172-174 NORTH 11th STREET

BROOKLYN, NEW YORK

Remedial Action Work Plan

NYC VCP Project Number 15CVCP054K
OER Project Number 15EHAZ064K

Prepared For:

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C&D	Construction and Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering Controls and Institutional Controls
ELAP	Environmental Laboratory Accreditation Program
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response
IRM	Interim Remedial Measure
BCA	Brownfield Cleanup Agreement
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYS DEC	New York State Department of Environmental Conservation
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYC OER	New York City Office of Environmental Remediation
NYC VCP	New York City Voluntary Cleanup Program
NYCRR	New York Codes Rules and Regulations
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PCBs	Professional Engineer Polychlorinated Biphenyls
PE	Professional Engineer
PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment

RAOs	Remedial Action Objectives
RAP	Remedial Action Plan
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
RIR	Remedial Investigation Report
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-Slab Depressurization System
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

CERTIFICATION

I, Paul K. Boyce, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 172-174 North 11th Street, Brooklyn, NY Site (NYC OER Project Number 15EHAZ064K and NYC VCP Project Number 15CVCP054K).

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

Paul K. Boyce
Name

074604
NYS PE License Number

Paul Boyce
Signature

02.23.15
Date

EXECUTIVE SUMMARY

174 North 11th Partners, LLC is working with the NYC Office of Environmental Remediation (OER) to investigate and remediate a 10,000-square foot site located at 172-174 North 11th Street in Brooklyn, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance, and conforms with applicable laws and regulations.

Site Location and Current Usage

The Site is located at 172-174 North 11th Street in the Williamsburg section of Brooklyn, New York and is identified as Block 2298 and Lot 13 on the New York City Tax Map. **Figure 1** – Subject Site Vicinity Plan shows the Site location. The Site is 10,000-square ft and is bounded by North 11th Street to the northeast and multi-level residential and commercial buildings to the east, south and west. A map of the site boundary is shown in **Figure 2** – Site Map.

Presently, the Site contains two commercial buildings. Building 172 consists of two floors with the first level being utilized as a lighting fixture restoration company (Aurora Lampworks Inc.) and as a jewelry showroom (Fitzgerald Jewelry). The upper level is used for storage and office space. The north portion of Building 174 consists of one floor and is utilized as a design showroom (Design Rehab, LLC). The rear portion of Building 174 is utilized as storage (Aurora Lampworks Inc.).

Summary of Proposed Redevelopment Plan

The proposed future use of the Site will consist of redeveloping the lot with a six-story residential building which will be comprised of 37 units, 24 ground level parking stalls, and a small ground level retail space with a single basement level. The ground floor of the proposed development will occupy the entire footprint of the property. The existing buildings will be demolished prior construction.

A partial cellar will be 85 ft wide. There will be no cellar along a 15 ft wide section on the eastern side of parcel. The partial cellar will extend approximately 42 ft to the southwest from North 11th Street and will increase to 65 ft from North 11th Street at approximately 55 ft from the east side of the parcel. The bottom of the cellar slab will be excavated to approximately 8-10 feet below ground surface (ft bgs). Locally, the excavation may extend to approximately 12-15 ft bgs to accommodate the elevator shaft and some of the footings and pile caps. **Figure 3** presents the site excavation diagram. The 100 ft x 100 ft ground level will be fully enclosed and will contain 24-parking stalls, a residential lobby, and a 1,000 square foot retail space. Floors two through five will be 61 ft x 100 ft and contain nine units per floor. Floor six will contain 1 unit and recreation space.

Approximately 2,000 yds^3 of material will be excavated, some of which will be removed from below the water table.

The layout of the proposed site development is presented in **Appendix 1.** The current zoning designation is M1-2/R6A/MX8 (Mixed Use / Special Use District). The proposed use is consistent with existing zoning for the property. **Figure 4** presents a map of the surrounding land use.

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

Summary of the Environmental Findings

A remedial investigation was performed and the results are documented in a companion document called "Remedial Investigation Report, 172-174 North 11th Street Brooklyn, New York", dated December 2014 (RIR).

Summary of Past Uses of Site and Areas of Concern
A Phase I Environmental Site Assessment (ESA) of the Site was completed by PWGC in March 2012. Review of historical information for the subject property indicates that the property has been developed since at least 1887. The table below summarizes the past use of the property.

Historic Use

Date(s)	Issues Noted	Description
1887	Yes	The western portion of the property is occupied by Travers Bro's Varnish Works. A melting room, cooling room, and storage room are identified on the map indicating the facility was used for the production of varnish. The eastern portion of the property is vacant.
1905-1916	Yes	The western portion of the property is occupied by a commercial building labeled as offices. The eastern portion of the property is identified as being a gas producer. Several large above ground storage tanks are identified on the property.
1940-1951	No	The subject property is identified as being operated as a packing corporation and a smoked fish corporation.
1965-2007	No	The property is as it appears today with two commercial buildings.
The historic usage is based upon a review of Sanborn Insurance Maps and City Directory.		

AOCs identified for this site include:
1. The presence of non-native historic urban fill.
2. The past use of the site as a producer-gas facility.

Summary of the Work Performed under the Remedial Investigation

PWGC, on behalf of 174 North 11th Partners, LLC, performed the following scope of work:

1. Performed a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed seven soil borings across the entire project Site (four in 2012, three in 2014), and collected 11 soil samples (five in 2012, six in 2014) for chemical analysis from the soil borings to evaluate soil quality;
3. Collected five groundwater samples (two in 2012, three in 2014) from temporary well points for chemical analysis to evaluate groundwater quality;
4. Collected six soil vapor samples (three in 2012, three in 2014) across the entire project Site for chemical analysis.

Summary of Environmental Findings

1. Depth to groundwater ranges from 8-9 ft bgs at the Site.
2. Groundwater flow is generally to the north-northwest.
3. Depth to bedrock is over 100 ft bgs.
4. Subsurface soil conditions indicate the presence of non-native historic urban fill from ground surface to approximately 8 ft bgs. The fill material is underlain by up to 100 feet of native sands.
5. Soil/fill samples collected during the 2012 Phase II and 2014 RI were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Unrestricted Use (UU) and Restricted Residential Use (RRU) Soil Cleanup Objectives (SCOs). No pesticides or PCBs were detected above their respective UUSCOs. The volatile organic compounds (VOCs) acetone (maximum [max] 170 micrograms per kilogram [µg/Kg], benzene (300 µg/Kg), methylene chloride (340 µg/Kg), naphthalene (25,000 µg/Kg), and m&p xylenes (max 380 µg/Kg) were detected above their respective UUSCOs but below their respective RRUSCOs. The semi-volatile organic compounds (SVOCs) benzo(a)anthracene (max 47,000 µg/Kg), benzo(a)pyrene (max 40,000 µg/Kg), benzo(b)fluoranthene (max 48,000 µg/Kg), benzo(k)fluoranthene (max 18,000 µg/Kg), chrysene (max 42,000 µg/Kg), dibenzo(a,h)anthracene (max 4,900 µg/Kg), fluoranthene (max 140,000 µg/Kg), indeno(1,2,3-cd)pyrene (max 25,000 µg/Kg), phenanthrene (max 180,000 µg/Kg), and pyrene (max 100,000 µg/Kg) were detected in several samples above their respective RRUSCOs. The concentration of SVOCs at sample locations SB001 (0 – 2') and SB002 (0 – 2' and 2 – 4') represent hot spots. The metals arsenic (max 78 mg/Kg), barium (580 mg/Kg), cadmium (max 5.7 mg/Kg), copper (max 6,100 mg/Kg), lead (max 700 mg/Kg), and mercury (max 21 mg/Kg) were detected above their respective RRUSCOs. Additional soil investigations (three borings) will be conducted after buildings demolition and prior to start of construction
6. Groundwater samples collected during the 2012 Phase II and 2014 RI were compared to the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (GQS) for Class GA (drinking water). No pesticides or PCBs were detected above the GQS. The VOCs benzene (max 4.6 µg/L) naphthalene (max 430 µg/L), n-propyl-benzene (max 59 µg/L), and toluene (18 µg/L) were detected above their respective GQS. The SVOCs benzo(a)anthracene (max 3.2 µg/L), benzo(b)flouranthene (max 1.4 µg/L), benzo(k)fluoranthene (max 0.62 µg/L), bis(2-ethylhexyl)phthalate (16 µg/L), chrysene (max 2.6 µg/L), and naphthalene (max 150 µg/L) were detected above

their respective GQS. The dissolved metals antimony (max 3.87 µg/L), beryllium (3.20 µg/L), chromium (max 373 µg/L), copper (286.6 µg/L), iron (max 67,900 µg/L), lead (max 111.9 µg/L), magnesium (40,800 µg/L), manganese (max 2,504 µg/L), nickel (107 µg/L), selenium (24 µg/L), and sodium (max 400,000 µg/L) were detected above their respective GQS. In order to evaluate whether the presence of total and dissolved metals in groundwater samples were attributable to sample turbidity, two of the three groundwater sampling locations, GW002 and GW003, were resampled for metal analysis at the request of NYC OER in December 2014. A groundwater sample could not be collected from GW001 because the well had settled and was inaccessible for sampling. The only dissolved metals detected at concentrations above their respective GQS were iron, manganese, and sodium, which indicate that the metal concentrations in the previous sampling events can be attributed to turbidity.

7. Soil vapor samples collected during the 2014 RI were compared to the New York State Department of Health (NYSDOH) Final Guidance on Soil Vapor Intrusion (October 2006) Matrix 1 and Matrix 2 values. Samples indicated petroleum related VOCs and chlorinated VOCs were present at low concentrations. Petroleum-related VOCs (BTEX) were detected at a maximum concentration of 158.67 micrograms per cubic meter (µg/m^3). Overall the highest reported concentrations were for ethanol (max 1,110 µg/m^3), heptane (max 451 µg/m^3), acetone (max 342 µg/m^3), n-hexane (278 µg/m^3), propylene (max 125 µg/m^3), cyclohexane (max 119 µg/m^3), and benzene (max 98.7 µg/m^3). The chlorinated solvents tetrachloroethylene and carbon tetrachloride were not detected in any of the samples. The chlorinated solvents trichloroethylene and 1,1,1-trichloethylene were detected in one sample but at concentrations below the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

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

Summary of the Remedy

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
3. Establishment of Track 4 Site-specific Soil Cleanup Objectives (SCOs).

4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. Approximately 4,760 ft^2 will be excavated to the water table, approximately 8 -10 ft bgs, for development purposes (building cellar). The majority of the remaining area of the Site, approximately 5,470 ft^2, will be excavated to a depth of 1 - 2 ft. Locally, the excavation may extend to approximately 12 - 15 ft bgs to accommodate the elevator shaft, covering approximately 100 ft^2, and some of the footings and pile caps. Approximately 3,200 tons of soil will be excavated and removed from this Site.
6. Confirmatory soil samples will be collected from the bottom of the excavation (approximately 8 - 10 ft bgs) at two locations within the footprint of the building cellar and analyzed for SVOCs and metals. The details concerning confirmation soil sampling locations are presented in **Figure 5**.
7. Additional site characterization soil samples will be obtained from approximately 2 - 4 ft bgs at three locations in the area outside the footprint of the building cellar and analyzed for VOCs, SVOCs, and metals. This sampling will be conducted prior to start of construction activities. The details concerning soil sampling locations are presented in **Figure 5**.
8. Excavation and removal of soil from a hotspot in the vicinity of SB-1, in the southwest portion of the property, to a depth of approximately 10 - 12 ft bgs, or the water table, whichever is shallower. Additional excavation of this hotspot will be performed to a depth of 4 ft bgs in the vicinity of SB002. The location of this hot spot excavation is presented in **Figure 5**. Confirmatory soil samples will be collected both from the bottom of both the northern end of the hot spot excavation (approximately 10 - 12 ft bgs) and the southern end of the excavation (4 - 6 ft bgs) and analyzed for SVOCs and metals. Excavation and removal of soil from a hotspot in the vicinity of SB-003, in the southeast portion of the property, to a depth of 6 ft bgs. The location of this hot spot excavation is presented in **Figure 5**. A confirmatory soil sample will be collected from the bottom of the excavation (approximately 6 - 8 ft bgs) and analyzed for metals.
9. Additional waste characterization sampling will be performed as necessary.
10. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
11. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
12. Removal of underground storage tanks (USTs) (if encountered) and closure of petroleum spills (if encountered) in compliance with applicable local, State and Federal laws and regulations.
13. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
14. Collection and analysis of confirmatory endpoint samples to determine the performance of the remedy with respect to attainment of SCOs.
15. Demarcation of residual soil/fill in landscaped areas.

16. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
17. Installation of a waterproofing/vapor barrier system beneath the cellar slab, the slab-on-grade below the residential portion of the Site, and along foundation side walls to prevent potential exposures from soil vapor. The vapor barrier will consist of Grace Products Preprufe 160R/300R or equivalent.
18. Construction and maintenance of an engineered composite cover consisting of a 5 inch concrete slab, to prevent human exposure to residual soil/fill remaining under the Site;
19. Construction and operation of a ventilated parking garage with a mechanical ventilation capability of approximately 11,000 cfm/ft^2, as per NYC Building Department's codes and requirements.
20. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
21. Submission of an approved Site Management Plan (SMP) in the Remedial Action Plan (RAP) for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
22. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.
23. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

COMMUNITY PROTECTION STATEMENT

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

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

Project Information:

- Site Address: 172-174 North 11th Street, Brooklyn, New York
- NYC Voluntary Cleanup Program Project Number: 15CVCP054K

Project Contacts:

- OER Project Manager: Shana Holberton, 212-788-8841
- Site Project Manager: Richard Kampf, 212-786-7420
- Site Safety Officer: Kris Almskog, 631-589-6353
- Online Document Repository: http://www.nyc.gov/html/oer/html/document-repository/document-repository.shtml
- Library Document Repository: Greenpoint Library, 718-349-8504, 107 Norman Ave., Brooklyn, NY 11222

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

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

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

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

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

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

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

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

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

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

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

issued by that agency. For this cleanup project, the hours of operation will conform to requirements of Department of Buildings and will be conveyed to OER before the start of the remedial action.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

REMEDIAL ACTION WORK PLAN

1.0 Site Background

174 North 11th Partners, LLC is working with the NYC Office of Environmental Remediation (OER) to investigate and remediate a property located at 172-174 North 11th Street in the Williamsburg section of Brooklyn, New York (the "Site"). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Current Usage

The Site is located at 172-174 North 11th Street in the Williamsburg section in Brooklyn, New York and is identified as Block 2298 and Lot 13 on the New York City Tax Map. **Figure 1 – Subject Site Vicinity Plan** shows the Site location. The Site is 10,000-square ft and is bounded by North 11th Street to the northeast and multi-level residential and commercial buildings to the east, south and west. A map of the site boundary is shown in **Figure 2 – Site Map.**

Presently, the Site contains two commercial buildings. Building 172 consists of two floors with the first level being utilized as a lighting fixture restoration company (Aurora Lampworks Inc.) and as a jewelry showroom (Fitzgerald Jewelry). The upper level is used for storage and office space. The north portion of Building 174 consists of one floor and is utilized as a design showroom (Design Rehab, LLC). The rear portion of Building 174 is utilized as storage (Aurora Lampworks Inc.).

1.2 Proposed Redevelopment Plan

The proposed future use of the Site will consist of redeveloping the lot with a six-story residential building which will be comprised of 37 units, 24 ground level parking stalls, and a small ground level retail space with a single basement level. The ground floor of the proposed development will occupy the entire footprint of the property. The existing buildings will be demolished prior construction.

A partial cellar will be 85 ft wide. There will be no cellar along a 15 ft wide section on the eastern side of parcel. The partial cellar will extend approximately 42 ft to the southwest from North 11th Street and will increase to 65 ft from North 11th Street at approximately 55 ft from the east side of the parcel. The bottom of the cellar slab will be excavated to approximately 8 - 10 ft bgs. Locally, the excavation may extend to approximately 12 - 15 ft bgs to accommodate the elevator shaft, covering approximately 100 ft^2, and some of the footings and pile caps. **Figure 3** presents the site excavation diagram. The 100 ft x 100 ft ground level will be fully enclosed and

will contain 24-parking stalls, a residential lobby, and a 1,000 ft^2 retail space. Floors two through five will be 61 ft x 100 ft and contain nine units per floor. Floor six will contain 1 unit and recreation space.

Approximately 2,000 yds^3 of material will be excavated, some of which will be removed from below the water table.

The layout of the proposed site development is presented in **Appendix 1.** The current zoning designation is M1-2/R6A/MX8 (Mixed Use / Special Use District). The proposed use is consistent with existing zoning for the property.

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

1.3 Description of Surrounding Properties

The area surrounding the Site consists of a mix of residential and commercial retail properties. No sensitive receptors including hospitals or daycare facilities are located within a 500 ft radius of the Site.

Figure 4 shows the surrounding land usage.

The table below summarizes the surrounding property use.

Surrounding Property Usage

Direction	Property Description
North – North Side of N 11th St.	Block 2291, Lot 1 – (95 Bedford Ave.) Developed with multi-story residential building.
South – Adjacent Property	Block 2298, Lot 25 – (177 N. 10th St.) Developed with multi-story commercial/office use building.
East - Adjacent Property	Block 2298, Lot 17 – (460 Driggs Ave.) Developed with multi-story mixed residential and commercial building.
West - Adjacent Property	Block 2298, Lot 7501 – (170 North 11th Street.) Developed with multi-story residential building.

1.4 Remedial Investigation

A remedial investigation was performed and the results are documented in a companion document called "Remedial Investigation Report, 172-174 North 11th Street Brooklyn, New York", dated December 2014 (RIR).

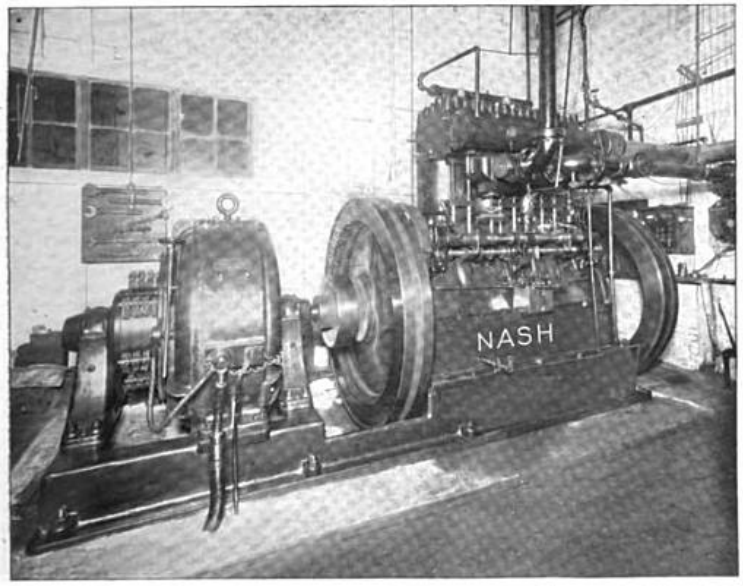
Summary of Past Uses of Site and Areas of Concern

A Phase I Environmental Site Assessment (ESA) of the Site was completed by PWGC in March 2012. Review of historical information for the subject property indicates that the property has been developed since at least 1887. The table below summarizes the past use of the property.

Historic Use

Date(s)	Issues Noted	Description
1887	Yes	The western portion of the property is occupied by Travers Bro's Varnish Works. A melting room, cooling room, and storage room are identified on the map indicating the facility was used for the production of varnish. The eastern portion of the property is vacant.
1905-1916	Yes	The western portion of the property is occupied by a commercial building labeled as offices. The eastern portion of the property is identified as being a gas producer. Several large above ground storage tanks are identified on the property.
1940-1951	No	The subject property is identified as being operated as a packing corporation and a smoked fish corporation.
1965-2007	No	The property is as it appears today with two commercial buildings.
The historic usage is based upon a review of Sanborn Insurance Maps and City Directory.		

The Historical Sanborn Maps indicate that the Site was occupied by the Phoenix Tube Company from at least 1905 to 1916. A producer-gas unit operated on a portion of the Site and consisted of consisting of a producer-gas unit, gas engines, and dynamos. Small scale producer-gas units such as this were typically used to generate electricity for lighting and other general needs of the facility. The photo below is an illustration of a gas powered engine-dynamo system used at the Site.



A Nash engine and C&C dynamo system at the Phoenix Tube Company, Brooklyn, NY.

The feedstock used at the Site was buckwheat (5/16 inch to 9/16 inch) anthracite coal. The coal was heated in the on-Site producer unit in a low oxygen environment without combustion and mixed with a controlled amount of air or steam to produce a carbon monoxide producer-gas. The fuel produced from the gasification process was then used to power the gas engines located on Site. The estimated coal usage at the Phoenix Tube Company was 105 lbs/hour.

Typical by-products of producer-gas plants include ash, coal tar, sulfur, ammonia, and wastewater.

AOCs identified for this site include:

1. The presence of non-native historic urban fill.
2. The past use of the site as a gas-producer facility.

Summary of the Work Performed under the Remedial Investigation

PWGC, on behalf of 174 North 11th Partners, LLC, performed the following scope of work:

1. Performed a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed seven soil borings across the entire project Site (four in 2012, three in 2014), and collected 11 soil samples (five in 2012, six in 2014) for chemical analysis from the soil borings to evaluate soil quality;
3. Collected five groundwater samples (two in 2012, three in 2014) from temporary well points for chemical analysis to evaluate groundwater quality;
4. Collected six soil vapor samples (three in 2012, three in 2014) across the entire project Site for chemical analysis.

Summary of Environmental Findings

1. Depth to groundwater ranges from 8-9 ft bgs at the Site.
2. Groundwater flow is generally to the north-northwest.
3. Depth to bedrock is over 100 feet bgs.

4. Subsurface soil conditions indicate the presence of non-native historic urban fill from ground surface to approximately 8 ft bgs. The fill material is underlain by up to 100 feet of native sands.
5. Soil/fill samples collected during the 2012 Phase II and 2014 RI were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Unrestricted Use (UU) and Restricted Residential Use (RRU) Soil Cleanup Objectives (SCOs). No pesticides or PCBs were detected above their respective UUSCOs. The volatile organic compounds (VOCs) acetone (maximum [max] 170 micrograms per kilogram [µg/Kg], benzene (300 µg/Kg), methylene chloride (340 µg/Kg), naphthalene (25,000 µg/Kg), and m&p xylenes (max 380 µg/Kg) were detected above their respective UUSCOS but below their respective RRUSCOs. The semi-volatile organic compounds (SVOCs) benzo(a)anthracene (max 47,000 µg/Kg), benzo(a)pyrene (max 40,000 µg/Kg), benzo(b)fluoranthene (max 48,000 µg/Kg), benzo(k)fluoranthene (max 18,000 µg/Kg), chrysene (max 42,000 µg/Kg), dibenzo(a,h)anthracene (max 4,900 µg/Kg), fluoranthene (max 140,000 µg/Kg), indeno(1,2,3-cd)pyrene (max 25,000 µg/Kg), phenanthrene (max 180,000 µg/Kg), and pyrene (max 100,000 µg/Kg) were detected in several samples above their respective RRUSCOs. The concentration of SVOCs at sample locations SB001 (0 – 2') and SB002 (0 – 2' and 2 – 4') represent hot spots. The metals arsenic (max 78 mg/Kg), barium (580 mg/Kg), cadmium (max 5.7 mg/Kg), copper (max 6,100 mg/Kg), lead (max 700 mg/Kg), and mercury (max 21 mg/Kg) were detected above their respective RRUSCOs. The concentration of metals at SB-1, SB002, and SB003 represent hot spots. Additional soil investigations (three borings) will be conducted after buildings demolition and prior to start of construction.

6. Groundwater samples collected during the 2012 Phase II and 2014 RI were compared to the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (GQS) for Class GA (drinking water). No pesticides or PCBs were detected above the GQS. The VOCs bezene (max 4.6 µg/L) naphthalene (max 430 µg/L), n-propyl-benzene (max 59 µg/L), and toluene (18 µg/L) were detected above their respective GQS. The SVOCs benzo(a)anthracene (max 3.2 µg/L), benzo(b)flouranthene (max 1.4 µg/L), benzo(k)fluoranthene (max 0.62 µg/L), bis(2-ethylhexyl)phthalate (16 µg/L), chrysene (max 2.6 µg/L), and naphthalene (max 150 µg/L) were detected above their respective GQS. The dissolved metals antimony (max 3.87 µg/L), beryllium (3.20 µg/L), chromium (max 373 µg/L), copper (286.6 µg/L), iron (max 67,900 µg/L), lead (max 111.9 µg/L), magnesium (40,800 µg/L), manganese (max 2,504 µg/L), nickel (107 µg/L), selenium (24 µg/L), and sodium (max 400,000 µg/L) were detected above their respective GQS. In order to evaluate whether the presence of total and dissolved metals in groundwater samples were attributable to sample turbidity, two of the three groundwater sampling locations, GW002 and GW003, were resampled for metal analysis at the request of NYC OER in December 2014. A groundwater sample could not be collected from GW001 because the well had settled and was inaccessible for sampling. The only dissolved metals detected at concentrations above their respective GQS were iron, manganese, and sodium, which indicate that the metal concentrations in the previous sampling events can be attributed to turbidity.
7. Soil vapor samples collected during the 2014 RI were compared to the New York State Department of Health (NYSDOH) Final Guidance on Soil Vapor Intrusion (October

2006) Matrix 1 and Matrix 2 values. Samples indicated petroleum related VOCs and chlorinated VOCs were present at low concentrations. Petroleum-related VOCs (BTEX) were detected at a maximum concentration of 158.67 micrograms per cubic meter ($\mu g/m^3$). Overall the highest reported concentrations were for ethanol (max 1,110 $\mu g/m^3$), heptane (max 451 $\mu g/m^3$), acetone (max 342 $\mu g/m^3$), n-hexane (278 $\mu g/m^3$), propylene (max 125 $\mu g/m^3$), cyclohexane (max 119 $\mu g/m^3$), and benzene (max 98.7 $\mu g/m^3$). The chlorinated solvents tetrachloroethylene and carbon tetrachloride were not detected in any of the samples. The chlorinated solvents trichloroethylene and 1,1,1-trichloethylene were detected in one sample but at concentrations below the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

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

2.0 Remedial Action Objectives

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

Soil

- Prevent direct contact with contaminated soil.
- Prevent exposure to contaminants volatilizing from contaminated soil and from off-site sources.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Groundwater

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

Soil Vapor

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

3.0 Remedial Alternatives Analysis

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

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

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

Alternative 1:

- Selection of NYSDEC 6NYCRR Part 375-6.8 (a) Unrestricted Use Soil Cleanup Objectives (SCOs).
- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. Based on the results of the Remedial Investigation, it is expected that this alternative would be achieved by excavating to a depth of 8-10 feet or groundwater across the entire Site, removing all historic fill. If soil/fill containing analytes at concentrations above Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building's cellar level is complete, additional excavation will be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs.
- No Engineering or Institutional Controls are required for a Track 1 cleanup, but a waterproofing/vapor barrier system will be installed beneath the cellar slab, the slab-on-grade below the residential portion of the Site, and along foundation side walls as part of development to prevent potential exposures from off-Site soil vapor.
- Placement of a final cover over the entire Site as part of construction.

Alternative 2:

- Establishment of Site specific (Track 4) SCOs (as defined in Section 4.2 of this RAWP).
- Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. Approximately 4,760 ft^2 will be excavated to the water table, approximately 8 -10 ft bgs,

for development purposes (building cellar). The majority of the remaining area of the Site, approximately 5,470 ft^2, will be excavated to a depth of 1 - 2 ft. Locally, the excavation may extend to approximately 12 - 15 ft bgs to accommodate the elevator shaft, covering approximately 100 ft^2, and some of the footings and pile caps. Approximately 3,200 tons of soil will be excavated and removed from this Site.

- Confirmatory soil samples will be collected from the bottom of the excavation (approximately 8 - 10 ft bgs) at two locations within the footprint of the building cellar and analyzed for SVOCs and metals. The details concerning confirmation soil sampling locations are presented in **Figure 5**.
- Additional site characterization soil samples will be obtained from approximately 2 - 4 ft bgs at three locations in the area outside the footprint of the building cellar and analyzed for VOCs, SVOCs, and metals. This sampling will be conducted prior to start of construction activities. The details concerning soil sampling locations are presented in **Figure 5**.
- Excavation and removal of soil from a hotspot in the vicinity of SB-1, in the southwest portion of the property, to a depth of approximately 10 - 12 ft bgs, or the water table, whichever is shallower. Additional excavation of this hotspot will be performed to a depth of 4 ft bgs in the vicinity of SB002. The location of this hot spot excavation is presented in **Figure 5**. Confirmatory soil samples will be collected both from the bottom of both the northern end of the hot spot excavation (approximately 10 - 12 ft bgs) and the southern end of the excavation (4 - 6 ft bgs) and analyzed for SVOCs and metals. Excavation and removal of soil from a hotspot in the vicinity of SB-003, in the southeast portion of the property, to a depth of 6 ft bgs. The location of this hot spot excavation is presented in **Figure 5**. A confirmatory soil sample will be collected from the bottom of the excavation (approximately 6 - 8 ft bgs) and analyzed for metals.
- Additional waste characterization sampling will be performed as necessary.
- If soil/fill containing analytes at concentrations above Track 4 Site-Specific SCOs is still present at the base of the excavation, additional excavation would be performed to meet Track 4 Site-Specific SCOs.
- Placement of a 5 inch concrete slab cover system over the entire Site to prevent exposure to remaining soil/fill;
- Installation of a waterproofing/vapor barrier system beneath the cellar slab, the slab-on-grade below the residential portion of the Site, and along foundation side walls to prevent potential exposures from soil vapor;
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site; prohibitions of sensitive Site uses, such as farming or vegetable gardening, to prevent future exposure pathways; and prohibition of a higher level of land use without OER approval;
- Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these Engineering and Institutional Controls including the performance of periodic inspections and certification that the controls are performing as they were intended. The SMP will note that the property owner and property owner's successors and assigns must comply with the approved SMP; and
- The property will continue to be registered with an E-Designation at the NYC Buildings Department.

3.1 Threshold Criteria – Protection of Public Health and the Environment

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

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

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

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an approved Soil/Materials Management Plan and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a waterproofing/vapor barrier system beneath the cellar slab, the slab-on-grade below the residential portion of the Site, and along foundation side walls to prevent potential exposures from soil vapor. A ventilated parking garage would also prevent accumulation of any soil vapors.

3.2 Balancing Criteria

Compliance with Standards, Criteria and Guidance (SCGs): This evaluation criterion assesses the ability of the alternative to achieve applicable standards, criteria and guidance.
Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to achieve Track 1 Unrestricted Use SCOs and Protection of Groundwater SCOs. Compliance with SCGs for soil vapor would also be achieved by installing a vapor barrier around the cellar slab, the slab-on-grade below the residential portion of the Site, and along foundation side walls, as part of development. In addition, the first floor of the building will contain a ventilated garage with the mechanical ventilation capability of approximately 11,000 cfm/ft^2, as per City Department of Buildings codes.

Alternative 2 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to meet Track 4 Site-Specific SCOs. Compliance with SCGs for soil vapor would also be achieved by installing a vapor barrier around the cellar slab,

the slab-on-grade below the residential portion of the Site, and along foundation side walls, as part of development. A Site Management Plan would ensure that these controls remained protective for the long term. In addition, the first floor of the building will contain a ventilated garage with the mechanical ventilation capability of approximately 11,000 cfm/ft^2, as per City Department of Buildings codes.

Health and safety measures contained in the CHASP and Community Air Monitoring Plan (CAMP) that comply with the applicable SCGs shall be implemented during Site redevelopment under this RAWP. For both Alternatives, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs. These measures will protect on-site workers and the surrounding community from exposure to Site-related contaminants.

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

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

An additional short-term adverse impact and risks to the community associated with both remedial alternatives is increased truck traffic. Approximately 217 25-ton capacity truck trips would be necessary to transport fill and soil excavated during Site development following the Alternative 1 remediation plan. Approximately 128 25-ton capacity truck trips would be necessary to transport fill and soil excavated during Site development following the Alternative 2 remediation plan. Truck traffic will be routed on the most direct course using major thoroughfares where possible and flaggers will be used to protect pedestrians at Site entrances and exits.

The effects of these potential adverse impacts to the community, workers and the environment would be minimized through implementation of corresponding control plans including a Construction Health and Safety Plan, a Community Air Monitoring Plan (CAMP) and a Soil/Materials Management Plan (SMMP), during all on-Site soil disturbance activities and would minimize the release of contaminants into the environment. Both alternatives provide short-term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-Site contaminants. Construction workers operating under appropriate management procedures and a Construction Health and Safety Plan (CHASP) would be

protected from on-Site contaminants (personal protective equipment would be worn consistent with the documented risks within the respective work zones).

Long-term effectiveness and permanence

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

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

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

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

Reduction of toxicity, mobility, or volume of contaminated material

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

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

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

Alternative 1 would eliminate a greater total mass of contaminants on Site. The removal of soil to 8 to10 feet or groundwater for the new development in both scenarios would likely result in relatively minor differences between these two alternatives.

Implementability

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

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

Cost effectiveness

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

Historic fill at the Site was found during the RI to extend to a depth of up to 8 feet below ground surface. Alternative 1 requires that historic fill be removed from the entire Site. The footprint of the Site, approximately 10,000 ft^2, will be excavated to a depth of 8-10 ft. The total amount of soil removed from the Site in Alternative 1 is estimated to be approximately 3,333 yds^3.

Alternative 2 requires excavation of approximately 4,760 ft^2 of the Site to a depth of 8-10 ft across the portion of the parcel that will contain the cellar. The majority of the remaining area of the Site, approximately 5,470 ft^2, will be excavated to a depth of 1-2 ft. In addition, the elevator shaft, covering approximately 100 sq ft, will be excavated to a depth of 10-15 ft bgs, and hot spots located in the southwest and southeast portions of the Site, covering approximately 240 ft^2 and 225 ft^2 respectively will be excavated to a depth of approximately 10 - 12 ft bgs, or the water table, whichever is shallower, and 6 ft bgs, respectively. The total amount of soil removed from the Site in Alternative 2 is approximately 2,000 yds^3.

Due to the differences in excavations, the costs associated with Alternative 1 would be higher than Alternative 2. Additional costs would include installation of additional shoring/underpinning, disposal of additional soil, and import of clean soil for backfill. However, long-term costs for Alternative 2 are likely higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2.

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

Community Acceptance

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

Based on the overall goals of the remedial program and initial permitting associated with the proposed site development, no adverse community opinion is anticipated for either alternative. This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in **Appendix 2**. Observations here will be supplemented by public comment received on the RAWP.

Land use

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

The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with the selected remedy of soil remediation. The proposed future use of the Site includes a six-story residential building with a partial cellar, a ground level parking garage, and a ground level retail space. Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs, both of which are appropriate for its planned residential use. The reasonably anticipated future use of the Site and its surroundings will be documented by the applicant in the NYC VCP application, which will include the following conclusions: The proposed redevelopment of the Site is compatible with its current zoning and is consistent with recent development patterns. The areas surrounding the site are urban and consist of predominantly mixed residential and commercial buildings in zoning districts designated for mixed use. The development would replace an underutilized site with a modern residential building. The proposed development would create new employment opportunities, living space, and economic and fiscal benefits to the City and State in the form of economic revitalization and tax revenue.

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

The Site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites, natural resources, waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species. The Site is located in an urban area with limited proximity to fish or wildlife. Both alternatives would prevent potential exposure pathways of contaminant migration affecting fish or wildlife. Municipal water supply wells are not present in this part of City; therefore, groundwater from the Site is not likely to affect municipal water supply wells or recharge areas. The Site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. Both alternatives are equally protective of natural resources and cultural resources.

Improvements in the current environmental condition of the property achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land and bringing such properties into productive reuse.

Sustainability of the Remedial Action

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

While Alternative 2 would potentially result in lower energy usage based on reducing the volume of material transported off-Site, both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. The remedial plan would take into consideration the shortest trucking routes during off-Site disposal of historic fill and other soils, which would reduce greenhouse gas emissions and conserve energy used to fuel trucks. The New York City Clean Soil Bank program may be utilized for reuse of native soils. To the extent practicable, energy efficient building materials, appliances, and equipment will be utilized to complete the development. A complete list of green remedial activities considered as part of the NYC VCP is included in the Sustainability Statement, included as **Appendix 3**.

4.0 Remedial Action

4.1 Summary of Preferred Remedial Action

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
3. Establishment of Track 4 Site-specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. Approximately 4,760 ft^2 will be excavated to the water table, approximately 8 -10 ft bgs, for development purposes (building cellar). The majority of the remaining area of the Site, approximately 5,470 ft^2, will be excavated to a depth of 1 - 2 ft. Locally, the excavation may extend to approximately 12 - 15 ft bgs to accommodate the elevator shaft, covering approximately 100 ft^2, and some of the footings and pile caps. Approximately 3,200 tons of soil will be excavated and removed from this Site.
6. Confirmatory soil samples will be collected from the bottom of the excavation (approximately 8 - 10 ft bgs) at two locations within the footprint of the building cellar and analyzed for SVOCs and metals. The details concerning confirmation soil sampling locations are presented in **Figure 5**.
7. Additional site characterization soil samples will be obtained from approximately 2 - 4 ft bgs at three locations in the area outside the footprint of the building cellar and analyzed for VOCs, SVOCs, and metals. This sampling will be conducted prior to start of construction activities. The details concerning soil sampling locations are presented in **Figure 5**.
8. Excavation and removal of soil from a hotspot in the vicinity of SB-1, in the southwest portion of the property, to a depth of approximately 10 - 12 ft bgs, or the water table, whichever is shallower. Additional excavation of this hotspot will be performed to a depth of 4 ft bgs in the vicinity of SB002. The location of this hot spot excavation is presented in **Figure 5**. Confirmatory soil samples will be collected both from the bottom of both the northern end of the hot spot excavation (approximately 10 - 12 ft bgs) and the southern end of the excavation (4 - 6 ft bgs) and analyzed for SVOCs and metals. Excavation and removal of soil from a hotspot in the vicinity of SB-003, in the southeast

portion of the property, to a depth of 6 ft bgs. The location of this hot spot excavation is presented in **Figure 5**. A confirmatory soil sample will be collected from the bottom of the excavation (approximately 6 - 8 ft bgs) and analyzed for metals.

9. Additional waste characterization sampling will be performed as necessary.
10. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
11. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
12. Removal of underground storage tanks (USTs) (if encountered) and closure of petroleum spills (if encountered) in compliance with applicable local, State and Federal laws and regulations.
13. Transportation and off-Site disposal of soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
14. Collection and analysis of confirmatory endpoint samples to determine the performance of the remedy with respect to attainment of SCOs.
15. Demarcation of residual soil/fill in landscaped areas.
16. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
17. Installation of a waterproofing/vapor barrier system beneath the cellar slab, the slab-on-grade below the residential portion of the Site, and along foundation side walls to prevent potential exposures from soil vapor; The vapor barrier will consist of Grace Products Preprufe 160R/300R or equivalent.
18. Construction and maintenance of an engineered composite cover consisting of a 5 inch concrete slab, to prevent human exposure to residual soil/fill remaining under the Site;
19. Construction and operation of a ventilated parking garage with the mechanical ventilation capability of approximately 11,000 cfm/ft^2, as per NYC Building Department's codes and requirements.
20. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
21. Submission of an approved Site Management Plan (SMP) in the Remedial Action Plan (RAR) for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
22. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes Engineering and Institutional Controls to be implemented at the Site.
23. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it

safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

4.2 Soil Cleanup Objectives and Soil/ Fill Management

Track 4 SCOs are proposed for this project. If 6 NYCRR Part 375, Table 6.8(a) Track 1 Unrestricted Use is not achieved, the 6 NYCRR Part 375, Table 6.8(b) Track 2 Restricted Residential SCOs will be used as amended by the following Site-Specific Track 4 SCOs:

Contaminant	Track 4 SCOs
Total SVOCs	500 ppm
Mercury	3.5 ppm
Arsenic	23 ppm
Copper	300 ppm
Lead	800 ppm

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

Soil/Fill Excavation and Removal

Approximately 4,760 ft^2 will be excavated to the water table, approximately 8 -10 ft bgs, for development purposes (building cellar). The majority of the remaining area of the Site, approximately 5,470 ft^2, will be excavated to a depth of 1 - 2 ft. Locally, the excavation may extend to approximately 12 - 15 ft bgs to accommodate the elevator shaft, covering approximately 100 ft^2, and some of the footings and pile caps. Approximately 3,200 tons of soil will be excavated and removed from this Site. The location of planned excavations is shown in **Figure 3**.

The total quantity of soil/fill expected to be excavated and disposed off-Site is approximately 2,000 $yards^3$.

The proposed disposal locations for Site-derived impacted materials are listed below. Additional disposal locations established at a later date will be reported promptly to the OER Project Manager.

Disposal Facility	Waste Type	Estimated Quantity
Total Recycling Corp (TRC), Allentown, PA	Non-hazardous soil	2,000 $yards^3$

The waste characterization facility and estimated quantity of removed soil information is subject to change pending the results of the final waste characterization sample results. Disposal

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

Soil Sampling

Soil samples will be analyzed for compounds and elements as described below utilizing the following analytical methods:

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

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

Confirmation Soil Sampling

1. Confirmatory soil samples will be collected from the bottom of the excavation (approximately 8 - 10 ft bgs) at two locations within the footprint of the building cellar and analyzed for SVOCs and metals. The details concerning confirmation soil sampling locations are presented in **Figure 5**.
2. Additional site characterization soil samples will be obtained at three locations in the area outside the footprint of the building cellar and analyzed for VOCs, SVOCs, and metals. This sampling will be conducted prior to start of construction activities. The details concerning soil sampling locations are presented in **Figure 5**.
3. Excavation and removal of soil from a hotspot in the vicinity of SB-1, in the southwest portion of the property, to a depth of approximately 10 - 12 ft bgs, or the water table, whichever is shallower. Additional excavation of this hotspot will be performed to a depth of 4 ft bgs in the vicinity of SB002. The location of this hot spot excavation is presented in **Figure 5**. Confirmatory soil samples will be collected both from the northern end of the hot spot excavation (approximately 10 - 12 ft bgs) and the southern end of the excavation (4 - 6 ft bgs) analyzed for SVOCs and metals. Excavation and removal of soil from a hotspot in the vicinity of SB-003, in the southeast portion of the property, to a depth of 6 ft bgs. The location of this hot spot excavation is presented in **Figure 5**. A confirmatory soil sample will be collected from the bottom of the excavation (approximately 6 - 8 ft bgs) and analyzed for metals.

Additional site characterization soil samples will be obtained from approximately 2 – 4 feet bgs at three locations in the area outside the footprint of the building cellar and analyzed for VOCs, SVOCs, and metals. This sampling will be conducted prior to start of construction activities. The details concerning soil sampling locations are presented in **Figure 5**.

Removal actions for development purposes under this plan will be performed in conjunction with confirmation soil sampling. Two confirmation end-point samples will be collected from within the building footprint, as shown on **Figure 5**. To evaluate attainment of Track 4 Site-specific SCOs, analytes will include those for which SCOs have been developed, including:

- Volatile organic compounds by EPA Method 8260;
- Semi-volatile organic compounds by EPA Method 8270; and
- Target Analyte List metals

If Track 1 Unrestricted Use SCOs are pursued, samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals according to analytical methods described above.

End-point Sampling at Hotspots Identified During the Remedial Investigation

During the early stages of building demolition and excavation, two hotspot areas will be delineated: one in the southwest portion of the site in the vicinity of SB-1 and SB002/GW002 and one in the southeast portion of the site in the vicinity of SB003/GW003. Hotspot excavation in the vicinity of SB-1 will occur to a depth of approximately 10 - 12 ft bgs, or the water table, whichever is shallower. Additional excavation of this hotspot will be performed to a depth of 4 ft bgs in the vicinity of SB002. Confirmatory soil samples will be collected at the termination depth at both the northern end of the hot spot excavation (approximately 10 - 12 ft bgs), or the water table, whichever is shallower, and the southern end of the excavation (4 - 6 ft bgs) analyzed for SVOCs and metals. Hotspot excavation in the vicinity of SB-003 will be performed to a depth of 6 ft bgs. A confirmatory soil sample will be collected from the bottom of the excavation (approximately 6 - 8 ft bgs) and analyzed for metals. The hotspot locations are shown in **Figure 5**.

Additional Hotpsot Sampling

If hotspots are identified during the remedial program, hotspot removal actions will be performed to ensure that hot-spots are fully removed. Analytes for end-point sampling will be those parameters that are driving the hot-spot removal action and will be approved by OER. Analysis will be performed according to analytical methods described above. Frequency for hot-spot end-point sample collection is as follows:

1. For excavations less than 20 feet in total perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.
2. For excavations 20 to 300 feet in perimeter:
    - For surface removals, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
    - For subsurface removals, one sample from each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
3. For sampling of volatile organics, bottom samples should be taken within 24 hours of excavation, and should be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours should be taken at six to twelve inches.
4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to bullets 1-3 above.

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

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

Confirmation Waste Characterization Sampling

Additional waste characterization sampling will be based on waste disposal facility requirements.

Quality Assurance/Quality Control

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

One blind duplicate sample for every 20 samples collected will be submitted to the approved laboratory for analysis of the same parameters. Trip blanks will be used whenever samples are transported to the laboratory for analysis of VOCs. One trip blank will be submitted to the laboratory with each shipment of soil samples. Trip blanks will not be used for samples to be analyzed for metals, SVOCs or pesticides.

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

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

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

Field blanks will be prepared by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers.

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the Soil/Materials Management Plan in **Appendix 4**. Soil import is not anticipated at this time.

4.3 Engineering Controls

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

- composite cover system consisting of a concrete building slab;
- soil vapor barrier

Composite Cover

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. This composite cover system is comprised of a 5 inch concrete building slab beneath the areas of proposed building.

Figure 6 shows the location of each cover type built at the Site. **Figure 7** shows the typical design for each remedial cover type used on this Site.

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

Vapor Barrier

As part of new development, migration of potential soil vapor from onsite or offsite sources in the future will be mitigated with a combination of building slab and vapor barrier. The vapor barrier will consist of Grace Products Preprufe 160R/300R or equivalent. The vapor barrier will extend beneath the cellar slab, the slab-on-grade below the residential portion of the Site, and along foundation side walls to prevent potential exposures from soil vapor; in accordance with manufacturer specifications. The vapor barrier will not extend beneath the first floor parking garage. The parking garage will be ventilated with a mechanical ventilation capability of approximately 11,000 cfm/ft^2 based on the area of the parking garage and as per NYC Building Department's codes and requirements.

The project's Professional Engineer licensed by the State of New York will have primary direct responsibility for overseeing the implementation of the vapor barrier. The extent of the proposed vapor barrier membrane is provided in **Figure 6**. Installation details with respect to the proposed building foundation, footings, slab, and sidewalls are provided in **Figure 8**. Product specification sheets are provided in **Appendix 6**. The Remedial Action Report will include photographs (maximum of two photos per page) of the installation process, PE/RA certified letter (on

company letterhead) from primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturers certificate of warranty.

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

4.4 Institutional Controls

This Site will achieve Site Specific Track 4 remediation. Institutional Controls (IC) have been incorporated in this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment. Institutional Controls are listed below. Long-term employment of EC/ICs will be implemented under a site-specific Site Management Plan (SMP) that will be included in the RAR. Institutional Controls for this remedial action are:

- Continued registration of the E-Designation for the property. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the SMP which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- Submittal of a SMP in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, inspection, and certification of ECs and IC's. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(l)(3).
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for residential and retail use and will not be used for a higher level of use without prior approval by OER.

4.5 Site Management Plan

Site Management is required for Track 4 remedial actions. Site Management will be the last phase of remediation and begins with the approval of the Remedial Action Report and issuance

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

The SMP will provide a detailed description of the procedures required to manage residual soil/fill left in place following completion of the remedial action in accordance with the Brownfield Cleanup Agreement with OER. This includes a plan for: (1) implementation of EC's and ICs; (2) implementation of monitoring programs; (3) operation and maintenance of EC's; (4) inspection and certification of EC's; and (5) reporting.

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

4.6 Qualitative Human Health Exposure Assessment

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

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

Known and Potential Contaminant Sources

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

- Historic Fill: Historic urban fill was identified throughout the Site to a depth of approximately 8 feet bgs.
- Producer-gas Plant: Historic Sanborn Maps indicate that a producer-gas plant operated on the Site from at least 1905 to 1916.

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

Soil:

- The volatile organic compounds (VOCs) including acetone, benzene, methylene chloride, naphthalene, and m&p xylenes were detected above their respective Unrestricted Use SCOs.
- The SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene were detected in several samples above their respective RRUSCOs.
- The metals arsenic, barium, cadmium, copper, lead, and mercury were detected above their respective RRUSCOs.

Groundwater:

- The VOCs bezene, naphthalene, n-propyl-benzene, and toluene were detected above their respective GQS.
- The SVOCs benzo(a)anthracene, benzo(b)flouranthene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, and naphthalene were detected above their respective GQS.

  The metals including iron, manganese, and sodium were detected above their respective GQS

Soil Vapor:

- No concentrations of contaminants were detected above NYS DOH Soil Vapor Matrix values.
- Petroleum related VOCs were detected at low levels.

Nature, Extent, Fate and Transport of Contaminants

- Soil: Potential contaminants found at the Site are representative of urban fill and there did not appear to be a pattern to the horizontal distribution of constituent concentrations. However, in several instances, metals concentrations appear to be greater in the shallow soils, decreasing with depth.
- Groundwater: Potential contaminants found in the groundwater at the Site are representative of urban fill and/or the migration of dissolved phase constituents from off-property sources indicative of regional conditions.
- Soil Vapor: No concentrations of contaminants were detected above New York State Air Guidance Values.

Receptor Populations

On-Site Receptors: Because the site is currently developed with two commercial buildings and access to the Site is restricted by secure doors, onsite receptors are limited to trespassers, site representatives and visitors granted access to the property. During construction, potential on-site receptors include construction workers, site representatives, and visitors. Under proposed future conditions, potential on-site receptors include adult and child building residents, workers and visitors.

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

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

Potential Routes of Exposure

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

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

Potential Exposure Points

Current Conditions: The entire site is currently occupied by two commercial buildings. Therefore, there are no known potential exposure pathways from ingestion, inhalation, or dermal absorption of soil/ fill. Groundwater is not exposed at the site, and because the site is served by the public water supply, groundwater is not used at the site. Therefore, the potential for exposure via the groundwater pathway is not likely. Because the site is currently developed with two commercial buildings, each capping their respective portion of the Site with a concrete slab, it is not likely for soil vapor to accumulate on site.

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

Proposed Future Conditions: Under future remediated conditions, soils in excess of Track 4 SCOs will be removed. The site will be fully capped, limiting potential direct exposure to soil and groundwater remaining in place. A vapor barrier will limit the potential for inhalation via soil vapor intrusion. The site is served by the public water supply, and groundwater is not used at the site. There are no known completed off-site pathways for oral, inhalation, or dermal exposure to contaminants derived from the site.

Overall Human Health Exposure Assessment

This assessment takes into consideration the reasonably anticipated use of the site, which includes a residential structure with ground floor retail space, site-wide impervious surface cover

cap, and a partial subsurface vapor barrier system for the building. Under current conditions, on-Site exposure pathways exist for those given access to the Site or trespassers. During remedial construction, on-Site and off-Site exposures to contaminated dust from historic fill material will be addressed through dust controls, and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

Environmental Media & Exposure Route	**Human Exposure Assessment**
Direct contact with surface soils (and incidental ingestion)	• People are not coming into contact because contaminated surface soils are currently covered with a concrete cap • People are not coming into contact because public access to the site will be restricted by fencing. • People can come into contact if they trespass on the site.
Direct contact with subsurface soils (and incidental ingestion)	• People can come into contact if they complete ground-intrusive work on the site.
Ingestion of groundwater	• Contaminated groundwater is not being used for drinking water, as the area is served by the public water supply and use of groundwater is prohibited.
Direct contact with groundwater	• People can come into contact if they complete ground-intrusive work at the site.
Inhalation of air (exposures related to soil vapor intrusion)	• A vapor barrier will be installed beneath the cellar, the slab-on-grade beneath the residential portion of the Site, and the foundation walls to prevent exposure to soil vapor. A ventilated parking garage with the ventilation capability of approximately 11,000 cfm/ft^2, will be utilized to prevent exposure to soil vapor for the remainder of the first floor. There were no detected soil vapor contaminants above guidance values.

5.0 Remedial Action Management

5.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include Paul K. Boyce (PE, QEP), Richard Kampf (Project Manager), and Kris Almskog (Site Safety Officer). The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project is Paul K. Boyce.

5.2 Site Security

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

5.3 Work Hours

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

5.4 Construction Health and Safety Plan

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

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

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

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

5.5 Community Air Monitoring Plan

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

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

VOC Monitoring, Response Levels, and Actions

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

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

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

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

Particulate Monitoring, Response Levels, and Actions

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

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

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

5.6 Agency Approvals

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

5.7 Site Preparation

Pre-Construction Meeting

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

Mobilization

Mobilization will be conducted as necessary for each phase of work at the Site. Mobilization includes field personnel orientation, equipment mobilization (including securing all sampling equipment needed for the field investigation), marking/staking sampling locations and utility

mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

Utility Marker Layouts, Easement Layouts

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

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

Dewatering

Dewatering may be required in specific areas of the Site. The areas that may require dewatering include footings, elevator pit, and pile caps. If dewatering is necessary, discharge effluent will be completed in accordance with applicable NYCDEP regulations.

Equipment and Material Staging

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

Stabilized Construction Entrance

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

Truck Inspection Station

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

Extreme Storm Preparedness and Response Contingency Plan

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

Storm Preparedness

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

Storm Response

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

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

Storm Response Reporting

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

5.8 Traffic Control

Drivers of trucks leaving the NYC VCP Site with soil/fill will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site is shown on **Figure 9**.

5.9 Demobilization

Demobilization will include:

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

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

5.10 Reporting and Record Keeping

Daily reports

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

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

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

An alpha-numeric site map will be constructed to identify locations described in reports submitted to OER. The site map will be presented to OER after final waste characterization results are reviewed by the waste disposal facility.

Record Keeping and Photo Documentation

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

5.11 Complaint Management

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

5.12 Deviations From The Remedial Action Work Plan

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

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

6.0 Remedial Action Report

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

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

Remedial Action Report Certification

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

I, Paul K. Boyce, am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 172-174 North 11th Street, Brooklyn, New York Site (NYC OER Project Number 15EHAZ064K and NYC VCP Project Number 15CVCP054K).

I certify that the OER-approved Remedial Action Work Plan dated month day year and Stipulations in a letter dated (December 2014); if any were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

Paul K. Boyce
Name

NYS PE License Number

Signature

Date

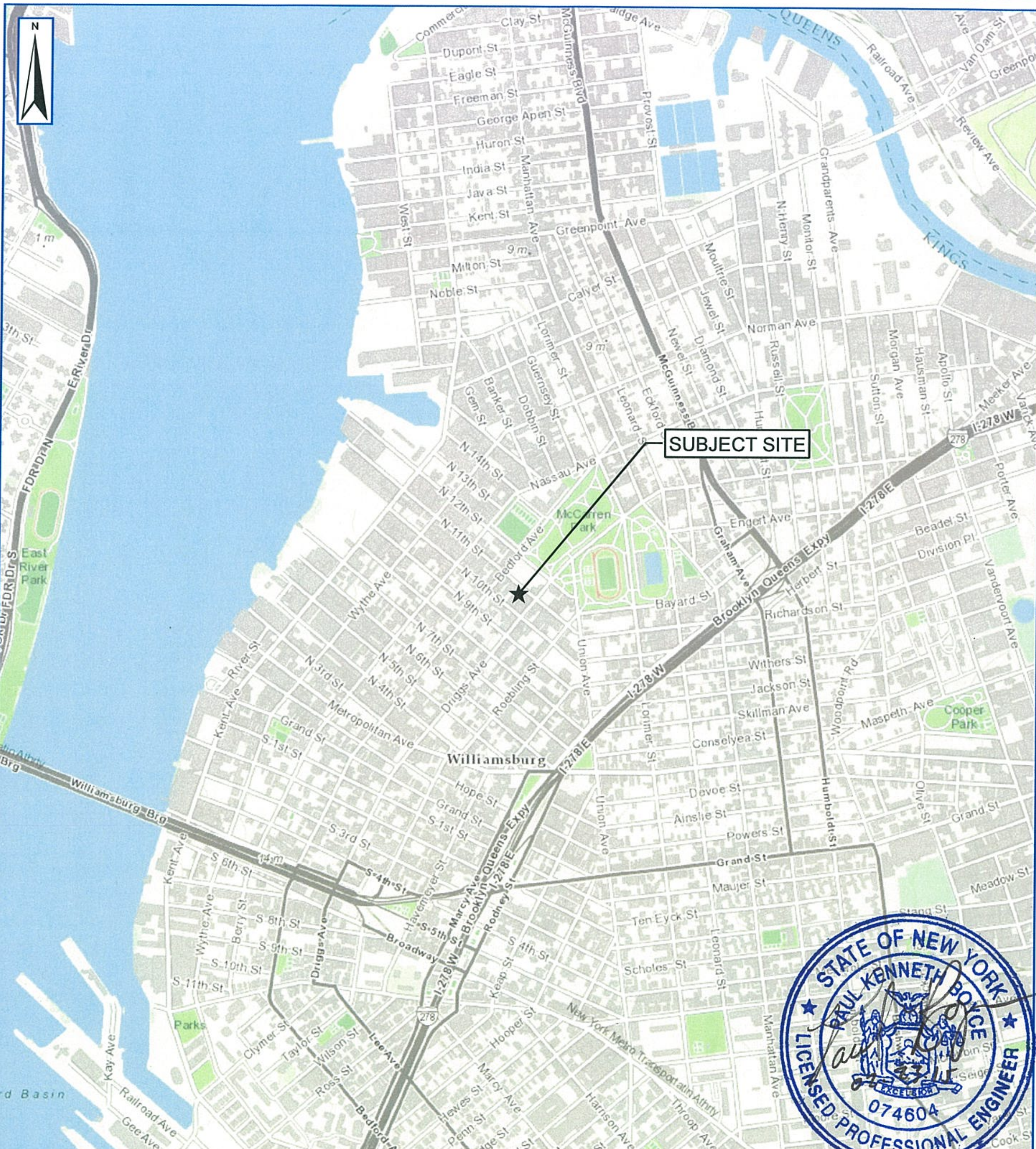
PE Stamp

7.0 Schedule

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a 3 month remediation period is anticipated.

Schedule Milestone	**Weeks from Remedial Action Start**	**Duration (weeks)**
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization	0	1
Remedial Excavation	1	6
Demobilization	7	1
Submit Remedial Action Report	8	4

FIGURES



Document Path: D:\GIS\Projects\E-L\GPP1401\FIG1_VicinityMap.mxd

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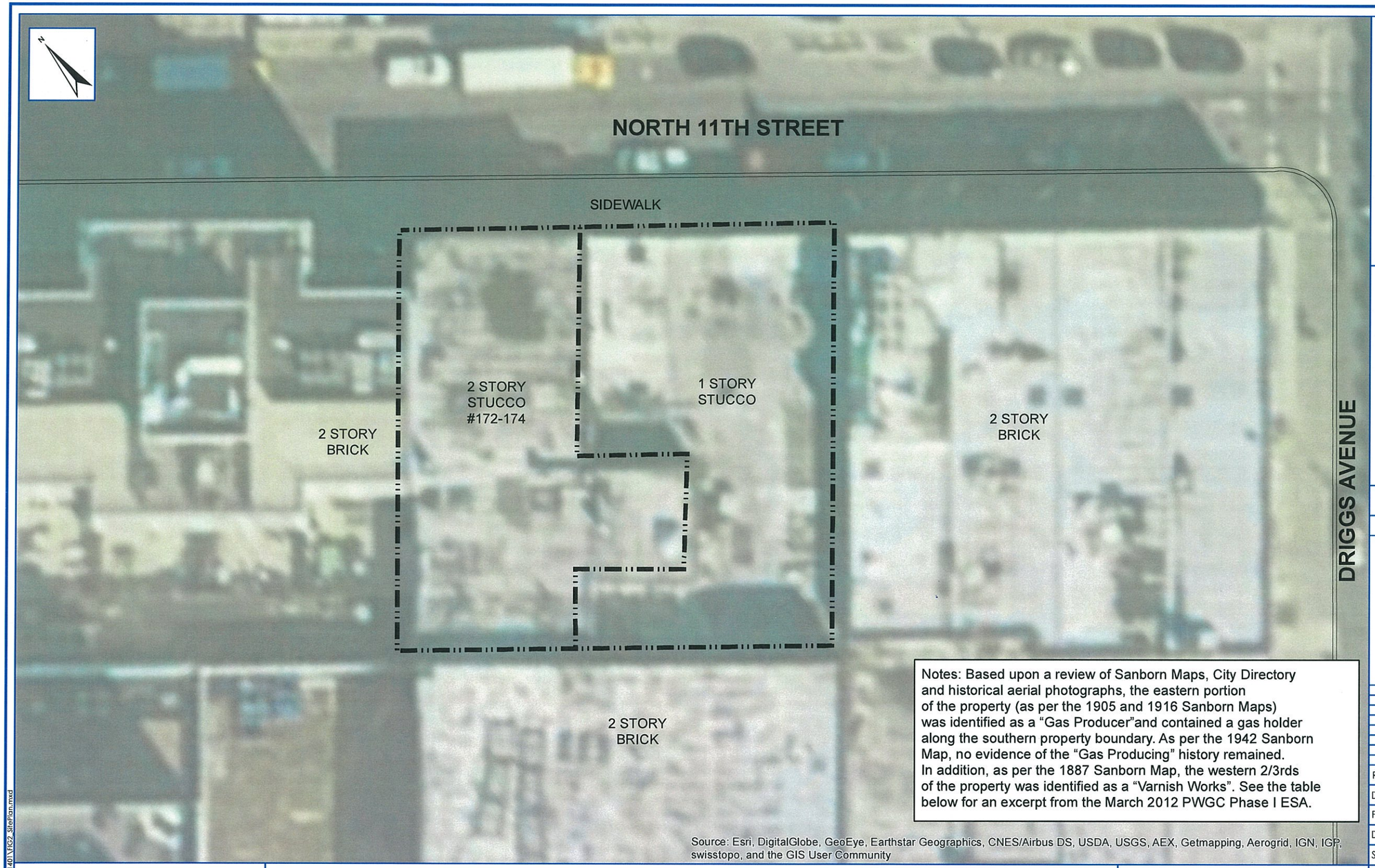
SUBJECT SITE VICINITY

172-174 NORTH 11TH ST
BROOKLYN, NY

Miles: 0, ¼, ½, ¾, 1

Project:	GPP1401
Date:	10/28/2014
Designed by:	JCG
Drawn by:	BB
Approved by:	KA
Figure No:	1



Notes: Based upon a review of Sanborn Maps, City Directory and historical aerial photographs, the eastern portion of the property (as per the 1905 and 1916 Sanborn Maps) was identified as a "Gas Producer"and contained a gas holder along the southern property boundary. As per the 1942 Sanborn Map, no evidence of the "Gas Producing" history remained. In addition, as per the 1887 Sanborn Map, the western 2/3rds of the property was identified as a "Varnish Works". See the table below for an excerpt from the March 2012 PWGC Phase I ESA.

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Property Line

Curbline

SITE PLAN

172-174 NORTH 11TH ST.
BROOKLYN, NY

0 25 50 75 100 Feet

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STATE OF NEW YORK
PAUL KENNETH BOYCE
074604
LICENSED PROFESSIONAL ENGINEER
EXCELSIOR

DRAWING PREPARED FOR:

REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

Project:	GPP1401	Designed by:	AM
Date:	2/13/2015	Drawn by:	AM
Scale:	AS SHOWN	Approved by:	KA

FIGURE NO: 2

SHEET:

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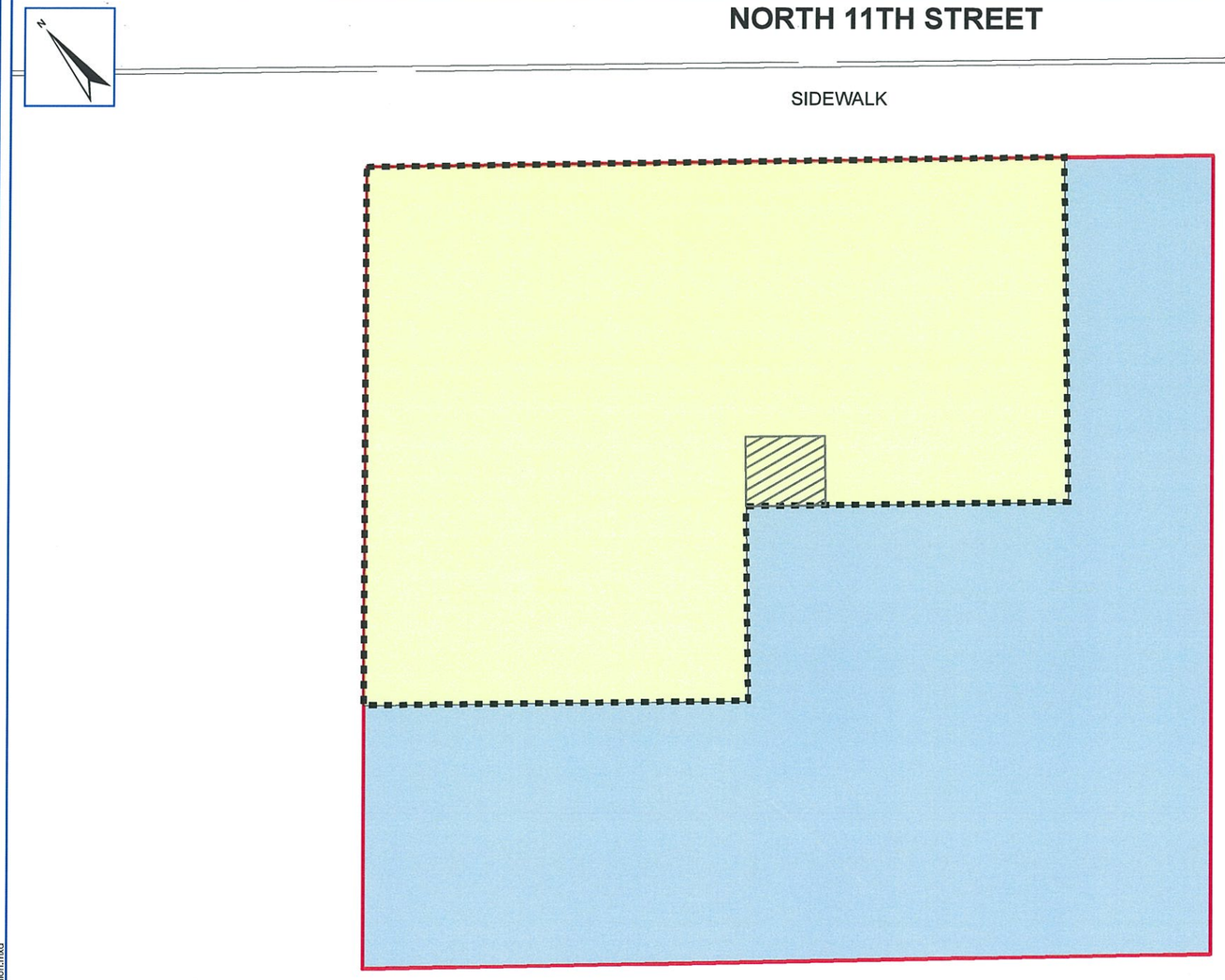

Elevator Pit (Excavated 10-15 ft)
Cellar Outline
Excavated 8 ft
Site Boundary
Excavated 1-2 ft
Curbline

SITE EXCAVATION DIAGRAM

172-174 NORTH 11TH ST.
BROOKLYN, NY

0 20 40 60 80 Feet

DRIGGS AVENUE

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REVISION	DATE	INITIAL	COMMENTS

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Project:	GPP1401	Designed by:	JCG
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Scale:	AS SHOWN	Approved by:	KA

FIGURE NO: 3

SHEET:

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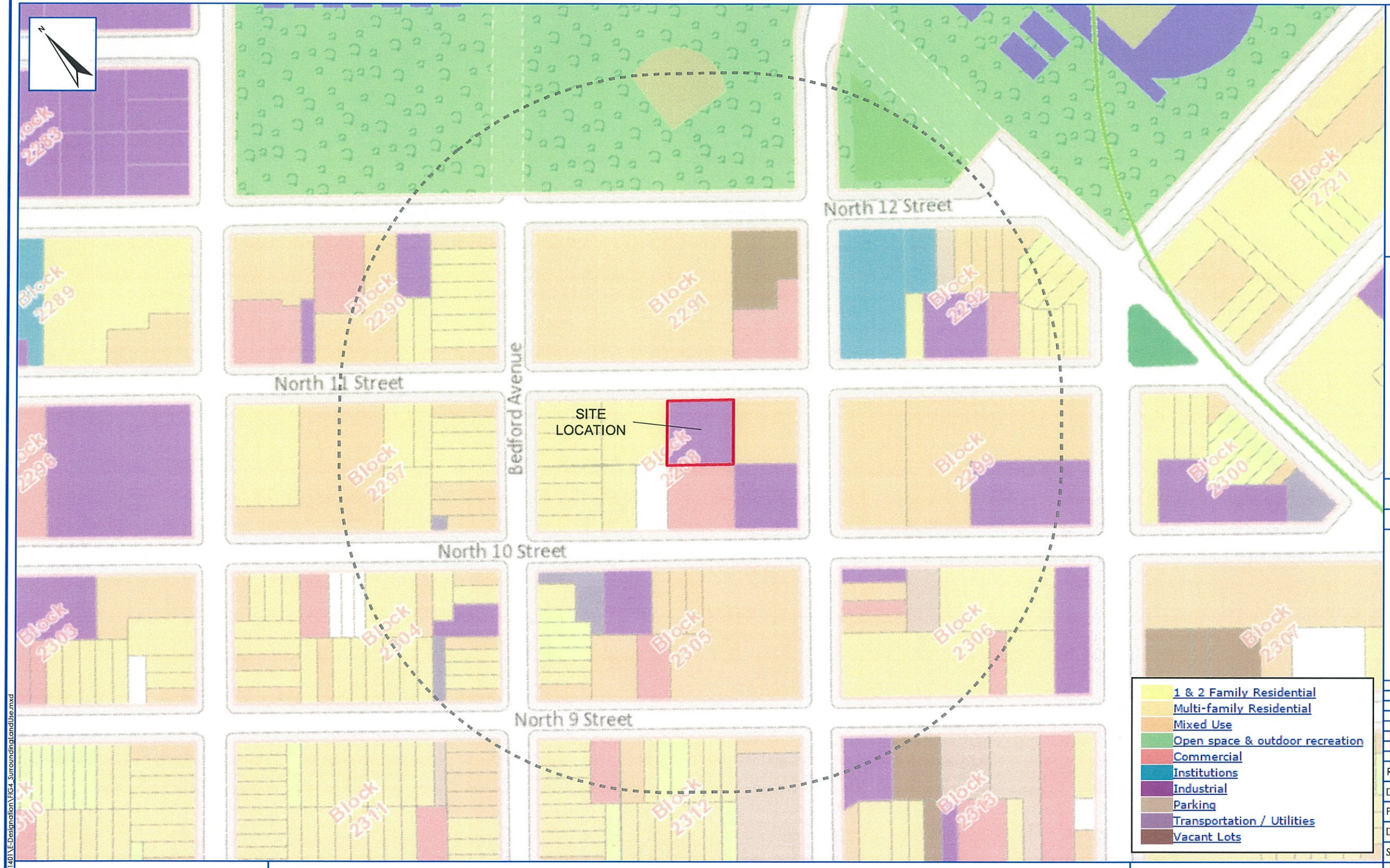

Source: www.loasisnyc.net

SURROUNDING LAND USE

172-174 NORTH 11TH ST.
BROOKLYN, NY

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REVISION	DATE	INITIAL	COMMENTS

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FIGURE NO: 4

SHEET:

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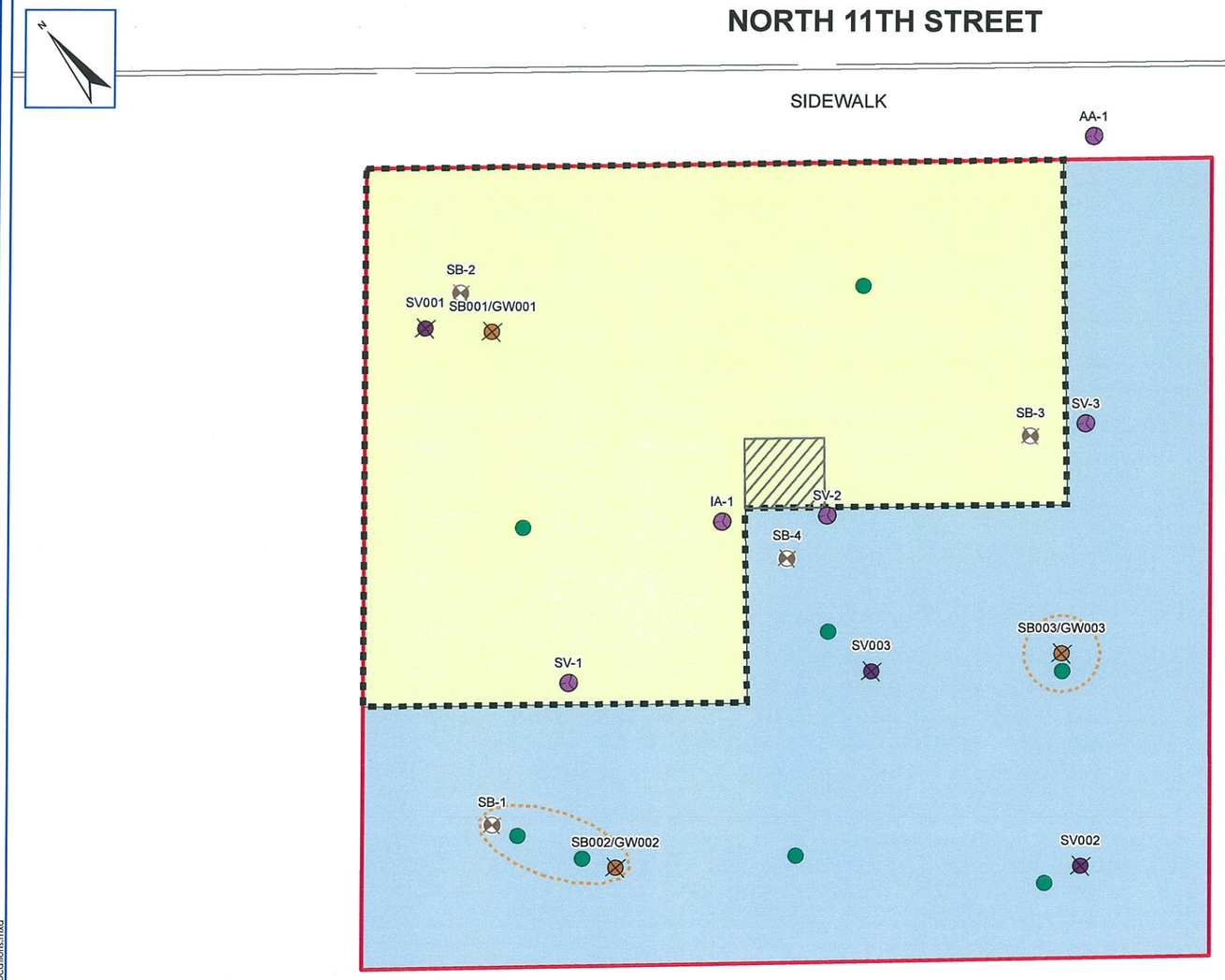

MAP OF CONFIRMATORY SAMPLING LOCATIONS

172-174 NORTH 11TH ST.
BROOKLYN, NY

0 20 40 60 80 Feet

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REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

Project:	GPP1401	Designed by:	JD
Date:	1/16/2015	Drawn by:	JCG
Scale:	AS SHOWN	Approved by:	KA

FIGURE NO: 5

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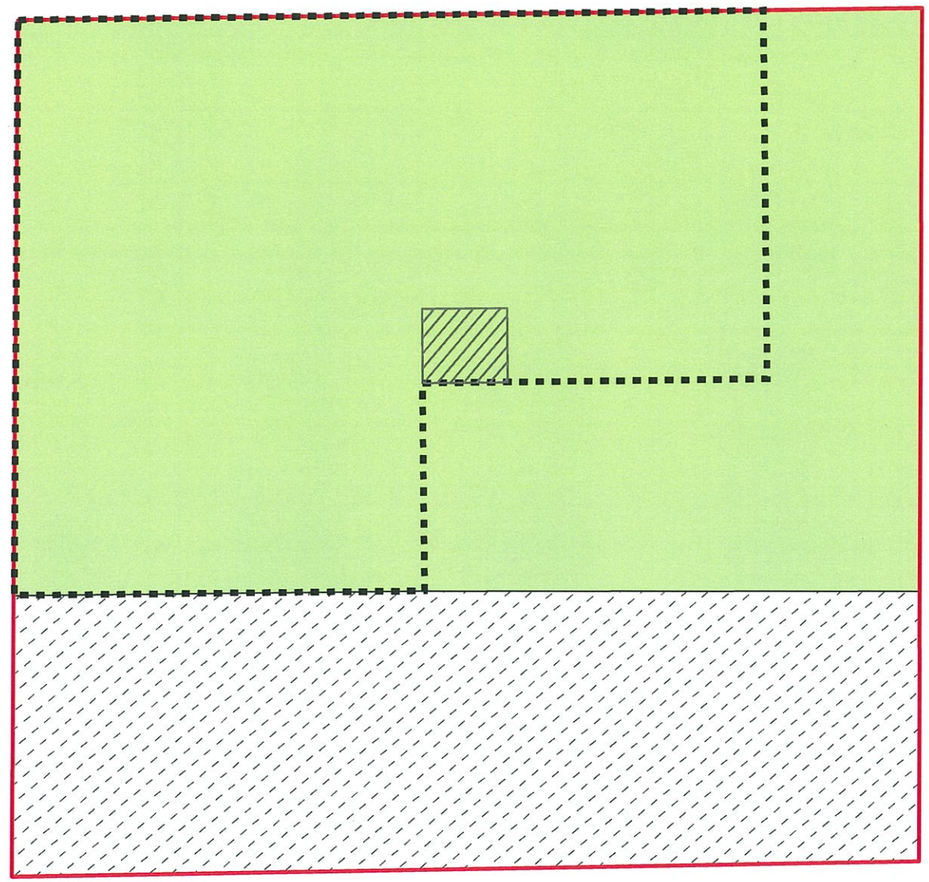
NORTH 11TH STREET

SIDEWALK



DRIGGS AVENUE

Elevator Pit
Cellar Outline
Site Boundary
Concrete and Vapor Barrier cover system
Concrete cover system
Curbline

SITE WIDE COVER SYSTEM PLAN

172-174 NORTH 11TH ST.
BROOKLYN, NY

0 20 40 60 80 Feet

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REVISION	DATE	INITIAL	COMMENTS

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Project:	GPP1401	Designed by:	JD
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Scale:	AS SHOWN	Approved by:	KA

FIGURE NO: 6

SHEET:

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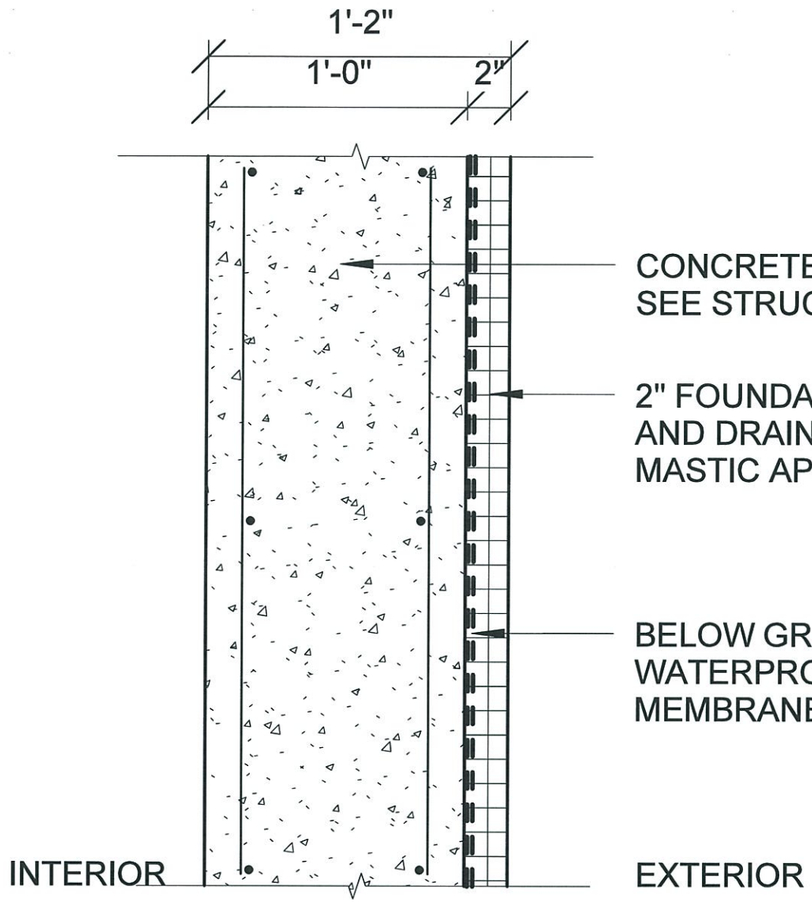

E1A CONCRETE FOUNDATION WALL (PLAN VIEW)
2 HR RATED
1"= 1'-0"

NOTE: USE BLIND SIDE WATERPROOFING AT NEIGHBORING BUILDINGS AND WHERE ACCESS IS LIMITED

COVER DETAIL

172-174 NORTH 11TH ST.
BROOKLYN, NY

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REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

Project:	GPP1401	Designed by:	JD
Date:	12/3/2014	Drawn by:	JCG
Scale:	AS SHOWN	Approved by:	KA

FIGURE NO: 7

SHEET:

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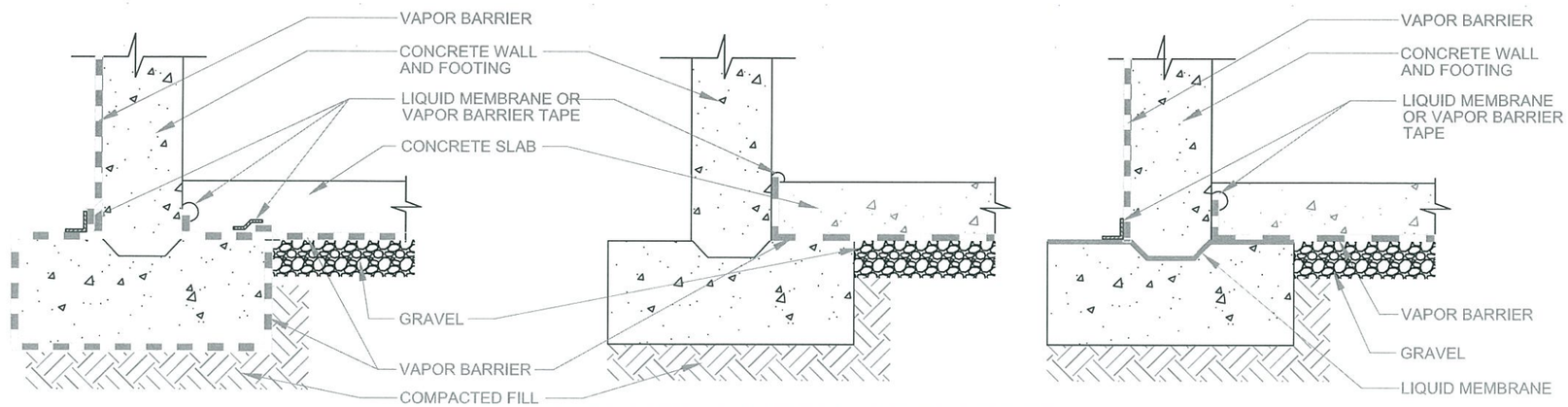
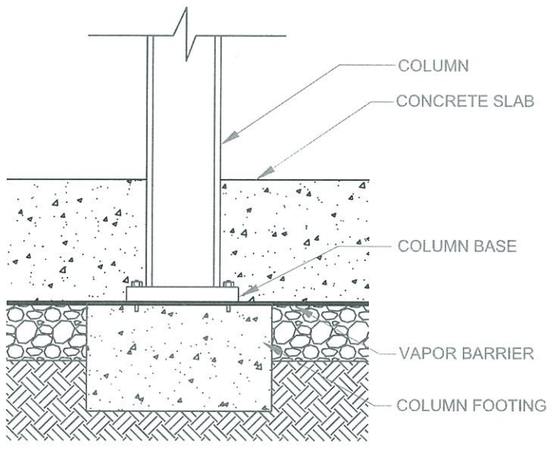


WALL/FOOTING INSTALLATION DETAIL

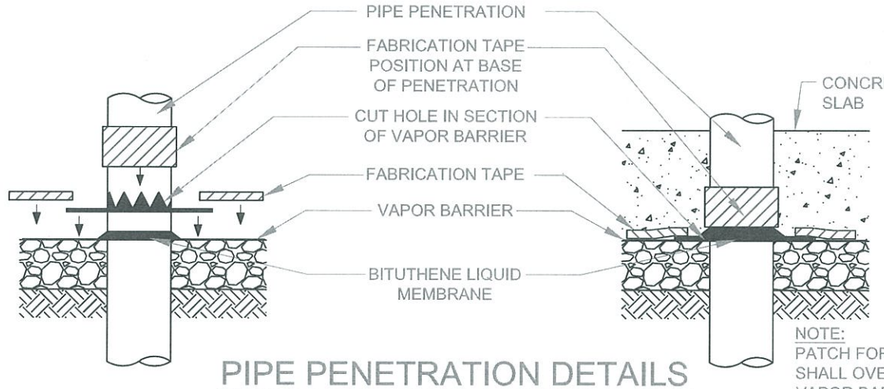
SCALE: NOT TO SCALE



NOTE:
SEAL BOLT PENETRATIONS WITH BITUTHENE LIQUID MEMBRANE

COLUMN DETAIL

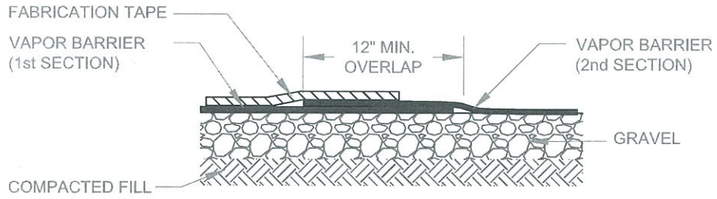
SCALE: NOT TO SCALE



NOTE:
PATCH FOR VAPOR BARRIER SHALL OVERLAP IN PLACE VAPOR BARRIER BY SIX INCHES.

