

771-785 METROPOLITAN AVENUE
BROOKLYN, NEW YORK 11221

Remedial Action Work Plan

NYC VCP Number: 15EHAN382K
E-Designation Site Number: 15CVCP113K

Prepared for:

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APRIL 2015

REMEDIAL ACTION WORK PLAN

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LIST OF ACRONYMS

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

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

CERTIFICATION

I, Ariel Czemerinski, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the Redevelopment Project located at 771-785 Metropolitan Avenue, Brooklyn, New York (NYC VCP Site No. 15CVCP113K and OER Project No.15EHAN382K).

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

Name

NYS PE License Number

Signature

Date



EXECUTIVE SUMMARY

Adam America Real Estate has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a 15,000 square-foot Site located at 771-785 Metropolitan Avenue in Brooklyn, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Current Usage

The Site is located at 771-785 Metropolitan Avenue in the East Williamsburg section of Brooklyn, New York, and is identified as Block 2760, Lots 28 and 35 on the New York City Tax Map. Figure 1 shows the Site location. The Lots are irregularly shaped lot consisting of 150 feet of street frontage on Metropolitan Avenue and approximately 100 feet of street frontage on Humboldt Street for a total of approximately 15,000 ft². The Site is located on the north side of Metropolitan Avenue between Humboldt Street and Graham Avenue and is bordered by Humboldt Street to the east, a residential 1 and 2 family two-story building and a mixed use commercial and residential two-story building to the west, a two-story and a four-story residential multi-family walk up buildings and a one-story auto repair shop to the north, a three-story mixed residential and commercial building to the east beyond Humboldt Street, and multiple, 2 and 3-story residential multi-family walk up buildings and a mixed use residential and commercial two-story building to the south beyond Metropolitan Avenue.

The entire footprint Lot 35 is currently developed with a single-story commercial building that is vacant and previously used as a shoe store. Lot 28 is developed with a single-story commercial building occupying the west side of the lot that is currently vacant and previously used as a White Castle restaurant. The remaining portion of the lot is developed as a parking lot.

Summary of Proposed Redevelopment Plan



The development project consists of redeveloping the lot with a 6-story commercial and residential apartment building with cellar level parking and storage space. The cellar level will consist of nineteen parking spaces, storage space, bike storage, computer room, electrical room, sprinkler room, water room, as well as a stairwell, and elevator. The first floor consists of open commercial space, stairway, elevator, lobby for upper residential units. Floors 2 through 6 will consist of residential apartments.

The building and cellar will cover the entire lot and will require excavation of the entire lot to a depth of at least 14 feet below grade, except for approximately 1,500 square foot area in the northern portion of the site that will be landscaped and not excavated to cellar level. The landscaped area will not be excavated. Therefore, an estimated 11,394 tons of soil will require excavation for the new building's cellar. The water table is expected at approximately 24 feet below grade surface (bgs), and will therefore not be encountered during excavation.

Layout of the proposed site development is presented in Figure 3. The current zoning designation is R7A with a C2-4 commercial overlay. The proposed use is consistent with existing zoning for the property.

Summary of Environmental Findings

1. The elevation of the Site is approximately 48 feet.
2. Depth to groundwater is estimated to be approximately 24 feet below sidewalk grade.
3. Groundwater flow is generally east.
4. Depth to bedrock is at the Site is greater than 100 feet.
5. The stratigraphy of the Site surrounding the existing foundation slab from the surface down consists of historic fill material to depths as great as 3 feet, underlain by native silty-sand.
6. Soil/fill samples results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8 and CP51. Soil/fill samples detected one VOC, acetone (maximum [max] of 340 µg/kg), in the shallow soil samples exceeding Unrestricted Use SCOs. Several other VOCs were detected at trace concentrations and included 1,2,4-Trimethylbenzene (max of 2.1 µg/kg), 1,3,5-Trimethylbenzene (1.9 µg/kg), carbon disulfide (max of 17 µg/kg),

ethylbenzene (2.8 µg/kg), m&p xylenes (max of 14 µg/kg), methyl ethyl ketone (max of 45 µg/kg), methyl chloride (max of 3.4 µg/kg), naphthalene (max of 1,800 µg/kg), n-butylbenzene (1.8 µg/kg), o xylene (max of 15 µg/kg), p-isopropyltoluene (max of 1.8 µg/kg), and toluene (max of 69 µg/kg). Seven SVOCs, including benz(a)anthracene (max of 11,000 µg/kg), benzo(a)pyrene (max of 10,000 µg/kg), benzo(b)-fluoranthene (max of 13,000 µg/kg), benzo(k)fluoranthene (max of 4,400 µg/kg), chrysene (max of 12,000 µg/kg), dibenz(a,h)anthracene (580 µg/kg), and indeno(1,2,3-cd)pyrene (max of 5,600 µg/kg), were detected above Restricted Residential Use SCOs within four of the seven shallow soil samples. Several other SVOCs were detected in trace amounts in the shallow soil samples collected. Highest SVOCs were detected in two shallow soil borings (B2 and B5). No pesticides above Unrestricted Use SCOs were detected within any of the soil samples collected. One PCB; PCB-1260 (max of 160 µg/kg) was found in two of the shallow soil samples exceeding Unrestricted Use SCOs. Several metals including arsenic (13.4 mg/kg), barium (max of 528 mg/kg), cadmium (max of 6.02 mg/kg), copper (max of 593 mg/kg), lead (max of 18,100 mg/kg), mercury (max of 41.3 mg/kg), and zinc (max of 2,490 mg/kg) exceeded Restricted Residential Use SCOs within shallow soil samples. Of these metals, arsenic, copper, lead, mercury, and zinc also exceeded Restricted Residential Use SCOs. and also exceeded Restricted Residential Use SCOs. Highest metal concentrations were detected in one shallow soil sample (B-5), indicating a hotspot area. Overall, with the exception of the metals and SVOCs hot-spot identified at the B5 soil boring location, the soil results were consistent with data identified at sites with historic fill material in NYC. Additional waste characterization samples were obtained and indicated TCLP failure for lead in various soil samples.

7. Groundwater samples results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples showed no PCBs at detectable concentrations. Two VOCs including, acetone (max of 800 µg/L) and benzene (max of 0.79 µg/L) were detected above GQS. The following VOCs were detected at trace amounts; carbon disulfide (2.8 µg/L), chloromethane (0.72 µg/L), methyl ethyl ketone (32 µg/L), and methyl t-butyl ether (0.99 µg/L). Five SVOCs, including benz(a)anthracene (max of 0.07 µg/L), benzo(b) fluoranthene (0.07 µg/L),

benzo(k)fluoranthene (0.06 µg/L), chrysene (0.06 µg/L), and indeno(1,2,3-cd)pyrene (0.02 µg/L) were detected above GQS in two groundwater samples. One SVOC, bis(2-ethylhexyl)phthalate (max of 85 µg/L), was detected at trace amounts in all groundwater samples. One pesticide, dieldrin (0.005 µg/L), was detected above GQS in one sample. Several metals were identified, but only iron (max of 20 mg/L), manganese (max of 4.09 mg/L), and sodium (max of 326 mg/L) exceeded their respective GQS in all groundwater samples.

8. Soil vapor results collected during the RI were compared to the compounds listed in Vapor Intrusion Matrices in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. Total concentrations of petroleum-related VOCs (BTEX) were detected at maximum concentration of 78.61 µg/m³. All compounds were detected at concentrations less than 50 µg/m³, except for acetone detected at 136 µg/m³ and propylene at 626 µg/m³. The CVOC trichloroethylene (TCE) was detected in two of the five soil gas samples at concentrations of 2.42 µg/m³ and 9.5 µg/m³. Tetrachloroethylene was detected in all five soil gas samples ranging in concentration from 1.83 µg/m³ to 42.9 µg/m³. 1,1,1-trichloroethane (max of 2.4 µg/m³) was detected within four of the five soil gas samples. Carbon tetrachloride was not detected in any of the soil vapor samples. The TCE concentrations were above the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

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 implementation of all required

- NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan;
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds;
 3. Selection of NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs) for the foot print of the building (95% of property) and Site-Specific (Track 4) SCOs for the rear yard;
 4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas;
 5. Completion of a Waste Characterization Study and additional soil samples to be collected from the northeast and southeast portions of the property, adjacent to the former junkyard areas and installation of one groundwater monitoring well adjacent to former boring location B5; prior to excavation activities. Waste characterization soil samples will be collected at a frequency specified by disposal facility. A Waste Characterization Report documenting sample procedures, location, analytical results and disposal facility(s) approval letters will be submitted to NYCOER prior to the start of the remedial action;
 6. Performance of additional Site characterization by collection of additional soil samples from the northeast and southeast portions of the property, adjacent to the former junkyard areas and installation of one groundwater monitoring well adjacent to former boring location B5; prior to excavation activities. A total of 4 soil samples (0-2 feet and 2-4 feet intervals) from two locations will be collected on the northern portion of the Site which the developer is planning to landscape and a total of 2 soil samples (12-14 feet) from two other areas will be collected. Soil and groundwater samples will be analyzed for VOCs, SVOCs, PCBs, pesticides and metals;
 7. Excavation and removal of soil/fill exceeding NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs) for the foot print of the building and Site-Specific (Track 4) SCOs for the rear yard. For development purposes, the entire 15,000 sf Site will be excavated to depth of 14 feet for the new building's footings and foundation. Approximately 11,394 tons of soil will be removed;

8. 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;
9. 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;
10. Removal of underground storage tanks (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations;
11. 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;
12. Collection and analysis of end-point and hot spot samples to determine the performance of the remedy with respect to attainment of SCOs;
13. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations;
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations;
15. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations;
16. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP;

If Track 1 Unrestricted Use SCOs are not achieved for the building foot print, the following construction elements implemented as part of new development will constitute Engineering Controls:

17. As a part of the new development, installation of a vapor barrier system below the slab of the mechanical and storage areas of the building as well as behind foundation walls. The vapor barrier will consist of the Raven Industries' VaporBlock 20 Plus or equivalent system. VaporBlock 20 Plus is a seven layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins;
18. As part of new development, construction and maintenance of an engineered composite cover consisting of a 6 inch thick concrete basement slab (building foot print) and 2 feet of clean fill or 6-inch concrete cap for the rear yard to prevent human exposure to residual soil/fill remaining under the Site;
19. As part of new development, construction and operation of a ventilated parking garage as per NYC Building Department's codes and requirements;
20. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency; and
21. The property will continue to be registered with an E-Designation by 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 Office of Environmental Remediation (OER) created the New York City Voluntary Cleanup Program (NYC VCP) to provide governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of prior environmental studies that show the location of contamination at the Site, and describes the plans to clean up the Site to protect public health and the environment.

This cleanup plan provides a very high level of protection for neighboring communities 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.

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

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

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

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

Site Safety Coordinator. This project has a designated Site Safety Coordinator to implement the Health and Safety Plan. The Site Safety Coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site Safety Coordinator is Mr. Kevin Waters of Environmental Business Consultants. Mr. Waters can be reached at (631) 504-6000.

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 only to workers performing specific tasks including removing hazardous material and installing cleanup systems in contaminated areas.

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

Odor, Dust and Noise Control. This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and includes steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these areas, please contact the on-Site Project Manager, Chawinie Reilly at (631) 504-6000 or NYC Office of Environmental Remediation Project Manager, Kate Glass at 212-676-4925.

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

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

Hours of Operation. The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation are 7:00AM to 6:00PM Monday through Friday.

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

Complaint Management. The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager, Mrs. Chawinie Reilly (EBC) at (631) 504-6000, the NYC Office of Environmental Remediation Project Manager, Kate Glass at 212-676-4925, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

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

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

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

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

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

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

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

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

Truck Routing. Truck routes have been selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total

distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-Site line-ups (queuing) of trucks entering the property. Operators of loaded trucks leaving the Site will be instructed not to stop or idle in the local neighborhood.

Final Report. The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at the Brooklyn Library - Bedford Branch (496 Franklin Avenue).

Long-Term Site Management. To provide long-term protection after the cleanup is complete, the property owner will be required to comply with an ongoing Site Management Plan (If Track 1 is not achieved) that calls for continued inspection of protective controls, such as Site covers. The Site Management Plan is evaluated and approved by the NYC OER. Requirements that the property owner must comply with are 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

Adam America Real Estate has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 771-785 Metropolitan Avenue in the East 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 771-785 Metropolitan Avenue in the East Williamsburg section of Brooklyn, New York, and is identified as Block 2760, Lots 28 and 35 on the New York City Tax Map. Figure 1 shows the Site location. The Lots are irregularly shaped lot consisting of 150 feet of street frontage on Metropolitan Avenue and approximately 100 feet of street frontage on Humboldt Street for a total of approximately 15,000 ft². The Site is located on the north side of Metropolitan Avenue between Humboldt Street and Graham Avenue and is bordered by Humboldt Street to the east, a residential 1 and 2 family two-story building and a mixed use commercial and residential two-story building to the west, a two-story and a four-story residential multi-family walk up buildings and a one-story auto repair shop to the north, a three-story mixed residential and commercial building to the east beyond Humboldt Street, and multiple, 2 and 3-story residential multi-family walk up buildings and a mixed use residential and commercial two-story building to the south beyond Metropolitan Avenue.

The entire footprint Lot 35 is currently developed with a single-story commercial building that is vacant and previously used as a shoe store. Lot 28 is developed with a single-story commercial

building occupying the west side of the lot that is currently vacant and previously used as a White Castle restaurant. The remaining portion of the lot is developed as a parking lot.

1.2 Proposed Redevelopment Plan

The development project consists of redeveloping the lot with a 6-story commercial and residential apartment building with cellar level parking and storage space. The cellar level will consist of nineteen parking spaces, storage space, bike storage, computer room, electrical room, sprinkler room, water room, as well as a stairwell, and elevator. The first floor consists of open commercial space, stairway, elevator, lobby for upper residential units. Floors 2 through 6 will consist of residential apartments.

The building and cellar will cover the entire lot and will require excavation of the entire lot to a depth of at least 14 feet below grade, except for approximately 1,500 square foot area in the northern portion of the site that will be landscaped and not excavated to cellar level. The landscaped area will not be excavated. Therefore, an estimated 11,394 tons of soil will require excavation for the new building's cellar. The water table is expected at approximately 24 feet below grade surface (bgs), and will therefore not be encountered during excavation.

Layout of the proposed site development is presented in Figure 3. The current zoning designation is R7A with a C2-4 commercial overlay. The proposed use is consistent with existing zoning for the property.

1.3 Description of Surrounding Property

The area immediately surrounding Site consists of a 1 and 2 family two-story building to the west, residential streets consisting of 2 and 3-story multi-family walk ups to the south beyond Metropolitan Avenue, a 4-story multi-family walk ups, two-story 1 and 2 family building, and an auto repair shop to the north, and mixed residential and commercial pet grooming facility to the east beyond Humboldt Street.

Figure 4 shows the surrounding land usage of the adjacent properties listed below as well as additional properties located up to 500 feet away from the Site. A daycare facility is located within a 250 ft radius of the Site at 201 Conselyea Street to the north.

Surrounding Property Usage

Direction	Property Description
North – Adjacent	<u>Block 2760, Lots 20, 21, 22, and 24</u> – 188, 190, and 192 Conselyea Street, 385 Humboldt Street Multiple 25 ft wide lots, developed with 4-story multi-family walk up, 2-story 1 and 2 family residential building, a parking lot, and an auto repair shop.
South – Opposite side of Metropolitan Avenue	<u>Block 2765 Lots 17, 18, 19, and 20</u> – 772-778 Metropolitan Avenue and 365 Humboldt Street Three 25ft wide lots, each developed with a 2 or 3-story multi-family walk-up with rear yards behind each building and a 2-story mixed residential and commercial building with a deli occupying the first floor.
East – Opposite side of Humboldt Street	<u>Block 2892, Lot 1</u> - 1 Maspeth Avenue A 3,800 ft ² lot developed with a 3-story mixed residential and commercial building with a pet grooming facility occupying the first floor and a rear yard.
West – Adjacent Property	<u>Block 2760, Lot 36</u> – 769 Metropolitan Avenue A 2,100 ft ² lot developed with a 2-story residential 1 and 2 family building with a rear yard.

1.4 Remedial Investigation

EBC conducted a Phase I Environmental Site Assessment in 2014 and is further discussed below:

The Site consists of two tax lots which are located on the north side of Metropolitan Avenue in the East Williamsburg Section of the Borough of Brooklyn, City of New York, Kings County, New York. The Street address associated with the Site is 771-785 Metropolitan Avenue, Brooklyn, New York 11211 and is identified as Block 2760 and Lots 35 and 28 in the New York City (NYC) Tax Map. The lot is irregularly shaped and approximately 15,937 square feet (s.f.) in total with approximately 175 feet of total street frontage on Metropolitan Avenue.

EBC was able to establish a history for the property dating back to 1887. In 1887, the Site was developed with three two-story dwellings, two single-story carpenters facilities, two stables, a wagon house, two single-story stores and five small single-story structures. In 1905 the Site was occupied by four stables, one carpenter, a single-story building, a single story building with an office, two small single-story buildings, two stores, one single- and one two-story. The dwellings no longer exist and there is now an open space on the west side of the lot designated as junk. In

1916 the office, a stable and the junk space has now been developed into a rags and paper facility, wagon shed and stable. One of the stables has been replaced with a building designated for hay and feed along with a small stable. The building containing rags is now designated for junk. In 1942, the rags and paper facility, wagon shed and stable remain the same on the west side of the lot, and the rest of the lot now contains a building containing automobiles, three small single-story structures, and the rest is designated as a pipe yard. A small portion of the northeast side of the current day Site contains the corner of an adjacent building, which in 1942 was being used as an auto repair shop. In 1951 the rags and paper stock building now includes the hay and feed building and the stable. The pipe yard now contains one additional small single-story building. The building on the south side of the lot that contained automobiles is now an iron pipe shop. In 1965 one of the single story structures, in the southeast corner of the lot, is serving as an office. In 1978 the rags and paper facility is now for waste paper and one of the structures in the center of the pipe yard has been expanded east and south. In 1989 the waste paper facility remains on the west side of the lot remains, and the rest of the Site is now undeveloped except for a commercial building at the center of the Site labeled 'iron'. The site still contains the small portion of the auto repair shop at the northeast corner and it remains this way until at least 2007. In 2008 the commercial building became a fast food restaurant, White Castle, and in 2013 the waste paper facility is listed as a basement corporation.

Based upon reconnaissance of the Site and surrounding properties, interviews and review of historical records and regulatory agency databases, **this assessment has revealed two recognized environmental conditions in connection with the Site and is further discussed below:**

- In 1916 and 1932, the northeast and southeast corners of the Site, respectively, were developed and used as junkyards. Junkyards typically process hazardous materials including petroleum hydrocarbons, heavy metals and acids. There is a potential that these products were improperly stored or released at the site.
- A portion of the Site was formerly occupied by an auto repair facility. Auto repair operations typically store and utilize solvents and petroleum products on-site including oil, waste oil, antifreeze, battery acid, grease, antifreeze, and solvent parts washers (containing perchloroethylene).

A Phase II subsurface investigation from September to October of 2014 and is further discussed below:

The field work portion of the investigation was performed on September 11 through October 10, 2014. The work consisted of the installation of eleven soil borings, three monitoring wells and six soil gas implants and the collection and analysis of related samples.

Seven soil boring locations (B1 through B7) were selected as shown on **Figure 2** to gain representative soil quality information from across the site. Due to a high lead concentration in boring B5 on Lot 35, four lead delineation borings (B8-B11) were added on October 10.

All borings were advanced with Geoprobe™ direct push equipment using either a 54LT or 6712DT track mounted probe. Soil samples were collected continuously using either a 4 ft or 5 ft dual tube sampling system with disposable acetate liners. Borings B1-B7 were advanced to a depth of 15 feet. Delineation borings B8-B11 were advanced to a total depth of 6 feet. Retrieved sample cores were characterized by an Environmental Professional and field screened for the presence of volatile organic compounds (VOCs) using a photo-ionization detector (PID).

Two soil samples were retained from borings B1-B7 including the 0-2 ft and either the 8-10 or 12-14 ft intervals. Samples from the delineation borings included samples from the 0-2, 2-4 and 4-6 ft intervals with the exception of boring B8 in which only the 2-4 ft interval was obtained. Subsurface obstructions at this location prevented the collection of the additional intervals.

Soil was characterized as a brown silty-sand with some historic fill material mixed in from surface grade to approximately 3 feet below grade followed by a brown silty-sand to the termination depth. Groundwater was present at approximately 24 ft below grade.

EBC installed three monitoring wells (MW1- MW3) on September 11, 2014. A total of six soil gas sampling points were installed across the site. All soil gas sampling locations (SG1 through SG6) were installed to a depth of 12 feet below grade.

Prior to sampling, each sampling location was tested to ensure a proper surface seal had been obtained. In accordance with NYSDOH guidance (NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, February 2005), a tracer gas (helium) was used as a quality assurance/quality control device to verify the integrity of the sampling point seal prior to collecting the samples. Prior to testing and collecting samples, the surface immediately surrounding the polyethylene tubing of the vapor implant was sealed using a 1ft by 1ft square sheet of plastic adhered to a wetted layer of granular bentonite. The seal was then tested by enriching the air space above the seal with a tracer gas (helium) while continuously monitoring air drawn from the implant with a helium detector. No surface seal leaks were observed at any of the locations.

Subsurface soil at the site consisted of urban fill, which was primarily comprised of brick, concrete, and other debris in a brown sandy matrix to a depth of approximately 3 feet, underlain by native silty-sand to the termination depth of 15 feet below grade. Groundwater is present at a depth of approximately 24 feet below surface grade.

With the exception of acetone, a common laboratory introduced contaminant, there were no VOCs reported above SCOs in any of the soil samples analyzed. The SVOCs, PCBs and metals reported above SCOs are all related to the fill material present on-site and do not indicate a release associated with historic use of the property.

Lead was reported at high concentrations in the 0-2 ft interval of B5. Further delineation of this condition identified an approximate 650 sf area with lead above the TCLP limit to depths of between 2 and 4 ft. Note that under a redevelopment scenario this area will need to be excavated and disposed of separately from the rest of the fill present on -site. Costs for soil disposal with lead above the TCLP criteria will be approximately \$ 125/ton and require an EPA ID number. NYS Waste generation fees will be waived in this case since the work would be part of a redevelopment project performed under the NYC Voluntary Cleanup program.

Two VOCs were reported above groundwater standards, benzene at 0.79 ug/L in MW1 and acetone at 800 ug/L in MW3. Acetone is a common laboratory introduced contaminant which is unlikely to be related to the historic use of the property. The low level of benzene is not of concern and is likely associated with background conditions.

The petroleum VOCs and CVOCs reported in soil gas were also consistent with background conditions in the area. Such detections are commonly reported in soil gas samples in current or former commercial areas of Brooklyn. The PCE and TCE concentrations reported were below recommended NYSDOH mitigation levels. Based on our experience a passive subslab venting system may be required under a redevelopment scenario along with an upgraded vapor barrier (20 mil) which is required on all redevelopment projects with an E-designation. If this portion of the Site were to remain open or if it were to be used for parking then the venting system would not be needed.

Summary of Past Uses of Site and Areas of Concern

The AOCs identified for this Site include:

1. Historic fill layer is present at the Site from grade to depths as great as 3 feet below grade.
2. The presence of the auto repair shop in the northeast corner of the site.
3. The presence of two junk yards on the northeast corner and southeast side of the site in the early 1900's.

Summary of the Work Performed under the Remedial Investigation

EBC performed the following scope of work in January of 2015:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed three soil borings across the Site on September 11, 2014 and collected 6 soil samples for chemical analysis from the soil borings to evaluate soil quality. Installed three soil borings across the Site on September 12, 2014 and collected 6 soil samples for chemical analysis from the soil borings to evaluate soil quality. Installed five more soil

borings across the Site on October 10, 2014 and collected 16 soil samples for chemical analysis from the soil borings to evaluate soil quality and a lead hot spot at B5;

3. Installed 3 groundwater monitoring wells throughout the Site and collected 6 groundwater samples and two duplicate groundwater sample for chemical analysis to evaluate groundwater quality; and
4. Installed six soil gas implants and collected five soil gas samples for chemical analysis.

Summary of Environmental Findings

1. The elevation of the Site is approximately 48 feet.
2. Depth to groundwater is estimated to be approximately 24 feet below sidewalk grade.
3. Groundwater flow is generally east.
4. Depth to bedrock is at the Site is greater than 100 feet.
5. The stratigraphy of the Site surrounding the existing foundation slab from the surface down consists of historic fill material to depths as great as 3 feet, underlain by native silty-sand.
6. Soil/fill samples results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8 and CP51. Soil/fill samples detected one VOC, acetone (maximum [max] of 340 µg/kg), in the shallow soil samples exceeding Unrestricted Use SCOs. Several other VOCs were detected at trace concentrations and included 1,2,4-Trimethylbenzene (max of 2.1 µg/kg), 1,3,5-Trimethylbenzene (1.9 µg/kg), carbon disulfide (max of 17 µg/kg), ethylbenzene (2.8 µg/kg), m&p xylenes (max of 14 µg/kg), methyl ethyl ketone (max of 45 µg/kg), methyl chloride (max of 3.4 µg/kg), naphthalene (max of 1,800 µg/kg), n-butylbenzene (1.8 µg/kg), o xylene (max of 15 µg/kg), p-isopropyltoluene (max of 1.8 µg/kg), and toluene (max of 69 µg/kg). Seven SVOCs, including benz(a)anthracene (max of 11,000 µg/kg), benzo(a)pyrene (max of 10,000 µg/kg), benzo(b)-fluoranthene (max of 13,000 µg/kg), benzo(k)fluoranthene (max of 4,400 µg/kg), chrysene (max of 12,000 µg/kg), dibenz(a,h)anthracene (580 µg/kg), and indeno(1,2,3-cd)pyrene (max of 5,600 µg/kg), were detected above Restricted Residential Use SCOs within four of the seven shallow soil samples. Several other SVOCs were detected in trace amounts in

- the shallow soil samples collected. Highest SVOCs were detected in two shallow soil borings (B2 and B5). No pesticides above Unrestricted Use SCOs were detected within any of the soil samples collected. One PCB; PCB-1260 (max of 160 µg/kg) was found in two of the shallow soil samples exceeding Unrestricted Use SCOs. Several metals including arsenic (13.4 mg/kg), barium (max of 528 mg/kg), cadmium (max of 6.02 mg/kg), copper (max of 593 mg/kg), lead (max of 18,100 mg/kg), mercury (max of 41.3 mg/kg), and zinc (max of 2,490 mg/kg) exceeded Restricted Use SCOs within shallow soil samples. Of these metals, arsenic, copper, lead, mercury, and zinc also exceeded Restricted Residential Use SCOs. and also exceeded Restricted Residential Use SCOs. Highest metal concentrations were detected in one shallow soil sample (B-5), indicating a hotspot area. Overall, with the exception of the metals and SVOCs hot-spot identified at the B5 soil boring location, the soil results were consistent with data identified at sites with historic fill material in NYC. Additional waste characterization samples were obtained and indicated TCLP failure for lead in various soil samples.
7. Groundwater samples results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples showed no PCBs at detectable concentrations. Two VOCs including, acetone (max of 800 µg/L) and benzene (max of 0.79 µg/L) were detected above GQS. The following VOCs were detected at trace amounts; carbon disulfide (2.8 µg/L), chloromethane (0.72 µg/L), methyl ethyl ketone (32 µg/L), and methyl t-butyl ether (0.99 µg/L). Five SVOCs, including benz(a)anthracene (max of 0.07 µg/L), benzo(b) fluoranthene (0.07 µg/L), benzo(k)fluoranthene (0.06 µg/L), chrysene (0.06 µg/L), and indeno(1,2,3-cd)pyrene (0.02 µg/L) were detected above GQS in two groundwater samples. One SVOC, bis(2-ethylhexyl)phthalate (max of 85 µg/L), was detected at trace amounts in all groundwater samples. One pesticide, dieldrin (0.005 µg/L), was detected above GQS in one sample. Several metals were identified, but only iron (max of 20 mg/L), manganese (max of 4.09 mg/L), and sodium (max of 326 mg/L) exceeded their respective GQS in all groundwater samples.
 8. Soil vapor results collected during the RI were compared to the compounds listed in Vapor Intrusion Matrices in the New York State Department of Health (NYSDOH)

Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. Total concentrations of petroleum-related VOCs (BTEX) were detected at maximum concentration of 78.61 $\mu\text{g}/\text{m}^3$. All compounds were detected at concentrations less than 50 $\mu\text{g}/\text{m}^3$, except for acetone detected at 136 $\mu\text{g}/\text{m}^3$ and propylene at 626 $\mu\text{g}/\text{m}^3$. The CVOC trichloroethylene (TCE) was detected in two of the five soil gas samples at concentrations of 2.42 $\mu\text{g}/\text{m}^3$ and 9.5 $\mu\text{g}/\text{m}^3$. Tetrachloroethylene was detected in all five soil gas samples ranging in concentration from 1.83 $\mu\text{g}/\text{m}^3$ to 42.9 $\mu\text{g}/\text{m}^3$. 1,1,1-trichloroethane (max of 2.4 $\mu\text{g}/\text{m}^3$) was detected within four of the five soil gas samples. Carbon tetrachloride was not detected in any of the soil vapor samples. The TCE concentrations were above the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

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

2.0 REMEDIAL ACTION OBJECTIVES

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

Groundwater

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

Soil

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

Soil Vapor

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

3.0 REMEDIAL ALTERNATIVES ANALYSIS

The goal of the remedy selection process under 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). A remedy is then developed based on the following ten criteria:

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

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

Alternative 1 involves

- Selection of NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
- Removal of all soil/fill exceeding Unrestricted Use SCOs throughout the Site and confirmation that Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. If soil/fill containing analytes at concentrations above Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building's cellar level and landscaped area 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 vapor barrier would be installed beneath the building slab in areas not used for ventilated garage as part of new development to prevent any potential future exposures from off-Site soil vapor.
- As part of development, placement of a final cover over the entire Site.

Alternative 2 involves:

- Establishment of Site-Specific (Track 4) SCOs;
- Removal of all soil/fill exceeding Track 4 Site-Specific SCOs and confirmation that Track 4 has been achieved with post-excavation endpoint sampling. Excavation for construction of the cellar would take place to a depth of approximately 14 feet for the entire Site, which would effectively remove all historic fill at the Site. A small landscaped area on the north side will remain unexcavated. However, if soil/ fill containing VOCs, pesticides, SVOCs or metals at concentrations above Track 4 Site-Specific SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building is complete, additional excavation will be performed to meet Track 4 Site-Specific SCOs;
- Placement of a final cover over the entire Site to prevent exposure to remaining soil/fill;
- Installation of a soil vapor barrier beneath the mechanical rooms in the cellar to prevent any potential future exposures from off-Site 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 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; and
- Continued registration as an E-designated property to memorialize the remedial action and the Engineering and Institutional Controls required by this RAWP.

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 would prevent direct contact with any remaining on-Site soil/fill. The ventilated garage and vapor barrier would mitigate any vapor issues. Implementing Institutional Controls including a Site Management Plan would ensure that the composite cover system remains intact and protective. Establishment of Track 4 Site-Specific SCOs would minimize the risk of contamination leaching into groundwater.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an approved Soil/Materials Management Plan and Community Air Monitoring Plan (CAMP). Potential use of groundwater for potable supply would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier below the new building's mechanical rooms in the cellar and via the ventilated parking area located throughout the cellar level. The subgrade parking area will be built and ventilated per requirements of NYC Building Department codes.

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 Groundwater Protection Standards. Compliance with SCGs for soil vapor would also be achieved by installing a vapor barrier below the new building's meter rooms in the cellar and by the ventilated cellar level indoor parking area per requirements of the NYC Building Department's 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, below the new building's mechanical rooms in the cellar and by the ventilated cellar level indoor parking area per requirements of the NYC Building Department's codes. A Site Management Plan would ensure that these controls remained protective for the long term.

Health and safety measures contained in the CHASP and Community Air Monitoring Plan (CAMP) 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 Alternative 1 and Alternative 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 could potentially be higher for Alternative 1 if excavation of greater amounts of historical fill material is encountered below the excavation depth of the proposed building. However, focused attention to means and methods during the remedial action during a Track 1 removal action, including community air monitoring and appropriate truck routing, would minimize or negate the overall impact of these.

An additional short-term adverse impact and risks to the community associated with both remedial alternatives is increased truck traffic. Approximately 460, 25-ton capacity truck trips would be necessary to transport fill and soil excavated during Site development. 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 will 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) will 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 ECs/ICs that may be used to manage contaminant residuals that remain at the Site and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of Engineering Controls.

Alternative 1 would achieve long-term effectiveness and permanence related to on-Site contamination by permanently removing all impacted soil/fill above Track 1 Unrestricted Use SCOs. Installation of a vapor barrier below the building slab and composite cover, as part of new construction, would prevent potential future migration of soil vapors into the new building.

Alternative 2 would provide long-term effectiveness by removing most on-Site contamination and attaining Track 4 Site-Specific SCOs; placing a vapor barrier, and a composite cover system across the Site, establishing use restrictions, establishing an SMP to ensure long-term management of Institutional Controls (ICs) Engineering Controls (ECs), and maintaining continued registration as an E-designated property to memorialize these controls for the long term. Groundwater use restrictions will eliminate potential exposure to groundwater and establishment of an SMP will ensure that this protection remains effective for the long-term. The SMP would ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended assuring that protections designed into the remedy will provide continued high level of protection in perpetuity.

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

Reduction of toxicity, mobility, or volume of contaminated material

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

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

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

Alternative 2 would likely remove a majority of historic fill at the Site, thus permanently eliminating the toxicity, mobility, and volume of contaminants, and any remaining on-Site soil beneath the new building would meet Track 4 - Site-Specific SCOs. Alternative 1 could potentially eliminate a greater total mass of contaminants on Site.

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

Cost effectiveness

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

the continued effectiveness of a remedial action.

Since historic fill at the Site was found during the RI to extend to a depth of 3 feet, and the new building requires excavation of 95% Site to a depth of 14 ft, the costs associated with both Alternative 1 and Alternative 2 would likely be the same. If additional soil/fill with analytes above Track 1 Unrestricted Use SCOs but below Track 4 Site-Specific SCOs remains after excavation for the new building, long-term costs for Alternative 2 would likely be higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2.

Community Acceptance

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

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

Land use

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

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

Sustainability of the Remedial Action

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

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. 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 D.

4.0 REMEDIAL ACTION

4.1 Summary of Preferred Remedial Action

The preferred remedial action alternative is the [NYSDEC 6NYCRR Part 375 Unrestricted Use \(Track 1\) Soil Cleanup Objectives \(SCOs\) for the foot print of the building and Site-Specific \(Track 4\) SCOs for the rear yard](#). 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 implementation of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan;
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds;
3. Selection of NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs) for the foot print of the building (95% of property) and Site-Specific (Track 4) SCOs for the rear yard;
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas;
5. Completion of a Waste Characterization Study and additional soil samples to be collected from the northeast and southeast portions of the property, adjacent to the former junkyard areas and installation of one groundwater monitoring well adjacent to former boring location B5; prior to excavation activities. Waste characterization soil samples will be collected at a frequency specified by disposal facility. A Waste Characterization Report documenting sample procedures, location, analytical results and disposal facility(s) approval letters will be submitted to NYCOER prior to the start of the remedial action;

6. Performance of additional Site characterization by collection of additional soil samples from the northeast and southeast portions of the property, adjacent to the former junkyard areas and installation of one groundwater monitoring well adjacent to former boring location B5; prior to excavation activities. A total of 4 soil samples (0-2 feet and 2-4 feet intervals) from two locations will be collected on the northern portion of the Site which the developer is planning to landscape and a total of 2 soil samples (12-14 feet) from two other areas will be collected. Soil and groundwater samples will be analyzed for VOCs, SVOCs, PCBs, pesticides and metals;
7. Excavation and removal of soil/fill exceeding NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs) for the foot print of the building and Site-Specific (Track 4) SCOs for the rear yard. For development purposes, the entire 15,000 sf Site will be excavated to depth of 14 feet for the new building's footings and foundation. Approximately 11,394 tons of soil will be removed;
8. 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;
9. 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;
10. Removal of underground storage tanks (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations;
11. 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;
12. Collection and analysis of end-point and hot spot samples to determine the performance of the remedy with respect to attainment of SCOs;

13. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations;
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations;
15. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations;
16. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP;

If Track 1 Unrestricted Use SCOs are not achieved for the building foot print, the following construction elements implemented as part of new development will constitute Engineering Controls:

17. As a part of the new development, installation of a vapor barrier system below the slab of the mechanical and storage areas of the building as well as behind foundation walls. The vapor barrier will consist of the Raven Industries' VaporBlock 20 Plus or equivalent system. VaporBlock 20 Plus is a seven layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins;
18. As part of new development, construction and maintenance of an engineered composite cover consisting of a 6 inch thick concrete basement slab (building foot print) and 2 feet of clean fill or 6-inch concrete cap for the rear yard to prevent human exposure to residual soil/fill remaining under the Site;
19. As part of new development, construction and operation of a ventilated parking garage as per NYC Building Department's codes and requirements;
20. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency; and

21. The property will continue to be registered with an E-Designation by 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

NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs) for the foot print of the building and Site-Specific (Track 4) SCOs for the rear yard are proposed for this project. The SCOs for this Site are listed in Table 1. If Track 1 Unrestricted Use SCOs are not achieved, the 6NYCRR Part 375, Table 6.8(b) Track 2 Restricted Residential SCOs will be used as amended by the following Site-Specific (Track 4) SCOs:

<u>Contaminant</u>	<u>Track 4 SCOs</u>
SVOCs	150 ppm
Mercury	2.5 ppm
Lead	1000 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 Attachment D. 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 and fill management at the Site will include impacted soil removal and disposal within the development cut. The location of planned excavations is shown in Figure 5.