PIPE PENETRATION DETAILS

SCALE: NOT TO SCALE



SEAM SEALING DETAILS

SCALE: NOT TO SCALE

NOTE:
DETAILS TO BE USED AS A GUIDE. INSTALL VAPOR BARRIER PER MANUFACTURER'S INSTRUCTIONS.

VAPOR BARRIER/ WATERPROOFING DETAIL

172-174 NORTH 11TH ST.
BROOKLYN, NY

PWGC
Strategic Environmental and Engineering Solutions
P.W. GROSSER CONSULTING, INC.
630 Johnson Avenue. • Suite 7
Bohemia • NY • 11716-2618
Phone: (631) 589-6353 • Fax: (631) 589-8705
E-mail: INFO@PWGROSSER.COM

STATE OF NEW YORK
PAUL KENNETH BOYCE
074604
LICENSED PROFESSIONAL ENGINEER

DRAWING PREPARED FOR:

REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

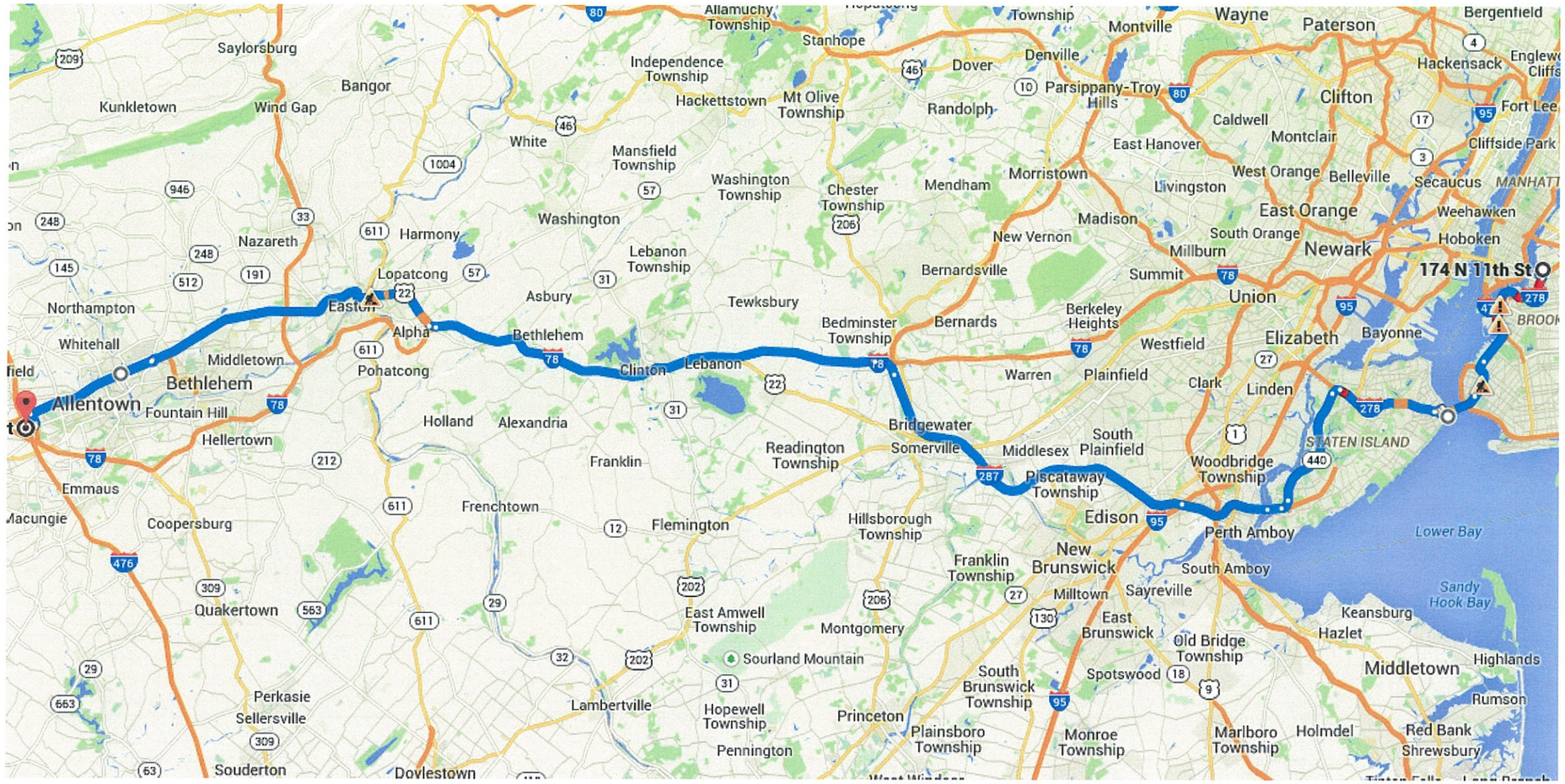
Project:	GPP1401	Designed by:	JD
Date:	12/3/2014	Drawn by:	JCG
Scale:	AS SHOWN	Approved by:	KA

FIGURE NO: 8

SHEET:

Document Path: Z:\GIS\Projects\E-L\GPP\1401\E-Designation\Fig8_VaporBarrierDetail.mxd

Directions from 174 N 11th St to 5050 Tilghman St



0 2.5 5 10 15 20 Miles

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STATE OF NEW YORK
PAUL KENNETH BOGE
LICENSED PROFESSIONAL ENGINEER
074604
02-13-15

DRAWING PREPARED FOR:

REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

Project:	GPP1401	Designed by:	JD
Date:	2/11/2015	Drawn by:	JCG
Scale:	AS SHOWN	Approved by:	KA

TRUCK ROUTE

174 N 11th St, Brooklyn
to
5050 Tilghman St, Allentown

FIGURE NO:

9

SHEET:

APPENDIX 1

PROPOSED DEVELOPMENT PLANS

SHEET LIST		
Sheet Number	Sheet Name	Sheet Issue Date
T-000.OO	COVER	10/15/14
Z-100.OO	ZONING ANALYSIS	10/15/14
Z-101.OO	ZONING ANALYSIS	10/15/14
G-100.00	BUILDING CODE ANALYSIS, GENERAL NOTES & ADA COMPLIANCE	10/15/14
G-101.00	ADA NOTES	10/15/14
G-102.00	ADA NOTES	10/15/14
G-200.00	SURVEY	10/15/14
G-300.OO	AREA DEDUCTIONS	10/15/14
G-301.OO	AREA DEDUCTIONS	10/15/14
EN-100.00	ENERGY ANALYSIS	10/15/14
A-010.OO	SITE PLAN	10/15/14
A-100.00	CELLAR PLAN	10/15/14
A-101N.00	1ST FLOOR PLAN - NORTH	10/15/14
A-101S.00	1ST FLOOR PLAN - SOUTH	10/15/14
A-102N.00	2ND FLOOR PLAN - NORTH	10/15/14
A-102S.00	2ND FLOOR PLAN - SOUTH	10/15/14
A-103.00	3RD-4TH FLOOR PLAN	10/15/14
A-104.00	5TH FLOOR PLAN	10/15/14
A-105.OO	6TH FLOOR PLAN	10/15/14
A-107.OO	ROOF PLAN	10/15/14
A-108.OO	BULKHEAD PLAN	10/15/14
A-300.OO	NORTH ELEVATION	10/15/14
A-301.OO	SOUTH ELEVATION	10/15/14
A-302.OO	WEST ELEVATION	10/15/14
A-303.OO	EAST ELEVATION	10/15/14
A-304.OO	BULKHEAD ELEVATIONS	10/15/14
A-310.OO	LONGITUDINAL BUILDING SECTION	10/15/14
A-311.OO	TRANSVERSE BUILDING SECTION	10/15/14
A-400.OO	WALL SECTIONS	10/15/14
A-600.OO	STAIR PLANS & SECTIONS	10/15/14
A-610.00	STAIR DETAILS	10/15/14
A-800.00	INTERIOR PARTITION TYPES	10/15/14
A-810.00	DOOR SCHEDULE,DOOR HEAD & JAMB DETAILS, DOOR SADDLE DETAILS	10/01/14
A-820.00	WINDOW SCHEDULE & DETAILS	10/15/14

PROGRESS SET: 10/13/2014 6:05:14 PM

Project

174 N. 11TH STREET

BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS

434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
434 Broadway Suite
31st Floor
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STRUCTURAL ENGINEER:
GAUZ
31 W 27th St #6
New York, NY 10001

MEP ENGINEER:
Gurt DeGroot Con. Eng.
45 W 27th St
New York, NY 10001

CODE CONSULTANT:

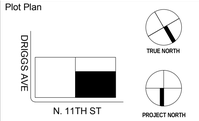
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title

COVER

Sign & Seal

Drawing No.

T-000.OO

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	**Checked By**	**DOB Sheet**
3/16" = 1'-0"	Checker	1 OF 36

DOB NUMBER

ZONING INFORMATION

Applicable Resolution	Zoning Resolution of The City of New York City Planning Commission Department of City Planning numbers below refer to this document		
Address	174 N 11th Street, Brooklyn, NY 11211		Narrow Street
Block	2298	Lot	13
Zoning Map	13a	Zoning District	M1-2 / R6A
		Special District	MX-8
		E Designation	E-138 Underground tank testing protocol
Proposed Building Use (Sec. 22-12)	Use Group 2A Residences- Apartments		
Lot Area (LA)	Lot 13: **10,000 SF**		
	Total LA= 10,000 SF		

Floor Area

(Sec. 123-64) Mixed use buildings

(a.) (4) Max Floor Area shall be the Max Permitted for either Commercial or Residential, whichever is the greatest amount of Floor Area

Commercial

(Sec. 123-61) FAR shall be as set forth in Article 4 Chapter 3
(Sec. 123-64) (a.) (1) Mixed Use Buildings — Commercial per Section 43-12
(Sec. 43-12) M1-2 — FAR: 2.0

Maximum Floor Area Permitted: (LA x FAR=)
10,000 x 2.0 = 20,000 sf

COMPLIES

Proposed Floor Area = 1,204 SF

Residential

(Sec. 123-61) Residential Buildings shall conform to the requirements of article 2 Chaper 3

(Sec. 123-64) (a.) (3) Mixed Use Buildings — Residential Per Section 123=-63

(Sec. 23-952) Max. Floor Area

R6A (WITHOUT INCLUSIONARY HOUSING) — FAR: 2.7
Maximum Floor Area Permitted: (LA x FAR=)
10,000 x 2.7 = 27,000 sf

COMPLIES

Proposed Floor Area = 26,988 SF

Lot Coverage

(Sec. 123-64 b) Lot coverage requirements shall not apply — COMPLIES

See Lot Coverage & Yard Diagram Z-100.00/3 COMPLIES

DENSITY

(Sec. 23-20) R6A
Maximum number of dwelling units Permitted:
R6A FACTOR: 680
26,988 sf / 680 = 39 UNITS
Proposed number of Units: 37 UNITS — COMPLIES

Yards

(Sec. 123-64)	Front Yard: Not Required	Proposed:	none	COMPLIES
(Sec. 123-64)	Side Yards: Not Required	Proposed:	none	COMPLIES
(Sec. 23-47)	Rear Yard: 30'-0" MIN REQ	Proposed:	39'-0"	COMPLIES

Permitted Obstructions

(Sec. 23-62(a)) Balconies, unenclosed, subject to the provisions of Section 23-13.
(Sec. 23-13) Balconies
(Sec. 23-132) Balconies may project into or over any required open area within a rear yard, an initial setback distance, and any areas not occupied by towers, any required side or rear setbacks, or any required open space, provided that such balcony shall:
(Sec. 23-132(a)) Not project by a distance of greater than 7'-0"
Proposed: 6'-8" — COMPLIES
(Sec. 23-132(b)) Not project into the minimum required distance between buildings on the same zoning lot
N/A — COMPLIES
(Sec. 23-132(d)) Be unenclosed except for a parapet not exceeding 3'-8" in height or a railing not less than 50% open and not exceeding 4'-6" in height — COMPLIES
Proposed: 3'-7" Railing 50% Open
(Sec. 23-132(e)) Be located at or higher than the floor level of the third story or at least 20'-0" above the base plane — COMPLIES
Proposed: Balconies start on 3rd floor (20'-8" from the base plane)
(Sec. 23-132(f)) Have an aggregate width of not exceeding 50% of the at that level of the plane surface of the building wall from which it projects — COMPLIES
Proposed: See Floor Plan for Calculations Z-101.00/1 — COMPLIES
(Sec. 23-62(g)) Elevator or stair bulkheads (including shafts; and vestibules not larger than 60 square feet in area providing access to a roof), roof water tanks and accessory mechanical equipment (including enclosures), provided that:
Proposed: 60 SF Elevator Vestibule — COMPLIES
(Sec. 23-62(g)(1)) Such obstructions shall be located not less than 10'-0" from the street wall of a building, except that such obstructions need not be set back more than 25'-0" feet from a narrow street line or more than 20'-0" from a wide street line. However, such restrictions on location shall not appy to elevator or stair bulkheads (including shafts or vestibules), provided the aggregate width of street walls of such bulkheads within 10'-0" of a street wall, facing each street frontage, times their average height, in feet, does not exceed an area equal to four times the width, in feet, of the street wall of the building facing such frontage
Proposed: See Bulkhead Diagram Z-100.00 / 3 — COMPLIES
(Sec. 23-62(g)(2)) All mechanical equipment shall be screened on all sides
Proposed: Screened mechanical equipment — COMPLIES
(Sec. 23-62(g)(3)) Such obstructions and screening are contained within a volume that complies with one of the following:
(Sec. 23-62(g)(3)(i)) the product, in square feet, of the aggregate width of street walls of such obstructions facing each street frontage, times their average height, shall not exceed an area equal to eight feet times the width, in feet of the street wall fo the building facing such frontage; or
(Sec. 23-62(g)(3)(ii)) the lot coverage of all such obstructions does not exceed 20 percent of the lot coverage of the building, and where the maximum permitted height of a buidling is less than 120'-0", such obstructions are limited to a maximum height of 25'-0"
Proposed: 16'-10" < 25'-0" — COMPLIES
(Sec. 23-162(c)(1)) Dormers shall be allowed as a permitted obstruction, provided that on any street frontage, the aggregate width of all dormers at the maximum base height does not exceed 60 percent of the width of the street wall of the highest story entirely below the maximum base height. For each foot above the maximum base height, the aggregate width of all dormers shall be decreased by one percent of the street wall width of the highest story entirely below the maximum base height.
Proposed: See Dormer Calculations Z-100.00 / 2 — COMPLIES

Parking Regulations

(Sec. 123-70) For special mixed use districts, the provisions of section 123-70 shall apply

COMMERCIAL

(Sec. 123-71) Commercial Uses — Off-street parking and and loading regulations of as set forth in article 4 chapter 4 shall apply
(Sec. 44-11) Accessory off-street parking spaces may be provided for all permitted uses subject to the applicable provisions set forth in section 44-12- such spaces shall be open or enclosed, but not located on the roof
(Sec. 44-12) Maximum size of accessory parking shall not contain more than 150 off-street parking spaces
(Sec. 44-21) Accessory off-street parking spaces shall be provided in conformity with requirements set forth in the table in this section
(Sec. 44-21(a)) When a smaller number of spaces is required than is specified by the provisions of section 44-23
(Sec. 44-21) TABLE General Retail Uses
M1-2 — **1 per 300 SF**
Retail area proposed — **1077 SF**
Parking Required — **4**
(Sec. 44-23) TABLE Waiver for Parking — If total number of parking spaces required is less than the number of spaces set forth in the table
(Sec. 44-23) TABLE M1-2 — **15 Parking Spaces** — **Required is 4 - Parking is waived**

RESIDENTIAL

(Sec. 123-72) The accessory off-street parking and loading regulations of the designated residence district as set forth in Article 2 chapter 5 shall apply, except:
(Sec. 123-72 (a)) The provisions of section 25-50 shall not apply. In lieu thereof the provisions of section 44-30 shall apply to such uses
(Sec. 123-72 (b)) In addition to the applicable accessory off-street parking in article 2 chapter 5, the provisions of section 44-46, 44-47, and 44-48 shall apply
(Sec. 25-02) The regulations of article 2 chapter 5 on permitted or required accessory off-street parking spaces and accessory bicycle parking spaces shall apply to residences
(Sec. 25-025) R6B- all accessory off-street parking spaces shall comply with the provisions of section 28-50
(Sec. 25-11) accessory off-street parking spaces may be provided for all permitted uses subject to the applicable provisions set forth in section 44-12- such spaces shall be open or enclosed, but not located on the roof
(Sec. 25-23) R6A — Units 37 — 50% of Units 19 Spaces Required
Proposed : 24 SPACES — COMPLIES

Bicycle Parking

(Sec. 25-80) The total area in square feet of bicycle parking spaces shall be excluded from the calculation of floor area for and shall be noted on the certificate of occupancy.
(Sec. 25-811) Enclosed bicycle parking spaces
Residential
Use — Required
Use Group 2 — 1 per 2 dwelling units
Required: 37 (units) x .50 = 19 Bicycle Parking Spaces
Proposed : 25 Bicycle Parking Spaces — COMPLIES
(Sec. 25-83) Operation, size, and location of enclosed bicycle parking spaces. Each bicycle space shall adjoin a rack for securing, shall be located in a secured area by a lock, or adjoin a securly anchored rack.
15 SF of area shall be provided for each bicycle space.
19 Bicycle Parking Spaces x 15 sf = 285 SF
Proposed : 375 sf of Bicycle Parking located in the Cellar — COMPLIES
A plaque shall be placed at the exterior of the entry to the bicycle parking area with lettering at least 3/4" in height stating "Bicycle Parking"

Street Tree & Planting

(Sec. 23-03) (Sec. 26-41) Provide Street Trees in accordance with Section 26-41
Required 1 per 25' of street frontage
100'-0" Frontage / 25' = 4 (4) Trees Required
Trees to be preserved on site: 2
New trees to be planted on site: 2
New trees to be planted off Site: N/A
Total Proposed: 4 — COMPLIES

Quality Housing

(Sec. 28-21) Minmum size of Dwelling Units: 400 SF
Proposed : All units are over 400 SF- See Floor Plans — COMPLIES
(Sec. 28-22) Windows shall all be double glazed — COMPLIES
(Sec. 28-23) Refuse room at each floor 12 SF minimum
Proposed : Refuse Room 46 SF at each floor — COMPLIES
12 SF of refuse room shall be excluded from the definition of floor area
(Sec. 28-24) Laundry Facilities
(1) Washer per 20 dwelling units — DU 37 — Washers Provided 3
(1) Dryer per 40 dwelling units — DU 37 — Dryers Provided 3
(Sec. 28-25) Daylight in Corridors
50% of the square footage of a corridor may be excluded from the floor area if a window with a clear, non-tinted, glazed area of at least 20 sf is provided in such corridor provided that such window: Shall be directly visible from 50% of the corridor or from the vertical circulation core.
Is located at least 20' from a wall or side or rear lot line — COMPLIES
(Sec. 28-31) Required Recreation Space- All developments with nine or more units shall provide at least a minimum amount of recreation space as set forth in the table of this section. The floor space of indoor recreation space provided in accordance with the standards set forth in Section 23-32, not exceeding the amount required in the table, shall be excluded from the difinition of floor area.
District — % of Res. Floor Area
R7 — 3.3
Required: Residential Floor Area x 3.3% = SF of Recreation Area
26,988 SF x 3.3% = 891 SF of Recreation Area
REROOF RECREATION SPACE OUTDOOR= 891 SF
Proposed : 900 SF PROVIDED — COMPLIES
(Sec. 28-41) DENSITY PER CORRIDORS
50% of corridors serving less than 11 units will be deducted from floor area
Proposed : 2nd fl, 3rd fl, 4th fl, 5th fl — COMPLIES

Height & Setback

(Sec. 123-632) The height and setback regulations of section 23-60 and 43-40 shall not apply - in lieu thereof section 123-662 shall apply
(Sec. 123-662 (b)) Shall not exceed the maximum height specified in table B (R6a: 60'-0")
(Sec. 123-662 (1)) Setback shall be 10 ft from a wide street
At a height no lower than the minimum base height in table B (R6a: 40'-0")
Setback shall be 15 ft from a narrow street
At a height no lower than the minimum base height in table B (R6a: 40'-0")

(Sec. 23-663 TABLE B)	Min Base Ht	Max Base Ht	Max Building Ht
R6A	40	60	70

(Sec. 23-663 (b)) Required rear yard setbacks - In the districts indicated, for all buildings or other structures, and for quality housing buildings in other R6 through R10 districts, no portion of a building or other structure that exceeds the applicable maximum base height specified in section 23-633 (street wall location and height and setback regulations in certain districts) shall be nearer to a rear yard line than 10 feet

Proposed base Height: 6 STORIES @ 60'-0" — COMPLIES
(See Height & Setback Diagram) Z-101.00 / 2 / 3
Proposed Building Height: 6 STORIES @ 60'-0" — COMPLIES
(See Height & Setback Diagram) Z-101.00 / 2 / 3

NORTH 11TH STREET

WEST ELEVATION = 11.68 FT
EAST ELEVATION = 12.84 FT

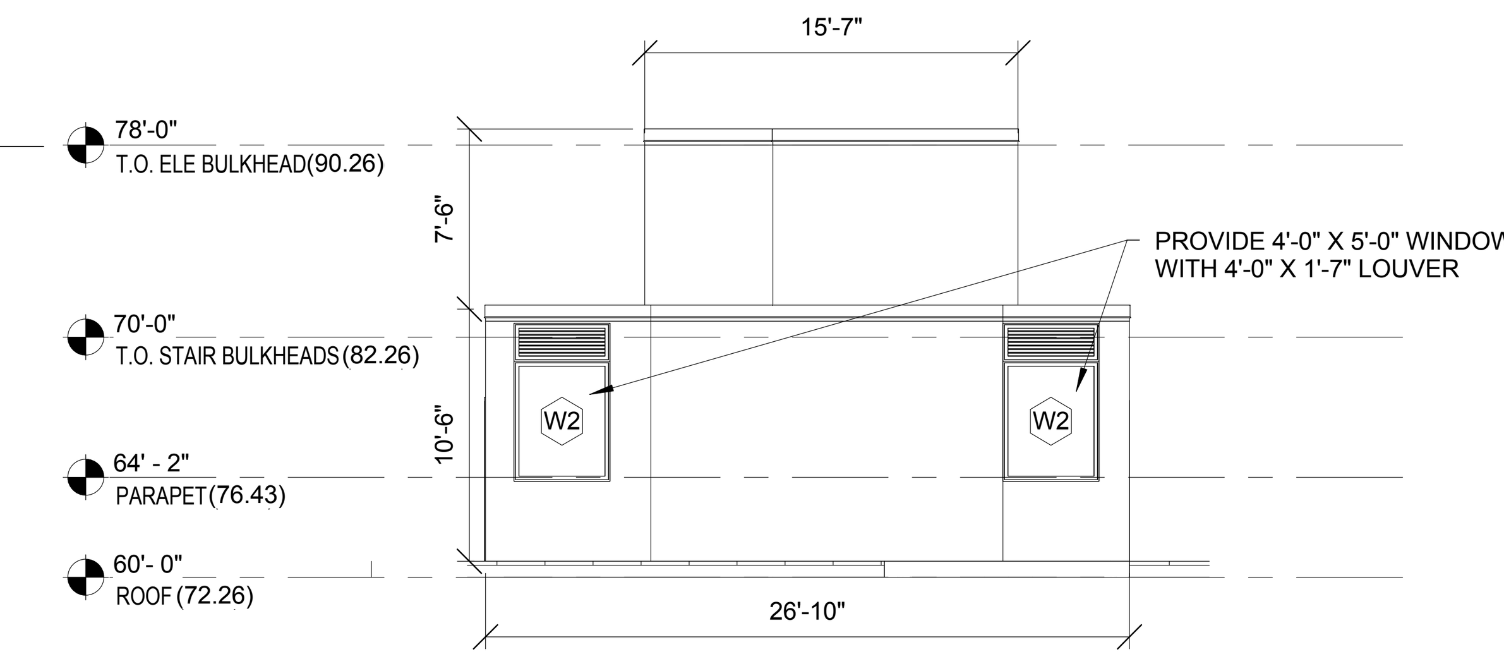
CALCULATION 11.68 + 12.84 = 24.52 FT

24.52/2 = 12.26

BASE PLANE = 12.26

FLOOR AREA TABLE

FLOOR	UNITS	GFA	QH. DEDUCTION	MH/PL DEDUCTIONS	ZFA
C	-	4,622			
1	-	9,967	303	21	2,153
2	9	6,080	197	79	5,804
3	9	6,080	197	81	5,802
4	9	6,080	197	81	5,802
5	9	6,080	197	79	5,805
6	1	1,992	356	14	1,622
TOTAL	37	40,901	1,446	354	26,988



BULKHEAD CALCULATIONS

Permitted Obstruction
(SEC. 23-62(g)(3i))

Bulkhead Width X Aggregate Height Street Wall Width X 4

North Facade 100'-0" = Length of street wall
100' x 8 = 800 sf of obstruction surface allowed

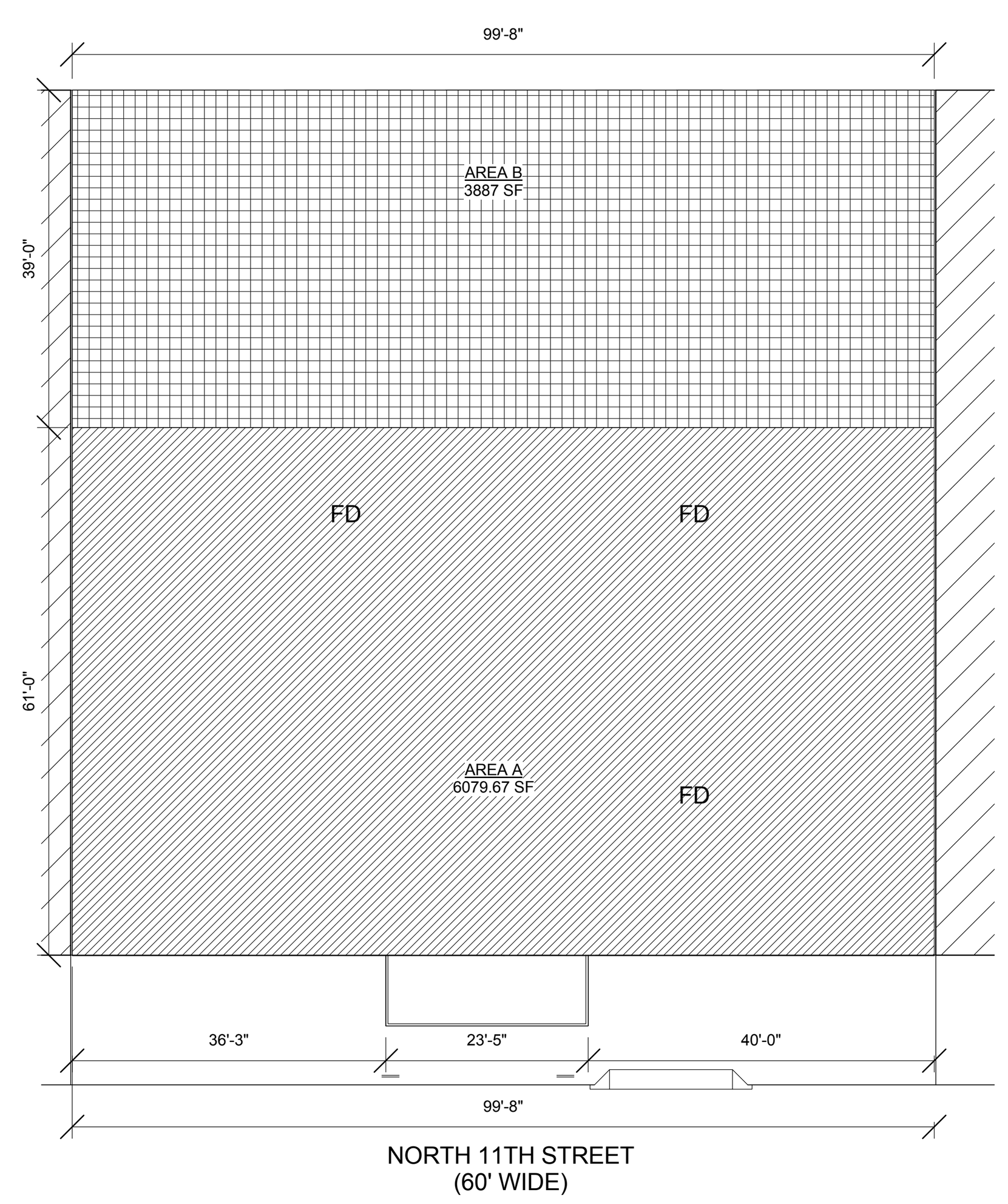
Proposed bulkhead area

26'-10"x 10'-6"= **282 sf**

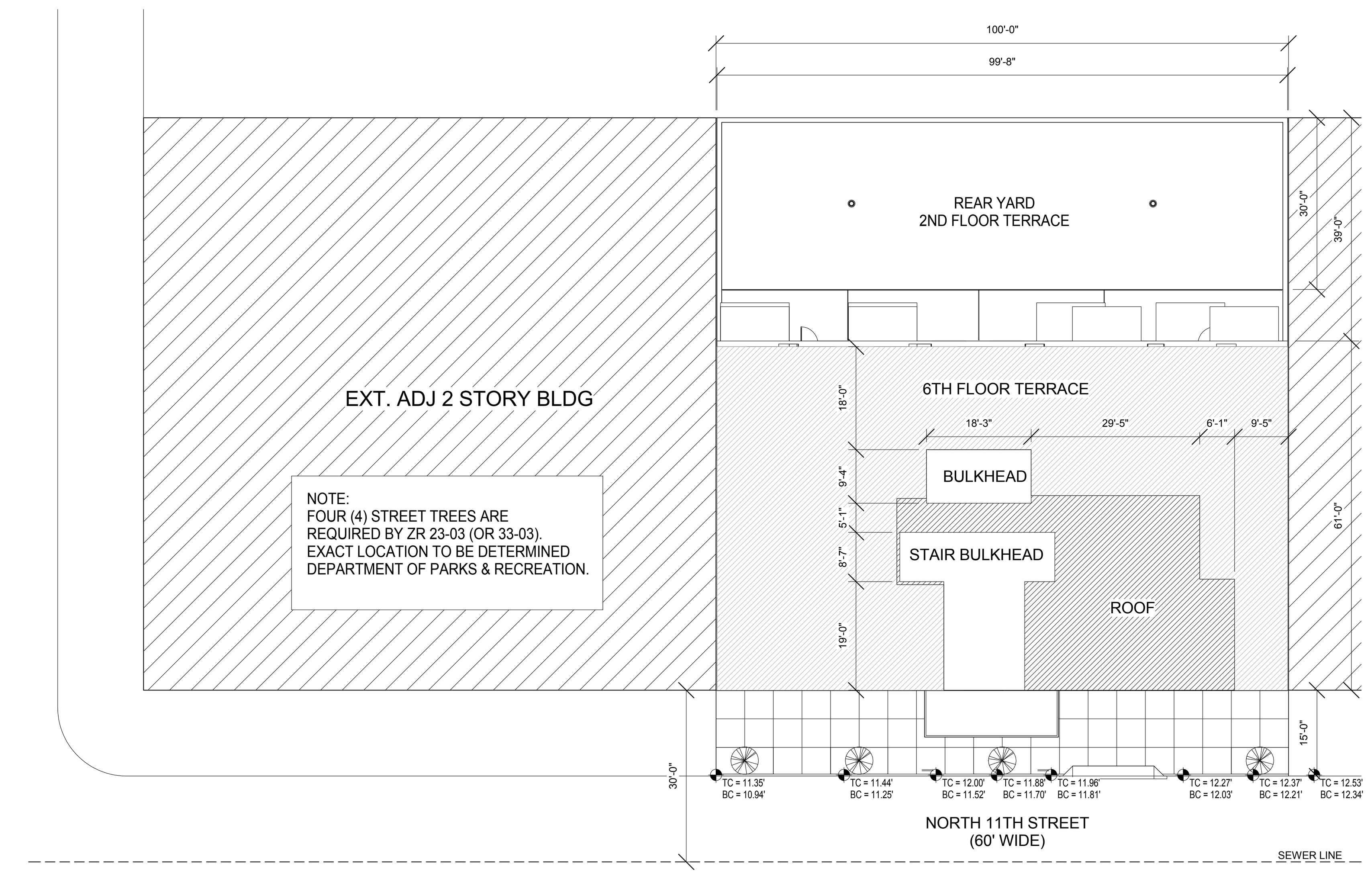
15'-7" x 7'-6"= **117 sf**

282 + 117 = 399sf < 800sf

3 North Bulkhead Elevation
1/8" = 1'-0"



2 AREA PLAN DIAGRAM
3/64" = 1'-0"



1 PLOT PLAN
3/64" = 1'-0"

PROGRESS SET: 10/13/2014 6:05:24 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER: / STRUCTURAL ENGINEER: / MEP ENGINEER: / CODE CONSULTANT:

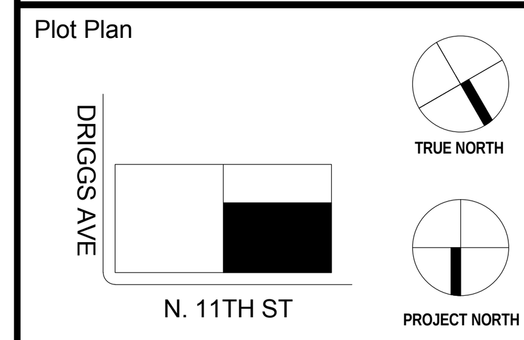
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

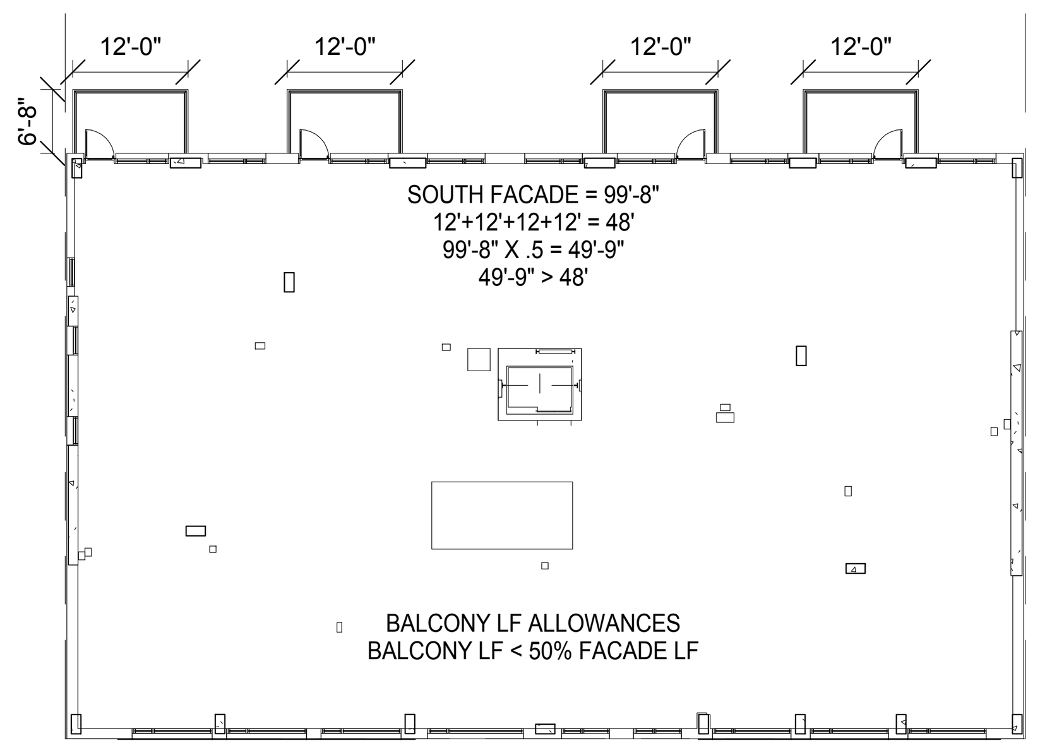
Drawing Title
ZONING ANALYSIS

Sign & Seal

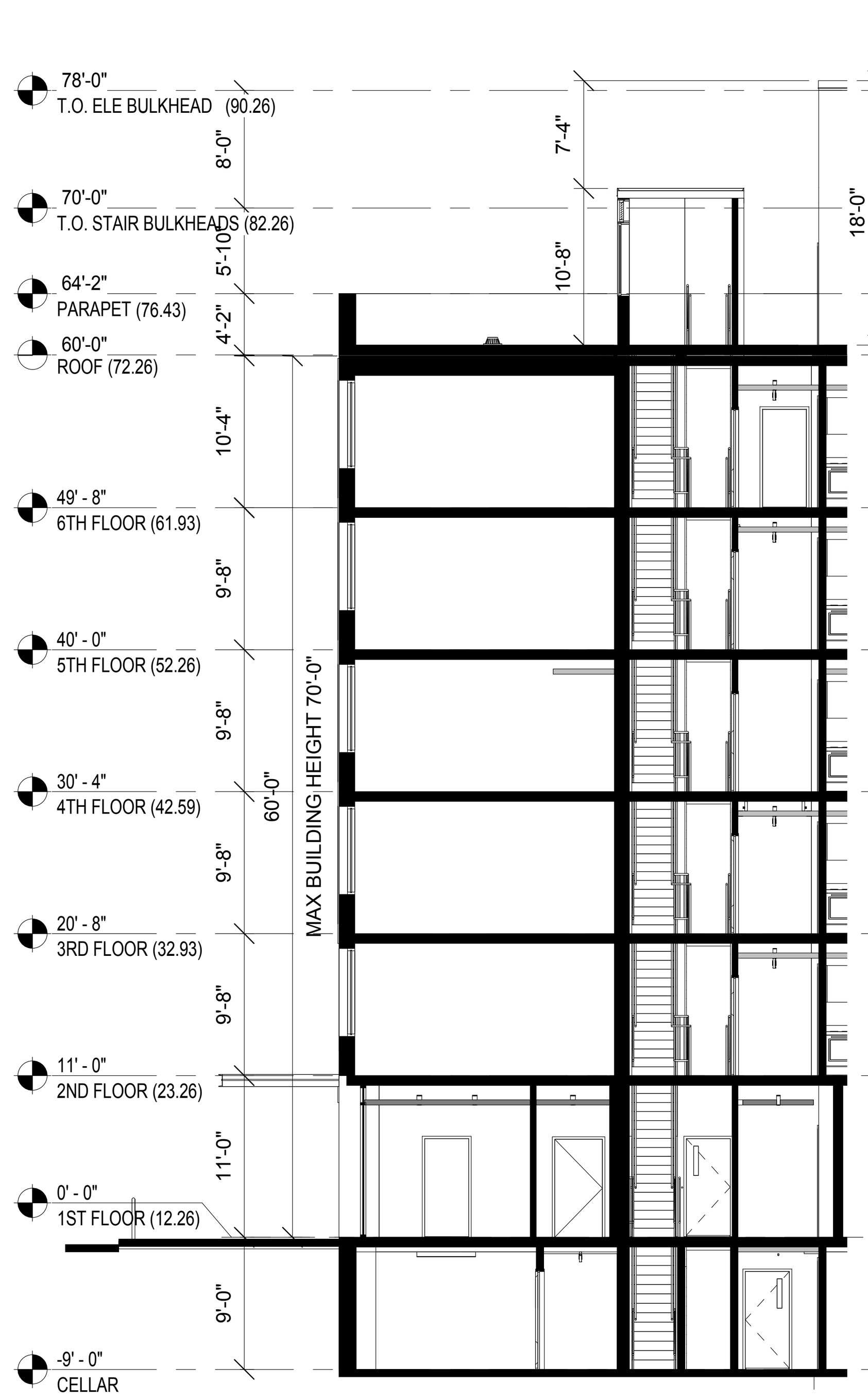
Drawing No.
Z-100.OO

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	2 OF 36

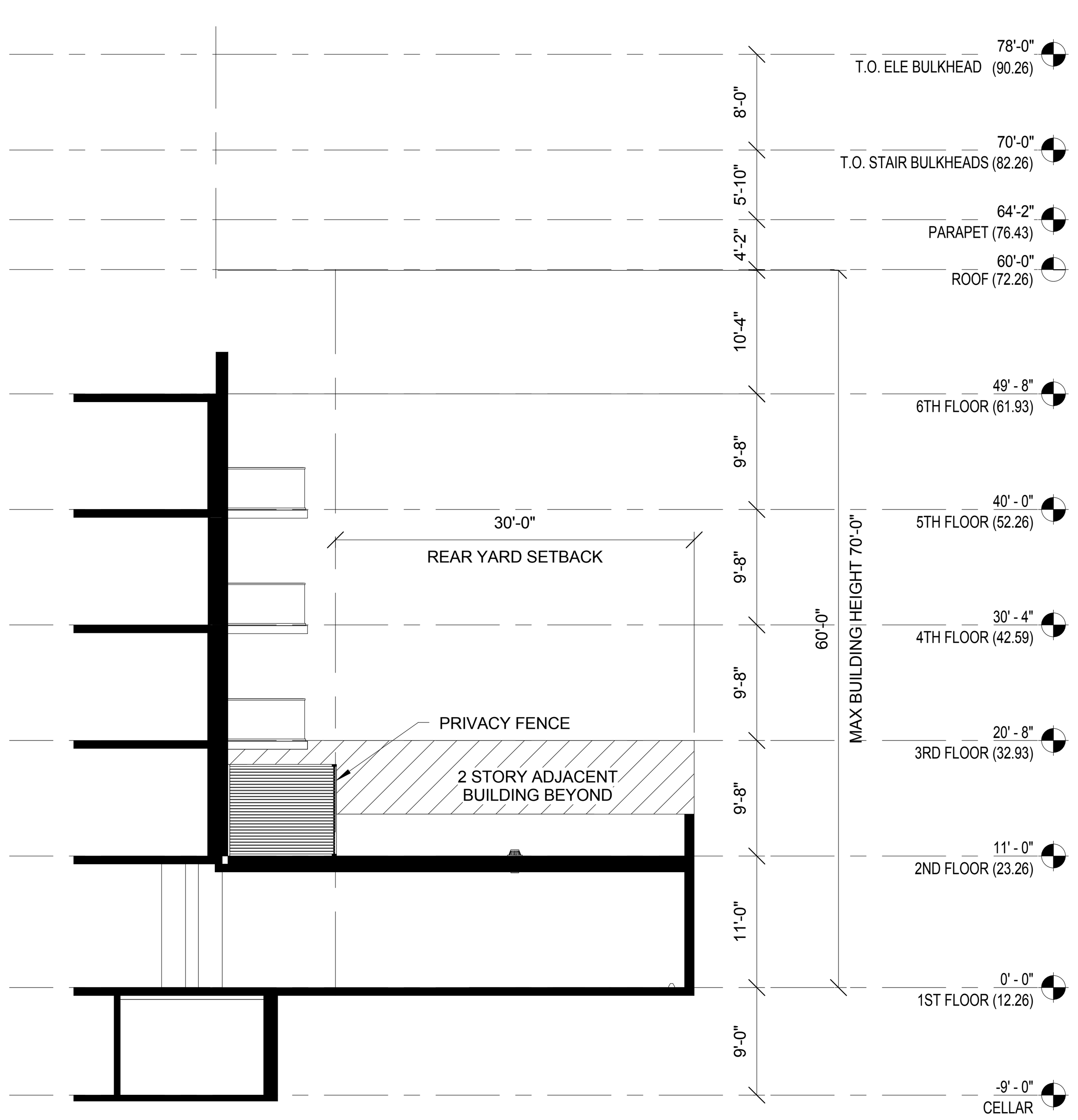
DOB NUMBER



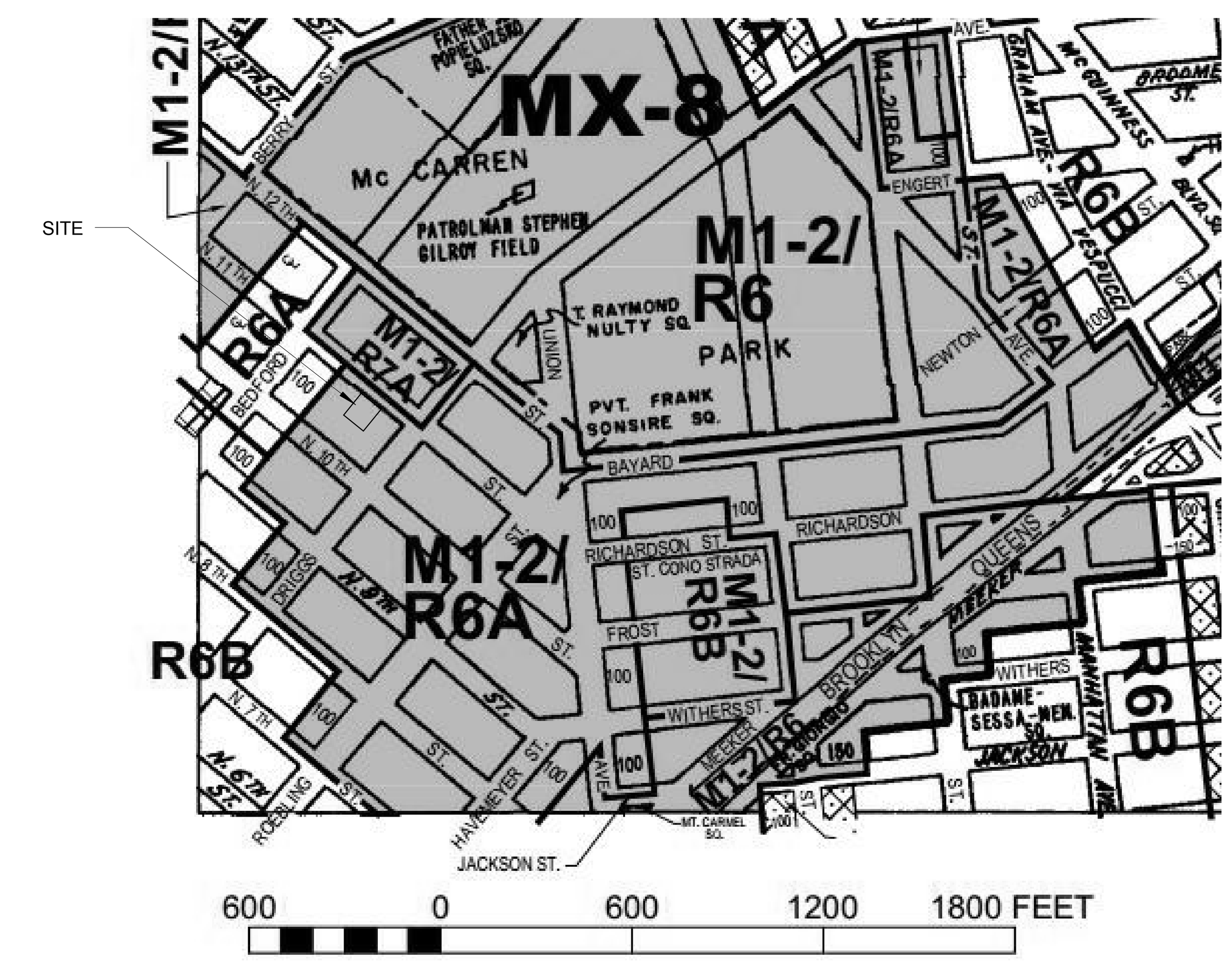
1 3RD-5TH FLOOR BALCONIES
1" = 20'-0"



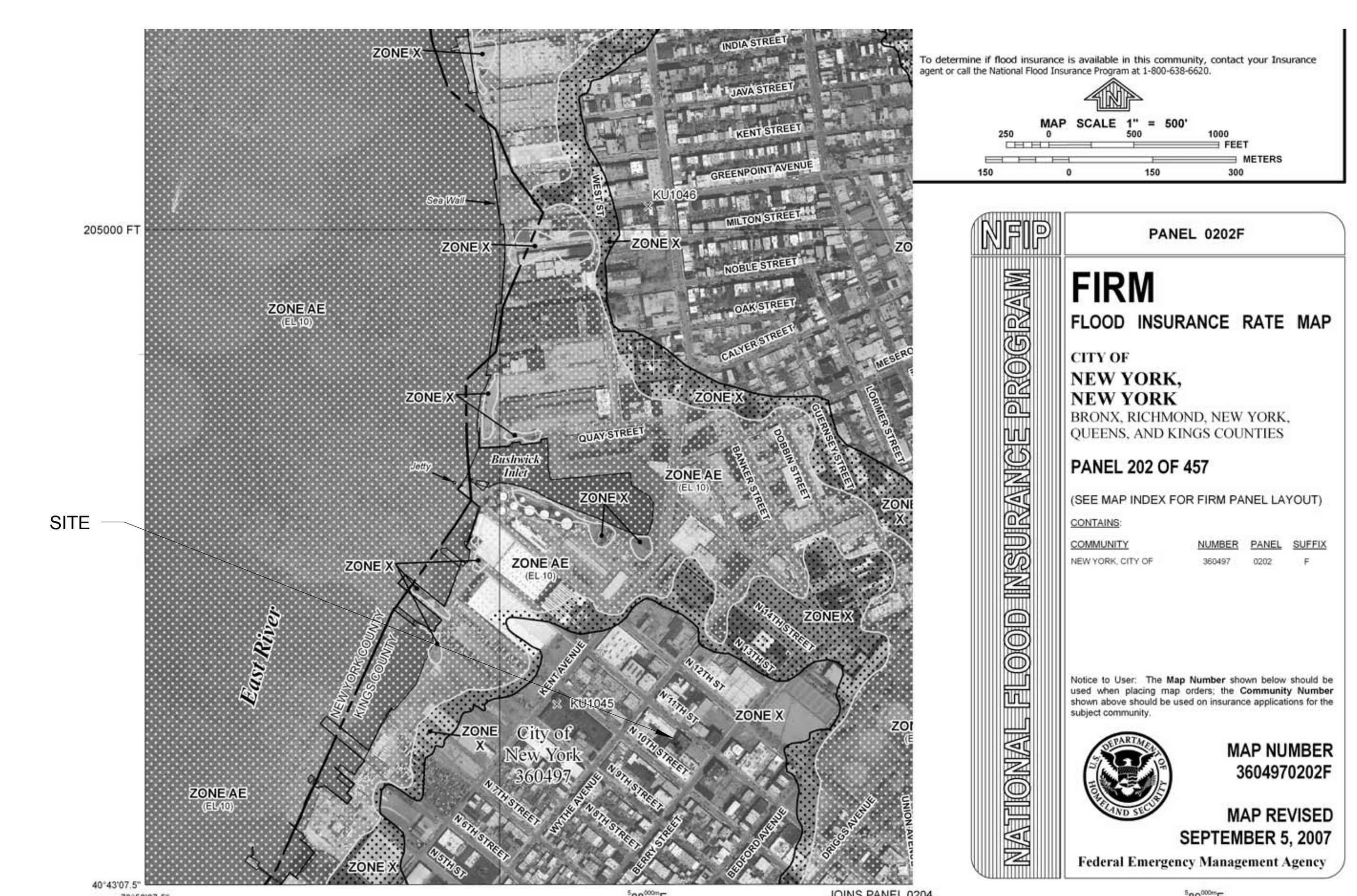
2 HEIGHT & SETBACK DIAGRAM--FRONT
3/32" = 1'-0"



3 HEIGHT & SETBACK DIAGRAM--REAR
3/32" = 1'-0"



4 ZONING MAP-13A
NTS



5 FEMA FLOOD DIAGRAM
NTS

PROGRESS SET: 10/13/2014 6:05:34 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

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MEP ENGINEER:
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New York, NY 10001

CODE CONSULTANT:

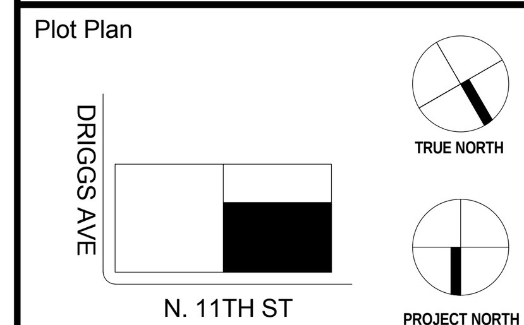
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
ZONING ANALYSIS

Sign & Seal
REGISTERED ARCHITECT
DANIEL KENNETH BERNSTEIN
16854
STATE OF NEW YORK

Drawing No.
Z-101.OO

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	3 OF 36

DOB NUMBER

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH THE RULES AND REGULATIONS OF LOCAL CODES AND ORDINANCES AND OTHER AUTHORITIES HAVING JURISDICTION. ALL REQUIRED PERMITS SHALL BE OBTAINED AND PAID FOR BY THE CONTRACTOR.
2. DRAWINGS ARE NOT TO BE SCALED. USE DIMENSIONS ONLY. CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE COMMENCING WORK.
3. ALL DIMENSIONS ARE GIVEN FINISHED FACE TO FINISHED FACE, UNLESS OTHERWISE NOTED.
4. CONTRACTOR SHALL PATCH AND REPAIR ALL HOLES WHICH OCCUR AS A RESULT OF DRILLING AND/OR CUTTING IN EXISTING MASONRY WALLS TO MATCH EXISTING.
5. ALL EXITS SHALL BE KEPT READILY ACCESSIBLE AND UNOBSTRUCTED AT ALL TIMES.
6. ILLUMINATION OF AT LEAST 10 FOOT CANDLES MEASURED AT FLOOR LEVEL SHALL BE MAINTAINED CONTINUOUSLY DURING OCCUPANCY IN EXITS AND THEIR ACCESS FACILITIES.
7. EXIT LIGHTING SHALL BE ON CIRCUITS THAT ARE SEPARATE FROM ANY OTHER CIRCUITS, TAKE OFFS AHEAD OF MAIN SWITCH.
8. LOCATION OF EVERY EXIT ON FLOOR SHALL BE CLEARLY INDICATED BY EXIT SIGNS. PLACE-IF REQUIRED- AT ANGLE WITH EXIT OPENING. INSTALL DIRECTIONAL SIGNS TO SERVE AS GUIDE FROM ALL PORTIONS OF THE CORRIDOR OPENING OF FLOOR.
9. CORRIDORS AND EXIT PASSAGEWAYS SHALL HAVE A CLEAR HEIGHT OF 7'-6" FOR AT LEAST 75% OF THE FLOOR AREA WITH NO POINT LESS THAN 7'-0" IN HEIGHT. PROJECTION BELOW THE CEILING SHALL NOT OBSTRUCT FULL VIEW OF EXIT SIGNS.
10. EXIT DOORS SHALL BE READILY OPEN-ABLE AT ALL TIMES FROM THE SIDE FROM WHICH EGRESS IS TO BE MADE. DOORS OPENING INTO INTERIOR-ENCLOSED STAIRS SHALL NOT BE LOCKED FROM EITHER SIDE.
11. EXHAUST SYSTEM DUCTS SHALL BE FIRE PROTECTED WITH CONSTRUCTION HAVING A FIRE RATING OF ONE OR TWO HOURS AS PER THE BUILDING CODE. REFER TO DETAILS.
12. DUCTS, PIPES, AND CONDUITS PASSING THROUGH FIRE-RATED CONSTRUCTION SHALL HAVE SPACES NOT EXCEEDING 1/2" PACKED WITH MINERAL WOOL, OR CLOSED OFF WITH CLOSE FITTING METAL ESCUTCHEONS. AGGREGATE NET AREA OF SUCH OPENING SHALL NOT EXCEED 25 SQUARE INCHES IN ANY 100 SQUARE FOOT WALL OR FLOOR AREA UNLESS PROTECTED BY RATED SELF-CLOSING DEVICES.
13. ENTIRE ALTERATION, INCLUDING INSULATION OF NEW PLUMBING PIPES AND VENT DUCTS, TO COMPLY WITH THE NEW YORK STATE ENERGY CODE.
14. CONTRACTOR SHALL NOTIFY THE ARCHITECT IN WRITING OF ANY AND ALL DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. FAILURE TO NOTIFY THE ARCHITECT WILL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO PERFORM THE WORK AS INTENDED BY THE CONTRACT DOCUMENTS.
15. CONTRACTOR TO OBTAIN FENCE PERMIT PRIOR TO THE START OF CONSTRUCTION AND TO INFORM ADJOINING NEIGHBORS BY LETTER AT LEAST 5 DAYS PRIOR TO THE START OF CONSTRUCTION
16. FLOOR TILES SHALL BE THIN SET CERAMIC, UNLESS OTHERWISE NOTED.
17. CONTRACTOR ASSUMES RESPONSIBILITY FOR ALL CONCRETE TESTING UNLESS OTHERWISE NOTED IN THE DRAWINGS.

CONTROLLED INSPECTIONS

CONCRETE CAST- CAST-IN-PLACE	BC 1704.4
CONCRETE- PRECAST	BC 1704.4
MASONRY	BC 1704.5
SOILS- INVESTIGATIONS (BORINGS/ TEST PITS)	BC 1704.7.4 (TR1 & TR4)
PIER FOUNDATIONS	BC 1704.9
SPRAYED FIRE-RESISTANT MATERIALS	BC 1704.11
STRUCTURAL SAFTEY- STRUCTURAL STABILITY	BC 1704.19
SPRINKLER SYSTEMS	BC 1704.21
STANDPIPE SYSTEMS	BC 1704.22
HEATING SYSTEMS	BC 1704.23
FIRESTOP, DRAFTSTOP, AND FIREBLOCK SYSTEMS	BC 1704.25
CONCRETE TEST CYLINDERS	BC 1905.6 (TR1 & TR2)
CONCRETE DESIGN MIX	BC 1905.3 (TRI & TR3)
FOOTING & FOUNDATION	BC 109.3.1
ENERGY CODE COMPLIANCE INSPECTIONS	BC 109.3.5
FIRE-RESISTANCE RATED CONSTRUCTION	BC 109.3.4
FINAL	28-116.2.4.2, BC 109.5

1. ALL OTHER CONTROLLED INSPECTIONS AS LISTED ON RELEVANT DRAWINGS.
2. CONTROLLED INSPECTIONS ARE TO BE PERFORMED BY A LICENSED PROFESSIONAL ENGINEER OR A REGISTERED ARCHITECT, RETAINED BY THE OWNER AND ACCEPTABLE TO THE ARCHITECT OF RECORD. THE BUILDER OR CONTRACTOR SHALL BE RESPONSIBLE FOR RETAINING, COORDINATING, AND SCHEUDLING ALL INSPECTIONS. ALL INSPECTIONS TO BE MADE PRIOR TO PROCEEDING FURTHER WITH THE WORK. IF WORK OR MATERIALS SUBJECT TO CONTROLLED INSPECTION ARE COVERED UP BEFORE THE CONTROLLED INSPECTION OCCURS, SUCH WORK SHALL BE ENTIRELY UNCOVERED UNDER THE SUPERVISION OF THE ENGINEER, ARCHITECT OR HIS/HER REPRESENTATIVE. THE ARCHITECT OR ENGINEER SHALL SEE THAT ALL WORK UNDER THEIR INSPECTION COMPLIES WITH THE APPROVED PLANS.
3. A LOG OR OTHER DOCUMENTATION SHALL BE MAINTAINED AT THE JOB SITE STATING WHEN ALL CONTROLLED INSPECTIONS WERE PERFORMED, THE IDENTITY OF THE INSPECTOR, AND THE SCOPE OF THE WORK WHICH WAS PERFORMED.
4. WHEN A "TR-1, 2, 3, OR 4" CONTROLLED INSPECTION FORM IS FILED WITH THE BUILDING DEPARTMENT, SUCH FORM SHALL BE ACCOMPANIED BY A REPORT WHICH SHALL INCLUDE THE DATES OF INSPECTIONS, THE IDENTITY OF THE INSPECTOR, AND THE SCOPE OF THE WORK WHICH WAS OBSERVED. REPORTS SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW AND RECORD.
5. WHEN A TRADE INSTALLING MECHANICAL WORK CAUSES STRUCTURAL MEMBERS OR RATED ASSEMBLIES TO LOSE THEIR INTEGRITY, REPAIRS SHALL BE PERFORMED UNDER THE SUPERVISION OF A DESIGNATED PERSON.
6. BUILDING DEPARTMENT INSPECTORS SHALL REVIEW RECORDS AT JOB SITES TO MAKE CERTAIN THAT THERE IS ADEQUATE SELF-INSPECTION.

SMOKE / CO2 DETECTORS

1. ALL SMOKE AND CARBON MONOXIDE DETECTORS TO COMPLY WITH NEW YORK CITY LOCAL LAW 7/2004.
2. EACH DWELLING UNIT SHALL BE EQUIPPED WITH AN APPROVED TYPE SMOKE DETECTION DEVICE AND A SEPARATE OR COMBINED CARBON MONOXIDE DEVICE RECEIVING ITS PRIMARY POWER FROM BUILDING WIRING WITH NO SWITCH IN CIRCUIT OTHER THAN THE OVERCIRCUIT PROTECTING THE BRANCH CIRCUIT AS PER APPLICABLE BUILDING CODES.
3. SMOKE DETECTOR SHALL BE EITHER THE IONIZATION CHAMBER TYPE OR THE PHOTOELECTRIC TYPE AS PER APPLICABLE BUILDING CODES.
4. ALL SMOKE & CO□ DETECTORS MUST BE INSTALLED WITHIN 15 FEET OF ENTRANCE OF ANY SLEEPING ROOM WALL OR CEILING MOUNTED AND INDICATED ON PLANS AS PER NYC BUILDING CODE, APPENDIX Q, FIRE CODE AND ELECTRICAL CODE.
5. A CERTIFICATE OF SATISFACTORY INSTALLATION SHALL BE FILED WITH THE DIVISION OF CODE ENFORCEMENT 10 DAYS AFTER THE INSTALLATION IS COMPLETE.

MULTIPLE DWELLING LAW

1. BUILDING SHALL CONFORM TO ARTICLE 7 MULTIPLE DWELLING LAW AND DEPARTMENT RULES AND REGULATIONS AND HOUSING MAINTENANCE CODE
2. EXTERIOR LIGHT OR LIGHTS SHALL BE OF AT LEAST 50 WATTS SHALL BE LOCATED AT A HEIGHT OF BETWEEN 8'-0" AND 10'-0" ABOVE GROUND LEVEL AND SHALL BE LOCATED SO AS TO ADEQUATELY LIGHT ALL PORTIONS OF REAR YARD AS PER SECTION 26 MULTIPLE DWELLING LAW AND SECTION 27-2040 HOUSING MAINTENANCE CODE.
3. OWNER SHALL PROVIDE LIGHTING OF AT LEAST 50 WATTS FOR EVERY VESTIBULE, ENTRANCE HALL, PUBLIC HALL STAIR, AND PUBLIC HALL. LIGHTS SHALL BE SO LOCATED THAT EVERY PART THEREOF SHALL BE LIGHTED AS PER SECTION 37.1 MULTIPLE DWELLING LAW.
4. OWNER SHALL PROVIDE LIGHTS FROM SUNSET TO SUNRISE OF THE FOLLOWING DAY AS PER SECTION 37.2 MULTIPLE DWELLING LAW.
5. OWNER SHALL PROVIDE APPROVED-TYPE GOVERNMENT MAILBOXES AS APPROVED BY THE POST OFFICE AS PER SECTION 57 MULTIPLE DWELLING LAW AND 27-2041 HOUSING MAINTENANCE CODE.
6. OWNER SHALL INSTALL INTERCOM SYSTEM, FOR EACH APARTMENT, IN VESTIBULE OF BUILDING AS PER SECTION 57 MULTIPLE DWELLING LAW.
7. CELLAR CEILINGS SHALL BE FIRE-RETARDED WITH 5/8" FIRECODE 60 AS PER SECTION 185 MULTIPLE DWELLING LAW.
8. PARAPETS AND GUARDRAILS TO BE 3'-6" HIGH AS PER SECTION 62 MULTIPLE DWELLING LAW.
9. AS PER SECTION 64.2 MULTIPLE DWELLING LAW NO GAS METER SHALL BE PLACED IN A BOILER ROOM, STAIR OR PUBLIC HALL.
10. ALL LIQUID OR WATER-BORNE WASTE FROM PLUMBING FIXTURES SHALL BE CONVEYED BY A HOUSE DRAIN AND HOUSE SEWER TO A STREET SEWER AS PER SECTION 77.1 MULTIPLE DWELLING LAW.
11. THE OWNER OF EVERY MULTIPLE DWELLING OR PART THERE OF SHALL THOROUGHLY CLEANSE AND KEEP CLEAN AT ALL TIMES, AND IN GOOD REPAIR, THE ENTIRE PLUMBING AND DRAINAGE SYSTEM AS PER SECTION 77.4 MULTIPLE DWELLING LAW.
12. A REAR YARD SHALL BE PROVIDED, 13'-0" OR MORE IN DEPTH ACROSS THE ENTIRE LOT AS PER SECTION 22 MULTIPLE DWELLING LAW.
13. SKYLIGHT OVER PUBLIC HALL ON TOP STORY SHALL HAVE AT LEAST 20 SQUARE FEET GLAZED AREA (PLAIN GLASS) MINIMUM 40 SQUARE INCH RIDGE VENT WITH SUITABLE WIRE SCREENS ABOVE AND BELOW AS PER SECTION 178 MULTIPLE DWELLING LAW.
14. ROOF SCUTTLES SHALL BE AT LEAST 22" IN WIDTH AND 26" IN LENGTH COVERED ON THE EXTERIOR WITH METAL AND PROVIDED WITH A STATIONARY METAL LADDER AS PER SECTION 188 MULTIPLE DWELLING LAW.
15. STAIRS LEADING FROM A CELLAR TO THE FLOOR ABOVE SHALL BE CONSTRUCTED OF INCOMBUSTIBLE MATERIALS AS PER SECTION 190 MULTIPLE DWELLING LAW.
16. REMOVE ALL WAINSCOTING ON ANY PUBLIC HALL OR STAIR AS PER SECTION 191 MULTIPLE DWELLING LAW.
17. A CELLAR ENTRANCE FROM OUTSIDE THE DWELLING SHALL BE PROVIDED WITH A METAL FIRE LADDER OR A FIRE PROOF STAIR LEADING TO AN EXTERIOR OPENING 2'-6" IN WIDTH AND 6'-0" IN HEIGHT AS PER SECTION 192 MULTIPLE DWELLING LAW.
18. CEILING OF KITCHENETTES AND BATHROOMS SHALL BE FURRED DOWN AS REQUIRED; KITCHENETTE ARCH TO BE FURRED DOWN TO A MINIMUM OF 1'-0" FROM CEILING.
19. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF AND SHALL BE SUBJECT TO THE APPROVAL OF THE DEPARTMENT OF WATER SUPPLY, GAS, AND ELECTRICITY OR CON EDISON.
20. GAS RANGES SHALL BE OF TYPE APPROVED BY AMERICAN GAS ASSOCIATION AND UNDERWRITERS' LABORATORIES
21. OWNER SHALL PROVIDE AND MAINTAIN A PEEPHOLE IN THE ENTRANCE DOOR OF EACH DWELLING UNIT; SUCH PEEPHOLE SHALL BE LOCATED AND CONFORM IN ALL RESPECTS TO THE REQUIREMENTS OF SECTION 27-2041 HOUSING MAINTENANCE CODE.
22. THE CEILINGS AND WALLS OF ALL KITCHENETTES AND PUBLIC HALLS SHALL BE FIRE-RETARDED WITH 5/8" NATIONAL GOLD BOND "FIRE-SHIELD" (NYC BSA CAL.NO. 439-52-SM) OR APPROVED EQUAL.
23. OWNER SHALL INSTALL AND MAINTAIN LIGHTS ON EXTERIOR OF BUILDING; WHICH LIGHTS SHALL BE PROTECTED BY A METAL GUARD OR SHATTERPROOF GLOBE; LIGHTS SHALL BE OF AT LEAST 50 WATTS ILLUMINATION AND BE PLACED ON EACH SIDE OF FRONT ENTRANCE AT A HEIGHT OF BETWEEN 8'-0" AND 10'-0" ABOVE FLOOR LEVEL ADJACENT TO THE ENTRANCEWAY AS PER SECTION 26 MULTIPLE DWELLING LAW AND SECTION 27-2040HOUSING MAINTENANCE CODE.
24. ALL WINDOW SIZES SHOWN ARE BETWEEN STOP BEADS.ALL ENTRANCE AND VESTIBULE DOORS TO CONTAIN NOT LESS THAN 5 SQUARE FEET OF GLAZED AREA.
25. OWNER SHALL PROVIDE A KEY LOCK, DEAD BOLT LOCK AND CHAIN GUARD ON EACH DWELLING UNIT DOOR AS PER SECTION 27-2043 HOUSING MAINTENANCE CODE.
26. ALL APARTMENT ENTRANCE DOORS AND DOORS TO PUBLIC HALL STAIRS TO BE ONE-HOUR APPROVED, FIREPROOF, SELF-CLOSING INCLUDING DOOR ASSEMBLY.
27. OWNER SHALL REGISTER BUILDING AT HOUSING DIVISION AS PER SECTION 27-2097 HOUSING MAINTENANCE CODE.
28. OWNER SHALL PROVIDE A SIGN IN VESTIBULE IDENTIFYING OWNER, MANAGER, AND SUPERINTENDENT AS PER SECTION 27-2104 HOUSING MAINTENANCE CODE.
29. ALL LIVING ROOMS WILL HAVE A MINIMUM CEILING HEIGHT OF 8'-0" AND A MINIMUM ROOM SIZE OF 132 SQUARE FEET FOR BUILDING ERECTED AFTER APRIL 18. 1929, AS PER SECTION 27-2074 HOUSING MAINTENANCE CODE.
30. THE MAXIMUM NUMBER OF PERSONS FOR ANY APARTMENT SHALL BE THE TOTAL LIVABLE FLOOR AREA DIVIDED BY 80 SQUARE FEET AS PER SECTION 27-2075 HOUSING MAINTENANCE CODE.
31. NO NEW ROOMING UNITS SHALL BE CREATED AS PER SECTION 27-2077 HOUSING MAINTENANCE CODE.
32. OWNER SHALL FILE FIRE REGISTRATION STATEMENT WITH HOUSING DIVISION AS PER SECTION 27-2098 HOUSING MAINTENANCE CODE.
33. REGISTRATION SHALL CONTAIN THE FOLLOWING INFORMATION: BLOCK AND LOT, STREET NUMBER, NAME OF OWNER INCLUDING HOME AND OFFICE ADDRESS, NAME AND ADDRESS OF MANAGING AGENT, TELEPHONE NUMBER OF OWNER, AND PAY REQUIRED FEE AS PER SECTION 27-2098 HOUSING MAINTENANCE CODE.
34. CHANGE OF OWNERSHIP OF A BUILDING REQUIRES CHANGE OF REGISTRATION STATEMENT AS PER SECTION 27-2099 HOUSING MAINTENANCE CODE.
35. CHANGE OF MANAGING AGENT SHALL REQUIRE FILING AS PER SECTION 27-2101 HOUSING MAINTENANCE CODE.
36. ASHES OR WASTE MATTER SHALL NOT BE ALLOWED TO ACCUMULATE OTHER THAN IN PROPER RECEPTACLES; A SUFFICIENT NUMBER OF RECEPTACLES SHALL BE PROVIDED FOR WASTE DISPOSAL AS PER SECTION 27-2021 HOUSING MAINTENANCE CODE.
37. EVERY MULTIPLE DWELLING SHALL BE PROVIDED WITH HEAT FROM A CENTRAL HEATING SYSTEM AS PER SECTION 27-2028 HOUSING MAINTENANCE CODE.
38. A MINIMUM TEMPERATURE SHALL BE SUPPLIED FROM A CENTRAL HEATING SYSTEM. SUCH SYSTEM SHALL KEEP THE INSIDE TEMPERATURE AT 68 WHEN THE OUTSIDE TEMPERATURE FALLS BELOW 55 DURING THE HOURS OF 6:00 A.M. AND 10:00 P.M., AND AT AN INSIDE TEMPERATURE OF 55 WHEN THE OUTSIDE TEMPERATURE FALLS BELOW 40 BETWEEN THE HOURS OF 10:00 P.M. AND 6:00 A.M., ALL DURING THE MONTHS OF OCTOBER 1 THROUGH MAY 31 AS PER SECTION 27-2029HOUSING MAINTENANCE CODE.
39. THE OWNER SHALL HAVE THE CENTRAL HEATING SYSTEM INSPECTED BY A QUALIFIED PERSON AS PER SECTION 27-2030 HOUSING MAINTENANCE CODE.
40. FLOOR SIGNS DESIGNATING FLOORS SHALL BE PROVIDED WITHIN STAIR ENCLOSURES AND IN PUBLIC HALLS NEAR THE STAIRS AS PER SECTION 27-2048 HOUSING MAINTENANCE CODE.
41. OWNER SHALL PROVIDE A STREET NUMBER ON THE FRONT OF THE BUILDING VISIBLE FROM THE SIDEWALK AS PER SECTION 27-2049 HOUSING MAINTENANCE CODE.

NYS ENERGY NOTES

1. TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE LATEST EDITION OF THE ENERGY CONSERVATION CONSTRUCTION CODE OF THE STATE OF NEW YORK. SEE ENERGY CALCULATION SHEETS.

HANDICAP COMPLIANCE NOTES

NYC BUIDING CODE, APPENDIX P, ANSI ICC 117.1-2003

1. ALL HALLS, CORRIDORS, AISLES AND OTHER SPACES THAT ARE A PART OF AN ACCESSIBLE ROUTE SHALL COMPLY WITH ANSI A 117.1-2003.
2. ALL DWELLING UNIT BATHROOMS SHALL COMPLY WITH NYC BUILDING CODE, APPENDIX P, ANSI ICC 117.1-2003.
3. SPACE ALLOWANCE AND REACH RANGES AT ALL ROOMS AND SPACES SHALL COMPLY WITH ANSI 308.2. REACH RANGES TO BE:
   FORWARD REACH HEIGHT: MIN. 15 IN.
   (308.2) MAX. 48 IN. (UNOBSTRUCTED) MAX. 44 IN. (OBSTRUCTED)
   SIDE REACH HEIGHT: MIN. 15 IN.
   (308.3) MAX. 48 IN. (UNOBSTRUCTED) MAX. 34" - 48" (OBSTRUCTED)
4. GROUND AND FLOOR SURFACES ALONG ACCESSIBLE ROUTES AND IN ROOMS AND SPACES INCLUDING FLOORS, WALLS, AND STAIRS SHALL BE STABLE, FIRM AND SLIP RESISTANT AND COMPLY WITH 302.
5. ALL THRESHOLDS AT DOORWAYS SHALL NOT EXCEED 1/2" AND SHALL COMPLY WITH THE REQUIREMENTS OF 303.
6. ALL DOORS TO ACCESSIBLE SPACES SHALL COMPLY WITH 404.
7. ALL HANDLES, PULLS, LATCHES, LOCKS AND OTHER OPERATING DEVICES AT ENTRANCE DOORS AND AT PUBLIC SPACES SHALL COMPLY WITH 404.2.6. IF A DOOR CLOSER IS REQUIRED IT SHALL COMPLY WITH 404.2.7.
8. ALL ACCESSIBLE STORAGE FACILITIES SUCH AS CABINETS, SHELVES, CLOSETS AND DRAWERS SHALL COMPLY WITH 905.
9. ALL CONTROLS AND OPERATING MECHANISMS FOR LIGHT SWITCHES, DISPENSERS AND ALARMS SHALL BE ACCESSIBLE AND COMPLY WITH 309.
10. ALL EMERGENCY WARNING SYSTEMS SHALL COMPLY WITH 702.
11. ALL SIGNAGE THAT PROVIDES INFORMATION OR GENERAL CIRCULATION DIRECTION OR IDENTIFIES ROOMS OR SPACES SHALL COMPLY WITH 703. SYMBOLS OF ACCESSIBILITY SHALL BE PROVIDED AT PUBLIC TOILETS.
12. ALL TOILET ROOMS PROVIDED FOR COMMON USE SHALL COMPLY WITH THE REQUIREMENTS SET FORTH IN NYC BUILDING CODE AND ANSI 117.1-2003.

LIGHT & AIR CALCULATIONS

Unit Number	Room Number	Room Name	Area	Req'd Light SF	Proposed Light SF	Req'd Air SF	Proposed Air SF
2A	2A.1	LIVING ROOM	161.9 SF	16.2 SF	59.6 SF	8.1 SF	9.3 SF
2B	2B.1	LIVING ROOM	193.9 SF	19.4 SF	83.8 SF	9.7 SF	22.6 SF
2C	2C.1	LIVING ROOM	159.8 SF	16.0 SF	41.9 SF	8.0 SF	11.3 SF
2D	2D.1	LIVING ROOM	150.1 SF	15.0 SF	36.4 SF	7.5 SF	29.8 SF
2D	2D.2	BEDROOM	107.4 SF	10.7 SF	23.6 SF	5.4 SF	9.3 SF
2E	2E.1	LIVING ROOM	154.1 SF	15.4 SF	38.8 SF	7.7 SF	30.3 SF
2E	2E.4	BEDROOM	147.5 SF	14.7 SF	23.6 SF	7.4 SF	9.3 SF
2F	2F.1	LIVING ROOM	168.7 SF	16.9 SF	38.8 SF	8.4 SF	30.3 SF
2F	2F.4	BEDROOM	145.4 SF	14.5 SF	23.6 SF	7.3 SF	9.3 SF
2G	2G.2	BEDROOM	166.1 SF	16.6 SF	25.7 SF	8.3 SF	8.2 SF
2G	2G.3	LIVING ROOM	205.7 SF	20.6 SF	36.4 SF	10.3 SF	29.8 SF
2G	2G.4	BEDROOM	110.2 SF	11.0 SF	23.6 SF	5.5 SF	9.3 SF
2H	2H.1	LIVING ROOM	222.4 SF	22.2 SF	32.9 SF	11.1 SF	22.6 SF
2J	2J.1	LIVING ROOM	221.2 SF	22.1 SF	46.2 SF	11.1 SF	22.6 SF
2J	2J.4	BEDROOM	112.1 SF	11.2 SF	32.9 SF	5.6 SF	22.6 SF
2J	2J.5	BEDROOM	129.6 SF	13.0 SF	32.9 SF	6.5 SF	22.6 SF
3A-4A	3A.1	LIVING ROOM	161.9 SF	16.2 SF	68.8 SF	8.1 SF	11.3 SF
3B-4B	3B.1	LIVING ROOM	193.9 SF	19.4 SF	112.6 SF	9.7 SF	22.6 SF
3C-4C	3C.1	LIVING ROOM	157.4 SF	15.7 SF	56.3 SF	7.9 SF	9.3 SF
3D-4D	3D.1	LIVING ROOM	150.1 SF	15.0 SF	46.9 SF	7.5 SF	35.2 SF
3D-4D	3D.4	BEDROOM	107.4 SF	10.7 SF	23.6 SF	5.4 SF	9.3 SF
3E-4E	3E.1	LIVING ROOM	154.1 SF	15.4 SF	38.8 SF	7.7 SF	30.3 SF
3E-4E	3E.3	BEDROOM	147.5 SF	14.7 SF	23.6 SF	7.4 SF	9.3 SF
3F-4F	3F.1	LIVING ROOM	168.7 SF	16.9 SF	38.8 SF	8.4 SF	30.3 SF
3F-4F	3F.4	BEDROOM	145.4 SF	14.5 SF	23.6 SF	7.3 SF	9.3 SF
3G-4G	3G.1	LIVING ROOM	205.7 SF	20.6 SF	36.4 SF	10.3 SF	29.8 SF
3G-4G	3G.3	BEDROOM	110.2 SF	11.0 SF	23.6 SF	5.5 SF	9.3 SF
3G-4G	3G.4	BEDROOM	166.1 SF	16.6 SF	23.6 SF	8.3 SF	9.3 SF
3H	3H.1	LIVING ROOM	222.4 SF	22.2 SF	55.1 SF	11.1 SF	11.3 SF
3J-4J	3J.1	LIVING ROOM	221.2 SF	22.1 SF	46.2 SF	11.1 SF	22.6 SF
3J-4J	3J.3	BEDROOM	112.1 SF	11.2 SF	55.1 SF	5.6 SF	11.3 SF
3J-4J	3J.4	BEDROOM	129.6 SF	13.0 SF	55.1 SF	6.5 SF	11.3 SF
5A	5A.1	LIVING ROOM	161.9 SF	16.2 SF	68.8 SF	8.1 SF	11.3 SF
5B	5B.1	LIVING ROOM	193.9 SF	19.4 SF	112.6 SF	9.7 SF	22.6 SF
5C	5C.1	LIVING ROOM	157.2 SF	15.7 SF	56.3 SF	7.9 SF	11.3 SF
5D	5D.1	LIVING ROOM	150.1 SF	15.0 SF	46.9 SF	7.5 SF	35.2 SF
5D	5D.3	BEDROOM	107.4 SF	10.7 SF	23.6 SF	5.4 SF	9.3 SF
5E	5E.1	LIVING ROOM	148.3 SF	14.8 SF	38.8 SF	7.4 SF	30.3 SF
5E	5E.4	BEDROOM	147.5 SF	14.7 SF	23.6 SF	7.4 SF	9.3 SF
5F	5F.1	LIVING ROOM	168.7 SF	16.9 SF	38.8 SF	8.4 SF	30.3 SF
5F	5F.3	BEDROOM	145.4 SF	14.5 SF	23.6 SF	7.3 SF	9.3 SF
5G	5G.1	LIVING ROOM	205.7 SF	20.6 SF	36.4 SF	10.3 SF	29.8 SF
5G	5G.4	BEDROOM	110.2 SF	11.0 SF	23.6 SF	5.5 SF	9.3 SF
5G	5G.5	BEDROOM	166.1 SF	16.6 SF	23.6 SF	8.3 SF	9.3 SF
4H-5H	5H.1	LIVING ROOM	222.4 SF	22.2 SF	55.1 SF	11.1 SF	11.3 SF
5J	5J.1	LIVING ROOM	221.2 SF	22.1 SF	46.2 SF	11.1 SF	22.6 SF
5J	5J.4	BEDROOM	112.1 SF	11.2 SF	55.1 SF	5.6 SF	11.3 SF
5J	5J.5	BEDROOM	129.6 SF	13.0 SF	55.1 SF	6.5 SF	11.3 SF
6J	6J.1	LIVING ROOM	404.4 SF	40.4 SF	112.1 SF	20.2 SF	65.7 SF
6J	6J.4	BEDROOM	121.0 SF	12.1 SF	55.1 SF	6.0 SF	11.3 SF
6J	6J.5	BEDROOM	152.6 SF	15.3 SF	97.9 SF	7.6 SF	43.1 SF

ABBREVIATIONS

AFF above finished floor
ACT acoustical tile
ADJ adjacent
A/C air conditioning
ALT alternate
AL aluminum
AS aluninum saddle
ANOD anodized
APX approximate
ARCH architect
AD area drain
ASPH asphalt

BIT bituminous
BLK block
BLKG blocking
BOT bottom
BOS bottom of steel
BRK brick
BLDG building
BL building line

CAB cabinet
CPT carpet
CIPC cast-in-place concrete
CST cast stone
CB catch basin
CK calk (ing), caulk (ing)
CLG ceiling
CH ceiling height
CEM cement
CT ceramic tile
CLR clear (ance)
COL column
CONC concrete
CMU concrete masonry unit
CONST construction
CONTR contract (or)
CJ control joint
CPG coping
CORR corridor
CFL counterflashing
CRS course (s)
CY cubic yard

DEM demolish, demolition
DET detail
DIAM diameter
DIM dimension
DN down
DS downspout
D drain
DWG drawing
DF drinking fountian

E east
ELEC electric (al)
EP electrical panelboard
EL elevation
ELEV elevator
EMER emergency
EQ equal
EXIST existing
EJ expansion joint

FB face brick
FOC face of concrete
FOF faxe of finish
FOM face of masonry
FOS face of studs
FF finish face
FIN finish (ed)
FFE finished floor elevation
FFL finished floor line
FE fire extinguisher
FPSC fire proof self-closing
FL floor
FD floor drain
FTG footing
FND foundation
FBO furnished by others

GA gage, gauge
GALV galvanized
GC general contract (or)
GL glass, glazing
GT glazed tile
GB grab bar
GD grade, grading
GWB gypsum wall board

HDW hardware
HDR header
HVAC heating/ ventilation/ air conditioning
HT height
HP high point
H/C handicapped
HM hollow metal
HB hose bibb
HWH hot water heater

INCL include (d), (ing)
ID inside diameter
INT interior
INV invert

JC janitor's closet
JT joint

KIT kitchen
KO knockout

LC linen closet

MH manhole
MFR manufacturer
MS marble saddle
MAS masonry
MO masonry opening
MTL metal
MAX maxium
MECH mechanic (al)
MIN minimum
MISC miscellaneous
MT mount (ed), (ing)

NRC noise reduction coefficient
NOM nominal
N north
NIC not in contract
NTS not to scale

OC on center (s)
OPG opening
OPP opposite
OD outside diameter

PTD paint (ed)
PNL panel
PVMT pavement
PLAM plastic laminate
PL plate
PWD plywood
PT point
PSF pounds per square foot
PSI pounds per square inch
PC precast concrete
PL property line

RAD radius
REG register
RE reinforce (d), (ing)
REQ required
RES resistant
RET retum
REV revision (s), revised
RH right hand
R riser
RD roof drain
RM room
RO rough opening

SCH schedule
SEC section
SHT sheet
SIM similar
S south
SPEC specification (s)
SQ square
SST stainless steel
STD standard
ST steel

TEL telephone
THK thick (ness)
TOP top of parapet
TYP typical

UON unless otherwise noted

VERT vertical
VCT vinyl composition tile
VB vinyl base
VIF verify in field

WSCT wainscot
WC water closet
WP waterproofing
WR water resistant
WS weather strip (ing)
WWF welded wire fabric
W west
W/ with
WO without
WD wood

SYMBOLS

SMOKE DETECTOR
CARBON MONOXIDE DETECTOR
FLOOR DRAIN
EXIT LIGHT & SIGN
GRADE ELEVATION
BUILDING ELEVATION
WALL ELEVATION / SECTION
DETAIL NO.
SHEET NO.
PARTITION TYPE
DOOR TYPE
WINDOW TYPE

PROGRESS SET: 10/13/2014 6:04:27 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER: Great Point Properties, 450 Lexington Avenue, 31st Floor, New York, NY 10017
STRUCTURAL ENGINEER: GACE, 31 W 27th St #6, New York, NY 10001
MEP ENGINEER: Guth DeConzo Con. Eng., 242 W. 30th St, New York, NY 10001
CODE CONSULTANT:

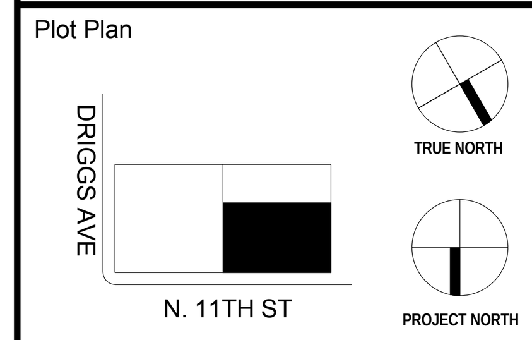
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

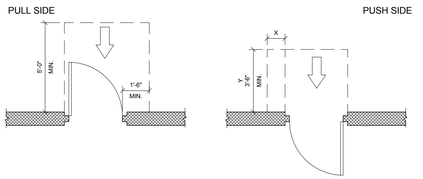
Drawing Title
BUILDING CODE ANALYSIS, GENERAL NOTES & ADA COMPLIANCE

Sign & Seal

Drawing No. G-100.00

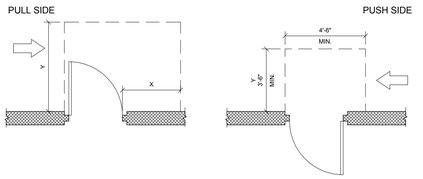
Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	**Checked By**	**DOB Sheet**
1/16" = 1'-0"	Checker	4 OF 36

DOB NUMBER



NOTE: X = 12 IN. MIN. IF DOOR HAS BOTH A LATCH AND A CLOSER

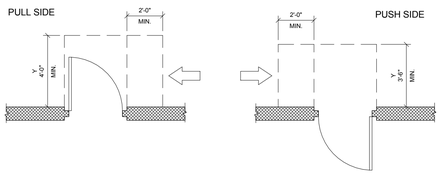
FRONT APPROACHES - SWINGING DOORS
N.T.S



NOTE: X = 36 IN. MIN. IF Y = 60 IN.; X = 42 IN. MIN. IF Y = 54 IN.

NOTE: X = 48 IN. MIN. IF DOOR HAS BOTH A LATCH AND A CLOSER

HINGE SIDE APPROACHES - SWINGING DOORS
N.T.S

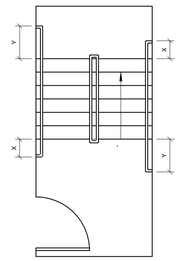


NOTE: Y = 54 IN. (1220 MM) MIN. IF THE DOOR HAS A CLOSER

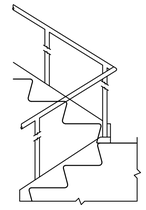
NOTE: Y = 48 IN. (1220 MM) MIN. IF THE DOOR HAS A CLOSER

LATCH SIDE APPROACHES - SWINGING DOORS
N.T.S

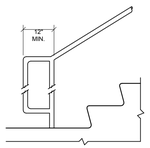
SADDLE
N.T.S



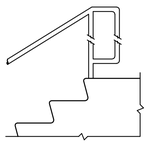
PLAN



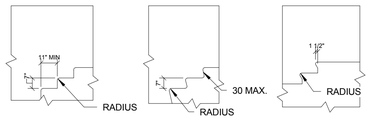
ELEVATION OF CENTER HANDRAIL



EXTENSION AT BOTTOM OF RUN

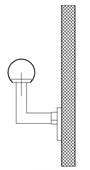


EXTENSION AT TOP OF RUN

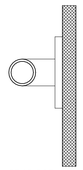


(A) FLUSH RISER (B) ANGLED NOSING (C) BEVELED NOSING

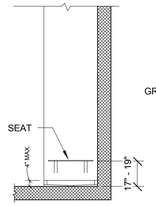
USABLE TREAD WIDTH AND EXAMPLES OF ACCEPTABLE NOSING
N.T.S



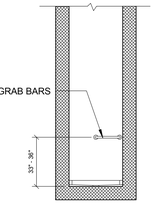
HANDRAIL
N.T.S



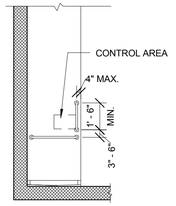
GRAB BAR
N.T.S



SEAT WALL

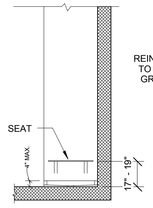


BACK WALL

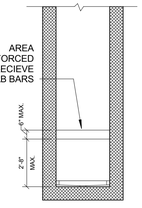


CONTROL WALL

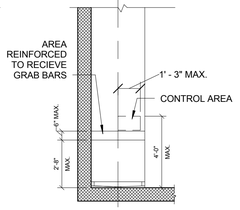
ACCESSIBLE SHOWERS
N.T.S



SEAT WALL



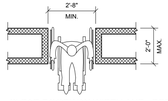
BACK WALL



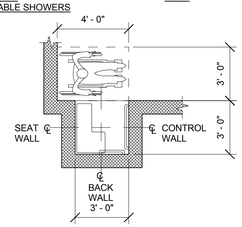
CONTROL WALL

ADAPTABLE SHOWERS
N.T.S

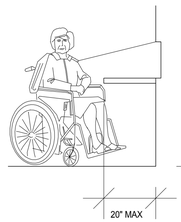
60-IN DIAMETER SPACE
N.T.S



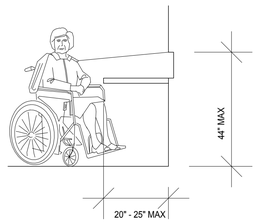
CLEAR DOORWAY WIDTH AND DEPTH
N.T.S

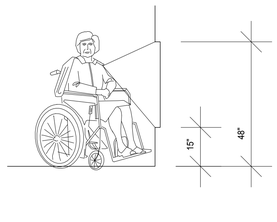


TRANSFER TYPE SHOWER COMPARTMENT SIZE AND CLEARANCE
N.T.S

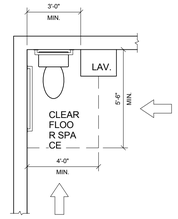


OBSTRUCTED HIGH FORWARD REACH

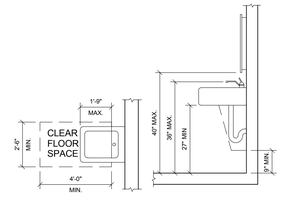




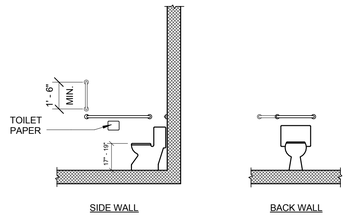
UNOBSTRUCTED FORWARD + SIDE REACH



CLEAR FLOOR SPACE AT WATER CLOSETS
N.T.S



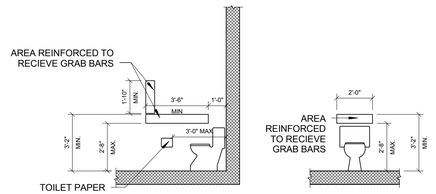
CLEAR ANCE AT LAVATORIES
N.T.S



SIDE WALL

BACK WALL

ACCESSIBLE WATER CLOSETS
N.T.S



SIDE WALL

BACK WALL

ADAPTABLE WATER CLOSETS
N.T.S

PROGRESS SET: 10/13/2014 6:04:34 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

CODE CONSULTANT:

MEP ENGINEER:
Gurt DeGroot Con. Eng.
41 E 11th St
New York, NY 10001

STRUCTURAL ENGINEER:
GAUZ
41 E 11th St #6
New York, NY 10001

OWNER:
Great Point Properties
42 Broadway Penthouse
31st Floor
New York, NY 10017

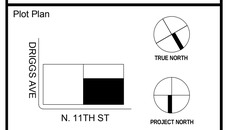
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
ADA NOTES

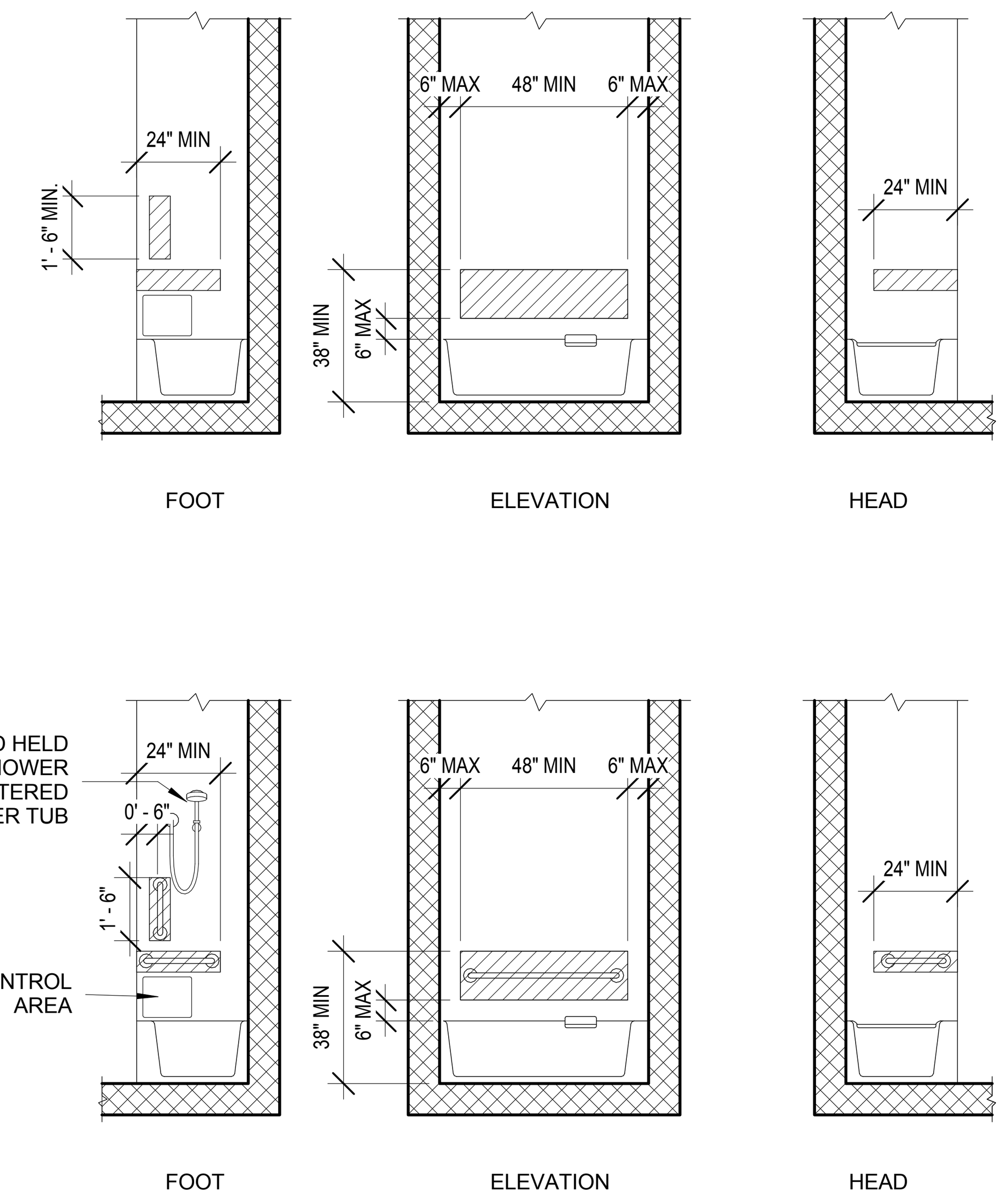
Sign & Seal
REGISTERED ARCHITECT QUENTIN J. KUTNICKI STATE OF NEW YORK 19854

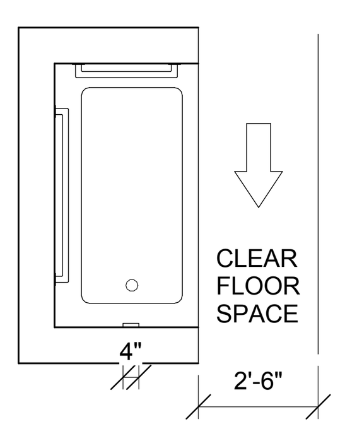
Drawing No.
G-101.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	**Checked By**	**DOB Sheet**
1/4" = 1'-0"	Checker	5 OF 36

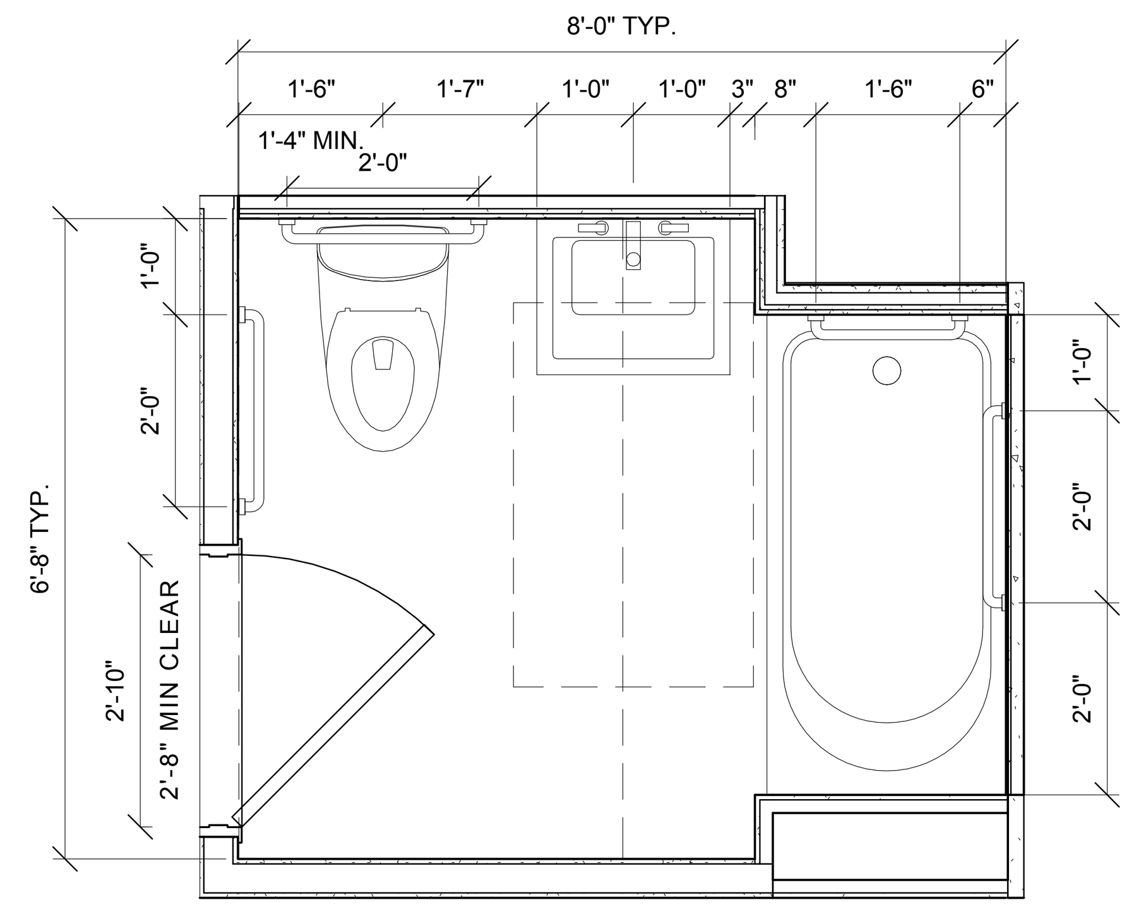
DOB NUMBER

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

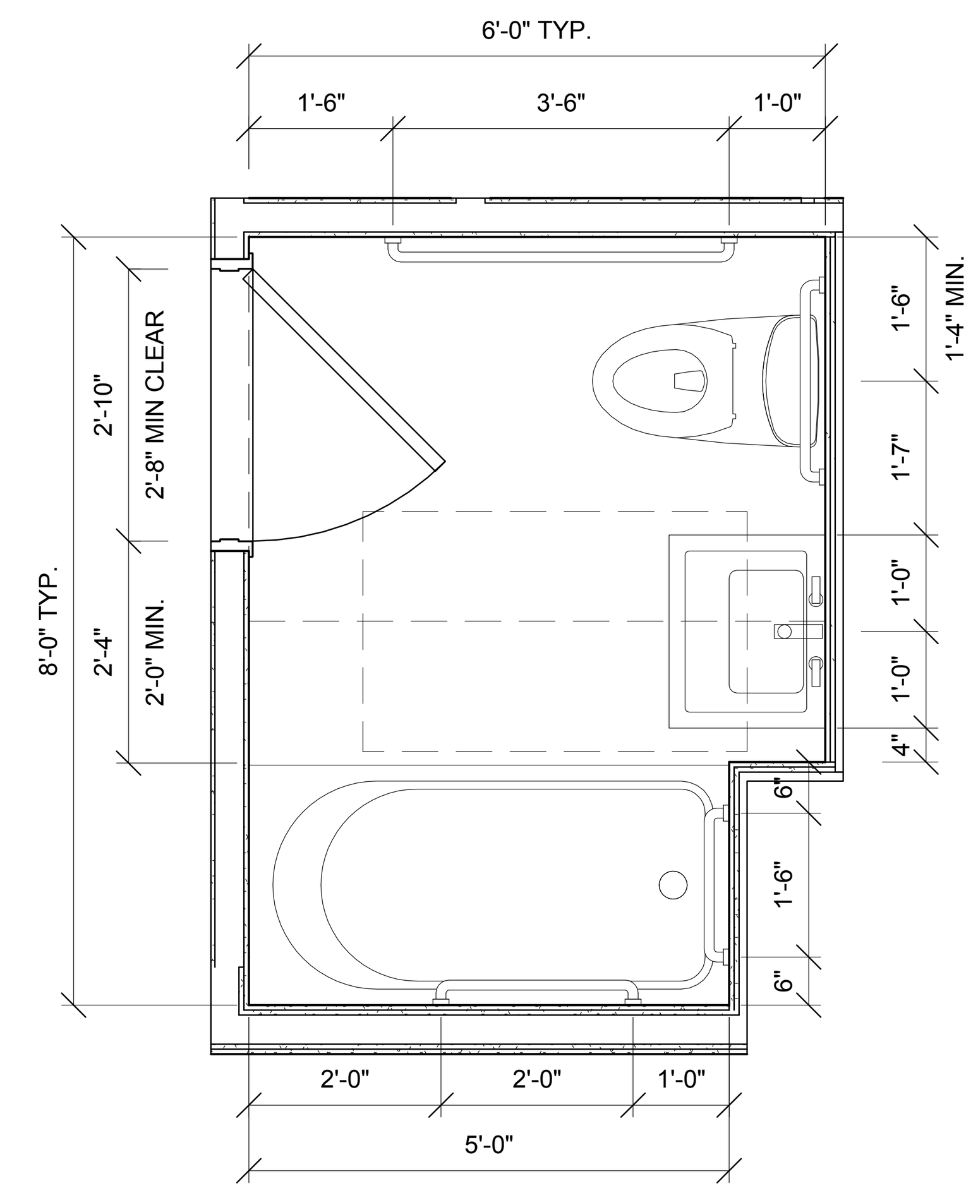




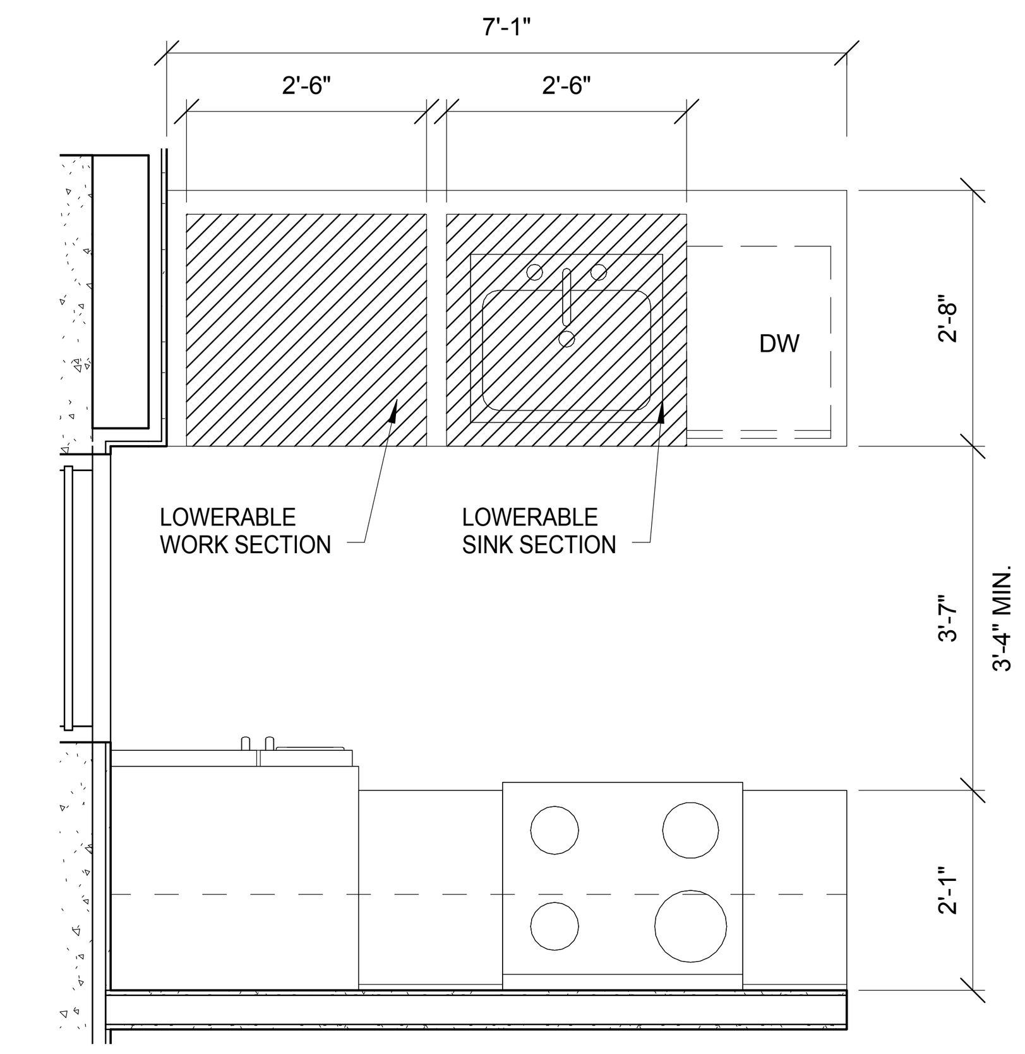
CLEAR FLOOR SPACE AT BATHTUB WITH SEAT IN TUB
N.T.S



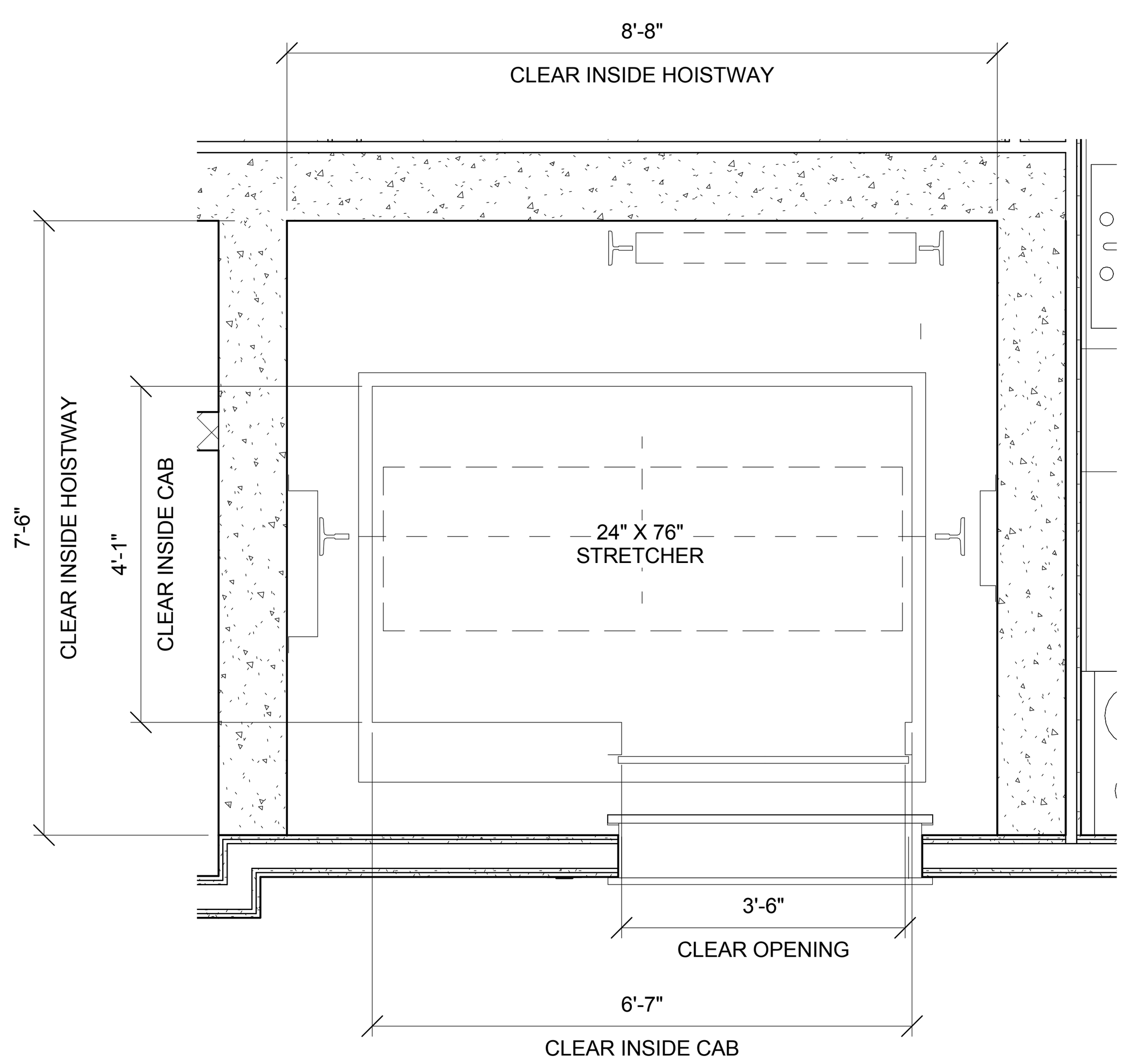
1 Adaptable Bathroom Type 1
1/2" = 1'-0"



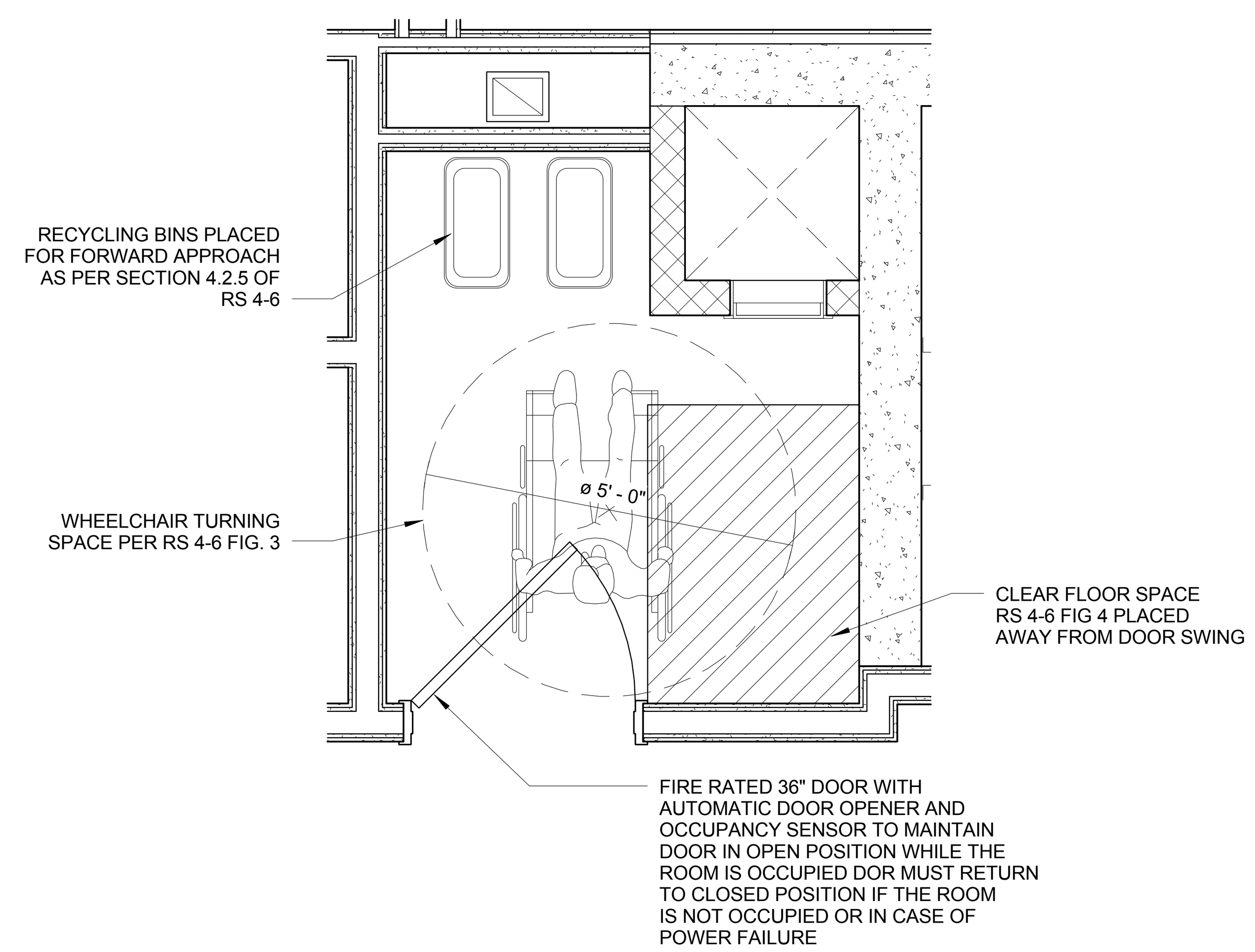
2 Adaptable Bathroom Type 2
1/2" = 1'-0"



5 Adaptable Kitchenette Typ.
1/2" = 1'-0"



3 Elevator Floor Plan
1/2" = 1'-0"



4 Typical Refuse Disposal/Storage Room
1/2" = 1'-0"

PROGRESS SET: 10/13/2014 6:04:42 PM

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

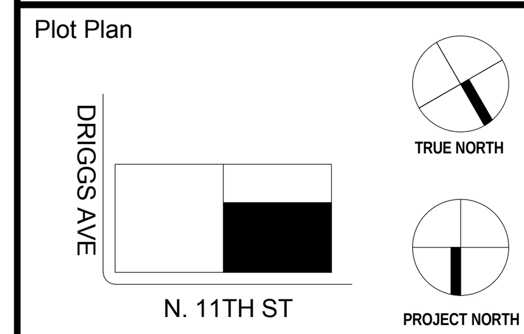
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
ADA NOTES

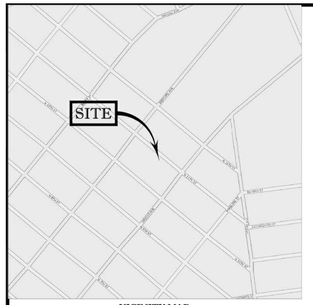
Sign & Seal

Drawing No.
G-102.00

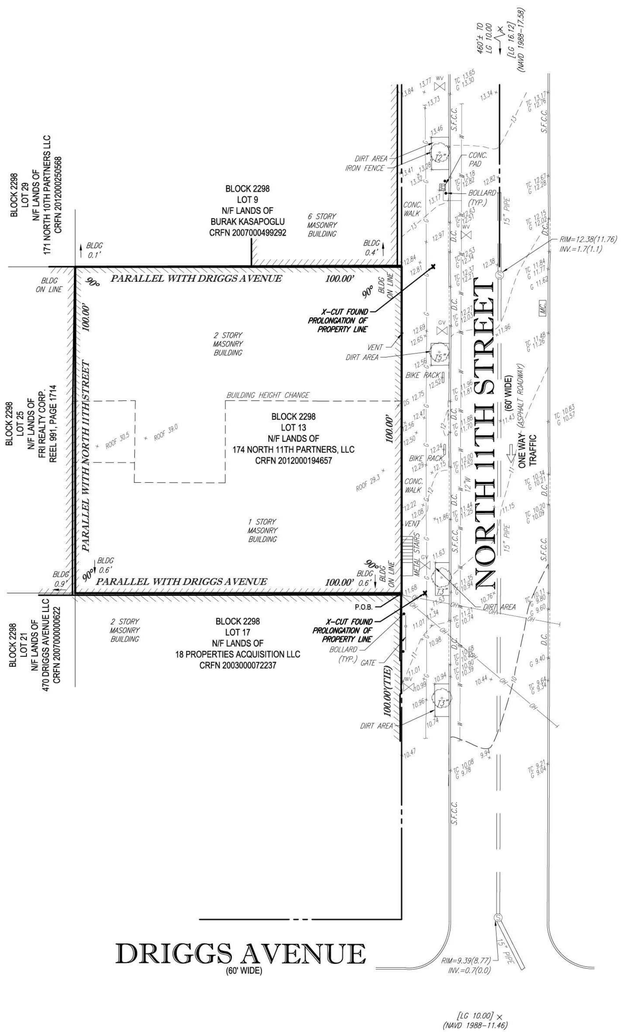
Date	Drawn By	Job No.
07/16/14	Author	2014-049

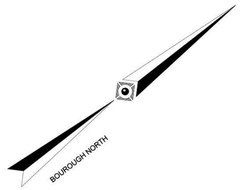
Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	6 OF 36

DOB NUMBER



VICINITY MAP





NOTES:

1. PROPERTY KNOWN AS LOT 13, BLOCK 2298, AS SHOWN ON THE NEW YORK CITY DIGITAL TAX MAP OF THE BOROUGH OF BROOKLYN, KINGS COUNTY, CITY AND STATE OF NEW YORK.
2. AREA = 10,000 S.F. OR 0.230 AC.
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE ASBUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.
4. THIS PLAN IS BASED ON INFORMATION PROVIDED BY A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC. AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
5. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN.
6. BY GRAPHIC PLOTTING ONLY PROPERTY IS LOCATED IN FLOOD HAZARD ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER REF. #2.
7. THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.
8. ELEVATIONS SHOWN ARE NAVD 1988, PER GPS OBSERVATIONS UTILIZING THE KEYSTONE KEYNET NETWORK TO CONVERT TO BROOKLYN BOROUGH HIGHWAY DATUM SUBTRACT 1.46 FROM THE ELEVATIONS LISTED, TO CONVERT TO NGVD 1929 ADD 1.1 TO THE ELEVATIONS LISTED.
9. THERE WERE NO NATURAL STREAMS OR WATERCOURSES VISIBLE AT THE TIME OF THE FIELD SURVEY.
10. ENCROACHMENTS AND VAULTS, IF ANY, BELOW SURFACE NOT SHOWN HEREON.

REFERENCES:

1. THE NEW YORK CITY DIGITAL TAX MAP OF THE BOROUGH OF BROOKLYN, KINGS COUNTY, CITY AND STATE OF NEW YORK.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, CITY OF NEW YORK, NEW YORK, BRONX, RICHMOND, NEW YORK, QUEENS AND KINGS COUNTIES," PANEL 202 OF 457, MAP NUMBER 3604970202F, MAP REVISED: SEPTEMBER 5, 2007.
3. MAP SHOWING UNDERGROUND WATER & SEWER FACILITIES IN THE VICINITY PROVIDED BY THE NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF WATER AND SEWER OPERATIONS.
4. FINAL SECTION MAP NO. 3 PROVIDED BY THE OFFICE OF THE PRESIDENT OF THE BOROUGH OF BROOKLYN, TOPOGRAPHICAL BUREAU.

LEGEND

124	EXISTING CONTOUR
125	
× 123.45	EXISTING SPOT ELEVATION
× TC 123.45	EXIST. TOP OF CURB ELEVATION
× G 122.95	EXIST. GUTTER ELEVATION
× DS 123.45	EXIST. DOOR SILL ELEVATION
	HYDRANT
WV	WATER VALVE
GV	GAS VALVE
G	APPROX. LOC. UNDERGROUND GAS LINE PER UTILITY MARKOUT (SEE NOTE 3)
W	APPROX. LOC. UNDERGROUND WATER LINE PER REF. 3 (NOT FIELD VERIFIED, SEE NOTE 3)
D.C.	DEPRESSED CURB
S.F.C.C.	STEEL FACED CONCRETE CURB
SMH	SANITARY/SEWER MANHOLE
RIM=9.50(8.88)	NAVD 1988 (BROOKLYN SEWER DATUM)

GRAPHIC SCALE

20 0 5 20 40 80

(IN FEET)
1 inch = 20 ft.

UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S EMBOSSED SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

PREPARED BY:

CONTROL POINT ASSOCIATES, INC.
35 TECHNOLOGY DRIVE
WARREN, NJ 07059
908.668.0099 - 908.668.9595 FAX

CHALFONT, PA 215.712.9800
SOUTHBOROUGH, MA 508.948.3000

NO.	DATE	BY	DESCRIPTION	APPROVED

REVISIONS

PROJECT NAME

174 NORTH 11TH PARTNERS, LLC.

174 NORTH 11TH STREET
LOT 13, BLOCK 2298
BOROUGH OF BROOKLYN, KINGS COUNTY
CITY AND STATE OF NEW YORK

DRAWING TITLE

BOUNDARY & TOPOGRAPHIC SURVEY

SEAL & SIGNATURE

NOT VALID UNTIL SEALED

JAMES C. WEED DATE
NEW YORK PROFESSIONAL LAND SURVEYOR #50765

FIELD DATE:	06-12-14
FIELD BK:	14-15
F. B. PAGE:	67-71
DATE:	6-25-2014
SCALE:	1"=20'
PROJECT No:	C14233
DRAWING BY:	R.A.B.
CHK BY:	G.R.E.
APPROVED BY:	G.J.S.
DWG No:	V-001.0
CAD FILE No:	C14233
PAGE No:	1 OF 1

PROGRESS SET: 10/13/2014 6:04:49 PM

Project

174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
434 Broadway
31st Floor
New York, NY 10013

STRUCTURAL ENGINEER:
GAUZE
41 E 28th St #6
New York, NY 10001

MEP ENGINEER:
Gurr Dickinson Con. Eng.
41 E 28th St
New York, NY 10001

CODE CONSULTANT:

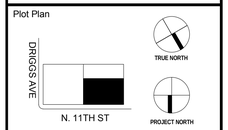
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

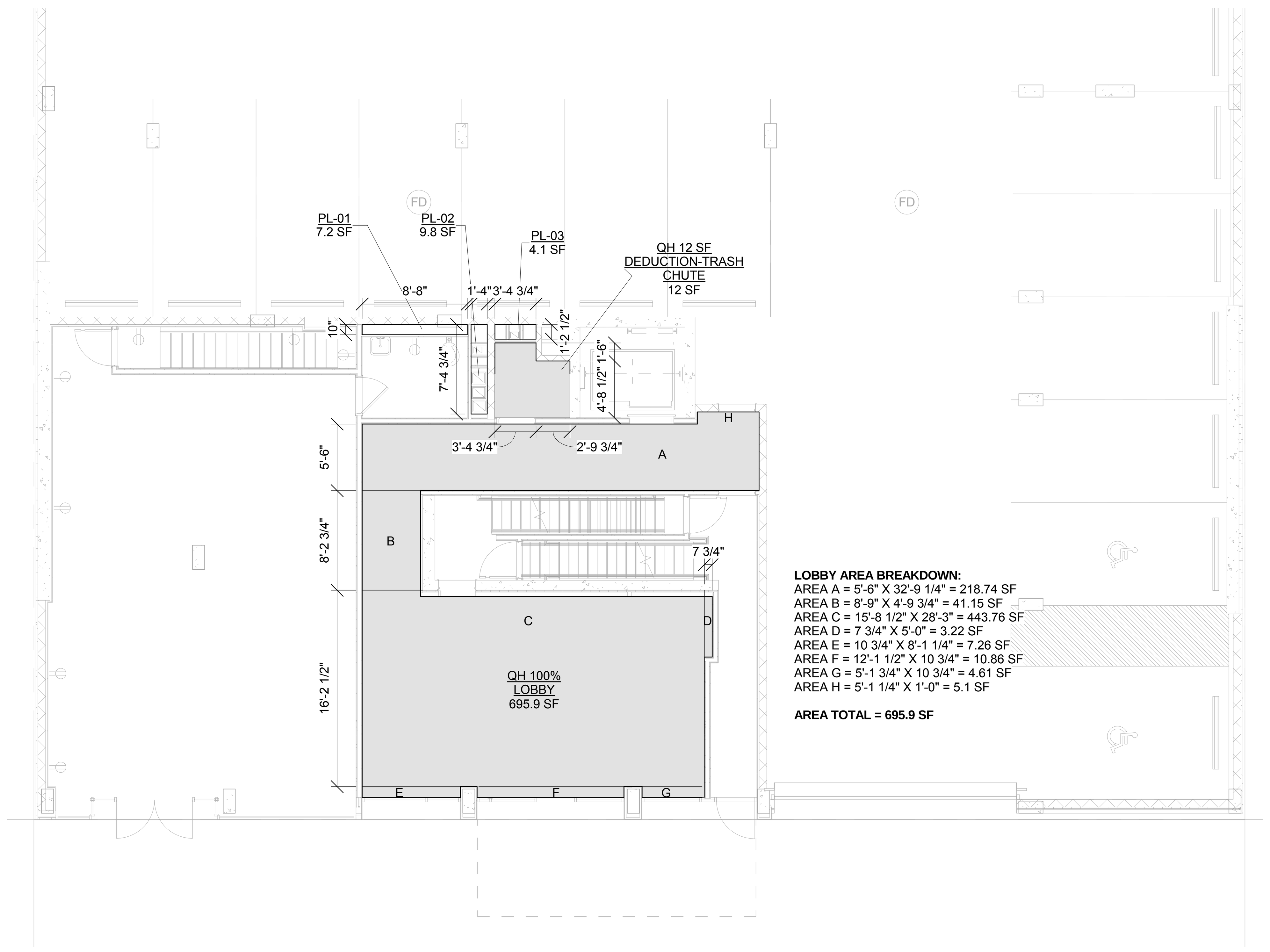
Drawing Title
SURVEY

Sign & Seal

Drawing No.
G-200.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
	Checker	7 OF 36

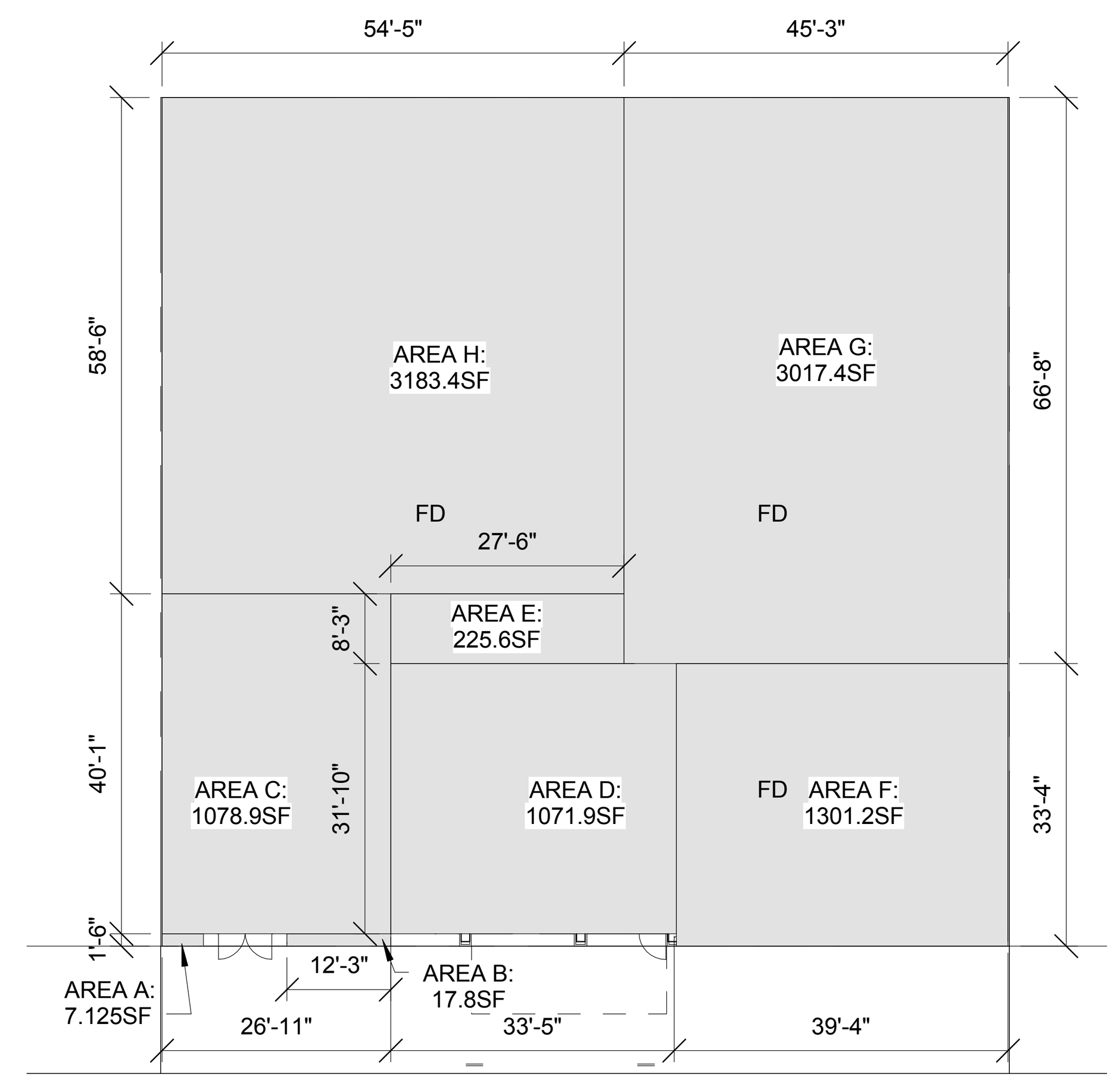
DOB NUMBER



LOBBY AREA BREAKDOWN:
AREA A = 5'-6" X 32'-9 1/4" = 218.74 SF
AREA B = 8'-9" X 4'-9 3/4" = 41.15 SF
AREA C = 15'-8 1/2" X 28'-3" = 443.76 SF
AREA D = 7 3/4" X 5'-0" = 3.22 SF
AREA E = 10 3/4" X 8'-1 1/4" = 7.26 SF
AREA F = 12'-1 1/2" X 10 3/4" = 10.86 SF
AREA G = 5'-1 3/4" X 10 3/4" = 4.61 SF
AREA H = 5'-1 1/4" X 1'-0" = 5.1 SF

AREA TOTAL = 695.9 SF

1 1st Floor
1/8" = 1'-0"

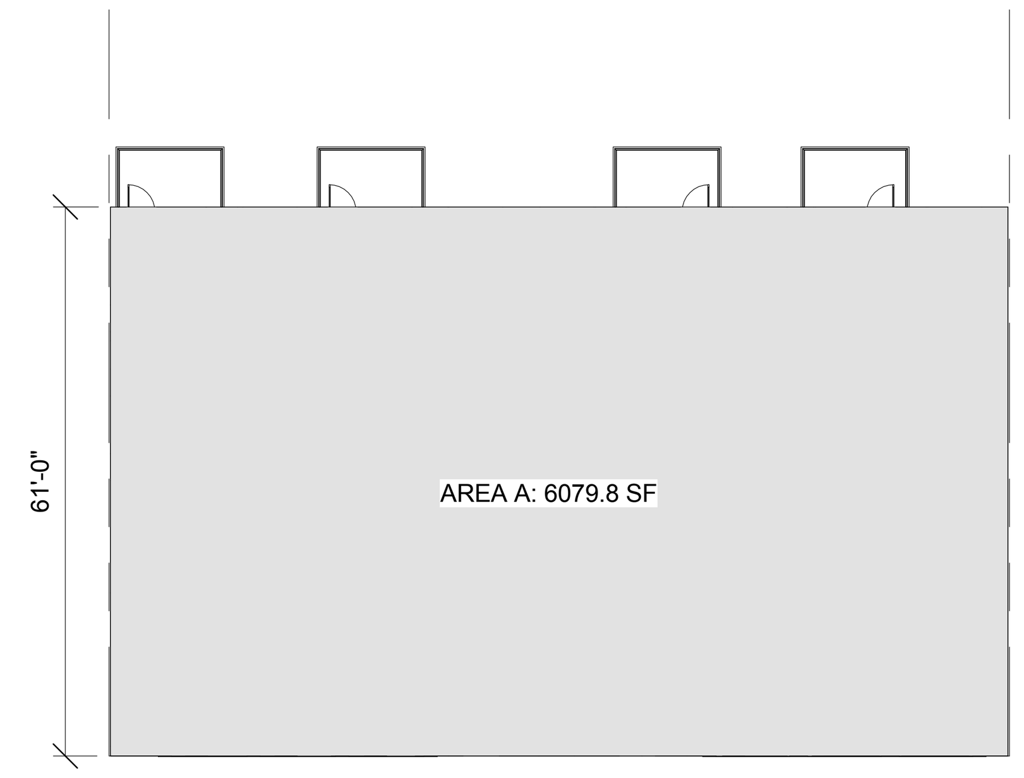


FIRST FLOOR AREA BREAKDOWN:

AREA A: 4'-10" X 1'-6" = 7.125 SF
AREA B: 12'-3" X 1'-6" = 17.8 SF
AREA C: 40'-1" X 26'-11" = 1078.9 SF
AREA D: 31'-10" X 33'-8" = 1071.9 SF
AREA E: 8'-3" X 27'-6" = 225.6 SF
AREA F: 33'-4" X 39'-1" = 1301.2 SF
AREA G: 66'-8" X 45'-3" = 3017.4 SF
AREA H: 58'-6" X 54'-5" = 3183.4 SF

TOTAL AREA: 9903.14 SF

3 Area plan Diagram-First Floor
3/64" = 1'-0"



2ND-5TH FLOOR AREA BREAKDOWN:

AREA A: 61'-0" X 99'-8" = 6079.8 SF

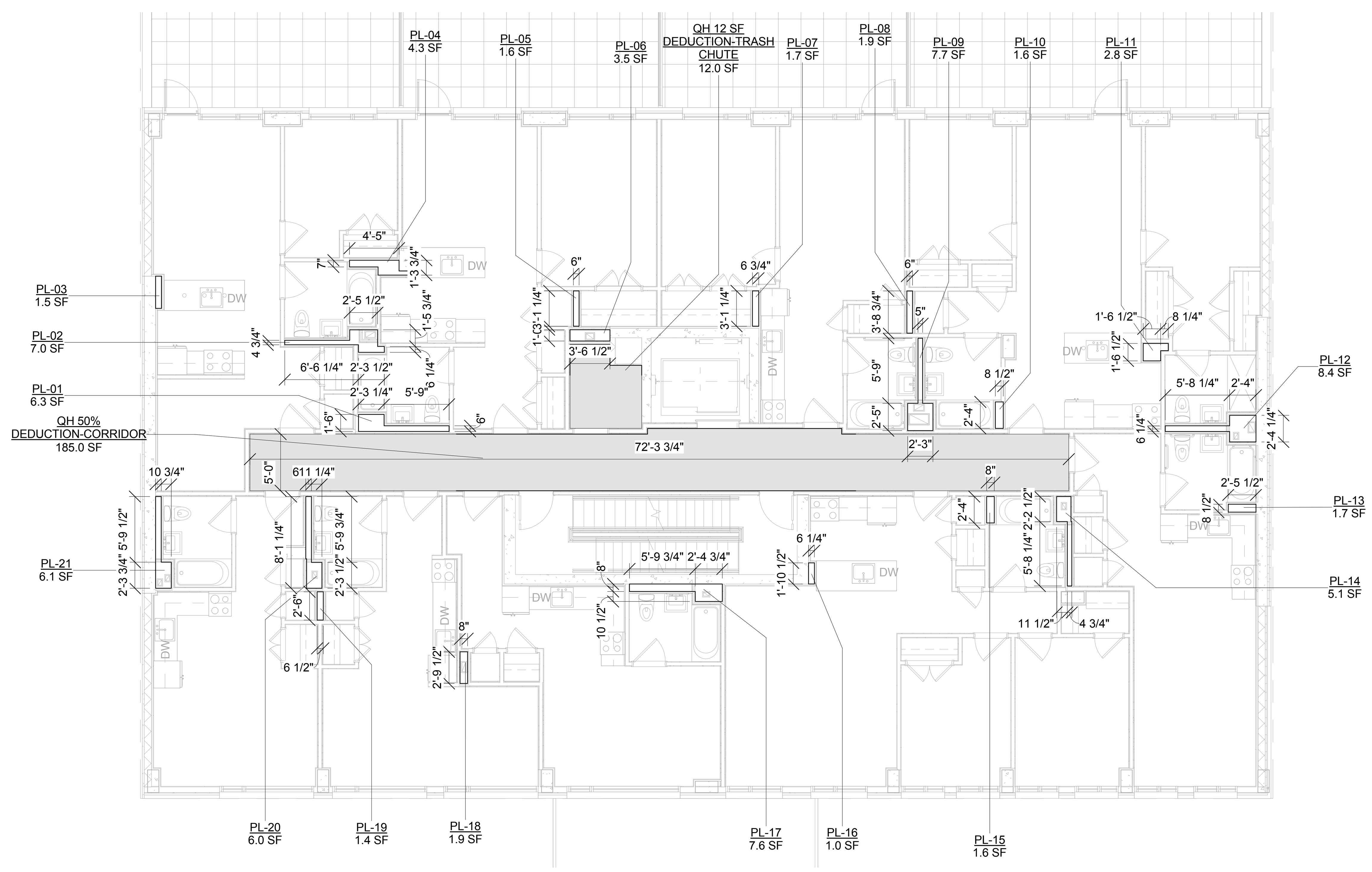
TOTAL AREA: 6079.8 SF

4 Area Plan Diagram-2nd-5th Floors
3/64" = 1'-0"

MECHANICAL & PLUMBING DEDUCTIONS		
Level	Name	Area
1ST FLOOR (12.26)	PL-01	7.2 SF
1ST FLOOR (12.26)	PL-02	9.8 SF
1ST FLOOR (12.26)	PL-03	4.1 SF
1ST FLOOR (12.26): 3		21.1 SF
2ND FLOOR (23.26)	PL-01	6.3 SF
2ND FLOOR (23.26)	PL-02	7.0 SF
2ND FLOOR (23.26)	PL-03	1.5 SF
2ND FLOOR (23.26)	PL-04	4.3 SF
2ND FLOOR (23.26)	PL-05	1.6 SF
2ND FLOOR (23.26)	PL-06	3.5 SF
2ND FLOOR (23.26)	PL-07	1.7 SF
2ND FLOOR (23.26)	PL-08	1.9 SF
2ND FLOOR (23.26)	PL-09	7.7 SF
2ND FLOOR (23.26)	PL-10	1.6 SF
2ND FLOOR (23.26)	PL-11	2.8 SF
2ND FLOOR (23.26)	PL-12	8.4 SF
2ND FLOOR (23.26)	PL-13	1.7 SF
2ND FLOOR (23.26)	PL-14	5.1 SF
2ND FLOOR (23.26)	PL-15	1.6 SF
2ND FLOOR (23.26)	PL-16	1.0 SF
2ND FLOOR (23.26)	PL-17	7.6 SF
2ND FLOOR (23.26)	PL-18	1.9 SF
2ND FLOOR (23.26)	PL-19	1.4 SF
2ND FLOOR (23.26)	PL-20	6.0 SF
2ND FLOOR (23.26)	PL-21	6.1 SF
2ND FLOOR (23.26): 21		79.0 SF
3RD FLOOR (32.93)	PL-01	8.7 SF
3RD FLOOR (32.93)	PL-02	6.3 SF
3RD FLOOR (32.93)	PL-03	1.9 SF
3RD FLOOR (32.93)	PL-04	7.0 SF
3RD FLOOR (32.93)	PL-05	4.3 SF
3RD FLOOR (32.93)	PL-06	1.6 SF
3RD FLOOR (32.93)	PL-07	3.5 SF
3RD FLOOR (32.93)	PL-08	1.7 SF
3RD FLOOR (32.93)	PL-09	1.5 SF
3RD FLOOR (32.93)	PL-10	7.8 SF
3RD FLOOR (32.93)	PL-11	1.6 SF
3RD FLOOR (32.93)	PL-12	2.8 SF
3RD FLOOR (32.93)	PL-13	8.2 SF
3RD FLOOR (32.93)	PL-14	1.8 SF
3RD FLOOR (32.93)	PL-15	5.4 SF
3RD FLOOR (32.93)	PL-16	1.6 SF
3RD FLOOR (32.93)	PL-17	1.0 SF
3RD FLOOR (32.93)	PL-18	7.2 SF
3RD FLOOR (32.93)	PL-19	1.9 SF
3RD FLOOR (32.93)	PL-20	1.4 SF
3RD FLOOR (32.93)	PL-21	5.7 SF
3RD FLOOR (32.93): 21		80.8 SF
4TH FLOOR (42.59)	PL-01	8.7 SF
4TH FLOOR (42.59)	PL-02	6.3 SF
4TH FLOOR (42.59)	PL-03	1.9 SF
4TH FLOOR (42.59)	PL-04	7.0 SF
4TH FLOOR (42.59)	PL-05	4.6 SF
4TH FLOOR (42.59)	PL-06	1.6 SF
4TH FLOOR (42.59)	PL-07	3.5 SF
4TH FLOOR (42.59)	PL-08	1.7 SF
4TH FLOOR (42.59)	PL-09	1.5 SF
4TH FLOOR (42.59)	PL-10	7.8 SF
4TH FLOOR (42.59)	PL-11	1.6 SF
4TH FLOOR (42.59)	PL-12	2.8 SF
4TH FLOOR (42.59)	PL-13	8.2 SF
4TH FLOOR (42.59)	PL-14	1.6 SF
4TH FLOOR (42.59)	PL-15	5.1 SF

MECHANICAL & PLUMBING DEDUCTIONS		
Level	Name	Area
4TH FLOOR (42.59)	PL-16	1.6 SF
4TH FLOOR (42.59)	PL-17	1.0 SF
4TH FLOOR (42.59)	PL-18	7.2 SF
4TH FLOOR (42.59)	PL-19	1.9 SF
4TH FLOOR (42.59)	PL-20	1.4 SF
4TH FLOOR (42.59)	PL-21	5.7 SF
4TH FLOOR (42.59): 21		80.4 SF
5TH FLOOR (52.26)	PL-01	1.5 SF
5TH FLOOR (52.26)	PL-02	7.0 SF
5TH FLOOR (52.26)	PL-03	3.1 SF
5TH FLOOR (52.26)	PL-04	6.3 SF
5TH FLOOR (52.26)	PL-05	1.6 SF
5TH FLOOR (52.26)	PL-06	3.5 SF
5TH FLOOR (52.26)	PL-07	1.7 SF
5TH FLOOR (52.26)	PL-08	1.5 SF
5TH FLOOR (52.26)	PL-09	7.7 SF
5TH FLOOR (52.26)	PL-10	1.6 SF
5TH FLOOR (52.26)	PL-11	2.8 SF
5TH FLOOR (52.26)	PL-12	8.2 SF
5TH FLOOR (52.26)	PL-13	1.6 SF
5TH FLOOR (52.26)	PL-14	5.2 SF
5TH FLOOR (52.26)	PL-15	1.6 SF
5TH FLOOR (52.26)	PL-16	1.0 SF
5TH FLOOR (52.26)	PL-17	7.2 SF
5TH FLOOR (52.26)	PL-18	1.7 SF
5TH FLOOR (52.26)	PL-19	1.3 SF
5TH FLOOR (52.26)	PL-20	5.6 SF
5TH FLOOR (52.26)	PL-21	5.7 SF
5TH FLOOR (52.26): 21		79.3 SF
6TH FLOOR (61.93)	PL-01	2.6 SF
6TH FLOOR (61.93)	PL-02	5.4 SF
6TH FLOOR (61.93)	PL-03	1.6 SF
6TH FLOOR (61.93)	PL-04	1.0 SF
6TH FLOOR (61.93): 4		14.0 SF

QUALITY HOUSING DEDUCTIONS		
Level	Name	Area
1ST FLOOR (12.26)	QH 12 SF DEDUCTION-TRASH CHUTE	12 SF
1ST FLOOR (12.26)	QH 100% LOBBY	291 SF
1ST FLOOR (12.26): 2		303 SF
2ND FLOOR (23.26)	QH 12 SF DEDUCTION-TRASH CHUTE	12 SF
2ND FLOOR (23.26)	QH 50% DEDUCTION-CORRIDOR	185 SF
2ND FLOOR (23.26): 2		197 SF
3RD FLOOR (32.93)	QH 12 SF DEDUCTION-TRASH CHUTE	12 SF
3RD FLOOR (32.93)	QH 50% DEDUCTION-CORRIDOR	185 SF
3RD FLOOR (32.93): 2		197 SF
4TH FLOOR (42.59)	QH 12SF DEDUCTION-TRASH CHUTE	12 SF
4TH FLOOR (42.59)	QH 50 % DEDUCTION -CORRIDOR	185 SF
4TH FLOOR (42.59): 2		197 SF
5TH FLOOR (52.26)	QH 12SF DEDUCTION-TRASH CHUTE	12 SF
5TH FLOOR (52.26)	QH 50% DEDUCTION-CORRIDOR	185 SF
5TH FLOOR (52.26): 2		197 SF
6TH FLOOR (61.93)	QH 12SF DEDUCTION-TRASH CHUTE	12 SF
6TH FLOOR (61.93)	QH 100% DEDUCTION--CORRIDOR	Not Enclosed
6TH FLOOR (61.93): 2		12 SF



2 2nd Floor
1/8" = 1'-0"

PROGRESS SET: 10/13/2014 6:04:52 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
450 Lexington Avenue
31st Floor
New York, NY 10017

STRUCTURAL ENGINEER:
GACE
31 W 27th St #6
New York, NY 10001

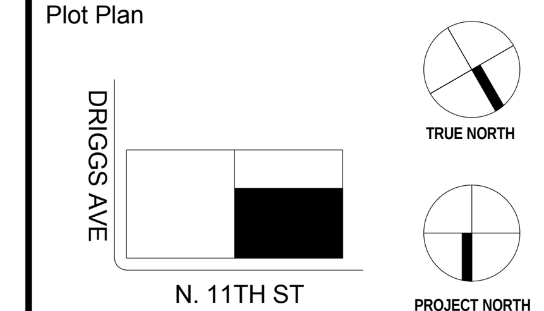
MEP ENGINEER:
Guth DeConzo Con. Eng.
242 W. 30th St
New York, NY 10001

CODE CONSULTANT:

Issuance Schedule		
No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule		
No.	Date	Description

Plot Plan



For Department of Buildings Use

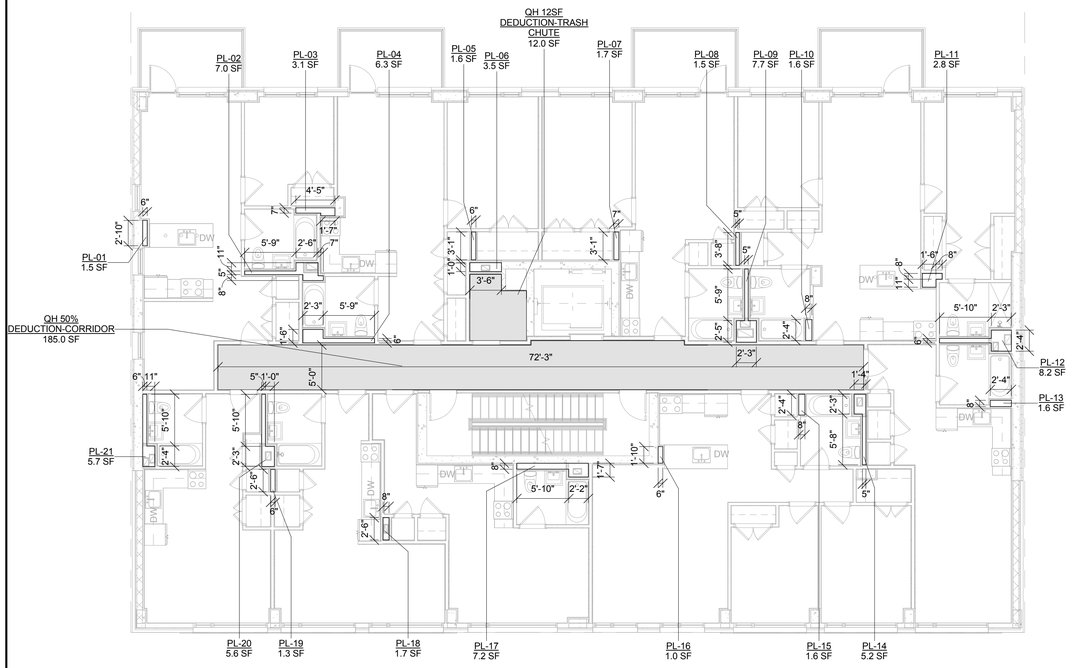
Drawing Title
AREA DEDUCTIONS

Sign & Seal

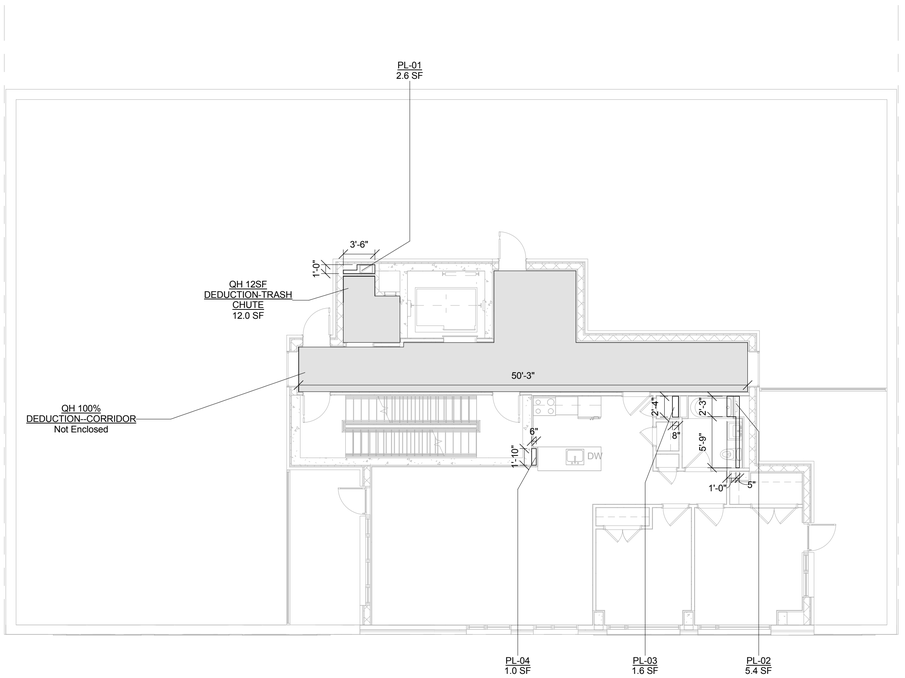
Drawing No.
G-300.OO

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	8 OF 36

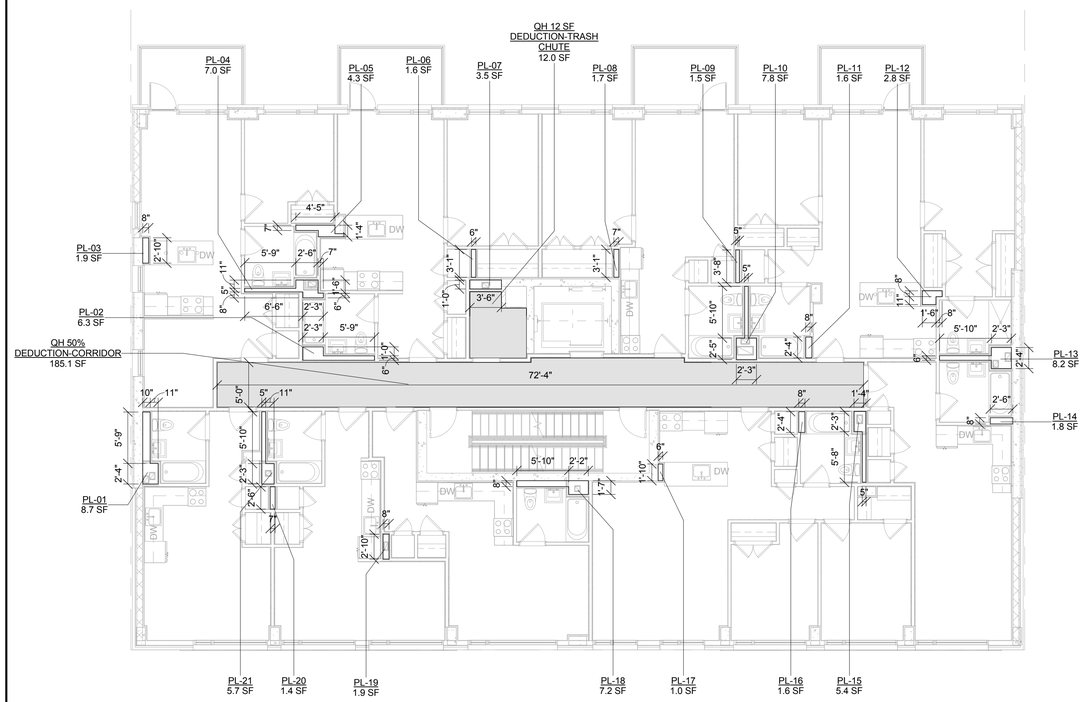
DOB NUMBER



2 5th Floor
1/8" = 1'-0"



3 6th Floor
1/8" = 1'-0"



1 3rd & 4th Floor
1/8" = 1'-0"

PROGRESS SET: 10/13/2014 6:05:03 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

STRUCTURAL ENGINEER:
GAUZ
41 East 28th St #6
New York, NY 10001

MEP ENGINEER:
Guh DeGroot Con. Eng.
41 East 28th St
New York, NY 10001

CODE CONSULTANT:

OWNER:
Great Point Properties
Attn: Jeff Eisenberg
31st Floor
New York, NY 10017

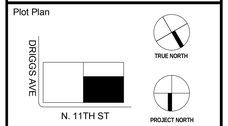
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
AREA DEDUCTIONS

Sign & Seal
REGISTERED ARCHITECT
QUENTIN J. KUTNICKI
STATE OF NEW YORK
1984

Drawing No.
G-301.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	**Checked By**	**DOB Sheet**
1/8" = 1'-0"	Checker	9 OF 36

DOB NUMBER

COMcheck Software Version 3.9.3
Envelope Compliance Certificate

2010 New York Energy Conservation Construction Code

Section 1: Project Information

Project Type: **New Construction**
Project Title : North 11th Street

Construction Site:	Owner/Agent:	Designer/Contractor:
174 N. 11th St. Brooklyn, NY 11211	Darren Anikstein Great Point Properties 450 Lexington Avenue 31st Floor New York, NY 10017 (212) 661-9890 danikstein@gpprop.com	

Section 2: General Information

Building Location (for weather data): **Kings, New York**
Climate Zone: **4a**
Building Space Conditioning Type(s): **Nonresidential**
Vertical Glazing / Wall Area Pct.: **26%**

Activity Type(s)	Floor Area
Multifamily	40819

Section 3: Requirements Checklist

Envelope PASSES: Design 7% better than code.

Climate-Specific Requirements:

Component Name/Description	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
North Wall: Steel-Framed, 16" o.c.	5243	0.0	19.0	0.046	0.064
Window 1: Metal Frame:Double Pane with Low-E, Perf. Type: Other testing/cert. Product ID: , SHGC 0.23 (b)	2816	---	---	0.420	0.550
South Wall: Steel-Framed, 16" o.c.	5751	0.0	19.0	0.046	0.064
Window 2: Metal Frame:Double Pane with Low-E, Perf. Type: Other testing/cert. Product ID: , SHGC 0.23 (b)	1433	---	---	0.420	0.550
West Wall: Steel-Framed, 16" o.c.	3255	0.0	19.0	0.046	0.064
Window 3: Metal Frame:Double Pane with Low-E, Perf. Type: Other testing/cert. Product ID: , SHGC 0.23 (b)	58	---	---	0.420	0.550
Exterior Wall 4: Steel-Framed, 16" o.c.	3258	0.0	19.0	0.046	0.064
Window 4: Metal Frame:Double Pane with Low-E, Perf. Type: Other testing/cert. Product ID: , SHGC 0.23 (b)	256	---	---	0.420	0.550
Basement Wall 1: Solid Concrete:12" Thickness, Normal Density, Furring: Wood, Wall Ht 9.0, Depth B.G. 9.0	2700	0.0	19.0	0.046	0.579
Basement Floor: Slab-On-Grade:Unheated, Horizontal without vertical 4 ft.	300	---	0.0	---	---
Roof (above 5th Floor): Insulation Entirely Above Deck	4230	---	30.0	0.032	0.048
Roof (above 6th): Insulation Entirely Above Deck	1910	---	30.0	0.032	0.048

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.

(b) Fenestrations product performance must be certfied in accordance with NFRC and requires supporting documentation.

Air Leakage, Component Certification, and Vapor Retarder Requirements:

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

Section 4: Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed envelope system has been designed to meet the 2010 New York Energy Conservation Construction Code requirements in COM*check* Version 3.9.3 and to comply with the mandatory requirements in the Requirements Checklist.

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

Name - Title Signature Date

COMcheck Software Version 3.9.3
Interior Lighting Compliance Certificate

2010 New York Energy Conservation Construction Code

Section 1: Project Information

Project Type: **New Construction**
Project Title : North 11th Street

Construction Site:	Owner/Agent:	Designer/Contractor:
174 N. 11th St. Brooklyn, NY 11211	Darren Anikstein Great Point Properties 450 Lexington Avenue 31st Floor New York, NY 10017 (212) 661-9890 danikstein@gpprop.com	

Section 2: Interior Lighting and Power Calculation

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B x C)
Multifamily	40819	0.7	28573
		Total Allowed Watts =	28573

Section 3: Interior Lighting Fixture Schedule

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Multifamily (40819 sq.ft.)				
L01: LED MR 7W:	1	257	7	1799
L02: LED MR 7W:	1	53	7	371
L03 (WL): LED MR 7W:	1	49	7	343
L04: Spiral 23W: Magnetic:	1	49	23	1127
L05: LED MR 7W:	3	36	21	756
L06: LED MR 7W:	8	1	56	56
L07: 24" T8U 32W: Magnetic:	2	29	64	1856
L08: 22" T5 14W: Electronic:	1	148	14	2072
L09: 24" T8U 32W: Electronic:	1	27	32	864
L10: 48" T8 25W (Super T8): Electronic:	1	1	25	25
L11: 60" T8 40W: Electronic:	2	2	40	80
			Total Proposed Watts =	9349

Section 4: Requirements Checklist

Interior Lighting PASSES: Design 67% better than code.

Lighting Wattage:

- ☐ 1. Total proposed watts must be less than or equal to total allowed watts.

Allowed Watts	Proposed Watts	Complies
28573	9349	YES

Controls, Switching, and Wiring:

- ☐ 2. Daylight zones under skylights more than 15 feet from the perimeter have lighting controls separate from daylight zones adjacent to vertical fenestration.
- ☐ 3. Daylight zones have individual lighting controls independent from that of the general area lighting.
  Exceptions:
  - ☐ Contiguous daylight zones spanning no more than two orientations are allowed to be controlled by a single controlling device.
  - ☐ Daylight spaces enclosed by walls or ceiling height partitions and containing two or fewer light fixtures are not required to have a separate switch for general area lighting.
- ☐ 4. Independent controls for each space (switch/occupancy sensor).
  Exceptions:
  - ☐ Areas designated as security or emergency areas that must be continuously illuminated.
  - ☐ Lighting in stairways or corridors that are elements of the means of egress.
- ☐ 5. Master switch at entry to hotel/motel guest room.
- ☐ 6. Individual dwelling units separately metered.
- ☐ 7. Medical task lighting or art/history display lighting claimed to be exempt from compliance has a control device independent of the control of the nonexempt lighting.
- ☐ 8. Each space required to have a manual control also allows for reducing the connected lighting load by at least 50 percent by either controlling all luminaires, dual switching of alternate rows of luminaires, alternate luminaires, or alternate lamps, switching the middle lamp luminaires independently of other lamps, or switching each luminaire or each lamp.
  Exceptions:
  - ☐ Only one luminaire in space.
  - ☐ An occupant-sensing device controls the area.
  - ☐ The area is a corridor, storeroom, restroom, public lobby or sleeping unit.
  - ☐ Areas that use less than 0.6 Watts/sq.ft.
- ☐ 9. Automatic lighting shutoff control in buildings larger than 5,000 sq.ft.
  Exceptions:
  - ☐ Sleeping units, patient care areas; and spaces where automatic shutoff would endanger safety or security.
- ☐ 10. Photocell/astronomical time switch on exterior lights.
  Exceptions:
  - ☐ Lighting intended for 24 hour use.
- ☐ 11. Tandem wired one-lamp and three-lamp ballasted luminaires (No single-lamp ballasts).
  Exceptions:
  - ☐ Electronic high-frequency ballasts; Luminaires on emergency circuits or with no available pair.

Section 5: Compliance Statement

Compliance Statement: The proposed lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2010 New York Energy Conservation Construction Code requirements in COM*check* Version 3.9.3 and to comply with the mandatory requirements in the Requirements Checklist.