Estimated Soil/Fill Removal Quantities

The total quantity of soil/fill expected to be excavated and disposed off-Site is 11,394 tons.

Disposal location(s) will be reported promptly to the OER Project Manager prior to the start of the remedial action.

End-Point Sampling

Removal actions under this plan will be performed in conjunction with remedial end-point sampling. Post-excavation end-point sampling and testing will be performed promptly following materials removal and completed prior to Site development activities. To evaluate attainment of NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs) for the foot print of the building and Site-Specific (Track 4) SCOs for the rear yard , 8 post excavation soil samples will be collected and analyzed for VOCs, SVOCs, PCBs, pesticides, and TAL Metals according to analytical methods described below. In addition, hot spot end point samples (side wall and bottom) will be collected from B5, B8, B9, B10 and B11 locations and analyzed for lead. For comparison to Track 4 Site-Specific SCOs, analytes will only include trigger compounds and elements established on the Track 4 Site-Specific SCO list above. The approximate collection location of the endpoint soil samples is shown on Figure 6.

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

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

New York State ELAP certified labs will be used for all end-point sample analyses. Labs for end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all end-point sample results and will include all data including non-detects and applicable standards and/or guidance values. End-point samples will be analyzed for trigger analytes (those for which SCO exceedence is identified) utilizing the following methodology:

Soil analytical methods will include:

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

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

Quality Assurance/Quality Control

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The

accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

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

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

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

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

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

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already on-Site will be performed in

conformance with the Soil/Materials Management Plan in Attachment D. The estimated quantity of soil to be imported into the Site for backfill and cover soil is 200 tons (rear yard area only). The estimated quantity of on-Site soil/fill expected to be reused/relocated on Site is 0 tons.

4.3 Engineering Controls

The excavation required for the proposed Site development will achieve NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs) for the foot print of the building and Site-Specific (Track 4) SCOs for the rear yard. Track 1 remedial actions do not require Engineering Controls. However, the following elements below will be incorporated into the foundation design as part of the development: composite cover system, a soil vapor barrier and a ventilated garage. If Track 1 is not achieved, these elements will constitute Engineering Controls that will be employed in the remedial action to address residual contamination remaining at the Site.

Composite Cover System

Exposure to residual soil/fill will be prevented by an engineered, permanent composite cover system to be built on the Site. This composite cover system will be comprised of 6-inch thick concrete-building slab beneath the area of the proposed building and will act as permanent engineering control for the Site. The rear yard will have a composite cover system of 2 feet of clean fill or 6-inch concrete slab. The system will be inspected and reported at specified intervals as required by this RAWP and the SMP. A Soil Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual soil/fill is disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the RAR.

Vapor Barrier

As part of development, migration of potential soil vapor from on-Site or off-Site in the future will be mitigated with a combination of the concrete building slab and vapor barrier. A vapor barrier will be installed beneath the building slab not used for ventilated garage. The vapor barrier will consist of Raven Industries' VaporBlock 20 Plus, which is a seven layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins. The specifications for

installation will be provided to the construction management company and the foundation contractor or installer of the liner. The specifications state that all vapor barrier seams, penetrations, and repairs will be sealed either by the tape method or weld method, according to the manufacturer's recommendations and instructions.

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 8. Installation details (penetrations, joints, etc.) with respect to the proposed building foundation, footings, slab, and sidewalls are provided in Figure 8. Product specification sheets are provided in Attachment E. 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 manufacturer's certificate of warranty.

Ventilated Garage

A sub grade ventilated garage will be installed and operated per requirements of the New York City Department of Buildings codes and regulations.

4.4 Institutional Controls

Institutional Controls are not required on sites that achieve Track 1 Remedial Action. If Track 1 SCOs are not achieved, Institutional Controls (IC) will be utilized 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.

If Track 1 SCOs are not achieved, Institutional Controls for this remedial action are:

- Continued registration of the E-Designation for the property at the NYC Buildings Department. This RAWP includes a description of all ECs and ICs and summarizes the

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

- Submittal of a Site Management Plan in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of ECs. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determined by OER in the SMP and will comply with RCNY §43-1407(1)(3).
- Vegetable gardens and farming on the Site are prohibited;
- 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; and
- The Site will be used for residential 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 not required for Track 1 remedial actions. However, if Track 1 SCOs are not achieved, 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 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 SMP are implemented.

The SMP will provide a detailed description of the procedures required to manage residual

soil/fill left in place following completion of the remedial action in accordance with the Voluntary Cleanup Agreement with OER. This includes a plan for: (1) implementation of EC's and ICs; (2) 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 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 to the contaminants of concern (COC) that are present at, or migrating from, the Site. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

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

Known and Potential Sources

Based on the results of the Remedial Investigation Report, historic fill was encountered at the Site only to a depth of approximately 4 feet. The following contaminants of concern were detected within the historic fill:

Soil

- Acetone exceeded Restricted Residential Use SCOs;

- SVOCs (PAH compounds) including; benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, dibenzofuran, indeno(1,2,3-cd)pyrene, exceeded Restricted Residential Use SCO;
- PCB-1260 was detected exceeding its Unrestricted Use SCOs but did not exceed Restricted Residential Use SCOs.

Groundwater

- Acetone and benzene were detected above their respective GQs.
- Benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene and indeno(1,2,3-cd)pyrene were detected above their respective GQs.
- Dieldrin was detected above their respective GQs.
-
- Iron, manganese, nickel and sodium were detected above their respective GQs.

Soil vapor

- Chlorinated VOCs including 1,1,1-trichloroethane and PCE detected at trace concentrations, well below NYS DOH monitoring thresholds. TCE was detected above NYS DOH monitoring thresholds; and
- Petroleum-related VOCs including BTEX were detected at low concentrations.

Nature, Extent, Fate and Transport of Contaminants

The information compiled during previous investigations has confirmed the presence of contaminated fill material from surface grade to an approximate depth of 3 feet bgs. VOCs, SVOCs, PCBs and metals are present in the historic fill materials throughout the Site. VOCs, SVOCs were detected in the groundwater samples at concentrations above their respective GQs. Pesticides and PCBs contaminants found in soil were not detected in the groundwater samples at concentrations above their respective GQs. The trace levels of petroleum VOCs identified in the soil vapor were well below guidance issued by New York State DOH and were not found in any of the on-Site soil samples collected. Chlorinated VOC; TCE was above the guidance issued by New York State DOH.

Receptor Populations

On-Site Receptors –

The entire footprint Lot 35 is currently developed with a single-story commercial building that is vacant and previously used as a shoe store. Lot 28 is developed with a single-story commercial building occupying the west side of the lot that is currently vacant and previously used as a White Castle restaurant. The remaining portion of the lot is developed as a parking lot.

The Site is fully capped. Potential on-Site receptors are Site representatives, patrons and employees. During redevelopment of the Site, the on-Site potential receptors will include construction workers, Site representatives, and visitors. Once the Site is redeveloped, the on-Site potential sensitive receptors will include adult and child building residents and visitors.

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

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

Potential Routes of Exposure

The five elements of an exposure pathway are:

- 1) The source of contamination;
- 2) The environmental media and transport mechanisms - direct contact, ingestion, and inhalation;
- 3) The point of exposure;
- 4) The route of exposure;
- 5) The receptor population.

An exposure pathway is considered complete when all five elements of an exposure pathway are documented. A potential pathway exists when any one or more of the five elements comprising an exposure pathway cannot be determined. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not

existed in the past, does not exist in the present, and will never exist in the future. Three potential primary routes exist by which chemicals can enter the body:

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

The work performed at the Site will include excavation of soil/fill material, and general construction activities. The construction and remediation work at the Site will expose the contaminants to the on-Site workers in a variety of ways listed above. These exposures will be limited to short durations through the intrusive work. A Construction Health and Safety Plan (CHASP) will be implemented during remediation work for the safety of on-Site workers and off-Site local population. Upon completion of the remedial activities, the Site will achieve Track 1 Unrestricted Use SCOs and the Site will be covered by the engineered composite cover (i.e., building slab and vapor/moisture barrier). This will prevent direct exposure to humans from any off-Site contamination.

Potential Points of Exposure

Existing: Exposure to historic fill is not possible as the site is fully capped. Access to the property includes owner representatives, patrons and employees. Groundwater is not accessible at the Site, and because the Site is served by the public water supply and groundwater use for potable supply is prohibited, groundwater is not used at the Site. Based upon data collected from the RI, soil vapor is accumulating beneath the current building slab.

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

Proposed Future Conditions: Once the remedial actions and redevelopment of the Site has been completed, there will be no potential on-Site or off-Site exposure pathways. Not only will soil/fill exceeding Track 1 - Unrestricted Use SCOs be removed, but the Site will also be fully capped with a basement concrete slab, which will prevent contact with soil. Any exposures to vapors will be prevented by the installation of a vapor barrier and the ventilated indoor sub-grade level parking area as part of development. The Site is served by a public water supply, and groundwater is not used at the Site for potable supply. There are no plausible off-Site pathways for ingestion, inhalation, or dermal exposure to contaminants derived from the Site under future conditions.

Overall Human Health Exposure Assessment

The proposed development will consist of the construction of a new 6-story residential and commercial building with sub-grade parking. Soil/fill material exceeding Unrestricted Use SCOs will be removed during Site development, eliminating potential impacts to human health or the environment. If there is any remaining residual metal, pesticide, PCB or SVOC-impacted soil that is not excavated, it will be removed to achieve Track 1, thereby eliminating the exposure pathway. Additionally, the impermeable cap (i.e., the proposed development), vapor barrier and ventilated indoor parking area will eliminate exposure pathways to contaminated soil vapor and related potential impacts to human health.

Based upon this analysis, complete on-Site exposure pathways appear to be present during the remedial action phase. Under current conditions, on-Site exposure pathways exist for patrons, employees and others that may access the Site. During remedial action, on-Site and off-Site exposure pathways to contaminated dust from historic fill material will be minimized by preventing access to the Site, through storm water pollution prevention, dust controls, and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan. After the remedial action is complete, there will be no remaining exposure pathways to on-Site soil/fill or groundwater, as all soil above Unrestricted Use SCOs will have been removed and a vapor barrier system and ventilated indoor parking area system will have been installed as part of development. The vapor barrier system will prevent potential vapor intrusion. The composite cover system and use

restrictions will prevent contact with residual soil or groundwater. If Track 1 remedy is not achieved, continued protection after the remedial action will be achieved by the implementation of site management including periodic inspection and certification of the performance of remedial controls. 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. This assessment takes into consideration the reasonably anticipated use of the site, which includes a residential structure, site-wide surface cover cap, and a subsurface vapor barrier system and ventilated garage for the building.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 Project Organization and Oversight

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

5.2 Site Security

Site access will be controlled by a chain link or wooden construction fence, which will surround the property.

5.3 Work Hours

The hours for operation of remedial construction will be from 7:00AM to 6:00PM. These hours conform to the New York City Department of Buildings construction code requirements.

5.4 Construction Health and Safety Plan

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

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

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign an HASP acknowledgment. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed.

Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

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

5.5 Community Air Monitoring Plan

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

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

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a 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/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ 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 $150 \text{ mcg}/\text{m}^3$ 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 $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

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

5.6 Agency Approvals

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

5.7 Site Preparation

Pre-Construction Meeting

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

Mobilization

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

Utility Marker Layouts, Easement Layouts

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

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

Dewatering

Due to the depth of groundwater, dewatering is not anticipated to be necessary. In the event that dewatering of groundwater or surface water during construction will be necessary, the water will be disposed into the New York City combined sanitary/storm sewer system. A permit to discharge will be obtained from the New York City Department of Environmental Protection (NYCDEP). As part of the permit to discharge, the location of discharge will be based on the Site-Specific requirements of the DEP. The need for pretreatment will be determined by DEP's requirements for the discharge permit. If pretreatment is required by the DEP, it will be performed in accordance with the requirements of the DEP.

Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations. Staging locations will be reported to OER prior to the start of the remedial action.

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, Adam America Real Estate 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, haybales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A site inspection report will be submitted to OER at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYS DEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to OER. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will 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. Storm-water control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped 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 will be west on Metropolitan Avenue to Interstate 278 - Brooklyn Queens Expressway.

5.9 Demobilization

Demobilization will include:

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

- General refuse disposal.

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

5.10 Reporting and Record Keeping

Daily Reports

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

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

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

Record Keeping and Photo-Documentation

Job-site record keeping for all remedial work will be performed. These records will be

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

5.11 Complaint Management

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

5.12 Deviations from the Remedial Action Work Plan

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

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

6.0 REMEDIAL ACTION REPORT

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

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

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

7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a 6 month remediation period is anticipated.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization	1	1
Remedial Excavation	2	8
Demobilization	10	1
Submit Remedial Action Report	20	-

TABLES

T A L E
S C O

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

T A L E
S C O

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

All soil cleanup objectives (SCOs) are in parts per million (ppm). NS=Not specified. See Technical Support Document (TSD). Footnotes

a The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.

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

c The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See TSD section 9.3.

d The SCOs for metals were capped at a maximum value of 10,000 ppm. See TSD section 9.3.

e For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

TABLE 2A
785 Metropolitan Avenue,
Brooklyn, New York
Soil Analytical Results
Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	B1				B2				B3			
			(0-2')		(12-14')		(0-2')		(12-14')		(0-2')		(12-14')	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,1,1,2-Tetrachloroethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,1,1-Trichloroethane	680	100,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,1,2,2-Tetrachloroethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,1,2-Trichloroethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,1-Dichloroethane	270	26,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,1-Dichloroethene	330	100,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,1-Dichloropropene			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,2,3-Trichlorobenzene			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,2,3-Trichloropropane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,2,4-Trichlorobenzene			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,2,4-Trimethylbenzene	3,600	52,000	1.2	8.2	< 9.5	9.5	2.1	9	< 7.4	7.4	< 11	11	< 13	13
1,2-Dibromo-3-chloropropane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,2-Dibromomethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,2-Dichlorobenzene	1,100	100,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,2-Dichloroethane	20	3,100	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,2-Dichloropropane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,3,5-Trimethylbenzene	8,400	52,000	1.9	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,3-Dichlorobenzene	2,400	4,900	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,3-Dichloropropane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
1,4-Dichlorobenzene	1,800	13,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
2,2-Dichloropropane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
2-Chlorotoluene			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
2-Hexanone (Methyl Butyl Ketone)			< 41	41	< 47	47	< 45	45	< 37	37	< 53	53	< 67	67
2-Isopropyltoluene			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
4-Chlorotoluene			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
4-Methyl-2-Pentanone			< 41	41	< 47	47	< 45	45	< 37	37	< 53	53	< 67	67
Acetone	50	100,000	25	50	11	50	82	90	19	50	340	110	15	50
Acrylonitrile			< 16	16	< 19	19	< 18	18	< 15	15	< 21	21	< 27	27
Benzene	60	4,800	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Bromobenzene			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Bromochloromethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Bromodichloromethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Bromoform			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Bromomethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Carbon Disulfide			3.2	8.2	2.9	9.5	17	9	< 7.4	7.4	8	11	< 13	13
Carbon tetrachloride	760	2,400	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Chlorobenzene	1,100	100,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Chloroethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Chloroform	370	49,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Chloromethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
cis-1,2-Dichloroethene	250	100,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
cis-1,3-Dichloropropene			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Dibromochloromethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Dibromomethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Dichlorodifluoromethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Ethylbenzene	1,000	41,000	< 8.2	8.2	< 9.5	9.5	2.8	9	< 7.4	7.4	< 11	11	< 13	13
Hexachlorobutadiene			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Isopropylbenzene			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
m&p-Xylenes	260	100,000	4	8.2	< 9.5	9.5	14	9	< 7.4	7.4	< 11	11	< 13	13
Methyl Ethyl Ketone (2-Butanone)	120	100,000	< 49	49	< 57	57	11	54	< 44	44	45	63	< 81	81
Methyl t-butyl ether (MTBE)	930	100,000	< 16	16	< 19	19	< 18	18	< 15	15	< 21	21	< 27	27
Methylene chloride	50	100,000	1.9	8.2	1.9	9.5	2	9	< 7.4	7.4	2.3	11	3.1	13
Naphthalene	12,000	100,000	< 8.2	8.2	< 9.5	9.5	390	320	< 7.4	7.4	< 11	11	< 13	13
n-Butylbenzene	12,000	100,000	1.8	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
n-Propylbenzene	3,900	100,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
o-Xylene	260	100,000	6.5	8.2	< 9.5	9.5	15	9	< 7.4	7.4	< 11	11	< 13	13
p-Isopropyltoluene			1.8	8.2	< 9.5	9.5	1.3	9	< 7.4	7.4	< 11	11	< 13	13
sec-Butylbenzene	11,000	100,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Styrene			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
tert-Butylbenzene	5,900	100,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Tetrachloroethene	1,300	19,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Tetrahydrofuran (THF)			< 16	16	< 19	19	< 18	18	< 15	15	< 21	21	< 27	27
Toluene	700	100,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	48	290	< 13	13
trans-1,2-Dichloroethene	190	100,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
trans-1,3-Dichloropropene			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
trans-1,4-dichloro-2-butene			< 16	16	< 19	19	< 18	18	< 15	15	< 21	21	< 27	27
Trichloroethene	470	21,000	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Trichlorofluoromethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Trichlorotrifluoroethane			< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Vinyl Chloride	20	900	< 8.2	8.2	< 9.5	9.5	< 9.0	9	< 7.4	7.4	< 11	11	< 13	13
Total BTEX Concentration			10.5		0		31.8		0		48		0	
Total VOCs Concentration			47.3		15.8		537.2		19		443.3		18.1	

Notes:

* - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

RL - Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Bold/highlighted- Indicated exceedance of the NYSDEC RRSO Guidance Value

TABLE 2B
771 Metropolitan Avenue,
Brooklyn, New York
Soil Analytical Results
Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	B4				B5				B6				B5		B7					
			9/12/2014				9/12/2014				9/12/2014				10/10/2014		10/10/2014					
			(0-2)		(8-10')		(0-2)		(8-10')		(0-2)		(12-14')		(8-10')		(0-2)		(8-10')		(12-14')	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,1,1,2-Tetrachloroethane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,1,1-Trichloroethane	680	100,000	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,1,2,2-Tetrachloroethane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,1,2-Trichloroethane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,1-Dichloroethane	270	26,000	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,1-Dichloroethene	330	100,000	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,1-Dichloropropene			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,2,3-Trichlorobenzene			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,2,3-Trichloropropane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,2,4-Trichlorobenzene			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,2,4-Trimethylbenzene	3,600	52,000	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,2-Dibromo-3-chloropropane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,2-Dibromomethane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,2-Dichlorobenzene	1,100	100,000	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,2-Dichloroethane	20	3,100	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,2-Dichloropropane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,3,5-Trimethylbenzene	8,400	52,000	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,3-Dichlorobenzene	2,400	4,900	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,3-Dichloropropane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
1,4-Dichlorobenzene	1,800	13,000	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
2,2-Dichloropropane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
2-Chlorotoluene			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
2-Hexanone (Methyl Butyl Ketone)			<41	41	<41	41	<51	51	<45	45	<40	40	<36	36	<32	32	<49	49	<42	42	<60	60
2-Isopropyltoluene			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
4-Chlorotoluene			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
4-Methyl-2-Pentanone			<41	41	<41	41	<51	51	<45	45	<40	40	<36	36	<32	32	<49	49	<42	42	<60	60
Acetone	50	100,000	80	83	17	50	23	50	13	50	85	80	9.6	50	<50	50	110	98	<50	50	17	50
Acrylonitrile			<17	17	<17	17	<20	20	<18	18	<16	16	<15	15	<13	13	<20	20	<17	17	<24	24
Benzene	60	4,800	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Bromobenzene			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Bromochloromethane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Bromodichloromethane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Bromoform			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Bromomethane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Carbon Disulfide			3.4	8.3	<8.3	8.3	7.4	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	10	9.8	<8.3	8.3	<12	12
Carbon tetrachloride	760	2,400	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Chlorobenzene	1,100	100,000	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Chloroethane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Chloroform	370	49,000	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Chloromethane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
cis-1,2-Dichloroethane	250	100,000	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
cis-1,3-Dichloropropane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Dibromochloromethane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<5.0	5	<9.8	9.8	<5.0	5	<5.0	5
Dibromomethane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Dichlorodifluoromethane			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Ethylbenzene	1,000	41,000	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Hexachlorobutadiene			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Isopropylbenzene			<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
m&p-Xylenes	260	100,000	<8.3	8.3	<8.3	8.3	<10	10	<8.9	8.9	<8.0	8	<7.3	7.3	<6.5	6.5	<9.8	9.8	<8.3	8.3	<12	12
Methyl Ethyl Ketone (2-Butanone)	120	100,000	15	50	<50	50	<61	61	<53	53	16	48	<44	44	<39	39	20	59	<50	50	<72	72
Methyl t-butyl ether (MTBE)	930	100,000	<17	17	<17	17	<20	20	<18	18	<16	16	<15	15	<13	13	<20	20	<17	17	<24	24
Methylene chloride	50	100,000	3.4	8.3	<8.3	8.3	2.7	10	<8.9	8.9	1.											

TABLE 3A
785 Metropolitan Avenue,
Brooklyn, New York
Soil Analytical Results
Semi-Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	B1				B2				B3			
			(0-2')		(12-14')		(0-2')		(12-14')		(0-2')		(12-14')	
			µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg	
Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	
1,2,4,5-Tetrachlorobenzene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
1,2,4-Trichlorobenzene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
1,2-Dichlorobenzene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
1,2-Diphenylhydrazine			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
1,3-Dichlorobenzene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
1,4-Dichlorobenzene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
2,4,5-Trichlorophenol			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
2,4,6-Trichlorophenol			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
2,4-Dichlorophenol			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
2,4-Dimethylphenol			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
2,4-Dinitrophenol			< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900
2,4-Dinitrotoluene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
2,6-Dinitrotoluene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
2-Chloronaphthalene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
2-Chlorophenol			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
2-Methylnaphthalene			< 250	250	< 260	260	540	260	< 260	260	< 260	260	160	260
2-Methylphenol (o-cresol)	330	100,000	< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
2-Nitroaniline			< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900
2-Nitrophenol			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
3&4-Methylphenol (m&p-cresol)	330	100,000	< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
3,3'-Dichlorobenzidine			< 720	720	< 760	760	< 740	740	< 740	740	< 740	740	< 750	750
3-Nitroaniline			< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900
4,6-Dinitro-2-methylphenol			< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900
4-Bromophenyl phenyl ether			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
4-Chloro-3-methylphenol			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
4-Chloroaniline			< 720	720	< 760	760	< 740	740	< 740	740	< 740	740	< 750	750
4-Chlorophenyl phenyl ether			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
4-Nitroaniline			< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900
4-Nitrophenol			< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900
Acenaphthene	20,000	100,000	< 250	250	< 260	260	1,200	260	< 260	260	< 260	260	< 260	260
Acenaphthylene	100,000	100,000	< 250	250	< 260	260	410	260	< 260	260	< 260	260	< 260	260
Acetophenone			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Aniline			< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900
Anthracene	100,000	100,000	< 250	250	< 260	260	3,900	260	< 260	260	120	260	< 260	260
Benz(a)anthracene	1,000	1,000	480	250	< 260	260	10,000	1,300	< 260	260	580	260	< 260	260
Benzidine			< 720	720	< 760	760	< 740	740	< 740	740	< 740	740	< 750	750
Benzo(a)pyrene	1,000	1,000	450	250	< 260	260	8,000	1,300	< 260	260	600	260	< 260	260
Benzo(b)fluoranthene	1,000	1,000	700	250	< 260	260	11,000	1,300	< 260	260	860	260	< 260	260
Benzo(ghi)perylene	100,000	100,000	160	250	< 260	260	1,900	260	< 260	260	230	260	< 260	260
Benzo(k)fluoranthene	800	3,900	260	250	< 260	260	3,400	260	< 260	260	300	260	< 260	260
Benzoic acid			< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900
Benzyl butyl phthalate			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Bis(2-chloroethoxy)methane			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Bis(2-chloroethyl)ether			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Bis(2-chloroisopropyl)ether			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Bis(2-ethylhexyl)phthalate			120	250	< 260	260	370	260	< 260	260	< 260	260	< 260	260
Carbazole			< 1800	1,800	< 1900	1,900	1,600	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900
Chrysene	1,000	3,900	500	250	< 260	260	11,000	1,300	< 260		580	260	< 260	260
Dibenz(a,h)anthracene	330	330	< 250	250	< 260	260	580	260	< 260	260	< 260	260	< 260	260
Dibenzofuran	7,000	59,000	< 250	250	< 260	260	860	260	< 260	260	< 260	260	< 260	260
Diethyl phthalate			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Dimethylphthalate			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Di-n-butylphthalate			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Di-n-octylphthalate			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Fluoranthene	100,000	100,000	810	250	< 260	260	21,000	6,500	< 260	260	1,100	260	< 260	260
Fluorene	30,000	100,000	< 250	250	< 260	260	2,000	260	< 260	260	< 260	260	< 260	260
Hexachlorobenzene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Hexachlorobutadiene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Hexachlorocyclopentadiene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Hexachloroethane			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Indeno(1,2,3-cd)pyrene	500	500	140	250	< 260	260	1,900	260	< 260	260	200	260	< 260	260
Isophorone			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Naphthalene	12,000	100,000	< 250	250	< 260	260	700	260	< 260	260	< 260	260	< 260	260
Nitrobenzene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
N-Nitrosodimethylamine			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
N-Nitrosodi-n-propylamine			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
N-Nitrosodiphenylamine			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Pentachloronitrobenzene			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Pentachlorophenol	800	6,700	< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Phenanthrene	100,000	100,000	450	250	< 260	260	23,000	1,300	< 260	260	570	260	< 260	260
Phenol	330	100,000	< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260
Pyrene	100,000	100,000	790	250	< 260	260	22,000	6,500	< 260	260	980	260	< 260	260
Pyridine			< 250	250	< 260	260	< 260	260	< 260	260	< 260	260	< 260	260

Notes:

* - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

RL - Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Bold/highlighted- Indicated exceedance of the NYSDEC RRSO Guidance Value

TABLE 3B
771 Metropolitan Avenue,
Brooklyn, New York
Soil Analytical Results
Semi-Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	B4				B5				B6				B5		B7			
			9/12/2014				9/12/2014				9/12/2014				10/10/2014		10/10/2014			
			(0-2)		(8-10')		(0-2)		(8-10')		(0-2)		(12-14')		(8-10')		(0-2)		(12-14')	
			µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg	
Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	
1,2,4,5-Tetrachlorobenzene			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
1,2,4-Trichlorobenzene			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
1,2-Dichlorobenzene			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
1,2-Diphenylhydrazine			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
1,3-Dichlorobenzene			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
1,4-Dichlorobenzene			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
2,4,5-Trichlorophenol			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
2,4,6-Trichlorophenol			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
2,4-Dichlorophenol			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
2,4-Dimethylphenol			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
2,4-Dinitrophenol			< 3700	3,700	< 1700	1,700	< 18000	18,000	< 1800	1,800	< 18000	18,000	< 1900	1,900	< 1600	1,600	< 1900	1,900	< 1600	1,600
2,4-Dinitrotoluene			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
2,6-Dinitrotoluene			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
2-Chloronaphthalene			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
2-Chlorophenol			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
2-Methylnaphthalene			< 510	510	< 240	240	1,100	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
2-Methylphenol (o-cresol)	330	100,000	< 330	330	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
2-Nitroaniline			< 3700	3,700	< 1700	1,700	< 18000	18,000	< 1800	1,800	< 18000	18,000	< 1900	1,900	< 1600	1,600	< 1900	1,900	< 1600	1,600
2-Nitrophenol			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
3&4-Methylphenol (m&p-cresol)	330	100,000	< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500		260	< 260	260	< 270	270	< 270	270
3,3'-Dichlorobenzidine			< 1500	1,500	< 690	690	< 7400	7,400	< 700	700	< 7200	7,200		750	< 750	750	< 770	770	< 770	770
3-Nitroaniline			< 3700	3,700	< 1700	1,700	< 18000	18,000	< 1800	1,800	< 18000	18,000	< 1900	1,900	< 1600	1,600	< 1900	1,900	< 1600	1,600
4,6-Dinitro-2-methylphenol			< 3700	3,700	< 1700	1,700	< 18000	18,000	< 1800	1,800	< 18000	18,000	< 1900	1,900	< 1900	1,900	< 1900	1,900	< 1900	1,900
4-Bromophenyl phenyl ether			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
4-Chloro-3-methylphenol			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
4-Chloroaniline			< 1500	1,500	< 690	690	< 7400	7,400	< 700	700	< 7200	7,200	< 750	750	< 330	330	< 770	770	< 330	330
4-Chlorophenyl phenyl ether			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
4-Nitroaniline			< 3700	3,700	< 1700	1,700	< 18000	18,000	< 1800	1,800	< 18000	18,000	< 1900	1,900	< 1900	1,900	< 1900	1,900	< 1900	1,900
4-Nitrophenol			< 3700	3,700	< 1700	1,700	< 18000	18,000	< 1800	1,800	< 18000	18,000	< 1900	1,900	< 1600	1,600	< 1900	1,900	< 1600	1,600
Acenaphthene	20,000	100,000	< 510	510	< 240	240	3,800	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	140	270	< 270	270
Acenaphthylene	100,000	100,000	< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	200	270	< 270	270
Acetophenone			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
Aniline			< 3700	3,700	< 1700	1,700	< 18000	18,000	< 1800	1,800	< 18000	18,000	< 1900	1,900	< 1900	1,900	< 1900	1,900	< 1900	1,900
Anthracene	100,000	100,000	< 510	510	< 240	240	7,100	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	430	270	< 270	270
Benzo(a)anthracene	1,000	1,000	610	510	< 240	240	11,000	2,600	< 250	250	3,600	2,500	< 260	260	< 260	260	1,900	270	< 270	270
Benzidine			< 1500	1,500	< 690	690	< 7400	7,400	< 700	700	< 7200	7,200	< 750	750	< 750	750	< 770	770	< 770	770
Benzo(a)pyrene	1,000	1,000	570	510	< 240	240	10,000	2,600	< 250	250	3,400	2,500	< 260	260	< 260	260	1,600	270	< 270	270
Benzo(b)fluoranthene	1,000	1,000	850	510	< 240	240	13,000	2,600	< 250	250	4,700	2,500	< 260	260	< 260	260	2,100	270	< 270	270
Benzo(ghi)perylene	100,000	100,000	380	510	< 240	240	6,300	2,600	< 250	250	2,000	2,500	< 260	260	< 260	260	860	270	< 270	270
Benzo(k)fluoranthene	800	3,900	250	510	< 240	240	4,400	2,600	< 250	250	1,500	2,500	< 260	260	< 260	260	690	270	< 270	270
Benzoic acid			< 3700	3,700	< 1700	1,700	< 18000	18,000	< 1800	1,800	< 18000	18,000	< 1900	1,900	< 1900	1,900	< 1900	1,900	< 1900	1,900
Benzyl butyl phthalate			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
Bis(2-chloroethoxy)methane			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
Bis(2-chloroethyl)ether			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
Bis(2-chloroisopropyl)ether			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
Bis(2-ethylhexyl)phthalate			< 510	510	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	150	270	< 270	270
Carbazole			< 3700	3,700	< 1700	1,700	6,700	18,000	< 1800		< 18000	18,000	< 1900	1,900	< 1900	1,900	450	1,900	< 1900	1,900
Chrysene	1,000	3,900	720	510	< 240	240	12,000	2,600	< 250	250	3,800	2,500	< 260	260	< 260	260	1,900	270	< 270	270
Dibenz(a,h)anthracene	330	330	< 330	330	< 240	240	< 2600	2,600	< 250	250	< 2500	2,500	< 260	260	< 260	260	< 270	270	< 270	270
Dibenzofuran	7,000	59,000	< 510	510	< 240	240	2,800	2,600	< 250	250	< 2500	2,500	< 26							

TABLE 4A
785 Metropolitan Avenue,
Brooklyn, New York
Soil Analytical Results
Pesticides PCBs

	COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	B1				B2				B3			
				(0-2') µg/Kg		(12-14') µg/Kg		(0-2') µg/Kg		(12-14') µg/Kg		(0-2') µg/Kg		(12-14') µg/Kg	
				Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Pesticides	4,4' -DDD	3.3	13,000	<2.6	2.6	<2.7	2.7	<27	27	<2.7	2.7	<2.7	2.7	<2.7	2.7
	4,4' -DDE	3.3	8,900	<2.6	2.6	<2.7	2.7	<27	27	<2.7	2.7	<2.7	2.7	<2.7	2.7
	4,4' -DDT	3.3	7,900	<4.5	4.5	<2.7	2.7	<27	27	<2.7	2.7	<7.0	7	<2.7	2.7
	a-BHC	20	480	<3.7	3.7	<3.7	3.7	<38	38	<3.7	3.7	<3.7	3.7	<3.7	3.7
	a-Chlordane	94	4,200	<3.7	3.7	<3.7	3.7	<38	38	<3.7	3.7	<3.7	3.7	<3.7	3.7
	Aldrin	5	97	<1.8	1.8	<1.9	1.9	<19	19	<1.9	1.9	<1.9	1.9	<1.9	1.9
	b-BHC	36	360	<3.7	3.7	<3.7	3.7	<38	38	<3.7	3.7	<3.7	3.7	<3.7	3.7
	Chlordane	94	4,200	<37	37	<37	37	<380	380	<37	37	<37	37	<37	37
	d-BHC	40	100,000	<3.7	3.7	<3.7	3.7	<38	38	<3.7	3.7	<3.7	3.7	<3.7	3.7
	Dieldrin	5	200	<1.8	1.8	<1.9	1.9	<19	19	<1.9	1.9	<1.9	1.9	<1.9	1.9
	Endosulfan I	2,400	24,000	<3.7	3.7	<3.7	3.7	<38	38	<3.7	3.7	<3.7	3.7	<3.7	3.7
	Endosulfan II	2,400	24,000	<3.7	3.7	<3.7	3.7	<38	38	<3.7	3.7	<3.7	3.7	<3.7	3.7
	Endosulfan sulfate	2,400	24,000	<3.7	3.7	<3.7	3.7	<38	38	<3.7	3.7	<3.7	3.7	<3.7	3.7
	Endrin	14	11,000	<3.7	3.7	<3.7	3.7	<38	38	<4.5	4.5	<3.7	3.7	<3.7	3.7
	Endrin aldehyde			<3.7	3.7	<3.7	3.7	<38	38	<3.7	3.7	<3.7	3.7	<3.7	3.7
	Endrin ketone			<1.8	1.8	<5.5	5.5	<19	19	<4.0	4	<1.9	1.9	<1.9	1.9
	g-BHC			<3.7	3.7	<3.7	3.7	<38	38	<3.7	3.7	<3.7	3.7	<3.7	3.7
	g-Chlordane			<3.7	3.7	<3.7	3.7	<38	38	<3.7	3.7	<3.7	3.7	<3.7	3.7
	Heptachlor	42	2,100	<3.7	3.7	<3.7	3.7	<38	38	<3.7	3.7	<3.7		<3.7	3.7
	Heptachlor epoxide			<1.8	1.8	<1.9	1.9	<19	19	<1.9	1.9	<1.9		<1.9	1.9
Methoxychlor			<7.3	7.3	<7.4	7.4	<76	76	<7.5	7.5	<7.4	7.4	<7.4	7.4	
Toxaphene			<180	180	<190	190	<1900	1,900	<190	190	<190	190	<190	190	
PCBs	PCB-1016	100	1,000	<37	37	<37	37	<38	38	<37	37	<37	37	<37	37
	PCB-1221	100	1,000	<37	37	<37	37	<38	38	<37	37	<37	37	<37	37
	PCB-1232	100	1,000	<37	37	<37	37	<38	38	<37	37	<37	37	<37	37
	PCB-1242	100	1,000	<37	37	<37	37	<38	38	<37	37	<37	37	<37	37
	PCB-1248	100	1,000	<37	37	<37	37	<38	38	<37	37	<37	37	<37	37
	PCB-1254	100	1,000	<37	37	<37	37	<38	38	<37	37	<37	37	<37	37
	PCB-1260	100	1,000	<37	37	<37	37	160	38	<37	37	<37	37	<37	37
	PCB-1262	100	1,000	<37	37	<37	37	<38	38	<37	37	<37	37	<37	37
	PCB-1268	100	1,000	<37	37	<37	37	<38	38	<37	37	<37	37	<37	37