Name - Title Signature Date

PROGRESS SET: 10/13/2014 6:04:19 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER: Great Point Properties, 450 Lexington Avenue, 31st Floor, New York, NY 10017
STRUCTURAL ENGINEER: GACE, 31 W 27th St #6, New York, NY 10001
MEP ENGINEER: Guth DeConzo Con. Eng., 242 W. 30th St, New York, NY 10001
CODE CONSULTANT:

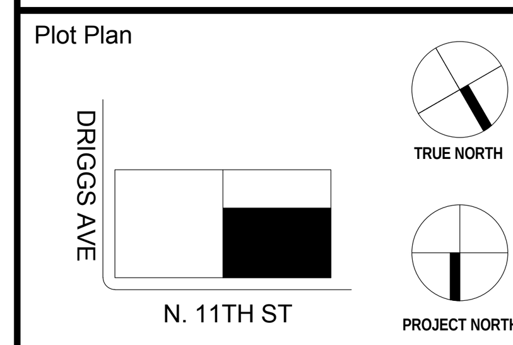
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

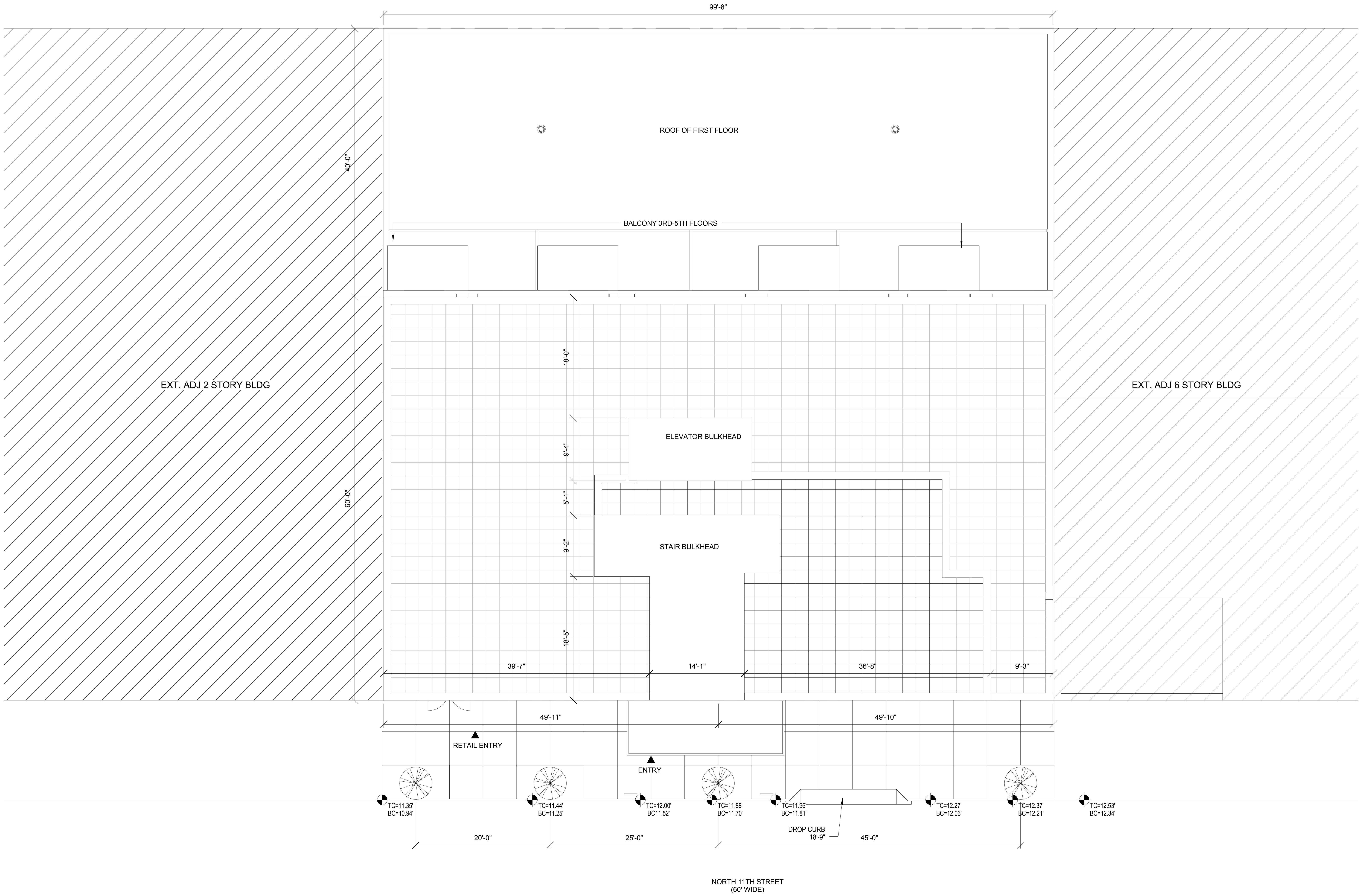
Drawing Title
ENERGY ANALYSIS

Sign & Seal

Drawing No.
EN-100.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	**Checked By**	**DOB Sheet**
	Checker	10 OF 36

DOB NUMBER



1 SITE PLAN
1/8" = 1'-0"

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
450 Lexington Avenue
31st Floor
New York, NY 10017

STRUCTURAL ENGINEER:
GACE
31 W 27th St #6
New York, NY 10001

MEP ENGINEER:
Guth DeConzo Con. Eng.
242 W. 30th St
New York, NY 10001

CODE CONSULTANT:

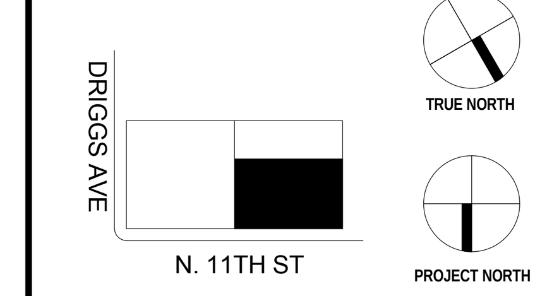
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
SITE PLAN

Sign & Seal

Drawing No.
A-010.OO

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
1/8" = 1'-0"	Checker	11 OF 36

DOB NUMBER

PROGRESS SET: 10/13/2014 6:01:02 PM

BUILDING CODE ANALYSIS:
OCCUPANCY GROUP: R-2

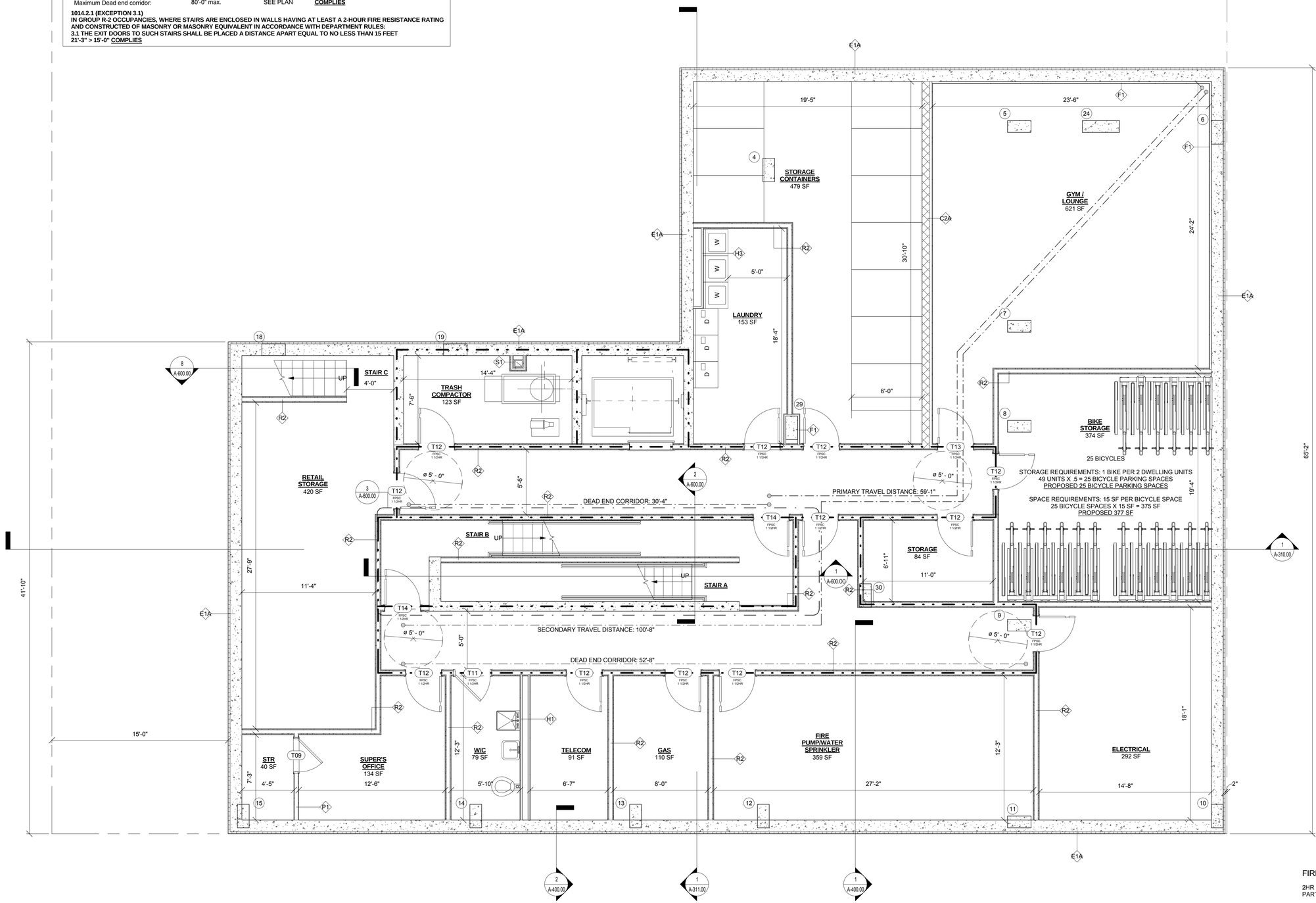
EXIT CAPACITY PER TABLE 1005.1

EXIT TYPE	WIDTH	FACTOR	MAX CAPACITY
STAIR A & B	36"	.3" /OCC.	120 OCC/STAIR
STAIR DOORS	36"	.2" / OCC.	180 OCC/STAIR DOOR
CORRIDOR	60"	.2"/OCC.	300 OCC

NOTE: 2 EXITS PROVIDED AT GRADE FOR LESS THAN 500 OCCUPANTS PER BC 1018

(Table 1015.1 and BC 1016.3)	REQUIRED	PROVIDED	
Maximum travel distance:	200'-0" max.	SEE PLAN	COMPLIES
Min. corridor width:	5'-0" min.	5'-0"	COMPLIES
Maximum Dead end corridor:	80'-0" max.	SEE PLAN	COMPLIES

1014.2.1 (EXCEPTION 3.1)
IN GROUP R-2 OCCUPANCIES, WHERE STAIRS ARE ENCLOSED IN WALLS HAVING AT LEAST A 2-HOUR FIRE RESISTANCE RATING AND CONSTRUCTED OF MASONRY OR MASONRY EQUIVALENT IN ACCORDANCE WITH DEPARTMENT RULES:
3.1 THE EXIT DOORS TO SUCH STAIRS SHALL BE PLACED A DISTANCE APART EQUAL TO NO LESS THAN 15 FEET
21'-3" > 15'-0" COMPLIES



1 Cellar Floor Plan
1/4" = 1'-0"

SYMBOL	DESCRIPTION
SD	SMOKE DETECTOR
SD R	SMOKE DETECTOR W/ ELEVATOR RECALL
CD	CARBON MONOXIDE DETECTOR
H	HEAT DETECTOR
	EMERGENCY EXIT
	SECURITY CAMERA
1'-0"	ELEVATION CHANGE

FIRE RATINGS
2HR RATED PARTITION
3HR RATED PARTITION

PROGRESS SET: 10/13/2014 6:01:11 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
45 Rockefeller Plaza
31st Floor
New York, NY 10017

STRUCTURAL ENGINEER:
GAUZE
31 West 27th St #6
New York, NY 10001

MEP ENGINEER:
Gurt DeDonzo Con. Eng.
45 E 20th St
New York, NY 10001

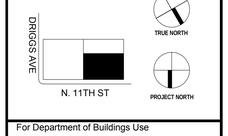
CODE CONSULTANT:

Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan


For Department of Buildings Use

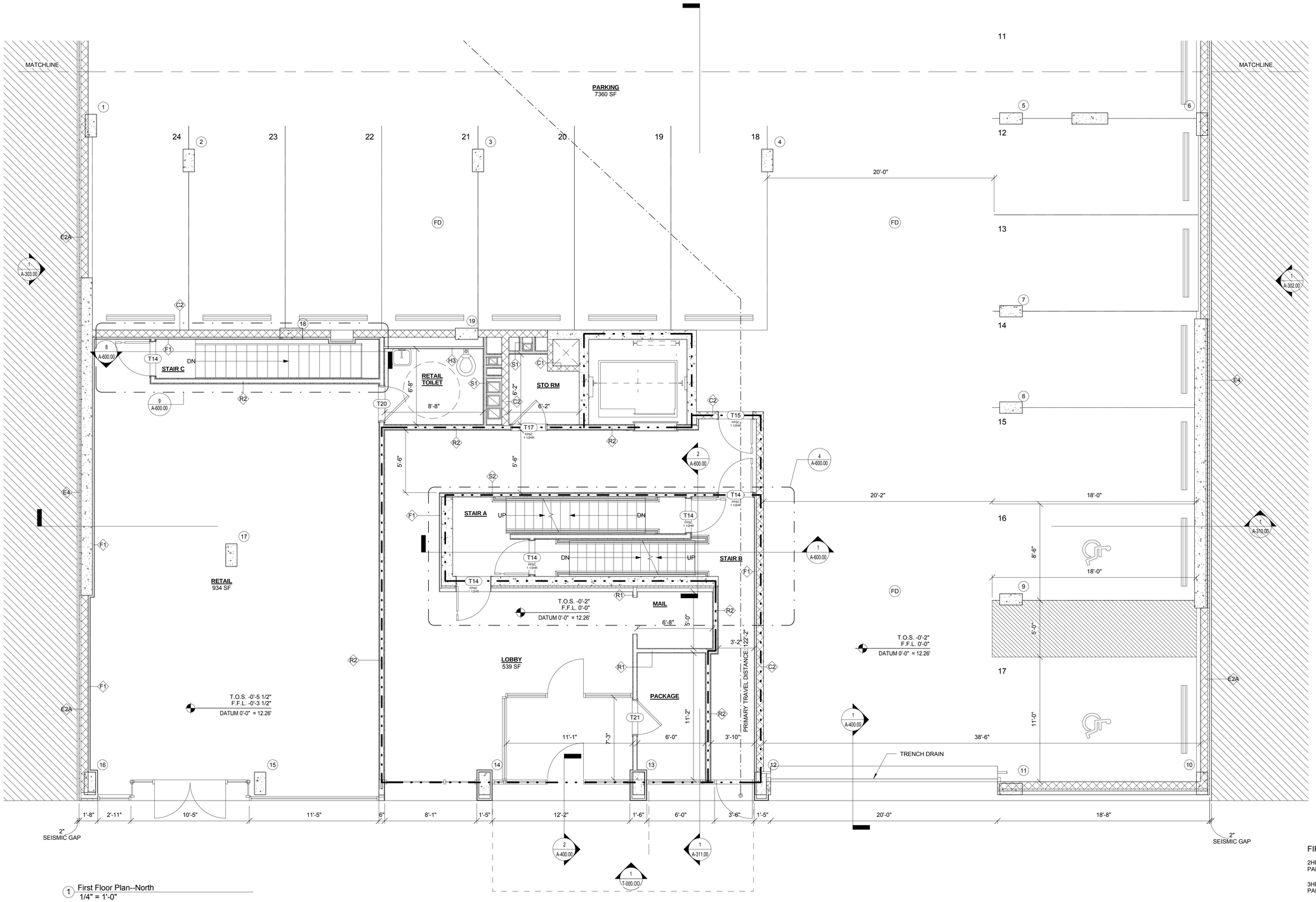
Drawing Title
CELLAR PLAN

Sign & Seal
REGISTERED ARCHITECT
STATE OF NEW YORK
19854

Drawing No.
A-100.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	12 OF 36

DOB NUMBER



1 First Floor Plan--North
1/4" = 1'-0"

SYMBOL	DESCRIPTION
SD	SMOKE DETECTOR
SD/R	SMOKE DETECTOR W/ ELEVATOR RECALL
CO	CARBON MONOXIDE DETECTOR
H	HEAT DETECTOR
	EMERGENCY EXIT
	SECURITY CAMERA
1'-0"	ELEVATION CHANGE

FIRE RATINGS

2HR RATED PARTITION

3HR RATED PARTITION

PROGRESS SET: 10/13/2014 6:01:20 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
434 Broadway Suite
31st Floor
New York, NY 10017

STRUCTURAL ENGINEER:
GACE
247 West 37th St #6
New York, NY 10001

MEP ENGINEER:
Gurt DeDonno Con. Eng.
247 West 37th St
New York, NY 10001

CODE CONSULTANT:

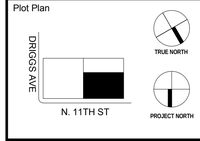
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

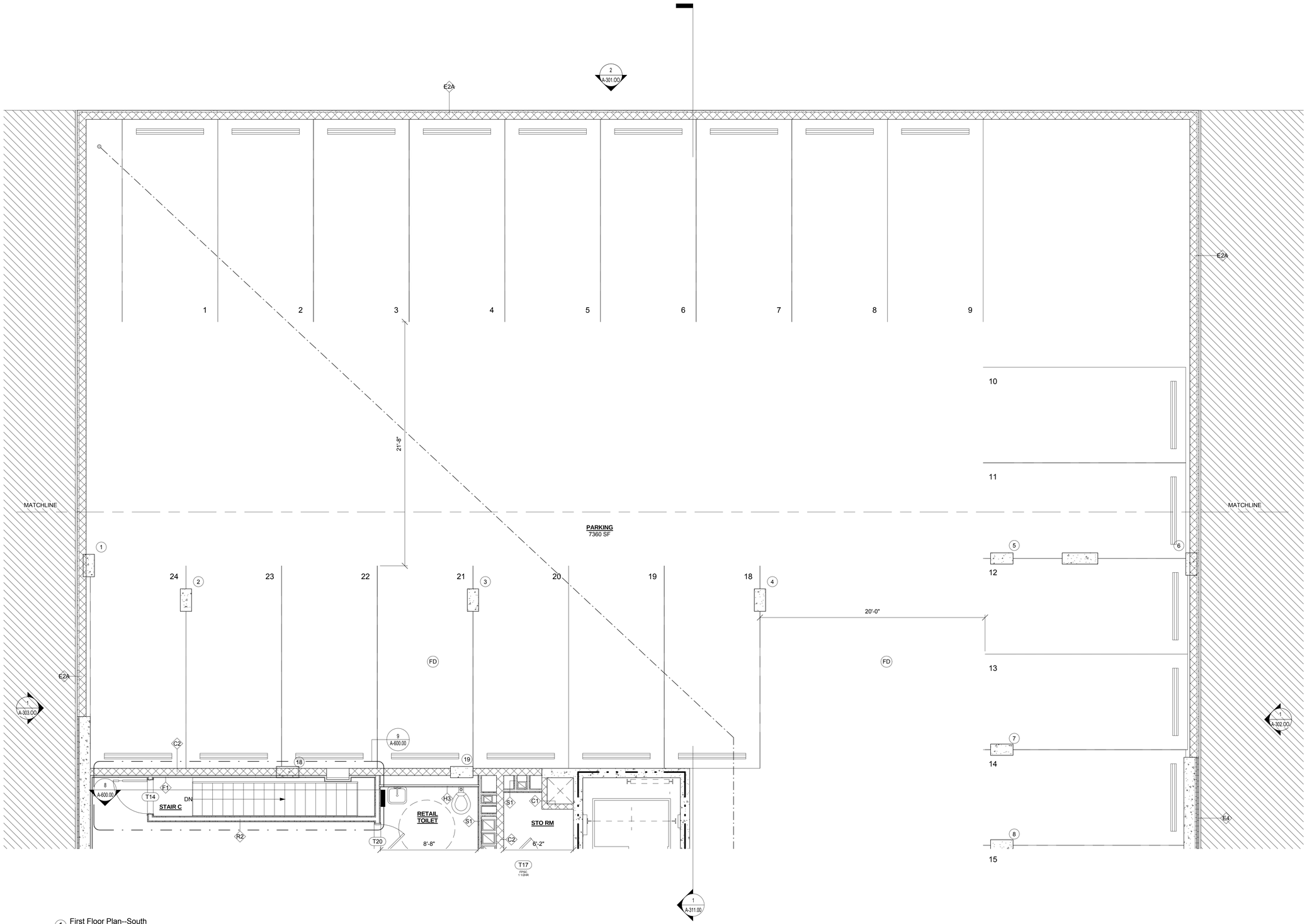
Drawing Title
1ST FLOOR PLAN - NORTH

Sign & Seal
REGISTERED ARCHITECT DANIEL J. KUTNICKI 018854 STATE OF NEW YORK

Drawing No.
A-101N.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	13 OF 36

DOB NUMBER



1 First Floor Plan--South
1/4" = 1'-0"

PROGRESS SET: 10/13/2014 6:01:27 PM

Project

174 N. 11TH STREET

BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
40 Exchange Place
31st Floor
New York, NY 10017

STRUCTURAL ENGINEER:
GAUZ
21 West 27th St #6
New York, NY 10001

MEP ENGINEER:
Gurt DeDonzo Con. Eng.
45 Broadway
New York, NY 10001

CODE CONSULTANT:

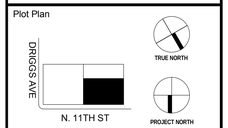
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
1ST FLOOR PLAN - SOUTH

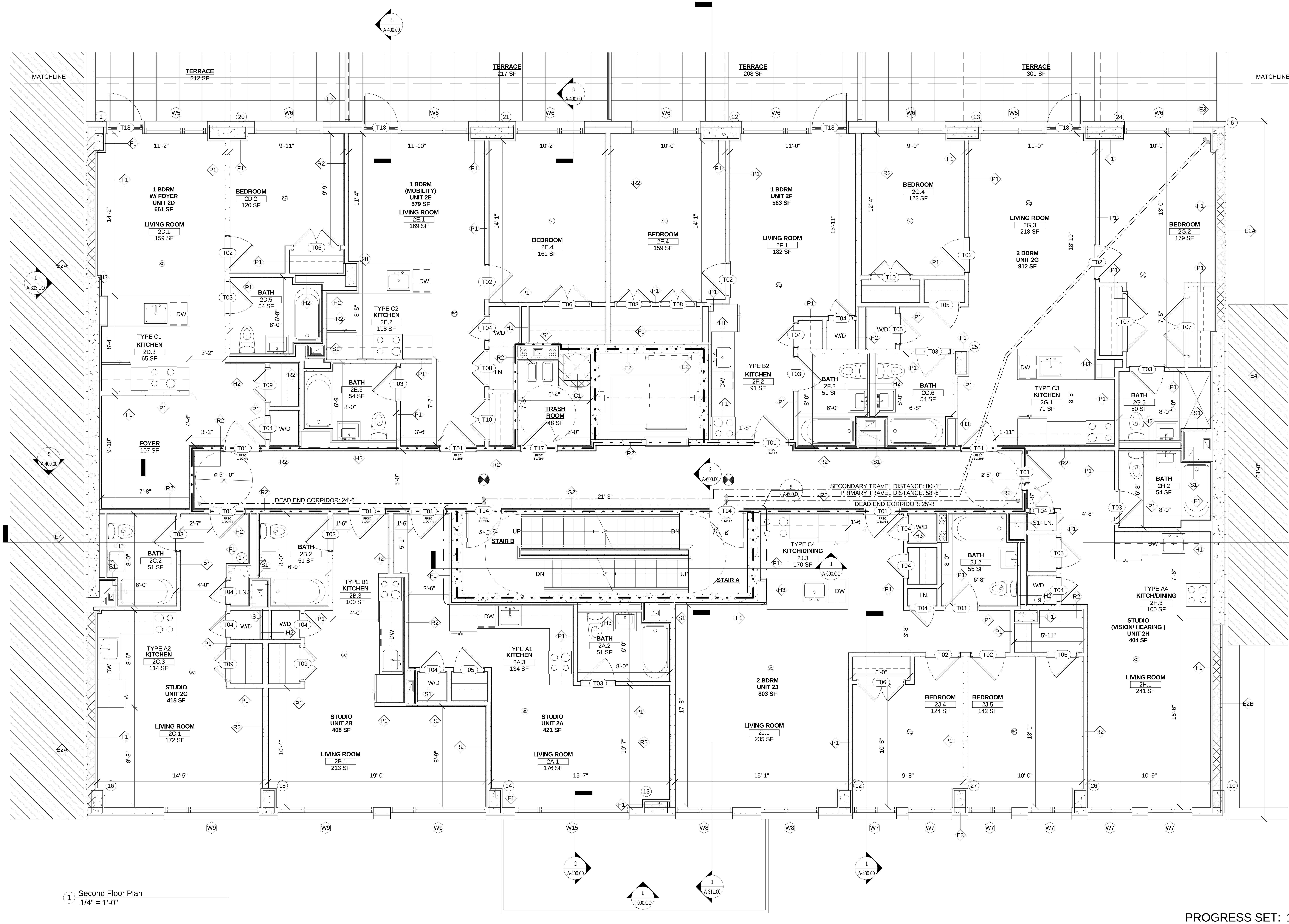
Sign & Seal
REGISTERED ARCHITECT
DEBRA L. KUTNICKI
018854
STATE OF NEW YORK

Drawing No.
A-101S.00

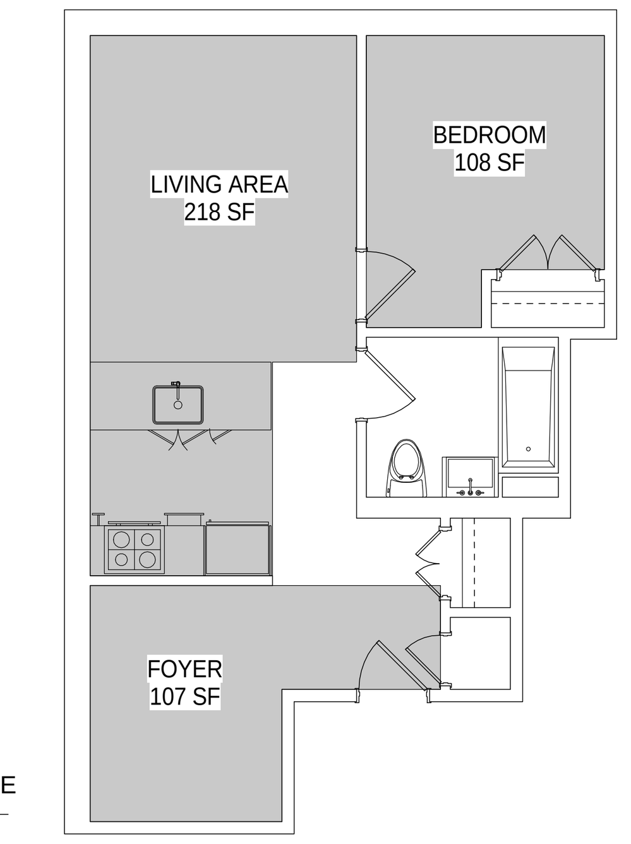
Date	Drawn By	Job No.
07/16/14	Author	2014-049

Sheet Scale	Checked By	DOB Sheet
1/4" = 1'-0"	Checker	14 OF 36

DOB NUMBER



1 Second Floor Plan
1/4" = 1'-0"



FOYER CALCULATION
UNIT 2F-5F
As per Multiple Dwelling Law
Section 31.(5)

Proposed Living Room = 218sf
Min Living room area= 132 x 20%=26
132+26 = 158
158 < 218 Complies
Proposed Bedroom = 108sf
Min. Bedroom = 80 x 20% = 16
80+16 =96
96 < 108 sf Complies

Apartment Total sf = 661 SF

765 x 20 %= 132 sf

Proposed Foyer = 107 sf < 132 sf Complies

SYMBOL	DESCRIPTION
SD	SMOKE DETECTOR
SD R	SMOKE DETECTOR W/ ELEVATOR RECALL
CO	CARBON MONOXIDE DETECTOR
H	HEAT DETECTOR
	EMERGENCY EXIT
	SECURITY CAMERA
1'-0"	ELEVATION CHANGE

FIRE RATINGS

2HR RATED PARTITION

3HR RATED PARTITION

PROGRESS SET: 10/14/2014 12:10:44 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
450 Lexington Avenue
31st Floor
New York, NY 10017

STRUCTURAL ENGINEER:
GACE
31 W 27th St #6
New York, NY 10001

MEP ENGINEER:
Guth DeConzo Con. Eng.
242 W. 30th St
New York, NY 10001

CODE CONSULTANT:

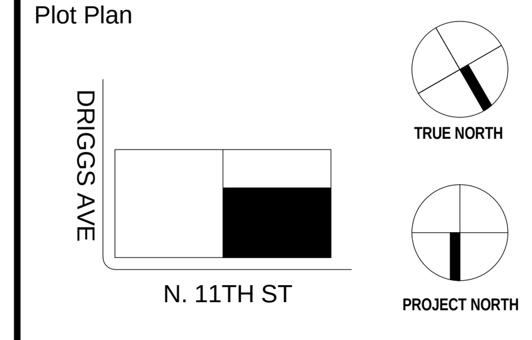
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
2ND FLOOR PLAN - NORTH

Sign & Seal
REGISTERED ARCHITECT DANIEL KENNETH BERNSTEIN 16854 STATE OF NEW YORK

Drawing No.
A-102N.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	**Checked By**	**DOB Sheet**
As indicated	Checker	15 OF 36

DOB NUMBER

Project

174 N. 11TH STREET
BROOKLYN, NY 11211

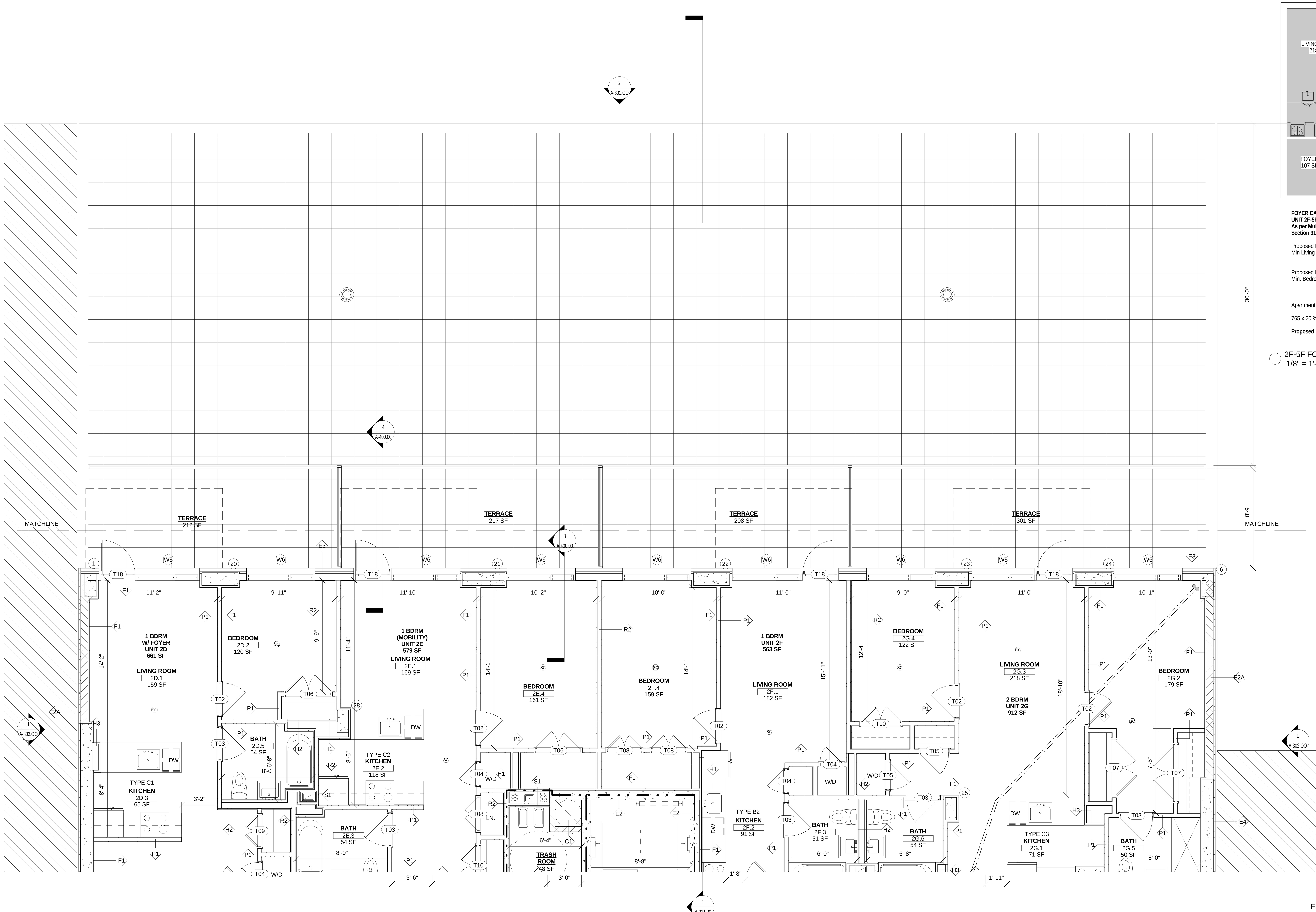
KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
450 Lexington Avenue
31st Floor
New York, NY 10017

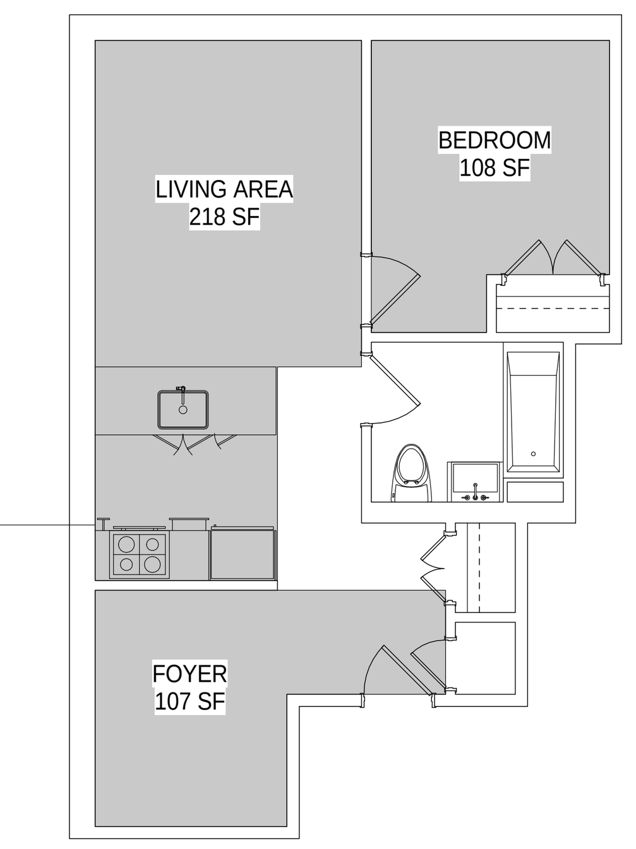
STRUCTURAL ENGINEER:
GACE
31 W 27th St #6
New York, NY 10001

MEP ENGINEER:
Guth DeConzo Con. Eng.
242 W. 30th St
New York, NY 10001

CODE CONSULTANT:



1 Second Floor Plan
1/4" = 1'-0"



FOYER CALCULATION
UNIT 2F-5F
As per Multiple Dwelling Law
Section 31.(5)

Proposed Living Room = 218sf
Min Living room area= 132 x 20%=26
132+26 = 158
158 < 218 Complies
Proposed Bedroom = 108sf
Min. Bedroom = 80 x 20% = 16
80+16 =96
96 < 108 sf Complies

Apartment Total sf = 661 SF

765 x 20 %= 132 sf

Proposed Foyer = 107 sf < 132 sf Complies

2F-5F FOYER CALCULATIONS
1/8" = 1'-0"

SYMBOL	DESCRIPTION
SD	SMOKE DETECTOR
SD R	SMOKE DETECTOR W/ ELEVATOR RECALL
CO	CARBON MONOXIDE DETECTOR
H	HEAT DETECTOR
	EMERGENCY EXIT
	SECURITY CAMERA
1'-0"	ELEVATION CHANGE

FIRE RATINGS

2HR RATED PARTITION

3HR RATED PARTITION

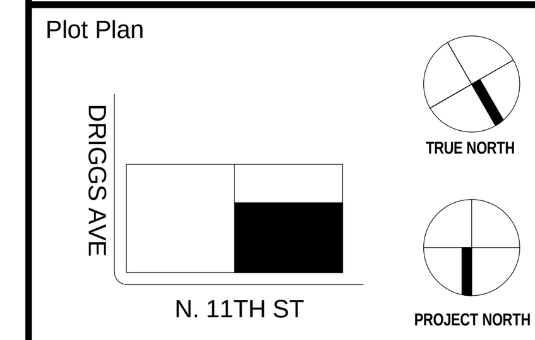
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
2ND FLOOR PLAN - SOUTH

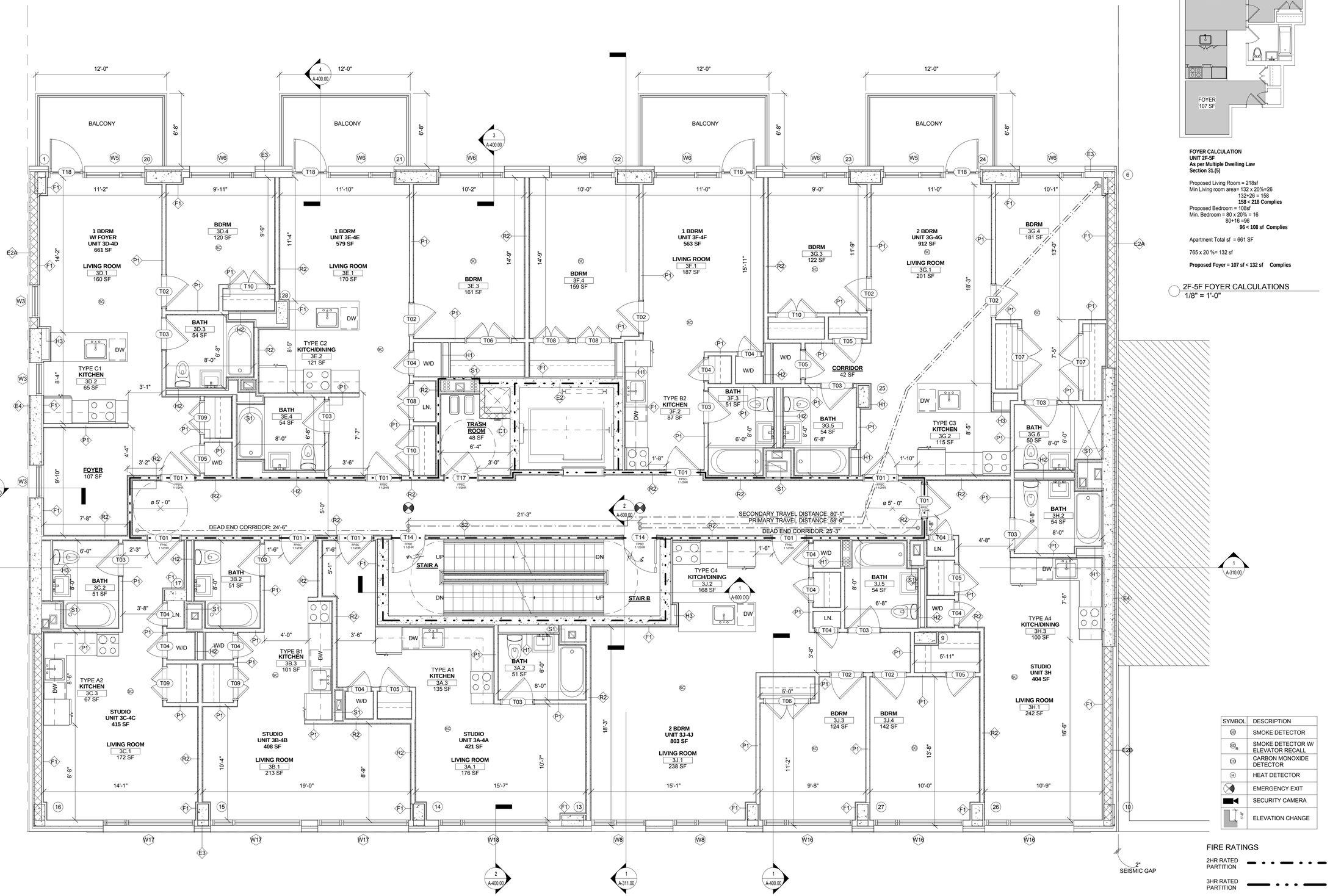
Sign & Seal

Drawing No.
A-102S.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	16 OF 36

DOB NUMBER

PROGRESS SET: 10/14/2014 12:10:51 PM



1 TYPICAL 3RD-4TH FLOOR
1/4" = 1'-0"

FOYER CALCULATION
UNIT 2F-5F
As per Multiple Dwelling Law Section 31.(5)

Proposed Living Room = 218sf
Min Living room area= 132 x 20%=26
132+26 = 158
158 < 218 Complies
Proposed Bedroom = 108sf
Min. Bedroom = 80 x 20% = 16
80+16 =96
96 < 108 sf Complies

Apartment Total sf = 661 SF

765 x 20 %= 132 sf

Proposed Foyer = 107 sf < 132 sf Complies

2F-5F FOYER CALCULATIONS
1/8" = 1'-0"

SYMBOL	DESCRIPTION
SD	SMOKE DETECTOR
SD/R	SMOKE DETECTOR W/ ELEVATOR RECALL
CD	CARBON MONOXIDE DETECTOR
H	HEAT DETECTOR
	EMERGENCY EXIT
	SECURITY CAMERA
1'-0"	ELEVATION CHANGE

FIRE RATINGS
2HR RATED PARTITION
3HR RATED PARTITION

PROGRESS SET: 10/13/2014 6:01:53 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
317 Madison Avenue
31st Floor
New York, NY 10017

STRUCTURAL ENGINEER:
GAUZ
41 Union Sq St #6
New York, NY 10001

MEP ENGINEER:
Gurt Dezonno Con. Eng.
41 Union Sq St
New York, NY 10001

CODE CONSULTANT:

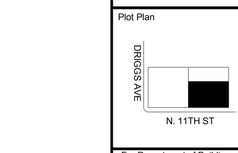
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

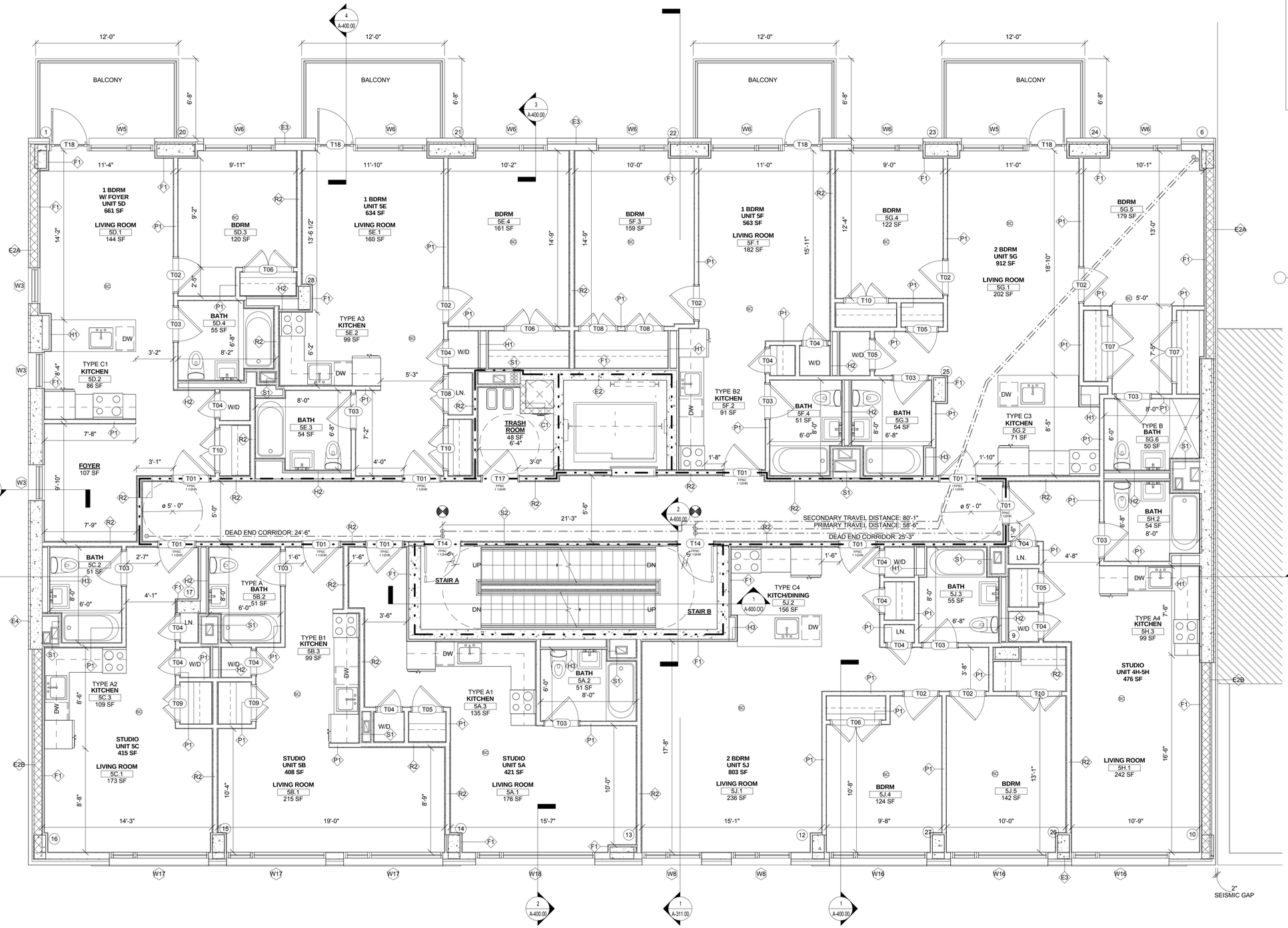
Drawing Title
3RD-4TH FLOOR PLAN

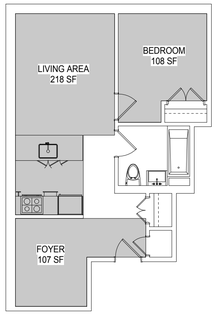
Sign & Seal
REGISTERED ARCHITECT
JONATHAN M. KUTNICKI
019854
STATE OF NEW YORK

Drawing No.
A-103.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	17 OF 36

DOB NUMBER





FOYER CALCULATION
UNIT 2F-5F
As per Multiple Dwelling Law Section 31.(5)

Proposed Living Room = 218sf
Min Living room area= 132 x 20%=26
132+26 = 158
158 < 218 Complies
Proposed Bedroom = 108sf
Min. Bedroom = 80 x 20% = 16
80+16 =96
96 < 108 sf Complies

Apartment Total sf = 661 SF

765 x 20 %= 132 sf

Proposed Foyer = 107 sf < 132 sf Complies

2F-5F FOYER CALCULATIONS
1/8" = 1'-0"

SYMBOL	DESCRIPTION
SD	SMOKE DETECTOR
SD/CO	SMOKE DETECTOR W/ ELEVATOR RECALL
CO	CARBON MONOXIDE DETECTOR
H	HEAT DETECTOR
	EMERGENCY EXIT
	SECURITY CAMERA
1'-0"	ELEVATION CHANGE

FIRE RATINGS
2HR RATED PARTITION
3HR RATED PARTITION

1 FIFTH FLOOR PLAN
1/4" = 1'-0"

PROGRESS SET: 10/13/2014 6:02:02 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
317 Madison Avenue
31st Floor
New York, NY 10017

STRUCTURAL ENGINEER:
GAUZE
41 E 28th St #6
New York, NY 10001

MEP ENGINEER:
Gurt Dezonno Con. Eng.
41 E 28th St #6
New York, NY 10001

CODE CONSULTANT:

Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan

For Department of Buildings Use

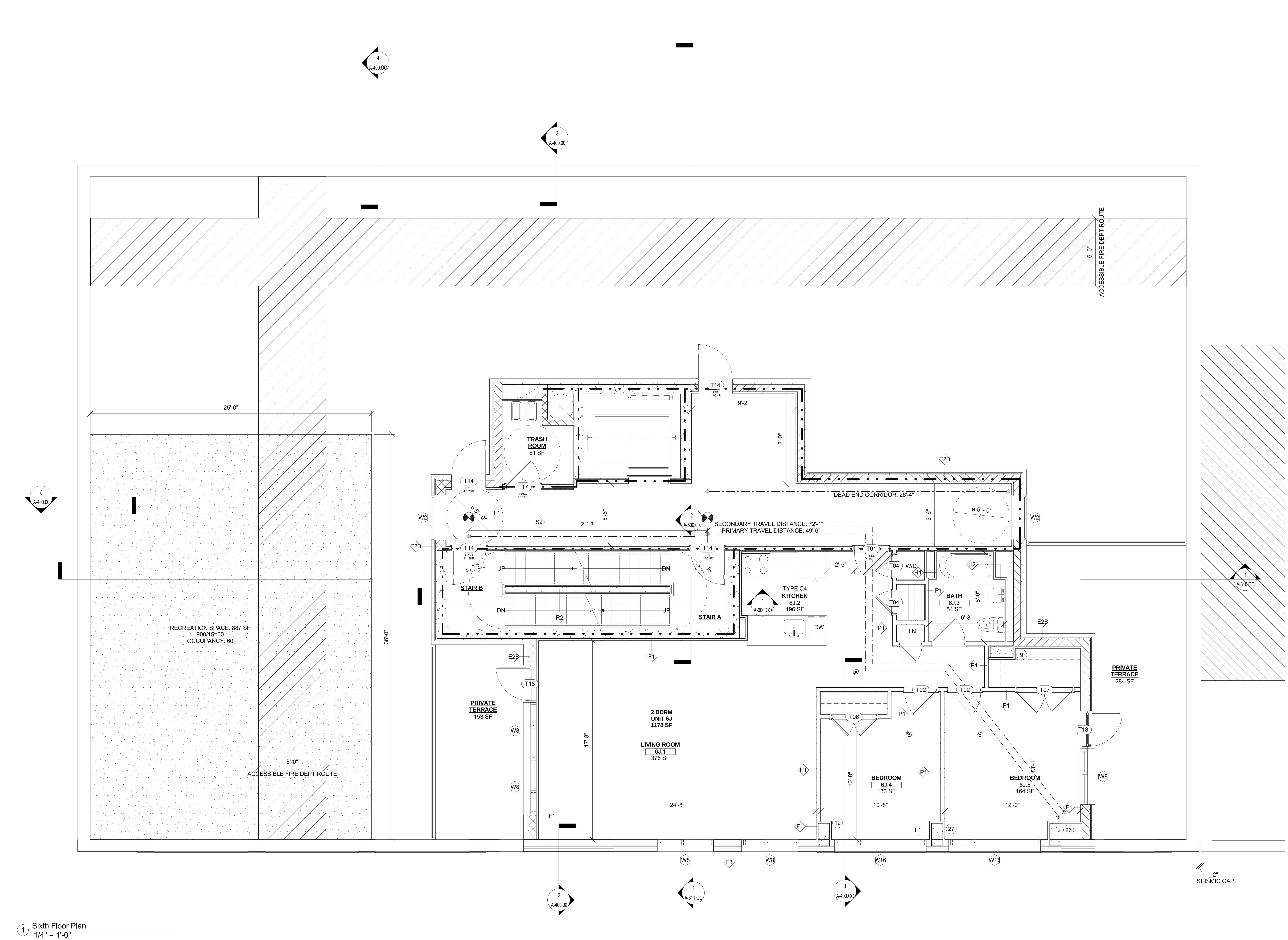
Drawing Title
5TH FLOOR PLAN

Sign & Seal

Drawing No.
A-104.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	18 OF 36

DOB NUMBER



SYMBOL	DESCRIPTION
SD	SMOKE DETECTOR
SD R	SMOKE DETECTOR W/ ELEVATOR RECALL
CO	CARBON MONOXIDE DETECTOR
H	HEAT DETECTOR
	EMERGENCY EXIT
	SECURITY CAMERA
	ELEVATION CHANGE

FIRE RATINGS

2HR RATED PARTITION

3HR RATED PARTITION

1 Sixth Floor Plan
1/4" = 1'-0"

PROGRESS SET: 10/13/2014 6:02:09 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan

DRIGGS AVE

N. 11TH ST

TRUE NORTH

PROJECT NORTH

For Department of Buildings Use

Drawing Title

6TH FLOOR PLAN

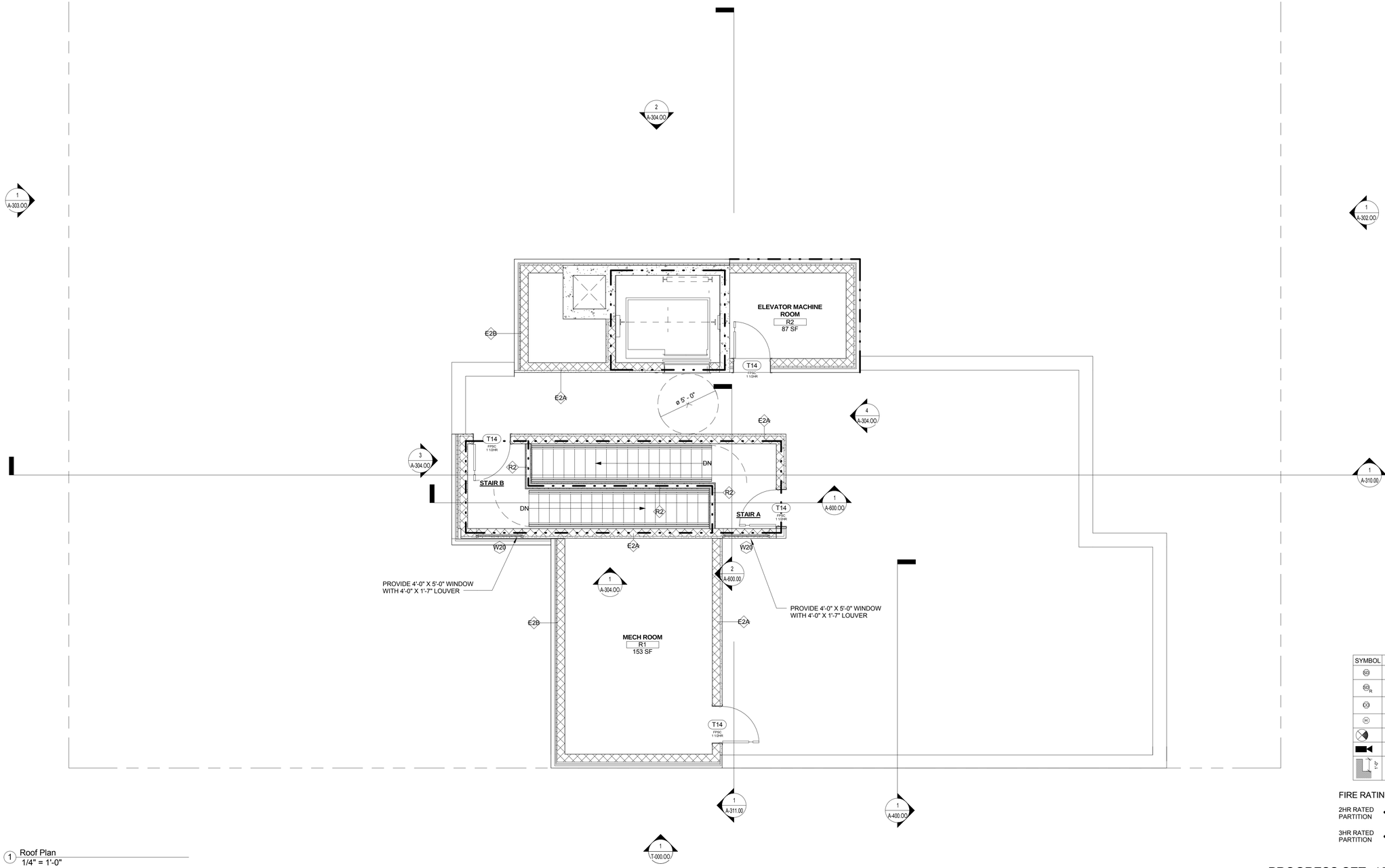
Sign & Seal

Drawing No.

A-105.OO

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	**Checked By**	**DOB Sheet**
As indicated	Checker	19 OF 36

DOB NUMBER



1 Roof Plan
1/4" = 1'-0"

SYMBOL	DESCRIPTION
SD	SMOKE DETECTOR
SD R	SMOKE DETECTOR W/ ELEVATOR RECALL
CO	CARBON MONOXIDE DETECTOR
H	HEAT DETECTOR
	EMERGENCY EXIT
	SECURITY CAMERA
A-1	ELEVATION CHANGE

FIRE RATINGS

2HR RATED PARTITION

3HR RATED PARTITION

PROGRESS SET: 10/13/2014 6:02:15 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
40 Exchange Place
31st Floor
New York, NY 10017

STRUCTURAL ENGINEER:
GAUZ
211 W 20th St #6
New York, NY 10001

MEP ENGINEER:
Gurt Dezonzo Con. Eng.
45 E 20th St
New York, NY 10001

CODE CONSULTANT:

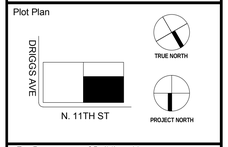
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

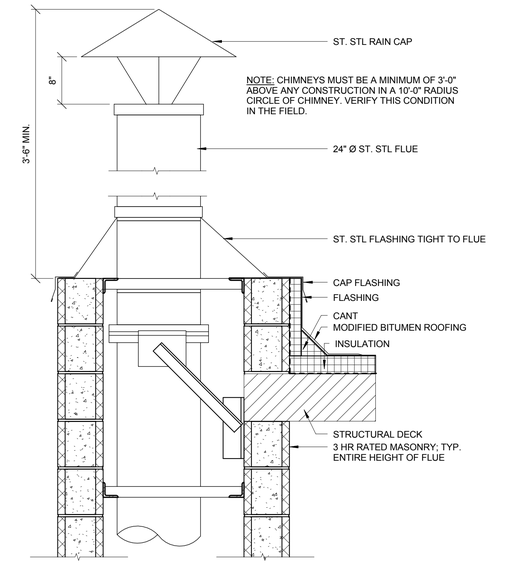
Drawing Title
ROOF PLAN

Sign & Seal

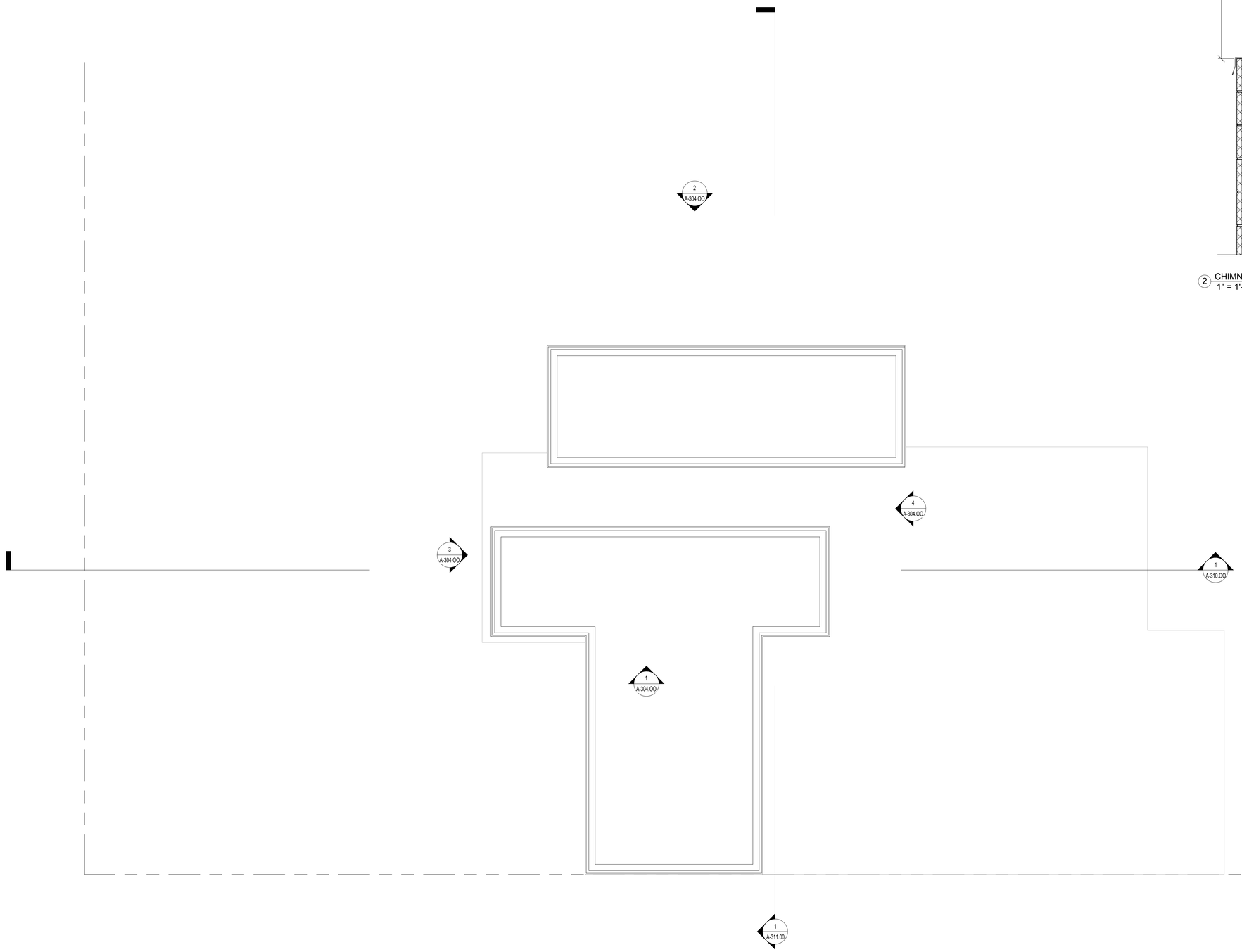
Drawing No.
A-107.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	20 OF 36

DOB NUMBER



2 CHIMNEY DETAIL
1" = 1'-0"



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

PROGRESS SET: 10/13/2014 6:02:21 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
434 Broadway Suite
3 1st Floor
New York, NY 10013

STRUCTURAL ENGINEER:
GAUZ
41 East 11th St #6
New York, NY 10001

MEP ENGINEER:
Gurt Dezonzo Con. Eng.
41 East 11th St
New York, NY 10001

CODE CONSULTANT:

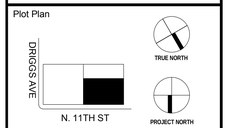
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
BULKHEAD PLAN

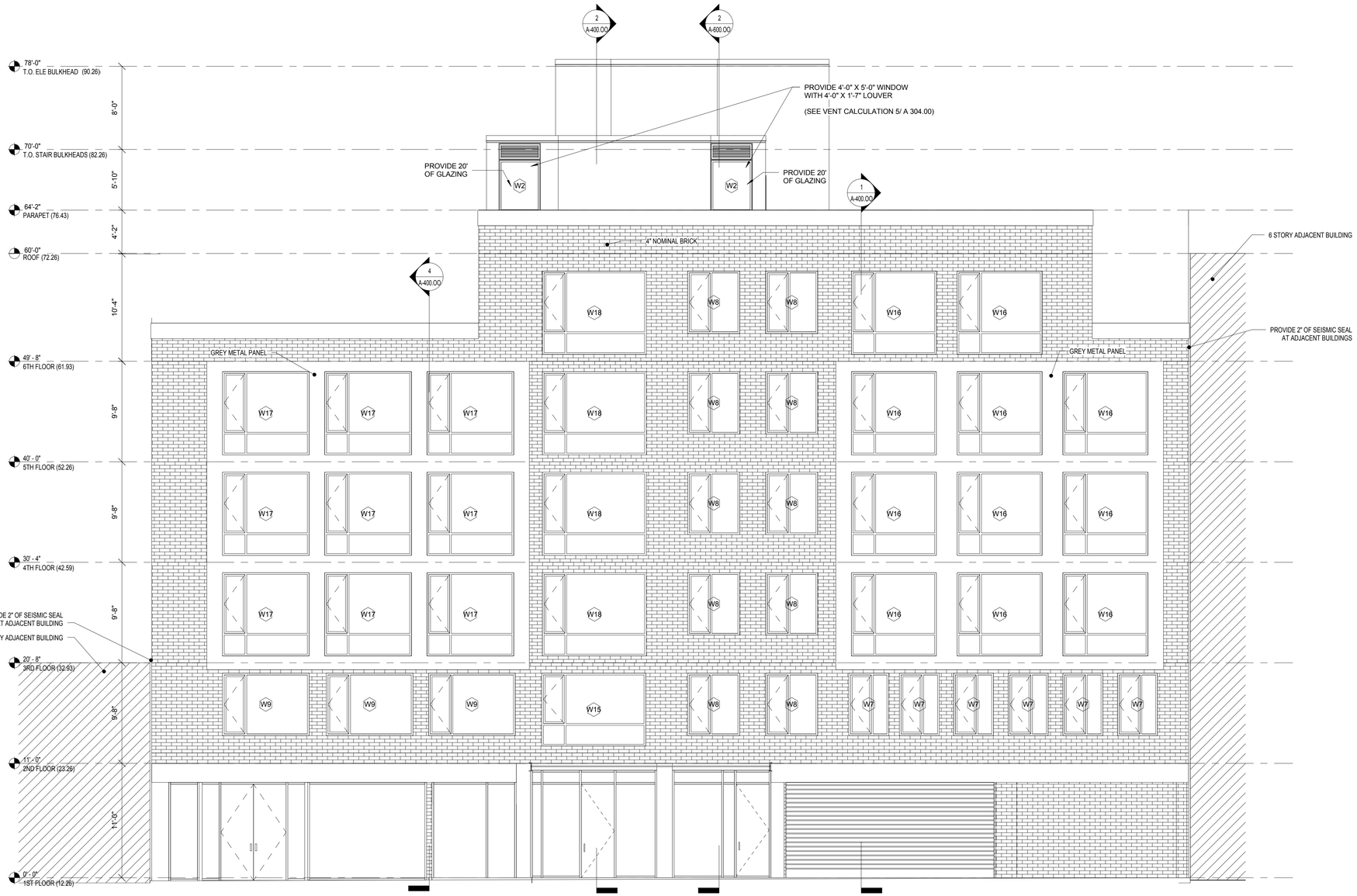
Sign & Seal
REGISTERED ARCHITECT
KUTNICKI BERNSTEIN
19854
STATE OF NEW YORK

Drawing No.
A-108.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049

Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	21 OF 36

DOB NUMBER



1 North Elevation
3/16" = 1'-0"

PROGRESS SET: 10/13/2014 6:02:30 PM

Project

174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
434 Broadway Penthouse
31st Floor
New York, NY 10013

STRUCTURAL ENGINEER:
GAUZ
41 E 11th St #6
New York, NY 10001

MEP ENGINEER:
Gurt DeGroot Con. Eng.
45 W 36th St
New York, NY 10001

CODE CONSULTANT:

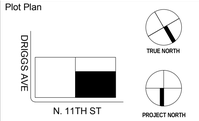
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
NORTH ELEVATION

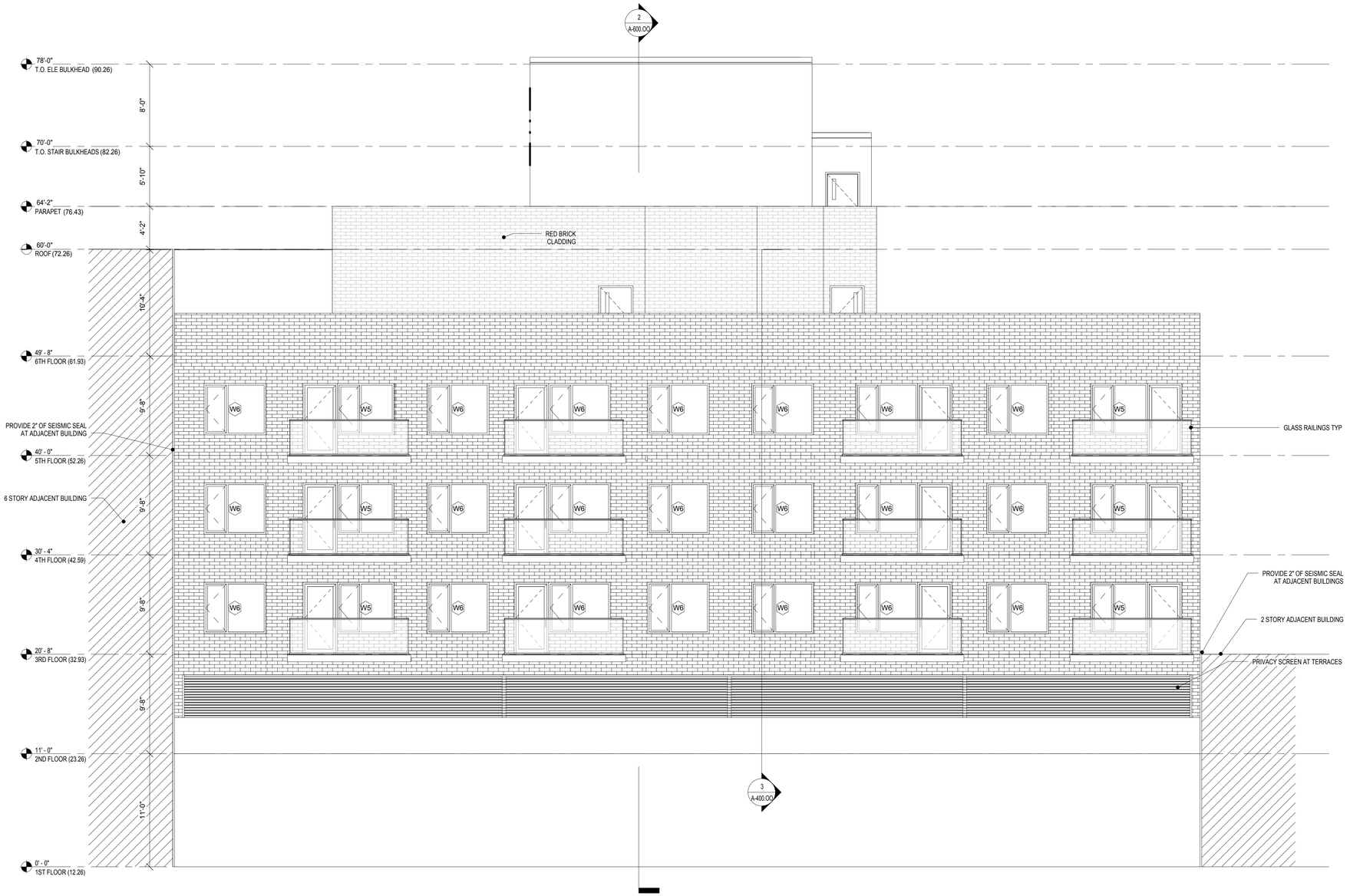
Sign & Seal
REGISTERED ARCHITECT
STATE OF NEW YORK

Drawing No.
A-300.00

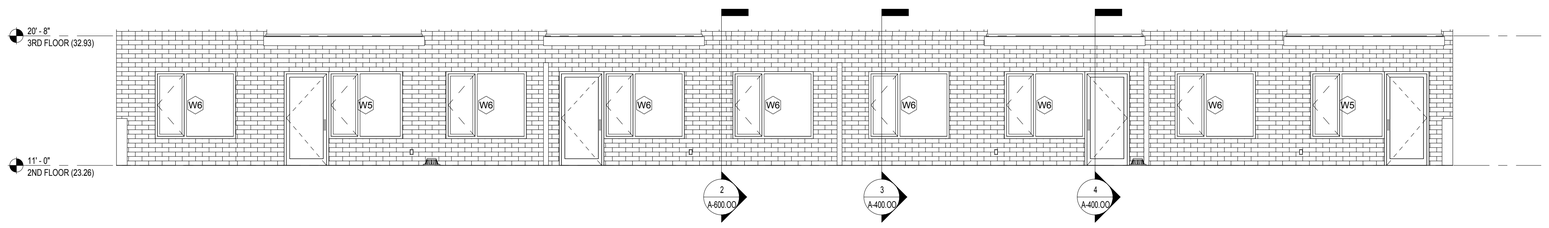
Date	Drawn By	Job No.
07/16/14	Author	2014-049

Sheet Scale	Checked By	DOB Sheet
3/16" = 1'-0"	Checker	22 OF 36

DOB NUMBER



2 South Elevation
3/16" = 1'-0"



1 Callout of South Elevation
3/16" = 1'-0"

PROGRESS SET: 10/13/2014 6:02:39 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
434 Broadway Penthouse
3'rd Floor
New York, NY 10013

STRUCTURAL ENGINEER:
GAUZ
41 E 11th St #6
New York, NY 10001

MEP ENGINEER:
Gurt DeDonno Con. Eng.
41 E 11th St #6
New York, NY 10001

CODE CONSULTANT:

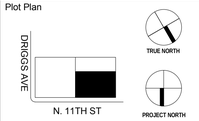
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

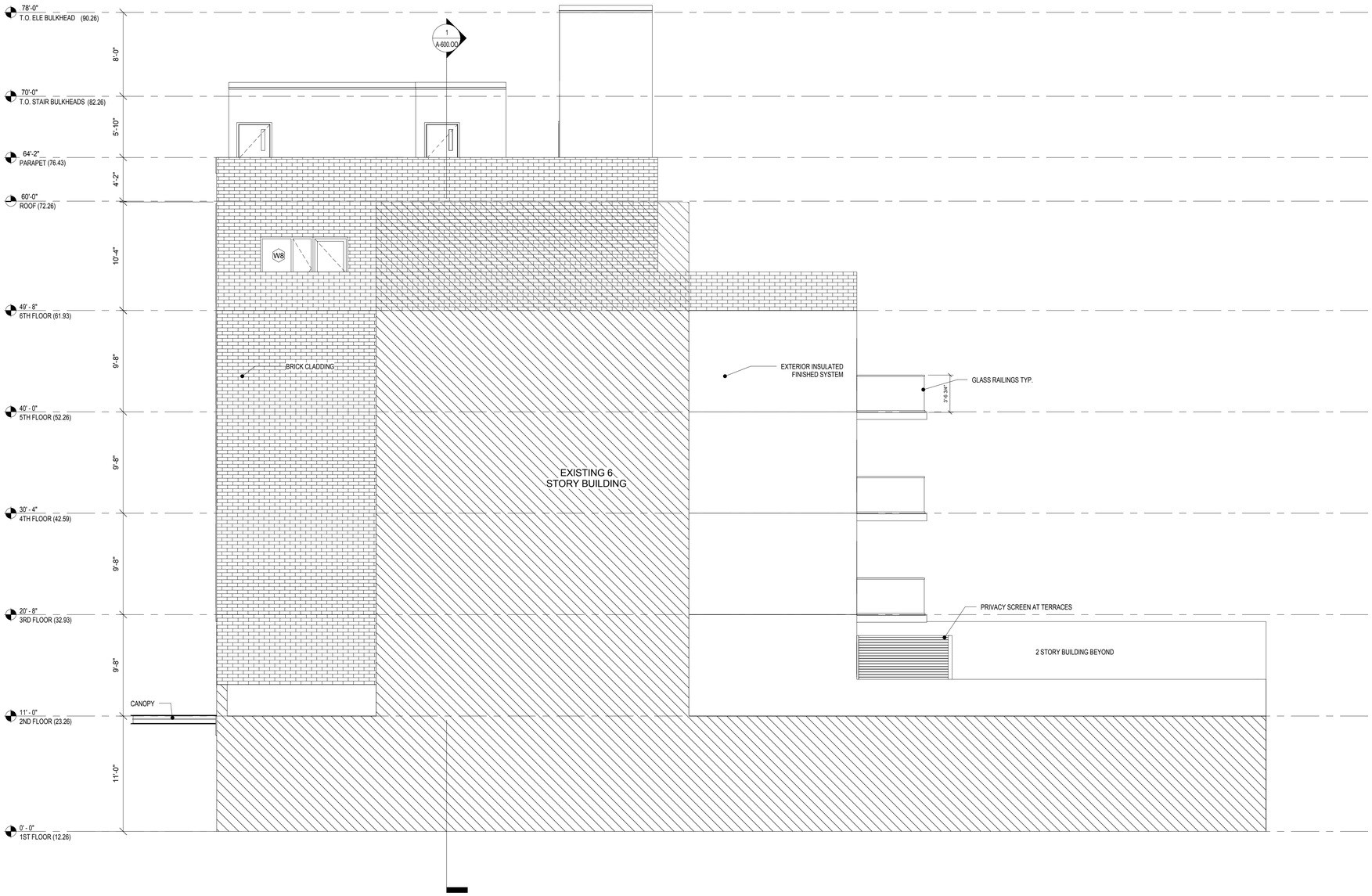
Drawing Title
SOUTH ELEVATION

Sign & Seal
REGISTERED ARCHITECT
GUILLERMO F. KUTNICKI
084854
STATE OF NEW YORK

Drawing No.
A-301.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	**Checked By**	**DOB Sheet**
3/16" = 1'-0"	Checker	23 OF 36

DOB NUMBER



1 West Elevation
3/16" = 1'-0"

PROGRESS SET: 10/13/2014 6:02:48 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
434 Broadway Penthouse
31st Floor
New York, NY 10017

STRUCTURAL ENGINEER:
GAUZ
(address illegible)
New York, NY 10001

MEP ENGINEER:
Gurt DeDonno Con. Eng.
(address illegible)
New York, NY 10001

CODE CONSULTANT:

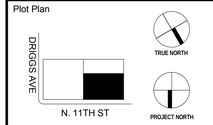
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
WEST ELEVATION

Sign & Seal
REGISTERED ARCHITECT
JONATHAN BERNSTEIN
STATE OF NEW YORK
19854

Drawing No.
A-302.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049

Sheet Scale	Checked By	DOB Sheet
3/16" = 1'-0"	Checker	24 OF 36

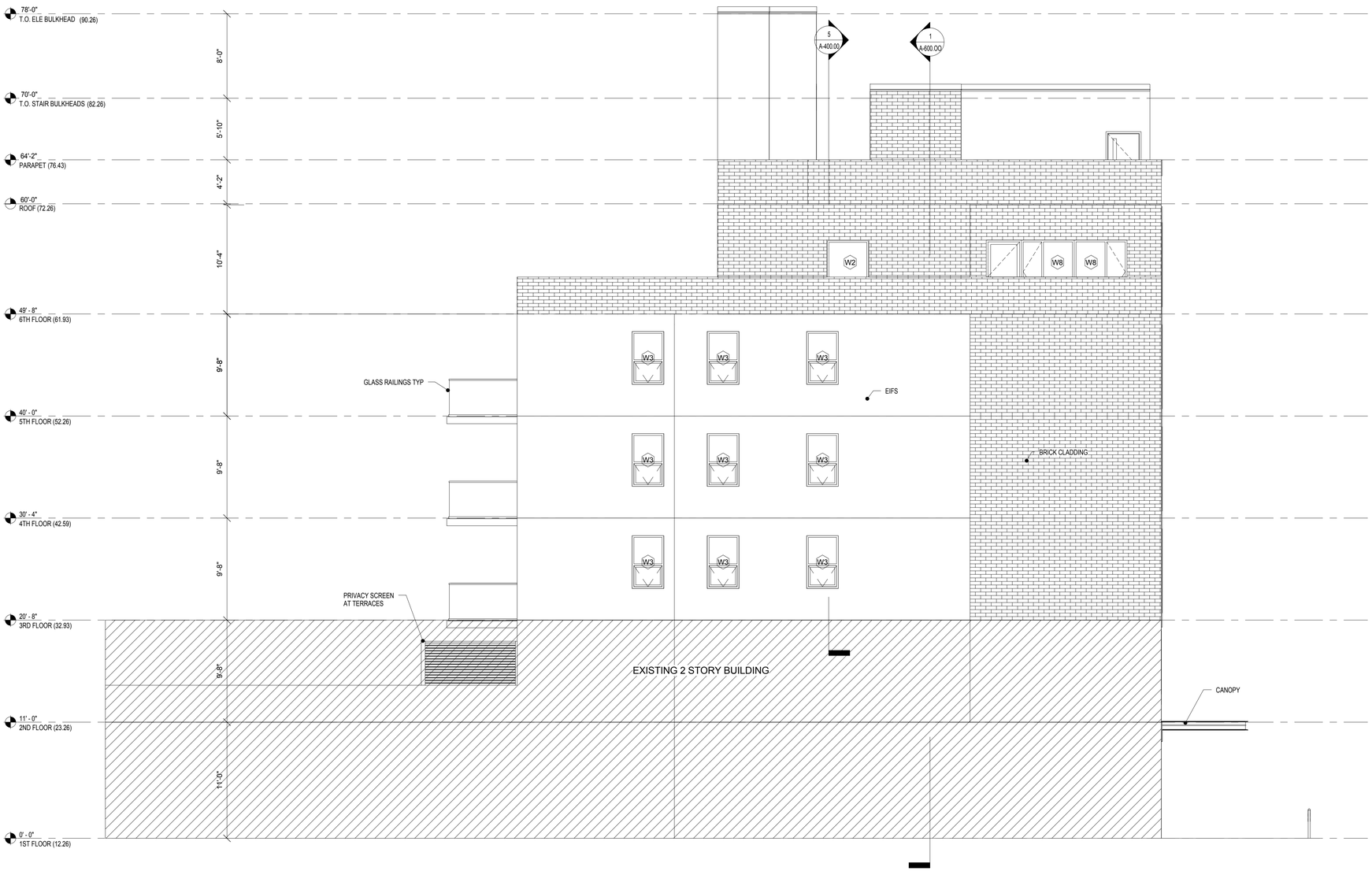
DOB NUMBER

BC TABLE 704.8

WINDOW TYPE W3 = 15 SF

3-5TH FLOOR ELEVATION = 9'-8" x 61'-0" = 589.67 SF
ALLOWABLE OPENINGS = 10% OF 589.67 SF = 58.9 SF
AREA OF OPENINGS = 15 SF x 3 = 45 SF

58.9 SF > 45 SF **COMPLIES**



1 East Elevation
3/16" = 1'-0"

PROGRESS SET: 10/13/2014 6:02:57 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
434 Broadway Penthouse
31st Floor
New York, NY 10017

STRUCTURAL ENGINEER:
GAUZ
41 E 11th St #6
New York, NY 10001

MEP ENGINEER:
Gurt Dezonno Con. Eng.
45 E 20th St
New York, NY 10001

CODE CONSULTANT:

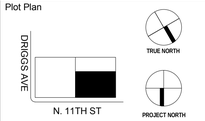
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
EAST ELEVATION

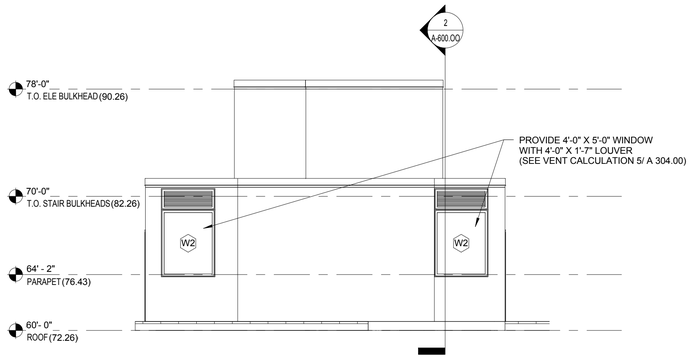
Sign & Seal
REGISTERED ARCHITECT
RICHARD KUTNICKI
019854
STATE OF NEW YORK

Drawing No.
A-303.00

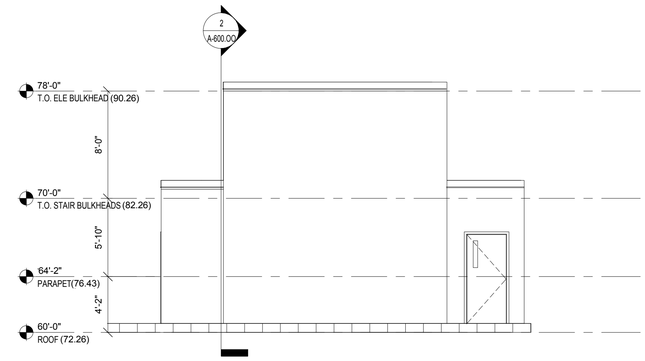
Date	Drawn By	Job No.
07/16/14	Author	2014-049

Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	25 OF 36

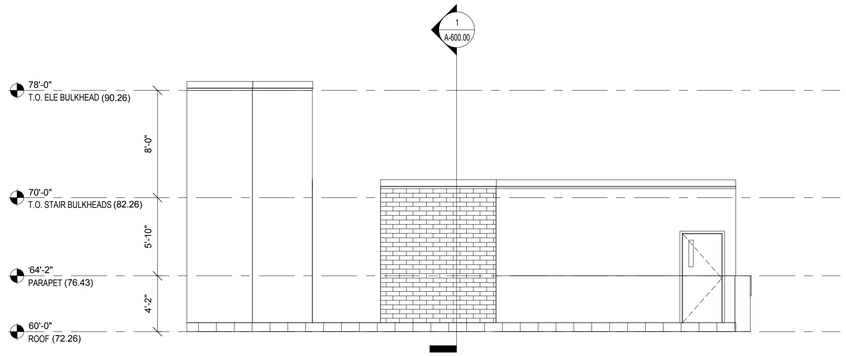
DOB NUMBER



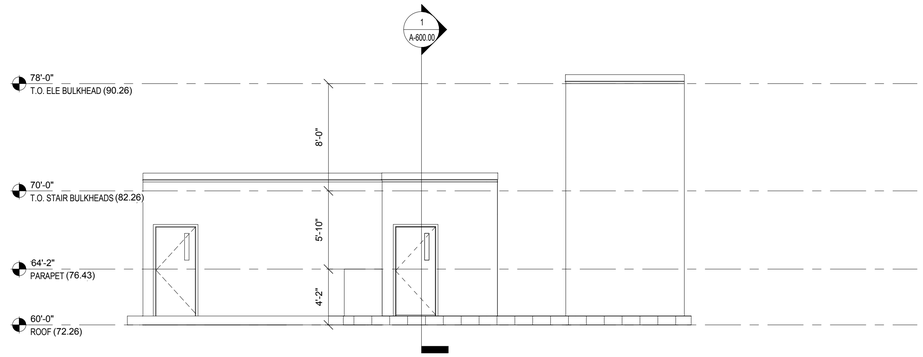
1 North Bulkhead Elevation
3/16" = 1'-0"



2 South Bulkhead Elevation
3/16" = 1'-0"



3 East Bulkhead Elevation
3/16" = 1'-0"



4 West Bulkhead Elevation
3/16" = 1'-0"

NOTES:

910.5.2 Smoke vent dimensions
The effective venting area shall not be less than 31/2 percent of the maximum shaft area at any floor, but in no event less than 72 square inches (0.05 m2). Of the total required vent area, at least one-third shall be clear opening to the exterior in the form of fixed louvers, ridge vents, or hooded or gooseknecked openings.