Notes:

* - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

RL- Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Bold/highlighted- Indicated exceedance of the NYSDEC RRSCO Guidance Value

TABLE 4B
771 Metropolitan Avenue,
Brooklyn, New York
Soil Analytical Results
Pesticides PCBs

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	B4				B5				B6				B5		B7				
			9/12/2014				9/12/2014				9/12/2014				10/10/2014		10/10/2014				
			(0-2') µg/Kg		(8-10') µg/Kg		(0-2') µg/Kg		(8-10') µg/Kg		(0-2') µg/Kg		(12-14') µg/Kg		(8-10') µg/Kg		(0-2') µg/Kg		(12-14') µg/Kg		
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	
Pesticides	4,4' -DDD	3.3	13,000	< 2.6	2.6	< 2.5	2.5	< 13	13	< 2.5	2.5	< 13	13	< 14	14	-	-	-	-	-	-
	4,4' -DDE	3.3	8,900	< 2.6	2.6	< 2.5	2.5	< 13	13	< 2.5	2.5	< 13	13	< 14	14	-	-	-	-	-	-
	4,4' -DDT	3.3	7,900	< 2.6	2.6	< 2.5	2.5	< 13	13	< 2.5	2.5	< 13	13	< 14	14	-	-	-	-	-	-
	a-BHC	20	480	< 3.6	3.6	< 3.5	3.5	< 18	18	< 3.5	3.5	< 18	18	< 19	19	-	-	-	-	-	-
	a-Chlordane	94	4,200	< 3.6	3.6	< 3.5	3.5	< 18	18	< 3.5	3.5	< 18	18	< 19	19	-	-	-	-	-	-
	Aldrin	5	97	< 1.8	1.8	< 1.8	1.8	< 9.2	9.2	< 1.8	1.8	< 9.1	9.1	< 9.4	9.4	-	-	-	-	-	-
	b-BHC	36	360	< 3.6	3.6	< 3.5	3.5	< 18	18	< 3.5	3.5	< 18	18	< 19	19	-	-	-	-	-	-
	Chlordane	94	4,200	< 36	36	< 35	35	< 180	180	< 35	35	< 180	180	< 190	190	-	-	-	-	-	-
	d-BHC	40	100,000	7.7	3.6	< 3.5	3.5	< 18	18	< 3.5	3.5	< 18	18	< 19	19	-	-	-	-	-	-
	Dieldrin	5	200	< 1.8	1.8	< 1.8	1.8	< 9.2	9.2	< 1.8	1.8	< 9.1	9.1	< 9.4	9.4	-	-	-	-	-	-
	Endosulfan I	2,400	24,000	< 3.6	3.6	< 3.5	3.5	< 18	18	< 3.5	3.5	< 18	18	< 19	19	-	-	-	-	-	-
	Endosulfan II	2,400	24,000	< 3.6	3.6	< 3.5	3.5	< 18	18	< 3.5	3.5	< 18	18	< 19	19	-	-	-	-	-	-
	Endosulfan sulfate	2,400	24,000	< 3.6	3.6	< 3.5	3.5	< 18	18	< 3.5	3.5	< 18	18	< 19	19	-	-	-	-	-	-
	Endrin	14	11,000	< 3.6	3.6	< 3.5	3.5	< 18	18	< 3.5	3.5	< 18	18	< 19	19	-	-	-	-	-	-
	Endrin aldehyde			< 3.6	3.6	< 3.5	3.5	< 18	18	< 3.5	3.5	< 18	18	< 19	19	-	-	-	-	-	-
	Endrin ketone			< 3.6	3.6	< 1.8	1.8	< 9.2	9.2	< 3.5	3.5	< 9.1	9.1	< 9.4	9.4	-	-	-	-	-	-
	g-BHC			< 3.6	3.6	< 3.5	3.5	< 18	18	< 3.5	3.5	< 18	18	< 19	19	-	-	-	-	-	-
	g-Chlordane			< 3.6	3.6	< 3.5	3.5	< 18	18	< 3.5	3.5	< 18		< 19	19	-	-	-	-	-	-
	Heptachlor	42	2,100	< 3.6	3.6	< 3.5	3.5	< 18	18	< 3.5	3.5	< 18		< 19	19	-	-	-	-	-	-
	Heptachlor epoxide			< 1.8	1.8	< 1.8	1.8	< 9.2	9.2	< 1.8	1.8	< 9.1	9.1	< 9.4	9.4	-	-	-	-	-	-
Methoxychlor			< 11	11	< 7.1	7.1	< 37	37	< 7.0	7	< 36	36	< 38	38	-	-	-	-	-	-	
Toxaphene			< 180	180	< 180	180	< 920	920	< 180	180	< 910	910	< 940	940	-	-	-	-	-	-	
PCBs	PCB-1016	100	1,000	< 36	36	< 35	35	< 37	37	< 35	35	< 36	36	< 38	38	< 37	37	< 38	38	< 39	39
	PCB-1221	100	1,000	< 36	36	< 35	35	< 37	37	< 35	35	< 36	36	< 38	38	< 37	37	< 38	38	< 39	39
	PCB-1232	100	1,000	< 36	36	< 35	35	< 37	37	< 35	35	< 36	36	< 38	38	< 37	37	< 38	38	< 39	39
	PCB-1242	100	1,000	< 36	36	< 35	35	< 37	37	< 35	35	< 36	36	< 38	38	< 37	37	< 38	38	< 39	39
	PCB-1248	100	1,000	< 36	36	< 35	35	< 37	37	< 35	35	< 36	36	< 38	38	< 37	37	< 38	38	< 39	39
	PCB-1254	100	1,000	< 36	36	< 35	35	< 37	37	< 35	35	< 36	36	< 38	38	< 37	37	< 38	38	< 39	39
	PCB-1260	100	1,000	< 36	36	< 35	35	< 37	37	< 35	35	< 36	36	< 38	38	< 37	37	< 38	38	< 39	39
	PCB-1262	100	1,000	< 36	36	< 35	35	< 37	37	< 35	35	< 36	36	< 38	38	< 37	37	< 38	38	< 39	39
	PCB-1268	100	1,000	< 36	36	< 35	35	< 37	37	< 35	35	< 36	36	< 38	38	< 37	37	< 38	38	< 39	39

Notes:

* - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

RL- Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Bold/highlighted- Indicated exceedance of the NYSDEC RRSO Guidance Value

TABLE 5A
785 Metropolitan Avenue,
Brooklyn, New York
Soil Analytical Results
Metals

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	B1				B2				B3			
			(0-2') mg/Kg		(12-14') mg/Kg		(0-2') mg/Kg		(12-14') mg/Kg		(0-2') mg/Kg		(12-14') mg/Kg	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Aluminum			8,110	35	7,030	37	6,860	36	11,700	37	7,170	37	12,800	36
Antimony			< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.8	1.8	< 1.8	1.8
Arsenic	13	16	7.2	0.7	1.3	0.7	10.6	0.7	< 0.7	0.7	10.6	0.7	1.6	0.7
Barium	350	350	87.3	0.7	34.2	0.7	198	0.7	41.8	0.7	186	0.7	55.4	0.7
Beryllium	7.2	14	0.38	0.28	0.38	0.3	0.33	0.28	0.37	0.3	0.33	0.3	0.61	0.29
Cadmium	2.5	2.5	0.6	0.35	< 0.37	0.37	1.25	0.36	< 0.37	0.37	0.67	0.37	< 0.36	0.36
Calcium			27,300	35	725	37	52,100	36	1,020	37	43,400	37	943	36
Chromium	30	180	18.4	0.35	16.4	0.37	19.4	0.36	25.3	0.37	17.1	0.37	25.9	0.36
Cobalt			5.88	0.35	5.44	0.37	5.6	0.36	13.8	0.37	4.68	0.37	7.47	0.36
Copper	50	270	43.4	0.35	15.2	0.37	112	0.36	14	0.37	77.6	0.37	20.4	0.36
Iron			20,600	35	18,100	37	26,100	36	20,100	37	19,300	37	22,900	36
Lead	63	400	118	0.7	4.6	0.7	352	7.1	4.9	0.7	356	7.4	6.8	0.7
Magnesium			6,670	35	1,510	3.7	7,320	36	4,240	3.7	10,600	37	2,830	3.6
Manganese	1,600	2,000	276	3.5	219	3.7	284	3.6	328	3.7	178	3.7	399	3.6
Mercury	0.18	0.81	0.31	0.09	< 0.07	0.07	0.66	0.07	< 0.08	0.08	2.05	0.08	< 0.07	0.07
Nickel	30	140	12.5	0.35	10.3	0.37	19.3	0.36	18.5	0.37	11.9	0.37	14.4	0.36
Potassium			1,960	7	1,050	7	1,730	7	1,020	7	1,170	7	1,880	7
Selenium	3.9	36	< 1.4	1.4	< 1.5	1.5	< 1.4	1.4	< 1.5	1.5	< 1.5	1.5	< 1.4	1.4
Silver	2	36	< 0.35	0.35	< 0.37	0.37	< 1.0	1	< 0.37	0.37	< 0.37	0.37	< 0.36	0.36
Sodium			546	7	140	7	905	7	206	7	277	7	147	7
Thallium			< 1.4	1.4	< 1.5	1.5	< 1.4	1.4	< 1.5	1.5	< 1.5	1.5	< 1.4	1.4
Vanadium			27.7	0.4	24.7	0.4	29.4	0.4	25.8	0.4	19.6	0.4		0.4
Zinc	109	2,200	455	7	23.3	0.7	956	7.1	54.5	0.7	551	7.4		0.7

Notes:

* - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

RL- Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Bold/highlighted- Indicated exceedance of the NYSDEC RRSCO Guidance Value

TABLE 5B
771 Metropolitan Avenue,
Brooklyn, New York
Soil Analytical Results
Metals

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	B4				B5				B6				B5		B7			
			9/12/2014				9/13/2014				9/14/2014				10/10/2014		10/10/2014			
			(0-2') mg/Kg		(8-10') mg/Kg		(0-2') mg/Kg		(8-10') mg/Kg		(0-2') mg/Kg		(12-14') mg/Kg		(8-10') mg/Kg		(0-2') mg/Kg		(12-14') mg/Kg	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Aluminum			6,360	38	6,720	37	7,070	34	8,090	34	7,160	33	8,420	36	13,100	36	7,460	37	7,870	35
Antimony			4.6	1.9	<1.9	1.9	37.6	1.7	<1.7	1.7	15.5	1.6	<1.8	1.8	<2.5	2.5	<2.5	2.5	<2.5	2.5
Arsenic	13	16	15.1	0.8	1.4	0.7	25.1	0.7	<0.7	0.7	8.3	0.7	<0.7	0.7	1.8	0.7	9.7	0.7	3.3	0.7
Barium	350	350	109	0.8	17.3	0.7	528	0.7	23.1	0.7	167	0.7	28.7	0.7	49.3	0.7	134	0.7	35.3	0.7
Beryllium	7.2	14	0.35	0.31	<0.30	0.3	0.22	0.27	0.45	0.28	0.27	0.26	0.75	0.29	0.4	0.28	0.32	0.29	0.44	0.28
Cadmium	2.5	2.5	1.45	0.38	<0.37	0.37	6.02	0.34	<0.34	0.34	1.03	0.33	0.46	0.36	<0.36	0.36	1.45	0.37	<0.35	0.35
Calcium			7,780	3.8	458	3.7	10,700	34	1,640	3.4	23,600	33	458	3.6	1,410	3.6	12,900	37	880	3.5
Chromium	30	180	29.5	0.38	11.5	0.37	55.5	0.34	17.7	0.34	23.4	0.33	28.4	0.36	24.7	0.36	18.8	0.37	20.2	0.35
Cobalt			16.2	0.38	3.6	0.37	21.4	0.34	8.01	0.34	8.21	0.33	9.81	0.36	8.4	0.36	6.02	0.37	6.98	0.35
Copper	50	270	200	3.8	5.1	0.37	593	3.4	14.2	0.34	153	3.3	23.1	0.36	15.8	0.36	77.4	0.37	10.7	0.35
Iron			81,700	38	13,300	37	75,100	34	18,200	34	21,800	33	57,900	36	20,900	36	28,500	37	26,600	35
Lead	63	400	491	7.6	10.3	7.5	18,100	690	202	6.9	663	6.5	8.9	0.7	7.4	0.7	358	7.4	7.2	0.7
Magnesium			1,600	3.8	1,050	3.7	4,340	3.4	1,350	3.4	2,850	3.3	1,530	3.6	2,830	3.6	2,260	3.7	2,330	3.5
Manganese	1,600	2,000	767	3.8	1,190	37	688	3.4	575	3.4	280	3.3	596	3.6	519	3.6	265	3.7	173	3.5
Mercury	0.18	0.81	2	0.06	<0.07	0.07	41.3	3.9	<0.06	0.06	2.05	0.09	<0.08	0.08	<0.08	0.08	2.16	0.09	<0.09	0.09
Nickel	30	140	30	0.38	5.22	0.37	77.7	0.34	9.02	0.34	19.6	0.33	13.8	0.36	11.8	0.36	16	0.37	14.2	0.35
Potassium			1,030	76	592	75	1,090	69	762	69	1,660	65	1,250	73	1,630	7	1,090	7	2,100	7
Selenium	3.9	36	1.9	1.5	<1.5	1.5	3.4	1.4	<1.4	1.4	<1.3	1.3	<1.5	1.5	<1.4	1.4	<1.5	1.5	<1.4	1.4
Silver	2	36	<0.38	0.38	<0.37	0.37	23.3	0.34	<0.34	0.34	0.48	0.33	<0.36	0.36	<0.36	0.36	<0.37	0.37	<0.35	0.35
Sodium			254	8	52	7	799	7	86	7	1,120	7	60	7	208	7	364	7	111	7
Thallium			<1.5	1.5	<1.5	1.5	<1.4	1.4	<1.4	1.4	<1.3	1.3		1.5	<1.4	1.4	<1.5	1.5	<1.4	1.4
Vanadium			52.8	0.4	16.3	0.4	32.4	0.3	29.1	0.3	27.6	0.3		0.4	35.5	0.4	21.9	0.4	28.7	0.4
Zinc	109	2,200	404	7.6	16.9	0.7	2,490	69	25.1	0.7	445	6.5	37.5	0.7	37.2	0.7	556	7.4	37.8	0.7

Notes:

* - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

RL- Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Bold/highlighted- Indicated exceedance of the NYSDEC RRSCO Guidance Value

TABLE 5C
771 Metropolitan Avenue,
Brooklyn, New York
Soil Analytical Results
Lead

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	B2		B5 10/10/14						B9					
			10/10/2014		10/10/2014						10/10/2014					
			(0-2') mg/Kg		(0-2') mg/Kg		(2-4') mg/Kg		(4-6') mg/Kg		(0-2') mg/Kg		(2-4') mg/Kg		(4-6') mg/Kg	
			Result	RL												
Lead	63	400	248	6.7	3,980	78	1,770	70	145	6.9	1,170	7.5	715	7.2	172	7.3
TCLP Lead			0.1	0.1	5.01	0.1	0.73	0.1	< 0.10	0.1	0.49	0.1	1.13	0.1	0.08	0.1

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	B10						B11						B8	
			10/10/2014						10/10/2014						10/10/2014	
			(0-2') mg/Kg		(2-4') mg/Kg		(4-6') mg/Kg		(0-2') mg/Kg		(2-4') mg/Kg		(4-6') mg/Kg		(2-4') mg/Kg	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Lead	63	400	143	7.2	172	7.1	126	6.9	3,590	75	7,280	66	117	7.2	5,100	70
TCLP Lead			0.06	0.1	< 0.10	0.1	0.06	0.1	2.01	0.1	71.4	1	0.12	0.1	18.8	0.1

Table 6
785 Metropolitan Avenue
Brooklyn, New York
Ground Water Analytical Results
Volatile Organic Compounds

Compound	NYSDEC Groundwater Quality Standards µg/L	MW1		MW2		MW3	
		9/25/2014		9/25/2014		9/25/2014	
		µg/L	RL	µg/L	RL	µg/L	RL
1,1,1,2-Tetrachloroethane	5	<1.0	1	<1.0	1	<2.0	2
1,1,1-Trichloroethane	5	<5.0	5	<5.0	5	<10	10
1,1,2,2-Tetrachloroethane	5	<1.0	1	<1.0	1	<2.0	2
1,1,2-Trichloroethane	1	<1.0	1	<1.0	1	<2.0	2
1,1-Dichloroethane	5	<5.0	5	<5.0	5	<10	10
1,1-Dichloroethene	5	<1.0	1	<1.0	1	<2.0	2
1,1-Dichloropropene		<1.0	1	<1.0	1	<2.0	2
1,2,3-Trichlorobenzene		<1.0	1	<1.0	1	<2.0	2
1,2,3-Trichloropropane	0.04	<1.0	1	<1.0	1	<2.0	2
1,2,4-Trichlorobenzene		<1.0	1	<1.0	1	<2.0	2
1,2,4-Trimethylbenzene	5	<1.0	1	<1.0	1	<2.0	2
1,2-Dibromo-3-chloropropane	0.04	<1.0	1	<1.0	1	<2.0	2
1,2-Dibromoethane		<1.0	1	<1.0	1	<2.0	2
1,2-Dichlorobenzene	5	<1.0	1	<1.0	1	<2.0	2
1,2-Dichloroethane	0.6	<0.60	0.6	<0.60	0.6	<1.2	1.2
1,2-Dichloropropane	0.94	<1.0	1	<1.0	1	<2.0	2
1,3,5-Trimethylbenzene	5	<1.0	1	<1.0	1	<2.0	2
1,3-Dichlorobenzene		<1.0	1	<1.0	1	<2.0	2
1,3-Dichloropropane	5	<1.0	1	<1.0	1	<2.0	2
1,4-Dichlorobenzene	5	<1.0	1	<1.0	1	<2.0	2
2,2-Dichloropropane	5	<1.0	1	<1.0	1	<2.0	2
2-Chlorotoluene	5	<1.0	1	<1.0	1	<2.0	2
2-Hexanone (Methyl Butyl Ketone)		<1.0	1	<1.0	1	<2.0	2
2-Isopropyltoluene	5	<1.0	1	<1.0	1	<2.0	2
4-Chlorotoluene	5	<1.0	1	<1.0	1	<2.0	2
4-Methyl-2-Pentanone		<1.0	1	<1.0	1	<2.0	2
Acetone		4.3	5	5.2	5	800	500
Acrolein		<5.0	5	<5.0	5	<10	10
Acrylonitrile	5	<5.0	5	<5.0	5	<10	10
Benzene	1	0.79	0.7	0.24	0.7	<1.4	1.4
Bromobenzene	5	<1.0	1	<1.0	1	<2.0	2
Bromochloromethane	5	<1.0	1	<1.0	1	<2.0	2
Bromodichloromethane		<1.0	1	<1.0	1	<2.0	2
Bromoform		<5.0	5	<5.0	5	<10	10
Bromomethane	5	<5.0	5	<5.0	5	<10	10
Carbon Disulfide	60	<1.0	1	<1.0	1	2.8	2
Carbon tetrachloride	5	<1.0	1	<1.0	1	<2.0	2
Chlorobenzene	5	<5.0	5	<5.0	5	<10	10
Chloroethane	5	<5.0	5	<5.0	5	<10	10
Chloroform	7	<5.0	5	<5.0	5	<10	10
Chloromethane	60	0.72	5	<5.0	5	<10	10
cis-1,2-Dichloroethene	5	<1.0	1	<1.0	1	<2.0	2
cis-1,3-Dichloropropene		<0.40	0.4	<0.40	0.4	<0.80	0.8
Dibromochloromethane		<1.0	1	<1.0	1	<2.0	2
Dibromomethane	5	<1.0	1	<1.0	1	<2.0	2
Dichlorodifluoromethane	5	<1.0	1	<1.0	1	<2.0	2
Ethylbenzene	5	<1.0	1	<1.0	1	<2.0	2
Hexachlorobutadiene	0.5	<0.5	0.5	<0.5	0.5	<2.0	2
Isopropylbenzene	5	<1.0	1	<1.0	1	<2.0	2
m&p-Xylenes	5	<1.0	1	<1.0	1	<2.0	2
Methyl Ethyl Ketone (2-Butanone)		<1.0	1	<1.0	1	32	2
Methyl t-butyl ether (MTBE)	10	<1.0	1	0.99	1	<2.0	2
Methylene chloride	5	<3.0	3	<3.0	3	<6.0	6
Naphthalene	10	<1.0	1	<1.0	1	<2.0	2
n-Butylbenzene	5	<1.0	1	<1.0	1	<2.0	2
n-Propylbenzene	5	<1.0	1	<1.0	1	<2.0	2
o-Xylene	5	<1.0	1	<1.0	1	<2.0	2
p-Isopropyltoluene		<1.0	1	<1.0	1	<2.0	2
sec-Butylbenzene	5	<1.0	1	<1.0	1	<2.0	2
Styrene	5	<1.0	1	<1.0	1	<2.0	2
tert-Butylbenzene	5	<1.0	1	<1.0	1	<2.0	2
Tetrachloroethene	5	<1.0	1	<1.0	1	<2.0	2
Tetrahydrofuran (THF)		<5.0	5	<5.0	5	<10	10
Toluene	5	<1.0	1	<1.0	1	<2.0	2
trans-1,2-Dichloroethene	5	<5.0	5	<5.0	5	<10	10
trans-1,3-Dichloropropene	0.4	<0.40	0.4	<0.40	0.4	<0.80	0.8
trans-1,4-dichloro-2-butene	5	<1.0	1	<1.0	1	<2.0	2
Trichloroethene	5	<1.0	1	<1.0	1	<2.0	2
Trichlorofluoromethane	5	<1.0	1	<1.0	1	<2.0	2
Trichlorotrifluoroethane		<1.0	1	<1.0	1	<2.0	2
Vinyl Chloride	2	<1.0	1	<1.0	1	<2.0	2

Notes:
RL- Reporting Limit
Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

Table 7
785 Metropolitan Avenue
Brooklyn, New York
Ground Water Analytical Results
Semi Volatile Organic Compounds

Compound	NYSDEC Groundwater Quality Standards µg/L	MW1		MW2		MW3	
		11/12/2014		11/12/2014		11/12/2014	
		µg/L		µg/L		µg/L	
		Results	RL	Results	RL	Results	RL
1,2,4-Trichlorobenzene		< 5	5	< 5.0	5	< 5	5
1,2-Dichlorobenzene		< 1.0	1	< 1.0	1	< 1.0	1
1,2-Diphenylhydrazine		< 5	5	< 5.0	5	< 5	5
1,3-Dichlorobenzene	3	< 1.0	1	< 1.0	1	< 1.0	1
1,4-Dichlorobenzene		< 1.0	1	< 1.0	1	< 1.0	1
2,4,5-Trichlorophenol	1	< 1.0	1	< 1.0	1	< 1.0	1
2,4,6-Trichlorophenol	1	< 1.0	1	< 1.0	1	< 1.0	1
2,4-Dichlorophenol		< 1.0	1	< 1.0	1	< 1.0	1
2,4-Dimethylphenol		< 1.0	1	< 1.0	1	< 1.0	1
2,4-Dinitrophenol	5	< 1.0	1	< 1.0	1	< 1.0	1
2,4-Dinitrotoluene	5	< 5	5	< 5.0	5	< 5	5
2,6-Dinitrotoluene	5	< 5	5	< 5.0	5	< 5	5
2-Chloronaphthalene	10	< 5	5	< 5.0	5	< 5	5
2-Chlorophenol	1	< 1.0	1	< 1.0	1	< 1.0	1
2-Methylnaphthalene		< 5	5	< 5.0	5	< 5	5
2-Methylphenol (o-cresol)	1	< 1.0	1	< 1.0	1	< 1.0	1
2-Nitroaniline	5	< 5.0	5	< 5.0	5	< 5.0	5
2-Nitrophenol	1	< 1.0	1	< 1.0	1	< 1.0	1
3&4-Methylphenol (m&p-cresol)		< 1.0	1	< 1.0	1	< 1.0	1
3,3'-Dichlorobenzidine	5	< 5.0	5	< 5.0	5	< 5.0	5
3-Nitroaniline	5	< 5.0	5	< 5.0	5	< 5.0	5
4,6-Dinitro-2-methylphenol	1	< 1.0	1	< 1.0	1	< 1.0	1
4-Bromophenyl phenyl ether		< 5	5	< 5.0	5	< 5	5
4-Chloro-3-methylphenol	1	< 1.0	1	< 1.0	1	< 1.0	1
4-Chloroaniline	5	< 3.5	3.5	< 3.5	3.5	< 3.5	3.5
4-Chlorophenyl phenyl ether		< 5	5	< 5.0	5	< 5	5
4-Nitroaniline	5	< 5.0	5	< 5.0	5	< 5.0	5
4-Nitrophenol		< 1.0	1	< 1.0	1	< 1.0	1
Acetophenone		< 5	5	< 5.0	5	< 5	5
Aniline	5	< 3.5	3.5	< 3.5	3.5	< 3.5	3.5
Anthracene	50	< 5	5	< 5.0	5	< 5	5
Benzidine	5	< 4.5	4.5	< 4.5	4.5	< 4.5	4.5
Benzoic acid		< 25	25	< 25	25	< 25	25
Benzyl butyl phthalate	50	< 5	5	< 5.0	5	< 5	5
Bis(2-chloroethoxy)methane	5	< 5	5	< 5.0	5	< 5	5
Bis(2-chloroethyl)ether	1	< 1.0	1	< 1.0	1	< 1.0	1
Bis(2-chloroisopropyl)ether		< 5	5	< 5.0	5	< 5	5
Bis(2-ethylhexyl)phthalate		-	-	85	10	21	5
Carbazole		< 25	25	< 25	25	< 25	25
Dibenzofuran		< 5	5	< 5.0	5	< 5	5
Diethyl phthalate	50	< 5	5	< 5.0	5	< 5	5
Dimethylphthalate	50	< 5	5	< 5.0	5	< 5	5
Di-n-butylphthalate	50	< 5	5	< 5.0	5	< 5	5
Di-n-octylphthalate	50	< 5	5	< 5.0	5	< 5	5
Fluoranthene	50	< 5	5	< 5.0	5	< 5	5
Fluorene	50	< 5	5	< 5.0	5	< 5	5
Hexachlorobutadiene	0.5	< 0.42	0.42	< 0.40	0.4	< 0.47	0.47
Hexachlorocyclopentadiene	5	< 5	5	< 5.0	5	< 5	5
Isophorone	50	< 5	5	< 5.0	5	< 5	5
Naphthalene	10	< 5	5	< 5.0	5	< 5	5
Nitrobenzene	0.4	< 0.11	0.11	< 0.10	0.1	< 0.12	0.12
N-Nitrosodimethylamine		< 1.0	1	< 1.0	1	< 1.0	1
N-Nitrosodi-n-propylamine		< 5	5	< 5.0	5	< 5	5
N-Nitrosodiphenylamine	50	< 5	5	< 5.0	5	< 5	5
Phenol	50	< 1.0	1	< 1.0	1	< 1.0	1
Pyrene	50	< 5	5	< 5.0	5	< 5	5
1,2,4,5-Tetrachlorobenzene		< 0.53	0.53	< 0.50	0.5	< 0.59	0.59
Acenaphthene	20	< 5	5	< 5.0	5	< 5	5
Acenaphthylene		< 0.11	0.11	< 0.10	0.1	< 0.12	0.12
Benz(a)anthracene	0.002	< 0.02	0.02	0.02	0.02	0.07	0.02
Benzo(a)pyrene		< 0.02	0.02	< 0.02	0.02	< 0.02	0.02
Benzo(b)fluoranthene	0.002	< 0.02	0.02	< 0.02	0.02	0.07	0.02
Benzo(ghi)perylene		< 0.02	0.02	< 0.02	0.02	0.04	0.02
Benzo(k)fluoranthene	0.002	< 0.02	0.02	< 0.02	0.02	0.06	0.02
Bis(2-ethylhexyl)phthalate	5	1.9	1.1	-	-	-	-
Chrysene	0.002	< 0.02	0.02	< 0.02	0.02	0.06	0.02
Dibenz(a,h)anthracene		< 0.02	0.02	< 0.02	0.02	< 0.02	0.02
Hexachlorobenzene	0.04	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02
Hexachloroethane	5	< 0.53	0.53	< 0.50	0.5	< 0.59	0.59
Indeno(1,2,3-cd)pyrene	0.002	< 0.02	0.02	< 0.02	0.02	0.02	0.02
Pentachloronitrobenzene		< 0.11	0.11	< 0.10	0.1	< 0.12	0.12
Pentachlorophenol	1	< 0.84	0.84	< 0.80	0.8	< 0.94	0.94
Phenanthrene	50	< 0.11	0.11	< 0.10	0.1	0.15	0.12
Pyridine	50	< 10	10	< 10	10	< 10	10

Notes:

RL- Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

Table 8
785 Metropolitan Avenue
Brooklyn, New York
Ground Water Analytica Results
Pesticides and PCBs

Compound	NYSDEC Groundwater Quality Standards µg/L	MW1		MW2		MW3	
		11/12/2014		11/12/2014		11/12/2014	
		µg/L		µg/L		µg/L	
		Results	RL	Results	RL	Results	RL
PCB-1016	0.09	< 0.050	0.05	< 0.050	0.05	< 0.054	0.054
PCB-1221	0.09	< 0.050	0.05	< 0.050	0.05	< 0.054	0.054
PCB-1232	0.09	< 0.050	0.05	< 0.050	0.05	< 0.054	0.054
PCB-1242	0.09	< 0.050	0.05	< 0.050	0.05	< 0.054	0.054
PCB-1248	0.09	< 0.050	0.05	< 0.050	0.05	< 0.054	0.054
PCB-1254	0.09	< 0.050	0.05	< 0.050	0.05	< 0.054	0.054
PCB-1260	0.09	< 0.050	0.05	< 0.050	0.05	< 0.054	0.054
PCB-1262	0.09	< 0.050	0.05	< 0.050	0.05	< 0.054	0.054
PCB-1268	0.09	< 0.050	0.05	< 0.050	0.05	< 0.054	0.054
4,4-DDD	0.3	< 0.010	0.01	< 0.010	0.01	< 0.030	0.03
4,4-DDE	0.2	< 0.010	0.01	< 0.010	0.01	< 0.027	0.027
4,4-DDT	0.11	< 0.010	0.01	< 0.010	0.01	< 0.030	0.03
a-BHC	0.94	< 0.005	0.005	< 0.005	0.005	< 0.054	0.054
a-Chlordane		< 0.010	0.01	< 0.010	0.01	< 0.050	0.05
Alachlor		< 0.075	0.075	< 0.075	0.075	< 0.050	0.05
Aldrin		< 0.002	0.002	< 0.002	0.002	< 0.016	0.016
b-BHC	0.04	< 0.005	0.005	< 0.005	0.005	< 0.054	0.054
Chlordane	0.05	< 0.050	0.05	< 0.050	0.05	< 0.50	0.5
d-BHC	0.04	< 0.005	0.005	< 0.005	0.005	< 0.054	0.054
Dieldrin	0.004	< 0.003	0.003	0.005	0.004	< 0.016	0.016
Endosulfan I		< 0.010	0.01	< 0.010	0.01	< 0.050	0.05
Endosulfan II		< 0.010	0.01	< 0.010	0.01	< 0.050	0.05
Endosulfan Sulfate		< 0.010	0.01	< 0.010	0.01	< 0.050	0.05
Endrin		< 0.010	0.01	< 0.010	0.01	< 0.050	0.05
Endrin aldehyde	5	< 0.010	0.01	< 0.010	0.01	< 0.050	0.05
Endrin ketone		< 0.010	0.01	< 0.010	0.01	< 0.050	0.05
gamma-BHC	0.05	< 0.005	0.005	< 0.005	0.005	< 0.054	0.054
g-Chlordane		< 0.010	0.01	< 0.010	0.01	< 0.050	0.05
Heptachlor	0.04	< 0.010	0.01	< 0.010	0.01	< 0.050	0.05
Heptachlor epoxide	0.03	< 0.010	0.01	< 0.010	0.01	< 0.050	0.05
Methoxychlor	35	< 0.10	0.1	< 0.10	0.1	< 0.10	0.1
Toxaphene		< 0.20	0.2	< 0.25	0.25	< 2.2	2.2

Notes:

RL- Reporting limit

ND - Non-detect

ND* - Due to matrix interference from non target compounds in the sample an elevated RL was reported.

Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

Table 9
785 Metropolitan Avenue
Brooklyn, New York
Ground Water Analytical Results
TAL Metals

Compound	NYSDEC Groundwater Quality Standards mg/L	MW1		MW2		MW3	
		11/12/2014		11/12/2014		11/12/2014	
		mg/L		mg/L		mg/L	
		Results	RL	Results	RL	Results	RL
Aluminum	NS	0.64	0.01	0.26	0.01	0.79	0.01
Antimony	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003
Arsenic	0.025	< 0.003	0.003	0.003	0.003	< 0.003	0.003
Barium	1	0.156	0.011	0.186	0.011	0.191	0.011
Beryllium	0.003	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001
Cadmium	0.005	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004
Calcium	NS	60.8	0.01	162	0.11	56.5	0.01
Chromium	0.05	< 0.001	0.001	0.001	0.001	< 0.001	0.001
Cobalt	NS	0.006	0.005	0.004	0.005	0.006	0.005
Copper	0.2	0.001	0.005	0.008	0.005	0.002	0.005
Iron	0.5	2.15	0.01	0.25	0.01	20	0.01
Lead	0.025	< 0.002	0.002	< 0.002	0.002	< 0.002	0.002
Magnesium	35	16.5	0.01	22	0.01	21.2	0.01
Manganese	0.3	4.09	0.053	0.774	0.005	1.02	0.005
Mercury	0.0007	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002
Nickel	0.1	0.009	0.004	0.025	0.004	0.021	0.004
Potassium	NS	17.6	0.1	32.8	0.1	11	0.1
Selenium	0.01	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004
Silver	0.05	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005
Sodium	2	122	1.1	326	1.1	73.6	1.1
Thallium	0.0005	< 0.0005	0.0005	< 0.0005	0.0005	< 0.0005	0.0005
Vanadium	NS	< 0.011	0.011	< 0.011	0.011	< 0.011	0.011
Zinc	2	0.009	0.011	0.007	0.011	0.003	0.011

Notes:

RL- Reporting limit

NS - No Standard

Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

TABLE 10A
785 Metropolitan Avenue
Brooklyn, New York
Soil Gas - Volatile Organic Compounds

COMPOUNDS	NYSDOH Maximum Sub-Slab Value ($\mu\text{g}/\text{m}^3$) ^(a)	NYSDOH Soil Outdoor Background Levels ($\mu\text{g}/\text{m}^3$) ^(b)	SG-1 ($\mu\text{g}/\text{m}^3$)		SG-2 ($\mu\text{g}/\text{m}^3$)	
			Result	RL	Result	RL
1,1,1,2-Tetrachloroethane			< 1.00	1	< 1.00	1
1,1,1-Trichloroethane	100	<2.0 - 2.8	2.4	1	< 1.00	1
1,1,2,2-Tetrachloroethane		<1.5	< 1.00	1	< 1.00	1
1,1,2-Trichloroethane		<1.0	< 1.00	1	< 1.00	1
1,1-Dichloroethane		<1.0	12.1	1	1.78	1
1,1-Dichloroethene		<1.0	< 1.00	1	< 1.00	1
1,2,4-Trichlorobenzene		NA	< 1.00	1	< 1.00	1
1,2,4-Trimethylbenzene		<1.0	11.8	1	8.2	1
1,2-Dibromoethane		<1.5	< 1.00	1	< 1.00	1
1,2-Dichlorobenzene		<2.0	< 1.00	1	< 1.00	1
1,2-Dichloroethane		<1.0	< 1.00	1	< 1.00	1
1,2-Dichloropropane			< 1.00	1	< 1.00	1
1,2-Dichlorotetrafluoroethane			< 1.00	1	< 1.00	1
1,3,5-Trimethylbenzene		<1.0	4.27	1	3.14	1
1,3-Butadiene		NA	< 1.00	1	< 1.00	1
1,3-Dichlorobenzene		<2.0	< 1.00	1	< 1.00	1
1,4-Dichlorobenzene		NA	< 1.00	1	< 1.00	1
1,4-Dioxane			< 1.00	1	< 1.00	1
2-Hexanone			< 1.00	1	< 1.00	1
4-Ethyltoluene		NA	1.42	1	< 1.00	1
4-Isopropyltoluene			< 1.00	1	< 1.00	1
4-Methyl-2-pentanone			< 1.00	1	< 1.00	1
Acetone		NA	136	1	< 1.00	1
Acrylonitrile			< 1.00	1	< 1.00	1
Benzene		<1.6 - 4.7	28.2	1	6.42	1
Benzyl Chloride		NA	< 1.00	1	< 1.00	1
Bromodichloromethane		<5.0	< 1.00	1	< 1.00	1
Bromoform		<1.0	< 1.00	1	< 1.00	1
Bromomethane		<1.0	< 1.00	1	< 1.00	1
Carbon Disulfide		NA	8.09	1	63.2	1
Carbon Tetrachloride	5	<3.1	< 0.25	0.25	< 0.25	0.25
Chlorobenzene		<2.0	< 1.00	1	< 1.00	1
Chloroethane		NA	1.26	1	< 1.00	1
Chloroform		<2.4	9.81	1	< 1.00	1
Chloromethane		<1.0 - 1.4	< 1.00	1	< 1.00	1
cis-1,2-Dichloroethene		<1.0	1.43	1	< 1.00	1
cis-1,3-Dichloropropene		NA	< 1.00	1	< 1.00	1
Cyclohexane		NA	4.75	1	12	1
Dibromochloromethane		<5.0	< 1.00	1	< 1.00	1
Dichlorodifluoromethane		NA	39.2	1	19.3	1
Ethanol			10.2	1	6.18	1
Ethyl Acetate		NA	< 1.00	1	< 1.00	1
Ethylbenzene		<4.3	5.73	1	4.17	1
Heptane		NA	5.53	1	14	1
Hexachlorobutadiene		NA	< 1.00	1	< 1.00	1
Hexane		<1.5	14.3	1	45.1	1
Isopropylalcohol		NA	< 1.00	1	< 1.00	1
Isopropylbenzene			1.18	1	4.13	1
Xylene (m&p)		<4.3	17.4	1	11.3	1
Methyl Ethyl Ketone			5.13	1	3.3	1
MTBE		NA	< 1.00	1	15.8	1
Methylene Chloride		<3.4	39.2	1	10.8	1
n-Butylbenzene			1.64	1	1.81	1
Xylene (o)		<4.3	7.98	1	7.46	1
Propylene		NA	24.2	1	626	1
sec-Butylbenzene			< 1.00	1	2.36	1
Styrene		<1.0	< 1.00	1	< 1.00	1
Tetrachloroethene	100		10.3	0.25	10.2	0.25
Tetrahydrofuran		NA	< 1.00	1	< 1.00	1
Toluene		1.0 - 6.1	19.3	1	13.7	1
trans-1,2-Dichloroethene		NA	< 1.00	1	< 1.00	1
trans-1,3-Dichloropropene		NA	< 1.00	1	< 1.00	1
Trichloroethene	5	<1.7	9.5	0.25	2.42	0.25
Trichlorofluoromethane		NA	9.88	1	209	1
Trichlorotrifluoroethane			< 1.00	1	< 1.00	1
Vinyl Chloride		<1.0	< 0.25	0.25	< 0.25	0.25
BTEX			78.61		43.05	
Total VOCs			389.31		997.55	

Notes:

NA - No guidance value or standard available

(a) Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006, New York State Department of Health.

(b) NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, February 2005, Summary of Background Levels for Selected Compounds (NYSDOH)

TABLE 10B
771 Metropolitan Avenue
Brooklyn, New York
Soil Gas - Volatile Organic Compounds

COMPOUNDS	NYSDOH Maximum Sub-Slab Value (µg/m ³) ^(a)	NYSDOH Soil Outdoor Background Levels (µg/m ³) ^(b)	SG-4 (µg/m ³)		SG-5 (µg/m ³)		SG-6 (µg/m ³)	
			Result	RL	Result	RL	Result	RL
1,1,1,2-Tetrachloroethane			<1.00	1	<1.00	1	<1.00	1
1,1,1-Trichloroethane	100	<2.0 - 2.8	1.2	1	1.09	1	1.47	1
1,1,2,2-Tetrachloroethane		<1.5	<1.00	1	<1.00	1	<1.00	1
1,1,2-Trichloroethane		<1.0	<1.00	1	<1.00	1	<1.00	1
1,1-Dichloroethane		<1.0	<1.00	1	<1.00	1	<1.00	1
1,1-Dichloroethene		<1.0	<1.00	1	<1.00	1	<1.00	1
1,2,4-Trichlorobenzene		NA	<1.00	1	<1.00	1	<1.00	1
1,2,4-Trimethylbenzene		<1.0	7.02	1	5.9	1	6.29	1
1,2-Dibromoethane		<1.5	<1.00	1	<1.00	1	<1.00	1
1,2-Dichlorobenzene		<2.0	<1.00	1	<1.00	1	<1.00	1
1,2-Dichloroethane		<1.0	<1.00	1	<1.00	1	<1.00	1
1,2-Dichloropropane			<1.00	1	<1.00	1	<1.00	1
1,2-Dichlorotetrafluoroethane			<1.00	1	<1.00	1	<1.00	1
1,3,5-Trimethylbenzene		<1.0	1.82	1	1.67	1	1.67	1
1,3-Butadiene		NA	<1.00	1	<1.00	1	<1.00	1
1,3-Dichlorobenzene		<2.0	<1.00	1	<1.00	1	<1.00	1
1,4-Dichlorobenzene		NA	<1.00	1	<1.00	1	<1.00	1
1,4-Dioxane			<1.00	1	<1.00	1	<1.00	1
2-Hexanone			<1.00	1	<1.00	1	<1.00	1
4-Ethyltoluene		NA	1.47	1	1.47	1	1.33	1
4-Isopropyltoluene			<1.00	1	<1.00	1	<1.00	1
4-Methyl-2-pentanone			1.72	1	2.5	1	2.33	1
Acetone		NA	4.06	1	4.89	1	5.08	1
Acrylonitrile			<1.00	1	<1.00	1	<1.00	1
Benzene		<1.6 - 4.7	<1.00	1	<1.00	1	<1.00	1
Benzyl Chloride		NA	<1.00	1	<1.00	1	<1.00	1
Bromodichloromethane		<5.0	<1.00	1	<1.00	1	<1.00	1
Bromoform		<1.0	<1.00	1	<1.00	1	<1.00	1
Bromomethane		<1.0	<1.00	1	<1.00	1	<1.00	1
Carbon Disulfide		NA	<1.00	1	9.62	1	<1.00	1
Carbon Tetrachloride	5	<3.1	<0.25	0.25	<0.25	0.25	<0.25	0.25
Chlorobenzene		<2.0	<1.00	1	<1.00	1	<1.00	1
Chloroethane		NA	<1.00	1	<1.00	1	<1.00	1
Chloroform		<2.4	<1.00	1	<1.00	1	1.27	1
Chloromethane		<1.0 - 1.4	<1.00	1	<1.00	1	<1.00	1
cis-1,2-Dichloroethene		<1.0	<1.00	1	<1.00	1	<1.00	1
cis-1,3-Dichloropropene		NA	<1.00	1	<1.00	1	<1.00	1
Cyclohexane		NA	<1.00	1	<1.00	1	<1.00	1
Dibromochloromethane		<5.0	<1.00	1	<1.00	1	<1.00	1
Dichlorodifluoromethane		NA	2.37	1	50.9	1	13.2	1
Ethanol			14.1	1	17.3	1	16.2	1
Ethyl Acetate		NA	1.12	1	2.05	1	2.27	1
Ethylbenzene		<4.3	2.52	1	2.6	1	2	1
Heptane		NA	1.35	1	9.09	1	<1.00	1
Hexachlorobutadiene		NA	<1.00	1	<1.00	1	<1.00	1
Hexane		<1.5	1.3	1	2.22	1	3.84	1
Isopropylalcohol		NA	<1.00	1	<1.00	1	<1.00	1
Isopropylbenzene			<1.00	1	<1.00	1	<1.00	1
Xylene (m&p)		<4.3	9.37	1	9.5	1	8.55	1
Methyl Ethyl Ketone			1.68	1	1.33	1	2	1
MTBE		NA	<1.00	1	<1.00	1	<1.00	1
Methylene Chloride		<3.4	1.46	1	1.28	1	4.13	1
n-Butylbenzene			<1.00	1	<1.00	1	<1.00	1
Xylene (o)		<4.3	4.34	1	4.43	1	4.12	1
Propylene		NA	<1.00	1	3.2	1	<1.00	1
sec-Butylbenzene			<1.00	1	<1.00	1	<1.00	1
Styrene		<1.0	<1.00	1	<1.00	1	<1.00	1
Tetrachloroethene	100		2.85	0.25	1.83	0.25	42.9	0.25
Tetrahydrofuran		NA	<1.00	1	<1.00	1	<1.00	1
Toluene		1.0 - 6.1	3.73	1	3.43	1	2.6	1
trans-1,2-Dichloroethene		NA	<1.00	1	<1.00	1	<1.00	1
trans-1,3-Dichloropropene		NA	<1.00	1	<1.00	1	<1.00	1
Trichloroethene	5	<1.7	<0.25	0.25	<0.25	0.25	<0.25	0.25
Trichlorofluoromethane		NA	1.68	1	13.6	1	27.3	1
Trichlorotrifluoroethane			<1.00	1	<1.00	1	<1.00	1
Vinyl Chloride		<1.0	<0.25	0.25	<0.25	0.25	<0.25	0.25
BTEX			19.96		19.96		17.27	
Total VOCs			65.16		149.90		148.55	

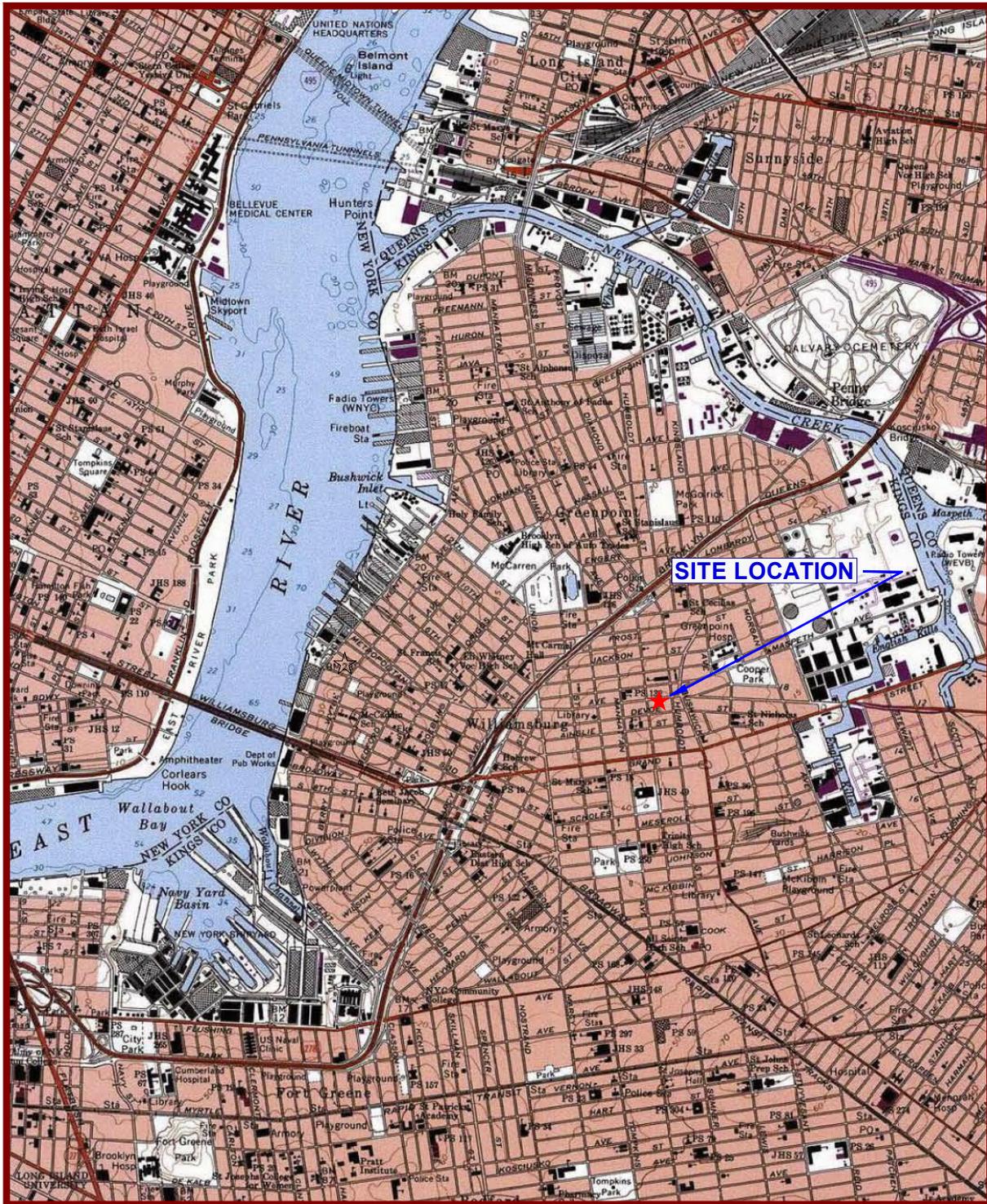
Notes:

NA No guidance value or standard available

(a) Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006, New York State Department of Health.

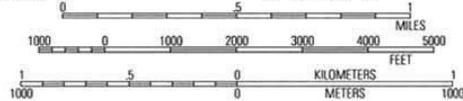
(b) NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, February 2005, Summary of Background Levels for Selected Compounds

FIGURES



40°45.000' N
40°44.000' N
40°43.000' N
40°42.000' N

73°59.000' W 73°58.000' W 73°57.000' W WGS84 73°56.000' W



MN|TN
13°
06/04/11

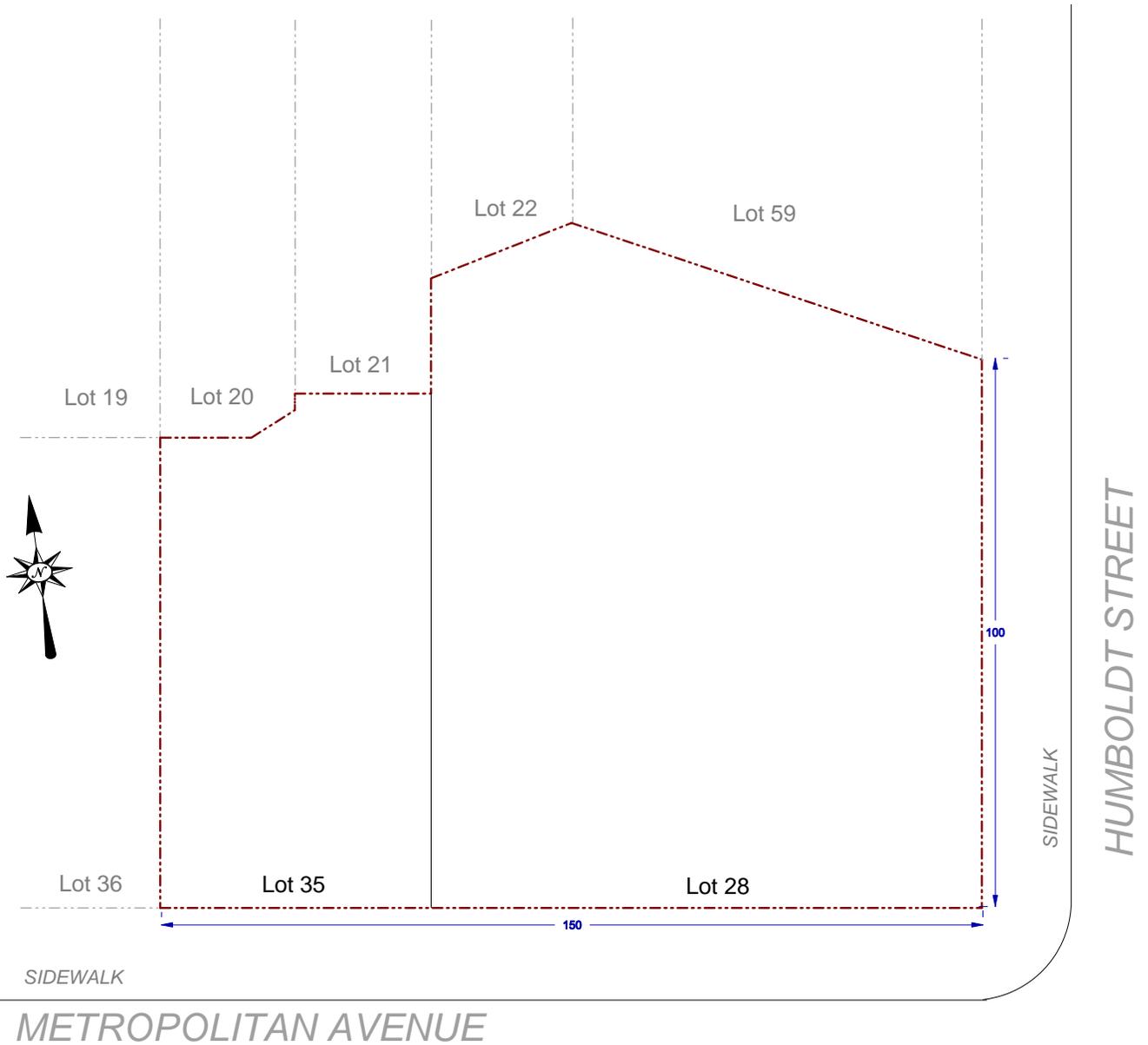
USGS Brooklyn Quadrangle 1995, Contour Interval = 10 feet

EBC
Environmental Business Consultants

Phone 631.504.6000
Fax 631.924.2870

771-781 METROPOLITAN AVENUE
Brooklyn, NY

FIGURE 1 Site Location Map



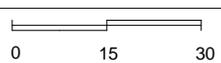
SIDEWALK

METROPOLITAN AVENUE

E

Property Boundary

SCALE

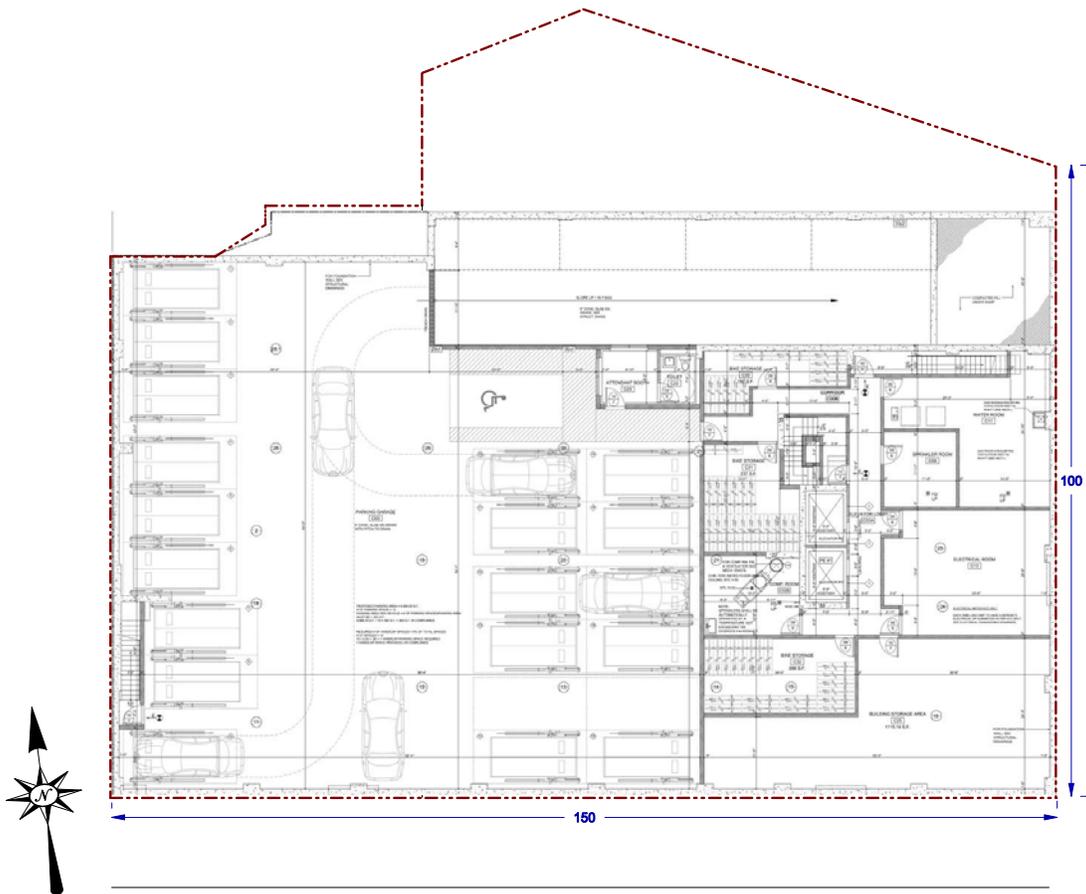


Scale: 1 inch = 30 feet

FRONT ELEVATION PLAN



CELLAR FLOOR PLAN



METROPOLITAN AVENUE



Environmental Business Consultants

Phone 631.504.6000
Fax 631.924.2870

Figure No.

Site Name: Redevelopment Project
Site Address: 771-781 Metropolitan Avenue, Brooklyn, NY
Drawing Title: Redevelopment Plan

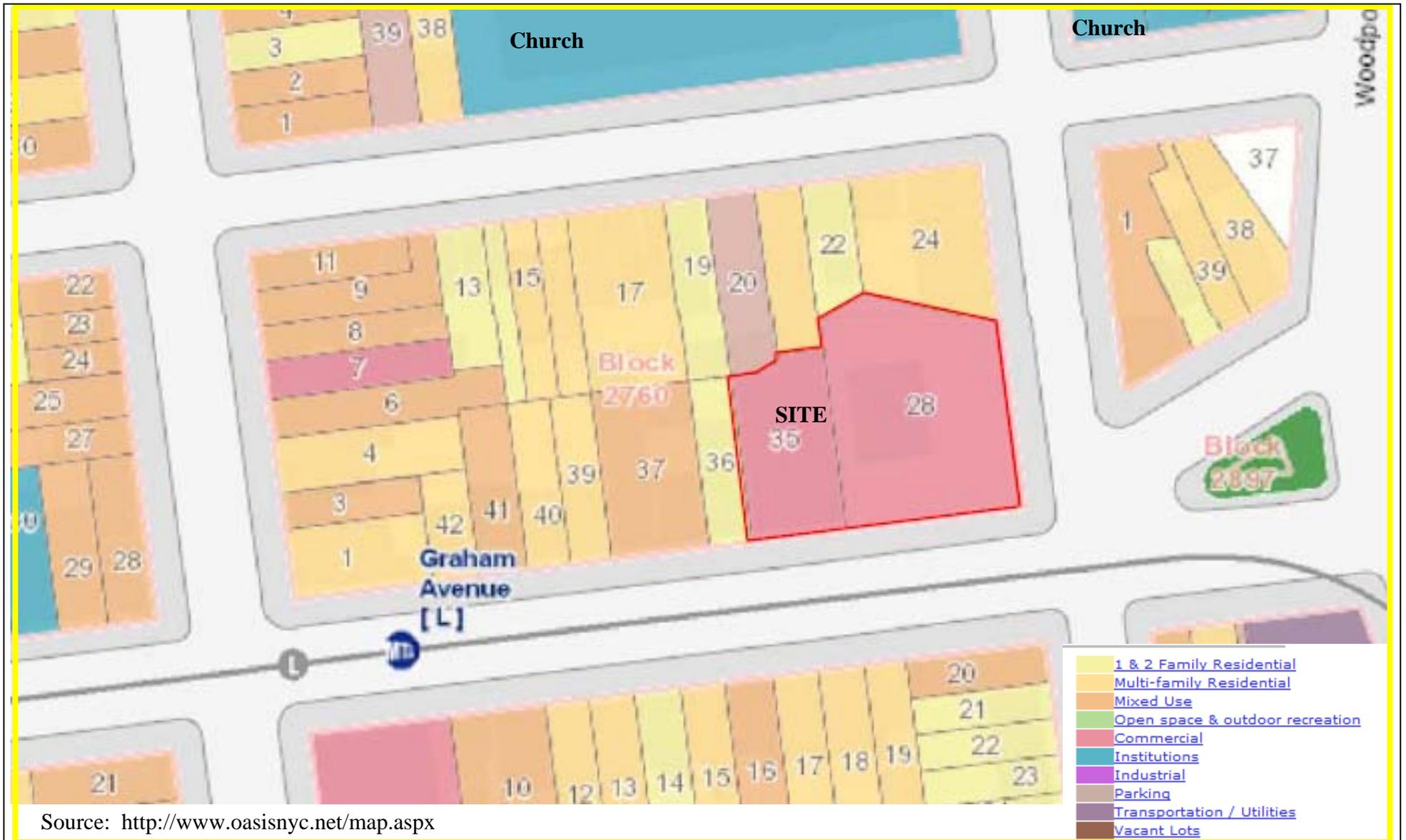
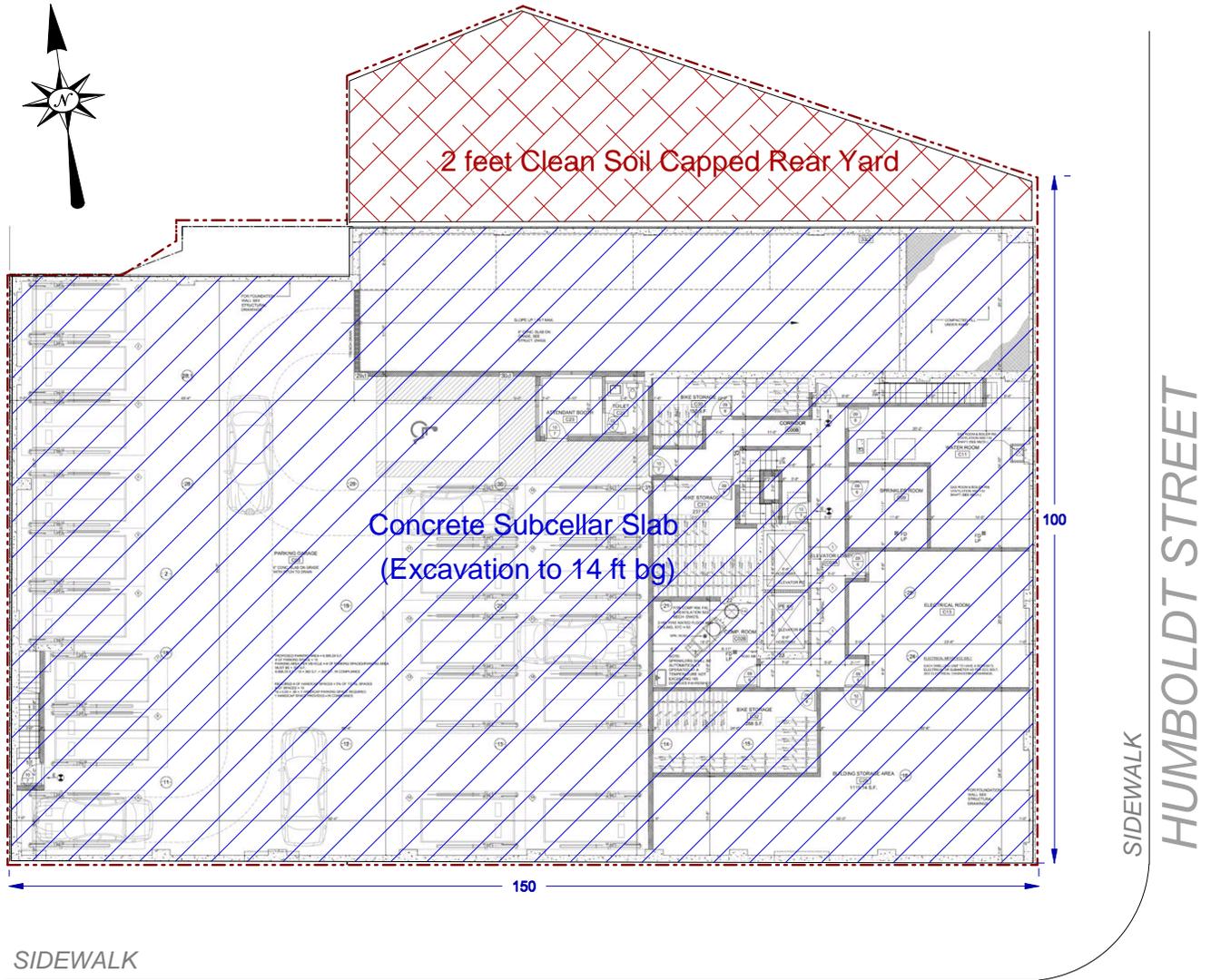


FIGURE 4
SURROUNDING LAND USE MAP

771-781 METROPOLITAN AVENUE,
 BROOKLYN, NY 11206



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



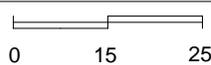
SIDEWALK

METROPOLITAN AVENUE

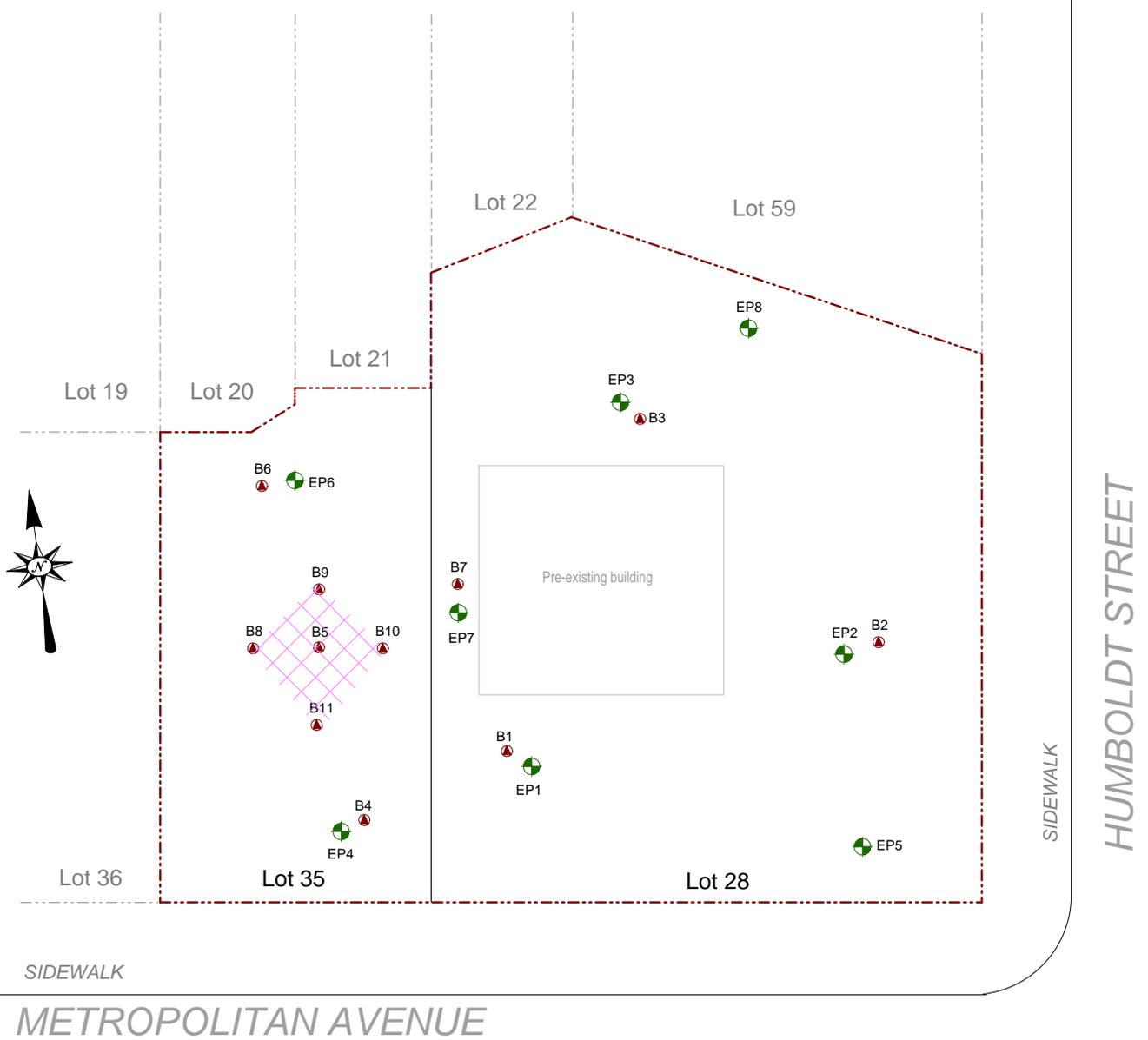
E

 Property Boundary

SCALE



Scale: 1 inch = 25 feet



- E**
- Property Boundary
 - Soil Boring Location
 - Endpoint Sampling Location
 - B5 Hot Spot Sampling Location (bottom and side wall samples)

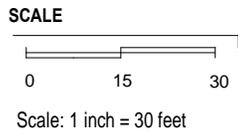
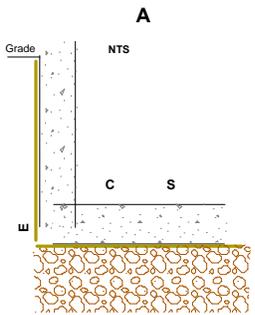
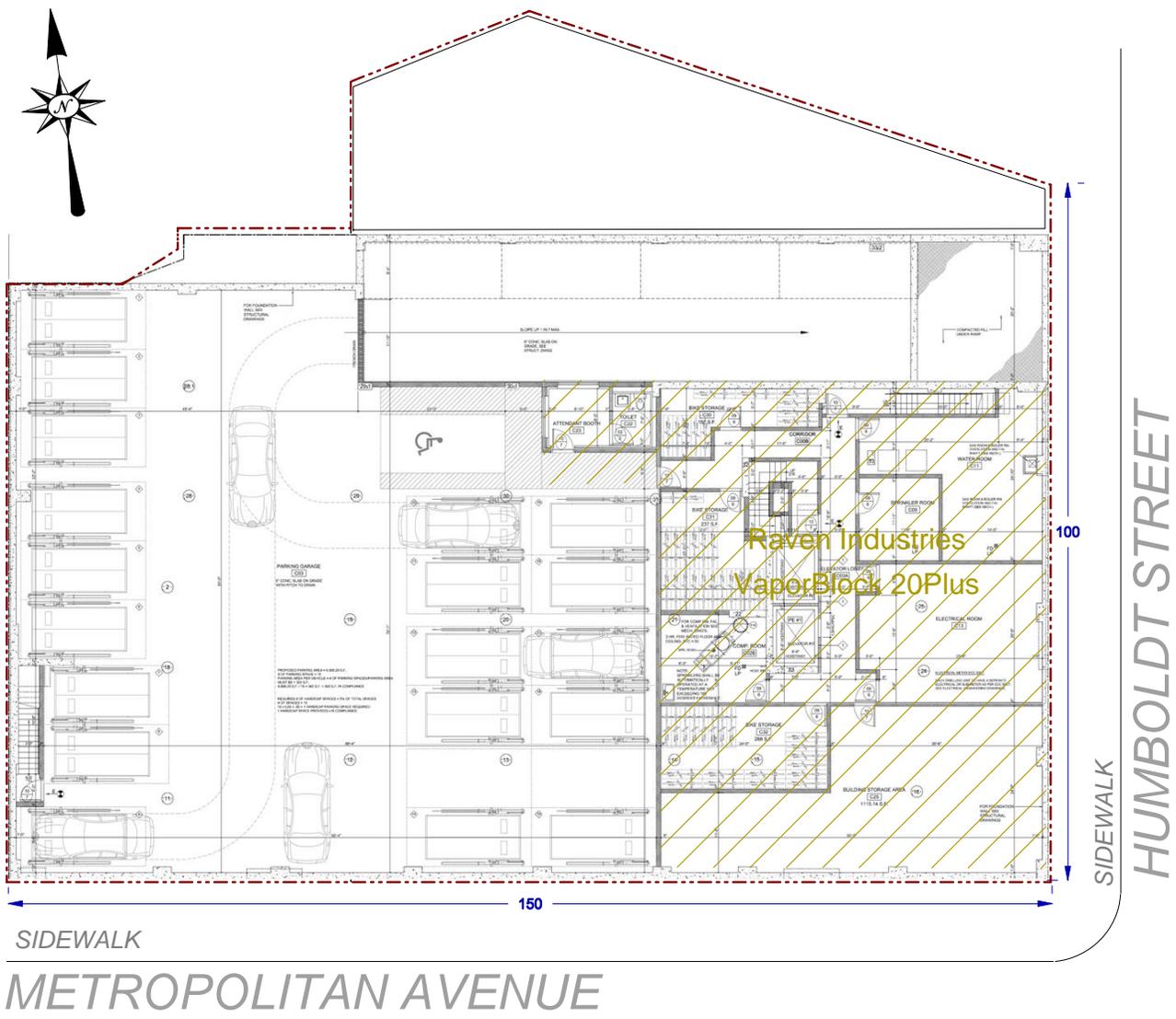


Figure No.