The max. shaft area demensions on typical floor 7'-0" x 24'-11" = 174.4 SF

Required: 174.4 SF x 3.5% = 10.5 SF
Provide: 4' x 5' = 20 SF **Complies**

20SF x 0.33 = 7 SF of Louver required.
Provided Louver: 4' x 1.67' = 7 SF **Complies**

5 VENT CALCULATION
1/16" = 1'-0"

PROGRESS SET: 10/13/2014 6:03:04 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
434 Broadway Suite
31st Floor
New York, NY 10013

STRUCTURAL ENGINEER:
GAUZ
41 E 11th St #6
New York, NY 10001

MEP ENGINEER:
Gurt DeGroot Con. Eng.
45 W 36th St
New York, NY 10001

CODE CONSULTANT:

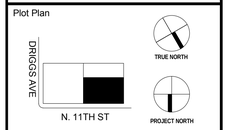
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
BULKHEAD ELEVATIONS

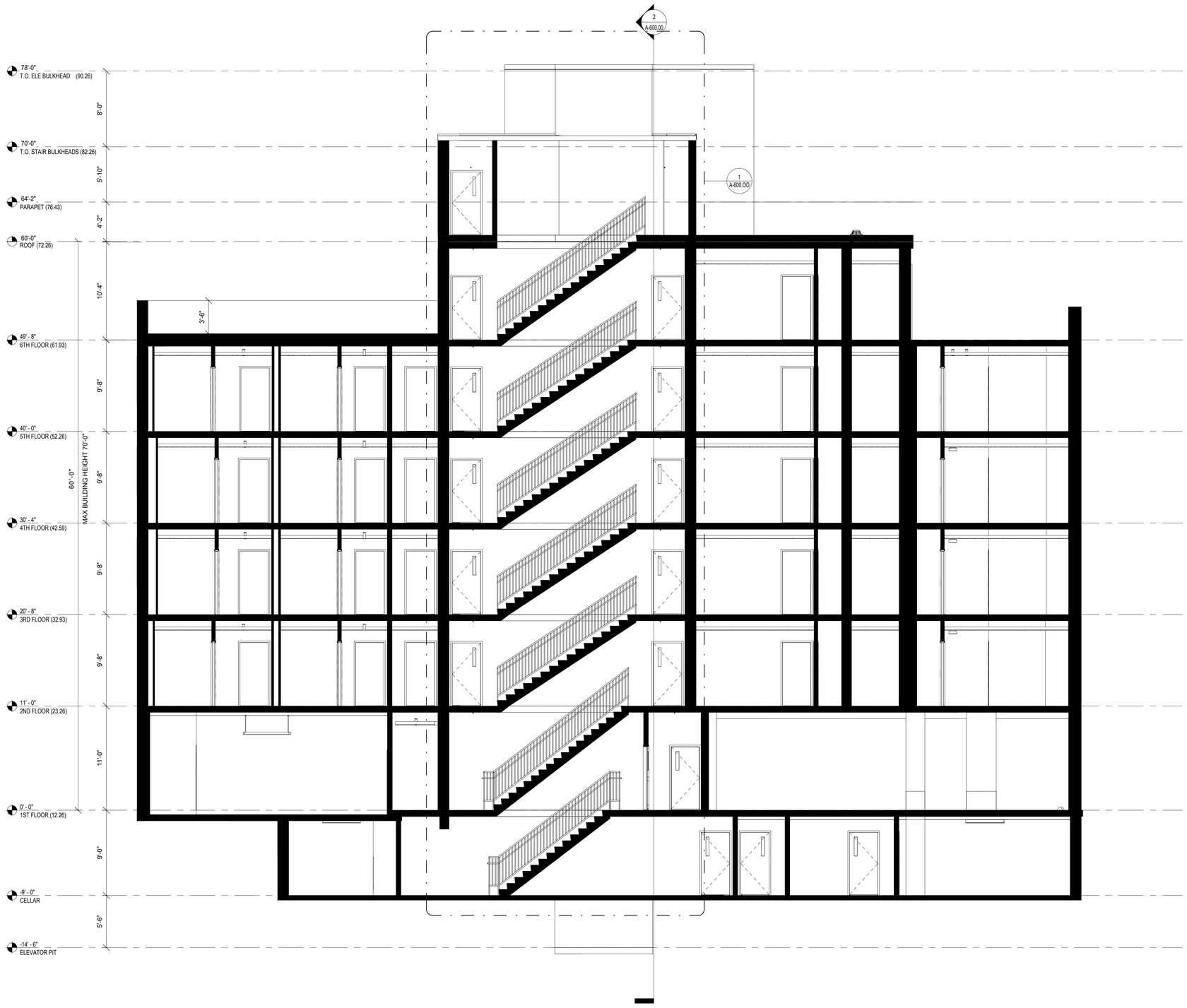
Sign & Seal
REGISTERED ARCHITECT
STATE OF NEW YORK
19854

Drawing No.
A-304.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049

Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	26 OF 36

DOB NUMBER



1 Longitudinal Section
3/16" = 1'-0"

PROGRESS SET: 10/13/2014 6:03:13 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
434 Broadway Penthouse
31st Floor
New York, NY 10013

STRUCTURAL ENGINEER:
GAUZ
41 E 11th St #6
New York, NY 10001

MEP ENGINEER:
Gurt Dezorzo Con. Eng.
41 E 11th St #6
New York, NY 10001

CODE CONSULTANT:

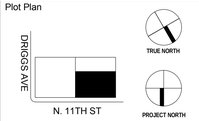
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

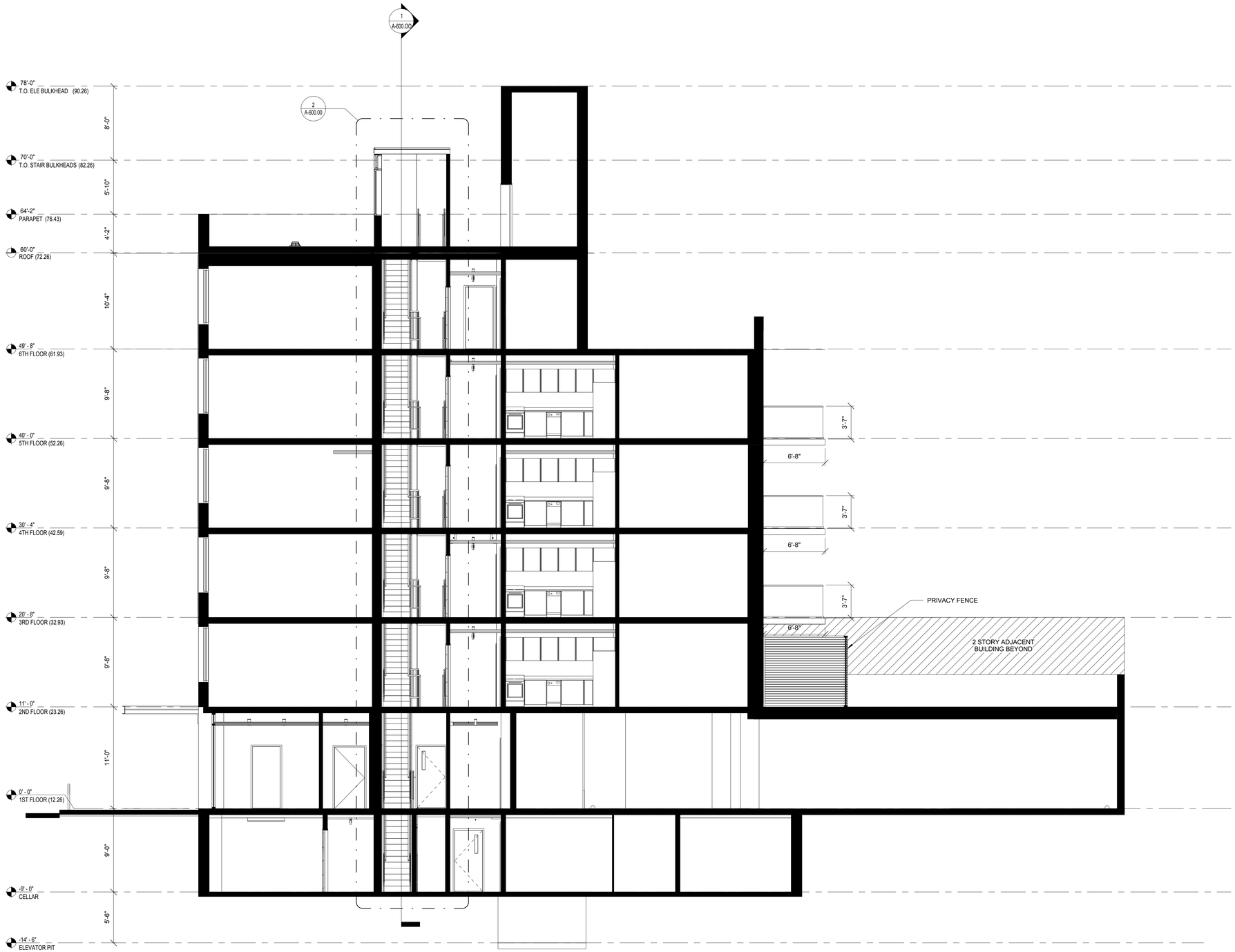
Drawing Title
LONGITUDINAL BUILDING SECTION

Sign & Seal
REGISTERED ARCHITECT
STATE OF NEW YORK
16854

Drawing No.
A-310.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
3/16" = 1'-0"	Checker	27 OF 36

DOB NUMBER



1 Transverse Section
3/16" = 1'-0"

PROGRESS SET: 10/13/2014 6:03:22 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
434 Broadway
31st Floor
New York, NY 10013

STRUCTURAL ENGINEER:
GAUZ
41 E 57th St #6
New York, NY 10001

MEP ENGINEER:
Gurt DeDonno Con. Eng.
41 E 57th St #6
New York, NY 10001

CODE CONSULTANT:

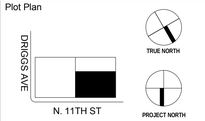
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
TRANSVERSE BUILDING SECTION

Sign & Seal
REGISTERED ARCHITECT
ROBERT J. KUTNICKI
STATE OF NEW YORK
16854

Drawing No.
A-311.00

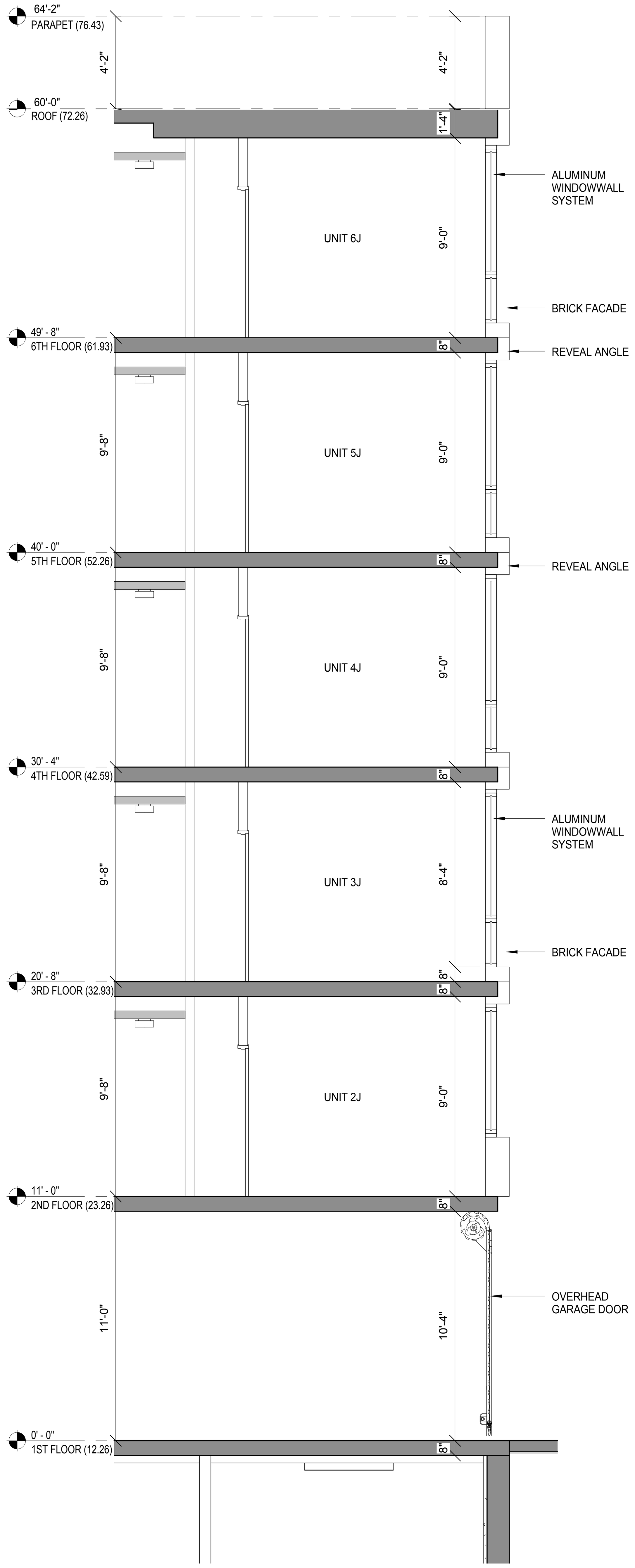
Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
3/16" = 1'-0"	Checker	28 OF 36

DOB NUMBER

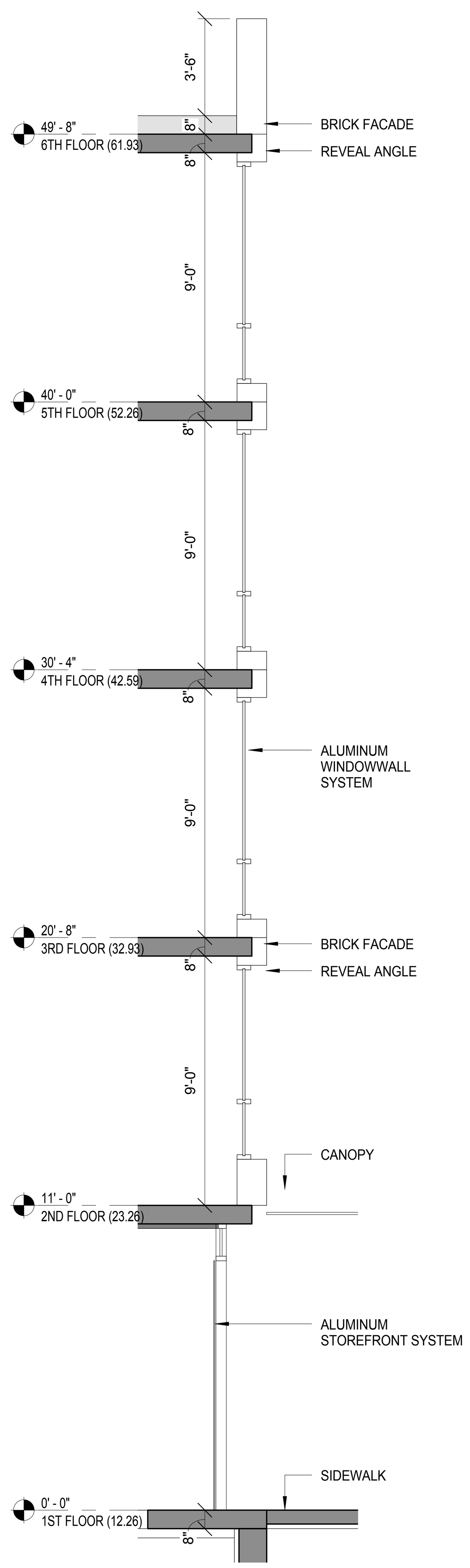
Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

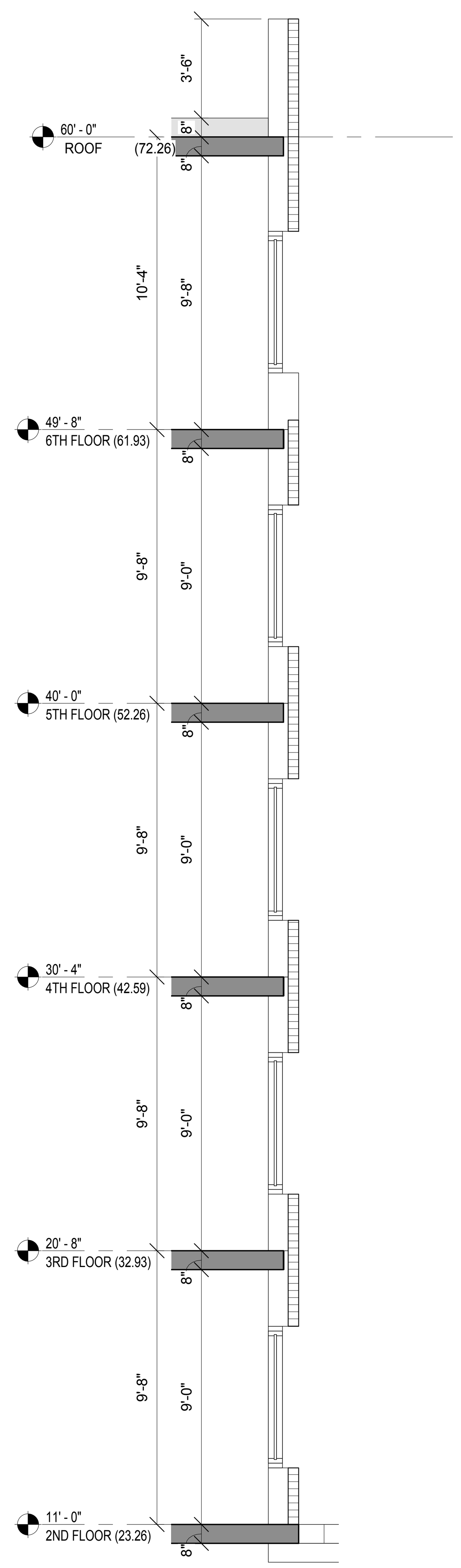
OWNER:
STRUCTURAL ENGINEER:
MEP ENGINEER:
CODE CONSULTANT:



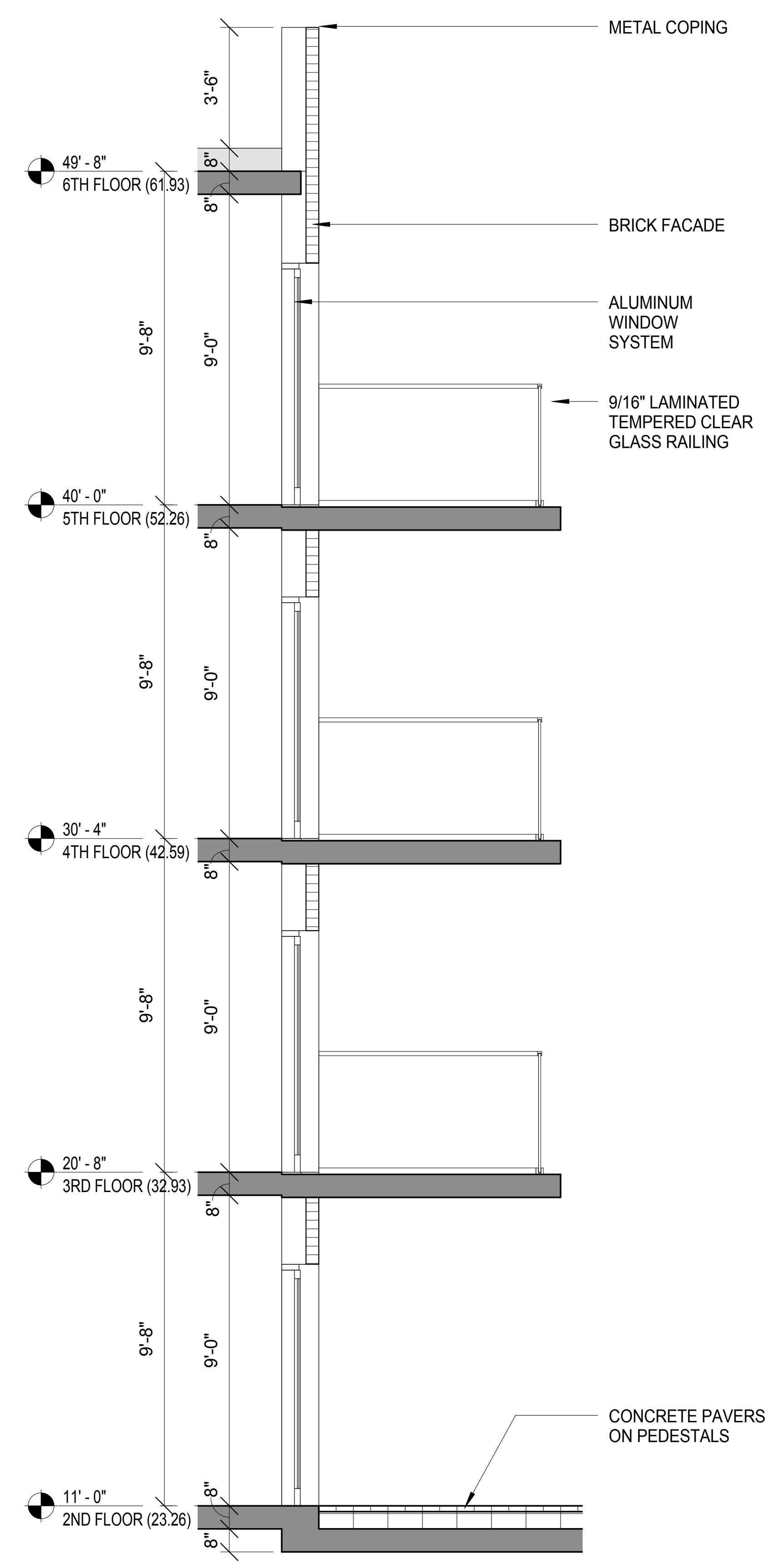
1 WALL SECTION 1 @ NORTH FACADE
1/4" = 1'-0"



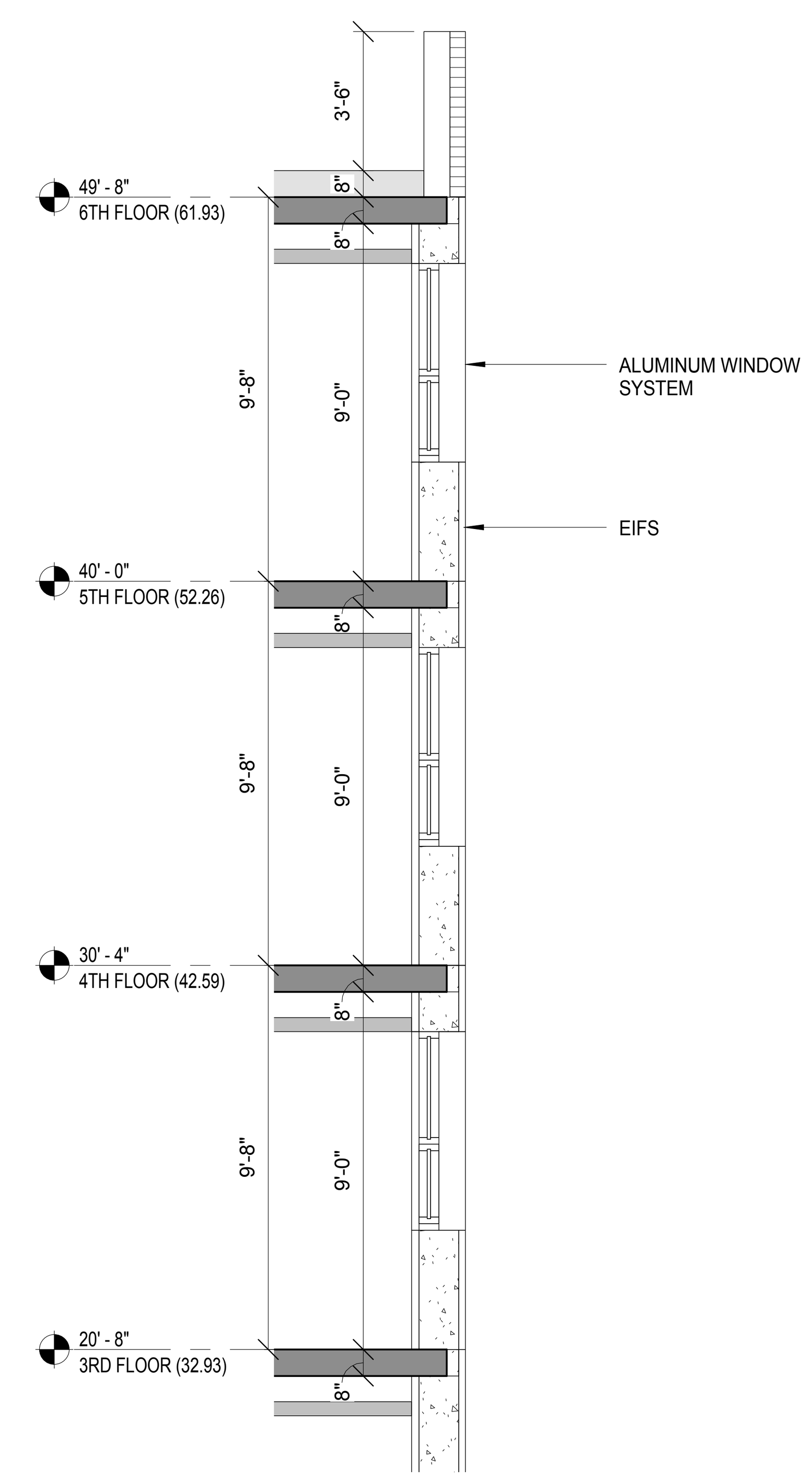
2 WALL SECTION 2 @ NORTH FACADE
1/4" = 1'-0"



3 WALL SECTION 3 @ SOUTH FACADE
1/4" = 1'-0"



4 WALL SECTION 4 @SOUTH FACADE
1/4" = 1'-0"



5 WALL SECTION 5 @WEST FACADE
1/4" = 1'-0"

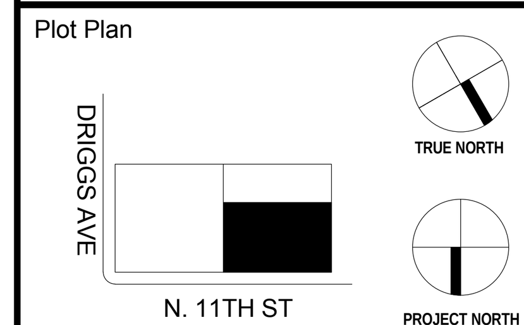
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
WALL SECTIONS

Sign & Seal

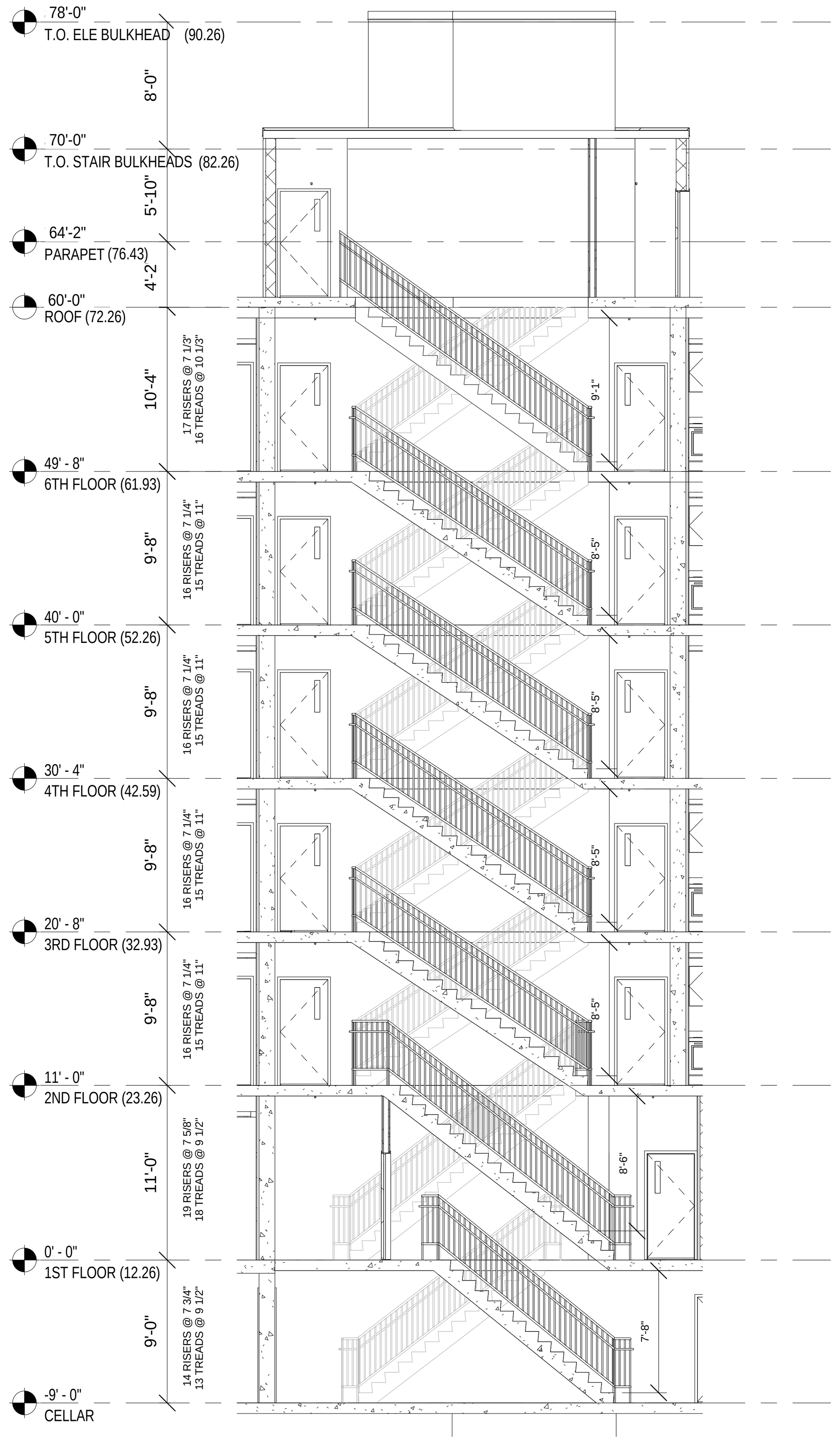
Drawing No. A-400.OO

Date	Drawn By	Job No.
07/16/14	Author	2014-049

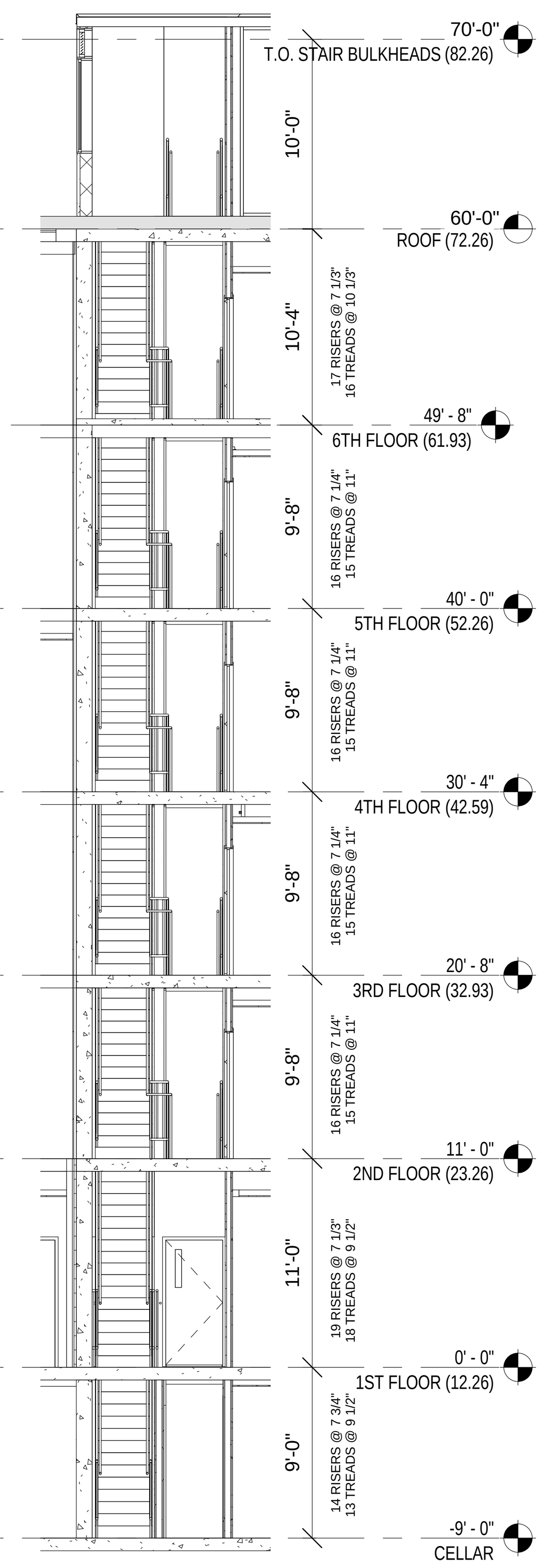
Sheet Scale	Checked By	DOB Sheet
1/4" = 1'-0"	Checker	29 OF 36

DOB NUMBER

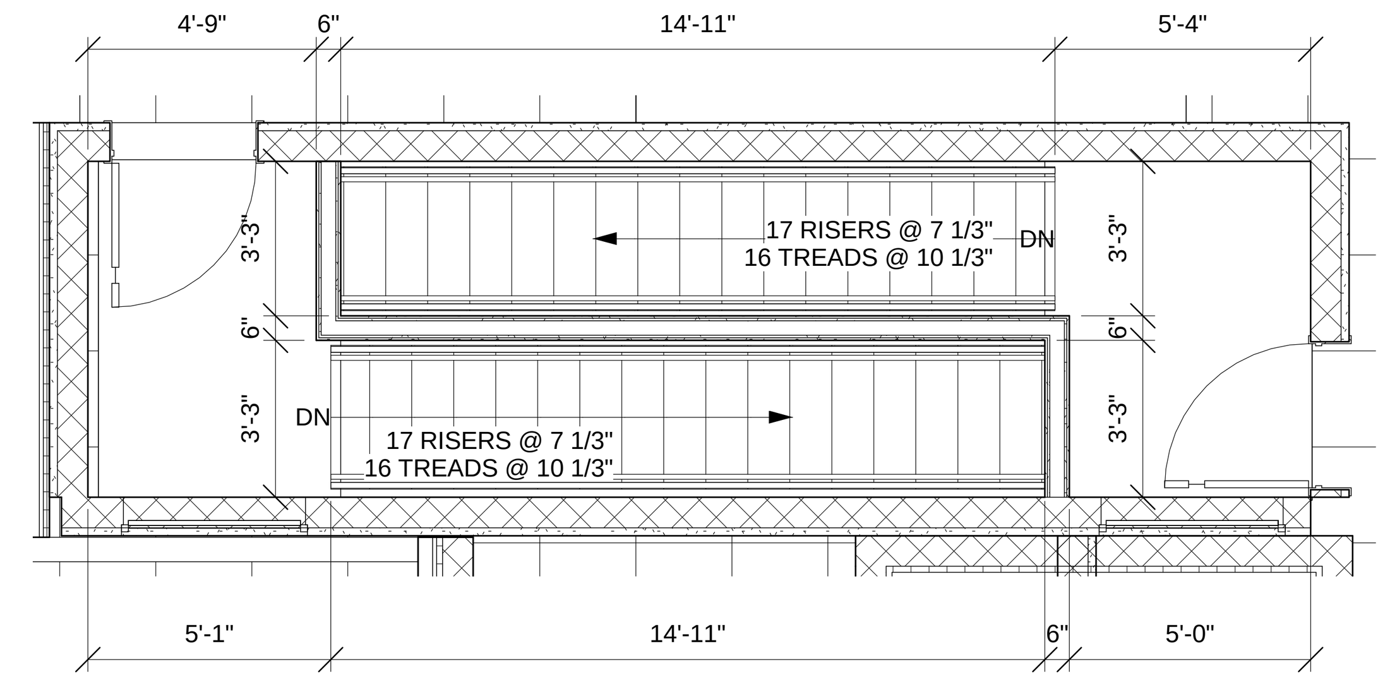
PROGRESS SET: 10/13/2014 6:03:29 PM



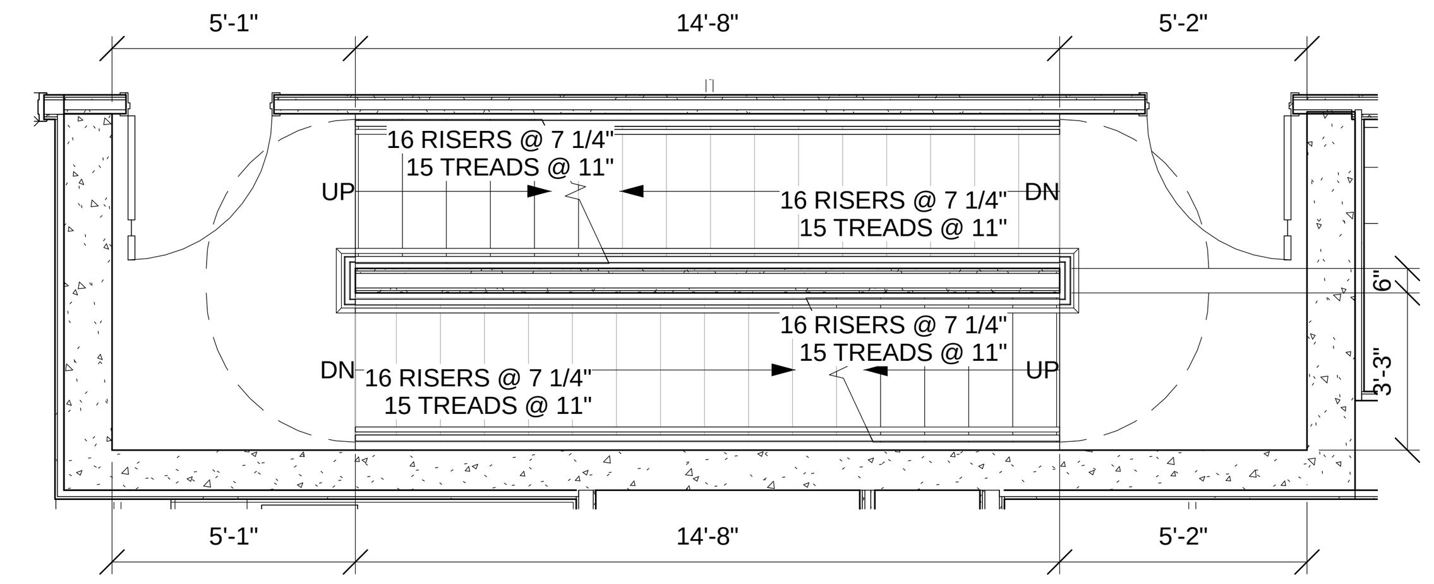
1 Stair Section A & B 1
1/8" = 1'-0"



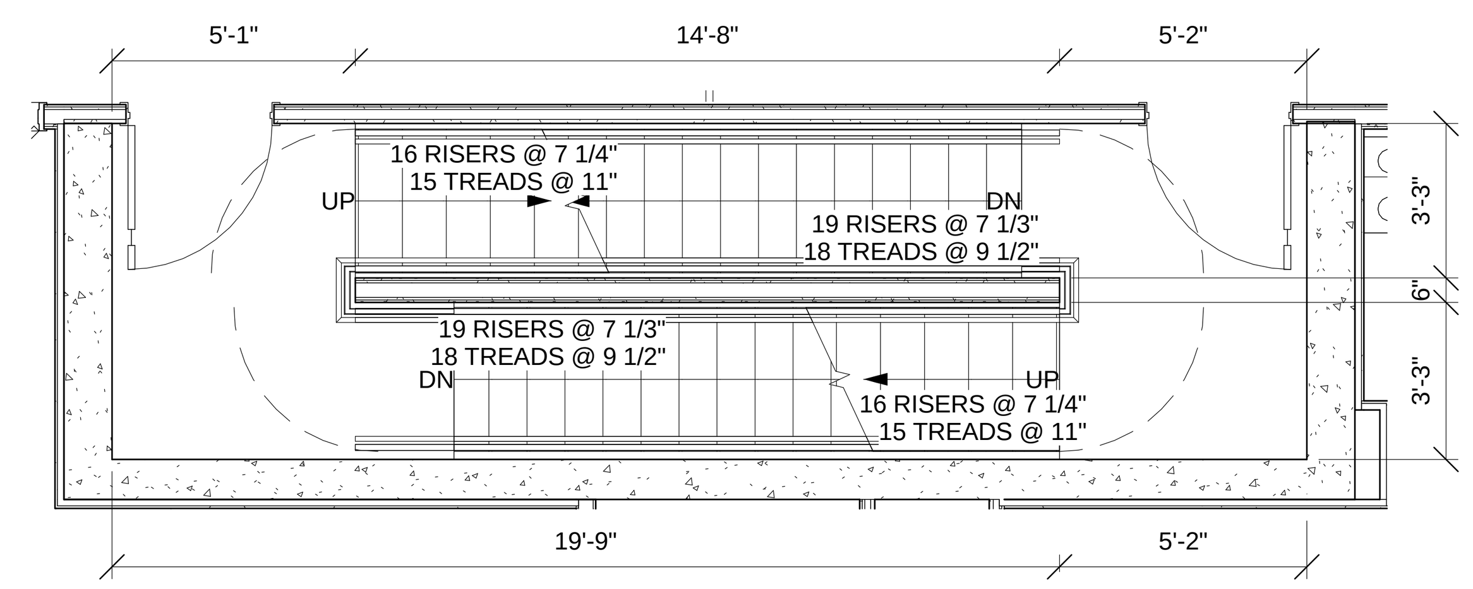
2 Stair Section A & B
1/8" = 1'-0"



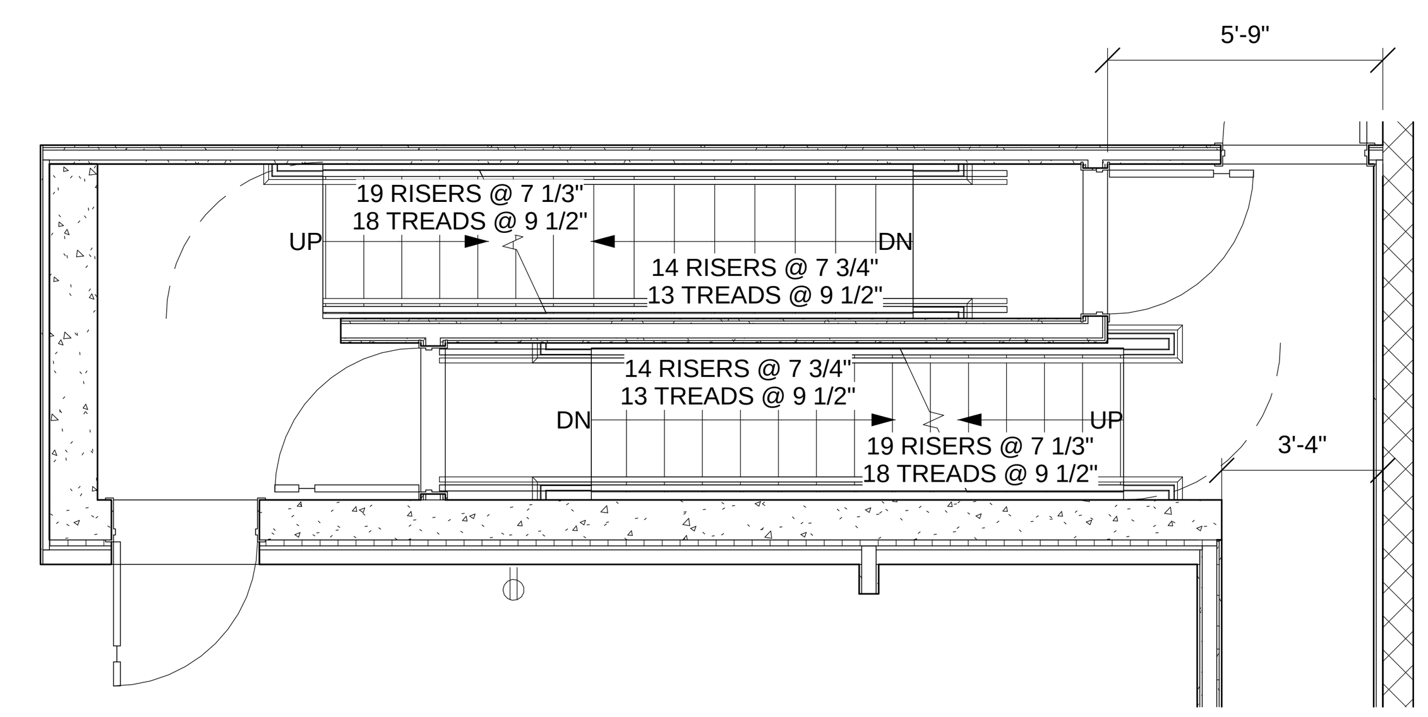
7 Stair Plan-Roof
1/4" = 1'-0"



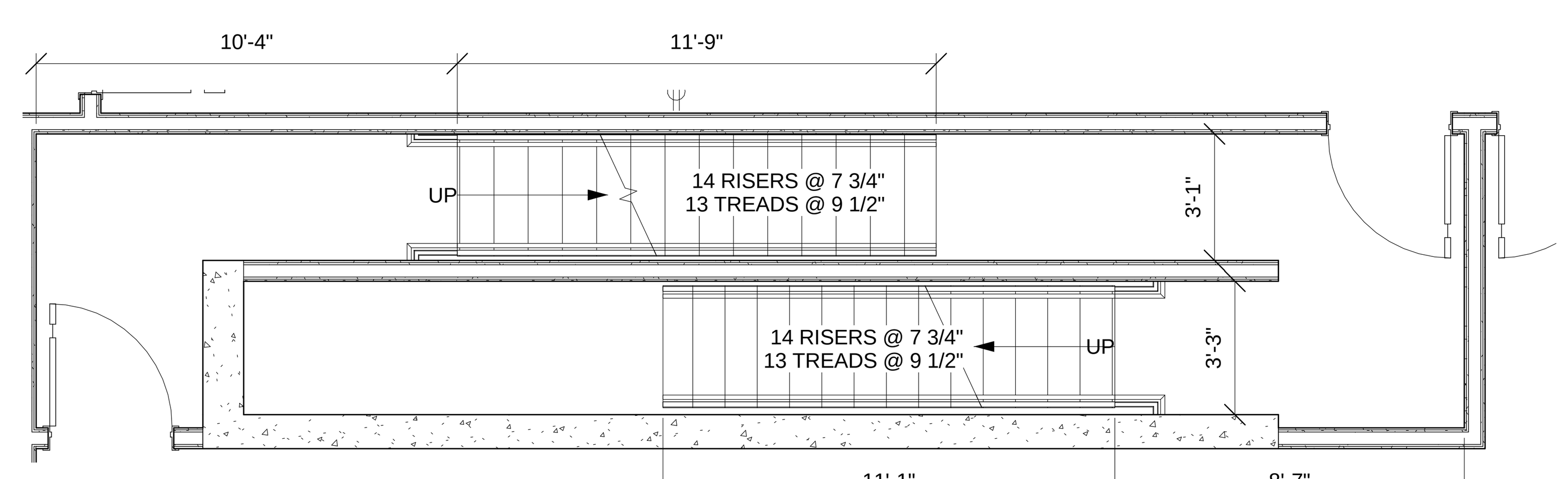
6 Stair Plan-Typ. 3rd-6th Floor
1/4" = 1'-0"



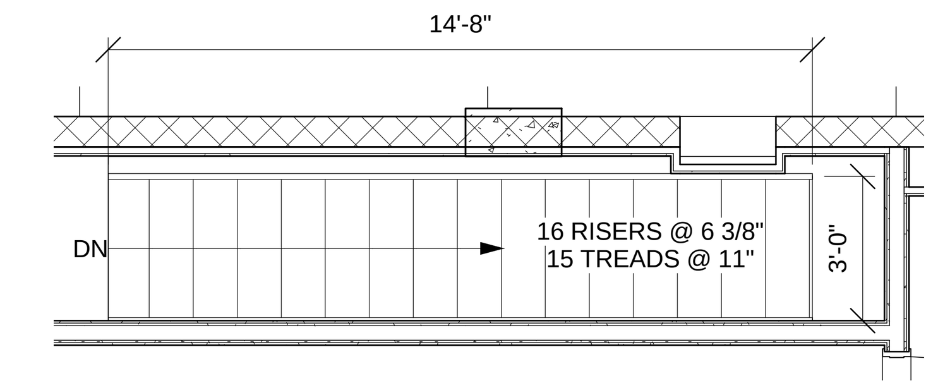
5 Stair Plan-Second Floor
1/4" = 1'-0"



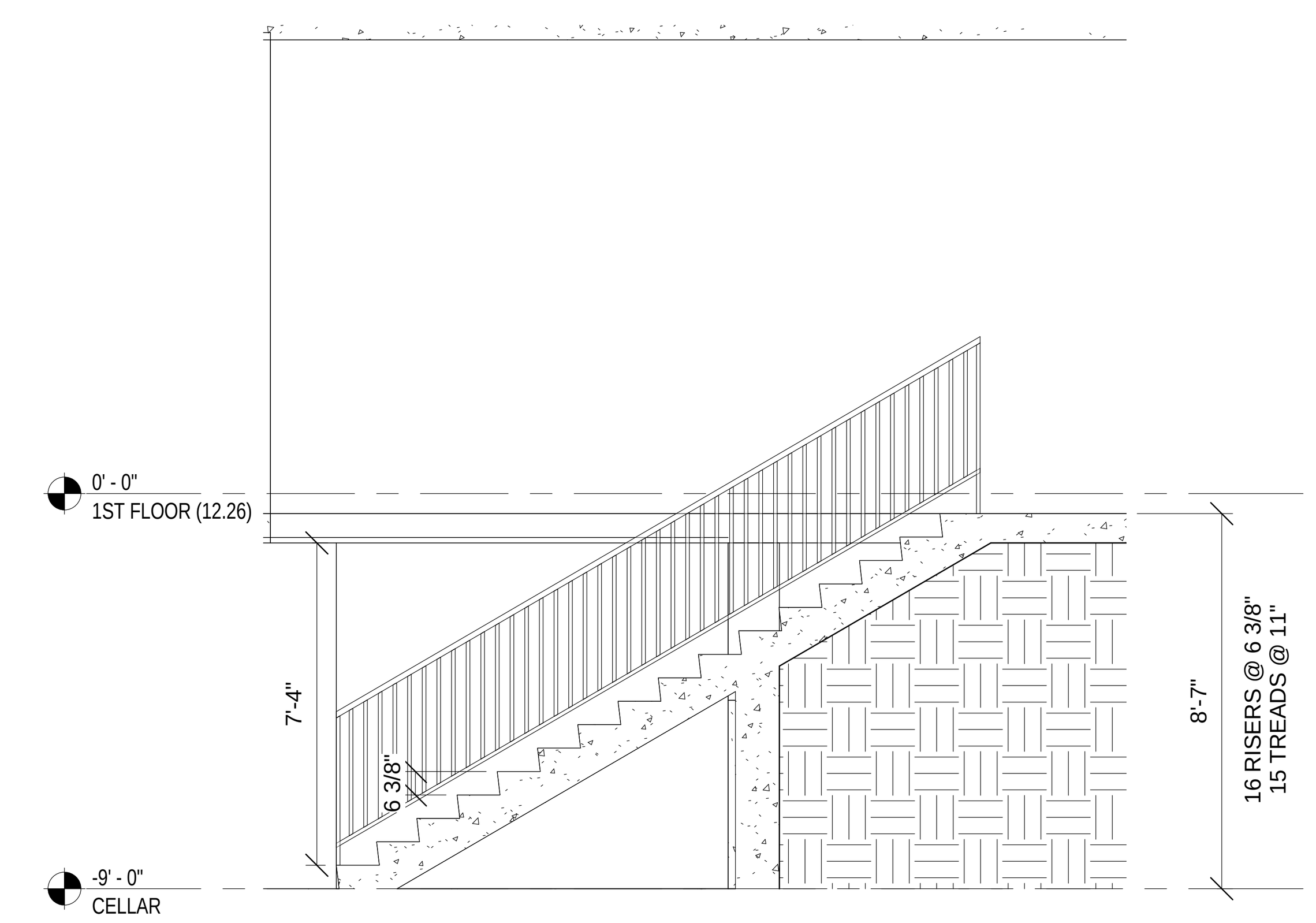
4 Stair Plan-First Floor
1/4" = 1'-0"



3 Stair Plan-Cellar
1/4" = 1'-0"



9 Stair C Plan
1/4" = 1'-0"



8 Stair Section C
1/4" = 1'-0"

PROGRESS SET: 10/14/2014 12:27:15 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
450 Lexington Avenue
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New York, NY 10017

STRUCTURAL ENGINEER:
GACE
31 W 27th St #6
New York, NY 10001

MEP ENGINEER:
Guth DeConzo Con. Eng.
242 W. 30th St
New York, NY 10001

CODE CONSULTANT:

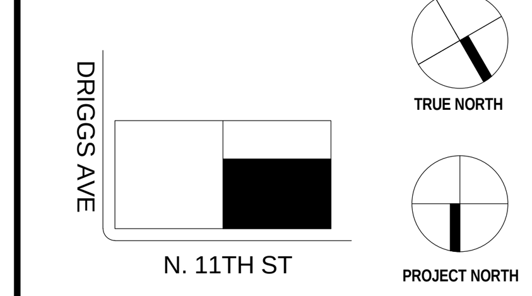
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
STAIR PLANS & SECTIONS

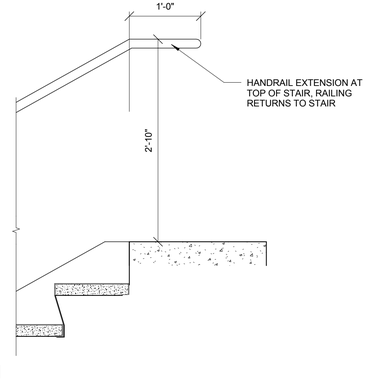
Sign & Seal
REGISTERED ARCHITECT
DANIEL KENNETH BERNSTEIN
16854
STATE OF NEW YORK

Drawing No.
A-600.OO

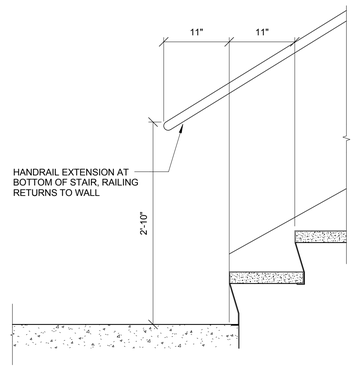
Date	Drawn By	Job No.
07/16/14	Author	2014-049

Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	32 OF 36

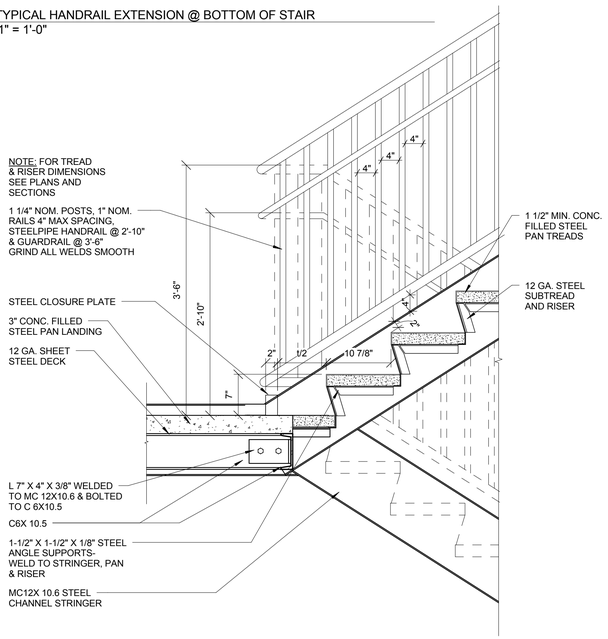
DOB NUMBER



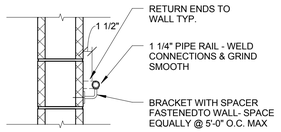
8 TYPICAL HANDRAIL EXTENSION @ TOP OF STAIR
1" = 1'-0"



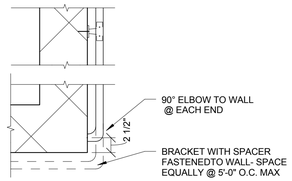
7 TYPICAL HANDRAIL EXTENSION @ BOTTOM OF STAIR
1" = 1'-0"



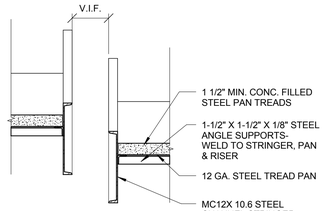
6 STAIR/ LANDING CONNECTION DETAIL
1" = 1'-0"



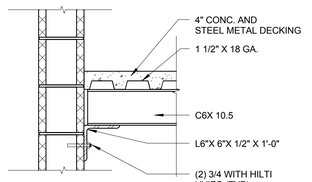
5 WALL HANDRAIL DETAIL SECTION
1" = 1'-0"



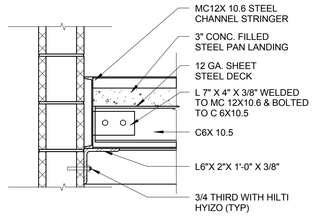
4 WALL HANDRAIL DETAIL PLAN
1" = 1'-0"



3 STRINGER SECTION
1" = 1'-0"



2 INTERMEDIATE LANDING DETAIL
1" = 1'-0"



1 FLOOR LEVEL LANDING DETAIL
1" = 1'-0"

PROGRESS SET: 10/13/2014 6:03:48 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
434 Broadway Penthouse
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New York, NY 10017

STRUCTURAL ENGINEER:
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New York, NY 10001

MEP ENGINEER:
Gurt DeGroot Con. Eng.
41 E 11th St #6
New York, NY 10001

CODE CONSULTANT:

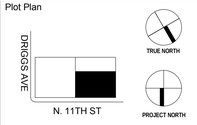
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
STAIR DETAILS

Sign & Seal
REGISTERED ARCHITECT CHRISTOPHER J. KUTNICKI 026854 STATE OF NEW YORK

Drawing No.
A-610.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049

Sheet Scale	Checked By	DOB Sheet
1" = 1'-0"	Checker	33 OF 36

DOB NUMBER

SHEET NOTES

SCHEDULED WALL DETAILS ARE BASIC MATERIAL AND COMPONENTS OF TYPICAL SCHEDULED WALLS, REFER TO DETAIL SHEETS AND SPECIFICATION FOR FURTHER DETAILS FOR SPECIFIC AREAS SUCH AS TRIMS, TERMINATION, PENETRATIONS AND APPLICATIONS.

1. PROVIDED 5/8" THICK MOISTURE RESISTANT GYP.. BD. AT ALL BATHROOMS, KITCHENS, WINDOW RETURN WALLS, ETC. AS SHOWN IN DETAILS, FIRECODE MR. BOARD REQUIRED AT RATED PARTITIONS. 5/8" CEMENTITIOUS BACKER BOARD REQUIRED AT FULL WALL OF TUB SURROUND, AND OTHER "WET AREAS"

2. REFER TO FINISH DETAILS FOR CEILING DETAILS.

3. ALL LOAD BEARING WALLS TO BE RATED AS PER CONSTRUCTION CLASSIFICATION. REFER TO STRUCTURAL DWGS FOR LOAD BEARING WALLS.

4. USE 1" TYPE S DRYWALL SCREWS 8" O.C. AT VERTICAL JOINTS AND 12" O.C. AT FLOOR AND CEILING RUNNERS AND INTERMEDIATE STUDS.

5. STAGGER GYP. BD. JOINTS AT 24" ON EACH SIDE AND ON OPPOSITE SIDES.

6. PROVIDE FIRE STOPPING AT ALL OPENINGS AND UNDERSIDE OF JOISTS.

7. LIMITING HEIGHT SCHEDULE.

U.S.C. METAL STUD SIZE	MAX. PARTITION HEIGHT
1-5/8"	9'
2-1/2"	12'
3-5/8"	18'

8. ALL SPECIFIED MATERIALS TO HAVE U.L. CLASSIFICATION MARKING.

9. METAL FRAMING TO BE STEEL NOT ALUMINUM.

10. ALL INTERIOR WALL STUDS AND FURRING MEMBERS TO BE 24-35 GA. GALV. STEEL UNLESS OTHERWISE NOTED IN DETAILS OR SPECIFICATIONS.

11. ALL STUDS AND FURRING MEMBERS AT 16" O.C. UNLESS OTHERWISE NOTED OR REQUIRED TO MEET DEFLECTION RATING.

12. USE 5/8" THICK GYP. BD. (TYPE X IN AREA INDICATED AS RATED IN PARTITION TYPES) AT ALL WALLS, CEILINGS, FOYERS, CLOSETS, ARCHWAY TO KITCHEN, IN ALL ROOMS OF APARTMENTS, PUBLIC SPACES AND COMMERCIAL SPACES.

13. FIRE OR SMOKE RATED PARTITIONS TO BE CONTINUOUS FROM FLOOR TO UNDERSIDE OF STRUCTURE ABOVE ALL OPENINGS (DOORS), PENETRATIONS (DUCTS, PIPES) CONNECTIONS AND JOINTS (CAULKING AND INSULATION) SHALL BE RATED TO MAINTAIN PARTITIONS'S RATING.

14. FIRE OR SMOKE RATED PARTITIONS SHALL BE UL LABELED AND SHALL CONFORM TO THE CODE REQUIREMENTS.

15. PROVIDE 3" THERMAFIBER SAFB (SOUND ATTENUATION FIRE BLANKET) INSULATION AT ALL DEMISING WALLS, PLUMBING RISERS, MECHANICAL RISERS, BEARING METAL/WOOD STUD WALLS, AND BATHROOM WALLS (MEA 208-82-M).

16. PROVIDE FIRE RATING AS NOTED ON PLANS.

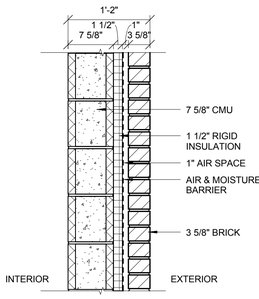
17. CMU BLOCK SHALL HAVE THE FOLLOWING MIN. EQUIVALENT THICKNESS TO ACHIEVE THE REQUIRED FIRE RATING

FIRE RATING			
1 HR.	2 HR.	3 HR.	4 HR.
2.52	3.80	4.78	5.60

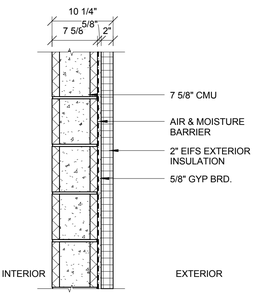
PROVIDE SOLID OR SOLID FILL BLOCK WHERE REQUIRED TO ACHIEVE FIRE RATING

18. MEMBRANE PENETRATION AND THROUGH PENETRATION OF FIRE-RESISTANCE- RATED WALLS , INCLUDING RECESSED RECEPTACLE BOXES, ETC. SHALL BE PROTECTED IN ACCORDANCE WITH NYC BUILDING CODE 712.3

EXTERIOR WALL TYPES

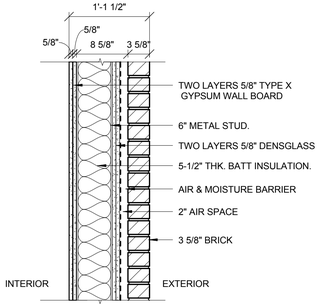


E2B TYPICAL BRICK CMU WALL 2 HR RATED 1"= 1'-0"

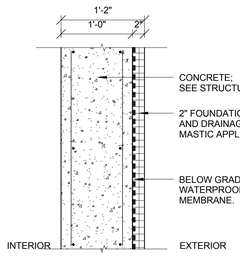


E2A MASONRY WALL 8" CMU-EIFS 2 HR RATED 1"= 1'-0"

E1B CONCRETE WALL 1"= 1'-0"



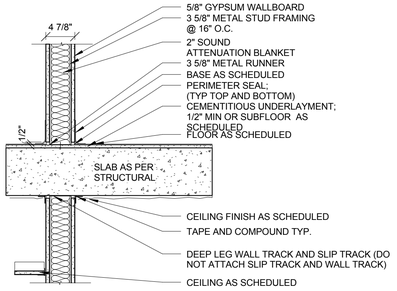
E3 TYPICAL BRICK METAL STUD WALL 2 HR RATED 1"= 1'-0"



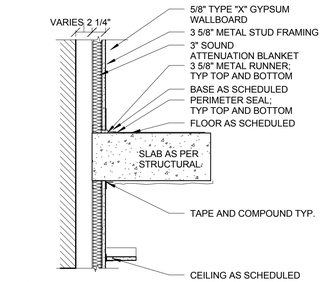
E1A CONCRETE FOUNDATION WALL 2 HR RATED 1"= 1'-0"

NOTE: USE BLIND SIDE WATERPROOFING AT NEIGHBORING BUILDINGS AND WHERE ACCESS IS LIMITED

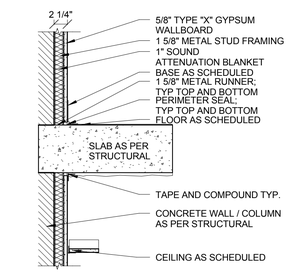
INTERIOR WALL TYPES



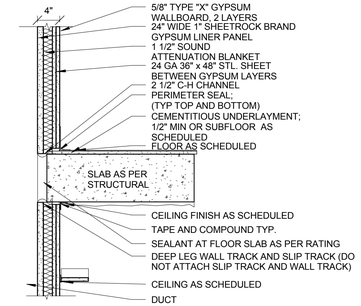
P1 NON-LOAD BEARING STUD WALL 1 HR RATED UL #419; STC 52 1"= 1'-0"



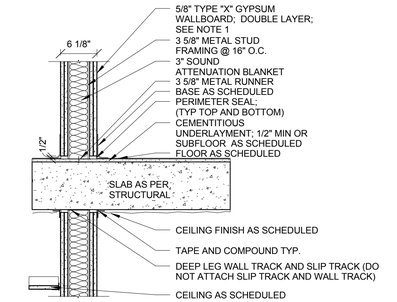
H3 CHASE WALL 1"= 1'-0"



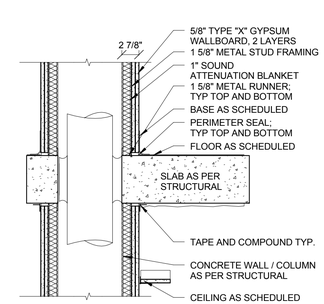
F1 FURRING WALL 1"= 1'-0"



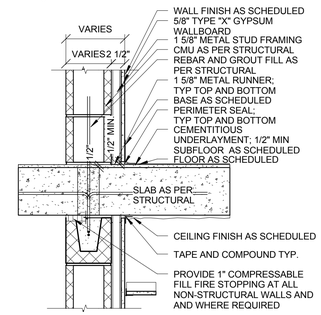
S1 SHAFT ENCLOSURE 2 HR RATED UL #438; STC 52 1"= 1'-0"



R2 NON-LOAD BEARING STUD WALL 1 HR RATED UL #411; STC 52 1"= 1'-0"

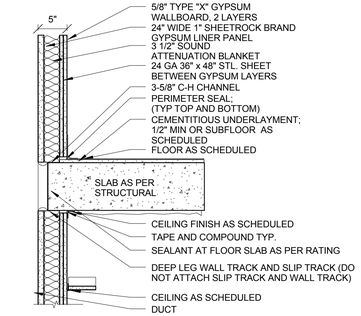


H2 CHASE ENCLOSURE 2 HR RATED UL #411; STC 52 1"= 1'-0"



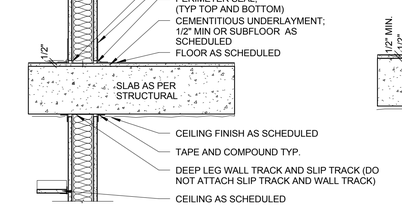
C1A MASONRY WALL 6" CMU (W/ GWB FINISH ONE SIDE) 2 HR RATED 1"= 1'-0"

C2A MASONRY WALL 8" CMU (W/GWB FINISH ONE SIDE) 2 HR RATED 1"= 1'-0"

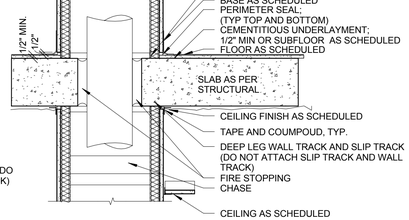


S2 SHAFT ENCLOSURE 2 HR RATED UL #438; STC 52 1"= 1'-0"

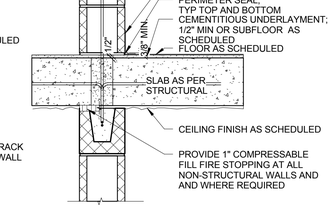
(MASONRY EQUIVALENT & IMPACT RESISTANT)



R1 NON-LOAD BEARING STUD WALL 1 HR RATED UL #419; STC 52 1"= 1'-0"



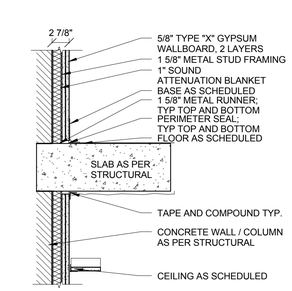
H1 CHASE ENCLOSURE 1 HR RATED UL #420; STC 52 1"= 1'-0"



C1 MASONRY WALL 6" CMU 2 HR RATED 1"= 1'-0"

C2 MASONRY WALL 8" CMU 2 HR RATED 1"= 1'-0"

C3 MASONRY FILLED WALL 8" CMU 3 HR RATED 1"= 1'-0"



F2 FURRING WALL 1"= 1'-0"

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

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MEP ENGINEER:
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CODE CONSULTANT:

Project
174 N. 11TH STREET
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Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

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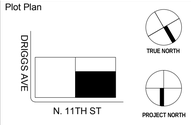
Plot Plan



For Department of Buildings Use

Drawing Title
INTERIOR PARTITION TYPES

Sign & Seal
REGISTERED ARCHITECT 1885A STATE OF NEW YORK

Drawing No.
A-800.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049

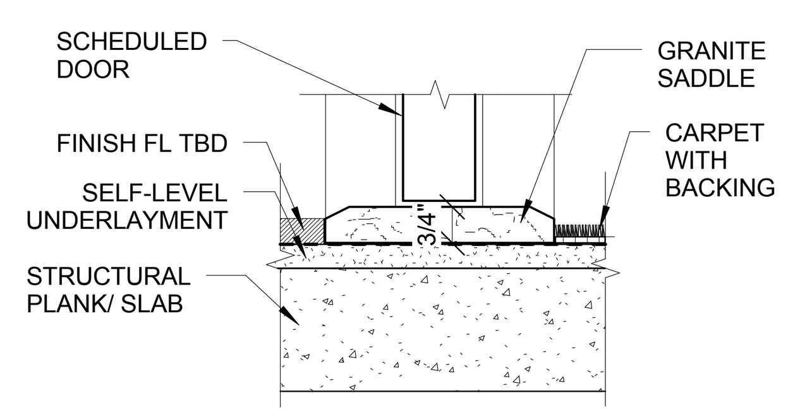
Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	34 OF 36

DOB NUMBER

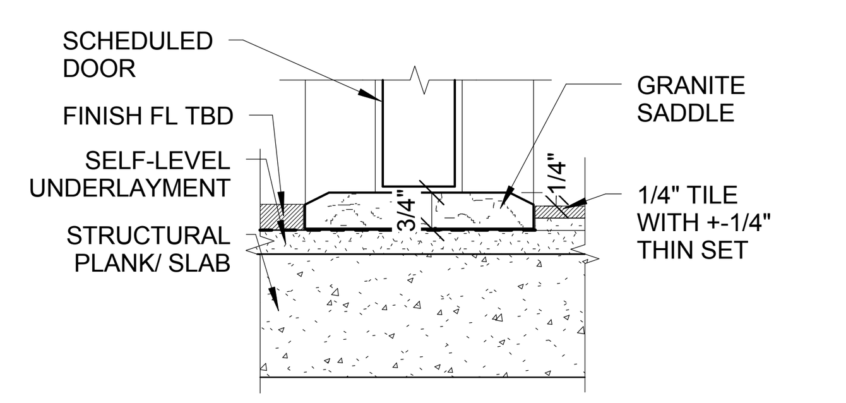
PROGRESS SET: 10/13/2014 6:03:55 PM

DOOR SCHEDULE

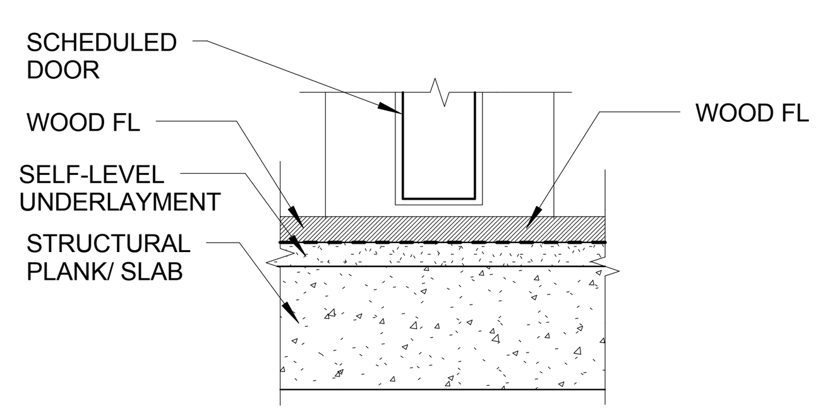
WT	LOCATION	TYPE	DOOR WIDTH	DOOR HEIGHT	DOOR THICKNESS	DOOR MATL.	FRAME TYPE	FRAME JAMB /HEAD	FRAME SADDLE	FIRE RATING	STC	COMMENTS
T01	APARTMENT ENTRY	A	3' - 0"	6' - 8"	0' - 1 3/4"	HM	HMW					
T02	APARTMENT BEDROOM	C	2' - 10"	6' - 8"	0' - 1 3/4"	WD	HMKD			--	--	
T03	APARTMENT BATHROOM	C	2' - 10"	6' - 8"	0' - 1 3/4"	WD	HMKD			--	--	
T04	WASHER/DRYER CLOSET	B	2' - 0"	6' - 8"	0' - 1 3/4"	WD	HMKD			--	--	
T05	APARTMENT CLOSET	B	2' - 6"	6' - 8"	0' - 1 3/4"	WD	HMKD			--	--	
T06	APARTMENT CLOSET	C	4' - 0"	6' - 8"	0' - 1 3/4"	WD	HMKD			--	--	
T07	APARTMENT CLOSET	C	5' - 0"	6' - 8"	0' - 1 3/4"	WD	HMKD			--	--	
T08	APARTMENT CLOSET	C	3' - 0"	6' - 8"	0' - 1 3/4"	WD	HMKD			--	--	
T09	APARTMENT CLOSET	C	2' - 10"	6' - 8"	0' - 1 3/4"	WD	HMKD					
T10	APARTMENT CLOSET	C	3' - 6"	6' - 8"	0' - 1 3/4"	WD	HMKD			--	--	
T11	W/C	A	3' - 0"	6' - 8"	0' - 1 3/4"	HM	HMW					
T12	VARIES	D	3' - 0"	6' - 8"	0' - 1 3/4"	HM	HMW					
T13	GYM	F	3' - 0"	6' - 8"	0' - 1 3/4"	HM	HMW					
T14	EXIT STAIR	D	3' - 0"	6' - 8"	0' - 1 3/4"	HM	HMW					
T15	GARAGE EXIT	D	3' - 0"	6' - 8"	0' - 1 3/4"	HM	HMW					
T17	TRASH ROOM	A	3' - 0"	6' - 8"	0' - 1 3/4"	HM	HMW					
T18	TERRACE DOOR	L	3' - 4"	7' - 0"								
T19	TERRACE DOOR	L	3' - 4"	7' - 2"								
T20	RETAIL W/C	A	3' - 0"	6' - 8"	0' - 1 3/4"	HM	HMW					
T21	PACKAGE ROOM	A	3' - 0"	6' - 8"	0' - 1 3/4"	HM	HMW					



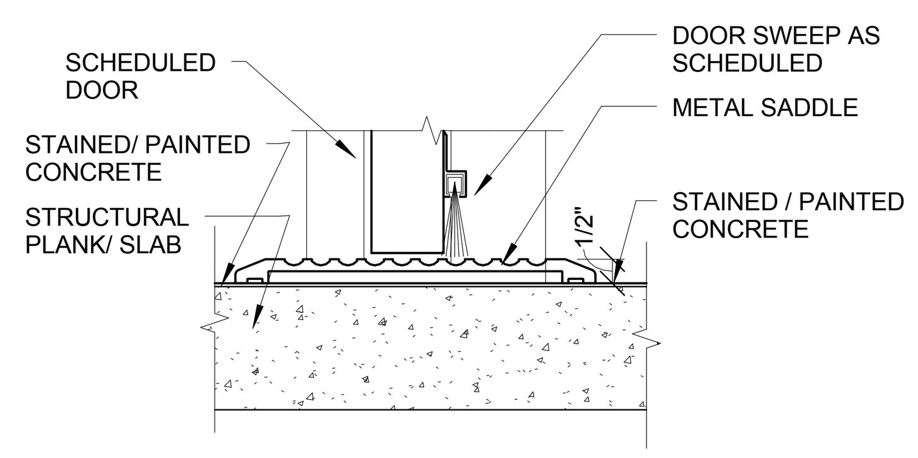
11 SADDLE DETAIL @ WOOD FL TO CARPET
6" = 1'-0"



9 SADDLE DETAIL @ TILE FLOORING TO TILE FLOORING
6" = 1'-0"

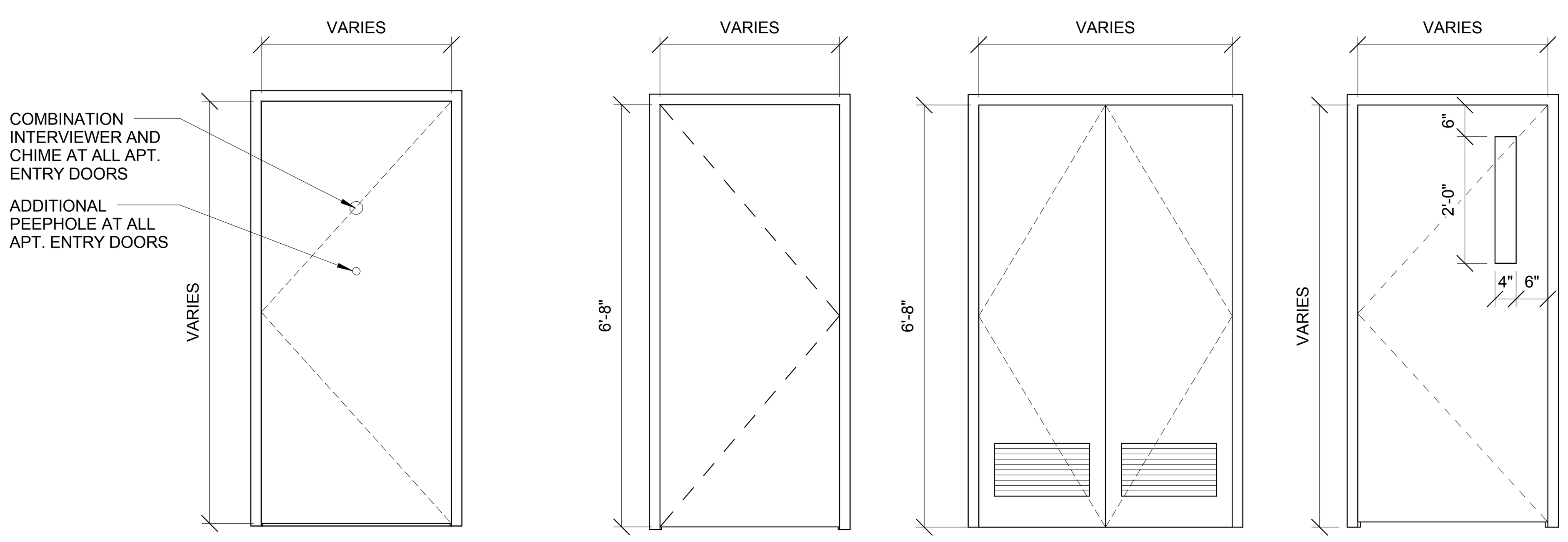


10 SADDLE DETAIL @ CONT. WOOD FL
6" = 1'-0"



8 SADDLE DETAIL @ STAINED CONC. TO STAINED CONC.
6" = 1'-0"

DOOR TYPES

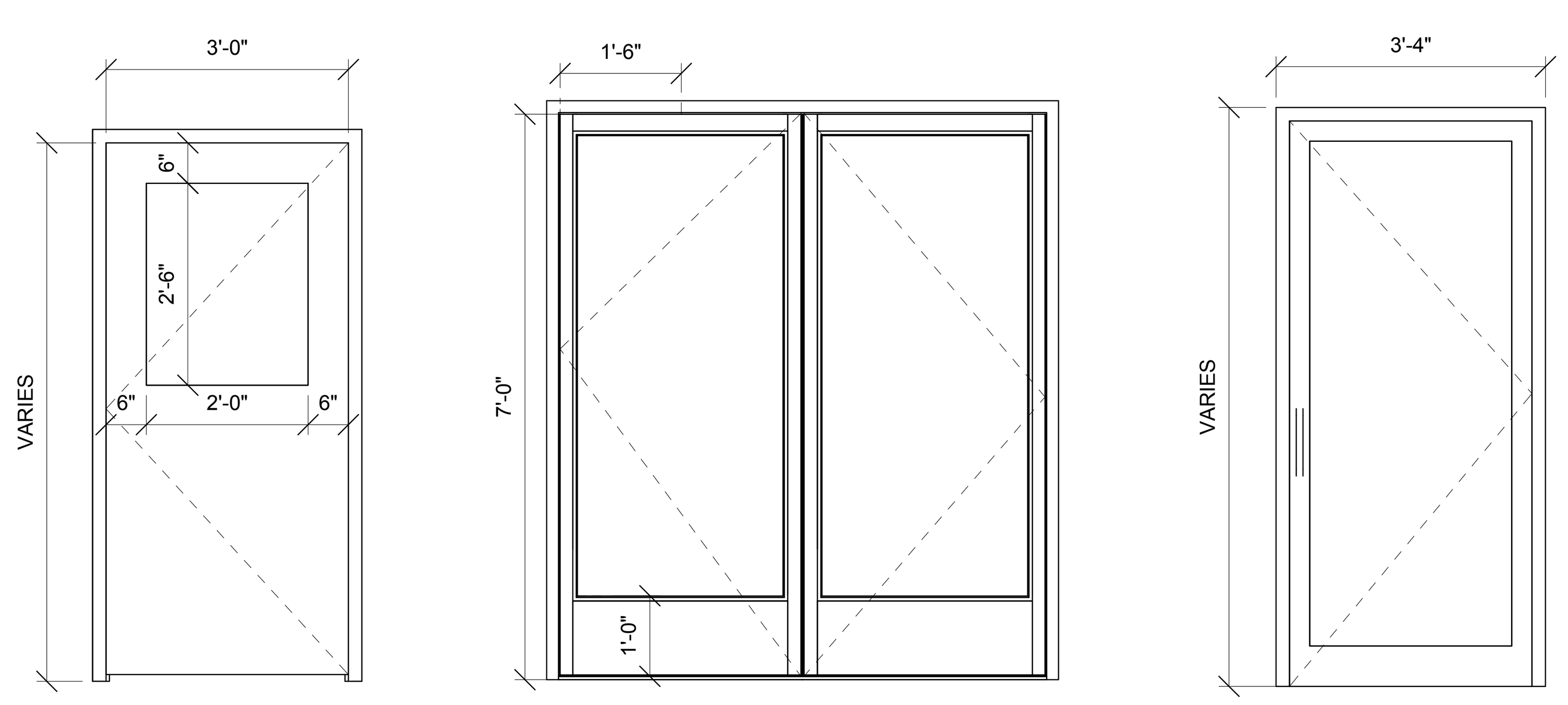


TYPE A
FLUSH HOLLOW METAL DOOR
@ APARTMENT ENTRY (W/ PEEP HOLE & CHIME)
@ UTILITY AREAS (W/OUT PEEP HOLE & CHIME)

TYPE B
FLUSH SOLID WOOD DOOR
@ BDRM & CLOSET W/OUT SADDLE
@ BATH & W/D W/ SADDLE

TYPE C
PAIR FLUSH SOLID WOOD DOORS
@ W/D DOORS W/ LOUVER
@ CLOSETS W/OUT LOUVER

TYPE D
DOOR W/ NARROW LIGHT
@ STAIR & TRASH ROOM



TYPE F
DOOR W/ HALF LIGHT

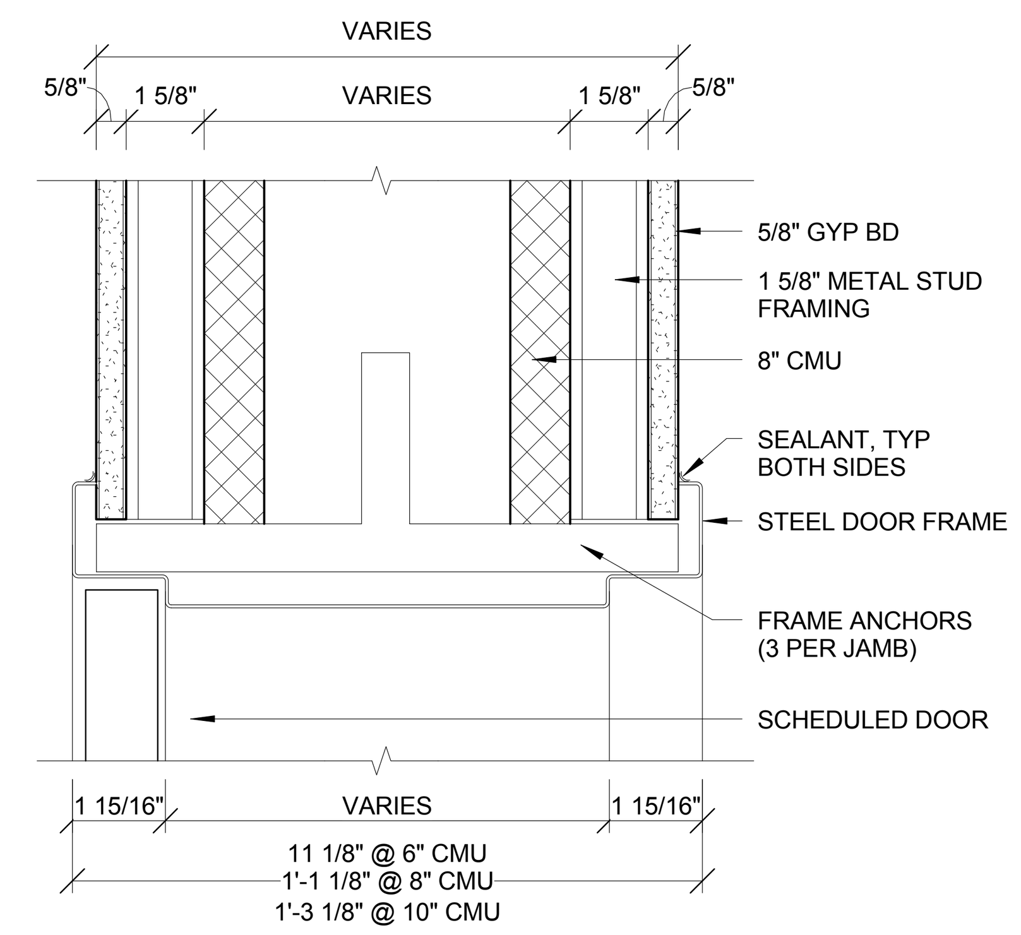
TYPE K
PAIR ALUMINUM ENTRY DOOR

TYPE L
TERRACE DOOR WITH FULL LIGHT

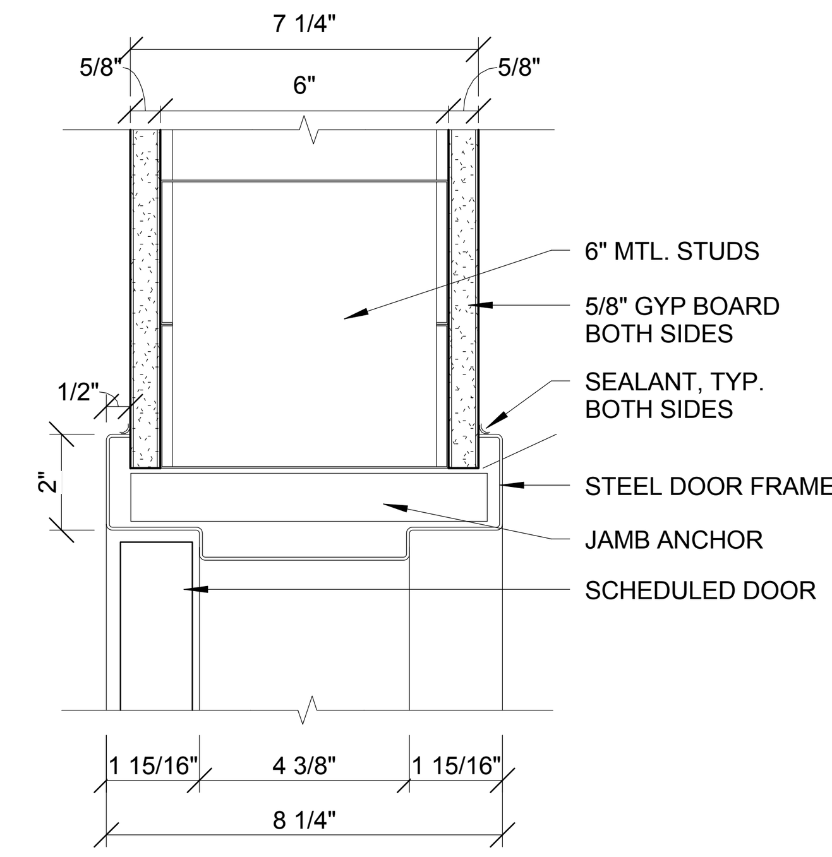
T18	NATURAL LIGHT	15.2 SF
	NATURAL VENTILATION	20.5 SF

T19	NATURAL LIGHT	15.6 SF
	NATURAL VENTILATION	21.0 SF

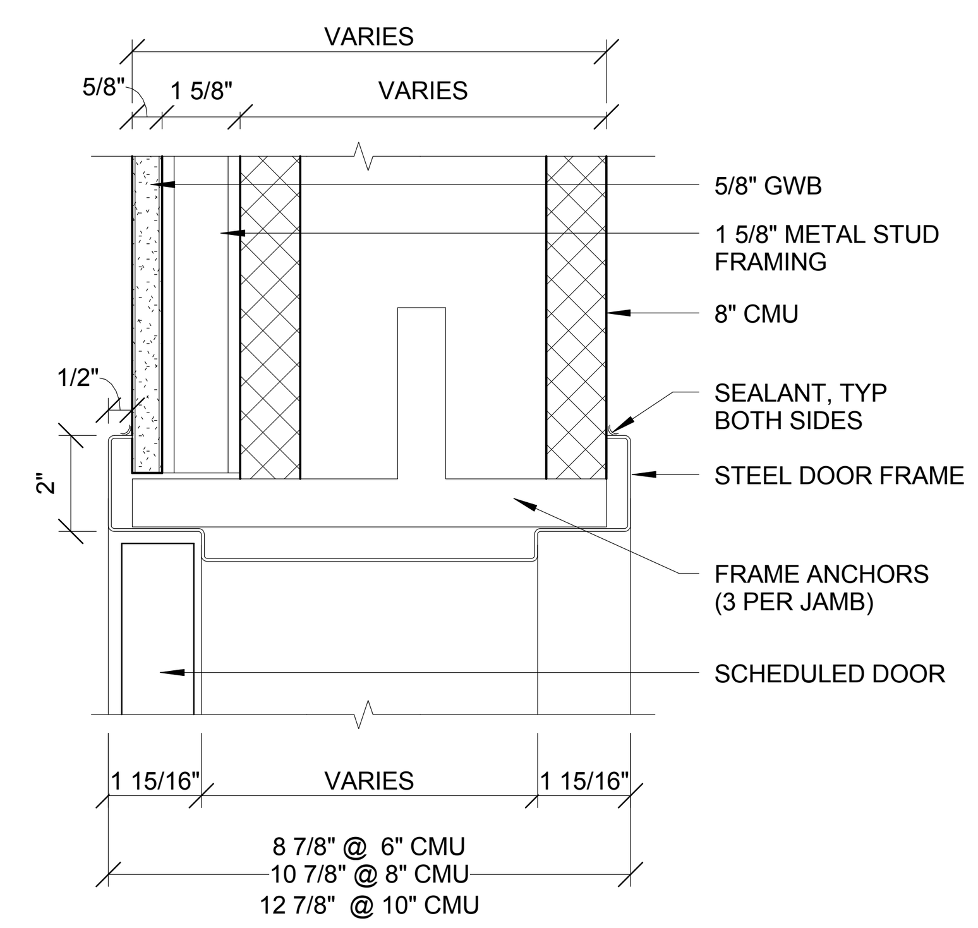
JAMB TYPES



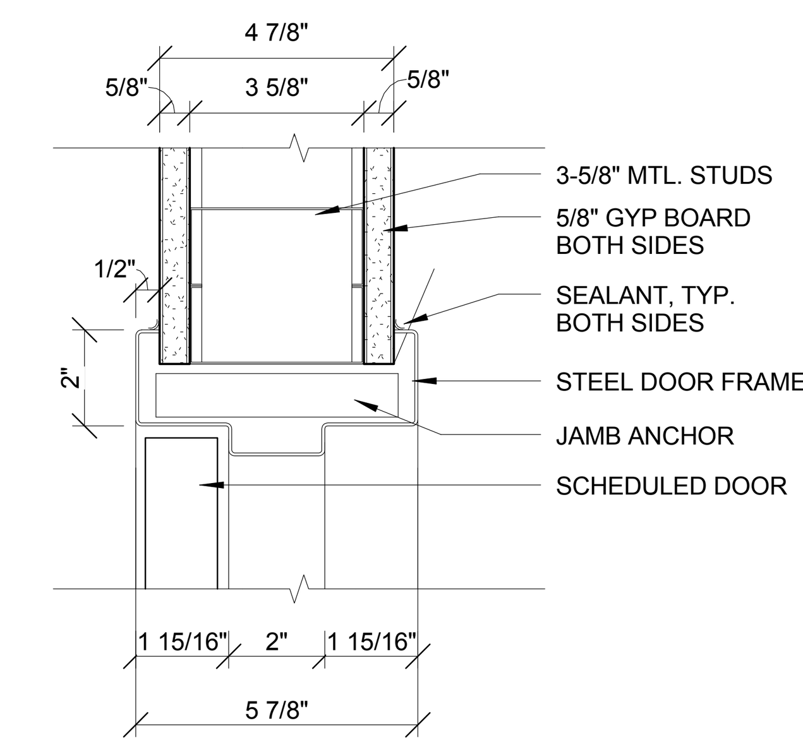
7 JAMB, HEAD SIM.
3" = 1'-0"



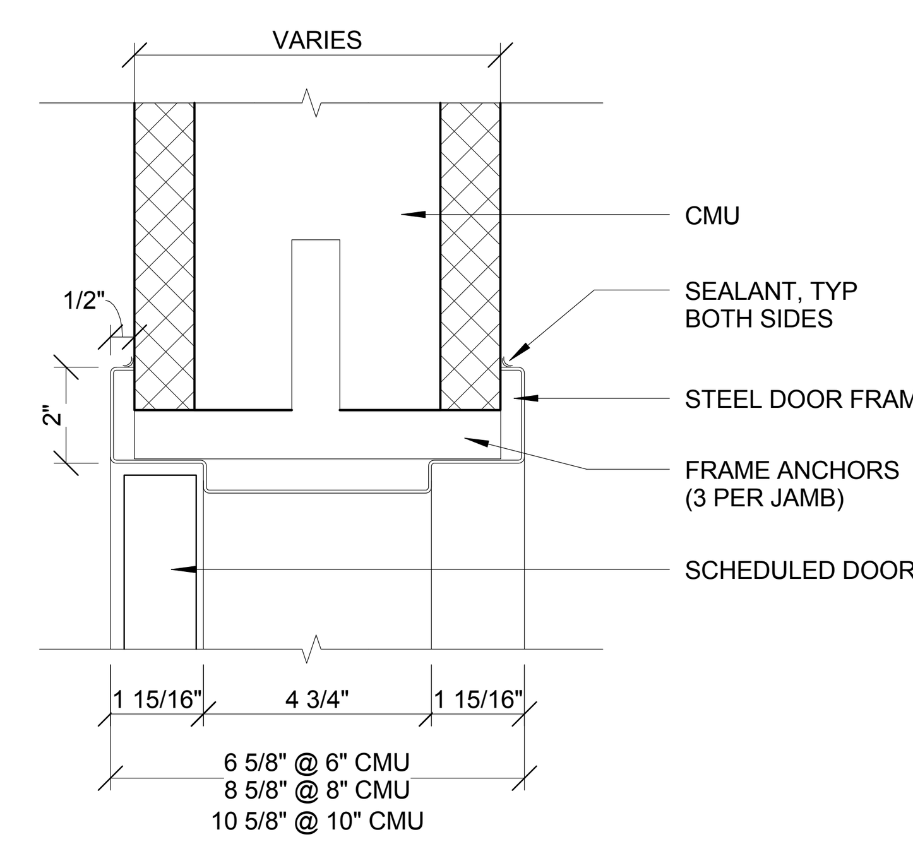
3B JAMB, HEAD SIM.
3" = 1'-0"



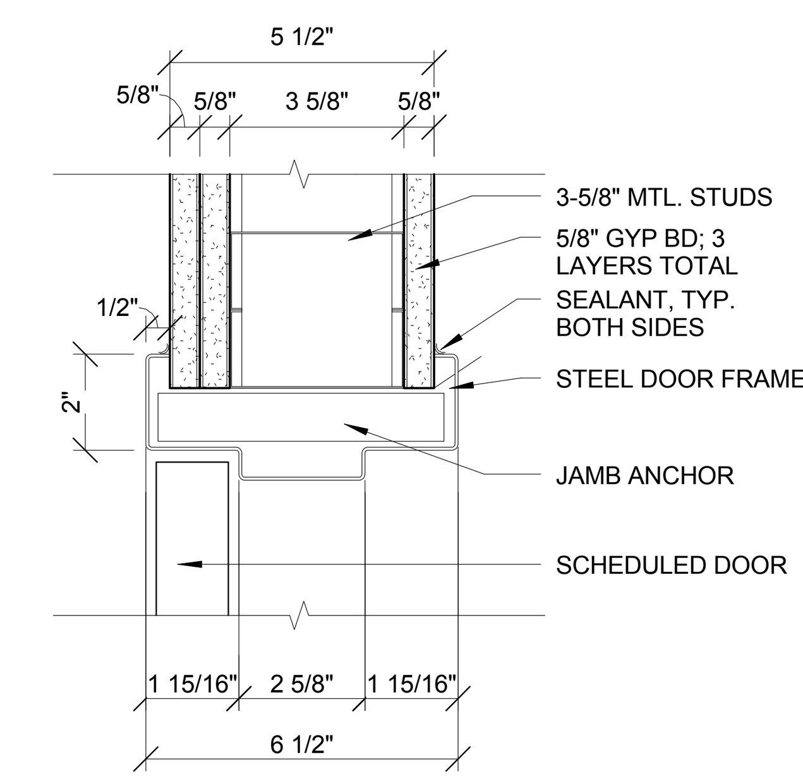
6 JAMB, HEAD SIM.
3" = 1'-0"



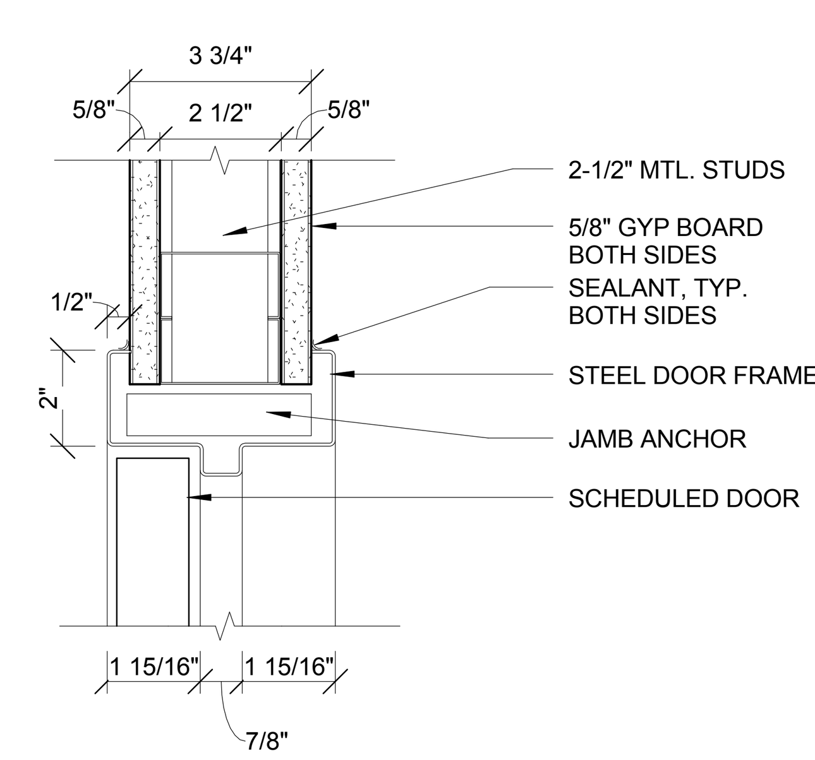
3A JAMB, HEAD SIM.
3" = 1'-0"



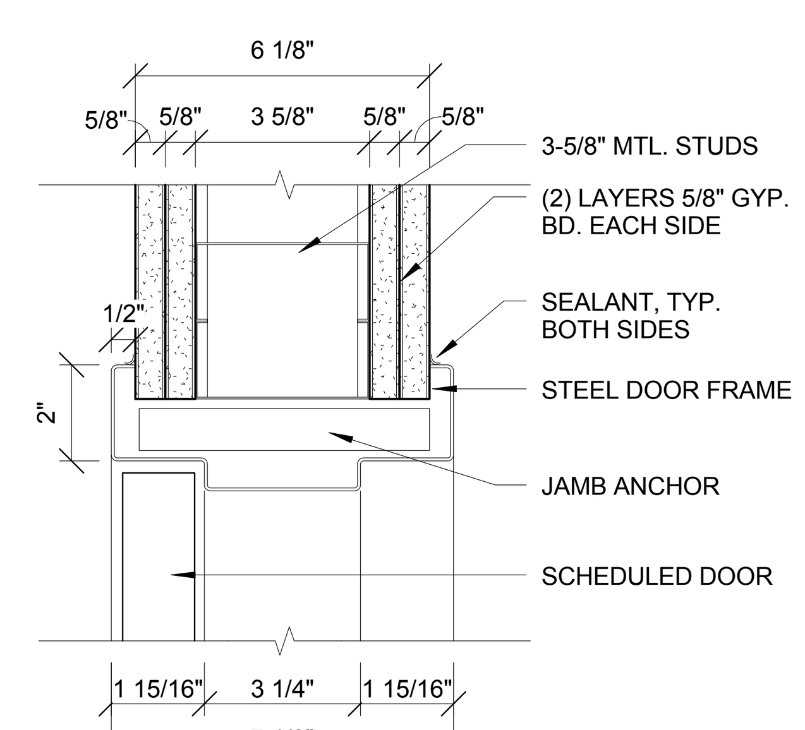
5 JAMB, HEAD SIM.
3" = 1'-0"



2 JAMB, HEAD SIM.
3" = 1'-0"



4 JAMB, HEAD SIM.
3" = 1'-0"



1 JAMB, HEAD SIM.
3" = 1'-0"

PROGRESS SET: 10/13/2014 6:04:04 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

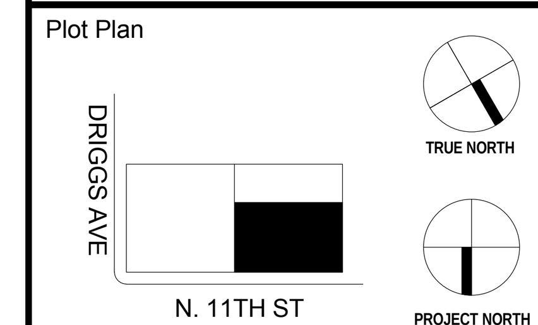
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
DOOR SCHEDULE,DOOR HEAD & JAMB DETAILS, DOOR SADDLE DETAILS

Sign & Seal

Drawing No.
A-810.00

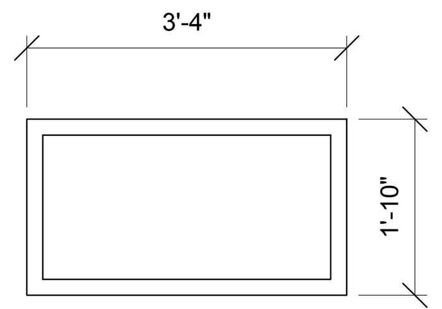
Date	Drawn By	Job No.
07/16/14	Author	2014-049

Sheet Scale	Checked By	DOB Sheet
As indicated	Checker	35 OF 36

DOB NUMBER

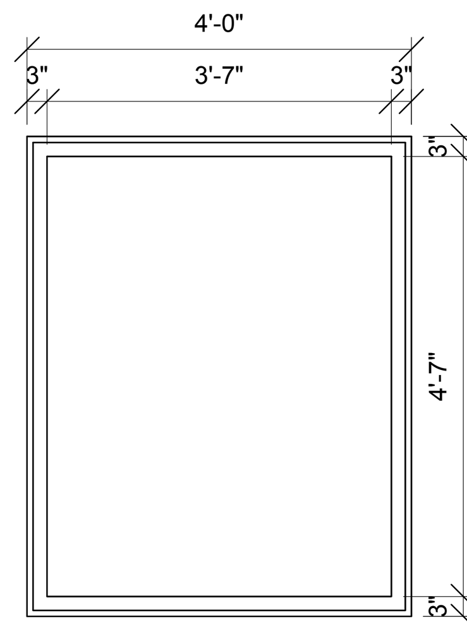
WINDOW TYPES

WINDOW SCHEDULE								
TYPE	DESCRIPTION	WIDTH	HEIGHT	GLAZING	Manufacturer	Model	OITC Rating	COMMENTS
W1		3' - 4"	1' - 10"					
W2	FIXED	4' - 0"	5' - 0"	1" IG (1/4" annealed exterior, 1/2" air space, 1/4" laminated interior)				
W3		3' - 0"	5' - 0"					
W4		5' - 4"	5' - 0"					
W5		5' - 6"	5' - 0"					
W6		6' - 0"	5' - 0"					
W7		3' - 10"	6' - 0"					
W8		5' - 0"	6' - 0"					
W9		8' - 4"	6' - 0"					
W10		4' - 6"	7' - 0"					
W11		5' - 0"	7' - 0"					
W12		8' - 0"	7' - 0"					
W13		3' - 3"	8' - 0"					
W14		3' - 10"	8' - 0"					
W15		10' - 0"	7' - 0"					
W16								
W17		8' - 4"	8' - 0"					
W18		10' - 0"	8' - 0"					
W20	LOUVERED OPENING	4' - 0"	1' - 7"					



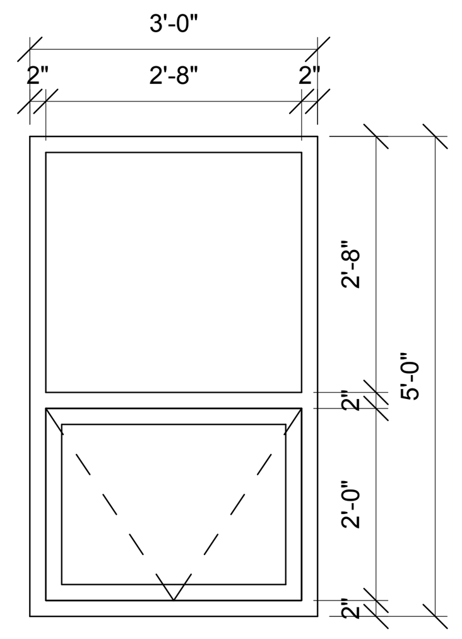
NATURAL LIGHT	4.50 SF
NATURAL VENTILATION	0.00 SF

W1 WINDOW TYPE A- FIXED WINDOW
1/2" = 1'-0"



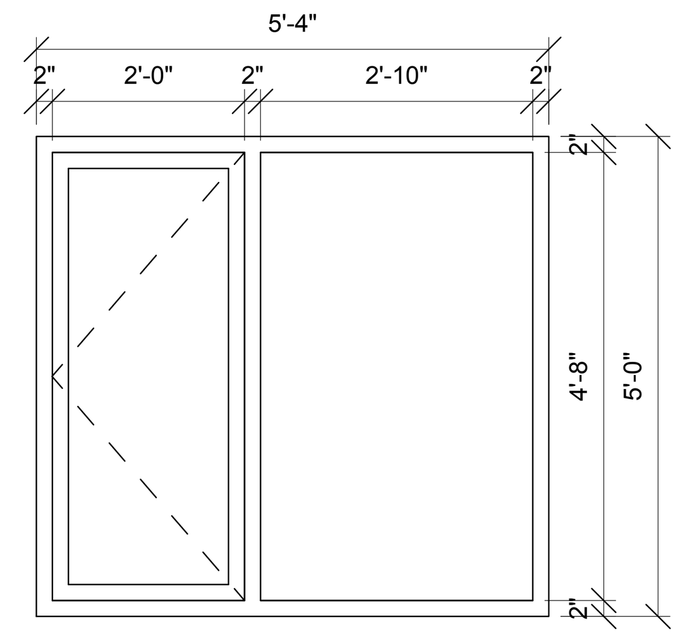
NATURAL LIGHT	16.42 SF
NATURAL VENTILATION	0.00 SF

W2 WINDOW TYPE B- FIXED WINDOW
1/2" = 1'-0"



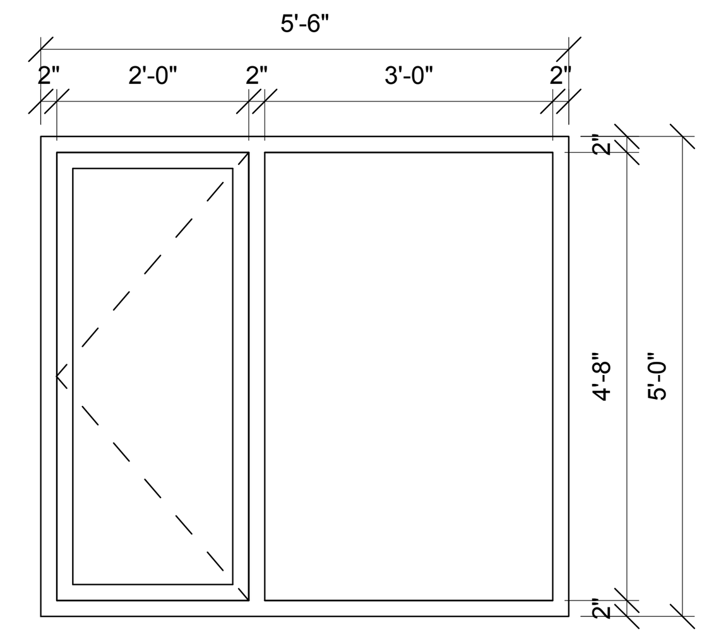
NATURAL LIGHT	10.5 SF
NATURAL VENTILATION	5.33 SF

W3 WINDOW TYPE C- CASEMENT WINDOW
1/2" = 1'-0"



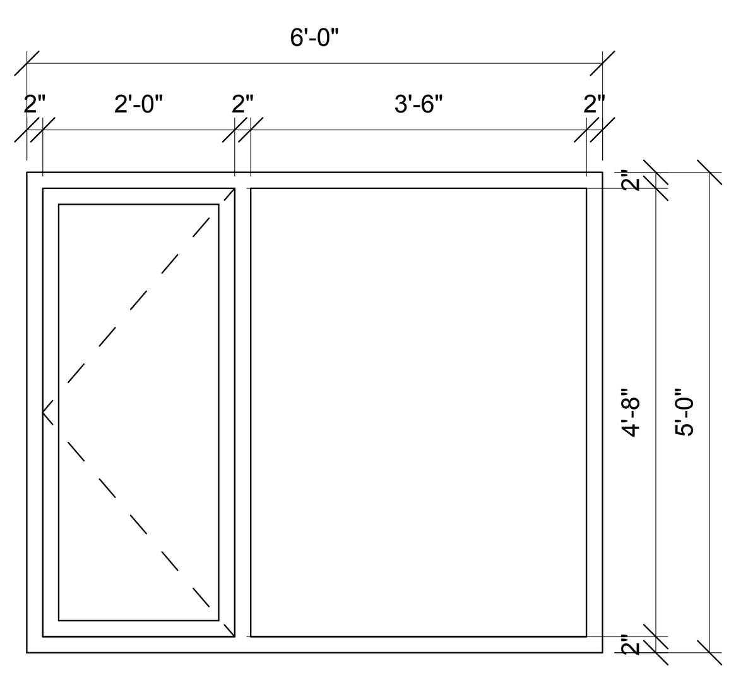
NATURAL LIGHT	20.4 SF
NATURAL VENTILATION	9.33 SF

W4 WINDOW TYPE D- CASEMENT WINDOW
1/2" = 1'-0"



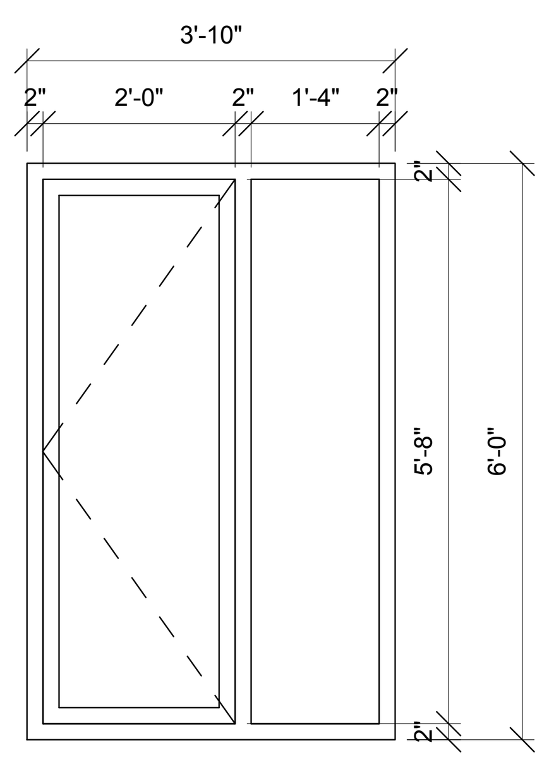
NATURAL LIGHT	21.2 SF
NATURAL VENTILATION	9.33 SF

W5 WINDOW TYPE D- CASEMENT WINDOW
1/2" = 1'-0"



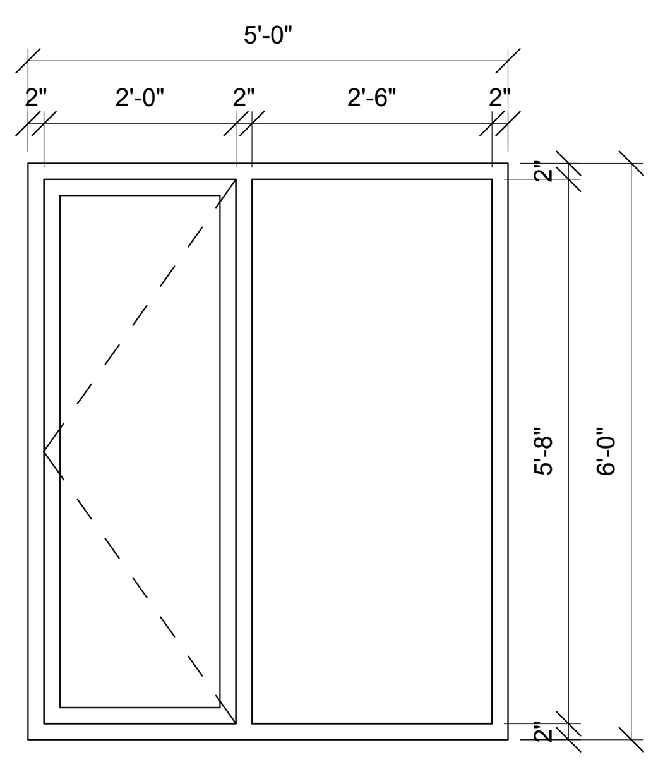
NATURAL LIGHT	23.6 SF
NATURAL VENTILATION	9.33 SF

W6 WINDOW TYPE D- CASEMENT WINDOW
1/2" = 1'-0"



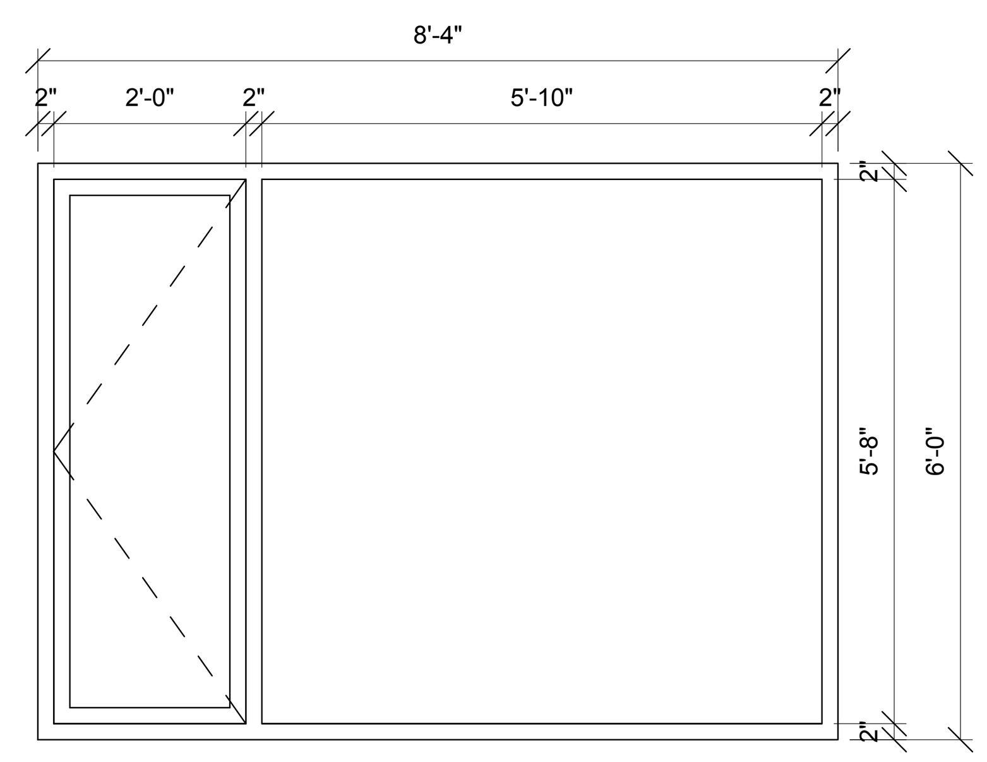
NATURAL LIGHT	16.44 SF
NATURAL VENTILATION	11.3 SF

W7 WINDOW TYPE D- CASEMENT WINDOW
1/2" = 1'-0"



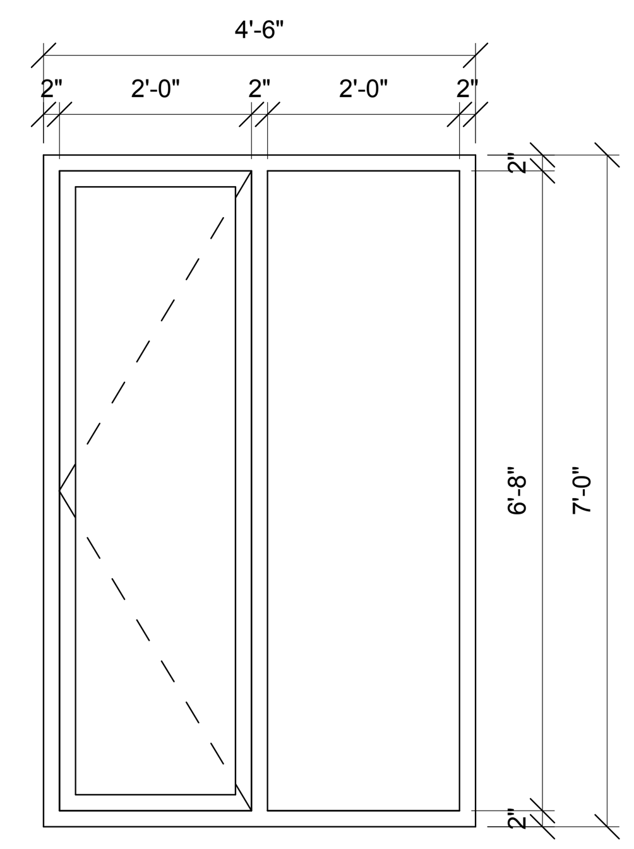
NATURAL LIGHT	23.1 SF
NATURAL VENTILATION	11.3 SF

W8 WINDOW TYPE D- CASEMENT WINDOW
1/2" = 1'-0"



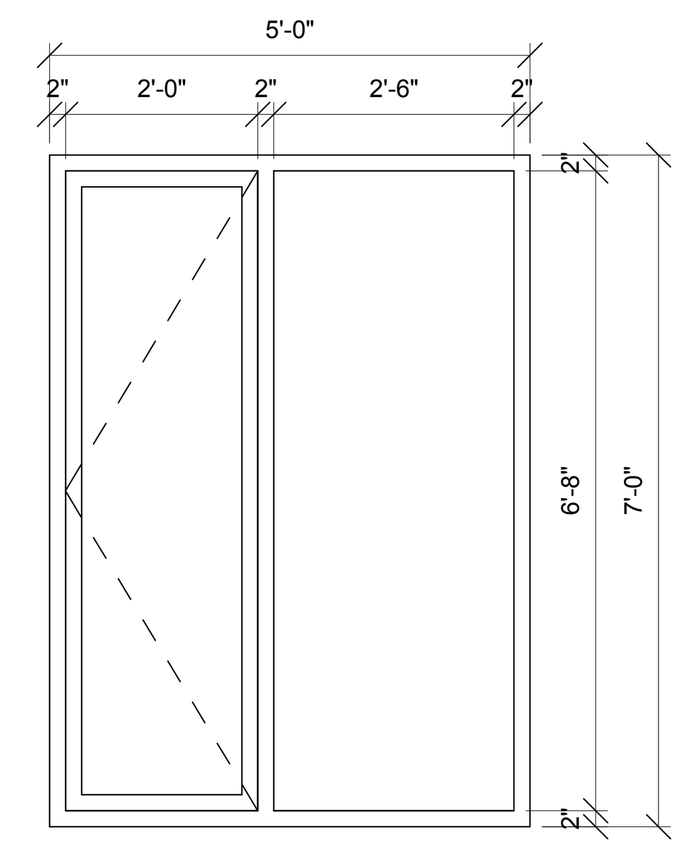
NATURAL LIGHT	41.9 SF
NATURAL VENTILATION	11.3 SF

W9 WINDOW TYPE D- CASEMENT WINDOW
1/2" = 1'-0"



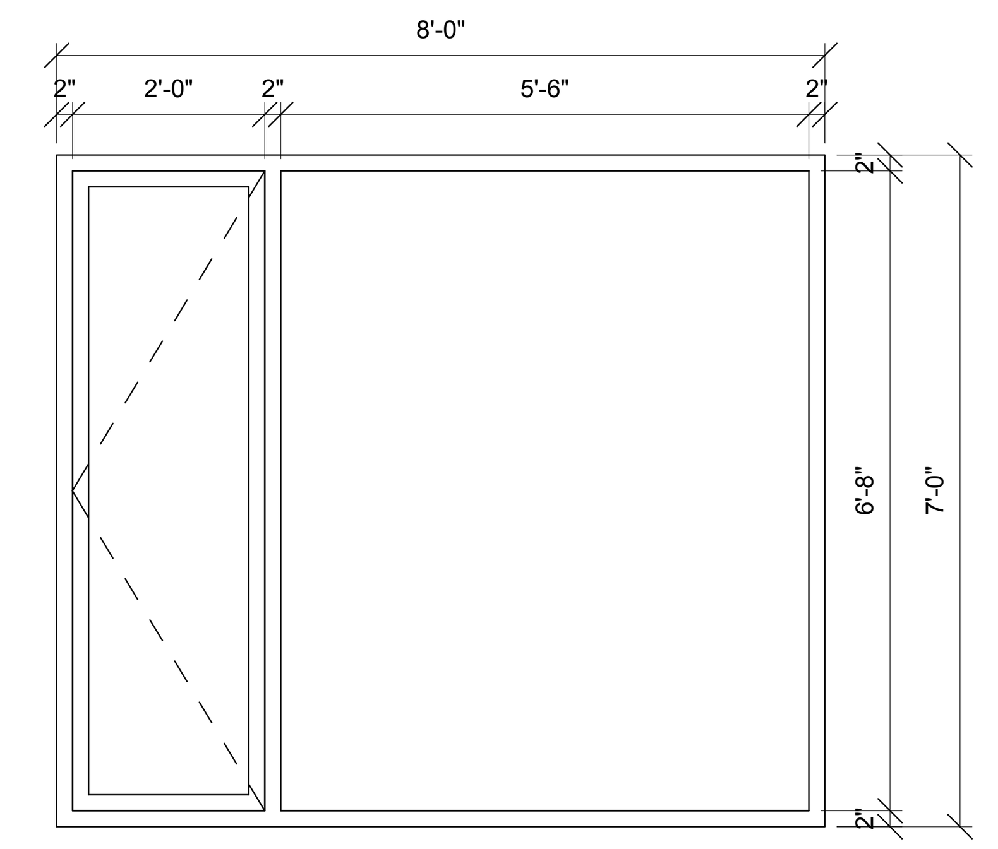
NATURAL LIGHT	23.9 SF
NATURAL VENTILATION	13.3 SF

W10 WINDOW TYPE D- CASEMENT WINDOW
1/2" = 1'-0"



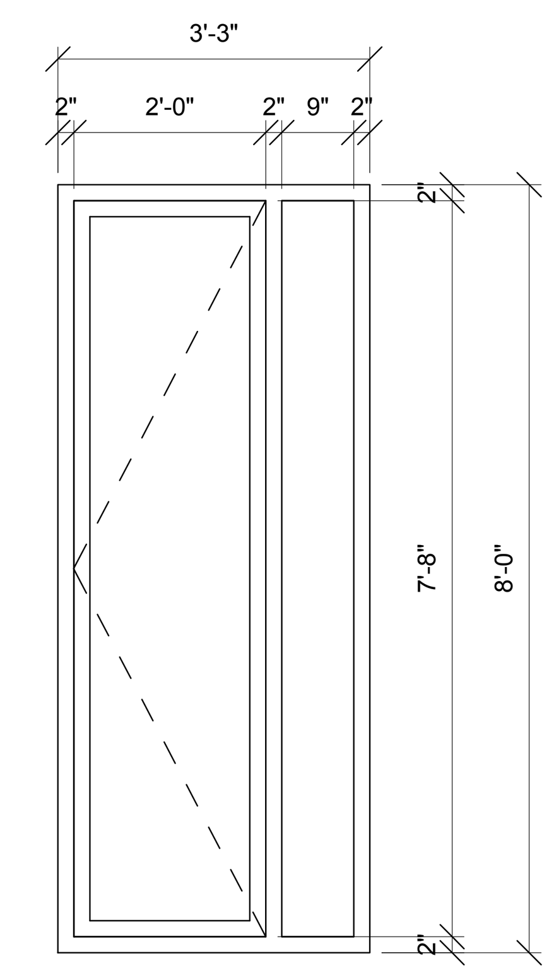
NATURAL LIGHT	27.2 SF
NATURAL VENTILATION	13.3 SF

W11 WINDOW TYPE D- CASEMENT WINDOW
1/2" = 1'-0"



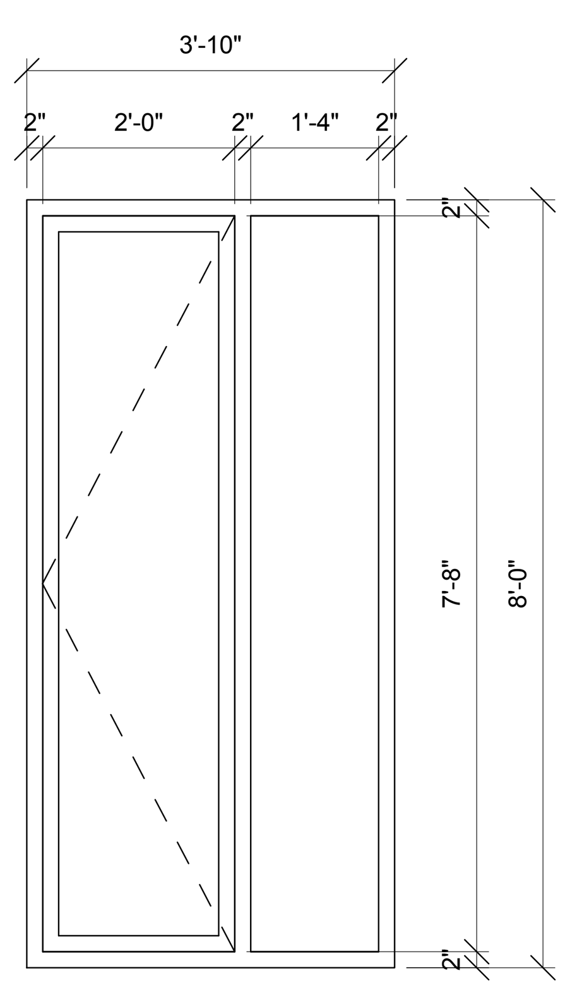
NATURAL LIGHT	47.2 SF
NATURAL VENTILATION	13.3 SF

W12 WINDOW TYPE D- CASEMENT WINDOW
1/2" = 1'-0"



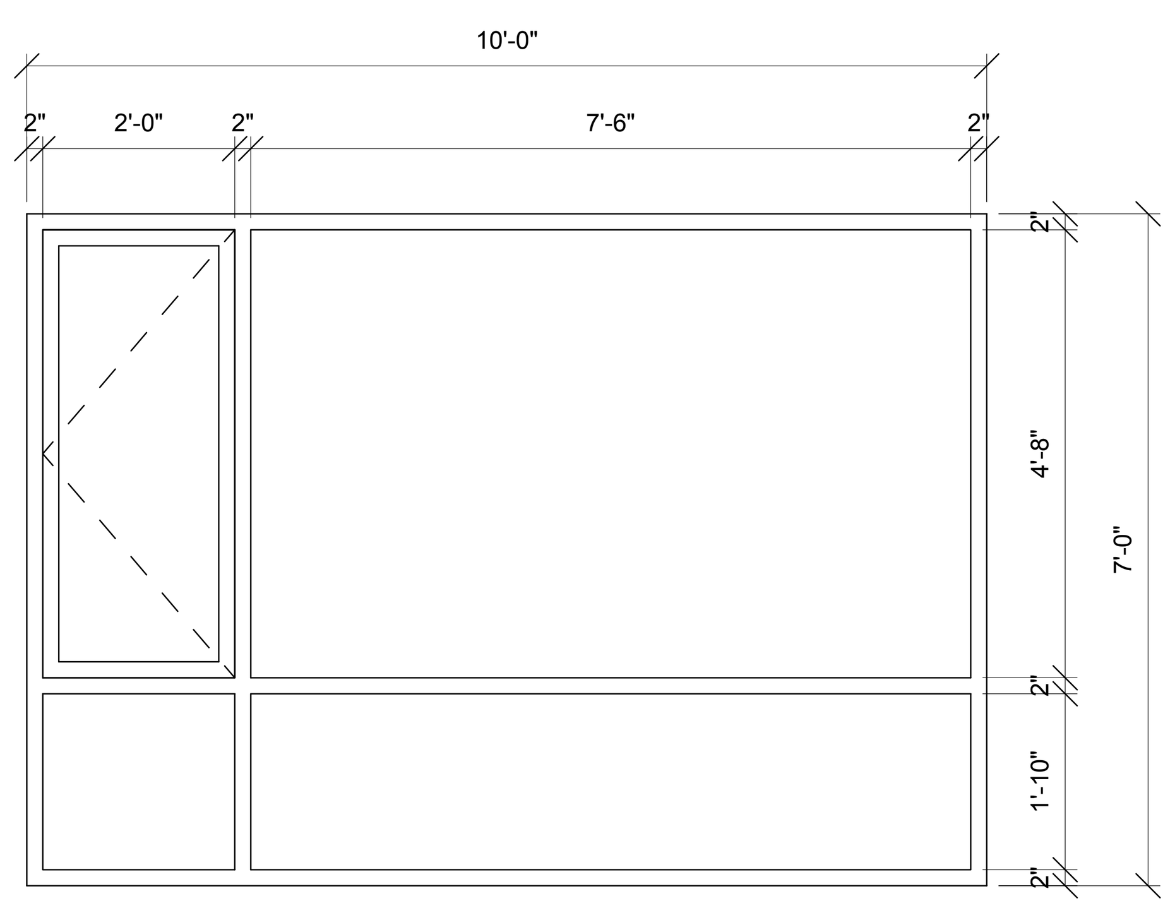
NATURAL LIGHT	18 SF
NATURAL VENTILATION	15.3 SF

W13 WINDOW TYPE D- CASEMENT WINDOW
1/2" = 1'-0"



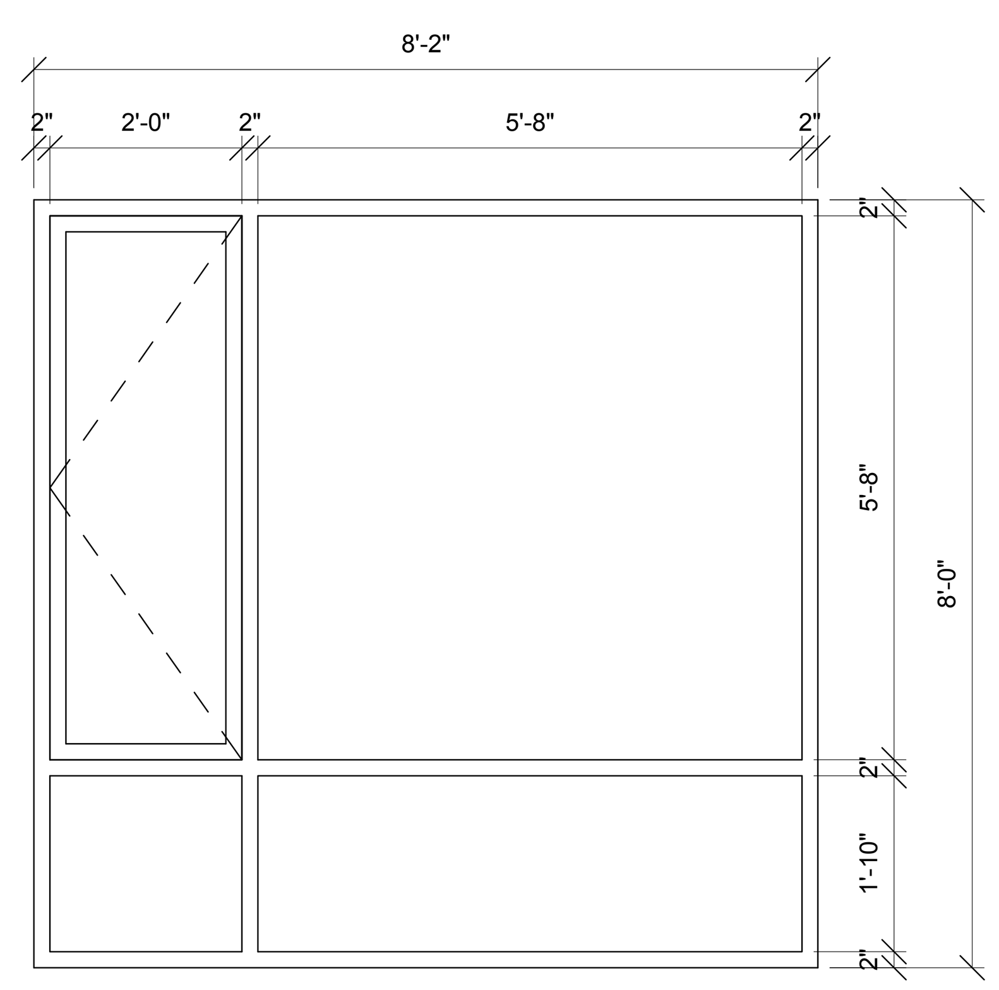
NATURAL LIGHT	22.44 SF
NATURAL VENTILATION	15.3 SF

W14 WINDOW TYPE D- CASEMENT WINDOW
1/2" = 1'-0"



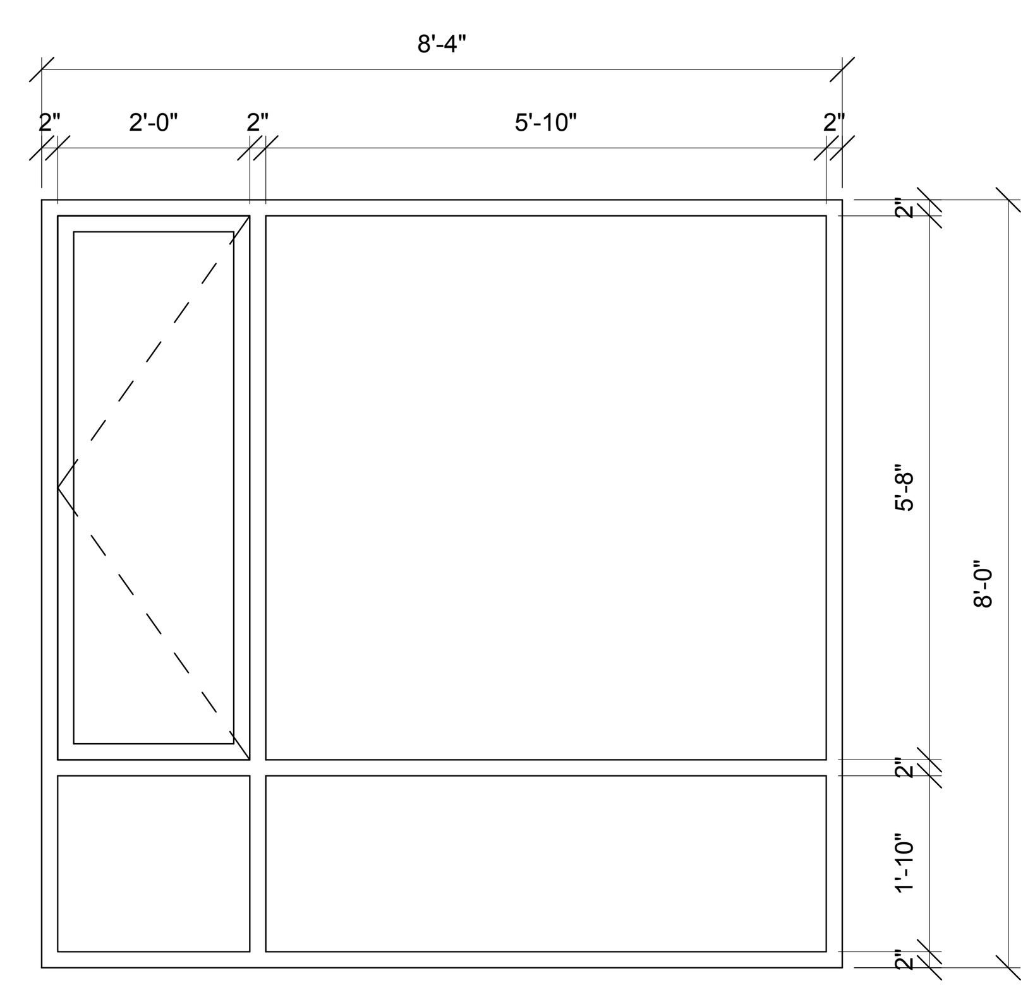
NATURAL LIGHT	59.64 SF
NATURAL VENTILATION	9.33 SF

W15 WINDOW TYPE E- CASEMENT WINDOW
1/2" = 1'-0"



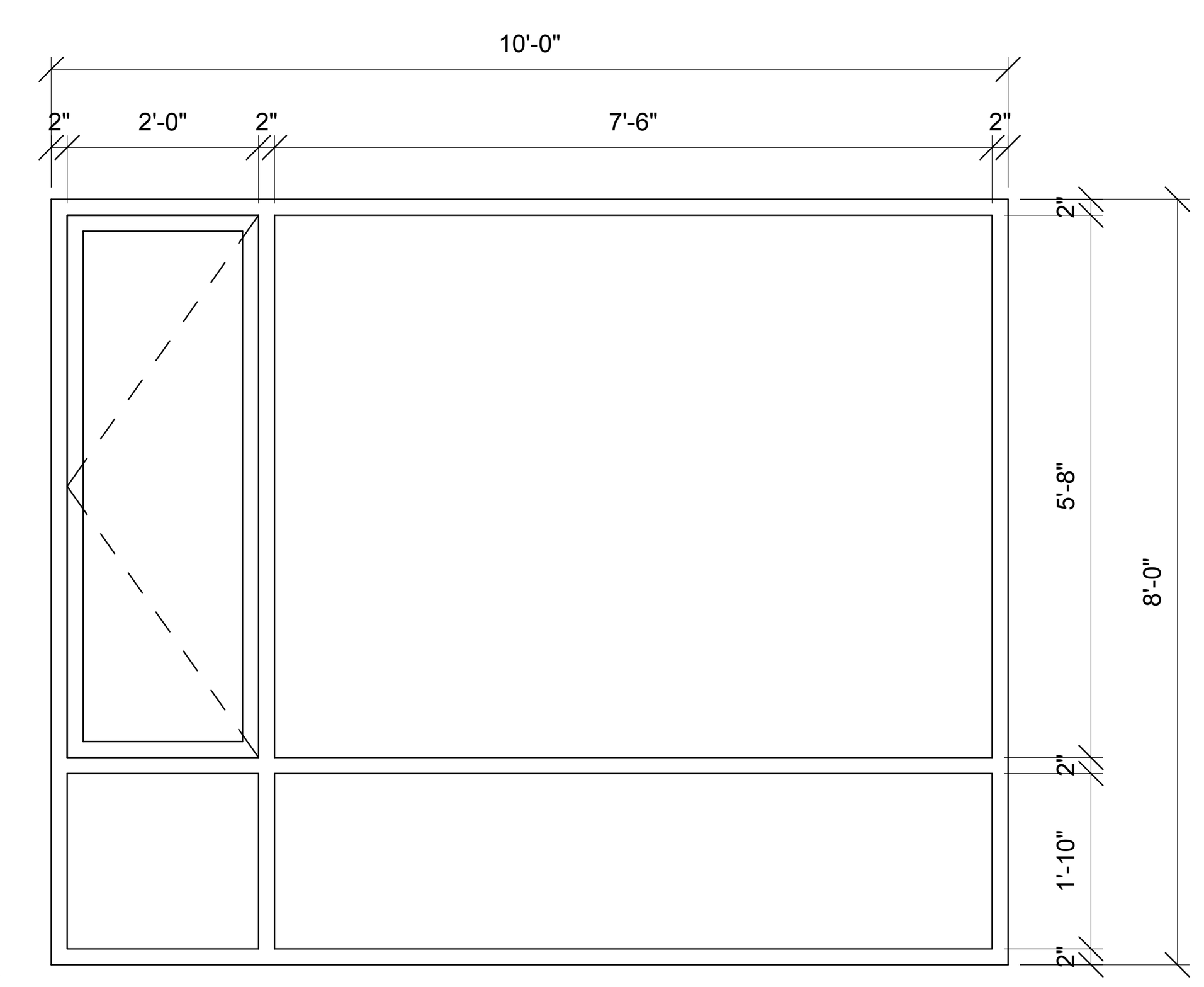
NATURAL LIGHT	55.1 SF
NATURAL VENTILATION	11.3 SF

W16 WINDOW TYPE E- CASEMENT WINDOW
1/2" = 1'-0"



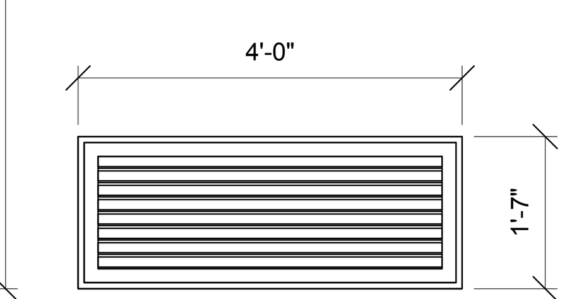
NATURAL LIGHT	56.3 SF
NATURAL VENTILATION	11.3 SF

W17 WINDOW TYPE E- CASEMENT WINDOW
1/2" = 1'-0"



NATURAL LIGHT	68.81 SF
NATURAL VENTILATION	11.3 SF

W18 WINDOW TYPE E- CASEMENT WINDOW
1/2" = 1'-0"



NATURAL LIGHT	0.00 SF
NATURAL VENTILATION	6.33 SF

W20 WINDOW TYPE F- LOUVERED OPENING
1/2" = 1'-0"

PROGRESS SET: 10/13/2014 6:04:12 PM

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
434 BROADWAY NEW YORK CITY 10013 P.212.431.5552 F.212.431.5663

OWNER:
Great Point Properties
450 Lexington Avenue
31st Floor
New York, NY 10017

STRUCTURAL ENGINEER:
GACE
31 W 27th St #6
New York, NY 10001

MEP ENGINEER:
Guth DeConzo Con. Eng.
242 W. 30th St
New York, NY 10001

CODE CONSULTANT:

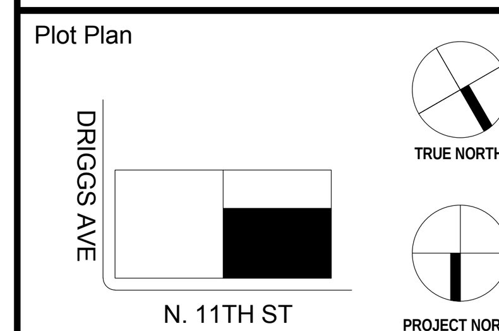
Issuance Schedule

No.	Date	Description
1	10/15	ISSUE FOR DOB

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
WINDOW SCHEDULE & DETAILS

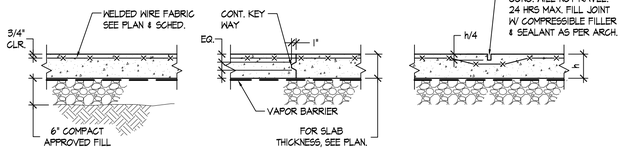
Sign & Seal

Drawing No.
A-820.00

Date	Drawn By	Job No.
07/16/14	Author	2014-049
Sheet Scale	Checked By	DOB Sheet
1/2" = 1'-0"	Checker	36 OF 36

DOB NUMBER

REINFORCEMENT SCHEDULE	
SLAB THICKNESS	REINF.
5"	6x6-W2.0xW2.0

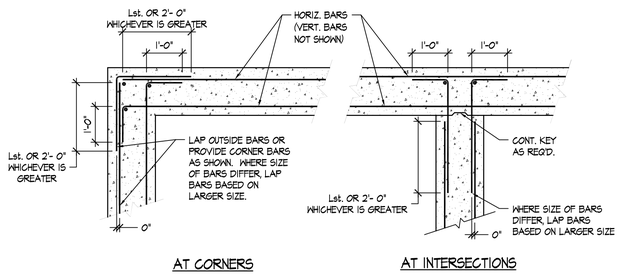


TYPICAL SLAB-ON-GRADE | CONSTRUCTION JOINT | CONTROL JOINT

NOTE: SEE LOCATION ON ARCHITECTURAL DRAWING OR PROVIDE @ 15'-0"

1 TYPICAL SLAB-ON-GRADE

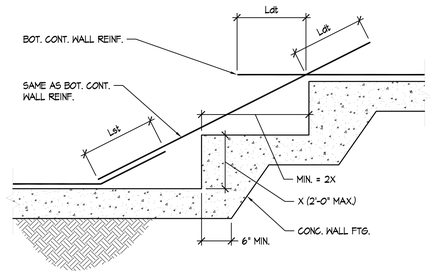
3/4" = 1'-0"



AT CORNERS | AT INTERSECTIONS

2 TYPICAL HORIZONTAL REINFORCING FOR CONCRETE WALLS AND GRADE BEAMS (PLAN)

1/2" = 1'-0"

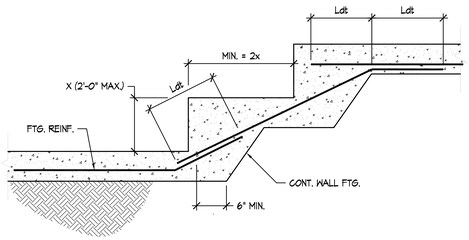


3 TYPICAL STEPPED WALL

1/2" = 1'-0"

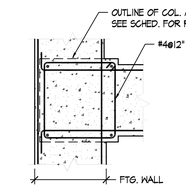
NOTES: 1. Ldt INDICATES TENSION DEVELOPMENT LENGTH. SEE SCHEDULE.

2. Lst INDICATES TENSION SPLICE LENGTH. SEE SCHEDULE.



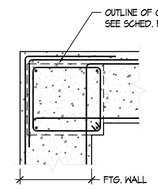
4 TYPICAL STEPPED FOOTING

1/2" = 1'-0"



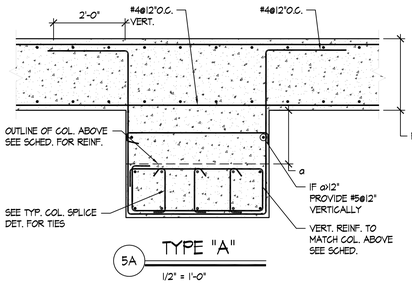
5C TYPE "C"

1/2" = 1'-0"



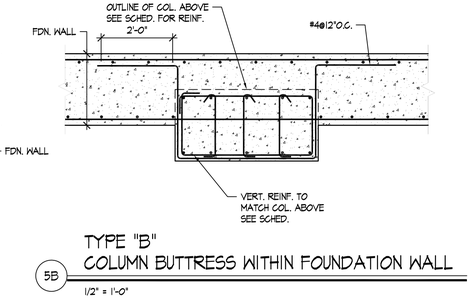
5D TYPE "D"

1/2" = 1'-0"



5A TYPE "A"

1/2" = 1'-0"



5B TYPE "B" COLUMN BUTTRESS WITHIN FOUNDATION WALL

1/2" = 1'-0"

5 TYPICAL COLUMN BUTTRESS PLAN

1/2" = 1'-0"

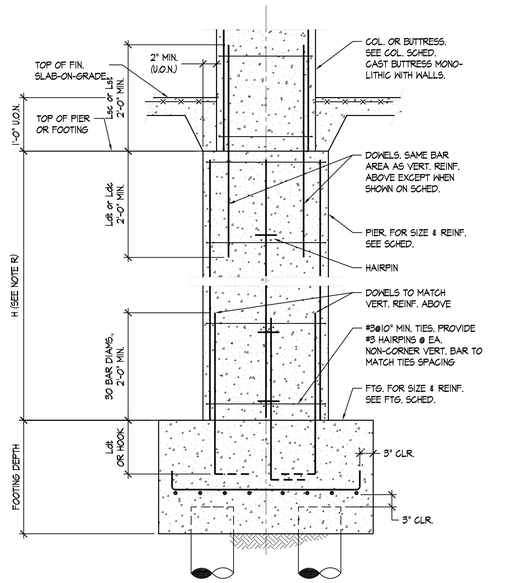
NOTE: FOR BALANCE OF WALL REINFORCEMENT & OTHER INFO, SEE TYPICAL WALL SECTIONS/ PIER-BUTTRESS DETAIL.

FOUNDATION NOTES:

1. FOUNDATION DESIGN HAS BEEN BASED ON GEOTECHNICAL REPORT PREPARED BY GEOTECH CONSULTANT DATED OCTOBER 20, 2014. A COPY OF THIS REPORT SHALL BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES.
2. ALL EARTHWORK, SUBGRADE PREPARATION AND FOUNDATION WORK SHALL BE DONE ACCORDING TO THE GEOTECHNICAL REPORT AND UNDER SUPERVISION OF LICENSED GEOTECHNICAL ENGINEER IN OWNER'S DIRECT EMPLOY.
3. ALL FOUNDATIONS AND OTHER CONSTRUCTION ELEMENTS AS SHOWN ON THE FOUNDATION PLAN SHALL BE SUPPORTED ON 60 TON CAPACITY MINI-PILES.
4. MAKE NO EXCAVATION TO THE FULL DEPTH INDICATED WHEN FREEZING TEMPERATURES MAY BE EXPECTED UNLESS THE FOOTINGS OR SLABS CAN BE PLACED IMMEDIATELY AFTER THE EXCAVATION HAS BEEN COMPLETED. PROTECT THE BOTTOM OF EXCAVATION FROM FROST IF PLACING OF CONCRETE IS DELAYED. SHOULD PROTECTION FAIL, REMOVE FROZEN MATERIALS AND REPLACE WITH CONCRETE OR GRAVEL FILL.
5. WALLS SHALL BE TEMPORARILY BRACED AGAINST EARTH PRESSURE AND OTHER FORCES UNTIL SLABS, BEAMS AND OTHER MEMBERS DESIGNED TO BRACE THE FINISHED STRUCTURE HAVE BEEN IN PLACE AND HAVE ATTAINED REQUIRED CONCRETE ULTIMATE STRENGTH.

MINI-PILE NOTES:

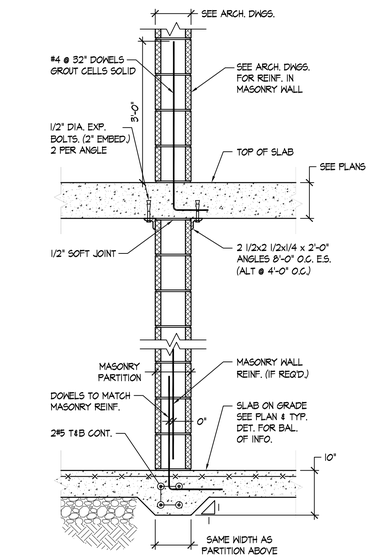
1. MINI-PILE INSTALLATION SHALL MEET ALL PROJECT SPECIFICATIONS AND APPLICABLE REQUIREMENTS OF THE 2008 NEW YORK CITY BUILDING CODE (NYCBC).
2. A MINIMUM PRESSURE HEAD OF 1.5 TIMES THE EXISTING TOTAL OVERBURDEN PRESSURE SHALL BE MAINTAINED AT ALL TIMES DURING PRESSURE GROUTING.
3. A MINIMUM VOLUME OF GROUT EQUAL TO OR GREATER THAN THE THEORETICAL GROUT VOLUME SHOULD BE USED TO GROUT MINI-PILES.
4. ALL ELEVATIONS SHOWN ARE REFERENCED TO THE DATUM OF THE TOPOGRAPHICAL BUREAU OF THE BOROUGH OF MANHATTAN, WHICH IS 2.75 FEET (FT) ABOVE MEAN SEA LEVEL AT SANDY HOOK, N.J. (1929 (NGVD29)).
5. MINI-PILES TO BE DRILLED USING DUPLEX DRILLING METHOD TO A BOTTOM ELEVATION (EL) OF -60.
6. LONGITUDINAL REINFORCEMENT CONSISTING OF ONE 13-INCH DIAMETER GRADE 50 STEEL REINFORCING BAR SHALL BE CENTRALLY INSTALLED IN ALL MINI-PILES TO NOT MORE THAN ONE INCH ABOVE THE BOTTOM OF THE MINI-PILES AND SECURED IN PLACE USING CENTRALIZERS.
7. CENTRALIZERS SHALL BE SECURELY ATTACHED TO THE REINFORCEMENT AT A MAXIMUM SPACING OF 10 FEET ON CENTER AND SHALL BE SIZED TO PERMIT GROUT TREMIE PIPE INSERTION TO THE BOTTOM OF THE DRILLHOLE AND FLOW OF GROUT TO THE FULL DEPTH OF MINI-PILES.
8. BEFORE GROUT IS PLACED, THE INTERIOR OF THE MINI-PILES SHALL BE FREE FROM CUTTINGS AND LOOSE MATERIAL. DRILLHOLES CAN BE FLUSHED WITH CLEAN WATER OR DRILLING FLUID AS NECESSARY UNTIL ALL CUTTINGS AND LOOSE MATERIAL IS REMOVED.
9. MINI-PILES TO BE GROUTED VIA TREMIE PIPE UNDER GRAVITY HEAD INSIDE CASING. GROUT PLACEMENT SHALL BE COMPLETED AS FOLLOWS:
   a. FILL CASING WITH CLEAN WATER OR DRILLING FLUID.
   b. POSITION GROUT PIPE TO WITHIN 6 INCHES OF THE BOTTOM OF THE PILE AND PLACE GROUT VIA TREMIE PIPE UNDER GRAVITY HEAD.
   c. PLACE GROUT IN ONE CONTINUOUS OPERATION UNTIL ALL WATER AND DRILL FLUIDS ARE DISPLACED AND VISUALLY PURE GROUT APPEARS AT THE TOP OF THE PILE.
10. FOLLOWING TREMIE GROUTING, CASING IS TO BE REMOVED TO EL -25 AS PRESSURE GROUTING IS PERFORMED.
11. CASING ABOVE EL -25 IS TO REMAIN IN MINI-PILE AS PERMANENT CASING.
12. MINI-PILES CONSTRUCTED IN CONFORMANCE TO THESE DETAILS AND CONTRACT SPECIFICATIONS SHALL HAVE AN ALLOWABLE AXIAL COMPRESSION LOAD CAPACITY OF 60 TONS, AN ALLOWABLE TENSION CAPACITY OF 30 TONS, AND AN ALLOWABLE LATERAL CAPACITY OF 1 TON. COMPRESSION CAPACTIY AND LATERAL CAPACITY TO BE CONFIRMED BY LOAD TESTS.
13. A MINIMUM OF ONE AXIAL COMPRESSIVE LOAD TEST SHALL BE PERFORMED ON A MINI-PILE IN ACCORDANCE WITH ASTM D 1143 AS MODIFIED BY THE NYCBC.
14. A MINIMUM OF ONE LATERAL LOAD TEST SHALL BE PERFORMED ON 1 PAIR OF MINI-PILES IN ACCORDANCE WITH ASTM D 3966 AS MODIFIED BY THE NYCBC.
15. FOR BOTH AXIAL AND LATERAL LOAD TESTS, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR PROPOSED LOAD TEST METHOD INDICATING THE ARRANGEMENT OF EACH TEST AND ALL DESIGN CALCULATIONS STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK NO LATER THAN 14 DAYS PRIOR TO COMMENCING TESTS.
16. LOAD TESTS SHALL ONLY BE PERFORMED IN THE PRESENCE OF THE OWNER'S ENGINEER.



6 TYPICAL CONCRETE COLUMN, PIER OR BUTTRESS AND FOOTING (NON-SEISMIC)

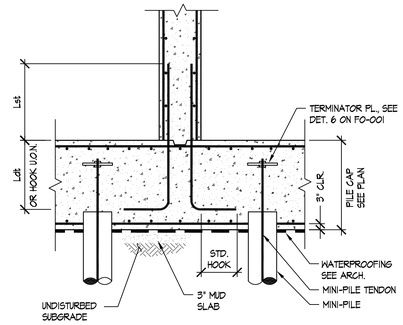
3/4" = 1'-0"

NOTE R: WHERE H IS LESS THAN 1'-0" EXTEND COLUMN DOWELS THROUGH PIER AND Ldt. INTO FOOTING AND OMIT PIER DOWELS. CAST COLUMN MONOLITHIC WITH FOOTING AND OMIT PIER.



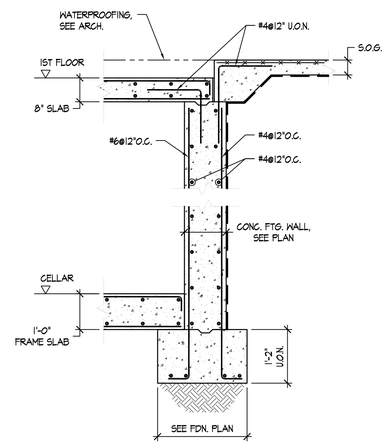
7 TYPICAL NON-BEARING MASONRY SUPPORTED BY SLAB-ON-GRADE

3/4" = 1'-0"



8 TYPICAL SHEAR WALL ON PILES

1/2" = 1'-0"



9 SECTION

1/2" = 1'-0"

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MEP ENGINEER:
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New York, NY 10001

CODE CONSULTANT:

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

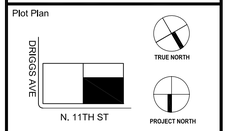
Issuance Schedule

No.	Date	Description
	12/12/14	BID SET

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
FOUNDATION DETAILS 1

Sign & Seal

Drawing No.
FO-001.00

Date	Drawn By	Job No.
07/16/14	JL	B4132.00
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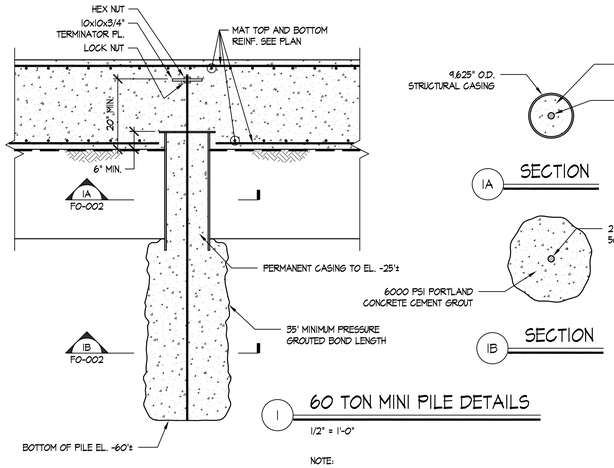
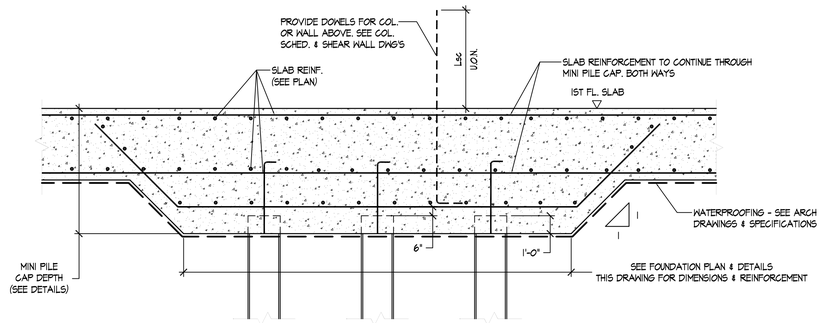
DOB NUMBER



1 60 TON MINI PILE DETAILS

1/2" = 1'-0"

NOTE:
1. SEE GEOTECH REPORT AND S.O.E DRAWINGS PREPARED BY YU AND ASSOCIATES FOR BALANCE OF INFORMATION.



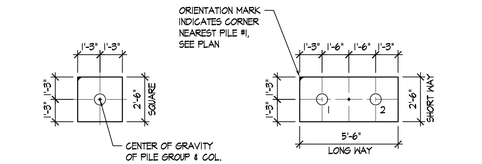
SECTION @ MINI PILE CAP

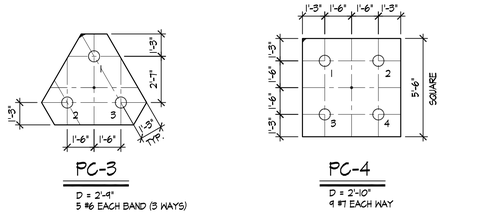
2 MINI PILE CAP DETAILS

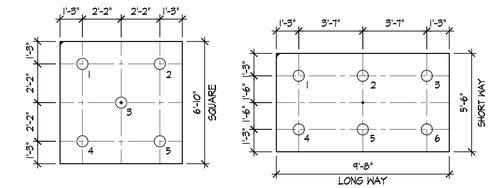
N.T.S.