Site Name: **REDEVELOPMENT PROJECT**
 Site Address: **771-781 METROPOLITAN AVENUE, BROOKLYN, NY**
 Drawing Title: **ENDPOINT SAMPLING PLAN**



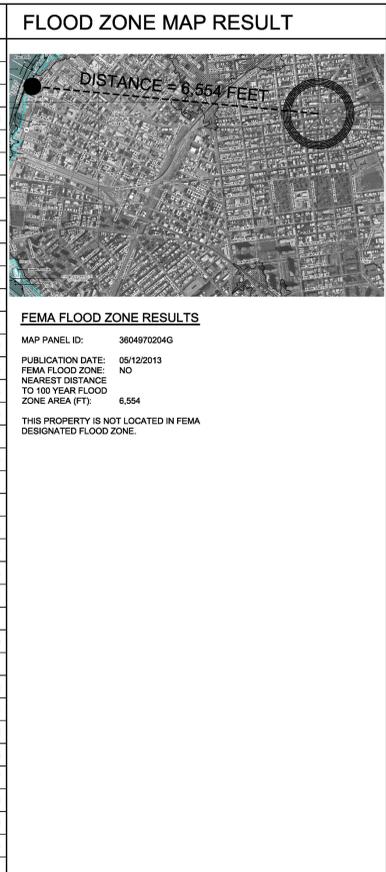
 <p>EBC ENVIRONMENTAL BUSINESS CONSULTANTS</p>	<p>Phone 631.504.6000 Fax 631.924.2870</p>	<p>Figure No.</p>	<p>Site Name: REDEVELOPMENT PROJECT</p>
			<p>Site Address: 771-781 METROPOLITAN AVENUE, BROOKLYN, NY</p>
			<p>Drawing Title: VAPOR BARRIER PLAN</p>

ATTACHMENT A
PROPOSED DEVELOPMENT PLANS

ABBREVIATIONS		DRAWING SCHEDULE	
ARCH	ARCHITECTURAL	I.N.R.	IMPACT NOISE RATING
A.C.	AIR CONDITIONER	INSUL	INSULATION
ACOUS	ACOUSTIC	INT.	INTERIOR
ABV.	ABOVE	I.D.	INSIDE DIAMETER
ADJ.	ADJOINING	INC.	INCLUDING
ADJUST	ADJUSTABLE	JAN. CL.	JANITOR CLOSET
A.F.F.	ABOVE FINISHED FLOOR	JT.	JOINT
ALUM.	ALUMINUM	K.	KITCHEN
APPROX.	APPROXIMATELY	K.I.T.	KITCHENETTE
APRD.	APPROVED	KPL.	KICK PLATE
ASPH.	ASPHALT	LM	LAMINATED
A.P.	APARTMENT PANEL	LAV.	LAVATORY
B.C.	BOTTOM OF CURB	L.C.L.	LINEN CLOSET
BET.	BETWEEN	LDR.	LEADER
BLDG.	BUILDING	L.P.	LOW POINT
BLK	BLOCK	L.T. WT.	LIGHT WEIGHT
BOT.	BOTTOM	MACH.	MACHINE
B.R.	BEDROOM	MAINT.	MAINTENANCE
B.S.A.	BOARD OF STANDARDS	MAS.	MASONRY
AND APPEALS		MAX.	MAXIMUM
B.U.	BUILT UP	MECH.	MECHANICAL
B.V.	BATH/TOILET VENT	M.C.	MEDICINE CABINET
CONT.	CONTRACT	MET.	METAL
C.	CORNER GUARD	MIN.	MINIMUM
C.G.	CORNER GUARD	MIRR.	MIRROR
C.I.	CAST IRON	M.O.	MASONRY OPENING
CAB.	CABINET	MH.	MANHOLE
CEM.	CEMENT	MISC.	MISCELLANEOUS
CIND.	CINDER	N.I.C.	NOT IN CONTRACT
CLG.	CEILING	NO. OR #	NUMBER
CL.	CLOSET	NOM.	NOMINAL
C.L.	CENTER LINE	N.T.S.	NOT TO SCALE
COL.	COLUMN	O.C.	ON CENTER
CONC.	CONCRETE	O.D.	OUTSIDE DIAMETER
CONST.	CONSTRUCTION	OFF.	OFFICE
CONV.	CONVECTOR	OPNG.	OPENING
CONTIN.	CONTINUOUS	(OPG)	
CORR.	CORRIDOR	P.	PART
C.R.	CLOTHES RACK	PART E.	PARTITION END
C.T.	CERAMIC TILE	PAV'T	PAVEMENT
C.C.	COMMUNICATIONS	P.E.	PASSENGER ELEVATOR
	PANEL	PERF.	PERFORATED
C.M.U.	CONCRETE	PL.P.L.	PLATE, PROPERTY LINE
	MASONRY UNIT	PLAST	PLASTER
C.J.	CONTROL JOINT	OR DINING AREA	
C.V.	CORRIDOR VENT	POL.	POLISH
D.	DRYER	PRE.FAB.	PREFABRICATED
D.A.	DINING ALCOVE	PLAS.LAM	PLASTIC LAMINATE
OR DINING AREA		P.	PROTECTION PLATE
DET.	DETAIL	R.	RISERS, RANGE
DIA.	DIAMETER	RAD.	RADIUS
DIAG.	DIAGONAL	R.D.	ROOF DRAIN
DIM.	DIMENSION	REF.	REFRIGERATOR
D.H.	DOUBLE HUNG	REF.	REFRIGERATOR
D.N.	DOWN	REF.	REFRIGERATOR
DR.	DINING ROOM	REF.	REFRIGERATOR
D.W.	DISH WASHER	REF.	REFRIGERATOR
DWG.	DRAWING	REF.	REFRIGERATOR
DP.	DRINKING FOUNTAIN	REINF.	REINFORCED
DV.	DRYER VENT	REQD	REQUIRED
EA.	EACH	RESIST.	RESISTANT
ELEC.	ELECTRIC	RM.	ROOM
EL.	ELEVATION	S.	SINK
ELEV.	ELEVATOR	SCHED.	SCHEDULED
ENGR.	ENGINEER	S.E.	SERVICE ELEVATOR
EXH.	EXHAUST	SECT.	SECTION
EQUIP.	EQUIPMENT	SH.	SHOWER
EXIST'G	EXISTING	SPEC.	SPECIFICATIONS
E.J.	EXPANSION JOINT	S.T.C.	SOUND TRANSMISSION
EQ.	EQUAL	STL.	STEEL
F.	FOYER	S.S.	STAINLESS STEEL
F.A.I.	FRESH AIR INTAKE	STOR.	STORAGE
F.B.O.	FURNISHED	STRUCT.	STRUCTURAL
BY OTHERS		SIM.	SIMILAR
FIN.	FINISH	S.O.	SLAB OPENING
FIN. FIXTURE		T.	TREAD
F.L.	FLOOR	T.	TOILET
F.D.	FLOOR DRAIN	T.A.	TRANSIT AUTHORITY
FLASH	FLASHING	T.C.	TOP OF CURB
F.P.S.C.	FIREPROOF	THK.	THICK
	SELF-CLOSING	T.O.P.	TRIMMED OPENING
F.S.P.	FIRE STANDPIPE	T.O.P.	TOP OF PARAPET
FURR.	METAL FURRING	T.O.S.	TOP OF SLAB
F.T.	TERRAZO FRITZ TILE	T.O.W.	TOP OF WALL
G.	GAS	T.P.	TYPICAL
GALV.	GALVANIZED	T.B.	TOWEL BAR
GA.	GAUGE	T.C.P.	TOP OF CONCRETE
G.B.	GRAB BAR	PLANK	
G.C.T.	GLAZED CERAMIC TILE	T.O.P.	TOP OF CONCRETE
GEN.	GENERAL	T.V.	TOILET EXHAUST
GL.	GLASS, GLAZING	V.C.T.	VINYL COMPOSITION TILE
GR.	GRADE	V.C.V.	VINYL CORNER GUARD
GC	GENERAL CONTRACTOR	VENT.	VENTILATION
GWB	GYPSON WALLBOARD	VEST.	VESTIBULE
H.	HUNG CEILING	W.V.C.	VINYL WALL COVERING
H.C.	HOLLOW CORE	W.	WASHING MACHINE
HT	HEIGHT	W.H.	WEEP HOLES
H.M.	HOLLOW METAL	W.	WITH
H.P.	HIGH POINT	W.C.	WATER CLOSET
HORIZ	HORIZONTAL	W.D.	WOOD
H.R.	HANDRAIL	W. GL	WIRE GLASS
HR.	HOUR	W.P.	WATERPROOFING
HVAC	HEATING, VENTILATING	W.R. GWB	WATER RESISTANT GYPSON BOARD
AIR CONDITIONING			
HEATING			

ARCHITECTURAL DRAWING LIST	
Z-001.00	ZONING ANALYSIS
Z-002.00	ZONING DIAGRAMS
Z-003.00	ZONING DIAGRAMS
Z-004.00	EXTERIOR WALL AREA CALCULATIONS
Z-005.00	EXTERIOR WALL AREA CALCULATIONS
Z-006.00	EXTERIOR WALL AREA CALCULATIONS
A-001.00	DRAWING LIST, SYMBOLS & PLOT PLAN
A-002.00	GENERAL NOTES, PUBLIC ASSEMBLY NOTES HANDICAPPED DETAILS
A-003.00	HANDICAPPED BATHROOM PLANS AND DETAILS
A-004.00	EGRESS DRAWINGS AND DETAILS
A-005.00	EGRESS DRAWINGS AND DETAILS
A-006.00	EGRESS DRAWINGS AND DETAILS
A-007.00	EGRESS DRAWINGS AND DETAILS
A-101.00	CELLAR PLAN
A-102.00	FIRST FLOOR PLAN
A-103.00	SECOND FLOOR PLAN
A-104.00	THIRD FLOOR PLAN
A-105.00	FOURTH FLOOR PLAN
A-106.00	FIFTH FLOOR PLAN
A-107.00	SIXTH FLOOR PLAN
A-108.00	ROOF & BULKHEAD PLANS
A-201.00	SOUTH ELEVATION
A-202.00	EAST ELEVATION
A-203.00	NORTH ELEVATION
A-204.00	WEST ELEVATION
A-205.00	CROSS SECTION
A-206.00	CROSS SECTION
A-301.00	CELLAR REFLECTED CEILING PLAN
A-302.00	1ST FLOOR REFLECTED CEILING PLAN
A-303.00	2ND FLOOR REFLECTED CEILING PLAN
A-304.00	3RD FLOOR REFLECTED CEILING PLAN
A-305.00	4TH FLOOR REFLECTED CEILING PLAN
A-306.00	5TH FLOOR REFLECTED CEILING PLAN
A-307.00	6TH FLOOR REFLECTED CEILING PLAN
A-308.00	ROOF LIGHTING PLAN
A-401.00	PARTITION TYPES
A-402.00	DOOR SCHEDULE & WINDOW SCHEDULE
A-403.00	BATHROOM ELEVATIONS
A-404.00	BATHROOM ELEVATIONS
A-405.00	BATHROOM ELEVATIONS
A-406.00	BATHROOM ELEVATIONS
A-407.00	KITCHEN ELEVATIONS
A-408.00	KITCHEN ELEVATIONS
A-501.00	SECTION DETAILS
A-502.00	SECTION DETAILS
A-503.00	SECTION DETAILS
A-504.00	SECTION DETAILS
A-505.00	SECTION DETAILS

SPECIAL INSPECTION	
SPECIAL INSPECTION ITEMS, REQUIRED FOR ALL APPLICATIONS.	
IDENTIFICATION OF REQUIREMENT	
Y	N
PROGRESS INSPECTIONS	CODE SECTION
<input type="checkbox"/>	FLOOD ZONE COMPLIANCE BC G105
<input type="checkbox"/>	FIRE ALARM TEST BC 907, BC 1704.13
<input type="checkbox"/>	PHOTOLUMINESCENT EXIT PATH MARKINGS TR7 BC 1026.11
<input type="checkbox"/>	EMERGENCY POWER SYSTEMS (GENERATORS) BC 1704.13, BC 2702
<input type="checkbox"/>	STRUCTURAL STEEL-WELDING BC 1704.3.1
<input type="checkbox"/>	STRUCTURAL STEEL-ERECTION & BOLTING BC 1704.3.2, BC 1704.3.3
<input type="checkbox"/>	STRUCTURAL COLD-FORMED STEEL BC 1704.4
<input type="checkbox"/>	CONCRETE - CAST-IN-PLACE BC 1704.4
<input type="checkbox"/>	CONCRETE - PRECAST BC 1704.4
<input type="checkbox"/>	CONCRETE - PRESTRESSED BC 1704.4
<input type="checkbox"/>	CONCRETE - TEST CYLINDERS* TR2 BC 1905.6
<input type="checkbox"/>	CONCRETE DESIGN MIX* TR3 BC 1905.3
<input type="checkbox"/>	MASONRY BC 1704.5
<input type="checkbox"/>	WOOD - OF-SITE FABRICATION OF STRUCTURAL ELEMENTS BC 1704.6
<input type="checkbox"/>	WOOD - INSTALLATION OF HIGH-LOAD DIAPHRAGMS BC 1704.6.1
<input type="checkbox"/>	WOOD - INSTALLATION OF METAL-PLATE-CONNECTED TRUSSES BC 1704.6.3
<input type="checkbox"/>	WOOD - INSTALLATION OF PREFABRICATED JOISTS BC 1704.6.4
<input type="checkbox"/>	SOILS - SITE PREPARATION BC 1704.7.1 & 109.3.1
<input type="checkbox"/>	SOILS - FILL PLACEMENT & IN-PLACE DENSITY BC 1704.7.2, BC 1704.7.3
<input type="checkbox"/>	SOILS - INVESTIGATIONS (BORING/TEST PITS) TR4 BC 1704.7.4
<input type="checkbox"/>	PILE FOUNDATIONS & DRILLED PIER INSTALLATION TR5 BC 1704.8
<input type="checkbox"/>	PILE FOUNDATIONS & DRILLED PIER INSTALLATION BC 1704.9
<input type="checkbox"/>	UNDERPINNING BC 1704.9.1
<input type="checkbox"/>	WALL PANELS, CURTAIN WALLS, AND VENEERS BC 1704.10
<input type="checkbox"/>	SPRAYED FIRE-RESISTANT MATERIALS BC 1704.11
<input type="checkbox"/>	EXTERIOR INSULATION FINISH SYSTEMS (EIFS) BC 1704.12
<input type="checkbox"/>	SMOKE CONTROL SYSTEMS BC 1704.14 & BC 909
<input type="checkbox"/>	MECHANICAL SYSTEMS BC 1704.15
<input type="checkbox"/>	FUEL-OIL STORAGE AND FUEL-OIL PIPING SYSTEMS BC 1704.16
<input type="checkbox"/>	HIGH-PRESSURE STEAM PIPING (WELDING) BC 1704.17
<input type="checkbox"/>	FUEL-GAS PIPING (WELDING) BC 1704.18
<input type="checkbox"/>	STRUCTURAL SAFETY - STRUCTURAL STABILITY BC 1704.19
<input type="checkbox"/>	MECHANICAL DEMOLITION BC 1704.19, BC 3306.8
<input type="checkbox"/>	EXCAVATION - SHEETING, SHORING, AND BRACING BC 1704.19, BC 3304.4.1
<input type="checkbox"/>	SOIL PERCOLATION TEST - DRYWELL BC 1704.20.1
<input type="checkbox"/>	SOIL PERCOLATION TEST - SEPTIC BC 1704.20.1
<input type="checkbox"/>	SITE STORM DRAINAGE DISPOSAL AND DETENTION SYSTEM INSTALLATION BC 1704.20
<input type="checkbox"/>	SEPTIC SYSTEM INSTALLATION BC 1704.20
<input type="checkbox"/>	SPRINKLER SYSTEMS BC 1704.21
<input type="checkbox"/>	STANDPIPE SYSTEMS BC 1704.22
<input type="checkbox"/>	HEATING SYSTEMS BC 1704.23
<input type="checkbox"/>	CHIMNEYS BC 1704.24
<input type="checkbox"/>	FIRESTOP, DRASTOP, AND FIREBLOCK SYSTEMS BC 1704.25
<input type="checkbox"/>	ALUMINUM WELDING BC 1704.26
<input type="checkbox"/>	SEISMIC ISOLATION SYSTEMS BC 1707.8
<input type="checkbox"/>	PRELIMINARY 28-116.2.1, BC 109.2
<input type="checkbox"/>	FOOTING AND FOUNDATION BC 109.3.1
<input type="checkbox"/>	LOWEST FLOOR ELEVATION (ATTACH FEMA FORM) BC 109.3.2
<input type="checkbox"/>	FRAME INSPECTION BC 109.3.3
<input type="checkbox"/>	ENERGY CODE COMPLIANCE INSPECTIONS BC 109.3.5
<input type="checkbox"/>	FIRE-RESISTANCE RATED CONSTRUCTION BC 109.3.4
<input type="checkbox"/>	PUBLIC ASSEMBLY EMERGENCY LIGHTING 28-116.2.2
<input type="checkbox"/>	FINAL 28-116.2.4.2 & BC 109.5 & DIRECTIVE 14 OF 1975



CODE ANALYSIS																																																																																																																																																																																																																																																																																																																																																																																		
TABLE 503 ALLOWABLE HEIGHT AND BUILDING AREAS																																																																																																																																																																																																																																																																																																																																																																																		
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	<table border="1"> <thead> <tr> <th rowspan="2">TYPE I</th> <th colspan="2">TYPE II</th> <th rowspan="2">TYPE III</th> <th rowspan="2">TYPE IV</th> <th rowspan="2">TYPE V</th> </tr> <tr> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>GR (Ht)</td> <td>UL</td> <td>100 ft</td> <td>85</td> <td>85</td> <td>85</td> <td>85</td> <td>85</td> <td>50</td> <td>40</td> </tr> <tr> <td>A-1</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>10,500</td> <td>14,700</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>A-2</td> <td>A</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>A-3</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>A-4</td> <td>A</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> 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<td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-6</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-7</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-8</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-9</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-10</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-11</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-12</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-13</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-14</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-15</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-16</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-17</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-18</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-19</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-20</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-21</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-22</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-23</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-24</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-25</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-26</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-27</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-28</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-29</td> <td>S</td> <td>UL</td> <td>17,500</td> <td>9,500</td> <td>14,000</td> <td>5,600</td> <td>15,000</td> <td>6,400</td> <td>5,500</td> </tr> <tr> <td>B-30</</td></tr></tbody></table>	TYPE I	TYPE II		TYPE III	TYPE IV	TYPE V	A	B	GR (Ht)	UL	100 ft	85	85	85	85	85	50	40	A-1	S	UL	17,500	10,500	14,700	5,600	15,000	6,400	5,500	A-2	A	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	A-3	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	A-4	A	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	A-5	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-1	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-2	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-3	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-4	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-5	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-6	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-7	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-8	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-9	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-10	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-11	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-12	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-13	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-14	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-15	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-16	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-17	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-18	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-19	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-20	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-21	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-22	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-23	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-24	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-25	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-26	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-27	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-28	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-29	S	UL	17,500	9,500	14,000	5,600	15,000	6,400	5,500	B-30</
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GENERAL NOTES

- PERMITS AND COMPLIANCE:** ALL WORK SHALL CONFORM TO AND BE PERFORMED IN STRICT ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE 2008 CONSTRUCTION CODES: BUILDING CODE (BC), PLUMBING CODE (PC), MECHANICAL CODES (MC), FUEL GAS CODE (FGC) AND ELECTRICAL CODE (EC) OF THE CITY OF NEW YORK, THE NEW YORK CITY HOUSING MAINTENANCE CODE (NYC HMC), THE NEW YORK STATE MULTIPLE DWELLING LAW (M.D.L.), THE NEW YORK CITY CITYENRGY CONSERVATION CODE AND ALL OTHER REGULATIONS HAVING JURISDICTION. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO COMMENCEMENT OF THE WORK.
- CONDITIONS AFFECTING THE WORK:** BEFORE PROCEEDING WITH THE WORK, THE CONTRACTOR AND SUB-CONTRACTORS SHALL THOROUGHLY EXAMINE CONDITIONS AT THE PROJECT SITE TO ASSURE THAT THE WORK CAN PROCEED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ANY CONDITIONS FOUND WHICH WILL ADVERSELY AFFECT THE WORK SHALL BE REPORTED TO THE OWNERS REPRESENTATIVE AND THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK.
- NOTIFICATION OF ADJACENT PROPERTY OWNERS:** FIVE DAYS PRIOR NOTICE SHALL BE GIVEN BY THE CONTRACTOR TO THE OWNER OF EACH ADJACENT LOT AFFECTED BY FOUNDATION, EARTHWORK OR DEMOLITION WORK AS PER SEC. 204.3.2. THE OWNER SHALL BE RESPONSIBLE FOR THE SAFE MAINTENANCE OF THE BUILDING AND ITS FACILITIES.
- COMMENCEMENT OF OPERATIONS:** AT LEAST 24 HOURS WRITTEN NOTICE SHALL BE GIVEN BY THE CONTRACTOR TO THE COMMISSIONER OF BUILDINGS BEFORE COMMENCEMENT OF WORK PER BC 206.5.1. SPECIAL INSPECTION ITEMS REFER TO THE DATUM IN USE BY THE DEPARTMENT OF HIGHWAYS, BROADWAY PRESIDENT OF MANHATTAN (WB 1.7) ABOVE THE U.S. COAST AND GEODETIC SURVEY DATUM OF MEAN SEA LEVEL AT SANDY HOOK.
- WORK BEYOND STREET LINE:** NO WORK SHALL BE PERFORMED BEYOND THE STREET LINE PRIOR TO OBTAINING APPROVAL FROM NYCDOT. PERMITS FOR ALL WORK OUTSIDE OF THE STREET LINE SHALL BE OBTAINED BY THE CONTRACTOR. SIDEWALK AND STREET CURBING SHALL BE REBUILT IN ACCORDANCE WITH THE REQUIREMENTS OF NYCDOT.
- DIMENSIONS VERIFICATION:** BEFORE PROCEEDING WITH THE WORK, THE CONTRACTOR AND SUB-CONTRACTORS SHALL VERIFY ELEVATION DATUM AND ALL DIMENSIONS. ANY DIMENSIONAL VARIATIONS BETWEEN FIELD CONDITIONS AND PROPOSED NEW WORK WHICH WILL ADVERSELY AFFECT THE WORK SHALL BE REPORTED TO THE OWNERS REPRESENTATIVE AND THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK. DO NOT SCALE DRAWINGS, WRITTEN DIMENSIONS TAKE PRECEDENCE.
- SURVEY AND BORINGS:** BORING DIAGRAM SHALL BE FILED BEFORE CONSTRUCTION IS STARTED AS PER NYC ADMINISTRATIVE CODE. AN ACCURATE AND COMPLETE FINAL SURVEY, MADE BY A LICENSED SURVEYOR SHALL BE SUBMITTED AFTER COMPLETION OR WORK SHOWING THE LOCATION OF NEW BUILDING ELEVATION OF FIRST FLOOR, FINISHED GRADE OF OPEN SPACES ESTABLISHED CURB LEVEL, LOCATION AND BOUNDARIES OF LOT.
- DIMENSIONS:** UNLESS OTHERWISE SHOWN OR INDICATED, DIMENSIONS SHOWN ON ARCHITECTURAL PLAN DRAWINGS ARE INDICATED TO FINISHED FACE OF PARTITIONS. THICKNESS OF APPLIED WALL FINISHES ARE INDICATED ON DETAILS AND ELSEWHERE IN THE CONTRACT DOCUMENTS.
- DIMENSIONS VERIFICATION:** BEFORE PROCEEDING WITH THE WORK, THE CONTRACTOR AND SUB-CONTRACTORS SHALL VERIFY ELEVATION DATUM AND ALL DIMENSIONS. ANY DIMENSIONAL VARIATIONS BETWEEN FIELD CONDITIONS AND PROPOSED NEW WORK WHICH WILL ADVERSELY AFFECT THE WORK SHALL BE REPORTED TO THE OWNERS REPRESENTATIVE AND THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK. DO NOT SCALE DRAWINGS, WRITTEN DIMENSIONS TAKE PRECEDENCE.
- CONSTRUCTION CLASSIFICATION:** THE CONSTRUCTION CLASSIFICATION OF THIS BUILDING IS CONSTRUCTION GROUP "P" NON-COMBUSTIBLE, CLASS "1P". ALL CONSTRUCTION ELEMENTS SHALL BE OF THE REQUIRED MINIMUM FIRE RESISTANCE RATINGS OUTLINED IN TABLE B01 AND ELSEWHERE IN THE CODES.
- SEPARATION OF OCCUPANCIES:** PROVIDE FIRE SEPARATIONS OR DIVISIONS BETWEEN VARIOUS OCCUPANCIES AS PER BC CHAP. 5 AND TABLES 508.2 AND 508.3.
- RATED ASSEMBLIES:** ALL MATERIALS OR ASSEMBLIES REQUIRED TO HAVE A FIRST RESISTANCE RATING SHALL COMPLY WITH THE APPLICABLE NYC BLDG. DEPT. REFERRED STANDARDS.
- MATERIALS, ASSEMBLIES, EQUIPMENT AND METHODS OF CONSTRUCTION AND SERVICE EQUIPMENT SHALL MEET THE FOLLOWING REQUIREMENTS:**
 - THEY SHALL HAVE BEEN ACCEPTED PRIOR TO THE EFFECTIVE DATE OF THE CODE BY THE BOARD OF STANDARDS AND APPEALS (BSA), OR NYC DOB MATERIALS & EQUIPMENT ACCEPTANCE (MEA), OR.
 - THEY SHALL HAVE BEEN ACCEPTED FOR THE USE UNDER THE PRESCRIBED TEST METHODS AS PER NYC BUILDING CODE.
- MASONRY UNITS SHALL CONFORM TO THE CODE AND MASONRY WALLS AND CONSTRUCTION SHALL CONFORM TO BC CHAPTER 21. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.**
- SPRINKLER/STAMPING:** BUILDING TO BE FULLY SPRINKLERED AND PROVIDED WITH STAMPERS PER BC SECTIONS 203.2.7 & 905.
- FIRESTOPPING - GENERAL:** CONCEALED SPACES WITH PARTITIONS, WALLS, FLOORS, ROOFS, STAIRS, FURRING, PIPE SPACES, COLUMN ENCLOSURES, ETC., SHALL BE FIRESTOPPED (EXCEPT WHERE CONCEALED SPACE IS SPRINKLERED) WITH NON-COMBUSTIBLE MATERIAL THAT CAN BE SHAPED, FITTED, AND PERMANENTLY SECURED IN POSITION AS PER FC 710 AND FC 713.
- SHaft ENCLOSURE:** STAIR, ELEVATOR, AND SHaFT ENCLOSURES SHALL HAVE A 2 HOUR FIRE-RESISTANCE RATING, COMPLYING WITH THE BUILDING CODE.
- FIRESTOPPING, DUCTS, PIPES, CONDUITS:** DUCT, PIPES, AND CONDUITS PASSING THROUGH FIRE RATED CONSTRUCTION SHALL HAVE SURROUNDING SPACES NOT EXCEEDING 1/2" IN WIDTH PACKED WITH FIRESTOPPING MATERIAL APPROVED BY THE CODE AND CLOSED OFF WITH CLOSE FITTING METAL COUPLERS. DUCTWORK PENETRATIONS SHALL BE PROTECTED BY RATED SELF-CLOSING DEVICES, PER BC SECTION 713.43.
- ELEVATORS:** SHALL BE FILED AS A SEPARATE NYC BLDG. DEPT. APPLICATION BY THE CONTRACTOR. ELEVATORS SHALL COMPLY WITH ALL STANDARDS. ALL DRIVERS TO BE OPERATED BY SHaFT SHALL BE PROVIDED WITH SELF-CLOSING DOORS AND BUCKS HAVING A 1 1/2 HOUR RATING. ALL DOORS TO ELEVATOR SHaFTS AND DOORS IN ELEVATOR CABS SHALL BE PROVIDED WITH AUTOMATIC DEVICES AS REQUIRED. ELEVATORS AND ACCESSORIES SHALL COMPLY WITH THE REQUIREMENTS FOR THE HANDICAPPED AND THE FIREHOLE RECALL SYSTEM. PROVIDE MIRRORS IN ELEVATOR CABS (SEC. 518-MC.1 & 204-HMC).
- STAIR SHaFT VENTING:** STAIR SHaFTS SHALL BE VENTED IN ACCORDANCE WITH BC 910.5 SEC. 36 AND 916-MC.
- CHIMNEY:** THE WORK SHALL COMPLY WITH BC TABLE B01 AND MECHANICAL CODE, SHaPTEr 8. ENCLOSURE OF INTERIOR METAL CHIMNEY SHALL BE 2HR. RATED.
- ALL INTERIOR TOILETS SHALL BE MECHANICALLY VENTILATED IN ACCORDANCE WITH CHAPTER 12 OF THE BUILDING CODE.
- ELEVATOR SHaFTS SHALL BE ENCLOSED WITH CONSTRUCTION FOR 1 HOUR FIRE RATING IN ACCORDANCE WITH NEW YORK CITY BUILDING CODE CHAPTER 7.
- INTERIOR REQUIRED STAIR SHALL BE ENCLOSED WITH 2 HOUR FIRE RATING IN ACCORDANCE WITH NEW YORK CITY BUILDING CODE CHAPTER 7.
- ALL VENT DUCT SHaFTS SHALL BE ENCLOSED WITH 2 HOUR ENCLOSURE. NO DUCT VENTS TO PASS THROUGH STAIR ENCLOSURES. 1 1/2 HOUR AUTOMATIC SELF-CLOSING FIRE DAMPERS TO BE INSTALLED IN VENT DUCTS WHEN THEY PIERCE PUBLIC CORRIDORS.
- MECHANICAL VENTILATION, AIR CONDITIONING AND REFRIGERATION:** (NYC MC 208-403)
 - ALL FINAL INSPECTIONS AND TESTS OF A REQUIRED VENTILATING SYSTEM SHALL BE MADE (THE ARCHITECT OR ENGINEER NEED NOT TO BE IN THE EMPLOY OF THE OWNER).
 - ALL INSPECTIONS AND TESTS OF A REFRIGERATION SYSTEM SHALL BE MADE (THE ARCHITECT OR ENGINEER NEED NOT TO BE IN THE EMPLOY OF THE OWNER).
- HEATING AND COMBUSTION EQUIPMENT:** (NYC MC 208-CHaPTEr 8)
 - ALL FINAL INSPECTIONS AND TESTS FOR BOILERS SHALL BE SUBJECT TO THE PROVISIONS FOR CONTROLLED INSPECTION (SUCH INSPECTIONS AND TESTS, HOWEVER, MAY BE MADE BY DEPARTMENT INSPECTIONS OR BY A DULY AUTHORIZED INSURANCE COMPANY INSPECTOR).
 - ALL APPLICATIONS FOR EQUIPMENT USE PERMIT FOR HEATING SYSTEMS SHALL BE ACCOMPANIED BY A BONDED STATEMENT BY AN ARCHITECT OR ENGINEER STATING THAT THE SYSTEM HAS BEEN OPERATED AND FUNCTIONS SATISFACTORY AND THAT TO THE BEST OF HIS KNOWLEDGE AND BELIEF THE SYSTEM WILL MEET THE CODE TEMPERATURE REQUIREMENTS.

MULTIPLE DWELLING LAW (M.D.L.) NOTES

- PREMISES TO COMPLY WITH THE MULTIPLE DWELLING LAW, ARTICLE 7B.
- CONSTRUCTION TO CONFORM WITH SECTION 4 OF M.D.L. RELATIVE TO LIGHT FIXTURES. PROPER LIGHT TO BE PROVIDED FOR ALL MEANS OF EGRESS, EVERY ROOM, BATHROOMS AND STAIRS OR PUBLIC HALLS.
- ALL LIGHT FIXTURES IN VESTIBULE, ENTRANCE HALL, PUBLIC HALLS AND STAIRS SHALL BE AT LEAST 80 WATTS INCANDESCENT OR 20 WATTS COOL WHITE FLUORESCENT OR EQUIVALENT ILLUMINATION.
- IN NEW KITCHENS OR KITCHENETTES, ALL COMBUSTIBLE MATERIAL IMMEDIATELY UNDER AND WITHIN ONE FOOT OF ANY COOKING APPARATUS SHALL BE COVERED WITH 5/8" GYPSUM WALL BOARD, AS PER SECTION 203.3.3.
- GAS RANGE PER SECTION 303.3.EE. SHALL BE PROVIDED WITH ELECTRICAL LIGHTING IGNITION AND SHALL BE APPROVED BY A.G.A. OR B.S.A.
- ALL KITCHENETTES TO BE MECHANICALLY VENTILATED AS PER SECTION 303.3.M.D.L.
- ALL PLUMBING AND DRAINAGE TO COMPLY WITH SECTION 77 M.D.L. ALL LIQUID DR WATER BORNE WASTE FROM PLUMBING FIXTURES SHALL BE CONVEYED BY HOSE SEWER TO STREET SEWER. ALL ROOFS, TERRACES, SHAFTS, COURT AREAS AND YARD SHALL BE PROPERLY GRADED AND DRAINED TO BE CONNECTED TO STREET STORM DRAIN OR TO COMBINED SEWER SYSTEM. ENTIRE PLUMBING AND DRAINAGE SYSTEM TO BE KEPT CLEAN AT ALL TIMES AND IN GOOD REPAIR, INCLUDING PLUMBING FIXTURES.
- PERIPHERIES TO BE PROVIDED TO ALL ENTRANCE DOORS TO APARTMENT AND SHALL BE LOCATED TO ENABLE A PERSON TO VIEW FROM THE INSIDE OF THE ENTRANCE DOOR ANY PER STANDING IMMEDIATELY OUTSIDE THE ENTRANCE AS PER SECTION 91 B.D.L.
- BOILER SHALL BE ENCLOSED IN A ROOM WITH FIREPROOF WALLS AND CEILING. ALL DOORS TO BE FIREPROOF, SELF-CLOSING ASSEMBLIES. CELLAR SHALL NOT BE ACCESSED THROUGH BOILER ROOM, AS PER SECTION 65 M.D.L.
- FIRE STOPPING OF PARTITIONS BETWEEN APARTMENTS AND BETWEEN APARTMENT WALLS SHALL COMPLY WITH SECTION 241, M.D.L. SUCH PARTITIONS SHALL BE FILLED SOLELY WITH NON-COMBUSTIBLE MATERIAL.
- BATHROOM TO HAVE CERAMIC TILE FLOORS AND A MINIMUM BASE OF 1/8" INTERIOR BATH ROOM, IF ANY, TO BE MECHANICALLY VENTILATED IN SAME MANNER AS KITCHENETTE. MECHANICAL SYSTEM TO PROVIDE A MINIMUM OF FOUR AIR CHANGES PER HOUR FOR EACH BATHROOM FROM 6 A.M. TO 12 MIDNIGHT.
- PROVIDE BELL AT APARTMENT ENTRANCE DOOR AND MAIL RECEPTACLE, AS PER SECTION 67, M.D.L. WHEREVER BELL IS INSTALLED AT ENTRANCE TO MULTIPLE DWELLING AND MAIL RECEPTACLE IT SHALL BE KEPT IN GOOD CONDITION AT ALL TIMES.
- COMPLY WITH LOCAL LAW 78 FOR ASBESTOS.
- COMPLY WITH NYC BC CHAPTER 11 AND APPENDIX P FOR HANDICAPPED ACCESSIBILITY.
- UPON COMPLETION OF WORK, OWNER SHALL OBTAIN A CERTIFICATE OF OCCUPANCY THE BUILDING DEPARTMENT.

HOUSING MAINTENANCE CODE

- THE OWNER OF THE MULTIPLE DWELLINGS SHALL KEEP THE PREMISES IN GOOD REPAIR.
- THE OWNER SHALL KEEP THE ROOFS, YARDS, COURTS & OTHER OPEN SPACES CLEAN & FREE FROM DIRT, FILTH, GARBAGE OR OTHER OFFENSIVE MATERIALS.
- PAINING OF PUBLIC PARTS WITHIN DWELLINGS TO COMPLY WITH SECTION D08B12.1 H.M.C.
- PAINTING OF WINDOW FRAMES TO COMPLY WITH SECTION D08-12.03 H.M.C.
- PREMISES TO BE MAINTAINED & KEPT FREE OF ROCKET & INSECT INFESTATION AS PER SECTION D08-13.01 & D08-13.05 H.M.C.
- RECEPTACLES FOR COLLECTION OF WASTE MATTER TO BE PROVIDED AS PER SECTION D08-13.05 & D08-14.05 H.M.C.
- KEEP & MAINTAIN A SUPPLY OF PURE & WHOLESOME WATER SUFFICIENT IN QUANTITY AT SURFICENT PRESSURE TO KEEP ALL PLUMBING FIXTURES ADEQUATELY SUPPLIED FOR THEIR SANITARY MAINTENANCE.
- MAINTAIN & KEEP AND/OR REPAIR THE PLUMBING & DRAINAGE SYSTEM INCLUDING WATER CLOSETS, TOILETS, SINKS & OTHER FIXTURES.
- THE DRAINAGE OF ROOFS, COURTS & YARDS SHALL COMPLY WITH D08-16.03 H.M.C.
- HEAT & HOT WATER REQUIREMENTS AS PER ARTICLE 17 OF H.M.C. CENTRAL HEATING SYSTEM AS PER BUILDING CODES, MINIMUM TEMPERATURES TO BE MAINTAINED AS PER SECTION D08-17.03. CENTRAL HEATING SYSTEM TO BE INSPECTED YEARLY BY QUALIFIED PERSON IN ACCORDANCE WITH SECTION D08-17.05 OF H.M.C. SUPPLY OF HOT WATER AS PER SECTION D08-17.07.
- YEARLY INSPECTIONS OF CENTRAL HEATING PLANT BY QUALIFIED PERSON TO BE MADE AS PER SECTION D08-17.06 H.M.C.
- PROVIDE ELECTRICAL LIGHTING EQUIPMENT IN ALL DWELLINGS AS PER SECTION D08-19.01.
- PROVIDE AND MAINTAIN ELECTRIC LIGHTING FIXTURES IN EVERY PUBLIC HALL, STAIR OR PRESTAIR IN ACCORDANCE WITH SECTION D08-19.03 & 19.05.
- PROPER ELECTRIC LIGHTS TO BE PROVIDED NEAR ENTRANCE, YARDS, COURTS & STAIRS TO SECTION D08-19.07 H.M.C. ON SEPARATE CIRCUIT OR CONNECTED TO HOUSE LINES SERVING PUBLIC HALLS, AND IN ACCORDANCE WITH REQUIREMENTS & APPROVAL OF THE DEPARTMENT OF WATER SUPPLY, GAS & ELECTRICITY.

SMOKE DETECTOR NOTES:

- SMOKE DETECTORS SHALL BE INSTALLED AS REQUIRED BY LOCAL LAW 112 OF 2013 AND IN ACCORDANCE WITH BC 907.2 LISTED BY AN ACCEPTABLE TESTING LABORATORY, COMPLY WITH ICODES A11.1 FOR GROUP R-2 OCCUPANCIES AND TESTED IN ACCORDANCE WITH WPA 7.2.
- WALL OR CEILING MOUNTED SMOKE DETECTORS SHALL BE PROVIDED AND MAINTAINED IN EACH DWELLING UNIT IN GROUPS R-2, R-3 AND I-1 IN THE FOLLOWING LOCATIONS:
 - ON EACH AND EVERY FLOOR LEVEL OF A DWELLING UNIT INCLUDING BELOW GRADE LEVELS AND PENNYWAYS AND;
 - IN EACH ROOM USED FOR SLEEPING PURPOSES AND;
 - WITHIN 10' OF THE DOOR TO SUCH ROOM.
- UNITS TO BE HARD WIRED WITH INSTALLATION COMPLYING WITH RSI-11 & RSI-12 OR SECTION 907.2.12.3 OF THE BUILDING CODE AS APPLICABLE, RECEIVING PRIMARY POWER FROM THE BUILDING WIRING WITH NO SWITCHES IN THE CIRCUITS OTHER THAN THE CURRENT DEVICE PROTECTING THE BRANCH CIRCUIT AND SHALL HAVE A BATTERY BACKUP.
- MULTIPLE SMOKE DETECTOR WHEN INSTALLED WITHIN DWELLING UNIT (GROUPS R-2 AND R-3) OR SLEEPING UNIT (GROUP R-1) SHALL BE INTERCONNECTED SO AS THE ACTIVATION OF ONE ALARM SHALL ACTIVATE ALL OF THE ALARMS IN THAT UNIT.
- SMOKE DETECTOR UNITS MUST BE EITHER IONIZATION CHAMBER TYPE OR THE PHOTOELECTRIC DETECTOR TYPE. MAINTENANCE SHALL BE IN CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS. WHERE A SMOKE DETECTOR ALARM RECEIVES PRIMARY OR BACKUP POWER FROM A BATTERY, THE ALARM SHALL BE A BATTERY. WHEN BATTERIES ARE LOW, THE BATTERY SHALL BE OF A REMOVABLE TYPE, IT SHALL BE REPLACED IN CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- UNITS TO BE APPROVED BY THE BOARD OF STANDARDS AND APPEALS ACCEPTED PURSUANT TO RULES AND REGULATIONS PROMULGATED BY THE COMMISSIONER OR BE LISTED BY AN ACCEPTABLE TESTING LABORATORY SUCH AS:
 - UL UNDERWRITERS LABORATORIES 333 PENNGEN ROAD NORTH BROOKFIELD, IL 60062-2098 STANDARD REFERENCE NUMBER TITLE 217-89 STANDARD FOR SINGLE AND MULTIPLE STATION SMOKE ALARMS.
 - CANADIAN STANDARDS ASSOC., ONTARIO CANADA, MEA LAB. NO. 25-94.
 - UNDERWRITERS LAB. OF CANADA, ONTARIO, CANADA, MEA LAB. NO. 81-80-L.

CARBON MONOXIDE DETECTOR NOTES AS PER 2008 CODE

- THE INSTALLATION OR WIRING AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE NYC ADMINISTRATIVE CODE.
- EVERY DWELLING UNIT (INCLUDING WITHIN OCCUPANCY GROUP R-3 WHERE A FOSSEL FUEL-BURNING FURNACE OR BOILER IS LOCATED) SHALL BE EQUIPPED WITH AN OPERABLE CARBON MONOXIDE DETECTING DEVICE APPROVED IN ACCORDANCE WITH THE RULES PROMULGATED BY THE COMMISSIONER IN CONSULTATION WITH THE FIRE DEPARTMENT AND THE DEPARTMENT OF HEALTH AND MENTAL HYGIENE.
- THERE SHALL BE INSTALLED AT LEAST ONE APPROVED AND OPERATIONAL CARBON MONOXIDE DETECTING DEVICE WITH FIFTEEN FEET OF EACH ROOM LAWFULLY USED FOR SLEEPING PURPOSES, OR ONE PER EACH DWELLING UNIT, WHICHEVER MAY APPLY.
- SUCH CARBON MONOXIDE DETECTING DEVICE MAY BE COMBINED WITH A SMOKE DETECTOR THAT COMBLES WITH THE PROVISIONS OF THIS TITLE AND ANY APPLICABLE RULES PROMULGATED THEREUNDER, REF. MECHANICAL HOME LAW 67.
- ALL CARBON MONOXIDE DETECTING DEVICES REQUIRED TO BE PROVIDED AND INSTALLED PURSUANT TO MUNICIPAL HOME RULE LAW 67, SHALL BE OF A TYPE AUTHORIZED BY RULES PROMULGATED BY THE COMMISSIONER.
- CARBON MONOXIDE DETECTING DEVICE SHALL BE KEPT AND MAINTAINED IN GOOD REPAIR AND BE REPLACED IN CASE SUCH DEVICE IS STOLEN, REMOVED, MISSING OR RENDERED INOPERABLE.
- IT SHALL BE UNLAWFUL FOR ANY PERSON TO TAMPER WITH OR RENDER INOPERABLE CARBON MONOXIDE DETECTING DEVICE, EXCEPT FOR REPLACING THE BATTERIES OR FOR OTHER MAINTENANCE PURPOSES.
- HARDWIRED CARBON MONOXIDE DETECTORS SHALL COMPLY AND BE INSTALLED IN ACCORDANCE WITH 163-13.13.10 TO 14 AND SEC. 202.2.0.2 THROUGH 202.2.0.3. IT SHALL BE PROVIDED IN EVERY DWELLING UNIT WITH FIFTEEN FEET OF THE PRIMARY ENTRANCE OF EACH BEDROOM.
- CARBON MONOXIDE ALARMS AND DETECTORS SHALL BE LISTED IN ACCORDANCE WITH UL 2084 AND UL 2075 AND SHALL BE INSTALLED IN ACCORDANCE WITH BC 908.7.

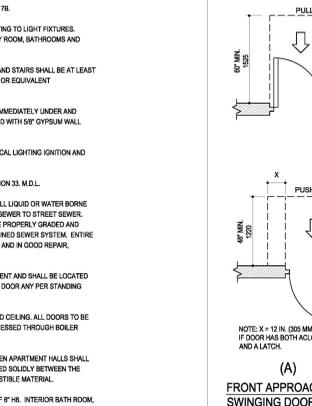
EARTHQUAKE NOTE:

THE BUILDING IS IN COMPLIANCE WITH BC 1621. THE SEPARATION SHALL COMPLY WITH 1709.3.96 (1" PER 50FT HEIGHT)

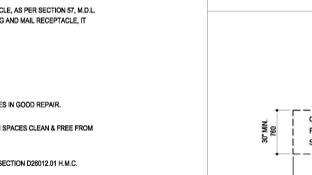
PROFESSIONAL STATEMENT:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN CONFORMANCE WITH THE ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE, USING CHAPTER 5.

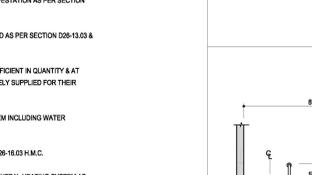
MANEUVERING CLEARANCE AT DOORS & RAMPS



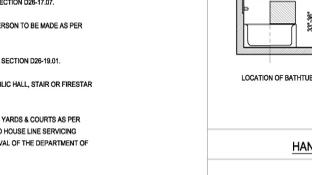
HANDICAPPED DETAILS FOR APARTMENTS (BATHROOM)



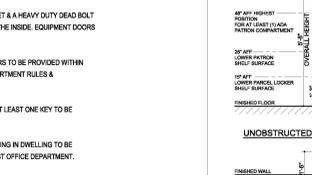
HANDICAP COUNTER DETAILS



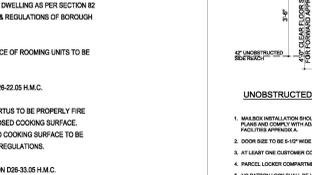
HIC BATHTUB DETAIL



HANDICAPPED DETAILS FOR MAILBOXES



HANDICAPPED DETAILS FOR APARTMENTS (KITCHENS)



SYMBOL KEY

- COUNTERTOP OR WALL-MOUNTED OVEN
- PULL-OUT BOARD PREFERRED WITH SELF-OPENING DOOR
- CLEAR OVEN SPACE
- BOTTOM-HINGED DOOR
- RANGE OVEN

MULTIPLE DWELLING LAW (M.D.L.) NOTES

- PREMISES TO COMPLY WITH THE MULTIPLE DWELLING LAW, ARTICLE 7B.
- CONSTRUCTION TO CONFORM WITH SECTION 4 OF M.D.L. RELATIVE TO LIGHT FIXTURES. PROPER LIGHT TO BE PROVIDED FOR ALL MEANS OF EGRESS, EVERY ROOM, BATHROOMS AND STAIRS OR PUBLIC HALLS.
- ALL LIGHT FIXTURES IN VESTIBULE, ENTRANCE HALL, PUBLIC HALLS AND STAIRS SHALL BE AT LEAST 80 WATTS INCANDESCENT OR 20 WATTS COOL WHITE FLUORESCENT OR EQUIVALENT ILLUMINATION.
- IN NEW KITCHENS OR KITCHENETTES, ALL COMBUSTIBLE MATERIAL IMMEDIATELY UNDER AND WITHIN ONE FOOT OF ANY COOKING APPARATUS SHALL BE COVERED WITH 5/8" GYPSUM WALL BOARD, AS PER SECTION 203.3.3.
- GAS RANGE PER SECTION 303.3.EE. SHALL BE PROVIDED WITH ELECTRICAL LIGHTING IGNITION AND SHALL BE APPROVED BY A.G.A. OR B.S.A.
- ALL KITCHENETTES TO BE MECHANICALLY VENTILATED AS PER SECTION 303.3.M.D.L.
- ALL PLUMBING AND DRAINAGE TO COMPLY WITH SECTION 77 M.D.L. ALL LIQUID DR WATER BORNE WASTE FROM PLUMBING FIXTURES SHALL BE CONVEYED BY HOSE SEWER TO STREET SEWER. ALL ROOFS, TERRACES, SHAFTS, COURT AREAS AND YARD SHALL BE PROPERLY GRADED AND DRAINED TO BE CONNECTED TO STREET STORM DRAIN OR TO COMBINED SEWER SYSTEM. ENTIRE PLUMBING AND DRAINAGE SYSTEM TO BE KEPT CLEAN AT ALL TIMES AND IN GOOD REPAIR, INCLUDING PLUMBING FIXTURES.
- PERIPHERIES TO BE PROVIDED TO ALL ENTRANCE DOORS TO APARTMENT AND SHALL BE LOCATED TO ENABLE A PERSON TO VIEW FROM THE INSIDE OF THE ENTRANCE DOOR ANY PER STANDING IMMEDIATELY OUTSIDE THE ENTRANCE AS PER SECTION 91 B.D.L.
- BOILER SHALL BE ENCLOSED IN A ROOM WITH FIREPROOF WALLS AND CEILING. ALL DOORS TO BE FIREPROOF, SELF-CLOSING ASSEMBLIES. CELLAR SHALL NOT BE ACCESSED THROUGH BOILER ROOM, AS PER SECTION 65 M.D.L.
- FIRE STOPPING OF PARTITIONS BETWEEN APARTMENTS AND BETWEEN APARTMENT WALLS SHALL COMPLY WITH SECTION 241, M.D.L. SUCH PARTITIONS SHALL BE FILLED SOLELY WITH NON-COMBUSTIBLE MATERIAL.
- BATHROOM TO HAVE CERAMIC TILE FLOORS AND A MINIMUM BASE OF 1/8" INTERIOR BATH ROOM, IF ANY, TO BE MECHANICALLY VENTILATED IN SAME MANNER AS KITCHENETTE. MECHANICAL SYSTEM TO PROVIDE A MINIMUM OF FOUR AIR CHANGES PER HOUR FOR EACH BATHROOM FROM 6 A.M. TO 12 MIDNIGHT.
- PROVIDE BELL AT APARTMENT ENTRANCE DOOR AND MAIL RECEPTACLE, AS PER SECTION 67, M.D.L. WHEREVER BELL IS INSTALLED AT ENTRANCE TO MULTIPLE DWELLING AND MAIL RECEPTACLE IT SHALL BE KEPT IN GOOD CONDITION AT ALL TIMES.
- COMPLY WITH LOCAL LAW 78 FOR ASBESTOS.
- COMPLY WITH NYC BC CHAPTER 11 AND APPENDIX P FOR HANDICAPPED ACCESSIBILITY.
- UPON COMPLETION OF WORK, OWNER SHALL OBTAIN A CERTIFICATE OF OCCUPANCY THE BUILDING DEPARTMENT.

HOUSING MAINTENANCE CODE

- THE OWNER OF THE MULTIPLE DWELLINGS SHALL KEEP THE PREMISES IN GOOD REPAIR.
- THE OWNER SHALL KEEP THE ROOF, YARDS, COURTS & OTHER OPEN SPACES CLEAN & FREE FROM DIRT, FILTH, GARBAGE OR OTHER OFFENSIVE MATERIALS.
- PAINING OF PUBLIC PARTS WITHIN DWELLINGS TO COMPLY WITH SECTION D08B12.1 H.M.C.
- PAINTING OF WINDOW FRAMES TO COMPLY WITH SECTION D08-12.03 H.M.C.
- PREMISES TO BE MAINTAINED & KEPT FREE OF ROCKET & INSECT INFESTATION AS PER SECTION D08-13.01 & D08-13.05 H.M.C.
- RECEPTACLES FOR COLLECTION OF WASTE MATTER TO BE PROVIDED AS PER SECTION D08-13.05 & D08-14.05 H.M.C.
- KEEP & MAINTAIN A SUPPLY OF PURE & WHOLESOME WATER SUFFICIENT IN QUANTITY AT SURFICENT PRESSURE TO KEEP ALL PLUMBING FIXTURES ADEQUATELY SUPPLIED FOR THEIR SANITARY MAINTENANCE.
- MAINTAIN & KEEP AND/OR REPAIR THE PLUMBING & DRAINAGE SYSTEM INCLUDING WATER CLOSETS, TOILETS, SINKS & OTHER FIXTURES.
- THE DRAINAGE OF ROOFS, COURTS & YARDS SHALL COMPLY WITH D08-16.03 H.M.C.
- HEAT & HOT WATER REQUIREMENTS AS PER ARTICLE 17 OF H.M.C. CENTRAL HEATING SYSTEM AS PER BUILDING CODES, MINIMUM TEMPERATURES TO BE MAINTAINED AS PER SECTION D08-17.03. CENTRAL HEATING SYSTEM TO BE INSPECTED YEARLY BY QUALIFIED PERSON IN ACCORDANCE WITH SECTION D08-17.05 OF H.M.C. SUPPLY OF HOT WATER AS PER SECTION D08-17.07.
- YEARLY INSPECTIONS OF CENTRAL HEATING PLANT BY QUALIFIED PERSON TO BE MADE AS PER SECTION D08-17.06 H.M.C.
- PROVIDE ELECTRICAL LIGHTING EQUIPMENT IN ALL DWELLINGS AS PER SECTION D08-19.01.
- PROVIDE AND MAINTAIN ELECTRIC LIGHTING FIXTURES IN EVERY PUBLIC HALL, STAIR OR PRESTAIR IN ACCORDANCE WITH SECTION D08-19.03 & 19.05.
- PROPER ELECTRIC LIGHTS TO BE PROVIDED NEAR ENTRANCE, YARDS, COURTS & STAIRS TO SECTION D08-19.07 H.M.C. ON SEPARATE CIRCUIT OR CONNECTED TO HOUSE LINES SERVING PUBLIC HALLS, AND IN ACCORDANCE WITH REQUIREMENTS & APPROVAL OF THE DEPARTMENT OF WATER SUPPLY, GAS & ELECTRICITY.

SMOKE DETECTOR NOTES:

- SMOKE DETECTORS SHALL BE INSTALLED AS REQUIRED BY LOCAL LAW 112 OF 2013 AND IN ACCORDANCE WITH BC 907.2 LISTED BY AN ACCEPTABLE TESTING LABORATORY, COMPLY WITH ICODES A11.1 FOR GROUP R-2 OCCUPANCIES AND TESTED IN ACCORDANCE WITH WPA 7.2.
- WALL OR CEILING MOUNTED SMOKE DETECTORS SHALL BE PROVIDED AND MAINTAINED IN EACH DWELLING UNIT IN GROUPS R-2, R-3 AND I-1 IN THE FOLLOWING LOCATIONS:
 - ON EACH AND EVERY FLOOR LEVEL OF A DWELLING UNIT INCLUDING BELOW GRADE LEVELS AND PENNYWAYS AND;
 - IN EACH ROOM USED FOR SLEEPING PURPOSES AND;
 - WITHIN 10' OF THE DOOR TO SUCH ROOM.
- UNITS TO BE HARD WIRED WITH INSTALLATION COMPLYING WITH RSI-11 & RSI-12 OR SECTION 907.2.12.3 OF THE BUILDING CODE AS APPLICABLE, RECEIVING PRIMARY POWER FROM THE BUILDING WIRING WITH NO SWITCHES IN THE CIRCUITS OTHER THAN THE CURRENT DEVICE PROTECTING THE BRANCH CIRCUIT AND SHALL HAVE A BATTERY BACKUP.
- MULTIPLE SMOKE DETECTOR WHEN INSTALLED WITHIN DWELLING UNIT (GROUPS R-2 AND R-3) OR SLEEPING UNIT (GROUP R-1) SHALL BE INTERCONNECTED SO AS THE ACTIVATION OF ONE ALARM SHALL ACTIVATE ALL OF THE ALARMS IN THAT UNIT.
- SMOKE DETECTOR UNITS MUST BE EITHER IONIZATION CHAMBER TYPE OR THE PHOTOELECTRIC DETECTOR TYPE. MAINTENANCE SHALL BE IN CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS. WHERE A SMOKE DETECTOR ALARM RECEIVES PRIMARY OR BACKUP POWER FROM A BATTERY, THE ALARM SHALL BE A BATTERY. WHEN BATTERIES ARE LOW, THE BATTERY SHALL BE OF A REMOVABLE TYPE, IT SHALL BE REPLACED IN CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- UNITS TO BE APPROVED BY THE BOARD OF STANDARDS AND APPEALS ACCEPTED PURSUANT TO RULES AND REGULATIONS PROMULGATED BY THE COMMISSIONER OR BE LISTED BY AN ACCEPTABLE TESTING LABORATORY SUCH AS:
 - UL UNDERWRITERS LABORATORIES 333 PENNGEN ROAD NORTH BROOKFIELD, IL 60062-2098 STANDARD REFERENCE NUMBER TITLE 217-89 STANDARD FOR SINGLE AND MULTIPLE STATION SMOKE ALARMS.
 - CANADIAN STANDARDS ASSOC., ONTARIO CANADA, MEA LAB. NO. 25-94.
 - UNDERWRITERS LAB. OF CANADA, ONTARIO, CANADA, MEA LAB. NO. 81-80-L.

CARBON MONOXIDE DETECTOR NOTES AS PER 2008 CODE

- THE INSTALLATION OR WIRING AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE NYC ADMINISTRATIVE CODE.
- EVERY DWELLING UNIT (INCLUDING WITHIN OCCUPANCY GROUP R-3 WHERE A FOSSEL FUEL-BURNING FURNACE OR BOILER IS LOCATED) SHALL BE EQUIPPED WITH AN OPERABLE CARBON MONOXIDE DETECTING DEVICE APPROVED IN ACCORDANCE WITH THE RULES PROMULGATED BY THE COMMISSIONER IN CONSULTATION WITH THE FIRE DEPARTMENT AND THE DEPARTMENT OF HEALTH AND MENTAL HYGIENE.
- THERE SHALL BE INSTALLED AT LEAST ONE APPROVED AND OPERATIONAL CARBON MONOXIDE DETECTING DEVICE WITH FIFTEEN FEET OF EACH ROOM LAWFULLY USED FOR SLEEPING PURPOSES, OR ONE PER EACH DWELLING UNIT, WHICHEVER MAY APPLY.
- SUCH CARBON MONOXIDE DETECTING DEVICE MAY BE COMBINED WITH A SMOKE DETECTOR THAT COMBLES WITH THE PROVISIONS OF THIS TITLE AND ANY APPLICABLE RULES PROMULGATED THEREUNDER, REF. MECHANICAL HOME LAW 67.
- ALL CARBON MONOXIDE DETECTING DEVICES REQUIRED TO BE PROVIDED AND INSTALLED PURSUANT TO MUNICIPAL HOME RULE LAW 67, SHALL BE OF A TYPE AUTHORIZED BY RULES PROMULGATED BY THE COMMISSIONER.
- CARBON MONOXIDE DETECTING DEVICE SHALL BE KEPT AND MAINTAINED IN GOOD REPAIR AND BE REPLACED IN CASE SUCH DEVICE IS STOLEN, REMOVED, MISSING OR RENDERED INOPERABLE.
- IT SHALL BE UNLAWFUL FOR ANY PERSON TO TAMPER WITH OR RENDER INOPERABLE CARBON MONOXIDE DETECTING DEVICE, EXCEPT FOR REPLACING THE BATTERIES OR FOR OTHER MAINTENANCE PURPOSES.
- HARDWIRED CARBON MONOXIDE DETECTORS SHALL COMPLY AND BE INSTALLED IN ACCORDANCE WITH 163-13.13.10 TO 14 AND SEC. 202.2.0.2 THROUGH 202.2.0.3. IT SHALL BE PROVIDED IN EVERY DWELLING UNIT WITH FIFTEEN FEET OF THE PRIMARY ENTRANCE OF EACH BEDROOM.
- CARBON MONOXIDE ALARMS AND DETECTORS SHALL BE LISTED IN ACCORDANCE WITH UL 2084 AND UL 2075 AND SHALL BE INSTALLED IN ACCORDANCE WITH BC 908.7.

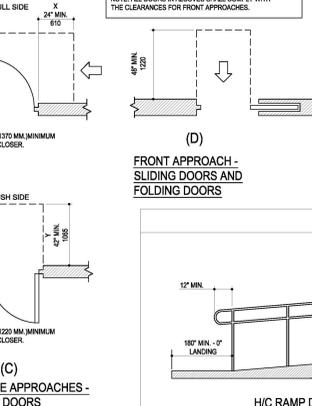
EARTHQUAKE NOTE:

THE BUILDING IS IN COMPLIANCE WITH BC 1621. THE SEPARATION SHALL COMPLY WITH 1709.3.96 (1" PER 50FT HEIGHT)

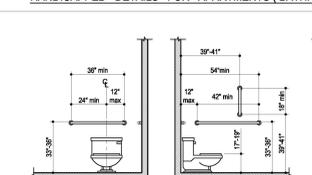
PROFESSIONAL STATEMENT:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN CONFORMANCE WITH THE ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE, USING CHAPTER 5.

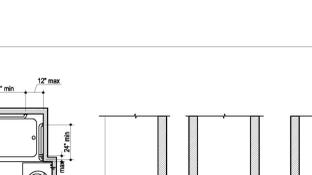
MANEUVERING CLEARANCE AT DOORS & RAMPS



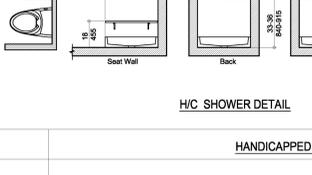
HANDICAPPED DETAILS FOR APARTMENTS (BATHROOM)



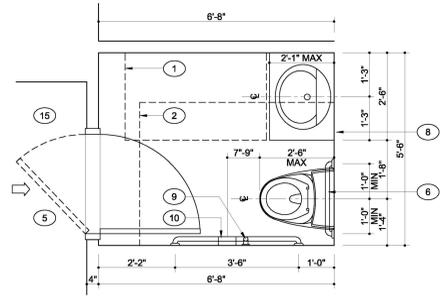
HANDICAP COUNTER DETAILS



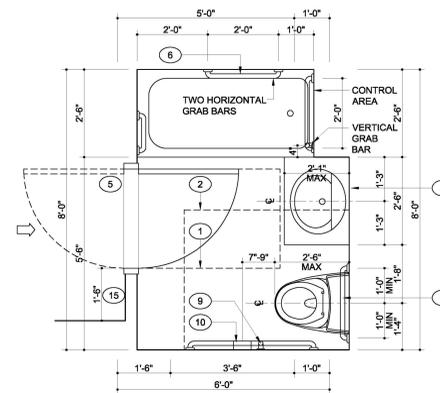
HIC BATHTUB DETAIL



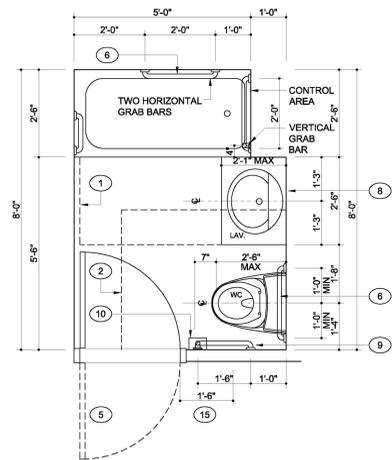
HANDICAPPED DETAILS FOR MAILBOXES



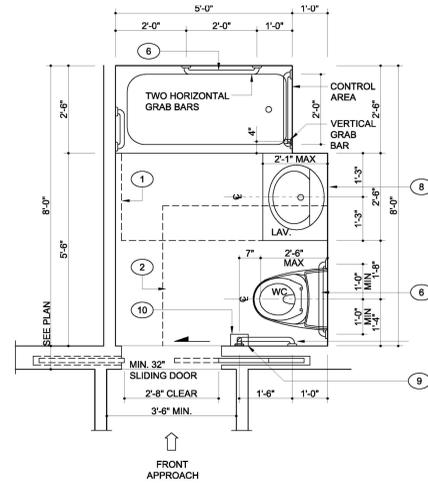
R-2 OCCUPANCY TYPE B UNIT APPENDIX P POWDER ROOM
TYPICAL LAYOUT (HINGED DOOR FRONT APPROACH)
SCALE 1/2"=1'-0"



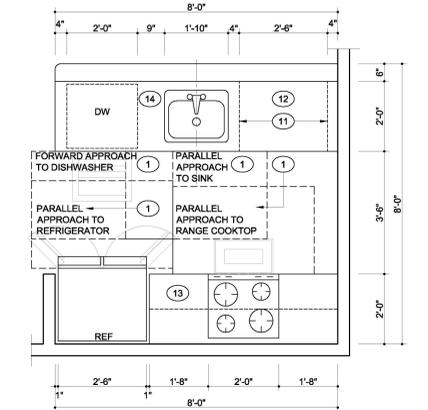
R-2 OCCUPANCY TYPE B UNIT APPENDIX P BATHROOM
TYPICAL LAYOUT STYLE 2
SCALE 1/2"=1'-0"



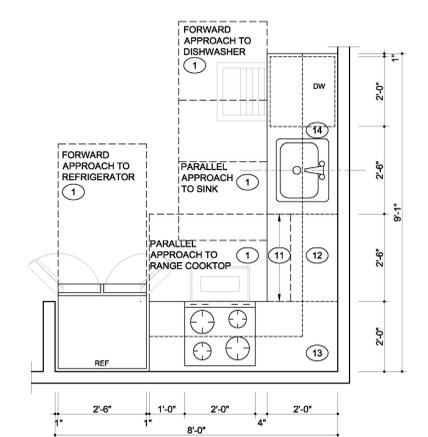
R-2 OCCUPANCY TYPE B UNIT APPENDIX P BATHROOM
TYPICAL LAYOUT STYLE 1
SCALE 1/2"=1'-0"



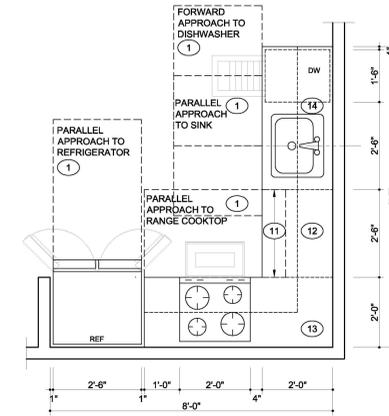
R-2 OCCUPANCY TYPE B UNIT APPENDIX P BATHROOM
TYPICAL LAYOUT STYLE 1 (POCKET DOOR FRONT APPROACH)
SCALE 1/2"=1'-0"



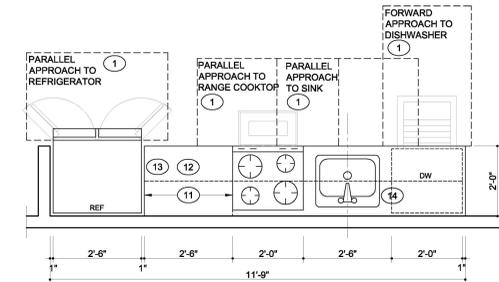
R-2 OCCUPANCY TYPE B KITCHEN
TYPICAL PARALLEL LAYOUT STYLE 1
SCALE 1/2"=1'-0"



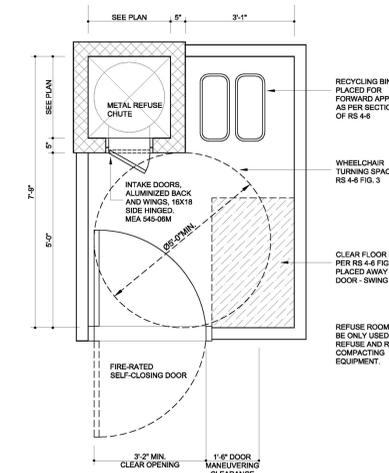
R-2 OCCUPANCY TYPE B KITCHEN
TYPICAL L-SHAPED LAYOUT STYLE 1
SCALE 1/2"=1'-0"



R-2 OCCUPANCY TYPE B KITCHEN
TYPICAL L-SHAPED LAYOUT STYLE 2
SCALE 1/2"=1'-0"



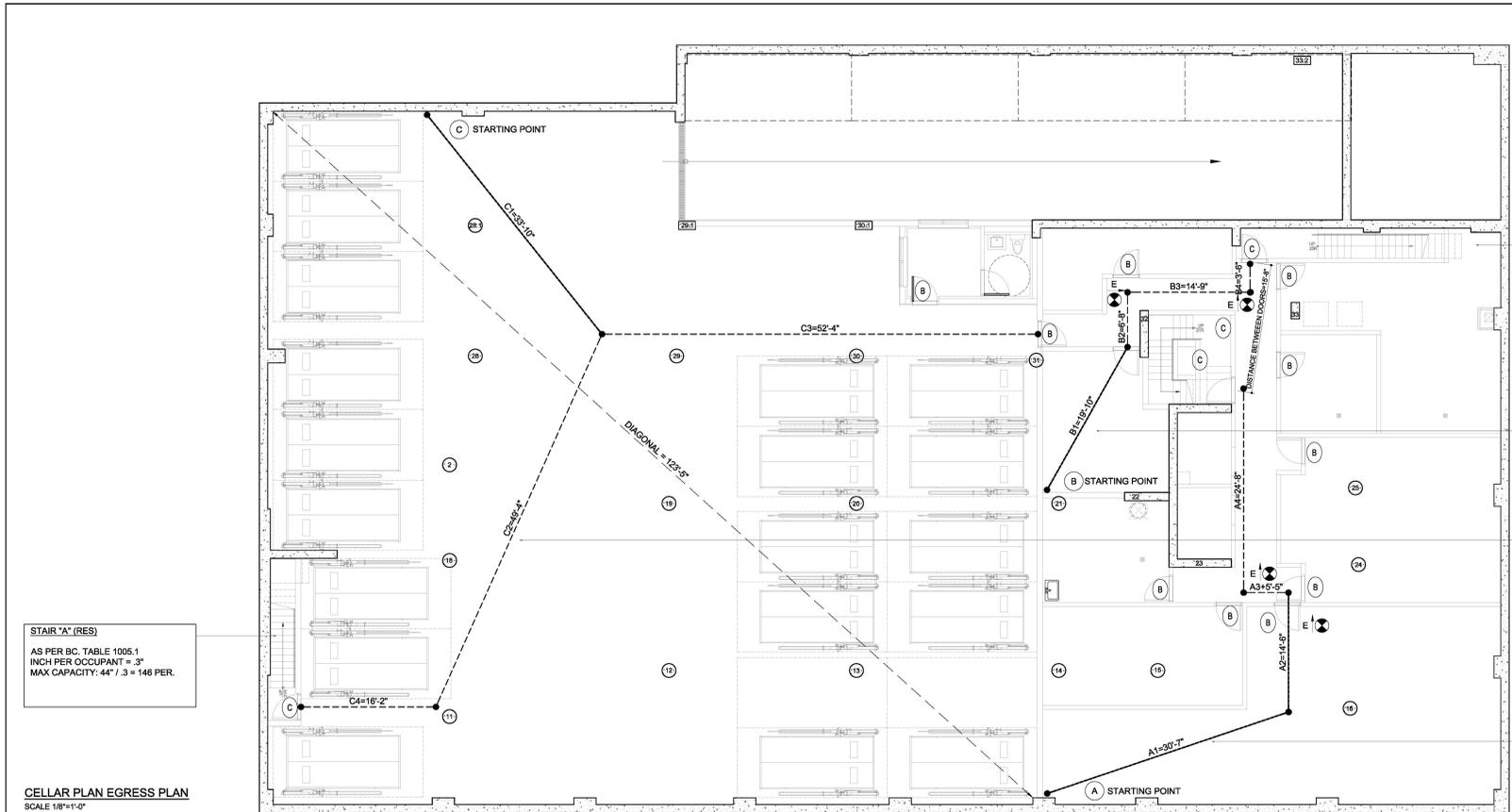
R-2 OCCUPANCY TYPE B KITCHEN
TYPICAL STRAIGHT LAYOUT STYLE 1
SCALE 1/2"=1'-0"



REFUSE DISPOSAL / STORAGE ROOM
TYPICAL LAYOUT STYLE 1
SCALE 1/2"=1'-0"

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC 862 3rd Ave, Suite 132 New York, NY 10022 646-439-8000	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. 25 West 31st St, 8th Floor New York, NY 10001 212-268-8200 info@issacstern.com issacstern.com	STRUCTURAL ENGINEER: ADG ENGINEERING PC 744 Broad St, 10th Floor Newark, NJ 07102 973-242-2628 info@adg.com	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC 2613 East 69th Street Brooklyn, NY 11234 (718) 966-0800	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: HANDICAPPED CLEARANCE DETAILS SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: A003-00
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ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



STAIR "A" (RES)
 AS PER BC. TABLE 1005.1
 INCH PER OCCUPANT = .3"
 MAX CAPACITY: 44' / .3 = 146 PER.