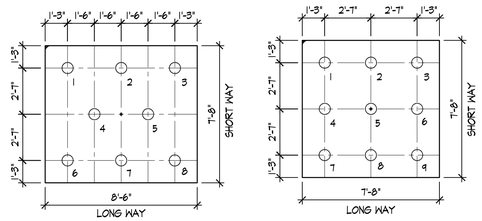
NOTES:

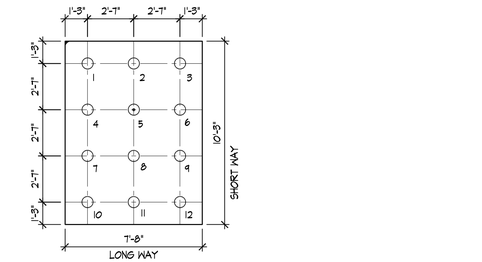
1. D = DEPTH OF MINI PILE CAP
2. REINFORCING SHOWN IS BOTTOM REINFORCEMENT.
3. ○ DENOTES MINI PILE

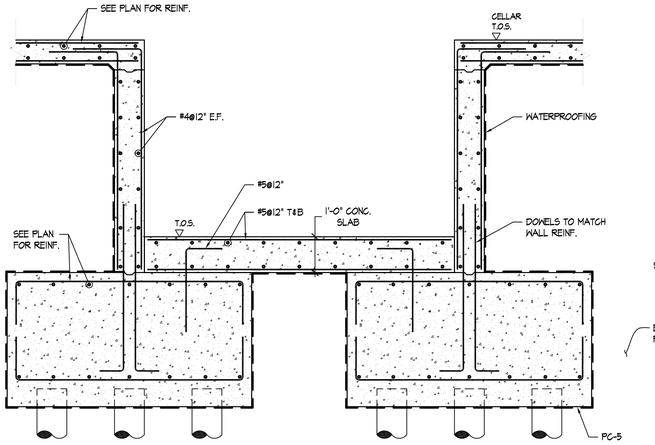




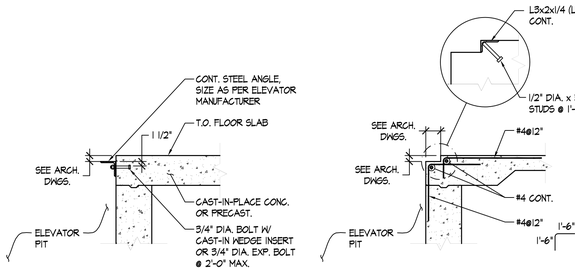








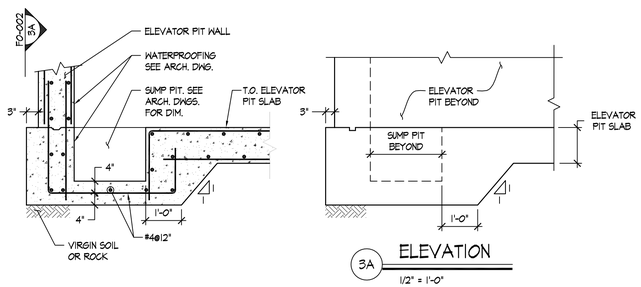
ELEVATOR PIT



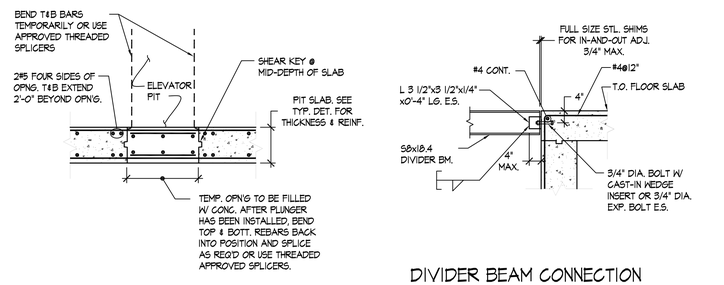
ELEVATOR SILL

NOTE: SEE TYPICAL ELEVATOR PIT DETAIL FOR BALANCE OF INFORMATION.

ELEVATOR PIT TO SLAB-ON-GRADE CONNECTION



ELEVATOR SUMP-PIT



TEMPORARY PLUNGER OPENING

NOTE: SEE TYPICAL ELEVATOR PIT DETAIL FOR BALANCE OF INFORMATION.

DIVIDER BEAM CONNECTION TO ELEVATOR PIT

NOTE: SEE TYPICAL ELEVATOR PIT DETAIL FOR BALANCE OF INFORMATION.

3 TYPICAL ELEVATOR PIT

1/2" = 1'-0"

Project
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BROOKLYN, NY 11211

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MEP ENGINEER:
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New York, NY 10001

CODE CONSULTANT:

Issuance Schedule

No.	Date	Description
	12/12/14	BID SET

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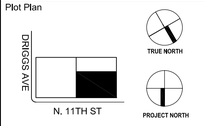
No.	Date	Description

Plot Plan



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FOUNDATION DETAILS 2

Sign & Seal

Drawing No.
FO-002.00

Date	Drawn By	Job No.
07/16/14	JL	B4132.00
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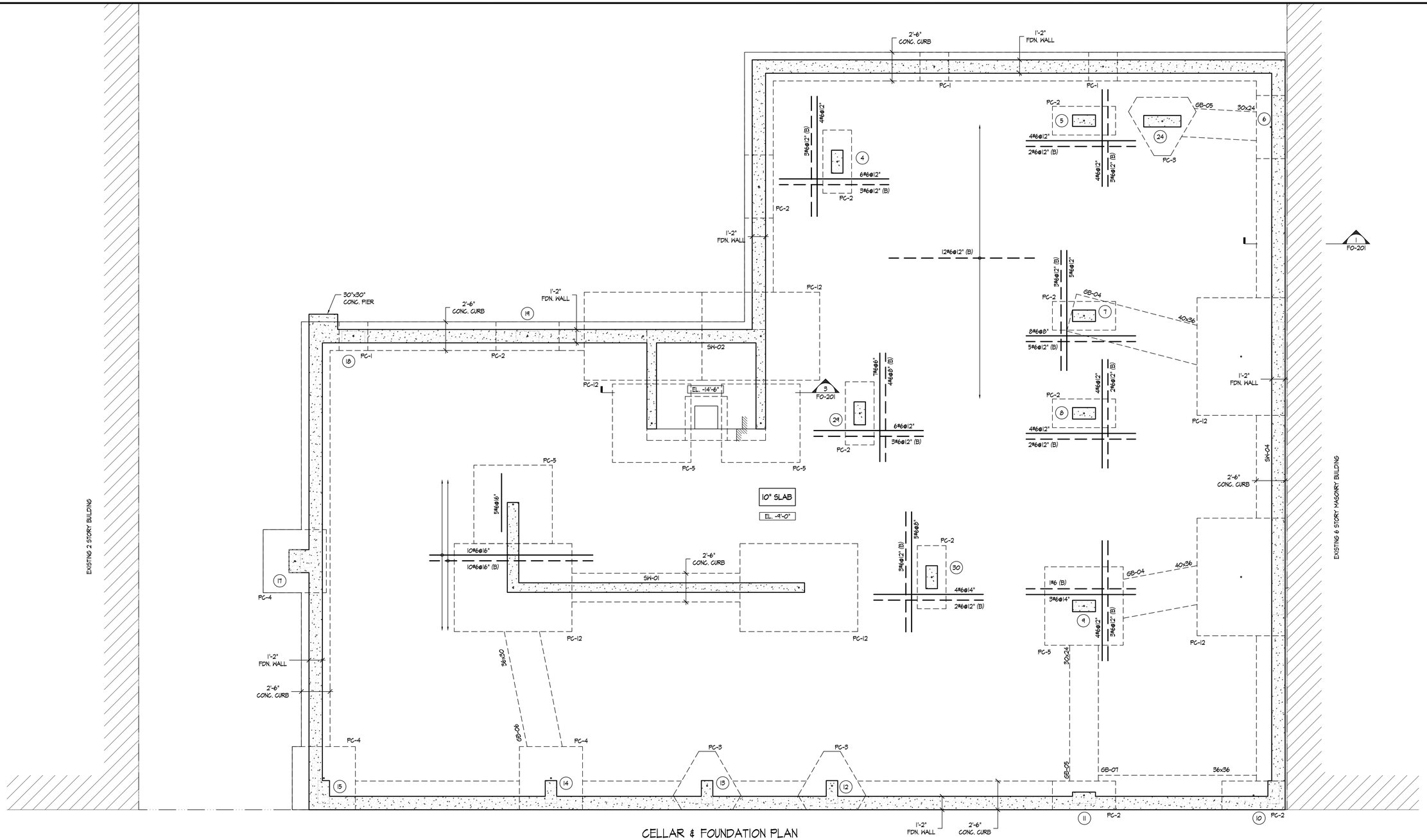
AS NOTED	CBB	X OF XX

DOB NUMBER



CELLAR & FOUNDATION PLAN

1/4" = 1'-0"

NOTES:

1. TOP OF CELLAR SLAB ELEVATION SHOWN AS EL. XX'-XX" WITH RESPECT TO PROJECT EL. 0'-0".
2. BOTTOM OF FOOTING ELEVATIONS AND DENOTED AS [X'-X"] WITH RESPECT TO PROJECT EL. 0'-0".
3. FOR GRADE BEAMS REINFORCEMENT, SEE SCHEDULE.
4. BOTTOM BARS SHOWN ON PLAN DENOTED BY ____ X#X(B)____ ARE TO BE PLACED IN ADDITION TO STANDARD BOTTOM REINFORCEMENT OF #5@14" EACH WAY CONTINUOUS (10" SLAB), REINFORCING BARS SHOWN ON PLAN TO BE PLACED IN ACCORDANCE WITH TYPICAL FLAT SLAB DETAILS 1 & 2 ON DRAWING S-004 AND IN ADDITION TO ANY STANDARD REINFORCEMENT CALLED OUT FOR IN THOSE DETAILS.
5. TOP BARS DENOTED BY _____X#X_____ ARE TO BE PLACED IN ADDITION TO STANDARD TOP REINFORCEMENT OF #5@14" EACH WAY CONTINUOUS (10" SLAB), REINFORCING BARS SHOWN ON PLAN TO BE PLACED IN ACCORDANCE WITH TYPICAL FLAT SLAB DETAILS 1 & 2 ON DRAWING S-004 AND IN ADDITION TO ANY STANDARD REINFORCEMENT CALLED OUT FOR IN THOSE DETAILS.
6. PLACEMENT EAST/WEST REINFORCING IN THE OUTERMOST LAYER

4' 0' 4' 8'

GRAPHIC SCALE

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
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CODE CONSULTANT:

Issuance Schedule

No.	Date	Description
	12/12/14	BID SET

Revision Schedule

No.	Date	Description

Plot Plan

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CELLAR & FOUNDATION PLAN

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	FO-101.00

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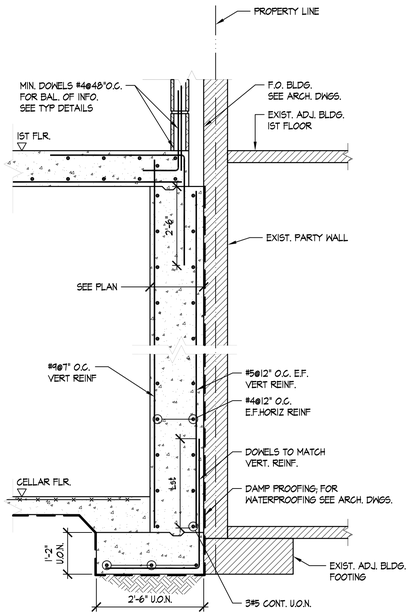
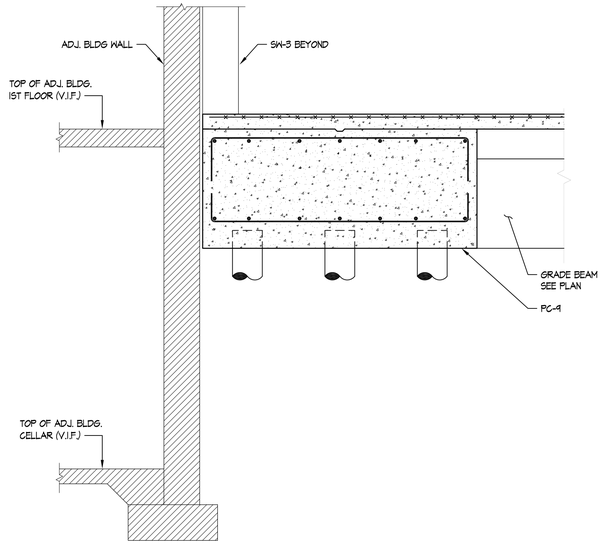
AS NOTED	CBB	X OF XX

DOB NUMBER



1 SECTION
1/2" = 1'-0"



2 SECTION
1/2" = 1'-0"

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
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New York, NY 10001

CODE CONSULTANT:

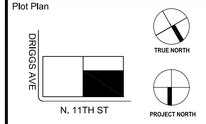
Issuance Schedule

No.	Date	Description
	12/12/14	BID SET

Revision Schedule

No.	Date	Description

Plot Plan



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FOUNDATION SECTIONS

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Drawing No.
FO-201.00

Date	Drawn By	Job No.
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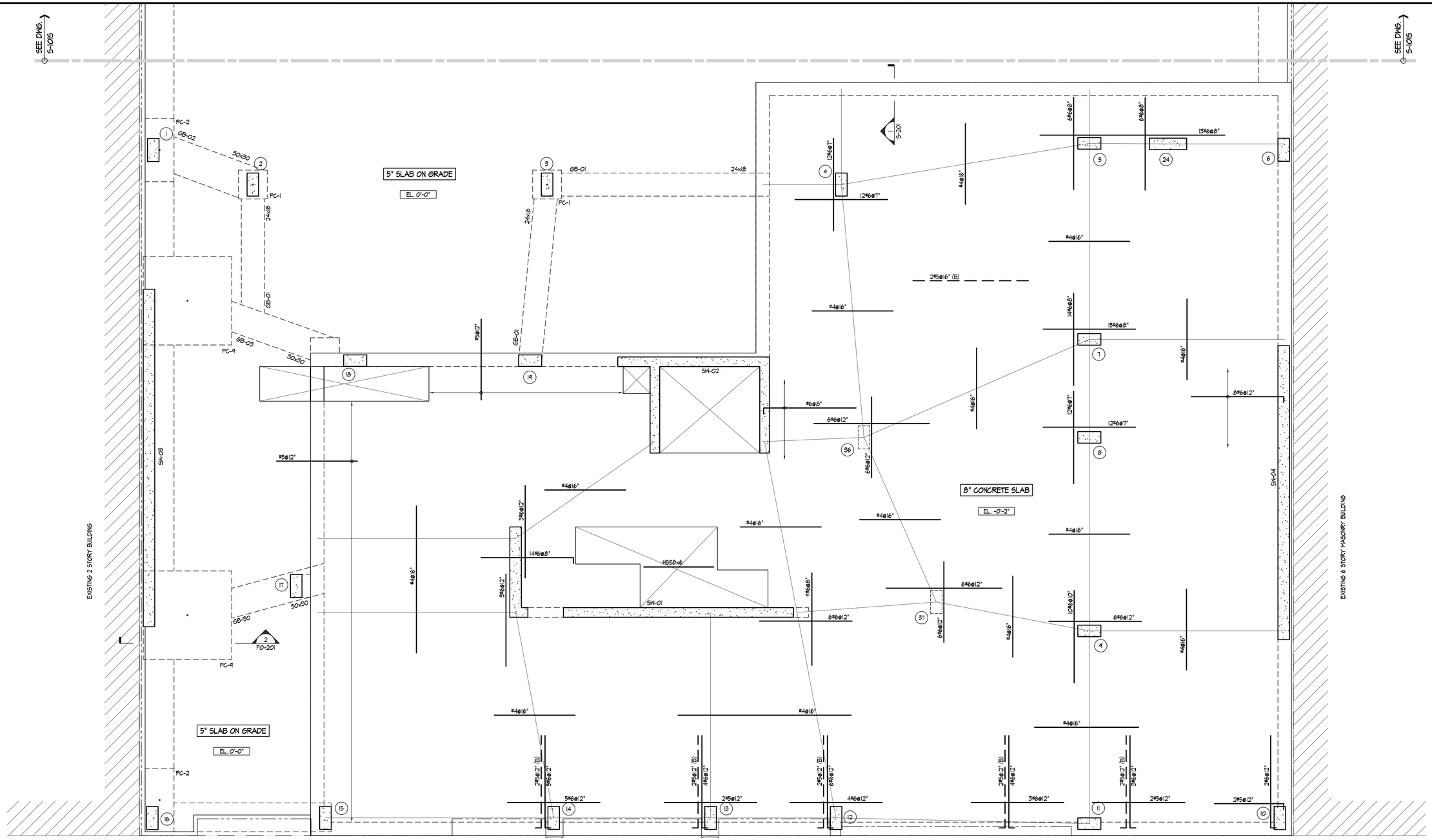
DOB NUMBER



1ST FLOOR FRAMING PLAN

1/4" = 1'-0"

NOTES:

1. BOTTOM BARS SHOWN ON PLAN DENOTED BY ____ X@X(B) ____ ARE TO BE PLACED IN ADDITION TO STANDARD BOTTOM REINFORCEMENT OF #4@12" EACH WAY CONTINUOUS (8" CONCRETE SLAB). REINFORCING BARS SHOWN ON PLAN TO BE PLACED IN ACCORDANCE WITH TYPICAL FLAT SLAB DETAILS 1 & 2 ON DRAWING S-004 AND IN ADDITION TO ANY STANDARD REINFORCEMENT CALLED OUT FOR IN THOSE DETAILS.
2. TOP BARS DENOTED BY ____ X@X ____ ARE TO BE PLACED IN ACCORDANCE WITH TYPICAL FLAT SLAB DETAILS 1 & 2 ON DRAWING S-004 AND IN ADDITION TO ANY STANDARD REINFORCEMENT CALLED OUT FOR IN THOSE DETAILS.
3. PLACE EAST-WEST REINFORCEMENT IN OUTER-MOST LAYER.
4. FOR COLUMN & MIDDLE STRIP SEE TYPICAL FLAT SLAB DETAIL ON DRAWING S-004.
5. FOR COLUMN DIMENSIONS & REINFORCEMENT SEE COLUMN SCHEDULES ON DRAWING S-301 & S-302.
6. FOR BEAM DIMENSIONS & REINFORCEMENT SEE BEAM SCHEDULE ON DRAWING S-303.
7. SLAB OPENINGS AND PENETRATIONS SHOWN MUST BE COORDINATED WITH PLUMBING, MECHANICAL & SPRINKLER DRAWINGS.
8. ALL REINFORCEMENT IN BALCONIES, TERRACES, PARKING & OTHER AREAS OF EXPOSED CONCRETE ARE TO BE EPOXY COATED REBARS.
9. TOP OF SLAB ELEVATION SHOWN [EL. X'-X"] WITH RESPECT TO NYC DATUM EL. 0'-0".
10. SW-XX DENOTES CONCRETE SHEAR WALL. SEE S-401 & S-402 FOR BALANCE OF INFORMATION.
11. [XX" SLAB] INDICATES CONCRETE SLAB OF THICKNESS "XX". SEE CONCRETE NOTES ON DRAWING S-001 FOR BALANCE OF INFORMATION.

4' 0' 4' 8'

GRAPHIC SCALE

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

KUTNICKI BERNSTEIN ARCHITECTS
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New York, NY 10001

CODE CONSULTANT:

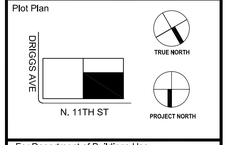
Issuance Schedule

No.	Date	Description
	12/12/14	BID SET

Revision Schedule

No.	Date	Description

Plot Plan



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Drawing Title
1ST FLOOR FRAMING PLAN - NORTH

Sign & Seal

Drawing No.
S-101N.00

Date	Drawn By	Job No.
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AS NOTED	CBB	XXOF XX

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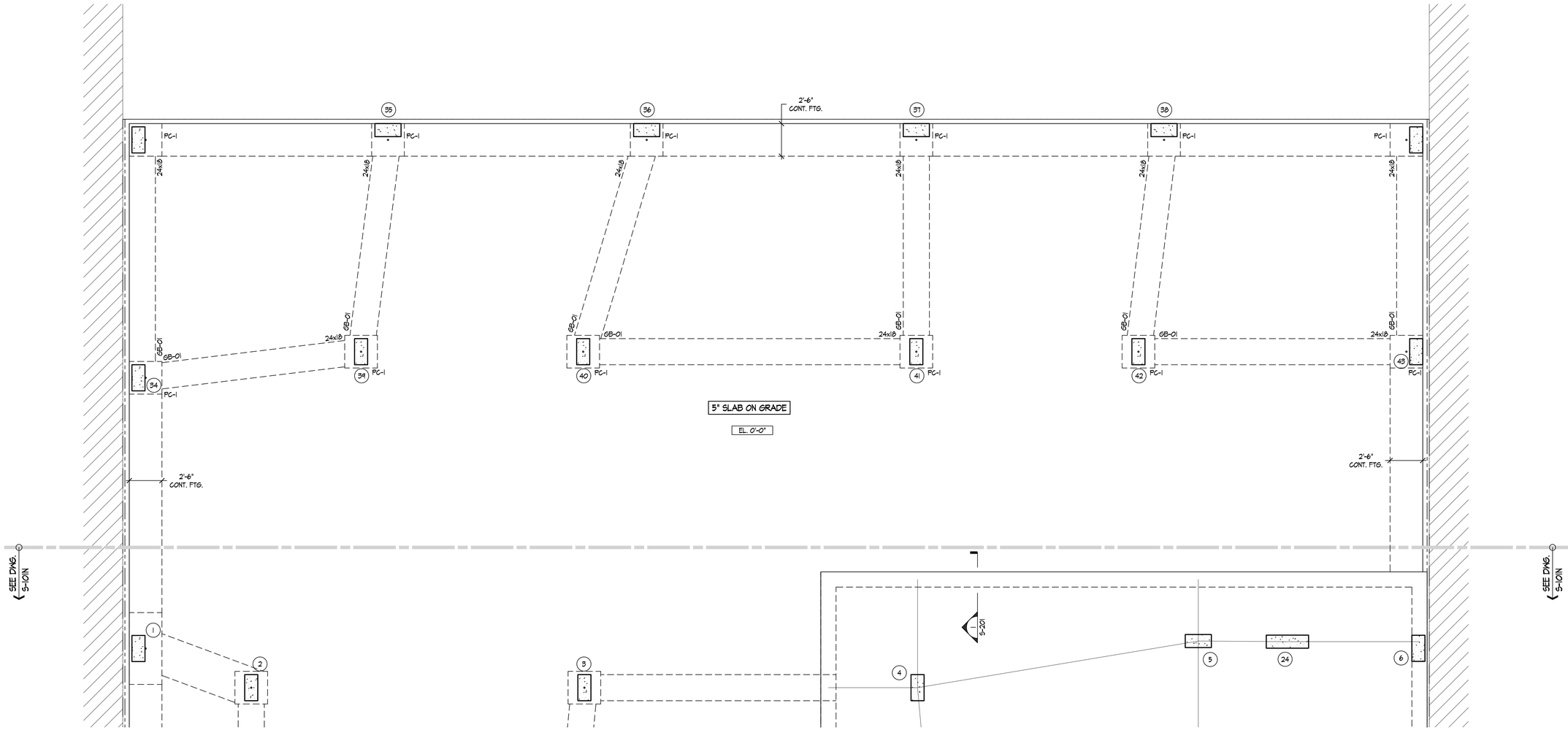

1ST FLOOR FRAMING PLAN

1/4" = 1'-0"

NOTES:

1. BOTTOM BARS SHOWN ON PLAN DENOTED BY ___ X#X(T) ___ ARE TO BE PLACED IN ADDITION TO STANDARD BOTTOM REINFORCEMENT OF #4@12" EACH WAY CONTINUOUS (8" CONCRETE SLAB). REINFORCING BARS SHOWN ON PLAN TO BE PLACED IN ACCORDANCE WITH TYPICAL FLAT SLAB DETAILS 1 & 2 ON DRAWING S-004 AND IN ADDITION TO ANY STANDARD REINFORCEMENT CALLED OUT FOR IN THOSE DETAILS.
2. TOP BARS DENOTED BY ——— X#X ——— ARE TO BE PLACED IN ACCORDANCE WITH TYPICAL FLAT SLAB DETAILS 1 & 2 ON DRAWING S-004 AND IN ADDITION TO ANY STANDARD REINFORCEMENT CALLED OUT FOR IN THOSE DETAILS.
3. PLACE EAST-WEST REINFORCEMENT IN OUTER-MOST LAYER.
4. FOR COLUMN & MIDDLE STRIP SEE TYPICAL FLAT SLAB DETAIL ON DRAWING S-004.
5. FOR COLUMN DIMENSIONS & REINFORCEMENT SEE COLUMN SCHEDULES ON DRAWING S-301 & S-302.
6. FOR BEAM DIMENSIONS & REINFORCEMENT SEE BEAM SCHEDULE ON DRAWING S-303.
7. SLAB OPENINGS AND PENETRATIONS SHOWN MUST BE COORDINATED WITH PLUMBING, MECHANICAL & SPRINKLER DRAWINGS.
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9. TOP OF SLAB ELEVATION SHOWN [EL. X'-X"] WITH RESPECT TO NYC DATUM EL. 0'-0".
10. SW-XX DENOTES CONCRETE SHEAR WALL. SEE S-401 & S-402 FOR BALANCE OF INFORMATION.
11. [XX" SLAB] INDICATES CONCRETE SLAB OF THICKNESS "XX". SEE CONCRETE NOTES ON DRAWING S-001 FOR BALANCE OF INFORMATION.

4' 0' 4' 8'

GRAPHIC SCALE

Project
174 N. 11TH STREET
BROOKLYN, NY 11211

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MEP ENGINEER:
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New York, NY 10001

CODE CONSULTANT:

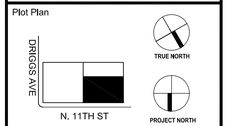
Issuance Schedule

No.	Date	Description
	12/12/14	BID SET

Revision Schedule

No.	Date	Description

Plot Plan



For Department of Buildings Use

Drawing Title
1ST FLOOR FRAMING PLAN - SOUTH

Sign & Seal

Drawing No.
S-101S.00

Date	Drawn By	Job No.
07/16/14	JL	B4132.00

Sheet Scale	Checked By	DOB Sheet
AS NOTED	CBB	XIOF XX

DOB NUMBER

APPENDIX 2

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and 174 North 11th Partners, LLC has established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, 174 North 11th Partners, LLC will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Shana Holberton, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-8841.

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

Repositories: A document repository is maintained online. Internet access to view OER's document repositories is available at public libraries. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. The library nearest the Site is:
Greenpoint Library (a Brooklyn Public Library)
107 Norman Ave., Brooklyn, NY 11222
(718)_349-8504
10:00am to 8:00pm (m-th), 10:00am to 6:00pm (f), 10:00am to 5:00 (sat), Closed (sun)

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

Issues of Public Concern: Concerns to the public will be potential impacts of noise and dust during the excavation of soils at the Site. Consideration and preventative measures will be taken during this work to limit exposures to future residents of the property and adjacent properties. Detailed plans to monitor the potential for exposure including a Construction Health and Safety Plan and a Community Air Monitoring Plan are required components of remediating the Site. Implementation of these plans will be under direct oversight of the New York City Department of Environmental Remediation (NYCOER).

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

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

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

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

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

APPENDIX 3
SUSTAINABILITY STATEMENT

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

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

It is anticipated that recycled concrete aggregate will be used wherever possible in grading at the Site. An estimate of the quantity (in tons) of clean, non-virgin materials (reported by type of material) reused under this plan will be quantified and reported in the RAR.

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

It is anticipated that the use of virgin soils and top-soils as backfill, if required, will be avoided. An estimate of the quantity (in tons) of virgin and non-renewable resources, the use of which will be avoided under this plan, will be quantified and reported in the RAR.

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

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

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

Efforts will be made to increase the use of clean fuels at the Site to reduce the environmental impact of Site operations. An estimate of the volume of clean fuels used during remedial activities will be quantified and reported in the RAR.

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

Best efforts will be made to remove the possibility of recontamination at the Site. A vapor barrier will be installed around the cellar slab, the slab-on-grade below the residential portion of the Site, and along foundation side walls in an attempt to eliminate the risk of future migration of soil vapor contamination from off-Site sources. The first floor, consisting of a ventilated parking garage, will have a mechanical ventilation capability of approximately 11,000 cfm/ft^2 in an attempt to eliminate the risk of future migration of soil vapor contamination from off-site sources. An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

Paperless Brownfield Cleanup Program: 174 North 11th Partners, LLC is participating in OER's Paperless Brownfield Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

Low-Energy Project Management Program: 174 North 11th Partners, LLC is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

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

It is anticipated that the Site will maintain and include street trees. An estimate of the land area that will be vegetated, including the number of trees planted or preserved, will be reported in square feet in the RAR.

APPENDIX 4
SOIL/MATERIALS MANAGEMENT PLAN

1.1 Soil Screening Methods

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

1.2 Stockpile Methods

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

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

1.3 Characterization of Excavated Materials

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

1.4 Materials Excavation, Load-Out, and Departure

The PE/QEP overseeing the remedial action will:

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

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

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

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

1.5 Off-Site Materials Transport

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

Outbound truck transport routes are shown in **Figure 9**. This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

1.6 Materials Disposal Off-Site

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

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

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations.

Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).
Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RAR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RAR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

1.7 Materials Reuse On-Site

Soil and fill that is derived from the property that meets the Soil Cleanup Objectives (SCOs) established in this plan may be reused on-Site. The SCOs for on-Site reuse are Track 2 Restricted Residential as modified by the Track 4 Site-Specific SCOs listed Section 4.2. 'Reuse on-Site' means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to the NYC VCP agreement subject to Engineering and Institutional Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this RAWP are followed.

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

1.8 Demarcation

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

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

1.9 Import of Backfill Soil From Off-Site Sources

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in Section 4.2.

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

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

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;
- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC.
- All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this RAWP. The RAR will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.
- Source Screening and Testing
- Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:
- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

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

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

1.10 Fluids Management

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

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

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

1.11 Stormwater Pollution Prevention

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

1.12 Contingency Plan

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

1.13 Odor, Dust, and Nuisance Control

Odor Control

All necessary means will be employed to prevent on- and off-Site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances

will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorants in spray or misting systems.

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

Dust Control

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

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

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

Other Nuisances

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

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

APPENDIX 5
CONSTRUCTION HEALTH AND SAFETY PLAN

REDEVELOPMENT PROJECT
172-174 NORTH 11TH STREET (BLOCK 2298, LOT 13)
BROOKLYN, NEW YORK
OER PROJECT NUMBER: 15EHAZ065K
NYC VCP PROJECT NUMBER: 15CVCP054K

CONSTRUCTION HEALTH AND SAFETY PLAN

Submitted To:

New York City Office of Environmental Remediation
E-Designation Program
253 Broadway, 14th Floor
New York, New York 10007

Prepared For:

174 North 11th Partners, LLC

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PWGC Project Number: GPP1401

DECEMBER 2014

PWGC
Strategic Environmental Engineering Solutions

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STATEMENT OF COMMITMENT

On-site employees may be exposed to risks from hazardous conditions related to the planned construction activities to be performed on the 172-174 North 11th Street, Brooklyn, New York project site. P.W. Grosser Consulting Inc.'s (PWGC's) policy is to minimize the possibility of work-related injury through awareness and qualified supervision, health and safety training, medical monitoring, use of appropriate personal protective equipment, and the following activity specific safety protocols contained in this Construction Health and Safety Plan (CHASP). PWGC has established a guidance program to implement this policy in a manner that protects personnel to the maximum reasonable extent.

This CHASP, which applies to PWGC personnel actually or potentially exposed to safety or health hazards, describes emergency response procedures for actual and potential physical and chemical hazards. This CHASP is also intended to inform and guide personnel entering the work area or exclusion zone. Persons are to acknowledge that they understand the potential hazards and the contents of this Health and Safety policy by signing off on receipt of their individual copy of the document. Contractors and suppliers are retained as independent contractors and are responsible for ensuring the health and safety of their own employees.

PWGC may require that its personnel take certain precautions in accordance with this CHASP, and PWGC requests that others protect their personnel in a manner that they deem necessary or sufficient.

1.0 INTRODUCTION AND SITE ENTRY REQUIREMENTS

This document describes the health and safety guidelines developed by P.W. Grosser Consulting, Inc. (PWGC) at the request of Great Point Properties, LLC for the proposed site re-development to be performed at the 172-174 North 11th Street, Brooklyn, New York site to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials or wastes. In accordance with the Occupational Safety and Health Administration (OSHA) 29 CFR Part 1910.120 Hazardous Waste Operations and Emergency Response Final rule, this CHASP, including the attachments, addresses safety and health hazards relating to each phase of site operations and is based on the best information available. The CHASP may be revised by PWGC at the request of Great Point Properties, LLC and/or a regulatory agency upon receipt of new information regarding site conditions. Changes will be documented by written amendments signed by P.W. Grosser's project superintendent, site safety officer and/or the PWGC health and safety consultant.

1.1 Training Requirements

PWGC personnel entering the exclusion zone or decontamination zone must meet the training requirements for hazardous waste site operations and emergency response operations in accordance with OSHA 29 CFR 1910.120(e). PWGC's health and safety training records are kept on file.

Each subcontractor and supplier working on the job must provide the site safety officer with training documentation for its personnel. This documentation will be reviewed by the site safety officer to ensure compliance with site-specific health and safety rules. The site safety officer may require modifications to the subcontractor or suppliers safety training documentation if it does not conform to site-specific requirements.

1.2 Medical Monitoring Requirements

PWGC personnel and visitors entering the exclusion zone or decontamination zone must have completed appropriate medical monitoring required under OSHA 29 CFR 1910.120(f). Medical monitoring enables a physician to monitor each employee's health, physical condition, and his fitness to wear respiratory protective equipment and carry out on-site tasks.

Evidence of compliance with additional medical monitoring requirements for this site must also be included. Subcontractors and suppliers working on the job must provide the site safety officer with documentation on their medical monitoring programs.

1.3 Fit-Testing Requirements

Personnel and visitors entering the exclusion zone or decontamination zone using a negative pressure

air purifying respirator (APR) must have successfully passed a qualitative respirator fit test in accordance with OSHA 29 CFR 1910.134 or the American National Standards Institute (ANSI).

Fit testing documentation is the responsibility of each subcontractor. Documentation of PWGC's personnel fit-testing is maintained on file.

1.4 Site Safety Plan Acceptance, Acknowledgment and Amendments

The project superintendent and the site safety officer are responsible for informing personnel (P.W. Grosser employees and/or owner or owners representatives) entering the work area of the contents of this plan and ensuring that each person signs the safety plan acknowledging the on-site hazards and procedures required to minimize exposure to adverse effects of these hazards. A copy of the Acknowledgement Form is included in **Appendix A**.

Site conditions may warrant an amendment to the CHASP. Amendments to the CHASP are acknowledged by completing forms included in **Appendix B**.

1.5 Daily Safety Meetings

Each day before work begins, the site safety officer will hold safety (tailgate or tool box) meetings to ensure that on-site personnel understand the site conditions and operating procedures and to address safety questions and concerns. Meeting minutes and attendance will be recorded. Personnel eligible to enter the exclusion and decontamination zones must attend the meetings. Project staff will discuss and remedy health and safety issues at these meetings.

1.6 Key Personnel - Roles and Responsibilities

The following PWGC key personnel are planned for this project:

- PWGC Project Manager — Mr. Richard Kampf
- PWGC Site Safety Officer — Mr. Kris Almskog

The PWGC project manager is responsible for overall project administration and, with guidance from the PWGC site safety officer, for supervising the implementation of this CHASP. The site safety officer will conduct daily (tail gate or tool box) safety meetings at the project site and oversee daily safety issues. Each subcontractor and supplier (defined as an OSHA employer) is also responsible for the health and safety of its employees. If there is any dispute about health and safety or project activities, on-site personnel will attempt to resolve the issue. If the issue cannot be resolved at the site, then the project manager will be consulted.

The PWGC site safety officer is also responsible for coordinating and enforcing health and safety

activities on-site. The site safety officer must meet the emergency response and hazardous materials training requirements of OSHA 29 CFR Part 1910.120; must have completed OSHA supervisor training, 29 CFR 1910.120 (e) 4; and must have appropriate experience to the related site work. The site safety officer is authorized to suspend the site work based on safety concerns, and is responsible for the following:

1. Educating personnel about information in this CHASP and other safety requirements to be observed during site operations, including, but not limited to, decontamination procedures, designation of work zones and levels of protection, air monitoring, fit testing, and emergency procedures dealing with fire and first aid.
2. Coordinating site safety decisions with the project manager.
3. Designating exclusion, decontamination and support zones on a daily basis.
4. Monitoring the condition and status of known on-site hazards and maintaining and implementing the air quality monitoring program specified in this CHASP.
5. Maintaining the work zone entry/exit log and site entry/exit log.
6. Maintaining records of safety problems, corrective measures and documentation of chemical exposures or physical injuries (the site safety officer will document these conditions in a bound notebook and maintain a copy of the notebook on-site).

The person who observes safety concerns and potential hazards that have not been addressed in the daily safety meetings should immediately report their observations/concerns to the site safety officer or appropriate key personnel.

2.0 SITE BACKGROUND AND SCOPE OF WORK

The subject property is located 172-174 North 11th Street, Brooklyn, New York. The site is designated as Block 2298, Lot 13 by the City of New York Department of Assessment. The property is approximately 0.23 acres in size. Presently, the Site contains two commercial buildings. Building 172 consists of two floors with the first level being utilized as a lighting fixture restoration company (Aurora Lampworks Inc.) and as a jewelry showroom (Fitzgerald Jewelry). The upper level is used for storage and office space. The north portion of Building 174 consists of one floor and is utilized as a design showroom (Design Rehab, LLC). The rear portion of Building 174 is utilized as storage (Aurora Lampworks Inc.). A site location map is shown on **Figure 1**.

PWGC Completed a Phase I ESA for the Site in March 2012 and a Phase II ESA in April 2012. PWGC is not aware of any additional subsurface investigations conducted at the Site. The Phase I ESA identified the following recognized environmental conditions (RECs):

- The site has historically been operated for industrial/manufacturing purposes
- Floor drains were located at the Site. These drains were filled with silt and debris from historical use.
- The site has an "E" designation for Hazmat.
- The Site is located adjacent to two New York State Department of Environmental Conservation (NYSDEC) SPILL sites that are currently active.
- Neighboring properties have a historical industrial background with the potential to affect the subsurface.

Based upon the findings of the Phase I ESA, a subsurface investigation (SI) was recommended for the subject site. A summary of the findings of the Phase II ESA report are detailed below.

The Phase II conducted by PWGC in April 2012 involved the installation of four soil borings, collection and analysis of five samples, two groundwater samples, and three soil vapor samples, and an evaluation of the floor drain system. The following significant findings were documents:

- Groundwater was encountered at approximately 10 ft bgs,
- The soils at the Site to at least 8 ft bgs are primarily made up of non-native historic urban fill materials,
- The urban fill material at the Site contain VOCs, SVOCs, and metal concentrations in excess

of Restricted Residential-Use Soil Cleanup Objectives (RRUSCOs), which is consistant with fill material in the area,

- Groundwater contained VOCs, including naphthalene and benzene, at concentrations that were slightly above standards, and
- Suspected floor drains appeared to be cleanouts for the Sites sanitary system. They were constructed with a concrete bottom and capped indicating that they did not represent a potential pathway for the migration of regulated constituents to the subsurface.

2.1 Future Site Use

The proposed future use of the Site will consist of redeveloping the lot with a six-story residential building which will be comprised of 37 units, 24 ground level parking stalls, and a small ground level retail space with a single basement level. The proposed development will occupy the entire footprint of the Site.

3.0 HAZARD ASSESSMENT

This section identifies the hazards associated with the proposed scope of work, general site operations which may also be conducted at site, and the standard operating procedures (SOPs) that should be implemented to reduce the hazards; identifies general physical hazards that can be expected at most sites; and presents a summary of documented or potential chemical hazards at the site. Every effort must be made to reduce or eliminate these hazards. Those that cannot be eliminated must be guarded against using engineering controls and/or personal protective equipment.

3.1 Activity-Specific Hazards and Standard Operating Procedures

3.1.1 Operation of Heavy Equipment

The use of heavy equipment will be implemented for this project; therefore, Occupational Safety and Health Administration (OSHA) guidelines will be followed for operating heavy equipment as outlined in 29 CFR 1926.602.

3.1.2 Excavation/Earthwork

Soil excavation will be conducted as part of this project and PWGC will follow the OSHA 29 CFR 1926.651 (February 20, 1990) construction industry standards relating to excavation work. These standards include shoring and cutback requirements, equipment specifications, entry requirements, etc. To avoid exposure to site specific contaminants and to ensure acceptable atmospheric conditions, the following additional requirements apply when excavation work is performed:

- Air quality will be tested before employees enter excavations over four feet deep if a hazardous atmosphere exists or is suspected to exist. If the site safety officer determines that excavations are, by OSHA's definition, "confined space," the confined space entry policy (Section 8.0) will be followed.
- Open excavations will be backfilled as soon as practicable. While excavations remain open, appropriate warnings will be posted and barricades will be erected to protect pedestrian and worker safety. Where possible, excavation side walls will be cut at a gradual slope to maximize egress and access. Workers will not enter excavations unless absolutely required.
- To ensure atmospheric quality, tests shall be conducted as often as necessary as determined by the site safety officer. This includes tests for flammable gas and oxygen deficiency.
- When the site safety officer identifies hazardous atmospheres, emergency rescue equipment and PPE must be on the work site (Level C PPE) and readily accessible to employees (29 CFR 1926.651(g)(2)(I)).

- Daily site safety inspections will be conducted by the site safety officer.

3.1.3 Work in Extreme Temperatures

Work under extremely hot or cold weather conditions requires special protocols to minimize the chance that employees will be affected by heat or cold stress. P.W. Grosser follows the heat and cold stress safety protocols described in **Appendix C**.

3.1.4 Dust Control and Monitoring

Dust generated during work activities may contain contaminants associated with the site characteristics. The PWGC site safety officer will be responsible for monitoring dust levels and requiring action when necessary as described in the following sections.

3.1.5 Dust Control and Monitoring During Earthwork

Dust generated during excavation activities or other earthwork may contain contaminants identified in soils at the site. Dust will be controlled by wetting the working surface with water. Calcium chloride may be used if the problem cannot be controlled with water. Air monitoring and dust control techniques are specified in a site specific Dust Control Plan (if applicable). Site workers will not be required to wear APR's unless dust concentrations are consistently over 150 µg/m3 over site-specific background in the breathing zone as measured by a dust monitor unless the site safety officer directs workers to wear APRs. The site safety officer will use visible dust as an indicator to implement the dust control plan. The primary sources of dust will be equipment, vehicular traffic, and construction activities.

3.1.6 Drilling and Probing Operations

Additional drilling operations at the site are not anticipated, however, if necessary PWGC will follow the drill rig/Geoprobe™ operation safety protocols described in **Appendix D**. In addition, PWGC and/or their subcontractor(s) will follow Geoprobe™ operation and sampling procedures Standard Operating Procedures.

3.2 Chemical Hazards

Soil sample results obtained during the Phase II ESA investigation at the site revealed no significant concentrations of volatile organic compounds (VOCs) in soils above the water table were detected above New York State Department of Environmental Conservation (NYSDEC) Restricted-Residential Use Soil Clean-up Objectives (RRUSCOs) identified in Technical and Administrative Guidance Memorandum No. 4046. Several semi-volatile organic compounds (SVOCs) were detected

above their respective NYSDEC RRUSCOs.

Semi-volatile organic compounds reported above their respective RRUSCOs include the following:

Benzo (a)anthracene	Benzo (a)pyrene	Benzo (b)flouranthene
Chrysene	Dibenzo (a,h)anthracene	Indeno (1,2,3-cd)pyrene

In addition, several metals were detected above their respective NYSDEC RRUSCOs. Metals reported above their respective RRUSCOs include the following:

Arsenic	Barium	Cadmium
Copper	Lead	Mercury

Soil vapor analytical results obtained during the Phase II ESA Investigation of the Site revealed no significant concentrations of contamination.

Soil sample results obtained during the Phase II ESA investigation at the Site revealed no significant concentrations of pesitcides or PCBs in soils above the water table above NYSDEC RRUSCOs.

Groundwater sample results obtained during the Phase II ESA investigation at the Site detected several VOCs above the NYSDEC Groundwater Quality Standards (GWQS). VOCs reported above their respective NYSDEC GWQS include the following:

Benzene	Naphthalene	n-Propylbenzene
Toluene		

Semi-organic volatile compounds reported above their respective NYSDEC GWQS include the following:

Benzo (a)anthracene	Benzo (b)flouranthene	Benzo (k)flouranthene

Bis (2-Ethylhexyl)phthalate	Chrysene	Naphthalene

Several metals were detected above their respective NYSDEC GWQS, they include the following:

Antimony	Beryllium	Chromium
Copper	Iron	Lead
Magnesium	Manganese	Nickel
Selenium	Sodium	

Appendix E includes information sheets for the known and suspected chemicals that may be encountered at the site.

3.2.1 Respirable Dust

Dust may be generated from vehicular traffic and/or other construction activities. If visible observation detects elevated levels of dust, a program of wetting will be employed by the site safety officer. If elevated dust levels persist, the site safety office will employ dust monitoring using a particulate monitor (Miniram or equivalent). If monitoring detects concentrations greater than 150 µg/m3 over daily background, the site safety officer will take corrective actions as defined herein, including the use of water for dust suppression and if this is not effective, requiring workers to wear APRs with efficiency particulate air (HEPA) cartridges.

Absorption pathways for dust and direct contact with soils will be mitigated with the implementation of latex gloves, hand washing and decontamination exercises when necessary.

3.2.2 Organic Vapors

While no VOCs were detected at concentrations exceeding their respective NYSDOH Air Guideline Values in samples collected during the investigation, low-level concentrations of several compounds were detected. Additionally, the potential for historical fill that comprises the site to contain isolated areas of VOCs impact exists. Therefore, excavation activities may cause the release of organic vapors to the atmosphere. The site safety officer will periodically monitor organic vapors with a

Photoionization Detector (PID) during excavation activities to determine whether organic vapor concentrations exceed action levels shown below.

PID Response	Action
Sustained readings of 5 ppm or greater	Shut down equipment and allow area to vent. Resume when readings return to background
Sustained readings of 5 ppm or greater that do not subside after venting	Implement Vapor Release Plan (Section 8.6). Re-evaluate respiratory protection as upgrade may be required.

3.3 General Site Hazards

Applicable OSHA 29 CFR 1910.120(m) standards for illumination shall apply. Work is to be conducted during daylight hours whenever possible.

Electrical power must be provided through a ground fault circuit interrupter. Equipment that will enter an excavation must be suitable and approved (i.e. intrinsically safe) for use in potentially explosive environments. Applicable OSHA 29 CFR 1926 Subpart K standards for use of electricity shall apply.

Work where there is a fall hazard will be performed using appropriate ladders and/or protection (e.g. body harness and lifeline). All work should be conducted at the ground surface or in trench excavations.

In accordance with 29 CFR 1910.151(c), workers involved in operations where there is the risk of eye injury, (chemical splash, etc.), must have ready access to an approved eye wash unit. Protective eye wear shall be donned in Level D, when directed by the site safety officer.

Operations where there is a potential for fire will be conducted in a manner that minimizes risk. Non sparking tools and fire extinguishers shall be used or available as directed by the site safety officer when work is in potentially explosive atmospheres. Ignition sources shall be removed from work areas. Explosion proof instruments and/or bonding and grounding will be used to prevent fire or explosion when the site safety officer directs their use.

Overhead and underground utilities shall be identified and/or inspected and appropriate safety precautions taken before conducting operations where there is potential for contact or interference.

4.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) shall be selected in accordance with the site air monitoring program, OSHA 29 CFR 1910.120(c), (g), and 1910.132. Protective equipment shall be NIOSH approved and respiratory protection shall conform to OSHA 29 CFR Part 1910.133 and 1910.134 specifications; head protection shall conform to 1910.135; eye and face protection shall conform to 1910.133; and foot protection shall conform to 1910.136. The only true difference among the levels of protection from D thru B is the addition of the type of respiratory protection. **It is anticipated that work will be performed in Level D PPE.**

4.1 Level D

Level D PPE shall be donned when the atmosphere contains no known hazards and work functions preclude splashes, immersion, or the potential for inhalation of, or contact with, hazardous concentrations of harmful chemicals. Level D PPE consists of:

- standard work uniform, coveralls, or tyvek, as needed;
- steel toe and steel shank work boots;
- hard hat;
- gloves, as needed;
- safety glasses;
- hearing protection;
- equipment replacements are available as needed.

4.2 Level C

Level C PPE shall be donned when the concentrations of measured total organic vapors in the breathing zone exceed background concentrations (using a portable OVA, or equivalent), but are less than 5 ppm. The specifications on the APR filters used must be appropriate for contaminants identified or expected to be encountered. Level C PPE shall be donned when the identified contaminants have adequate warning properties and criteria for using APR have been met. Level C PPE consists of:

- chemical resistant or coated tyvek coveralls;
- steel-toe and steel-shank workboots;
- chemical resistant overboots or disposable boot covers;
- disposable inner gloves (surgical gloves);
- disposable outer gloves;

- full face APR fitted with organic vapor/dust and mist filters or filters appropriate for the identified or expected contaminants;
- hard hat;
- splash shield, as needed; and,
- ankles/wrists taped with duct tape.

The site safety officer will verify if Level C is appropriate by checking organic vapor concentrations using compound and/or class-specific detector tubes.

4.3 Level B

Level B PPE shall be donned when the contaminants have not been identified and/or the concentrations of unknown measured total organic vapors in the breathing zone exceed 5 ppm (using a portable OVA, or equivalent). Level B PPE shall be donned if the IDLH of a known contaminant is exceeded. If a contaminant is identified or is expected to be encountered for which NIOSH and/or OSHA recommend the use of a positive pressure self-contained breathing apparatus (SCBA) when that contaminant is present, Level B PPE shall be donned even though the total organic vapors in the breathing zone may not exceed 5 ppm. Level B shall be donned for confined space entry, and when the atmosphere is oxygen deficient (oxygen less than 19.5%) or potentially oxygen deficient. If Level B PPE is required for a task, at least three people shall be donned in Level B at any one time during that task. PPE shall only be donned at the direction of the site safety officer. Level B PPE consists of:

- supplied air SCBA or air line system with five minute egress system;
- chemical resistant coveralls;
- steel-toe and steel-shank workboots;
- chemical resistant overboots or disposable boot covers;
- disposable inner gloves;
- disposable outer gloves;
- hard hat; and,
- ankles/wrists taped.

The exact PPE ensemble is decided on a site-by-site basis by the PWGC Health and Safety Officer with the intent to provide the most protective and efficient worker PPE.

4.4 Activity-Specific Levels of Personal Protection

The required level of PPE is activity-specific and is based on air monitoring results (Section 4.0) and

properties of identified or expected contaminants. **It is expected that site work will be performed in Level D.** If air monitoring results indicate the necessity to upgrade the level of protection engineering controls (i.e. Facing equipment away from the wind and placing site personnel upwind of excavations, active venting, etc.) will be implemented before requiring the use of respiratory protection.

5.0 DECONTAMINATION PROCEDURES

Equipment and PPE exiting the exclusion zone must be decontaminated or properly discarded upon exit. Personnel must enter and exit the exclusion zone through the decontamination area. The exclusion and decontamination zones may change depending on the nature of the site work. Plastic bags containing personal protective clothing and equipment will be placed in designated receptacles.

Boots and other potentially contaminated garments that have come in contact with hazardous materials will be cleaned in wash tubs with detergent/water solution and rinsed with water and must remain on site. The wash water, rinse water, and residues will be collected and properly stored until sampling results are received and the final method of disposal can be determined. Disposable PPE, including spent respirator cartridges and canisters, will be properly bagged and disposed. Contaminated boots, clothing, and equipment (e.g. leather boots, equipment carrying straps) that cannot be decontaminated will be disposed of with the disposable garments or left on site in the decontamination trailer.

The ***minimum*** measures for Level B doffing and decontamination are:

- deposit equipment on plastic drop cloths;
- scrub outer boots and gloves with a water and detergent solution and rinse;
- remove outer boots and outer gloves. Discard disposable outer garments in receptacle provided;
- remove SCBA and face piece and place on rack provided;
- remove tyvek/outer garment and place in receptacle provided;
- remove inner gloves and deposit in receptacle provided; and,
- shower/wash face and hands.

The ***minimum*** measures for Level C doffing and decontamination are:

- deposit equipment on plastic drop cloths;
- scrub outer boots and gloves (if worn) with a water and detergent solution and rinse;
- remove outer boots and outer gloves. Discard disposable outer garments in receptacle provided;
- remove tyvek/outer garment and place in receptacle provided;
- remove first pair of inner gloves;
- remove respirator (using "clean" inner gloves) and place on rack provided;
- remove last pair of inner gloves and deposit in receptacle provided; and,

- shower/wash face and hands.

The second to last item to be removed is the APR, and the last item to be removed is the last of several pairs of surgical gloves. Wearing several pairs of inner gloves permits layers to be removed as needed during various stages of the doffing procedure, and if the APR inadvertently becomes contaminated, inner gloves guard against bare hands contacting the APR.

Equipment that comes into contact with site contaminants is decontaminated according to manufacturer specifications. Decontamination is done in the exclusion or decontamination zones. Rented equipment is photographed after decontamination.

6.0 AIR MONITORING AND ACTION LEVELS

29 CFR 1910.120(h) specifies that monitoring shall be performed where there may be a question of employee exposure to hazardous concentrations of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment so that employees are not exposed to levels which exceed permissible exposure limits, or published exposure levels if there are no permissible exposure limits, for hazardous substances.

6.1 Air Monitoring Requirements

If excavation work is performed, fugitive respirable dust will be monitored using a MiniRam Model PDM-3 aerosol monitor and air will be monitored for VOCs with a portable Foxboro OVA, Photovac MicroTip, or the equivalent. If necessary, carbon dioxide and carbon monoxide will be monitored with a three-position analyzer and Lower Explosive Limit (LEL) and oxygen will be monitored with a Combustible Gas Indicator (CGI). Air will be monitored when any of the following conditions apply:

- initial site entry;
- during any work where a potential IDLH condition or flammable atmosphere could develop;
- excavation work begins on another portion of the site;
- contaminants, other than those previously identified, have been discovered;
- each time a different task or activity is initiated;
- during trenching and/or excavation work; or
- before and during entry into confined spaces.

Air monitoring data will be recorded by the designated site safety officer. P.W. Grosser's site safety officer or delegate must ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. Instruments will be zeroed daily and checked for accuracy. A daily log will be kept. Monitoring results will be recorded on the sheets contained in **Appendix F**.

Below are examples of site specific guidelines and actions which are taken based on routine air monitoring:

- Oxygen readings between 19.5% and 23.5%: continue.
- Oxygen readings <19.5%: SCBA required, CGI not reliable.
- Oxygen readings >23.5%: exit.
- CGI readings of <10% LEL: continue.
- CGI readings of 10 to 20% LEL: proceed with caution.

- CGI readings >20% LEL: exit.
- OVA/PID readings for VOCs sustained at background and 5 ppm over the site specific background in breathing zone: continue.
- OVA/PID readings for VOCs sustained between 5 ppm and 25 ppm over the site specific background in breathing zone: Level C PPE. (See Note)
- OVA/PID readings for VOCs sustained >25 ppm over the site specific background in breathing zone: Level B PPE. (See Note)

Note: To ensure that readings are not generated by methane, screen vapors with a PID[1]. If the PID reading is less than 5 ppm continue work (assume vapors are methane). If PID readings are over 5 ppm allow the work zone to vent. If PID and OVA readings continue to persist over 5 ppm, request PWGC to screen the area with compound specific detector tubes for benzene.

If this compound is not present then level C can be worn.
OVA readings >5 ppm in breathing zone: Level B PPE.
Total Respirable Dust at background in breathing zone: continue.

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[1] Some older model PIDs may not be safe for operation in combustible atmospheres. The PIDs used on this project must be "Class 1, Division 1 explosion proof", similar to a Photovac MicroTip.

Total Respirable Dust at 150 mg/m3 in breathing zone:

Level C PPE - HEPA filters. Site safety officer can call for upgrades based on visual dust without metering total respirable dust.

H2S readings of less than 5 ppm: continue
H2S readings of 5-10 ppm: proceed with caution
H2S readings of greater than 10 ppm: exit - stop work

CO readings of less than 25 ppm: continue
CO readings of 25-35 ppm: proceed with caution
CO readings of greater than 35 ppm: exit - stop work

CO2 readings of less than 2500 ppm: continue
CO2 readings of 2500-5000 ppm: proceed with caution

CO2 readings of greater than 5000: exit - stop work

Prior to site work, the P.W. Grosser site safety officer will compile a list of likely site contaminants, select appropriate air monitoring instrumentation and define action levels.

6.2 Perimeter Air Monitoring

To establish ambient air background concentrations, air will be monitored at several locations around the site perimeter before drilling/excavation activities begin. These points will be monitored periodically in series during the site work. VOCs will be monitored with a portable Foxboro OVA, Photovac MicroTip, or the equivalent. If appropriate, fugitive dust will be monitored using a MiniRam Model PDM-3 aerosol monitor.

The specific guidelines for actions to be taken based on air monitoring at the site perimeter are listed below:

- OVA/PID readings for VOCs less than 5.0 ppm over background: continue.
- OVA/PID readings for VOCs greater than 5.0 ppm over background: stop work and implement vapor release contingency plan until readings return to acceptable levels.
- Total Respirable Dust below 100 µg/m3 : continue.
- Total Respirable Dust above 100 µg/m3 in breathing zone: stop work and implement dust control measures (Section 3.0) until readings return to acceptable levels.

6.3 Activity-Specific Air Monitoring

The monitoring of VOC concentrations present in the employees breathing zone will be periodically monitored during drilling/excavation activities using a Foxboro OVA, Photovac MicroTip, or the equivalent. Air monitoring results will be recorded in the field log book. No trenches/excavations will be entered until they have been checked for combustible gases, percent oxygen VOCs and carbon dioxide. An MSA Model 361 combustible gas indicator, or the equivalent will be used to monitor trenches/excavations for the above listed compounds. If additional monitoring is required, the protocols will be developed and appended to this plan.

7.0 SITE CONTROL

7.1 Work Zones

The primary purpose of site controls is to establish the perimeter of a hazardous area, to reduce the migration of contaminants into clean areas, and to prevent access or exposure to hazardous materials by unauthorized persons. When operations are to take place involving hazardous materials, the site safety officer will establish an exclusion zone, a decontamination zone, and a support zone. These zones "float" (move around the site) depending on the tasks being performed on any given day. The site safety officer will outline these locations before work begins and when zones change. The site safety officer records this information in the site log book. **It is expected that for construction activities identification of an exclusion zone, decontamination zone, and support zone will not be necessary.**

Tasks requiring OSHA 40-hour Hazardous Waste Operations and Emergency Response Operations training are carried out in the exclusion zone. The exclusion zone is defined by the site safety officer but will typically be a 50-foot area around work activities. Gross decontamination (as determined by the site Health and Safety Officer) is conducted in the exclusion zone, all other decontamination is performed in the decontamination zone or trailer.

Protective equipment is removed in the decontamination zone. Disposable protective equipment is stored in receptacles staged in the decontamination zone, and non-disposable equipment is decontaminated according to the procedures outlined in Section 8.0. All personnel and equipment exit the exclusion zone through the decontamination zone. If a decontamination trailer is provided the first aid equipment, an eye wash unit, and drinking water are kept in the decontamination trailer.

The support zone is used for vehicle parking, daily safety meetings, and supply storage. Eating, drinking, and smoking are permitted only in the support zone. When a decontamination trailer is not provided, the eye wash unit, first aid equipment, and drinking water are kept at a central location designated by the site safety officer.

7.2 General Field Safety and Standard Operating Procedures

P.W. Grosser's policy is to control hazards at all site areas by limiting entrance to exclusion zones to essential personnel and by implementing the following rules:

- Non-essential (as judged by the site safety officer) personnel and unauthorized persons will not enter the exclusion or decontamination zone.
- Before entering the exclusion or decontamination zones, all personnel must be familiar with

emergency response procedures (Section 8.0), site safety locations, first aid and communication equipment, and the location of the map to the hospital and the list of emergency telephone numbers.

- The buddy system will be used at all times by field personnel in the exclusion zone; no one is to perform work within the exclusion zone alone. When in Level D or C, visual contact or radio contact shall be maintained at all times.
- Contact with contaminated and potentially contaminated surfaces should be avoided. Walk around (not through) puddles and discolored surfaces. Do not kneel on the ground or place equipment on the ground. Protect equipment from contamination.
- Eating, drinking, or smoking is permitted only in designated areas in the support zone.
- Each worker must be supplied with and maintain his/her own personal protective equipment.

8.0 CONFINED SPACE

OSHA published a Final Rule on permit-required confined spaces on January 14, 1993, for General Industry at 29 CFR 1910.146 et seq., with an implementation date of April 15, 1993. The rule specifically excludes agriculture, construction, or shipyard employment. Confined space entry and work within confined spaces is not anticipated to be performed under the proposed scope of work. However, if confined space work is conducted it will be performed in accordance with the applicable OSHA regulations. OSHA defines confined space as:

1. is large enough and so configured that an employee can bodily enter and perform assigned work;
2. has limited or restricted areas for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited entry); and
3. is not designed for continuous worker occupancy.

OSHA further requires that an "entry supervisor" (the site designated safety officer) decides at the time of entry whether the space is permit-required or non-permit required space. The site safety officer will monitor the space two hours prior to entry and continuously during work to ensure that the atmosphere is not hazardous. OSHA defines as hazardous atmosphere as:

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL);
2. Airborne combustible dust at a concentration that meets or exceeds its LEL;
   NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.
3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z. Toxic and Hazardous Substances, of this part and which could result in employee exposure in excess of its dose or permissible exposure limit;
5. Any other atmospheric condition that is immediately dangerous to life or health.
6. A space is non-permit required if none of the above defined hazardous conditions are present. OSHA requires that an attendant (e.g., an individual stationed outside one or more spaces who monitors the entrants and who performs air monitoring of the space(s)) be assigned to each space. The attendant is not allowed to perform any direct rescue related duties, but is there to communicate with the entrant and call for rescue procedures if required.

The following protocol applies when P.W. Grosser employees must enter a confined space:

- The site safety officer evaluates the space and site conditions to determine whether the space must be considered "confined".
- If so, the site safety officer monitors the space for hazardous atmospheres prior to entry and fills out a pre-entry checklist (**Appendix G**) to determine whether an entry-permit is required.
- If there is no hazardous atmosphere, the space will be continuously monitored during the entry to assure that the atmosphere remains non-hazardous.
- If the space contains a hazardous atmosphere, an entry permit (Appendix G) will be prepared and the space will only be entered in accordance with 29 CFR 1910.146.

9.0 CONTINGENCY PLAN/EMERGENCY RESPONSE PLAN

Site personnel must be prepared in the event of an emergency. Emergencies can take many forms: illnesses, injuries, chemical exposure, fires, explosions, spills, leaks, releases of harmful contaminants, or sudden changes in the weather.

Emergency telephone numbers and a map to the hospital (**Figure 2**) will be posted in the command post. Site personnel should be familiar with the emergency procedures, and the locations of site safety, first aid, and communication equipment. These will be outlined in the site specific CHASP.

9.1 Emergency Equipment On-site

Private telephones:	Site personnel.
Two-way radios:	Site personnel where necessary.
Emergency Alarms:	On-site vehicle horns*.
First aid kits:	On-site, in vehicles or office.
Fire extinguisher:	On-site, in office or on equipment.

* Horns: Air horns will be supplied to personnel at the discretion of the project superintendent or site safety officer.

9.2 Emergency Telephone Numbers

General Emergencies	911
New York City Police	911
Woodhull Medical Center	1-718-963-7958
NYSDEC Spills Division	1-800-457-7362
NYSDEC Hazardous Waste Division	1-718-482-4994
NYCDEP	1-718-699-9811
NYC Department of Health	1-212-788-4711
NYC Fire Department	911
National Response Center	1-800-424-8802
Poison Control	1-212-340-4494
Health and Safety Officer	1-631-589-6353
Alternate Health and Safety Officer	1-212-786-7420

A copy of this page shall be posted in the office and a copy is provided in **Appendix H**.

9.3 Personnel Responsibilities During an Emergency

The project manager is primarily responsible for responding to and correcting any emergency situations. However, in the absence of the project manager, the site safety officer shall act as the project managers on-site designee and perform the following tasks:

- Take appropriate measures to protect personnel including: withdrawal from the exclusion zone, evacuate and secure the site, or upgrade/downgrade the level of protective clothing and respiratory protection;
- Ensure that appropriate federal, state, and local agencies are informed and emergency response plans are coordinated. In the event of fire or explosion, the local fire department should be summoned immediately. If toxic materials are released to the air, the local authorities should be informed in order to assess the need for evacuation;
- Ensure appropriate decontamination, treatment, or testing for exposed or injured personnel;
- Determine the cause of incidents and make recommendations to prevent recurrence; and,
- Ensure that all required reports have been prepared.

The following PWGC key personnel are planned for this project:

- PWGC Project Manager Mr. Richard Kampf
- PWGC Site Safety Officer Mr. Kris Almskog

9.4 Medical Emergencies

A person who becomes ill or injured in the exclusion zone will be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination will be completed and first aid administered prior to transport. First aid will be administered while waiting for an ambulance or paramedics. A Field Accident Report (**Appendix H**) must be filled out for any injury.

A person transporting an injured/exposed person to a clinic or hospital for treatment will take the directions to the hospital and information on the chemical(s) to which they may have been exposed (**Appendix H**).

9.5 Fire or Explosion

In the event of a fire or explosion, the local fire department will be summoned immediately. The site safety officer or his designated alternate will advise the fire commander of the location, nature and identification of the hazardous materials on-site. If it is safe to do so, site personnel may:

- use fire fighting equipment available on site; or,

- remove or isolate flammable or other hazardous materials that may contribute to the fire.

9.6 Evacuation Routes

Evacuation routes established by work area locations for each site will be reviewed prior to commencing site operations. As the work areas change, the evacuation routes will be altered accordingly, and the new route will be reviewed.

Under extreme emergency conditions, evacuation is to be immediate without regard for equipment. The evacuation signal will be a continuous blast of a vehicle horn, if possible, and/or by verbal/radio communication. When evacuating the site, personnel will follow these instructions:

- Keep upwind of smoke, vapors, or spill location.
- Exit through the decontamination corridor if possible.
- If evacuation through the decontamination corridor is not possible, personnel should remove contaminated clothing once they are in a safe location and leave it near the exclusion zone or in a safe place.
- The site safety officer will conduct a head count to ensure that all personnel have been evacuated safely. The head count will be correlated to the site and/or exclusion zone entry/exit log.
- If emergency site evacuation is necessary, all personnel are to escape the emergency situation and decontaminate to the maximum extent practical.

9.7 Spill Control Procedures

Spills associated with site activities may be attributed to project specific heavy equipment and include gasoline, diesel and hydraulic oil. In the event of a leak or a release, site personnel will inform their supervisor immediately, locate the source of spillage and stop the flow if it can be done safely. A spill containment kit including absorbent pads, booms and/or granulated speedy dry absorbent material will be available to site personnel to facilitate the immediate recovery of the spilled material. Daily inspections of site equipment components including hydraulic lines, fuel tanks, etc. will be performed by their respective operators as a preventative measure for equipment leaks and to ensure equipment soundness. In the event of a spill, site personnel will immediately notify the NYSDEC (1-800-457-7362), and a spill number will be generated.

9.8 Vapor Release Plan

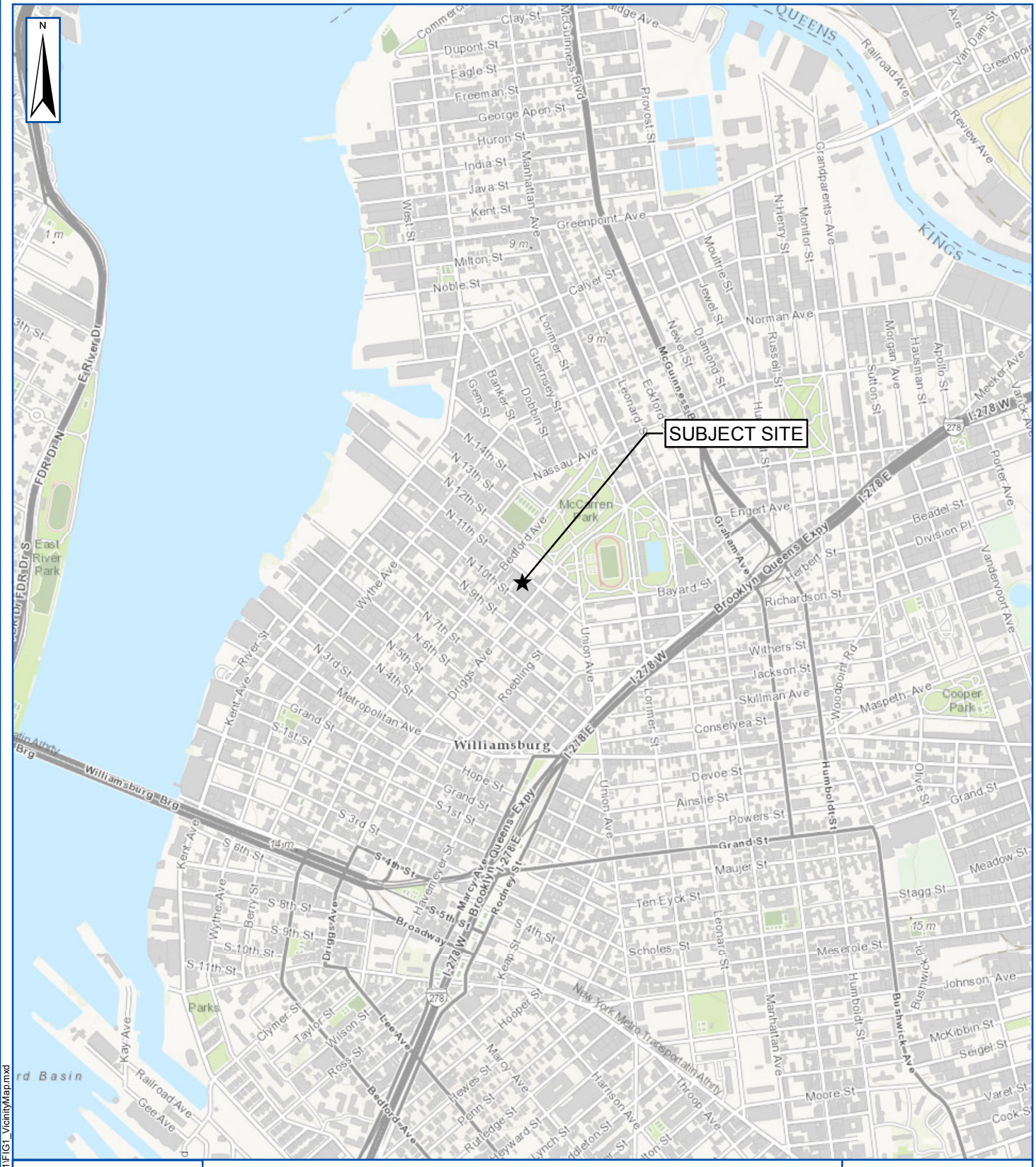
If work zone organic vapor (excluding methane) exceeds 5 ppm, then a downwind reading will be made either 200 feet from the work zone or at the property line, whichever is closer. If readings at this

location exceed 5 ppm over background, the work will be stopped.

If 5 ppm of VOCs are recorded over background on a PID at the property line, then an off-site reading will be taken within 20 feet of the nearest residential or commercial property, whichever is closer. If efforts to mitigate the emission source are unsuccessful for 30 minutes, then the designated site safety officer will:

- contact the local police;
- continue to monitor air every 30 minutes, 20 feet from the closest off-site property. If two successive readings are below 5 ppm (non-methane), off-site air monitoring will be halted.
- All property line and off site air monitoring locations and results associated with vapor releases will be recorded in the site safety log book.

FIGURES



SUBJECT SITE VICINITY

172-174 NORTH 11TH ST
BROOKLYN, NY

0 ¼ ½ ¾ 1 Miles

PWGC
Strategic Environmental and Engineering Solutions
P.W. GROSSER CONSULTING, INC.
630 Johnson Avenue, • Suite 7
Bohemia • NY • 11716-2618
Phone: (631) 589-6353 • Fax: (631) 589-8705
E-mail: INFO@PWGROSSER.COM

Project:	GPP1401
Date:	10/28/2014
Designed by:	JCG
Drawn by:	BB
Approved by:	KA
Figure No:	1

Document Path: D:\GIS\Projects\E-L\GPP1401\FIG1_VicinityMap.mxd

Drive 1.7 miles, 7 min

○ 174 N 11th St

Brooklyn, NY 11211

1. Head **southeast** on **N 11th St** toward **Driggs Ave**

0.2 mi

2. Turn **left** onto **Richardson St**

0.2 mi

3. Take the 2nd **right** onto **Leonard St**

1.1 mi

4. Turn **left** onto **Broadway**

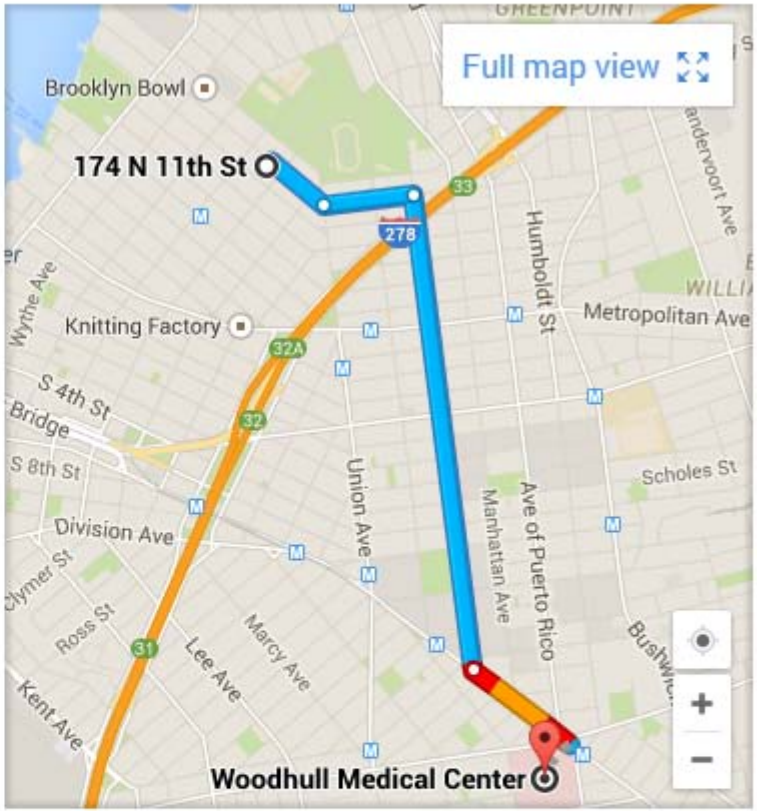
Destination will be on the right

0.3 mi

◉ Woodhull Medical Center

760 Broadway, Brooklyn, NY 11206

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



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APPENDIX A

SITE SAFETY PLAN ACCEPTANCE AND ACKNOWLEDGMENT FORM

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SITE SAFETY PLAN ACKNOWLEDGEMENT FORM

I have been informed and understand the procedures set forth in the health and safety plan and amendments:

Printed Name	Signature	Representing	Date

P.W. Grosser Consulting, Inc • P.W. Grosser Consulting Engineer & Hydrogeologist, PC
630 Johnson Avenue, Suite 7 • Bohemia, NY 11716 • Branch Location - Seattle, WA
PH 631.589.6353 • FX 631.589.8705 • www.pwgrosser.com

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APPENDIX B

SITE SAFETY AMENDMENT FORM

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SITE SAFETY PLAN AMENDMENT FORM

SITE SAFETY PLAN AMENDMENT # _____: _____

SITE NAME: _____

REASON FOR AMENDMENT: _____

_____

_____

ALTERNATIVE PROCEDURES: _____

_____

_____

REQUIRED CHANGES IN PPE: _____

_____

_____

_____ _____
PROJECT SUPERINTENDENT DATE

_____ _____
HEALTH & SAFETY CONSULTANT DATE

_____ _____
SITE SAFETY OFFICER DATE

P.W. Grosser Consulting, Inc • P.W. Grosser Consulting Engineer & Hydrogeologist, PC
630 Johnson Avenue, Suite 7 • Bohemia, NY 11716 • Branch Location - Seattle, WA
PH 631.589.6353 • FX 631.589.8705 • www.pwgrosser.com

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APPENDIX C

HEAT AND COLD STRESS SAFETY PROTOCOLS

HEAT STRESS

Heat Stress (Hyperthermia)

Heat stress is the body's inability to regulate the core temperature. A worker's susceptibility to heat stress can vary according to his/her physical fitness, degree of acclimation to heat, humidity, age and diet.

1. Prior to site activity, the field team leader may make arrangements for heat stress monitoring (i.e., monitoring heart rate, body temperature, and body water loss) during actual site work if conditions warrant. In addition, the FTL is to ensure that each team member has been acclimatized to the prevailing environmental conditions, that personnel are aware of the signs and symptoms of heat sickness, that they have been adequately trained in first aid procedures, and that there are enough personnel on-site to rotate work assignments and schedule work during hours of reduced temperatures. Personnel should not consume alcoholic or caffeinated beverages but rather drink moderate levels of an electrolyte solution and eat well prior to commencing site work.

2. Although there is no specific test given during a baseline physical that would identify a person's intolerance to heat, some indicators are tobacco or medication use, dietary habits, body weight, and chronic conditions such as high blood pressure or diabetes.

3. *Heat cramps*, caused by profuse perspiration with inadequate fluid intake and salt replacement, most often afflict people in good physical condition who work in high temperature and humidity. Heat cramps usually come on suddenly during vigorous activity. Untreated, heat cramps may progress rapidly to heat exhaustion or heat stroke. First aid treatment: remove victim to a cool place and replace lost fluids with water.

4. Thirst is not an adequate indicator of heat exposure. Drinking fluid by itself does not indicate sufficient water replacement during heat exposure. A general rule, the amount of water administered should replace the amount of water lost, and it should be administered at regular intervals throughout the day. For every half pound of water lost, 8 ounces of water should be ingested. Water should be replaced by drinking 2 – 4 ounce servings during every rest period. A recommended alternative to water is an electrolyte drink split 50/50 with water.

5. *Heat exhaustion* results from salt and water loss along with peripheral pooling of blood. Like heat cramps, heat exhaustion tends to occur in persons in good physical health who are working in high temperatures and humidity. Heat exhaustion may come on suddenly as dizziness and collapse. Untreated, heat exhaustion may progress to heat stroke.

6. *Treatment for heat exhaustion*: Move the victim to a cool environment (e.g. air-conditioned room/car), lay victim down and fan him/her. If the air-conditioning is not available, remove the victim to a shaded area, remove shirt, and fan. If symptoms do not subside within an hour, notify 911 to transport to hospital.

7. *Heat stroke* results from the body's inability to dissipate excess heat. A true medical emergency that requires immediate care, it usually occurs when one ignores the signs of heat exhaustion and continues strenuous activities. Working when the relative humidity exceeds 60% is a particular problem. Workers in the early phase of heat stress may not be coherent of they will be confused, delirious or comatose. Changes in behavior, irritability and combativeness are useful early signs of heat stroke.

8. *Treatment of heat stroke*: Move the victim to a cool, air-conditioned environment. Place victim in a semi-reclined position with head elevated and strip to underclothing. Cool victim as rapidly as possible, applying ice packs to the arms and legs and massaging the neck and torso. Spray victim with tepid water and constantly fan to promote evaporation. Notify 911 to transport to hospital as soon as possible.

TABLE 1

SYMPTOMS OF HEAT STRESS

Heat cramps are caused by heavy sweating with inadequate fluid intake. Symptoms include;

- Muscle cramps
- Cramps in the hands, legs, feet and abdomen

Heat exhaustion occurs when body organs attempt to keep the body cool. Symptoms include;

- Pale, cool moist skin
- Core temperature elevated 1-2^{o}
- Thirst
- Anxiety
- Rapid heart rate
- Heavy sweating
- Dizziness
- Nausea

Heat stroke is the most serious form of heat stress. Immediate action must be taken to cool the body before serious injury and death occur. Symptoms are;

- Red, hot, dry skin
- Lack of perspiration
- Seizures
- Dizziness and confusion
- Strong, rapid pulse
- Core temperature of 104^{o} or above
- Coma

TABLE 2

HEAT STRESS INDICATORS

Heat stress indicator	When to measure	If Exceeds…	Action
Heart rate (pulse)	Beginning of rest period	110 beats per minute	Shorten next work period by 33%
Oral temperature	Beginning of rest period	99°F (after thermometer is under tongue for 3 minutes) 100.6°F	Shorten next work period by 33% Prohibit work in impermeable clothing
Body weight	1. Before workday begins (a.m.) 2. After workday ends (p.m.)		Increase fluid intake

COLD STRESS

Cold stress (Hypothermia)

In hypothermia the core body temperature drops below 95°F. Hypothermia can be attributed to a decrease in heat production, increased heat loss or both.

Prevention

Institute the following steps to prevent overexposure of workers to cold:

1. Maintain body core temperature at 98.6°F or above by encouraging workers to drink warm liquids during breaks (preferably not coffee) and wear several layers of clothing that can keep the body warm even when the clothing is wet.
2. Avoid frostbite by adequately covering hands, feet and other extremities. Clothing such as insulated gloves or mittens, earmuffs and hat liners should be worn. To prevent contact frostbite (from touching metal and cold surfaces below 20°F), workers should wear gloves. Tool handles should be covered with insulating material.
3. Adjust work schedules to provide adequate rest periods. When feasible, rotate personnel and perform work during the warmer hours of the day.
4. Provide heated shelter. Workers should remove their outer layer(s) of clothing while in the shelter to allow sweat to evaporate.
5. In the event that wind barriers are constructed around an intrusive operation (such as drilling), the enclosure must be properly vented to prevent the buildup of toxic or explosive gases or vapors. Care must be taken to keep a heat source away from flammable substances.
6. Using a wind chill chart such as the one in Table 3, obtain the equivalent chill temperature (ECT) based on actual wind speed and temperature. Refer to the ECT when setting up work warm-up schedules, planning appropriate clothing, etc. Workers should use warming shelters at regular intervals at or below an ECT of 20°F. For exposed skin, continuous exposure should not be permitted at or below an ECT of -25°F.

Frostbite

Personnel should be aware of symptoms of frostbite/hypothermia. If the following symptoms are noticed in any worker, he/she should immediately go to a warm shelter.

Condition	Skin Surface	Tissue Under Skin	Skin Color
Frostnip	Soft	Soft	Initially red, then white
Frostbite	Hard	Soft	White and waxy
Freezing	Hard	Hard	Blotchy, white to yellow-gray to gray

1. *Frostnip* is the incipient stage of frostbite, brought about by direct contact with a cold object or exposure of a body part to cool/cold air. Wind chill or cold water also can be major factors. This condition is not serious. Tissue damage is minor and the response to care is good. The tip of the nose, tips of ears, upper cheeks and fingers (all areas generally exposed) are most susceptible to frostnip.

2. *Treatment of frostnip*: Care for frostnip by warming affected areas. Usually the worker can apply warmth from his/her bare hands, blow warm air on the site, or, if the fingers are involved, hold them in the armpits. During recovery, the worker may complain of tingling or burning sensation, which is normal. If the condition does not respond to this simple care, begin treatment for frostbite.

3. *Frostbite*: The skin and subcutaneous layers become involved. If frostnip goes untreated, it becomes superficial frostbite. This condition is serious. Tissue damage may be serious. The worker must be transported to a medical facility for evaluation. The tip of the nose, tips of ears, upper cheeks and fingers (all areas generally exposed) are most susceptible to frostbite. The affected area will feel frozen, but only on the surface. The tissue below the surface must still be soft and have normal response to touch. *DO NOT* squeeze or poke the tissue. The condition of the deeper tissues can be determined by gently palpating the affected area. The skin will turn mottled or blotchy. It may also be white and then turn grayish-yellow.

4. *Treatment of frostbite*: When practical, transport victim as soon as possible. Get the worker inside and keep him/her warm. Do not allow any smoking or alcohol consumption. Thaw frozen parts by immersion, re-warming in a 100^{o}F to 106^{o}F water bath. Water temperature will

drop rapidly, requiring additional warm water throughout the process. Cover the thawed part with a dry sterile dressing. Do not puncture or drain any blisters.

NOTE: Never listen to myths and folk tales about the care of frostbite. *Never* rub a frostbitten or frozen area. *Never* rub snow on a frostbitten or frozen area. Rubbing the area may cause serious damage to already injured tissues. Do not attempt to thaw a frozen area if there is any chance it will be re-frozen.

5. *General cooling/Hypothermia*: General cooling of the body is known as systemic hypothermia. This condition is not a common problem unless workers are exposed to cold for prolonged periods of time without any shelter.

Body Temperature	°C	Symptoms
99-96	37-35.5	Intense, uncontrollable shivering
95-91	35.5-32.7	Violent shivering persists. If victim is conscious, he has difficulty speaking.
90-86	32-30	Shivering decreases and is replaced by strong muscular rigidity. Muscle coordination is affected. Erratic or jerkey movements are produced. Thinking is less clear. General comprehension is dulled. There may be total amnesia. The worker is generally still able to maintain the appearance of psychological contact with his surroundings.
85-81	29.4-27.2	Victim becomes irrational, loses contact with his environment, and drifts into a stuporous state. Muscular rigidity continues. Pulse and respirations are slow and the worker may develop cardiac arrhythmias.
80-78	26.6-18.5	Victim becomes unconscious. He does not respond to the spoken word. Most reflexes cease to function. Heartbeat becomes erratic
Below 78	25.5	Cardiac and respiratory centers of the brain fail. Ventricular fibrillation occurs; probably edema and hemorrhage in the lungs; death.

6. *Treatment of hypothermia*: Keep worker dry. Remove any wet clothing and replace with dry clothes, or wrap person in dry blankets. Keep person at rest. Do not allow him/her to move around. Transport the victim to a medical facility as soon as possible.

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TABLE 3[(1)]
COOLING POWER OF WIND ON EXPOSED FLESH EXPRESSED AS AN EQUIVALENT TEMPERATURE (UNDER CALM CONDITIONS)

Estimated wind Speed (in mph)	Actual Temperature Reading (^{o}F)P											
	50	40	30	20	10	0	10	20	30	40	50	60
	Equivalent Chill Temperature (^{o}F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	15	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-146
(Wind speeds greater than 40 mph have little additional effect.)	LITTLE DANGER in < hr with dry skin. Maximum danger of false sense of security.				INCREASING DANGER Danger from freezing of exposed flesh within one minute			GREAT DANGER Flesh may freeze within 30 seconds.				
	Trench foot and imersion foot may occur at any point on this chart											

Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA.

(1) Reproduced from American Conference of Governmental Industrial Hygienists, Threshold Limit Values and Biological Exposure Indices for 1985-1986, p.01.

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APPENDIX D

GEOPROBE OPERATIONS SAFETY PROTOCOLS

SAFETY PROCEDURES DURING THE OPERATION OF DRILLING/PROBING MACHINES INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

- All site personnel should know the location of the rig emergency shut-off switch prior to beginning operations.
- The rig should be inspected prior to operation to ensure that it is in proper working condition and that all safety devices are functioning.
- Each rig should have a first-aid kit and fire extinguisher which should be inspected to ensure that they are adequate.
- All operators should wear, at a minimum, hard hats, steel-toe safety shoes or boots, gloves and safety glasses. Additional clothing and protective equipment may be required at sites where hazardous conditions are likely. Clothing must be close fitting, without loose ends, straps, draw strings or belts or other unfastened parts that might catch on moving machinery.
- Work areas should be kept free of materials, debris and obstruction, and substances such as grease or oil that could cause a surface to become slick or otherwise hazardous.
- Prior to drilling, the site must be checked to determine whether it can accommodate the rig and supplies and provide a safe working area.
- The drill rig mast (derrick) must be lowered prior to moving between drilling locations.
- The drill rig masts should not be raised if the rig will not be at least 20 feet away from overhead utilities.
- The location of underground utilities should be determined prior to erecting the rig.
- The drill rigs must be properly erected, leveled and stabilized prior to drilling.
- The operator must shut down the vehicle engine before leaving the vicinity of the machine.
- All personnel not directly involved in operating the rig or in sampling should remain clear of the drilling equipment when it is in operation.
- All unattended boreholes must be adequately covered or otherwise protected to prevent trip and fall hazards. All open boreholes should be covered, protected or backfilled as specified in local or state regulations.
- When climbing to or working on a derrick platform that is higher than 20 feet, a safety climbing device should be used.
- The user of wire line hoists, wire rope and hoisting hardware should be as stipulated by the American Iron and Steel Institute Wire Rope Users Manual.
- The rig should be operated in a manner which is consistent with the manufacturers' ratings of speed, force, torque, pressure, flow, etc. The rig and tools should be used for the purposes for which they were intended.

APPENDIX E

CHEMICAL HAZARDS

ARSENIC

0013
October 1999

CAS No: 7440-38-2
RTECS No: CG0525000
UN No: 1558
EC No: 033-001-00-X

Grey arsenic
As
Atomic mass: 74.9

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames. NO contact with strong oxidizers. NO contact with hot surfaces.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Risk of fire and explosion is slight when exposed to hot surfaces or flames in the form of fine powder or dust.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		**PREVENT DISPERSION OF DUST! AVOID ALL CONTACT! AVOID EXPOSURE OF (PREGNANT) WOMEN!**	**IN ALL CASES CONSULT A DOCTOR!**
Inhalation	Cough. Sore throat. Shortness of breath. Weakness. See Ingestion.	Closed system and ventilation.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
Skin	Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
Eyes	Redness.	Face shield or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion	Abdominal pain. Diarrhoea. Nausea. Vomiting. Burning sensation in the throat and chest. Shock or collapse. Unconsciousness.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING	
Evacuate danger area! Sweep spilled substance into sealable containers. Carefully collect remainder, then remove to safe place. Chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment.	T Symbol N Symbol R: 23/25-50/53 S: (1/2-)20/21-28-45-60-61 UN Hazard Class: 6.1 UN Pack Group: II	Do not transport with food and feedstuffs. Marine pollutant.

EMERGENCY RESPONSE	SAFE STORAGE
Transport Emergency Card: TEC (R)-61GT5-II	Separated from strong oxidants, acids, halogens, food and feedstuffs. Well closed.

IPCS
International Programme on Chemical Safety

Prepared in the context of cooperation between the International Programme on Chemical Safety and the European Commission

SEE IMPORTANT INFORMATION ON THE BACK.

IMPORTANT DATA

Physical State; Appearance
ODOURLESS, BRITTLE, GREY, METALLIC-LOOKING CRYSTALS.

Chemical dangers
Upon heating, toxic fumes are formed. Reacts violently with strong oxidants and halogens, causing fire and explosion hazard. Reacts with acids to produce toxic arsine gas (see: ICSC 0222).

Occupational exposure limits
TLV: 0.01 mg/m^3 as TWA; A1 (confirmed human carcinogen); BEI issued; (ACGIH 2004).
MAK: Carcinogen category: 1; Germ cell mutagen group: 3A; (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly, when dispersed.

Effects of short-term exposure
The substance is irritating to the eyes, the skin and the respiratory tract. The substance may cause effects on the gastrointestinal tract, cardiovascular system, central nervous system and kidneys, resulting in severe gastroenteritis, loss of fluid, and electrolytes, cardiac disorders, shock, convulsions and kidney impairment. Exposure above the OEL may result in death. The effects may be delayed. Medical observation is indicated.

Effects of long-term or repeated exposure
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the mucous membranes, skin, peripheral nervous system, liver and bone marrow, resulting in pigmentation disorders, hyperkeratosis, perforation of nasal septum, neuropathy, liver impairment, anaemia. This substance is carcinogenic to humans. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Sublimation point: 613/C
Density: 5.7 g/cm^3

Solubility in water: none

ENVIRONMENTAL DATA

The substance is toxic to aquatic organisms. It is strongly advised that this substance does not enter the environment.

NOTES

The substance is combustible but no flash point is available in literature.
Depending on the degree of exposure, periodic medical examination is suggested.
Do NOT take working clothes home.
Refer also to cards for specific arsenic compounds, e.g., Arsenic pentoxide (ICSC 0377), Arsenic trichloride (ICSC 0221), Arsenic trioxide (ICSC 0378), Arsine (ICSC 0222).
Card has been partly updated in October 2004. See sections Occupational Exposure Limits, EU classification, Emergency Response.
Card has been partly updated in October 2005 in section Effects of long-term or repeated exposure.

ADDITIONAL INFORMATION

BARIUM

1052
October 1999

CAS No: 7440-39-3
RTECS No: CQ8370000
UN No: 1400

Ba
Atomic mass: 137.3

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Flammable. Many reactions may cause fire or explosion.	NO open flames, NO sparks, and NO smoking. NO contact with water.	Special powder, dry sand, NO hydrous agents, NO water.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		**PREVENT DISPERSION OF DUST! STRICT HYGIENE!**	
Inhalation	Cough. Sore throat.	Local exhaust or breathing protection.	Fresh air, rest. Refer for medical attention.
Skin	Redness.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention.
Eyes	Redness. Pain.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Sweep spilled substance into sealable containers. Carefully collect remainder, then remove to safe place. Chemical protection suit including self-contained breathing apparatus. Do NOT wash away into sewer.	UN Hazard Class: 4.3 UN Pack Group: II

EMERGENCY RESPONSE	STORAGE
Transport Emergency Card: TEC (R)-43G12	Separated from halogenated solvents, strong oxidants, acids. Dry. Keep under inert gas, oil or oxygen-free liquid.

IPCS
International Programme on Chemical Safety

Prepared in the context of cooperation between the International Programme on Chemical Safety and the European Commission

SEE IMPORTANT INFORMATION ON THE BACK.

IMPORTANT DATA

Physical State; Appearance
YELLOWISH TO WHITE LUSTROUS SOLID IN VARIOUS FORMS.

Physical dangers
Dust explosion possible if in powder or granular form, mixed with air.

Chemical dangers
The substance may spontaneously ignite on contact with air (if in powder form). The substance is a strong reducing agent and reacts violently with oxidants and acids. Reacts violently with halogenated solvents. Reacts with water, forming flammable/explosive gas (hydrogen - see ICSC 0001), causing fire and explosion hazard.

Occupational exposure limits
TLV: 0.5 mg/m^3 (as TWA) (ACGIH 1999).

Routes of exposure
The substance can be absorbed into the body by ingestion.

Effects of short-term exposure
The substance irritates the eyes, the skin and the respiratory tract.

PHYSICAL PROPERTIES

Boiling point: 1640°C
Melting point: 725°C
Density: 3.6 g/cm^3
Solubility in water: reaction

ENVIRONMENTAL DATA

NOTES

Reacts violently with fire extinguishing agents such as water, bicarbonate, powder, foam, and carbon dioxide.
Rinse contaminated clothes (fire hazard) with plenty of water.

ADDITIONAL INFORMATION

BENZ(a)ANTHRACENE

0385
October 1995

CAS No: 56-55-3
RTECS No: CV9275000
EC No: 601-033-00-9

1,2-Benzoanthracene
Benzo(a)anthracene
2,3-Benzphenanthrene
Naphthanthracene
$C_{18}H_{12}$
Molecular mass: 228.3

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Combustible.		Water spray, powder. In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		**AVOID ALL CONTACT!**	
Inhalation		Local exhaust or breathing protection.	Fresh air, rest.
Skin		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes		Safety goggles, face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: complete protective clothing including self-contained breathing apparatus.	T Symbol N Symbol R: 45-50/53 S: 53-45-60-61

EMERGENCY RESPONSE	SAFE STORAGE
	Well closed.

IPCS
International Programme on Chemical Safety

Prepared in the context of cooperation between the International Programme on Chemical Safety and the European Commission

SEE IMPORTANT INFORMATION ON THE BACK.

IMPORTANT DATA

Physical State; Appearance
COLOURLESS TO YELLOW - BROWN FLUORESCENT FLAKES OR POWDER.

Physical dangers
Dust explosion possible if in powder or granular form, mixed with air.

Occupational exposure limits
TLV: A2 (suspected human carcinogen); (ACGIH 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.

Effects of long-term or repeated exposure
This substance is probably carcinogenic to humans.

PHYSICAL PROPERTIES

Sublimation point: 435/C
Melting point: 162/C
Relative density (water = 1): 1.274

Solubility in water: none
Vapour pressure, Pa at 20/C: 292
Octanol/water partition coefficient as log Pow: 5.61

ENVIRONMENTAL DATA

Bioaccumulation of this chemical may occur in seafood.

NOTES

This substance is one of many polycyclic aromatic hydrocarbons - standards are usually established for them as mixtures, e.g., coal tar pitch volatiles. However, it may be encountered as a laboratory chemical in its pure form.
Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.
Do NOT take working clothes home.
Tetraphene is a common name.
Card has been partly updated in October 2005. See sections Occupational Exposure Limits, EU classification.

ADDITIONAL INFORMATION

BENZO(a)PYRENE

0104
October 2005

CAS No: 50-32-8
RTECS No: DJ3675000
EC No: 601-032-00-3

Benz(a)pyrene
3,4-Benzopyrene
Benzo(d,e,f)chrysene
$C_{20}H_{12}$
Molecular mass: 252.3

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray, foam, powder, carbon dioxide.
EXPLOSION			
EXPOSURE	**See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.**	**AVOID ALL CONTACT! AVOID EXPOSURE OF (PREGNANT) WOMEN!**	
Inhalation		Local exhaust or breathing protection.	Fresh air, rest.
Skin	MAY BE ABSORBED!	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes		Safety goggles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion		Do not eat, drink, or smoke during work.	Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Evacuate danger area! Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.	T Symbol N Symbol R: 45-46-60-61-43-50/53 S: 53-45-60-61

EMERGENCY RESPONSE	SAFE STORAGE
	Separated from strong oxidants.

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International Programme on Chemical Safety

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IMPORTANT DATA

Physical State; Appearance
PALE-YELLOW CRYSTALS

Chemical dangers
Reacts with strong oxidants causing fire and explosion hazard.

Occupational exposure limits
TLV: Exposure by all routes should be carefully controlled to levels as low as possible A2 (suspected human carcinogen); (ACGIH 2005).
MAK: Carcinogen category: 2; Germ cell mutagen group: 2; (DFG 2005).

Routes of exposure
The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

Effects of long-term or repeated exposure
This substance is carcinogenic to humans. May cause heritable genetic damage to human germ cells. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 496/C
Melting point: 178.1/C
Density: 1.4 g/cm^3

Solubility in water: none (<0.1 g/100 ml)
Vapour pressure : negligible
Octanol/water partition coefficient as log Pow: 6.04

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. Bioaccumulation of this chemical may occur in fish, in plants and in molluscs. The substance may cause long-term effects in the aquatic environment.

NOTES

Do NOT take working clothes home.
Benzo(a)pyrene is present as a component of polycyclic aromatic hydrocarbons (PAHs) in the environment, usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.

ADDITIONAL INFORMATION

BENZO(b)FLUORANTHENE

0720
March 1999

CAS No: 205-99-2
RTECS No: CU1400000
EC No: 601-034-00-4

Benz(e)acephenanthrylene
2,3-Benzofluoroanthene
Benzo(e)fluoranthene
3,4-Benzofluoranthene
$C_{20}H_{12}$
Molecular mass: 252.3

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE			In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		**AVOID ALL CONTACT!**	
Inhalation		Local exhaust or breathing protection.	Fresh air, rest.
Skin		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes		Safety spectacles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	T Symbol N Symbol R: 45-50/53 S: 53-45-60-61

EMERGENCY RESPONSE	SAFE STORAGE
	Provision to contain effluent from fire extinguishing. Well closed.

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IMPORTANT DATA

Physical State; Appearance
COLOURLESS CRYSTALS

Chemical dangers
Upon heating, toxic fumes are formed.

Occupational exposure limits
TLV: A2 (suspected human carcinogen); (ACGIH 2004).
MAK: Carcinogen category: 2; (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation of its aerosol and through the skin.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.

Effects of long-term or repeated exposure
This substance is possibly carcinogenic to humans. May cause genetic damage in humans.

PHYSICAL PROPERTIES

Boiling point: 481/C
Melting point: 168/C
Solubility in water: none
Octanol/water partition coefficient as log Pow: 6.12

ENVIRONMENTAL DATA

This substance may be hazardous to the environment; special attention should be given to air quality and water quality.

NOTES

Benzo(b)fluoranthene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco. ACGIH recommends environment containing benzo(b)fluoranthene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m^3.
Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.
Card has been partly updated in October 2005. See section Occupational Exposure Limits.

ADDITIONAL INFORMATION

BENZO(k)FLUORANTHENE

0721
March 1999

CAS No: 207-08-9
RTECS No: DF6350000
EC No: 601-036-00-5

Dibenzo(b,jk)fluorene
8,9-Benzofluoranthene
11,12-Benzofluoranthene
$C_{20}H_{12}$
Molecular mass: 252.3

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE			In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		**AVOID ALL CONTACT!**	
Inhalation		Local exhaust or breathing protection.	Fresh air, rest.
Skin		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes		Safety spectacles or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	T Symbol N Symbol R: 45-50/53 S: 53-45-60-61

EMERGENCY RESPONSE	SAFE STORAGE
	Provision to contain effluent from fire extinguishing. Well closed.

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IMPORTANT DATA

Physical State; Appearance
YELLOW CRYSTALS

Chemical dangers
Upon heating, toxic fumes are formed.

Occupational exposure limits
TLV not established.
MAK: Carcinogen category: 2; (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation of its aerosol and through the skin.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.

Effects of long-term or repeated exposure
This substance is possibly carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 480/C
Melting point: 217/C

Solubility in water: none
Octanol/water partition coefficient as log Pow: 6.84

ENVIRONMENTAL DATA

This substance may be hazardous to the environment; special attention should be given to air quality and water quality. Bioaccumulation of this chemical may occur in crustacea and in fish.

NOTES

Benzo(k)fluoranthene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco. ACGIH recommends environment containing benzo(k)fluoranthene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m^3.
Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.
Card has been partly updated in October 2005. See section Occupational Exposure Limits.

ADDITIONAL INFORMATION

BERYLLIUM

0226
October 1999

CAS No: 7440-41-7
RTECS No: DS1750000
UN No: 1567
EC No: 004-001-00-7

Glucinium
Be
Atomic mass: 9.0

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Special powder, dry sand, NO other agents.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		**PREVENT DISPERSION OF DUST! AVOID ALL CONTACT!**	**IN ALL CASES CONSULT A DOCTOR!**
Inhalation	Cough. Shortness of breath. Sore throat. Weakness. Symptoms may be delayed (see Notes).	Local exhaust. Breathing protection.	Fresh air, rest. Refer for medical attention.
Skin	Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
Eyes	Redness. Pain.	Face shield or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING	
Evacuate danger area! Consult an expert! Carefully collect the spilled substance into containers; if appropriate moisten first, then remove to safe place. Chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment.	T+ Symbol R: 49-25-26-36/37/38-43-48/23 S: 53-45 Note: E UN Hazard Class: 6.1 UN Subsidiary Risks: 4.1 UN Pack Group: II	Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs.

EMERGENCY RESPONSE	SAFE STORAGE
Transport Emergency Card: TEC (R)-61GTF3-II NFPA Code: H3; F1; R0	Separated from strong acids, bases, chlorinated solvents, food and feedstuffs.

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IMPORTANT DATA

Physical State; Appearance
GREY TO WHITE POWDER.

Physical dangers
Dust explosion possible if in powder or granular form, mixed with air.

Chemical dangers
Reacts with strong acids and strong bases forming flammable/explosive gas (hydrogen - see ICSC0001). Forms shock sensitive mixtures with some chlorinated solvents, such as carbon tetrachloride and trichloroethylene.

Occupational exposure limits
TLV: 0.002 mg/m^3 as TWA, 0.01 mg/m^3 as STEL; A1 (confirmed human carcinogen); (ACGIH 2004).
MAK: sensitization of respiratory tract and skin (Sah); Carcinogen category: 1; (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

Effects of short-term exposure
The aerosol of this substance is irritating to the respiratory tract. Inhalation of dust or fumes may cause chemical pneumonitis. Exposure may result in death. The effects may be delayed. Medical observation is indicated.

Effects of long-term or repeated exposure
Repeated or prolonged contact may cause skin sensitization. Lungs may be affected by repeated or prolonged exposure to dust particles, resulting in chronic beryllium disease (cough, weight loss, weakness). This substance is carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: above 2500/C
Melting point: 1287/C
Density: 1.9 g/cm^3
Solubility in water: none

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms.

NOTES

Depending on the degree of exposure, periodic medical examination is suggested.
Do NOT take working clothes home.
Card has been partly updated in October 2005. See sections Occupational Exposure Limits, Emergency Response.

ADDITIONAL INFORMATION

CADMIUM

0020
April 2005

CAS No: 7440-43-9
RTECS No: EU9800000
UN No: 2570
EC No: 048-002-00-0

Cd
Atomic mass: 112.4

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Flammable in powder form and spontaneously combustible in pyrophoric form. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking. NO contact with heat or acid(s).	Dry sand. Special powder. NO other agents.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	

EXPOSURE		**PREVENT DISPERSION OF DUST! AVOID ALL CONTACT!**	**IN ALL CASES CONSULT A DOCTOR!**
Inhalation	Cough. Sore throat.	Local exhaust or breathing protection.	Fresh air, rest. Refer for medical attention.
Skin		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes	Redness. Pain.	Safety goggles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion	Abdominal pain. Diarrhoea. Headache. Nausea. Vomiting.	Do not eat, drink, or smoke during work.	Rest. Refer for medical attention.

SPILLAGE DISPOSAL	**PACKAGING & LABELLING**	
Evacuate danger area! Personal protection: chemical protection suit including self-contained breathing apparatus. Remove all ignition sources. Sweep spilled substance into containers. Carefully collect remainder, then remove to safe place.	T+ Symbol N Symbol R: 45-26-48/23/25-62-63-68-50/53 S: 53-45-60-61 Note: E UN Hazard Class: 6.1	Airtight. Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs.

EMERGENCY RESPONSE	**SAFE STORAGE**
	Fireproof. Dry. Keep under inert gas. Separated from igntion sources, oxidants acids, food and feedstuffs.

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SEE IMPORTANT INFORMATION ON THE BACK.

IMPORTANT DATA

Physical State; Appearance
SOFT BLUE-WHITE METAL LUMPS OR GREY POWDER. MALLEABLE. TURNS BRITTLE ON EXPOSURE TO 80/C AND TARNISHES ON EXPOSURE TO MOIST AIR.

Physical dangers
Dust explosion possible if in powder or granular form, mixed with air.

Chemical dangers
Reacts with acids forming flammable/explosive gas (hydrogen - see ICSC0001). Dust reacts with oxidants, hydrogen azide, zinc, selenium or tellurium, causing fire and explosion hazard.

Occupational exposure limits
TLV: (Total dust) 0.01 mg/m^3; (Respirable fraction) 0.002 mg/m^3; as TWA; A2 (suspected human carcinogen); BEI issued; (ACGIH 2005).
MAK: skin absorption (H); Carcinogen category: 1; Germ cell mutagen group: 3A; (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.

Inhalation risk
A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.

Effects of short-term exposure
The fume is irritating to the respiratory tract. Inhalation of fume may cause lung oedema (see Notes). Inhalation of fumes may cause metal fume fever. The effects may be delayed. Medical observation is indicated.

Effects of long-term or repeated exposure
Lungs may be affected by repeated or prolonged exposure to dust particles. The substance may have effects on the kidneys, resulting in kidney impairment. This substance is carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 765/C
Melting point: 321/C
Density: 8.6 g/cm^3

Solubility in water: none
Auto-ignition temperature: (cadmium metal dust) 250/C

ENVIRONMENTAL DATA

NOTES

Reacts violently with fire extinguishing agents such as water, foam, carbon dioxide and halons.
Depending on the degree of exposure, periodic medical examination is indicated.
The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential.
Do NOT take working clothes home.
Cadmium also exists in a pyrophoric form (EC No. 048-011-00-X), which bears the additional EU labelling symbol F, R phrase 17, and S phrases 7/8 and 43. UN numbers and packing group will vary according to the physical form of the substance.

ADDITIONAL INFORMATION

CHROMIUM

0029
October 2004

CAS No: 7440-47-3
RTECS No: GB4200000

Chrome
(powder)
Cr
Atomic mass: 52.0

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Combustible under specific conditions.	No open flames if in powder form.	In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION		Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		**PREVENT DISPERSION OF DUST!**	
Inhalation	Cough.	Local exhaust or breathing protection.	Fresh air, rest.
Skin		Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
Eyes	Redness.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion		Do not eat, drink, or smoke during work.	Rinse mouth.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Personal protection: P2 filter respirator for harmful particles.	

EMERGENCY RESPONSE	SAFE STORAGE

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IMPORTANT DATA

Physical State; Appearance
GREY POWDER

Physical dangers
Dust explosion possible if in powder or granular form, mixed with air.

Chemical dangers
Chromium is a catalytic substance and may cause reaction in contact with many organic and inorganic substances, causing fire and explosion hazard.

Occupational exposure limits
TLV: (as Cr metal, Cr(III) compounds) 0.5 mg/m^3 as TWA; A4; (ACGIH 2004).
MAK not established.

Inhalation risk
A harmful concentration of airborne particles can be reached quickly when dispersed.

Effects of short-term exposure
May cause mechanical irritation to the eyes and the respiratory tract.

PHYSICAL PROPERTIES

Boiling point: 2642/C
Melting point: 1900/C
Density: 7.15 g/cm^3
Solubility in water: none

ENVIRONMENTAL DATA

NOTES

The surface of the chromium particles is oxidized to chromium(III)oxide in air.
See ICSC 1531 Chromium(III) oxide.

ADDITIONAL INFORMATION

COPPER

0240
September 1993

CAS No: 7440-50-8
RTECS No: GL5325000
UN No:
EC No:

Cu
Atomic mass: 63.5

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Special powder, dry sand, NO other agents.
EXPLOSION			
EXPOSURE		**PREVENT DISPERSION OF DUST!**	
Inhalation	Cough. Headache. Shortness of breath. Sore throat.	Local exhaust or breathing protection.	Fresh air, rest. Refer for medical attention.
Skin	Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes	Redness. Pain.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Sweep spilled substance into containers. Carefully collect remainder. Then remove to safe place (extra personal protection: P2 filter respirator for harmful particles).	Symbol R: S:

EMERGENCY RESPONSE	STORAGE
	Separated from: see Chemical Dangers.

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SEE IMPORTANT INFORMATION ON THE BACK.

IMPORTANT DATA

Physical State; Appearance
RED POWDER, TURNS GREEN ON EXPOSURE TO MOIST AIR.

Chemical Dangers
Shock-sensitive compounds are formed with acetylenic compounds, ethylene oxides and azides. Reacts with strong oxidants like chlorates, bromates and iodates, causing explosion hazard.

Occupational Exposure Limits
TLV: ppm; 0.2 mg/m^3 fume (ACGIH 1992-1993).
TLV (as Cu, dusts & mists): ppm; 1 mg/m3 (ACGIH 1992-1993).

Routes of Exposure
The substance can be absorbed into the body by inhalation and by ingestion.

Inhalation Risk
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

Effects of Short-term Exposure
Inhalation of fume may cause metal fever (see Notes).

Effects of Long-term or Repeated Exposure
Repeated or prolonged contact may cause skin sensitization.

PHYSICAL PROPERTIES

Boiling point: 2595°C
Melting point: 1083°C
Relative density (water = 1): 8.9
Solubility in water: none

ENVIRONMENTAL DATA

NOTES

The symptoms of metal fume fever do not become manifest until several hours.

ADDITIONAL INFORMATION

DI(2-ETHYLHEXYL) PHTHALATE

0271

October 2001

CAS No: 117-81-7
RTECS No: TI0350000
EC No: 607-317-00-9

Dioctylphthalate
DOP; DEHP
Bis-(2-ethylhexyl)phthalate
$C_{24}H_{38}O_4$ / $C_6H_4(COOC_8H_{17})_2$
Molecular mass: 390.6

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames.	Water spray, foam, powder, carbon dioxide.
EXPLOSION			
EXPOSURE		**PREVENT GENERATION OF MISTS! AVOID EXPOSURE OF ADOLESCENTS AND CHILDREN!**	
Inhalation	Cough. Sore throat.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest.
Skin		Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
Eyes	Redness. Pain.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion	Abdominal cramps. Diarrhoea. Nausea.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Give plenty of water to drink.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Chemical protection suit.	T Symbol R: 60-61 S: 53-45

EMERGENCY RESPONSE	SAFE STORAGE
NFPA Code: H 0; F 1; R 0	Separated from strong oxidants, acids, alkalis, and nitrates. Cool. Dry. Well closed.

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IMPORTANT DATA

Physical State; Appearance
COLOURLESS TO LIGHT COLOURED VISCOUS LIQUID, WITH CHARACTERISTIC ODOUR.

Chemical dangers
The substance decomposes on heating producing irritating fumes. Reacts with strong oxidants acids, alkalis, and nitrates.

Occupational exposure limits
TLV: 5 mg/m^3; A3 (confirmed animal carcinogen with unknown relevance to humans); (ACGIH 2004).
MAK: 10 mg/m^3; Peak limitation category: II(8); Carcinogen category: 4; Pregnancy risk group: C; (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly on spraying.

Effects of short-term exposure
The substance is irritating to the eyes and the respiratory tract.

Effects of long-term or repeated exposure
The substance may have effects on the testes. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 385/C
Melting point: -50/C
Relative density (water = 1): 0.986
Solubility in water: none
Vapour pressure, kPa at 20/C: 0.001
Relative vapour density (air = 1): 13.45
Flash point: 215/C o.c.
Auto-ignition temperature: 350/C
Octanol/water partition coefficient as log Pow: 5.03

ENVIRONMENTAL DATA

Bioaccumulation of this chemical may occur in seafood.

NOTES

Card has been partly updated in October 2005. See section Occupational Exposure Limits.

ADDITIONAL INFORMATION

DIBENZO(a,h)ANTHRACENE

0431

October 1995

CAS No: 53-70-3
RTECS No: HN2625000
EC No: 601-041-00-2

1,2:5,6-Dibenzanthracene
$C_{22}H_{14}$
Molecular mass: 278.4

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray, powder.
EXPLOSION			
EXPOSURE		**AVOID ALL CONTACT!**	
Inhalation		Local exhaust or breathing protection.	Fresh air, rest.
Skin	Redness. Swelling. Itching.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes	Redness.	Face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: P3 filter respirator for toxic particles.	T Symbol N Symbol R: 45-50/53 S: 53-45-60-61

EMERGENCY RESPONSE	SAFE STORAGE
	Well closed.

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IMPORTANT DATA

Physical State; Appearance
COLOURLESS CRYSTALLINE POWDER.

Occupational exposure limits
TLV not established.

Routes of exposure
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.

Effects of long-term or repeated exposure
The substance may have effects on the skin, resulting in photosensitization. This substance is probably carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 524/C
Melting point: 267/C
Relative density (water = 1): 1.28

Solubility in water: none
Octanol/water partition coefficient as log Pow: 6.5

ENVIRONMENTAL DATA

Bioaccumulation of this chemical may occur in seafood.

NOTES

This is one of many polycyclic aromatic hydrocarbons - standards are usually established for them as mixtures, e.g., coal tar pitch volatiles. However, it may be encountered as a laboratory chemical in its pure form.
Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.
Do NOT take working clothes home.
DBA is a commonly used name.
This substance is one of many polycyclic aromatic hydrocarbons (PAH).
Card has been partly updated in October 2005. See section EU classification.

ADDITIONAL INFORMATION

INDENO(1,2,3-cd)PYRENE

0730
March 1999

CAS No: 193-39-5
RTECS No: NK9300000

o-Phenylenepyrene
2,3-Phenylenepyrene
$C_{22}H_{12}$
Molecular mass: 276.3

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE			In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		**AVOID ALL CONTACT!**	
Inhalation		Local exhaust or breathing protection.	Fresh air, rest.
Skin		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes		Safety spectacles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	

EMERGENCY RESPONSE	SAFE STORAGE
	Provision to contain effluent from fire extinguishing. Well closed.

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IMPORTANT DATA

Physical State; Appearance
YELLOW CRYSTALS

Chemical dangers
Upon heating, toxic fumes are formed.

Occupational exposure limits
TLV not established.
MAK: Carcinogen category: 2; (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation of its aerosol and through the skin.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.

Effects of long-term or repeated exposure
This substance is possibly carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 536/C
Melting point: 164/C

Solubility in water: none
Octanol/water partition coefficient as log Pow: 6.58

ENVIRONMENTAL DATA

This substance may be hazardous to the environment; special attention should be given to air quality and water quality. Bioaccumulation of this chemical may occur in fish.

NOTES

Indeno(1,2,3-cd)pyrene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco. ACGIH recommends environment containing Indeno(1,2,3-c,d)pyrene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m^3.
Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.
Card has been partly updated in October 2005. See section Occupational Exposure Limits.

ADDITIONAL INFORMATION

LEAD

0052
October 2002

CAS No: 7439-92-1
RTECS No: OF7525000

Lead metal
Plumbum
(powder)
Pb
Atomic mass: 207.2

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE	**See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.**	**PREVENT DISPERSION OF DUST! AVOID EXPOSURE OF (PREGNANT) WOMEN!**	
Inhalation		Local exhaust or breathing protection.	Fresh air, rest.
Skin		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Give plenty of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment. Personal protection: P3 filter respirator for toxic particles.	

EMERGENCY RESPONSE	SAFE STORAGE
	Separated from food and feedstuffs and incompatible materials. See Chemical Dangers.

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IMPORTANT DATA

Physical State; Appearance
BLUISH-WHITE OR SILVERY-GREY SOLID IN VARIOUS FORMS. TURNS TARNISHED ON EXPOSURE TO AIR.

Physical dangers
Dust explosion possible if in powder or granular form, mixed with air.

Chemical dangers
On heating, toxic fumes are formed. Reacts with oxidants. Reacts with hot concentrated nitric acid, boiling concentrated hydrochloric acid and sulfuric acid. Attacked by pure water and by weak organic acids in the presence of oxygen.

Occupational exposure limits
TLV: 0.05 mg/m^3 as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued; (ACGIH 2004).
MAK: Carcinogen category: 3B; Germ cell mutagen group: 3A; (DFG 2004).
EU OEL: as TWA 0.15 mg/m^3; (EU 2002).

Routes of exposure
The substance can be absorbed into the body by inhalation and by ingestion.

Inhalation risk
A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.

Effects of long-term or repeated exposure
The substance may have effects on the blood, bone marrow, central nervous system, peripheral nervous system and kidneys, resulting in anaemia, encephalopathy (e.g., convulsions), peripheral nerve disease, abdominal cramps and kidney impairment. Causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 1740/C
Melting point: 327.5/C
Density: 11.34 g/cm^3
Solubility in water: none

ENVIRONMENTAL DATA

Bioaccumulation of this chemical may occur in plants and in mammals. It is strongly advised that this substance does not enter the environment.

NOTES

Depending on the degree of exposure, periodic medical examination is suggested.
Do NOT take working clothes home.
Card has been partly updated in April 2005. See section Occupational Exposure Limits.

ADDITIONAL INFORMATION

MANGANESE

0174
November 2003

CAS No: 7439-96-5
RTECS No: OO9275000

(powder)
Mn
Atomic mass: Atomic mass: 54.9

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Dry sand, special powder.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		**PREVENT DISPERSION OF DUST! AVOID EXPOSURE OF (PREGNANT) WOMEN!**	
Inhalation	Cough.	Local exhaust or breathing protection.	Fresh air, rest. Refer for medical attention.
Skin		Protective gloves.	Rinse and then wash skin with water and soap.
Eyes		Safety goggles, or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion	Abdominal pain. Nausea.	Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Sweep spilled substance into containers. Carefully collect remainder, then remove to safe place. (Extra personal protection: P2 filter respirator for harmful particles.)	

EMERGENCY RESPONSE	SAFE STORAGE
	Separated from acids. Dry.

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IMPORTANT DATA

Physical State; Appearance
GREY - WHITE POWDER

Physical dangers
Dust explosion possible if in powder or granular form, mixed with air.

Chemical dangers
Reacts slowly with water more rapidly with steam and acids forming flammable/explosive gas (hydrogen - see ICSC0001) causing fire and explosion hazard.

Occupational exposure limits
TLV: 0.2 mg/m^3 (as TWA) ; (ACGIH 2003).
MAK: 0.5 I mg/m^3; Pregnancy risk group: C; (DFG 2003).

Routes of exposure
The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

Effects of short-term exposure
The aerosol is irritating to the respiratory tract.

Effects of long-term or repeated exposure
The substance may have effects on the lungs and central nervous system, resulting in increased susceptibility to bronchitis, pneumonitis and neurologic, neuropsychiatric disorders (manganism). Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 1962/C
Melting point: 1244/C
Density: 7.47 g/cm^3
Solubility in water: none

ENVIRONMENTAL DATA

This substance may be hazardous in the environment; special attention should be given to aquatic organisms.

NOTES

Depending on the degree of exposure, periodic medical examination is suggested.
The recommendations on this Card also apply to ferro manganese.

ADDITIONAL INFORMATION

MERCURY

0056
April 2004

CAS No: 7439-97-6
RTECS No: OV4550000
UN No: 2809
EC No: 080-001-00-0

Quicksilver
Liquid silver
Hg
Atomic mass: 200.6

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Risk of fire and explosion.		In case of fire: keep drums, etc., cool by spraying with water.

EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN! AVOID EXPOSURE OF ADOLESCENTS AND CHILDREN!	IN ALL CASES CONSULT A DOCTOR!
Inhalation	Abdominal pain. Cough. Diarrhoea. Shortness of breath. Vomiting. Fever or elevated body temperature.	Local exhaust or breathing protection.	Fresh air, rest. Artificial respiration if indicated. Refer for medical attention.
Skin	MAY BE ABSORBED! Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
Eyes		Face shield, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion		Do not eat, drink, or smoke during work. Wash hands before eating.	Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING	
Evacuate danger area in case of a large spill! Consult an expert! Ventilation. Collect leaking and spilled liquid in sealable non-metallic containers as far as possible. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Chemical protection suit including self-contained breathing apparatus.	T Symbol N Symbol R: 23-33-50/53 S: (1/2-)7-45-60-61 UN Hazard Class: 8 UN Pack Group: III	Special material. Do not transport with food and feedstuffs.

EMERGENCY RESPONSE	STORAGE
Transport Emergency Card: TEC (R)-80GC9-II+III	Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs. Well closed.

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IMPORTANT DATA

Physical State; Appearance
ODOURLESS, HEAVY AND MOBILE SILVERY LIQUID METAL.

Chemical dangers
Upon heating, toxic fumes are formed. Reacts violently with ammonia and halogens causing fire and explosion hazard. Attacks aluminium and many other metals forming amalgams.

Occupational exposure limits
TLV: 0.025 mg/m^3 as TWA; (skin); A4; BEI issued; (ACGIH 2004).
MAK: 0.1 mg/m^3; Sh; Peak limitation category: II(8); Carcinogen category: 3B; (DFG 2003).

Routes of exposure
The substance can be absorbed into the body by inhalation of its vapour and through the skin, also as a vapour!

Inhalation risk
A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20/C.

Effects of short-term exposure
The substance is irritating to the skin. Inhalation of the vapours may cause pneumonitis. The substance may cause effects on the central nervous system and kidneys. The effects may be delayed. Medical observation is indicated.

Effects of long-term or repeated exposure
The substance may have effects on the central nervous system and kidneys, resulting in irritability, emotional instability, tremor, mental and memory disturbances, speech disorders. May cause inflammation and discoloration of the gums. Danger of cumulative effects. Animal tests show that this substance possibly causes toxic effects upon human reproduction.

PHYSICAL PROPERTIES

Boiling point: 357/C
Melting point: -39/C
Relative density (water = 1): 13.5
Solubility in water: none
Vapour pressure, Pa at 20/C: 0.26
Relative vapour density (air = 1): 6.93
Relative density of the vapour/air-mixture at 20/C (air = 1): 1.009

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. In the food chain important to humans, bioaccumulation takes place, specifically in fish.

NOTES

Depending on the degree of exposure, periodic medical examination is indicated.
No odour warning if toxic concentrations are present.
Do NOT take working clothes home.

ADDITIONAL INFORMATION

NAPHTHALENE

0667
April 2005

CAS No: 91-20-3
RTECS No: QJ0525000
UN No: 1334 (solid); 2304 (molten)
EC No: 601-052-00-2

Naphthene
$C_{10}H_8$
Molecular mass: 128.18

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 80/C explosive vapour/air mixtures may be formed. Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		**PREVENT DISPERSION OF DUST!**	
Inhalation	Headache. Weakness. Nausea. Vomiting. Sweating. Confusion. Jaundice. Dark urine.	Ventilation (not if powder), local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
Skin	MAY BE ABSORBED! (Further see Inhalation).	Protective gloves.	Rinse skin with plenty of water or shower.
Eyes		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion	Abdominal pain. Diarrhoea. Convulsions. Unconsciousness. (Further see Inhalation).	Do not eat, drink, or smoke during work. Wash hands before eating.	Rest. Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING	
Personal protection: filter respirator for organic gases and vapours. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.	Xn Symbol N Symbol R: 22-40-50/53 S: (2-)36/37-46-60-61 UN Hazard Class: 4.1 UN Pack Group: III	Do not transport with food and feedstuffs. Marine pollutant.

EMERGENCY RESPONSE	SAFE STORAGE
Transport Emergency Card: TEC (R)-41S1334 (solid); 41GF1-II+III (solid); 41S2304 (molten) NFPA Code: H2; F2; R0	Separated from strong oxidants, food and feedstuffs. Store in an area without drain or sewer access.

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IMPORTANT DATA

Physical State; Appearance
WHITE SOLID IN VARIOUS FORMS, WITH CHARACTERISTIC ODOUR.

Physical dangers
Dust explosion possible if in powder or granular form, mixed with air.

Chemical dangers
On combustion, forms irritating and toxic gases. Reacts with strong oxidants.

Occupational exposure limits
TLV: 10 ppm as TWA; 15 ppm as STEL; (skin); A4 (not classifiable as a human carcinogen); (ACGIH 2005).
MAK: skin absorption (H); Carcinogen category: 2; Germ cell mutagen group: 3B; (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

Inhalation risk
A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20/C. See Notes.

Effects of short-term exposure
The substance may cause effects on the blood, resulting in lesions of blood cells (haemolysis). See Notes. The effects may be delayed. Exposure by ingestion may result in death. Medical observation is indicated.

Effects of long-term or repeated exposure
The substance may have effects on the blood, resulting in chronic haemolytic anaemia. The substance may have effects on the eyes, resulting in the development of cataract. This substance is possibly carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 218/C Sublimation slowly at room temperature
Melting point: 80/C
Density: 1.16 g/cm^3
Solubility in water, g/100 ml at 25/C: none
Vapour pressure, Pa at 25/C: 11
Relative vapour density (air = 1): 4.42
Flash point: 80/C c.c.
Auto-ignition temperature: 540/C
Explosive limits, vol% in air: 0.9-5.9
Octanol/water partition coefficient as log Pow: 3.3

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. The substance may cause long-term effects in the aquatic environment.

NOTES

Some individuals may be more sensitive to the effect of naphthalene on blood cells.

ADDITIONAL INFORMATION

NICKEL

0062
October 2001

CAS No: 7440-02-0 (powder)
RTECS No: QR5950000 Ni
EC No: 028-002-00-7 Atomic mass: 58.7

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Flammable as dust. Toxic fumes may be released in a fire.		Dry sand. NO carbon dioxide. NO water.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		**PREVENT DISPERSION OF DUST! AVOID ALL CONTACT!**	
Inhalation	Cough. Shortness of breath.	Local exhaust or breathing protection.	Fresh air, rest.
Skin		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
Eyes		Safety spectacles, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion		Do not eat, drink, or smoke during work.	Rinse mouth.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Vacuum spilled material. Carefully collect remainder, then remove to safe place. Personal protection: P2 filter respirator for harmful particles.	Xn Symbol R: 40-43 S: (2-)22-36

EMERGENCY RESPONSE	SAFE STORAGE
	Separated from strong acids.

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IMPORTANT DATA

Physical State; Appearance
SILVERY METALLIC SOLID IN VARIOUS FORMS.

Physical dangers
Dust explosion possible if in powder or granular form, mixed with air.

Chemical dangers
Reacts violently, in powder form, with titanium powder and potassium perchlorate, and oxidants such as ammonium nitrate, causing fire and explosion hazard. Reacts slowly with non-oxidizing acids and more rapidly with oxidizing acids. Toxic gases and vapours (such as nickel carbonyl) may be released in a fire involving nickel.

Occupational exposure limits
TLV: (Inhalable fraction) 1.5 mg/m^3 as TWA; A5 (not suspected as a human carcinogen); (ACGIH 2004).
MAK: (Inhalable fraction); sensitization of respiratory tract and skin (Sah); Carcinogen category: 1; (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation of the dust.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

Effects of short-term exposure
May cause mechanical irritation. Inhalation of fumes may cause pneumonitis.

Effects of long-term or repeated exposure
Repeated or prolonged contact may cause skin sensitization. Repeated or prolonged inhalation exposure may cause asthma. Lungs may be affected by repeated or prolonged exposure. This substance is possibly carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 2730/C
Melting point: 1455/C
Density: 8.9 g/cm^3
Solubility in water: none

ENVIRONMENTAL DATA

NOTES

At high temperatures, nickel oxide fumes will be formed.
Depending on the degree of exposure, periodic medical examination is suggested.
The symptoms of asthma often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential.
Anyone who has shown symptoms of asthma due to this substance should avoid all further contact with this substance.
Card has been partly updated in April 2005. See section Occupational Exposure Limits.

ADDITIONAL INFORMATION

SELENIUM

0072
April 1993

CAS No: 7782-49-2 (powder)
RTECS No: VS7700000 Se
EC No: 034-001-00-2 Atomic mass: 79.0

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames. NO contact with oxidants.	Powder, AFFF, foam, carbon dioxide. NO water.
EXPLOSION	Risk of fire and explosion on contact with oxidants.		
EXPOSURE		**PREVENT DISPERSION OF DUST! STRICT HYGIENE!**	
Inhalation	Irritation of nose. Cough. Dizziness. Headache. Laboured breathing. Nausea. Sore throat. Vomiting. Weakness. Symptoms may be delayed (see Notes).	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
Skin	Redness. Skin burns. Pain. Discolouration.	Protective gloves. Protective clothing.	Rinse skin with plenty of water or shower. Refer for medical attention. Remove and isolate contaminated clothes.
Eyes	Redness. Pain. Blurred vision.	Safety spectacles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion	Metallic taste. Diarrhoea. Chills. Fever. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING	
Do NOT wash away into sewer. Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: P3 filter respirator for toxic particles.	T Symbol R: 23/25-33-53 S: (1/2-)20/21-28-45-61	Airtight. Do not transport with food and feedstuffs.

EMERGENCY RESPONSE	SAFE STORAGE
	Fireproof. Separated from strong oxidants, strong acids, food and feedstuffs. Dry.

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SEE IMPORTANT INFORMATION ON THE BACK.

IMPORTANT DATA

Physical State; Appearance
ODOURLESS SOLID IN VARIOUS FORMS. DARK RED-BROWN TO BLUISH-BLACK AMORPHOUS SOLID OR RED TRANSPARENT CRYSTALS OR METALLIC GREY TO BLACK CRYSTALS.

Chemical dangers
Upon heating, toxic fumes are formed. Reacts violently with oxidants strong acids. Reacts with water at 50/C forming flammable/explosive gas (hydrogen - see ICSC0001) and selenious acids. Reacts with incandescence on gentle heating with phosphorous and metals such as nickel, zinc, sodium, potassium, platinum.

Occupational exposure limits
TLV: 0.2 mg/m^3 as TWA; (ACGIH 2004).
MAK: (Inhalable fraction) 0.05 mg/m^3; Peak limitation category: II(4); Carcinogen category: 3B; Pregnancy risk group: C; (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

Effects of short-term exposure
The substance is irritating to the eyes and the respiratory tract. Inhalation of dust may cause lung oedema (see Notes). Inhalation of fume may cause symptoms of asphyxiation, chills and fever and bronchitis. The effects may be delayed.

Effects of long-term or repeated exposure
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the respiratory tract, gastrointestinal tract, and skin, resulting in nausea, vomiting, cough, yellowish skin discolouration, loss of nails, garlic breath and bad teeth.

PHYSICAL PROPERTIES

Boiling point: 685/C
Melting point: 170-217/C
Relative density (water = 1): 4.8
Solubility in water: none
Vapour pressure, Pa at 20/C: 0.1

ENVIRONMENTAL DATA

NOTES

Do NOT take working clothes home.
Card has been partly updated in April 2005. See sections Occupational Exposure Limits, EU classification, Emergency Response.

ADDITIONAL INFORMATION

SODIUM

0717
April 2006

CAS No: 7440-23-5
RTECS No: VY0686000
UN No: 1428
EC No: 011-001-00-0

Natrium
Na
Atomic mass: 23.0

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Highly flammable. Many reactions may cause fire or explosion. Gives off irritating or toxic fumes (or gases) in a fire.	NO contact with water, acid(s) and halogens. NO open flames, NO sparks, and NO smoking.	Special powder, dry sand, NO other agents.
EXPLOSION	Risk of fire and explosion. on contact with acid(s), halogens, water.		Combat fire from a sheltered position.
EXPOSURE			
Inhalation	Cough. Sore throat. Burning sensation.	Closed system and ventilation.	Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.
Skin	Pain. Blisters. Serious skin burns.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention.
Eyes	Severe deep burns. loss of vision.	Face shield.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion	Burning sensation. Shock or collapse.	Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL

Evacuate danger area! Consult an expert! Chemical protection suit including self-contained breathing apparatus. Cover the spilled material with dry powder.

PACKAGING & LABELLING

EU classification
F Symbol
C Symbol
R: 14/15-34
S: (1/2)-5 -8-43-45
UN classification
UN Hazard Class: 4.3
UN Pack Group: I
GHS classification
Signal: Danger
Flam-Corr
In contact with water releases flammable gases which may ignite spontaneously
Causes severe skin burns and eye damage

Airtight. Unbreakable packaging; put breakable packaging into closed unbreakable container.

EMERGENCY RESPONSE

Transport Emergency Card: TEC (R)-43S1428a
NFPA Code: H3; F3; R2

SAFE STORAGE

Fireproof. Keep under mineral oil. Dry. Well closed.

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SEE IMPORTANT INFORMATION ON THE BACK.

IMPORTANT DATA

Physical State; Appearance
SILVERY SOLID IN VARIOUS FORMS

Chemical dangers
Reacts violently with water, causing fire and explosion hazard. The substance decomposes rapidly under the influence of air and moisture, forming flammable/explosive gas (Hydrogen - see ICSC0001).

Occupational exposure limits
TLV not established.
MAK not established.

Routes of exposure
Serious local effects by all routes of exposure.

Effects of short-term exposure
See ICSC 0360 (Sodium hydroxide)

PHYSICAL PROPERTIES

Boiling point: 880/C
Melting point: 97.4/C
Density: 0.97 g/cm^3

Solubility in water: reaction
Vapour pressure, Pa at 20/C: negligible
Auto-ignition temperature: 120-125/C

ENVIRONMENTAL DATA

NOTES

Sodium is always kept under mineral oil.
Reacts violently with fire extinguishing agents such as
water
and
carbon dioxide
.

ADDITIONAL INFORMATION

TOLUENE

0078
October 2002

CAS No: 108-88-3
RTECS No: XS5250000
UN No: 1294
EC No: 601-021-00-3

Methylbenzene
Toluol
Phenylmethane
$C_6H_5CH_3$ / C_7H_8
Molecular mass: 92.1

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking.	Powder, AFFF, foam, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Do NOT use compressed air for filling, discharging, or handling. Use non-sparking handtools.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		**STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN!**	
Inhalation	Cough. Sore throat. Dizziness. Drowsiness. Headache. Nausea. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
Skin	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
Eyes	Redness. Pain.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion	Burning sensation. Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING
Evacuate danger area in large spill! Consult an expert in large spill! Remove all ignition sources. Ventilation. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Personal protection: self-contained breathing apparatus in large spill.	F Symbol Xn Symbol R: 11-38-48/20-63-65-67 S: (2-)36/37-46-62 UN Hazard Class: 3 UN Pack Group: II

EMERGENCY RESPONSE	SAFE STORAGE
Transport Emergency Card: TEC (R)-30S1294 NFPA Code: H 2; F 3; R 0	Fireproof. Separated from strong oxidants.

IPCS
International Programme on Chemical Safety

Prepared in the context of cooperation between the International Programme on Chemical Safety and the European Commission

IMPORTANT DATA

Physical State; Appearance
COLOURLESS LIQUID, WITH CHARACTERISTIC ODOUR.

Physical dangers
The vapour mixes well with air, explosive mixtures are formed easily. As a result of flow, agitation, etc., electrostatic charges can be generated.

Chemical dangers
Reacts violently with strong oxidants causing fire and explosion hazard.

Occupational exposure limits
TLV: 50 ppm as TWA; (skin); A4; BEI issued; (ACGIH 2004).
MAK: 50 ppm, 190 mg/m^3; H; Peak limitation category: II(4); Pregnancy risk group: C; (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

Inhalation risk
A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20/C.

Effects of short-term exposure
The substance is irritating to the eyes and the respiratory tract. The substance may cause effects on the central nervous system. If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. Exposure at high levels may result in cardiac dysrhythmia and unconsciousness.

Effects of long-term or repeated exposure
The liquid defats the skin. The substance may have effects on the central nervous system. Exposure to the substance may enhance hearing damage caused by exposure to noise. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 111/C
Melting point: -95/C
Relative density (water = 1): 0.87
Solubility in water: none
Vapour pressure, kPa at 25/C: 3.8
Relative vapour density (air = 1): 3.1
Relative density of the vapour/air-mixture at 20/C (air = 1): 1.01
Flash point: 4/C c.c.
Auto-ignition temperature: 480/C
Explosive limits, vol% in air: 1.1-7.1
Octanol/water partition coefficient as log Pow: 2.69

ENVIRONMENTAL DATA

The substance is toxic to aquatic organisms.

NOTES

Depending on the degree of exposure, periodic medical examination is suggested.
Use of alcoholic beverages enhances the harmful effect.
Card has been partly updated in October 2004. See sections Occupational Exposure Limits, EU classification, Emergency Response.

ADDITIONAL INFORMATION

Safety data for antimony

Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

General

Synonyms: C.I. 77050, antimony black, regulus of antimony, stibium
Molecular formula: Sb
CAS No: 7440-36-0
EINECS No: 231-146-5

Physical data

Appearance: silve-white metal
Melting point: 631 C
Boiling point: 1637 C
Vapour density: 4.2 (air = 1)
Vapour pressure:
Density (g cm^{-3}): 6.684
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility: insoluble

Stability

Stable. Incompatible with strong oxidizing agents, strong acids, fluorine, chlorine.

Toxicology

May be harmful if dust is inhaled or swallowed. Skin, eye and respiratory irritant. Chronic exposure may cause liver or kidney damage. Typical TLV/TWA 0.5 mg m^{-3}

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
ORL-RAT LD50 7000 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R36 R37 R38.

Transport information

Non-hazardous for air, sea and road freight.

Personal protection

Avoid breathing dust.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S22.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

BENZENE	ICSC: 0015

Date of Peer Review: May 2003

Cyclohexatriene
Benzol

CAS #	71-43-2	C_6H_6
RTECS #	CY1400000	Molecular mass: 78.1
UN #	1114	
EC #	601-020-00-8	

TYPES OF HAZARD / EXPOSURE	ACUTE HAZARDS / SYMPTOMS	PREVENTION	FIRST AID / FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking.	Powder, AFFF, foam, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive. Risk of fire and explosion: see Chemical Dangers.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling. Use non-sparking handtools. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		**AVOID ALL CONTACT!**	
Inhalation	Dizziness. Drowsiness. Headache. Nausea. Shortness of breath. Convulsions. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
Skin	MAY BE ABSORBED! Dry skin. Redness. Pain. (Further see Inhalation).	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention.
Eyes	Redness. Pain.	Face shield, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to

			a doctor.
Ingestion	Abdominal pain. Sore throat. Vomiting. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	**PACKAGING & LABELLING**
Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Personal protection: complete protective clothing including self-contained breathing apparatus.	Do not transport with food and feedstuffs. **EU Classification** Symbol: F, T R: 45-46-11-36/38-48/23/24/25-65 S: 53-45 Note: [E] **UN Classification** UN Hazard Class: 3 UN Pack Group: II
EMERGENCY RESPONSE	**SAFE STORAGE**
Transport Emergency Card: TEC (R)-30S1114 / 30GF1-II NFPA Code: H2; F3; R0	Fireproof. Separated from food and feedstuffs oxidants and halogens.

IPCS
International Programme on Chemical Safety

UNEP

Prepared in the context of cooperation between the International Programme on Chemical Safety and the Commission of the European Communities

SEE IMPORTANT INFORMATION ON BACK

BENZENE — ICSC: 0015

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID, WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour is heavier than air and may travel along the ground; distant ignition possible. As a result of flow, agitation, etc., electrostatic charges can be generated.

CHEMICAL DANGERS:
Reacts violently with oxidants, nitric acid, sulfuric acid and halogens causing fire and explosion hazard. Attacks plastic and rubber.

OCCUPATIONAL EXPOSURE LIMITS:

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes, the skin and the respiratory tract. Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. The substance may cause effects on the central nervous

TLV: 0.5 ppm as TWA; 2.5 ppm as STEL; (skin); A1; BEI issued; (ACGIH 2004). MAK: H; Carcinogen category: 1; Germ cell mutagen group: 3A; (DFG 2004).	system, resulting in lowering of consciousness. Exposure far above the occupational exposure limit value may result in unconsciousness and death. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The liquid defats the skin. The substance may have effects on the bone marrow and immune system, resulting in a decrease of blood cells. This substance is carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 80°C Melting point: 6°C Relative density (water = 1): 0.88 Solubility in water, g/100 ml at 25°C: 0.18 Vapour pressure, kPa at 20°C: 10 Relative vapour density (air = 1): 2.7	Relative density of the vapour/air-mixture at 20°C (air = 1): 1.2 Flash point: -11°C c.c. Auto-ignition temperature: 498°C Explosive limits, vol% in air: 1.2-8.0 Octanol/water partition coefficient as log Pow: 2.13

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms.

NOTES

Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is indicated. The odour warning when the exposure limit value is exceeded is insufficient.
Card has been partly updated in October 2004. See sections Occupational Exposure Limits, EU classification, Emergency Response.

ADDITIONAL INFORMATION

Safety (MSDS) data for chrysene

General

Synonyms: 1,2-benzophenanthrene, benzo(a)phenanthrene, 1,2-benzphenanthrene, coal tar pitch, benz(a)phenanthrene, 1,2,5,6-dibenzonaphthalene
Molecular formula: $C_{18}H_{12}$
CAS No: 218-01-9
EC No: 205-923-4

Physical data

Appearance: crystalline powder
Melting point: 253 C
Boiling point: 448 C
Vapour density:
Vapour pressure:
Density (g cm^{-3}): 1.27
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility: insoluble

Stability

Stable. Combustible. Incompatible with strong oxidizing agents.

Toxicology

Toxic. Confirmed animal carcinogen, possible human carcinogen. Harmful if

swallowed, inhaled or absorbed through the skin.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
IPR-MUS LD50 >320 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R20 R21 R22 R45 R46.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN No 2811. Packing group I. Hazard class 6.1. CDG UK Transport category 1. EMS No 6.1-04.

Personal protection

Safety glasses, good ventilation, gloves. Handle as a carcinogen. A COSHH assessment is required.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S3 S7 S9 S36 S37 S39 S45.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety (MSDS) data for iron

Click here for data on iron in student-friendly format, from the HSci project

General

Synonyms: metallic iron, elemental iron
Molecular formula: Fe
CAS No: 7439-89-6
EC No:

Physical data

Appearance: grey crystalline powder, rod or chips
Melting point: 1535 C
Boiling point: 3000 C
Vapour density:
Vapour pressure:
Density (g cm^{-3}): 7.86
Flash point:
Explosion limits:
Autoignition temperature:
Water solubility:

Stability

Stable. Reacts slowly with moist air and water. Dust may form an explosive or combustible mixture with air. Incompatible with organic acids, strong oxidizing agents, water, mineral acids.

Toxicology

Dust may be harmful if inhaled.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)

Transport information

Non-hazardous for air, sea and road freight.

Personal protection

Avoid breathing dust or powder.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety data for magnesium

Click here for data on magnesium in student-friendly format, from the HSci project

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Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

General

Synonyms: magnesium ribbon, magnesium wire, magnesium powder
Molecular formula: Mg
CAS No: 7439-95-4
EC No: 231-104-6

Physical data

Appearance: silver or grey rod, turnings or ribbon
Melting point: 650 C
Boiling point: 1107 C
Vapour density:
Vapour pressure: 1 mm at 621 C
Specific gravity: 1.73
Flash point: 634 C (closed cup)

Explosion limits:
Autoignition temperature: 510 C

Stability

Stable. Reacts violently with halogens, chlorinated solvents, chloromethane. Air and moisture sensitive. Incompatible with acids, acid chlorides, strong oxidizing agents. Highly flammable.

Toxicology

Harmful if swallowed or inhaled. Severe irritant. Vesicant.

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)
R11 R20 R22.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
Hazard class 4.1 Packing group III

Personal protection

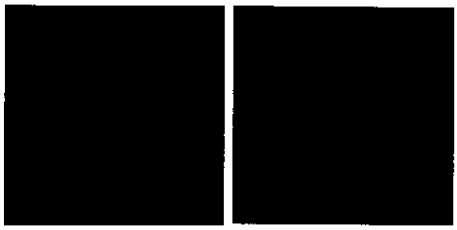
Safety glasses.

Safety phrases

(The meaning of any safety phrases which appear in this section is given here.)
S16 S26 S33 S36 S37 S39.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety data for propylbenzene



Glossary of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

General

Synonyms: 1-propylbenzene, n-propylbenzene, propyl benzene, 1-phenylpropane, isocumene
Molecular formula: C_9H_{12}
CAS No: 103-65-1
EC No: 203-132-9
Annex I Index No: 601-024-00-X

Physical data

Appearance: colourless or light yellow liquid
Melting point: -99 C
Boiling point: 159 C
Vapour density: 4.14
Vapour pressure: 2 mm Hg at 20C
Specific gravity: 0.862
Flash point: 47 C
Explosion limits: 0.8 - 6%
Autoignition temperature: 450 C

Stability

Stable. Flammable. Incompatible with strong oxidizing agents.

Toxicology

Harmful if swallowed. Respiratory irritant.

Toxicity data
(The meaning of any toxicological abbreviations which appear in this section is given here.)
ORL-RAT LD50 6040 mg kg^{-1}
IHL-RAT LC50 65000 ppm/2h

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R10 R37 R51 R53 R65.

Environmental information

Harmful in the environment - may cause long-term damage to the aquatic environment.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN No 2364. Hazard class 3.0. Packing group III.

Personal protection

Safety glasses, adequate ventilation. Do not release into the environment.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S24 S37 S61 S62.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

PWGC
Strategic Environmental Engineering Solutions

APPENDIX F

COMMUNITY AIR MONITORING LOGS

Daily Air Monitoring Record Form

Site safety officer: _____ Westher Condition _____

Job Site: _____ Job No. _____ Date: _____

Instrument make & model _____ Calibration date: _____
Instrument make & model _____ Calibration date: _____
Instrument make & model _____ Calibration date: _____

Air monitoring locations

Time	Basement Hallway		Alley Way		Street Level				Wind	Task
	PID	Dust	PID	Dust	PID	Dust	PID	Dust		

Dust suppressant necessary: Yes or No

Dust Suppession technique used:

_____

_____

Monitoring results and comments:

_____

_____

PWGC
Strategic Environmental Engineering Solutions

APPENDIX G

CONFINED SPACE ENTRY CHECKLIST / PERMIT

PWGC
Strategic Environmental Engineering Solutions

CONFINED SPACE ENTRY PERMIT

_____ Confined Space _____ Hazardous Area _____ Non Permit Required

Note: No work will be performed unless the space meets non permit requirements.
Permit valid 8 hours only. All copies of permit will remain at this job site until job is completed.

Site location and description: _____

Purpose of entry: _____

Supervisor(s) in charge of crew: _____

Type of crew: _____ Phone: _____

* BOLD DENOTES MINIMUM REQUIREMENTS TO BE COMPLETED & REVIEWED PRIOR TO ENTRY

Requirements Completed	*Date*	*Time*		*Requirements Completed*	*Date*	*Time*	
Lock Out/De-energize/try-out				Full Body Harness w/"D" Ring			
Line(s) Broken-capped-blanked				Emergency Escape Retrieval			
Purged-Flush and Vent				Lifelines			
Ventilation				Fire Extinguishers			
Secure Area (Post and Flag)				Lighting (Explosive Proof)			
Breathing Apparatus				Protective Clothing			
Resuscitator-Inhalator				Respirator(s) (Air Purifying)			
Standby Safety Personnel				Burning and Welding Permit			

Note: Items that do not apply enter N/A in the blank

Record Continuous Monitoring Results Every 2 Hours **

Continuous Monitoring to Test(s) to be taken	*Permissible Entry Level*	*Monitoring Results*									
Percent of Oxygen	19.5% to 23.5%										
Lower Flammable Limit	Under 10%										
Hydrogen Sulfide	+ 10 PPM* 15 PPM										

Notes: * Short-term exposure time: Employee can work in area up to 15 minutes
+ 8 hour time – Weighted average: Employee can work up to 8 hours (longer if appropriate respiratory protection).
** Record continuous monitoring results every 30 minutes starting ½ hour prior to beginning work.

REMARKS:

Gas Tester Name & Check #	Instrument(s) Used	Model &/or Type	Serial &/or Unit #
_____	_____	_____	_____
_____	_____	_____	_____

SAFETY STANDBY PERSON IS REQUIRED FOR ALL CONFINED SPACE WORK

Safety standby person(s)	Check #	Safety standby person(s)	Check #
_____	_____	_____	_____

Supervisor Authorizing Entry: _____

All Above Conditions Satisfied: _____

Emergency Number Posted in Job Trailer.

Note: A single entry permit can be filled out prior to start of daily work.

P.W. Grosser Consulting, Inc • P.W. Grosser Consulting Engineer & Hydrogeologist, PC
630 Johnson Avenue, Suite 7 • Bohemia, NY 11716 • Branch Location - Seattle, WA
PH 631.589.6353 • FX 631.589.8705 • www.pwgrosser.com

PWGC
Strategic Environmental Engineering Solutions

APPENDIX H

EMERGENCY TELEPHONE NUMBERS / FIELD ACCIDENT REPORT

PWGC
Strategic Environmental Engineering Solutions

FIELD ACCIDENT REPORT

This report is to be filled out by the designated Site Safety Officer after EVERY accident.

PROJECT NAME: _____ PROJECT. NO.: _____

Date of Accident: _____ Time: _____ Report By: _____

Type of Accident (Check One):

( ) Vehicular ( ) Personal ( ) Property

Name of Injured: _____ DOB or Age _____

How Long Employed: _____

Names of Witnesses: _____

Description of Accident: _____

_____

_____

Action Taken: _____

_____

_____

Did the Injured Lose Any Time? _____ How Much (Days/Hrs.)? _____

Was Safety Equipment in Use at the Time of the Accident (Hard Hat, Safety Glasses, Gloves, Safety Shoes, etc.)? _____

_____

_____

(If not, it is the EMPLOYEE'S sole responsibility to process his/her claims through his/her Health and Welfare Fund.)

INDICATE STREET NAMES, DESCRIPTION OF VEHICLES, AND NORTH ARROW

_____

_____

_____

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APPENDIX 6
VAPOR BARRIER MANUFACTURER SPECIFICATIONS

GRACE

PREPRUFE® 300R & 160R

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

Description

Preprufe® 300R & 160R membranes are unique composite sheets comprising a thick HDPE film, an aggressive pressure sensitive adhesive and a weather resistant protective coating.

Unlike conventional non-adhering membranes, which are vulnerable to water ingress tracking between the unbonded membrane and structure, the unique Preprufe bond to concrete prevents ingress or migration of water around the structure.

The Preprufe R System includes:

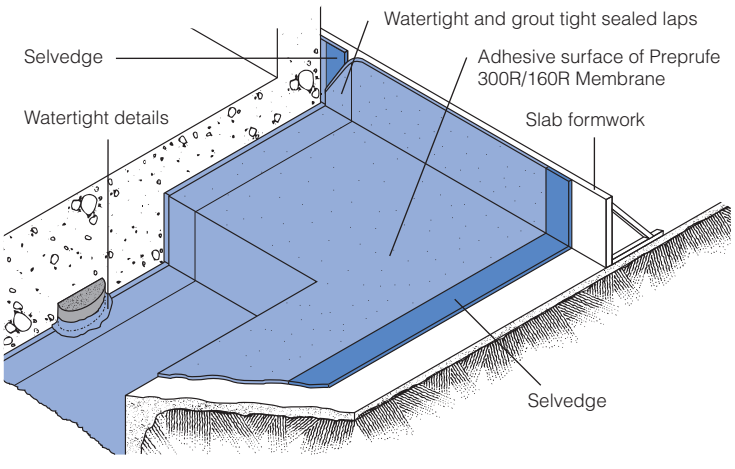
- **Preprufe 300R**—heavy-duty grade for use below slabs and on rafts (i.e. mud slabs). Designed to accept the placing of heavy reinforcement using conventional concrete spacers.
- **Preprufe 160R**—thinner grade for blindside, zero property line applications against soil retention systems.
- **Preprufe Tape LT**—for covering cut edges, roll ends, penetrations and detailing (temperatures between 25°F (-4°C) and 86°F (+30°C)).
- **Preprufe Tape HC**—as above for use in Hot Climates (minimum 50°F (10°C)).
- **Bituthene® Liquid Membrane**—for sealing around penetrations, etc.
- **Adcor™ ES**—waterstop for joints in concrete walls and floors
- **Preprufe Tieback Covers**—preformed cover for soil retention wall tieback heads
- **Preprufe Preformed Corners**—preformed inside and outside corners

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

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

Advantages

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



Drawings are for illustration purposes only.
Please refer to graceconstruction.com for specific application details.

BBA BRITISH BOARD OF AGREMENT CERTIFICATE No. 97/3325

Installation

The most current application instructions, detail drawings and technical letters can be viewed at graceconstruction.com. For other technical information contact your local Grace representative.

Preprufe 300R & 160R membranes are supplied in rolls 4 ft (1.2 m) wide, with a selvedge on one side to provide self-adhered laps for continuity between rolls. The rolls of Preprufe Membrane and Preprufe Tape are interwound with a disposable plastic release liner which must be removed before placing reinforcement and concrete.

Substrate Preparation

All surfaces—It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 0.5 in. (12 mm). Grout around all penetrations such as utility conduits, etc. for stability (see Figure 1).

Horizontal—The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, but standing water must be removed.

Vertical—Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5 in. (12 mm) out of alignment.

Membrane Installation

Preprufe can be applied at temperatures of 25°F (-4°C) or above. When installing Preprufe in cold or marginal weather conditions 55°F (<13°C) the use of Preprufe Tape LT is recommended at all laps and detailing. Preprufe Tape LT should be applied to clean, dry surfaces and the release liner must be removed immediately after application. Alternatively, Preprufe Low Temperature (LT) is available for low temperature condition applications. Refer to Preprufe LT data sheet for more information.

Horizontal substrates—Place the membrane HDPE film side to the substrate with the clear plastic release liner facing towards the concrete pour. End laps should be staggered to avoid a build up of layers. Leave plastic release liner in position until overlap procedure is completed (see Figure 2).

Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back the plastic release liner from between the overlaps as the two layers are bonded together. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller. Completely remove the plastic liner to expose the protective coating. Any initial tack will quickly disappear.

Refer to Grace Tech Letter 15 for information on suitable rebar chairs for Preprufe.

Vertical substrates—Mechanically fasten the membrane vertically using fasteners appropriate to the substrate with the the clear plastic release liner facing towards the concrete pour. The membrane may be installed in any convenient length. Fastening can be made through the selvedge using a small and low profile head fastener so that the membrane lays flat and allows firmly rolled overlaps. Immediately remove the plastic release liner.

Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Roll firmly to ensure a watertight seal.

Roll ends and cut edges—Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow to dry and apply Preprufe Tape LT (or HC in hot climates) centered over the lap edges and roll firmly (see Figure 3). Immediately remove printed plastic release liner from the tape.

Details

Refer to Preprufe Field Application Manual, Section V Application Instructions or visit graceconstruction.com. This manual gives comprehensive guidance and standard details.

Membrane Repair

Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by power washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and allow to dry. Repair small punctures (0.5 in. (12 mm) or less) and slices by applying Preprufe Tape centered over the damaged area and roll firmly. Remove the release liner from the tape. Repair holes and large punctures by applying a patch of Preprufe membrane, which extends 6 in. (150 mm) beyond the damaged area. Seal all edges of the patch with Preprufe Tape, remove the release liner from the tape and roll firmly. Any areas of damaged adhesive should be covered with Preprufe Tape. Remove printed plastic release liner from tape. Where exposed selvedge has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh Preprufe Tape, rolling firmly. Alternatively, use a hot air gun or similar to activate adhesive and firmly roll lap to achieve continuity.

Pouring of Concrete

Ensure the plastic release liner is removed from all areas of Preprufe membrane and tape.

It is recommended that concrete be poured within 56 days (42 days in hot climates) of application of the membrane. Following proper ACI guidelines, concrete must be placed carefully and consolidated properly to avoid damage to the membrane. Never use a sharp object to consolidate the concrete.

Removal of Formwork

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

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

Refer to Grace Tech Letter 17 for information on removal of formwork for Preprufe.

Figure 1

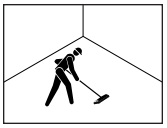


Figure 2

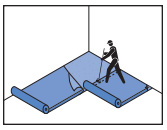
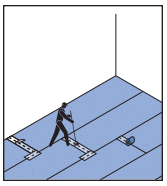
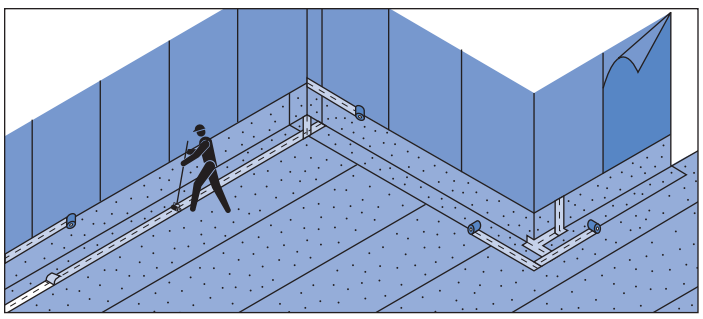


Figure 3

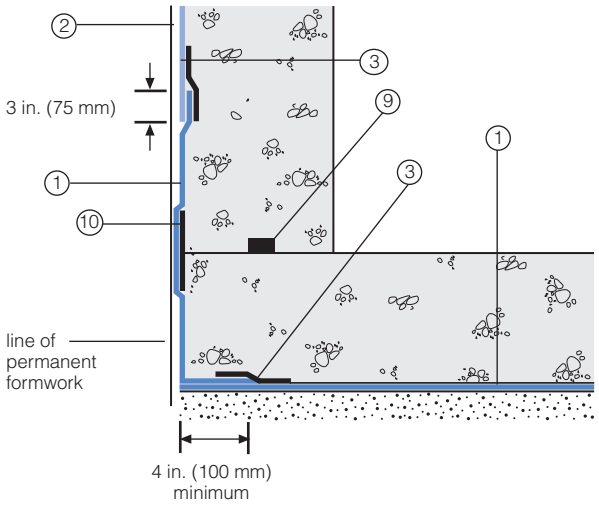




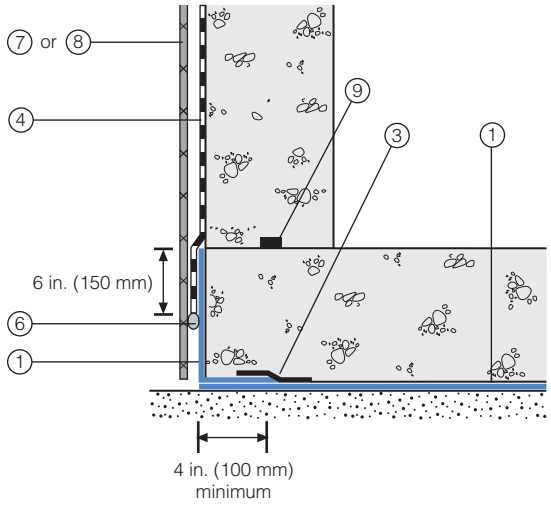
Detail Drawings

Details shown are typical illustrations and not working details. For a list of the most current details, visit us at graceconstruction.com. For technical assistance with detailing and problem solving please call toll free at 866-333-3SBM (3726).

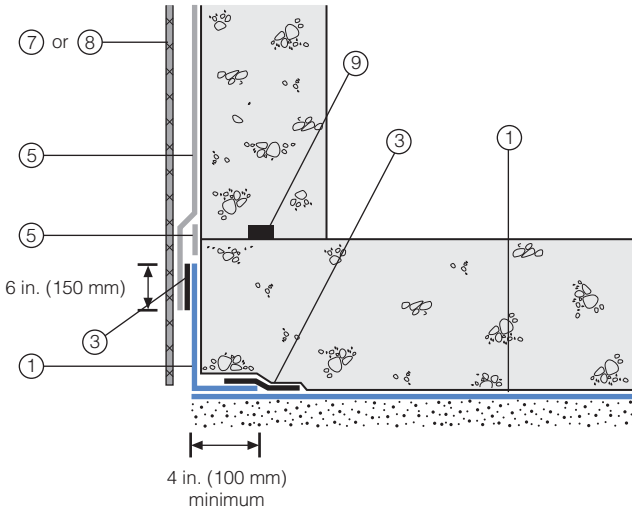
Wall base detail against permanent shutter



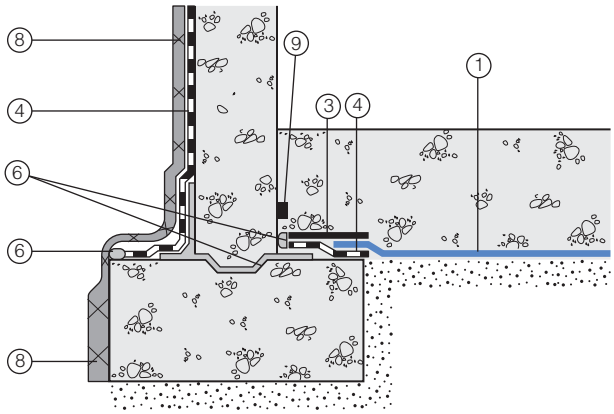
Bituthene wall base detail (Option 1)



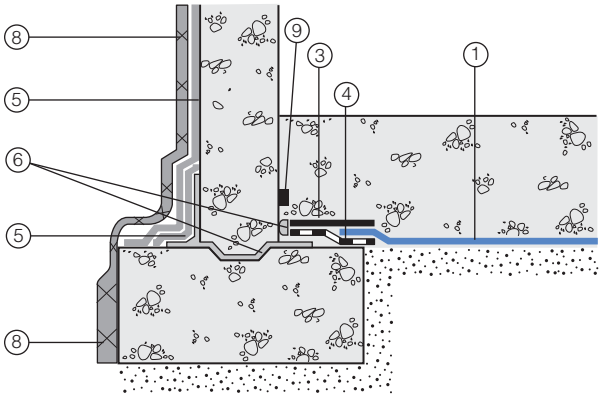
Procor wall base detail (Option 1)



Bituthene wall base detail (Option 2)



Procor wall base detail (Option 2)



1 Preprufe 300R
2 Preprufe 160R
3 Preprufe Tape
4 Bituthene
5 Procor
6 Bituthene Liquid Membrane
7 Protection
8 Hydroduct®
9 Adcor ES
10 Preprufe CJ Tape

Supply

Dimensions (Nominal)	Preprufe 300R Membrane	Preprufe 160R Membrane	Preprufe Tape (LT or HC*)
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	
Roll size	4 ft x 98 ft (1.2 m x 30 m)	4 ft x 115 ft (1.2 m x 35 m)	4 in. x 49 ft (100 mm x 15 m)
Roll area	392 ft² (36 m²)	460 ft² (42 m²)	
Roll weight	108 lbs (50 kg)	92 lbs (42 kg)	4.3 lbs (2 kg)
Minimum side/end laps	3 in. (75 mm)	3 in. (75 mm)	3 in. (75 mm)
* LT denotes Low Temperature (between 25°F (-4°C) and 86°F (+30°C)) HC denotes Hot Climate (50°F (>+10°C))			
Ancillary Products			
Bituthene Liquid Membrane—1.5 US gal (5.7 liter) or 4 US gal (15.1 liter)			

Physical Properties

Property	Typical Value 300R	Typical Value 160R	Test Method
Color	white	white	
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	ASTM D3767
Lateral Water Migration Resistance	Pass at 231 ft (71 m) of hydrostatic head pressure	Pass at 231 ft (71 m) of hydrostatic head pressure	ASTM D5385, modified[1]
Low temperature flexibility	Unaffected at -20°F (-29°C)	Unaffected at -20°F (-29°C)	ASTM D1970
Resistance to hydrostatic head	231 ft (71 m)	231 ft (71 m)	ASTM D5385, modified[2]
Elongation	500%	500%	ASTM D412, modified[3]
Tensile strength, film	4000 psi (27.6 MPa)	4000 psi (27.6 MPa)	ASTM D412
Crack cycling at -9.4°F (-23°C), 100 cycles	Unaffected, Pass	Unaffected, Pass	ASTM C836
Puncture resistance	221 lbs (990 N)	100 lbs (445 N)	ASTM E154
Peel adhesion to concrete	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D903, modified[4]
Lap peel adhesion	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D1876, modified[5]
Permeance to water vapor transmission	0.01 perms (0.6 ng/(Pa x s x m²))	0.01 perms (0.6 ng/(Pa x s x m²))	ASTM E96, method B
Water absorption	0.5%	0.5%	ASTM D570

Footnotes:

1. Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the membrane.
2. Hydrostatic head tests of Preprufe Membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125 in. (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block is placed in a chamber where water is introduced to the membrane surface up to the head indicated.
3. Elongation of membrane is run at a rate of 2 in. (50 mm) per minute.
4. Concrete is cast against the protective coating surface of the membrane and allowed to properly dry (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature.
5. The test is conducted 15 minutes after the lap is formed (per Grace published recommendations) and run at a rate of 2 in. (50 mm) per minute.

Specification Clauses

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

NOTE: Use Preprufe Tape to tie-in Procor with Preprufe.

Health and Safety

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

www.graceconstruction.com

For technical assistance call toll free at 866-333-3SBM (3726)

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