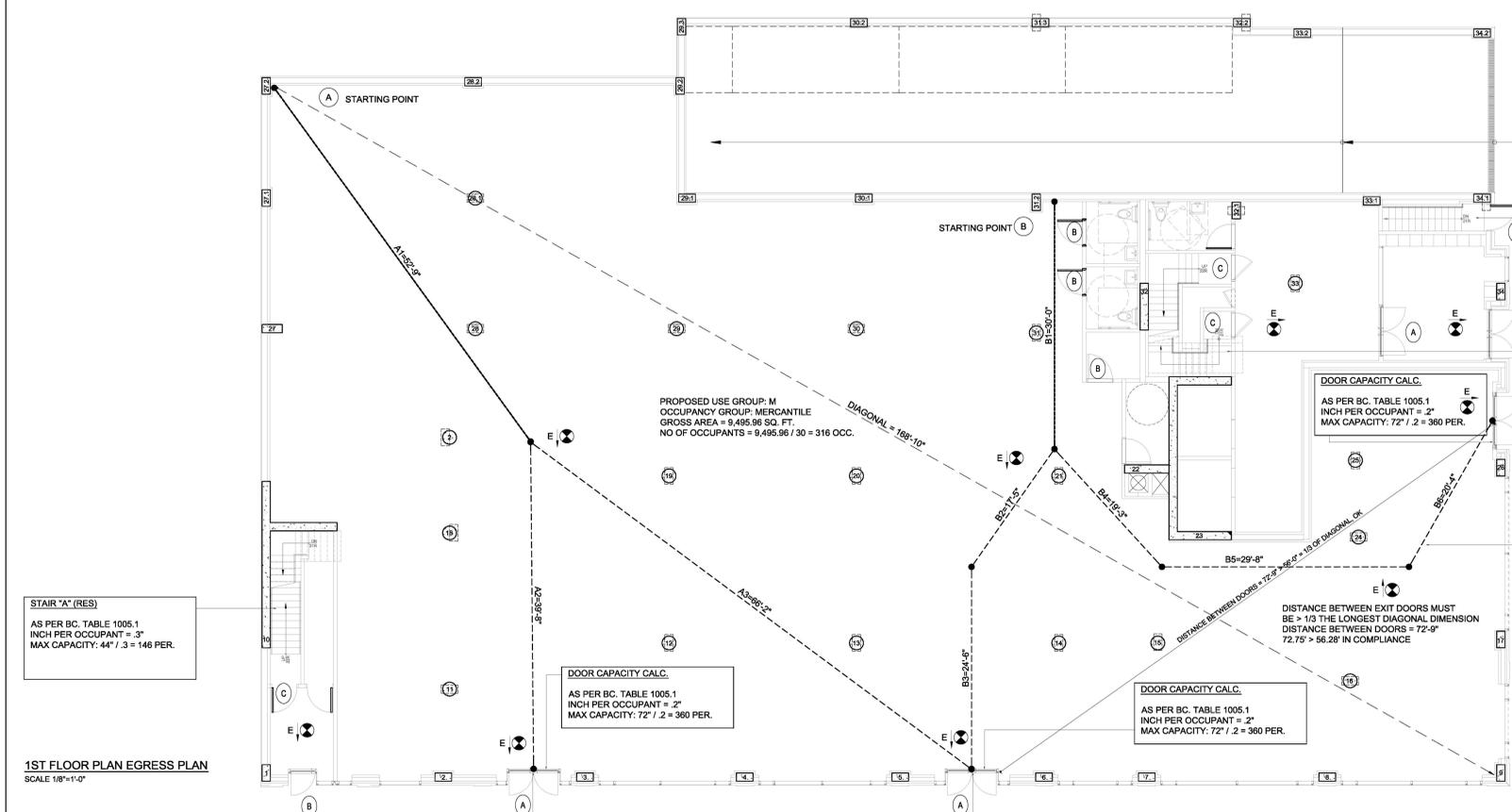
CELLAR PLAN EGRESS PLAN
 SCALE: 1/8"=1'-0"

STAIR "C" (RES)
 AS PER BC. TABLE 1005.1
 INCH PER OCCUPANT = .3"
 MAX CAPACITY: 36' / .3 = 120 PER.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	19'-10"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE B1-B2-B3-B4	< 200'	44'-9"	O.K.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	33'-10"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE C1-C2-C4	< 200'	99'-4"	O.K.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	45'-1"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE A1-A2-A3-A4	< 200'	82'-4"	O.K.



STAIR "A" (RES)
 AS PER BC. TABLE 1005.1
 INCH PER OCCUPANT = .3"
 MAX CAPACITY: 44' / .3 = 146 PER.

1ST FLOOR PLAN EGRESS PLAN
 SCALE: 1/8"=1'-0"

STAIR "C" (RES)
 AS PER BC. TABLE 1005.1
 INCH PER OCCUPANT = .3"
 MAX CAPACITY: 36' / .3 = 120 PER.

STAIR "B" (RES)
 AS PER BC. TABLE 1005.1
 INCH PER OCCUPANT = .3"
 MAX CAPACITY: 44' / .3 = 146 PER.

DOOR CAPACITY CALC.
 AS PER BC. TABLE 1005.1
 INCH PER OCCUPANT = .2"
 MAX CAPACITY: 72' / .2 = 360 PER.

DOOR CAPACITY CALC.
 AS PER BC. TABLE 1005.1
 INCH PER OCCUPANT = .2"
 MAX CAPACITY: 72' / .2 = 360 PER.

DOOR CAPACITY CALC.
 AS PER BC. TABLE 1005.1
 INCH PER OCCUPANT = .2"
 MAX CAPACITY: 72' / .2 = 360 PER.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	52'-9"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE A1-A2	< 200'	92'-5"	O.K.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	30'-0"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE B1+B2+B3	< 200'	71'-11"	O.K.

ENTRANCES & EXITS

- EXIT AS DEFINED IS THAT PORTION OF A MEANS OF EGRESS SYSTEM WHICH IS SEPARATED FROM OTHER INTERIOR SPACES OF A BUILDING OR STRUCTURE BY FIRE-RESISTANCE-RATED CONSTRUCTION AND OPENING PROTECTIVES AS REQUIRED TO PROVIDE A PROTECTED PATH OF EGRESS TRAVEL BETWEEN THE EXIT ACCESS AND THE EXIT DISCHARGE. EXITS INCLUDE EXTERIOR EXIT DOORS AT GROUND LEVEL, EXIT ENCLOSURES, EXIT PASSAGEWAYS, EXTERIOR EXIT STAIRS, EXTERIOR EXIT RAMPS AND HORIZONTAL EXITS. (1002.1)
- PUBLIC WAY AS DEFINED IS A STREET, ALLEY OR OTHER PARCEL OF LAND OPEN TO THE OUTSIDE AIR LEADING TO A STREET, THAT HAS BEEN DEEDED, DEDICATED OR OTHERWISE PERMANENTLY APPROPRIATED TO THE PUBLIC FOR PUBLIC USE AND WHICH HAS A CLEAR WIDTH AND HEIGHT OF NOT LESS THAN 10 FEET. (1002.1)
- ALL ENTRANCES AND EXTERIOR GROUND FLOOR EXIT DOORS TO BUILDINGS AND FACILITIES SHALL BE MADE ACCESSIBLE TO PERSONS WITH DISABILITIES.
- REVOLVING DOORS SHALL NOT BE USED AS A REQUIRED ENTRANCE FOR PERSONS WITH DISABILITIES.
- DURING PERIODS OF PARTIAL OR RESTRICTED USE OF A BUILDING OR FACILITY, THE ENTRANCE USED FOR PRIMARY ACCESS SHALL BE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES.
- RECESSED DOORMATS SHALL BE ADEQUATELY ANCHORED TO PREVENT INTERFERENCE WITH WHEELCHAIR TRAFFIC.
- ALL GATES, INCLUDING TICKET GATES, SHALL MEET ALL APPLICABLE ACCESSIBILITY SPECIFICATIONS OF DOORS.
- EVERY REQUIRED EXIT DOORWAY SHALL BE CAPABLE OF OPENING AT LEAST 90 DEGREES, SHALL HAVE A MINIMUM CLEAR OPENING OF 32 INCHES, AND SHALL BE OF A SIZE AS TO PERMIT THE INSTALLATION OF A DOOR NOT LESS THAN 3 FEET IN WIDTH AND NOT LESS THAN 6 FEET IN HEIGHT.
- THE SPACE BETWEEN TWO CONSECUTIVE DOOR OPENINGS IN A VESTIBULE, SERVING OTHER THAN A REQUIRED EXIT STAIRWAY, SHALL PROVIDE A MINIMUM OF 48 INCHES OF CLEAR SPACE FROM ANY DOOR OPENING INTO SUCH VESTIBULE WHEN THE DOOR IS POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION. DOORS IN A SERIES SHALL SWING EITHER IN THE SAME DIRECTION OR AWAY FROM THE SPACE BETWEEN THE DOORS. SEE FIGURES 119-30 & 119-31.
- EXITS, EXIT DISCHARGE, AND PUBLIC CORRIDORS SHALL BE ILLUMINATED AT ALL TIMES AS PER BC 1008.2.
- ALL OPENABLE WINDOWS SHALL BE EQUIPPED WITH SASH LOCKS DESIGNED TO BE OPERABLE FROM THE INSIDE ONLY AS PER BC 1008.4.3.
- BUILDINGS CONTAINING 8 OR MORE DWELLING UNITS SHALL BE PROVIDED WITH AN INTERCOMMUNICATION SYSTEM AT THE DOOR GIVING ACCESS TO THE MAIN ENTRANCE LOBBY AS PER BC 1008.4.4.
- A SIGN SHALL BE PROVIDED AT EACH FLOOR LANDING IN INTERIOR VERTICAL EXIT ENCLOSURES CONNECTING MORE THAN THREE STORES DESIGNATING THE FLOOR LEVEL AS PER BC 1019.1.7.
- EXIT SIGNS SHALL BE INSTALLED IN COMPLIANCE WITH BC1011.1.
- 403.8 EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS, AN EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 907.2.12.2.
- 403.7 FIRE DEPARTMENT COMMUNICATIONS SYSTEM. A TWO-WAY FIRE DEPARTMENT COMMUNICATIONS SYSTEM SHALL BE PROVIDED FOR FIRE DEPARTMENT USE IN ACCORDANCE WITH SECTION 907.2.12.3.
- 403.8 FIRE COMMAND. A FIRE COMMAND CENTER COMPLYING WITH SECTION 911 SHALL BE PROVIDED IN A LOCATION APPROVED BY THE FIRE DEPARTMENT.
- 403.12.1 STAIRWAY COMMUNICATIONS SYSTEM. A TELEPHONE OR OTHER TWO-WAY COMMUNICATIONS SYSTEM CONNECTED TO AN APPROVED CONSTANTLY ATTENDED STATION SHALL BE PROVIDED AT NOT LESS THAN EVERY FIFTH FLOOR IN EACH REQUIRED STAIRWAY WHERE STAIR SIDE DOORS ARE LOCKED.
- ELEVATOR SHALL BE INCORPORATED WITH BC 3003.3.1 AND BE KEPT AVAILABLE FOR IMMEDIATE USE FIRE DEPARTMENT ALL HOURS OF THE NIGHT AND DAY, INCLUDING HOLIDAYS, SATURDAYS AND SUNDAYS.

DOOR NOTES (BC 1008):

- 1008.1.1.1 DOOR WIDTH. THE MIN. WIDTH OF EACH DOOR OPENING, MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP WITH THE DOOR OPEN 90 DEGREES, AND WHICH IS PART OF THE REQUIRED MEANS OF EGRESS, SHALL BE SUFFICIENT FOR THE OCCUPANT LOAD THEREOF AND SHALL PROVIDE A CLEAR WIDTH OF NOT LESS THAN 32". DOOR OPENINGS TO STORAGE CLOSETS LESS THAN 10 SF. IN AREA SHALL NOT BE LIMITED BY THE MIN. WIDTH.
- 1008.1.1.2 PROJECTIONS INTO CLEAR WIDTH. THERE SHALL NOT BE PROJECTIONS INTO THE REQUIRED CLEAR WIDTH LOWER THAN 34" ABOVE THE FLOOR OR GROUND. PROJECTIONS INTO THE CLEAR OPENING WIDTH BETWEEN 34" AND 80" ABOVE THE FLOOR OR GROUND SHALL BE 2" MAX.
- 1008.1.1.3 HEIGHT. THE HEIGHT OF DOORS SHALL BE 80" MIN. EXCEPTIONS: DOOR OPENINGS WITHIN A DWELLING UNIT OR SLEEPING UNIT SHALL BE 78" MIN.
- 1008.1.2.1 MOUNTING. EGRESS DOORS SHALL BE SIDE-HINGED SWINGING.
- 1008.1.2.2 DIRECTION OF SWING. ALL DOORS SHALL SWING IN THE DIRECTION OF EGRESS TRAVEL EXCEPT APARTMENT ENTRY DOORS AND EXTERIOR LOBBY DOORS SERVING R2 OCCUPANCY ONLY.
- 1008.1.4 FLOOR ELEVATION. THERE SHALL BE A FLOOR OR LANDING ON EACH SIDE OF A DOOR. SUCH FLOOR OR LANDING SHALL BE AT THE SAME ELEVATION ON EACH SIDE OF THE DOOR. LANDINGS SHALL BE LEVEL EXCEPT FOR EXTERIOR LANDINGS, WHICH ARE PERMITTED TO HAVE A SLOPE NOT TO EXCEED 0.25" VERTICAL IN 12" HORIZONTAL (2% SLOPE).
- 1008.1.5 LANDINGS AT DOORS. LANDINGS SHALL HAVE A WIDTH NOT LESS THAN THE WIDTH OF THE STAIRWAY OR THE DOOR, WHICHEVER IS THE GREATER. DOORS IN THE FULLY OPEN POSITION SHALL NOT REDUCE A REQUIRED DIMENSION BY MORE THAN 7". WHEN A LANDING SERVES AN OCCUPANT LOAD OF 50 OR MORE, DOORS IN ANY POSITION SHALL NOT REDUCE THE LANDING TO LESS THAN 5 PERCENT OF ITS REQUIRED WIDTH. LANDINGS SHALL HAVE A LENGTH MEASURED IN THE DIRECTION OF TRAVEL OF NOT LESS THAN 44".
- 1008.1.6 THRESHOLDS. THRESHOLDS AT DOORWAYS SHALL NOT EXCEED 0.75 INCH IN HEIGHT FOR SLIDING DOORS SERVING DWELLING UNITS OR 0.2" FOR OTHER DOORS. RAISED THRESHOLDS AND FLOOR LEVEL CHANGES GREATER THAN 0.2" AT DOORWAYS SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN ONE UNIT VERTICAL IN TWO UNITS HORIZONTAL (50-PERCENT SLOPE).
- 1008.1.8 DOOR OPERATIONS. DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT.
- 1008.1.8.7 STAIRWAY DOORS. INTERIOR STAIRWAY MEANS OF EGRESS DOORS SHALL BE OPENABLE FROM BOTH SIDES WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT. EXCEPTIONS: STAIRWAY DISCHARGE DOORS SHALL BE OPENABLE FROM THE EGRESS SIDE AND SHALL ONLY BE LOCKED FROM THE OPPOSITE SIDE.
- 1008.4.1 ENTRANCE DOORS AND EXTERIOR EXIT DOORS. ENTRANCE DOORS AND OTHER EXTERIOR DOORS TO BE EQUIPPED WITH A HEAVY DUTY LOCK AND AUXILIARY LATCH BOLTS TO BE CONTROLLED BY A MASTER KEY, NOT THE SAME KEY AS FOR DWELLING UNITS. LIGHTS SHALL BE PROVIDED AT OR NEAR THE OUTSIDE OF THE FRONT ENTRANCE WAY OF THE BUILDING PROVIDING NOT LESS THAN 1 FOOT CANDLES (33.82 LUX) INTENSITY MEASURED AT THE FLOOR LEVEL FOR THE FULL WIDTH OF THE ENTRANCES WAY.
- 1008.4.2 DOORS TO DWELLING UNITS. DOORS TO DWELLING UNITS SHALL BE EQUIPPED WITH A HEAVY DUTY LATCH SET AND HEAVY DUTY DEAD BOLT OPERABLE BY A KEY FROM THE OUTSIDE AND TURN FROM THE INSIDE. DOORS ARE ALSO TO BE EQUIPPED WITH A CHAIN GUARD AND VIEWING DEVICE. ALL DOORS TO DWELLING UNITS TO COMPLY WITH BC 1008.4.2.

1007.4 ELEVATOR NOTES:

- TO BE CONSIDERED PART OF AN ACCESSIBLE MEANS OF EGRESS, AN ELEVATOR SHALL COMPLY WITH THE EMERGENCY OPERATION AND SIGNALING DEVICE REQUIREMENTS OF SECTION 2.7.7 OF ASME A17.1 AND SECTION 2.7.8. EMERGENCY POWER SHALL BE PROVIDED IN ACCORDANCE WITH SECTIONS 2702 AND 3003. THE ELEVATOR SHALL BE ACCESSIBLE FROM EITHER AN AREA OF RESCUE ASSISTANCE COMPLYING WITH SECTION 1007.8 OR A HORIZONTAL EXIT COMPLYING WITH SECTION 1007.1.
- EXCEPTION:
- ELEVATORS ARE NOT REQUIRED TO BE ACCESSIBLE FROM AN AREA OF RESCUE ASSISTANCE OR HORIZONTAL EXIT IN OPEN PARKING GARAGES.
 - ELEVATORS ARE NOT REQUIRED TO BE ACCESSIBLE FROM AN AREA OF RESCUE ASSISTANCE OR HORIZONTAL EXIT IN BUILDINGS AND FACILITIES EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 903.3.1.1 OR 903.3.1.2.

EGRESS SYMBOLS LEGEND

- 2 HR. FIRE RATED DEMISING WALL
- EGRESS PATH TRAVEL DISTANCE NUMBER OF PERSONS
- COMMON PATH OF TRAVEL
- DEAD END CORRIDOR
- INTERNATIONAL ACCESSIBILITY SYMBOL
- DOOR TYPE & CAPACITY (SEE DOOR SCHEDULE THIS SHEET)
- EXIT SIGN
- ROOM NUMBER DESIGNATION
- EMERGENCY LIGHT
- 4GRF-57VM SPEAKER/STROBE UNIT (TAP AT 1 WATT) MEA #478-91-E
- STAND PIPE

EGRESS DOOR SCHEDULE

DOOR #	WIDTH	CAPACITY	LOCATION
A	2(30" x 70")	240 PER. MAX.	FRONT AND REAR ENTRY
B	30" x 70"	120 PER.	APT. ENTRY DOORS, MECH. RMS, COMMON SPACES
C	30" x 70"	120 PER.	STAIRS

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	36'-8"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE B1+B2+B3+B4	< 200'	102'-0"	O.K.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	80'-6"	O.K.
DEAD END CORRIDOR	< 80'	11'-0"	O.K.
MAX TRAVEL DISTANCE C1+C2+C3+C4	< 200'	80'-6"	O.K.

STAIR "B" (RES)
AS PER BC. TABLE 1005.1
INCH PER OCCUPANT = 3"
MAX CAPACITY: 44' / 3 = 146 PER.
ACTUAL CAPACITY:
NUMBER OF PER. 12 < 146 O.K.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	31'-1"	O.K.
DEAD END CORRIDOR	< 80'	11'-10"	O.K.
MAX TRAVEL DISTANCE A1+A2+A3+A4	< 200'	79'-3"	O.K.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	60'-10"	O.K.
DEAD END CORRIDOR	< 80'	2'-4"	O.K.
MAX TRAVEL DISTANCE C1+C2+C3	< 200'	60'-10"	O.K.

STAIR "B" (RES)
AS PER BC. TABLE 1005.1
INCH PER OCCUPANT = 3"
MAX CAPACITY: 44' / 3 = 146 PER.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	31'-1"	O.K.
DEAD END CORRIDOR	< 80'	11'-10"	O.K.
MAX TRAVEL DISTANCE A1+A2+A3+A4	< 200'	79'-3"	O.K.

EGRESS SYMBOLS LEGEND

- 2 HR. FIRE RATED DEMISING WALL
- EGRESS PATH TRAVEL DISTANCE NUMBER OF PERSONS
- COMMON PATH OF TRAVEL
- DEAD END CORRIDOR
- INTERNATIONAL ACCESSIBILITY SYMBOL
- DOOR TYPE & CAPACITY (SEE DOOR SCHEDULE THIS SHEET)
- EXIT SIGN
- ROOM NUMBER DESIGNATION
- EMERGENCY LIGHT
- GARF-S7VM SPEAKER/STROBE UNIT (TAP AT 1 WATT) MEA #478-91-E
- STAND PIPE

EGRESS DOOR SCHEDULE			
DOOR #	WIDTH	CAPACITY	LOCATION
A	2(33" x 70")	240 PER. MAX.	FRONT AND REAR ENTRY
B	3'0" x 7'0"	120 PER.	APT. ENTRY DOORS, MECH. RMs, COMMON SPACES
C	3'0" x 7'0"	120 PER.	STAIRS

STAIR "A" (RES)
AS PER BC. TABLE 1005.1
INCH PER OCCUPANT = 3"
MAX CAPACITY: 44' / 3 = 146 PER.

2ND FLOOR PLAN EGRESS PLAN
SCALE 1/8"=1'-0"

STAIR "A" (RES)
AS PER BC. TABLE 1005.1
INCH PER OCCUPANT = 3"
MAX CAPACITY: 44' / 3 = 146 PER.

3RD FLOOR PLAN EGRESS PLAN
SCALE 1/8"=1'-0"

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	36'-8"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE A1+A2+A3+A4	< 200'	102'-0"	O.K.

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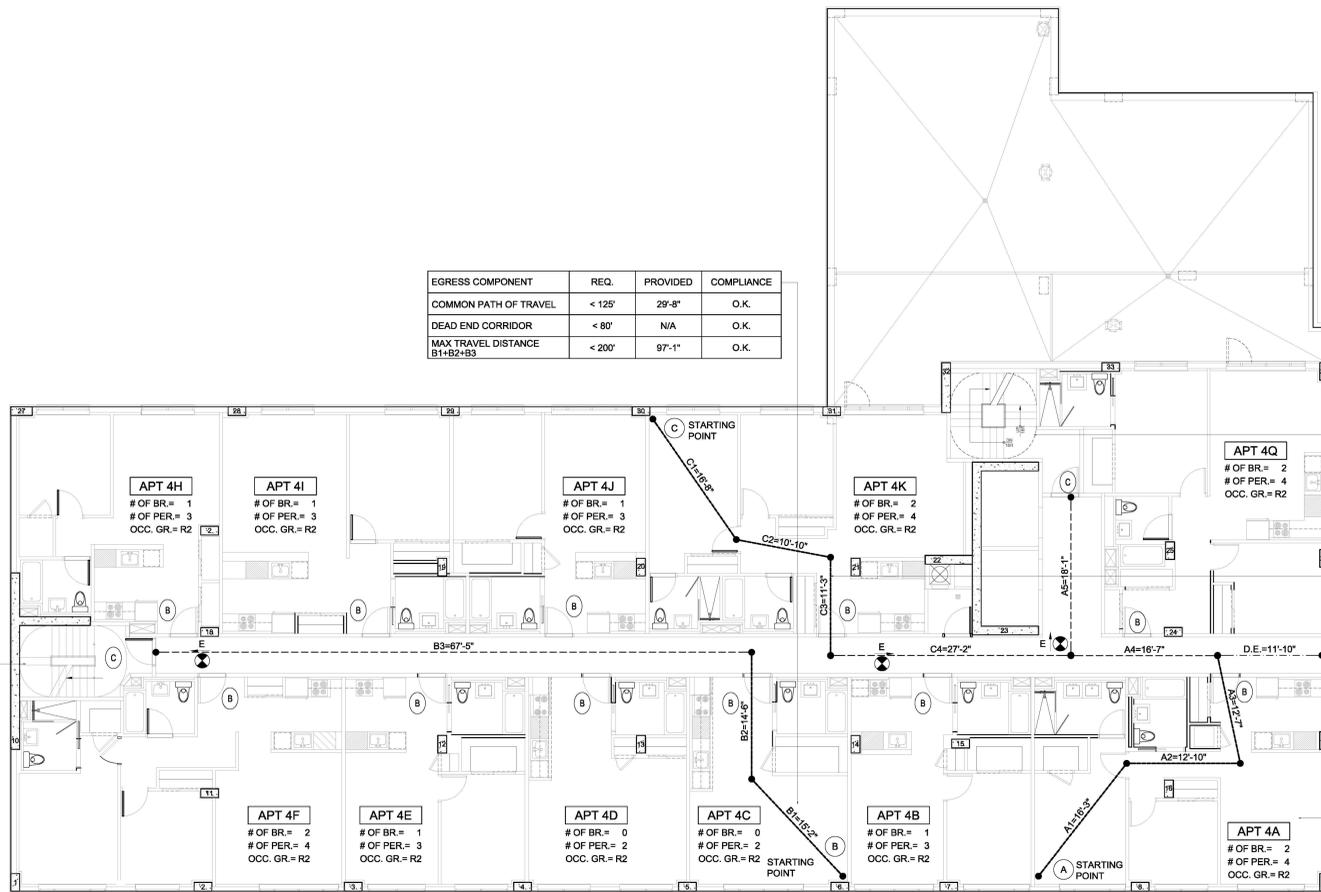


EGRESS SYMBOLS LEGEND

-  2 HR. FIRE RATED DEMISING WALL
-  EGRESS PATH TRAVEL DISTANCE NUMBER OF PERSONS
-  COMMON PATH OF TRAVEL
-  DEAD END CORRIDOR
-  INTERNATIONAL ACCESSIBILITY SYMBOL
-  DOOR TYPE & CAPACITY (SEE DOOR SCHEDULE THIS SHEET)
-  EXIT SIGN
-  ROOM NUMBER DESIGNATION
-  EMERGENCY LIGHT
-  GARF-S7VM SPEAKER/STROBE UNIT (TAP AT 1 WATT) MEA #478-91-E
-  STAND PIPE

EGRESS DOOR SCHEDULE			
DOOR #	WIDTH	CAPACITY	LOCATION
A	2(33" x 70"	240 PER. MAX.	FRONT AND REAR ENTRY
B	3'0" x 7'0"	120 PER.	APT. ENTRY DOORS, MECH. RMs, COMMON SPACES
C	3'0" x 7'0"	120 PER.	STAIRS

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	29'-8"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE B1+B2+B3	< 200'	97'-1"	O.K.



STAIR "A" (RES)
AS PER BC. TABLE 1005.1
INCH PER OCCUPANT = .3"
MAX CAPACITY: 44' / .3 = 146 PER.

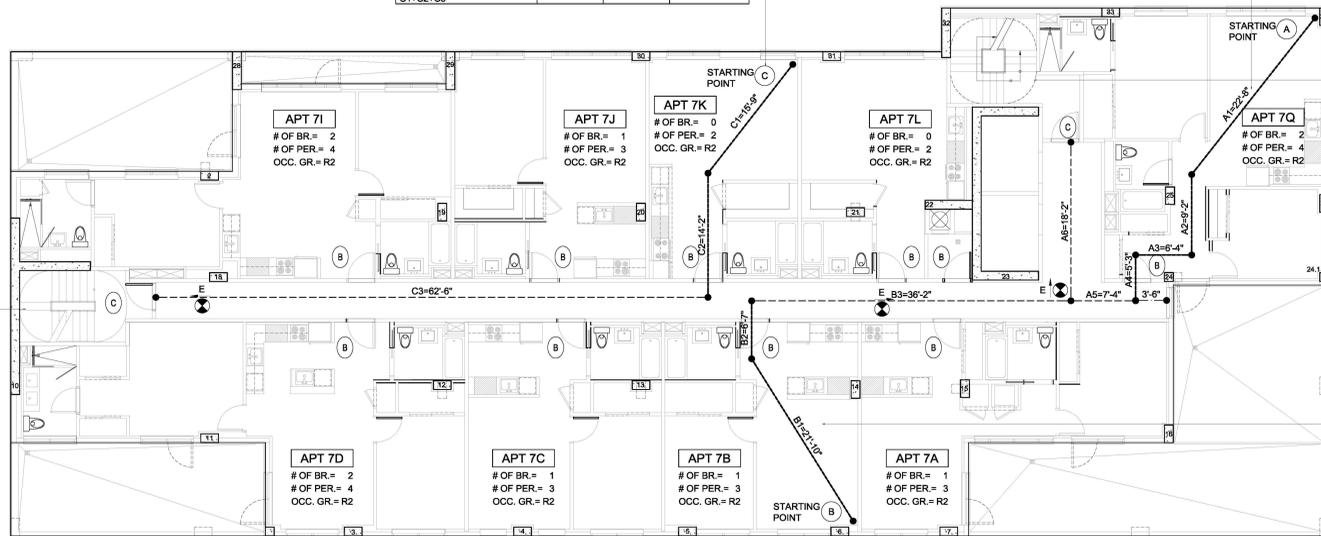
4TH-6TH FLOOR PLAN EGRESS PLAN
SCALE 1/8"=1'-0"

STAIR "B" (RES)
AS PER BC. TABLE 1005.1
INCH PER OCCUPANT = .3"
MAX CAPACITY: 44' / .3 = 146 PER.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	38'-9"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE C1+C2+C3+C4+A5	< 200'	84'-0"	O.K.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	41'-8"	O.K.
DEAD END CORRIDOR	< 80'	11'-10"	O.K.
MAX TRAVEL DISTANCE A1+A2+A3+A4+A5	< 200'	76'-11"	O.K.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	29'-11"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE C1+C2+C3	< 200'	92'-5"	O.K.



STAIR "A" (RES)
AS PER BC. TABLE 1005.1
INCH PER OCCUPANT = .3"
MAX CAPACITY: 44' / .3 = 146 PER.

7TH FLOOR PLAN EGRESS PLAN
SCALE 1/8"=1'-0"

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	43'-5"	O.K.
DEAD END CORRIDOR	< 80'	3'-6"	O.K.
MAX TRAVEL DISTANCE A1+A2+A3+A4+A5+A6	< 200'	68'-11"	O.K.

STAIR "B" (RES)
AS PER BC. TABLE 1005.1
INCH PER OCCUPANT = .3"
MAX CAPACITY: 44' / .3 = 146 PER.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	28'-10"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE B1+B2+B3+A6	< 200'	82'-7"	O.K.

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EGRESS SYMBOLS LEGEND

-  2 HR. FIRE RATED DEMISING WALL
-  EGRESS PATH TRAVEL DISTANCE
NUMBER OF PERSONS
-  COMMON PATH OF TRAVEL
-  DEAD END CORRIDOR
-  INTERNATIONAL ACCESSIBILITY
SYMBOL
-  DOOR TYPE & CAPACITY (SEE DOOR
SCHEDULE THIS SHEET)
-  EXIT SIGN
-  ROOM NUMBER DESIGNATION
-  EMERGENCY LIGHT
-  GARF-S7VM SPEAKER/STROBE UNIT
(TAP AT 1 WATT) MEA #476-91-E
-  STAND PIPE

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	31'-3"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE C1+C2+A6+A7	< 200'	75'-3"	O.K.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	38'-3"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE A1+A2+A3+A4+A5+A6	< 200'	89'-0"	O.K.

EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	59'-4"	O.K.
DEAD END CORRIDOR	< 80'	N/A	O.K.
MAX TRAVEL DISTANCE D1+D2+D3+D4+A7	< 200'	90'-2"	O.K.

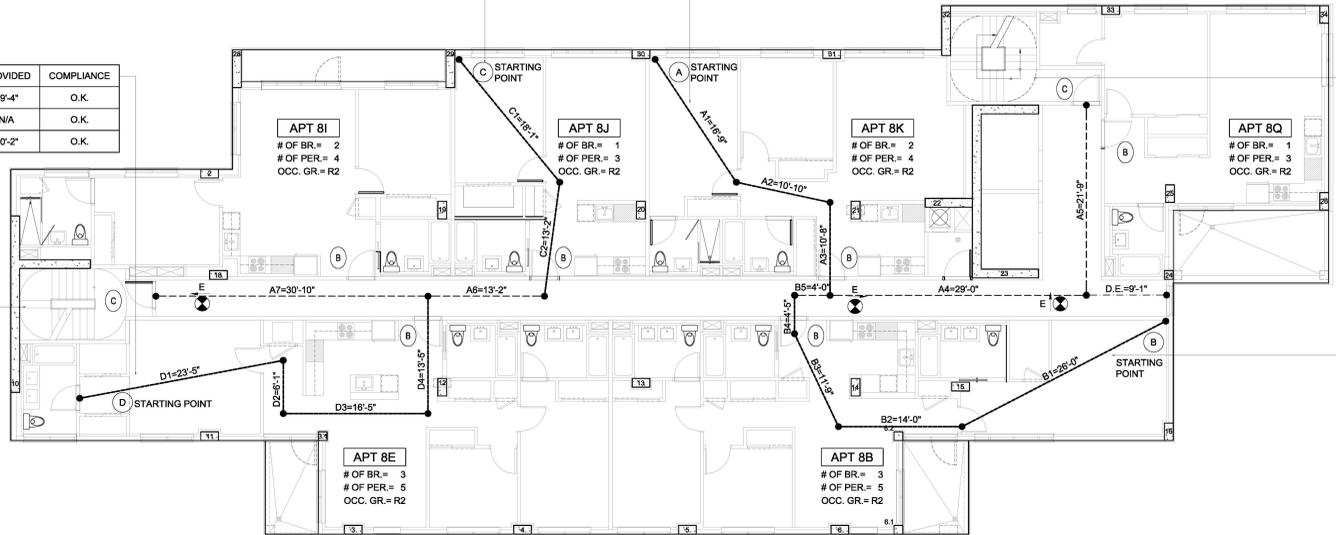
STAIR "B" (RES)
AS PER BC, TABLE 1005.1
INCH PER OCCUPANT = .3"
MAX CAPACITY: 44' / .3 = 146 PER.

EGRESS DOOR SCHEDULE			
DOOR #	WIDTH	CAPACITY	LOCATION
A	(2)3'0" x 7'0"	240 PER. MAX.	FRONT AND REAR ENTRY
B	3'0" x 7'0"	120 PER.	APT. ENTRY DOORS, MECH. RMs, COMMON SPACES
C	3'0" x 7'0"	120 PER.	STAIRS

STAIR "A" (RES)
AS PER BC, TABLE 1005.1
INCH PER OCCUPANT = .3"
MAX CAPACITY: 44' / .3 = 146 PER.

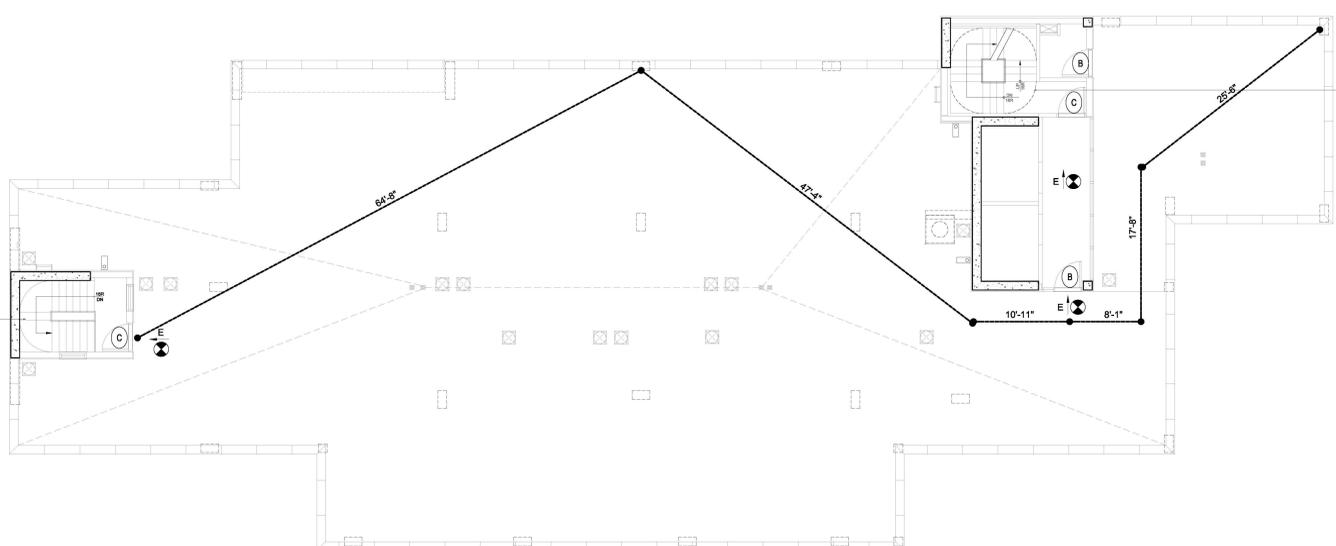
EGRESS COMPONENT	REQ.	PROVIDED	COMPLIANCE
COMMON PATH OF TRAVEL	< 125'	56'-2"	O.K.
DEAD END CORRIDOR	< 80'	9'-1"	O.K.
MAX TRAVEL DISTANCE B1+B2+B3+B4+B5+A4+A5	< 200'	110'-11"	O.K.

8TH FLOOR PLAN EGRESS PLAN
SCALE 1/8"=1'-0"



STAIR "B" (RES)
AS PER BC, TABLE 1005.1
INCH PER OCCUPANT = .3"
MAX CAPACITY: 44' / .3 = 146 PER.

STAIR "A" (RES)
AS PER BC, TABLE 1005.1
INCH PER OCCUPANT = .3"
MAX CAPACITY: 44' / .3 = 146 PER.

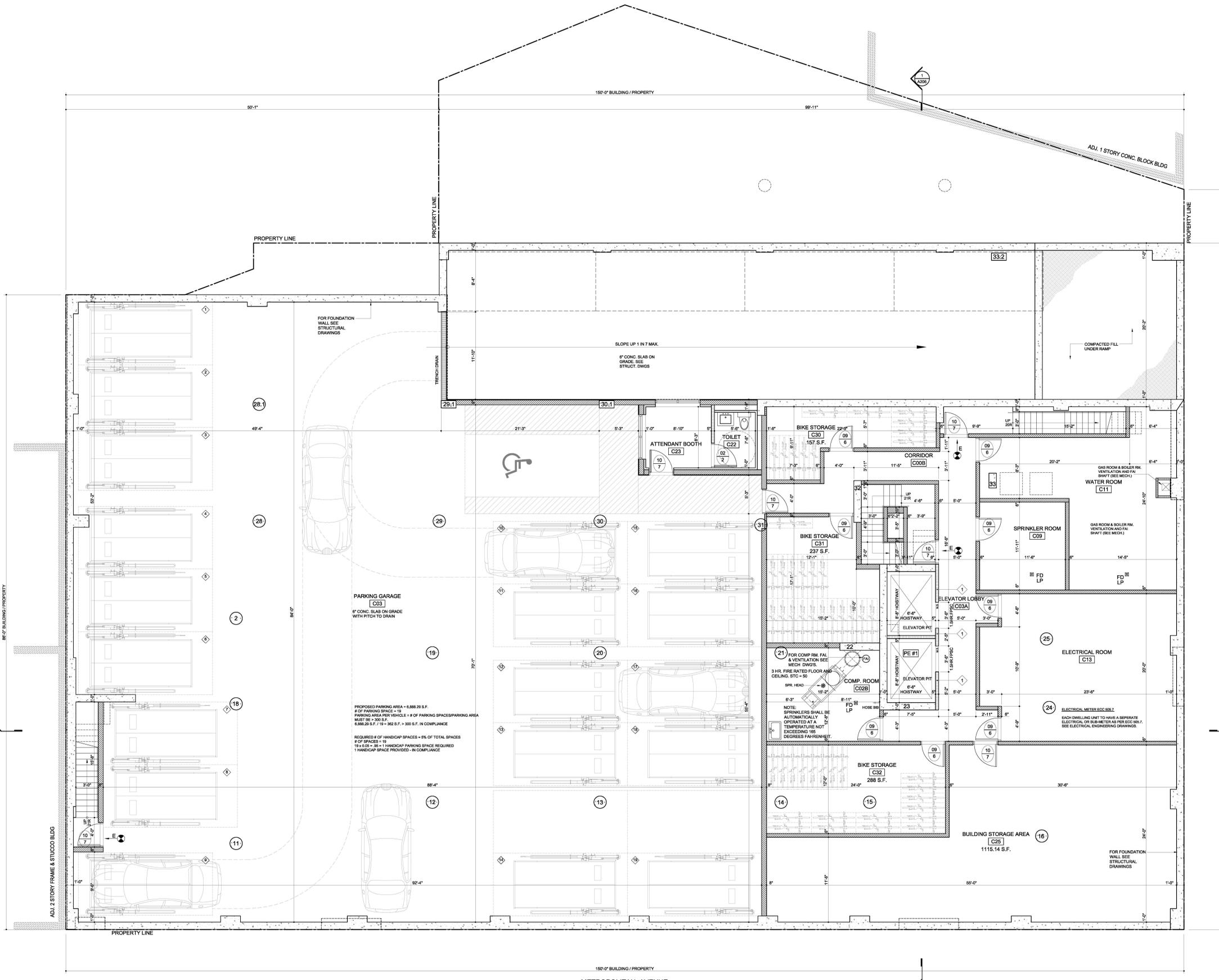
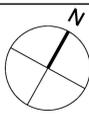


ROOF EGRESS PLAN
SCALE 1/8"=1'-0"

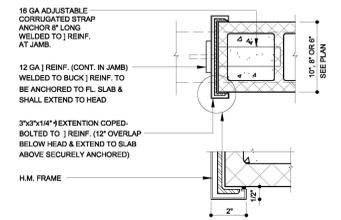
OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC 602 3rd Ave, Suite 130 New York, NY 10022 646-639-8000	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. 28 West 31st St, 9th Floor New York, NY 10001 212-268-8000 info@issacstern.com issacstern.com	STRUCTURAL ENGINEER: ADG ENGINEERING PC 744 Broad St, 19th Floor Brooklyn, NY 11216 312-268-8000 info@adg.com adg.com	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC 2613 East 65th Street Brooklyn, NY 11234 (718) 986-0800	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: EGRESS DRAWINGS AND DETAILS SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: A007-00
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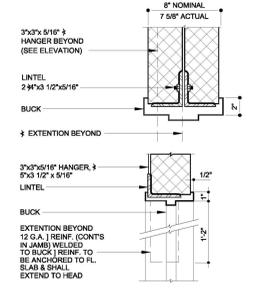




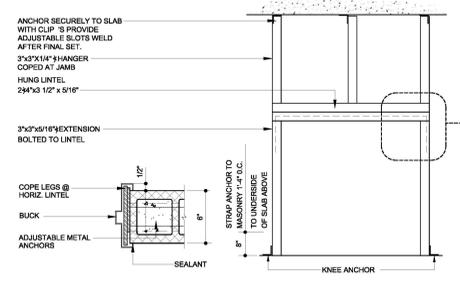
REINFORCED MAS. LINTEL AT CELLAR



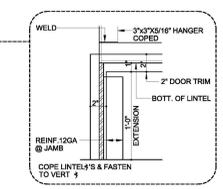
5 REINFORCING & SUB-FRAME @ JAMB
SCALE: 1"=1'-0"



6 REINFORCED HEAD
SCALE: 1"=1'-0"



7 DOOR FRAMING ELEVATION
SCALE: 1/4" = 1'-0"



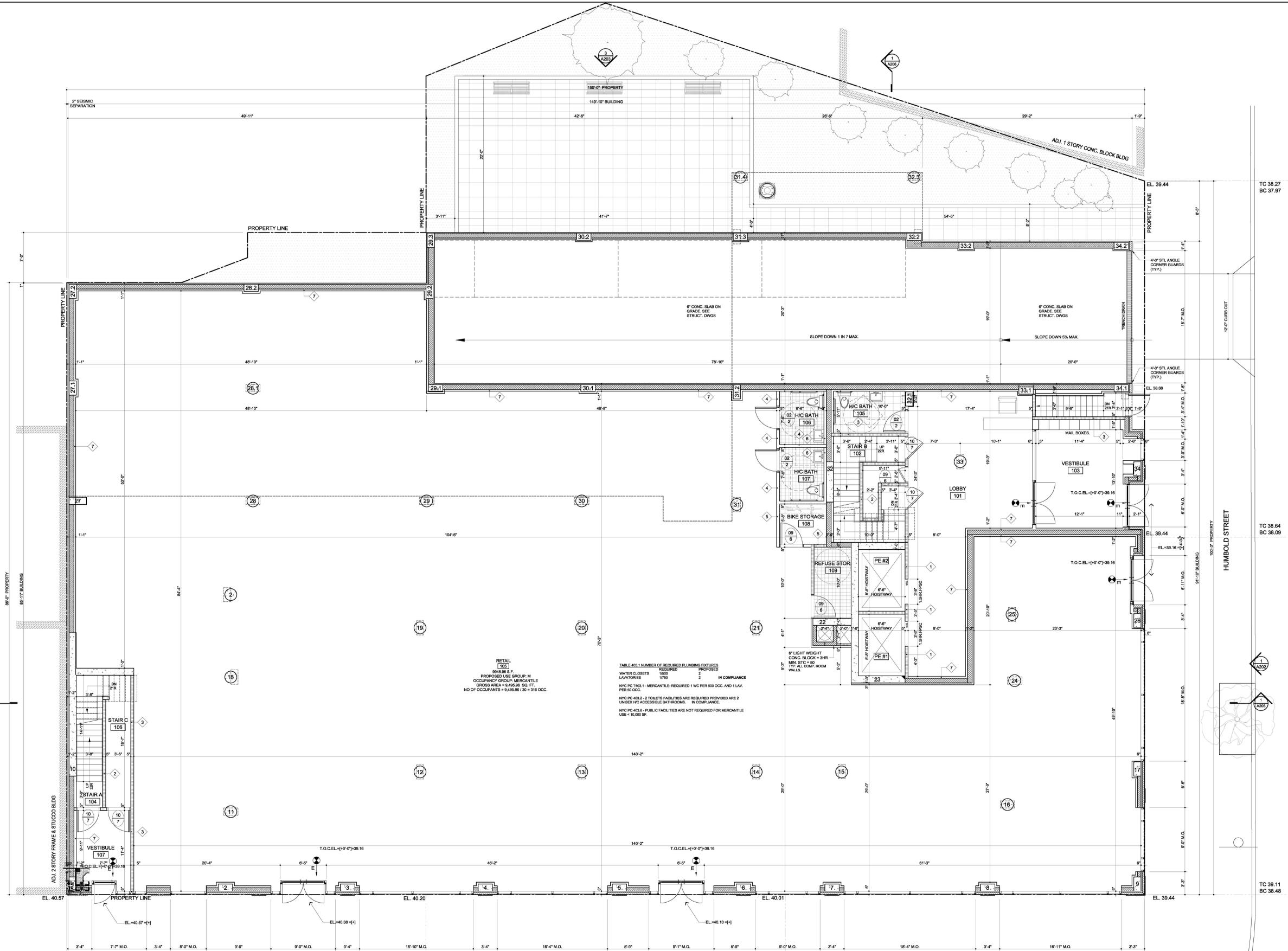
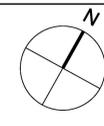
TRASH COMPACTOR NOTES:

- THE FOLLOWING BUILDING TYPES MUST COMPLY:
 - NEW MULTIPLE DWELLING WITH MORE THAN 4 STORIES OR MORE THAN 12 DWELLING UNITS.
 - HOTELS.
 - QUALITY HOUSING BUILDING WITH MORE THAN 9 DWELLING UNITS.
- THE TRASH COMPACTOR SHALL BE SURROUNDED BY 3" CLEARANCE SPACE.
- ALL COMPACTOR ROOM WALLS AND CEILING SHALL BE MIN. 3 HR FIRE RATED ASSEMBLIES w/SOUND TRANSMISSION CLASS OF 45 STC (GYPSUM MASONRY MAY NOT BE USED).
- ALL TRASH CHUTE WALLS AND TRASH DISPOSAL ROOM WALLS ARE TO BE MIN. 4" CMU CONSTRUCTION w/ A FIRE-PROTECTIVE SELF-CLOSING DOOR w/ FIRE RATING OF MIN. 1 1/2 HR.
- ELECTRICAL POWER ACCESS FOR TRASH COMPACTOR EQUIPMENT SHALL BE 3 PHASE 80 AMPS DEDICATED LINE.
- SPRINKLERS SHALL BE AUTOMATICALLY OPERATED AT A TEMPERATURE NOT EXCEEDING 165 DEGREES F.
- PROVIDE FRESH AIR INTAKE VIA MECHANICAL VENTILATION OR WINDOW DUCT.
- WITHIN TRASH COMPACTOR ROOM PROVIDE HOSE RIB AND A FLOOR DRAIN CONNECTED TO THE BUILDING DRAIN SYSTEM AS SHOWN ON PLUMBING DWGS.
- MECHANICAL EQUIPMENT SPACES AND SHAFTS WITH AN STC OF 50, AND INCINERATOR CHARGING CHUTES MUST COMPLY WITH 27-770(A)(2) AND (B).

CELLAR
T.O.C. ELEVATION = [-13'-6"]
GROSS AREA = 13,197.04 S.F.
SCALE 3/16"=1'-0"

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC 460 3rd Ave, Suite 130 New York, NY 10002 646-439-8000	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. 28 West 31st St, 9th Floor New York, NY 10001 212-268-9900 info@issacstern.com issacstern.com	STRUCTURAL ENGINEER: ADG ENGINEERING PC 744 Broad St, 19th Floor Brooklyn, NY 11218 312-268-9900 www.adg.com	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC 2613 East 65th Street Brooklyn, NY 11234 (718) 986-0800	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: PROPOSED CELLAR PLAN SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: A-101.00
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RETAIL
100

PROPOSED USE GROUP: M
OCCUPANCY GROUP: MERCANTILE
GROSS AREA = 9,456.96 SQ. FT.
NO. OF OCCUPANTS = 9,456.96 / 30 = 315 OCC.

9945-99.5.F

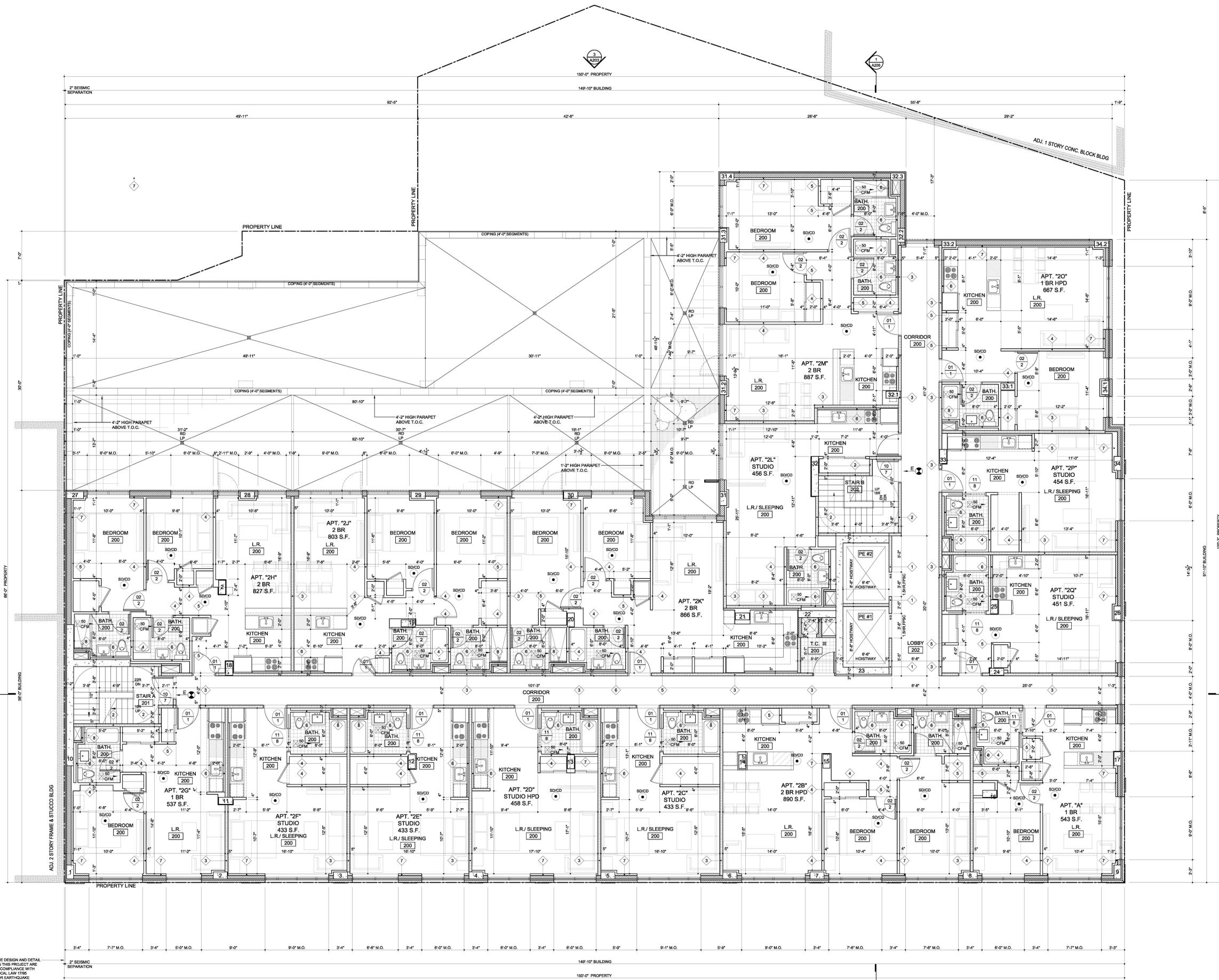
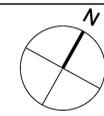
TABLE A03.1 NUMBER OF REQUIRED PLUMBING FEATURES

REQUIRED	PROPOSED	IN COMPLIANCE
WATER CLOSETS	1/90	2
LAVATORIES	1/90	2
NYC PC TAB.1-1 MERCANTILE: REQUIRED 1 WC PER 500 OCC. AND 1 LAV. PER 150 OCC.		
NYC PC 403.2-2 TOILETS FACILITIES ARE REQUIRED PROVIDED ARE 2 UNISEX H/C ACCESSIBLE BATHROOMS. IN COMPLIANCE.		
NYC PC 403.6 PUBLIC FACILITIES ARE NOT REQUIRED FOR MERCANTILE USE < 10,000 SF.		

1ST FLOOR PLAN
T.O.C. ELEVATION = (+0'-0")
GROSS AREA = 11,457.51 S.F.
SCALE 3/16"=1'-0"

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC 462 3rd Ave, Suite 130 New York, NY 10002 646-439-8000	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. 28 West 31st St, 9th Floor New York, NY 10001 212-268-9900 info@issacstern.com issacstern.com	STRUCTURAL ENGINEER: ADG ENGINEERING PC 744 Broad St, 19th Floor New York, NY 10003 973-242-2628 info@adg.com	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC 2613 East 65th Street Brooklyn, NY 11234 (718) 996-0800	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: PROPOSED 1ST FLOOR PLAN SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: A-102.00
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2" SEISMIC SEPARATION

149'-10" BUILDING

150'-0" PROPERTY

METROPOLITAN AVENUE

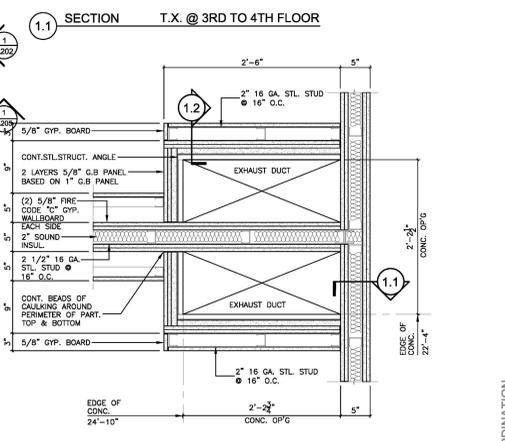
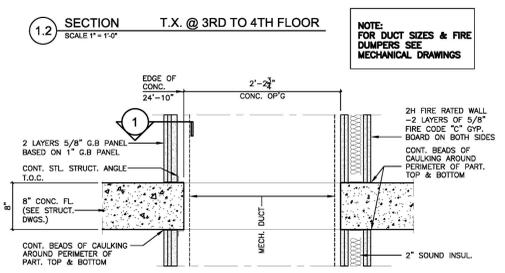
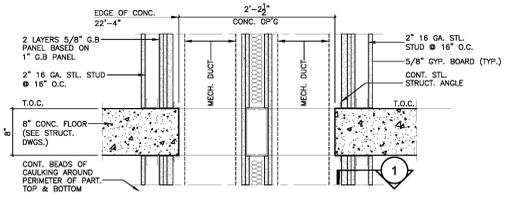
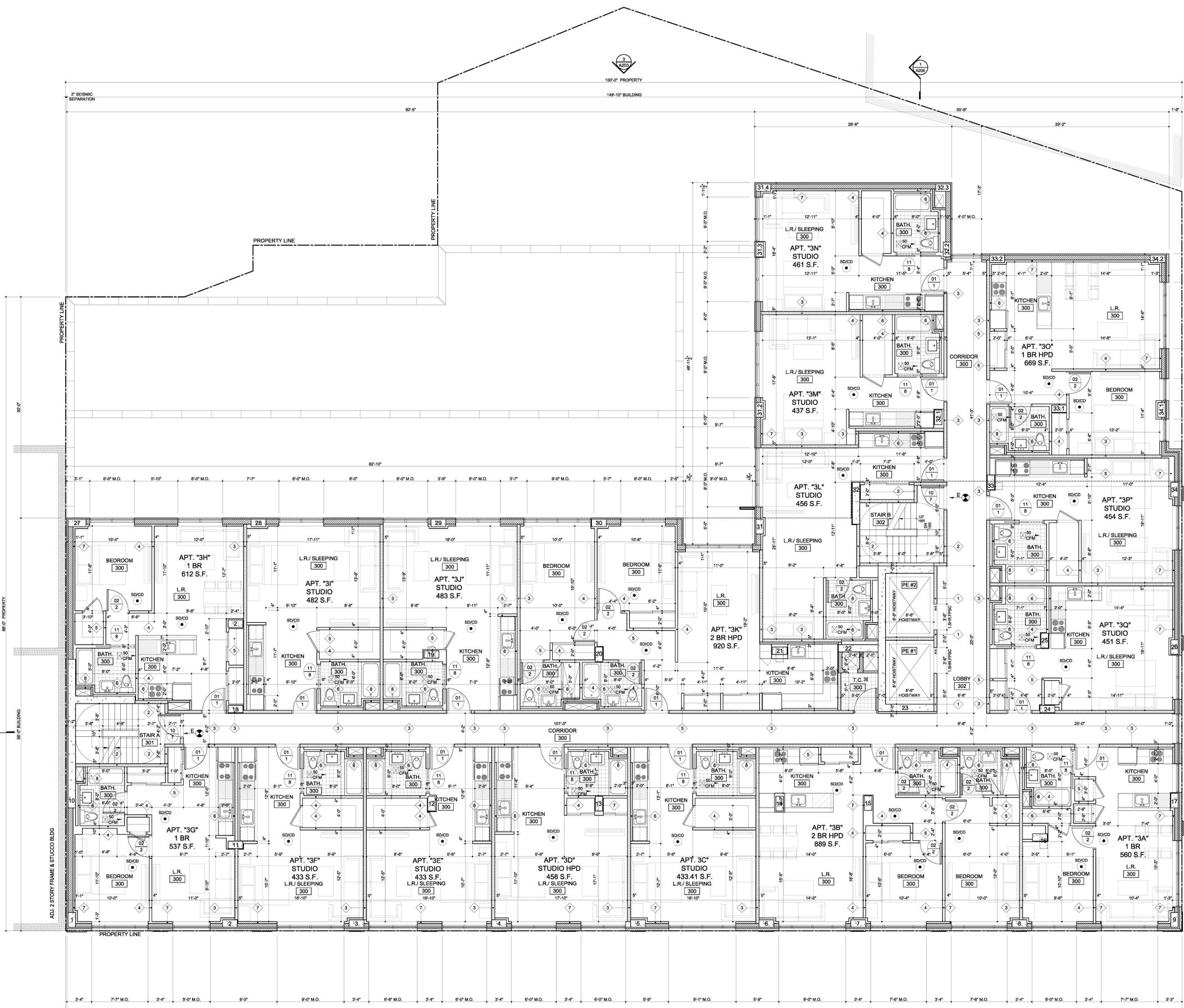


2ND FLOOR PLAN
T.O.C. ELEVATION = +14'-1 1/2"
GROSS AREA = 10,624.49 S.F.
SCALE: 3/16"=1'-0"

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC <small>802 3rd Ave, Suite 130 New York, NY 10022 646-639-8000</small>	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. <small>28 West 31st St, 9th Floor New York, NY 10001 212-268-9900 issacstern.com</small>	STRUCTURAL ENGINEER: ADG ENGINEERING PC <small>744 Broad St, 19th Floor New York, NY 10013 212-268-2600 adgengineering.com</small>	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC <small>2613 East 65th Street Brooklyn, NY 11234 718) 998-0800</small>	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: PROPOSED 2ND FLOOR PLAN SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: <h1>A-103.00</h1>
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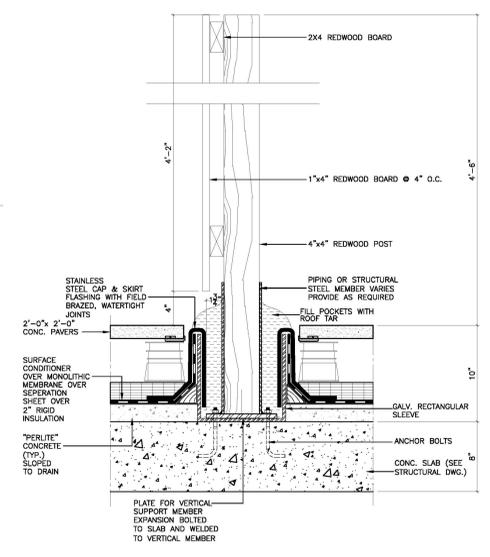
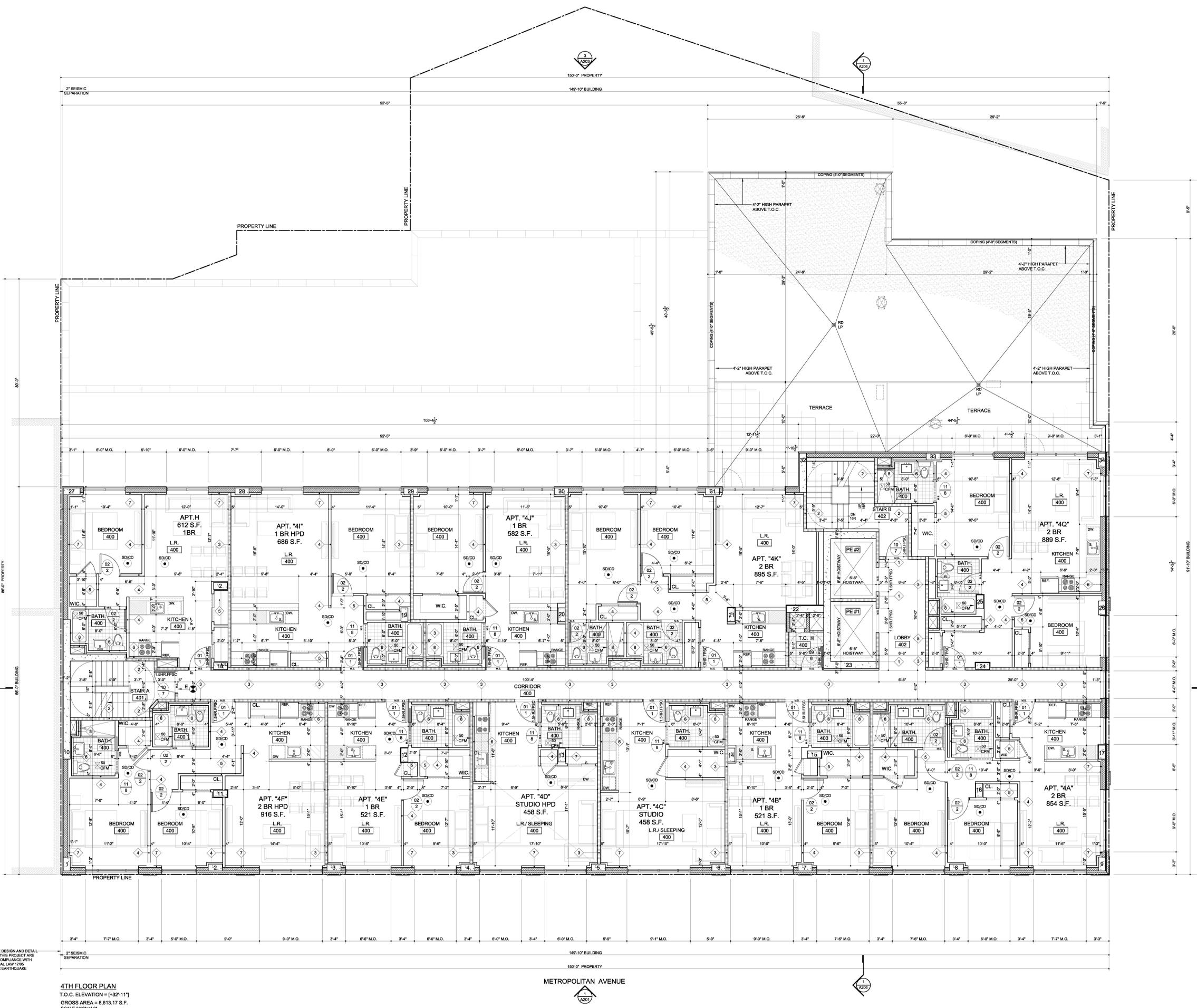


3RD FLOOR PLAN
T.O.C. ELEVATION = +23'-0"
GROSS AREA = 10,624.49 S.F.
SCALE 3/16"=1'-0"

METROPOLITAN AVENUE

OWNER/DEVELOPER 781 METROPOLITAN ASSET, LLC <small>602 3rd Ave, Suite 130 New York, NY 10022 646-628-8000</small>	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. <small>28 West 31st St, 9th Floor New York, NY 10001 212-268-8000 info@issacstern.com issacstern.com</small>	STRUCTURAL ENGINEER: ADG ENGINEERING PC <small>28 West 31st St, 9th Floor New York, NY 10001 212-268-8000 info@adg.com www.adg.com</small>	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC <small>2613 East 85th Street Brooklyn, NY 11234 (718) 986-0800</small>	PROJECT TITLE: 781 METROPOLITAN AVENUE <small>Brooklyn, NY</small>	DRAWING TITLE: PROPOSED 3RD FLOOR PLAN <small>SCALE: AS SHOWN</small>	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: <h1>A-104.00</h1>
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ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



1 SECTION DETAIL @ REDWOOD FENCE
SCALE 1/2" = 1'-0"

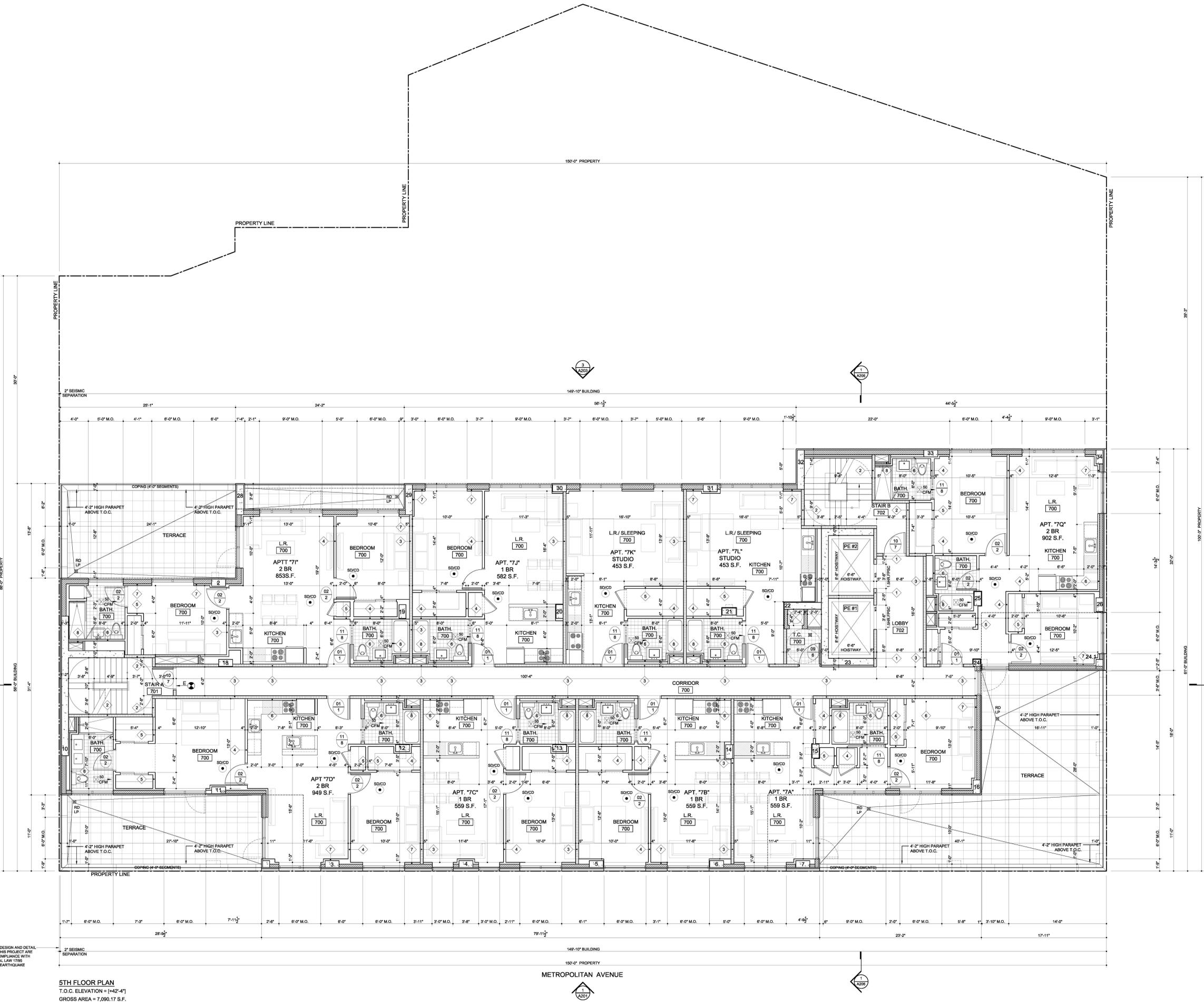
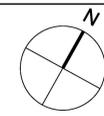
4TH FLOOR PLAN
T.O.C. ELEVATION = +132'-11"
GROSS AREA = 8,613.17 S.F.
SCALE 3/16" = 1'-0"

THE DESIGN AND DETAIL ON THIS PROJECT ARE IN COMPLIANCE WITH LOCAL LAW 1785 FOR EARTHQUAKE

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC <small>660 3rd Ave, Suite 130 New York, NY 10022 646-638-6000</small>	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. <small>28 West 31st St, 9th Floor New York, NY 10001 212-268-9900 info@issacstern.com issacstern.com</small>	STRUCTURAL ENGINEER: ADG ENGINEERING PC <small>744 Broad St, 19th Floor New York, NY 10019 973-242-2628 info@adg.com</small>	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC <small>2613 East 65th Street Brooklyn, NY 11234 (718) 986-0800</small>	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: PROPOSED 4TH FLOOR PLAN SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: <h1>A-105.00</h1>
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ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



HUMBOLD STREET

METROPOLITAN AVENUE

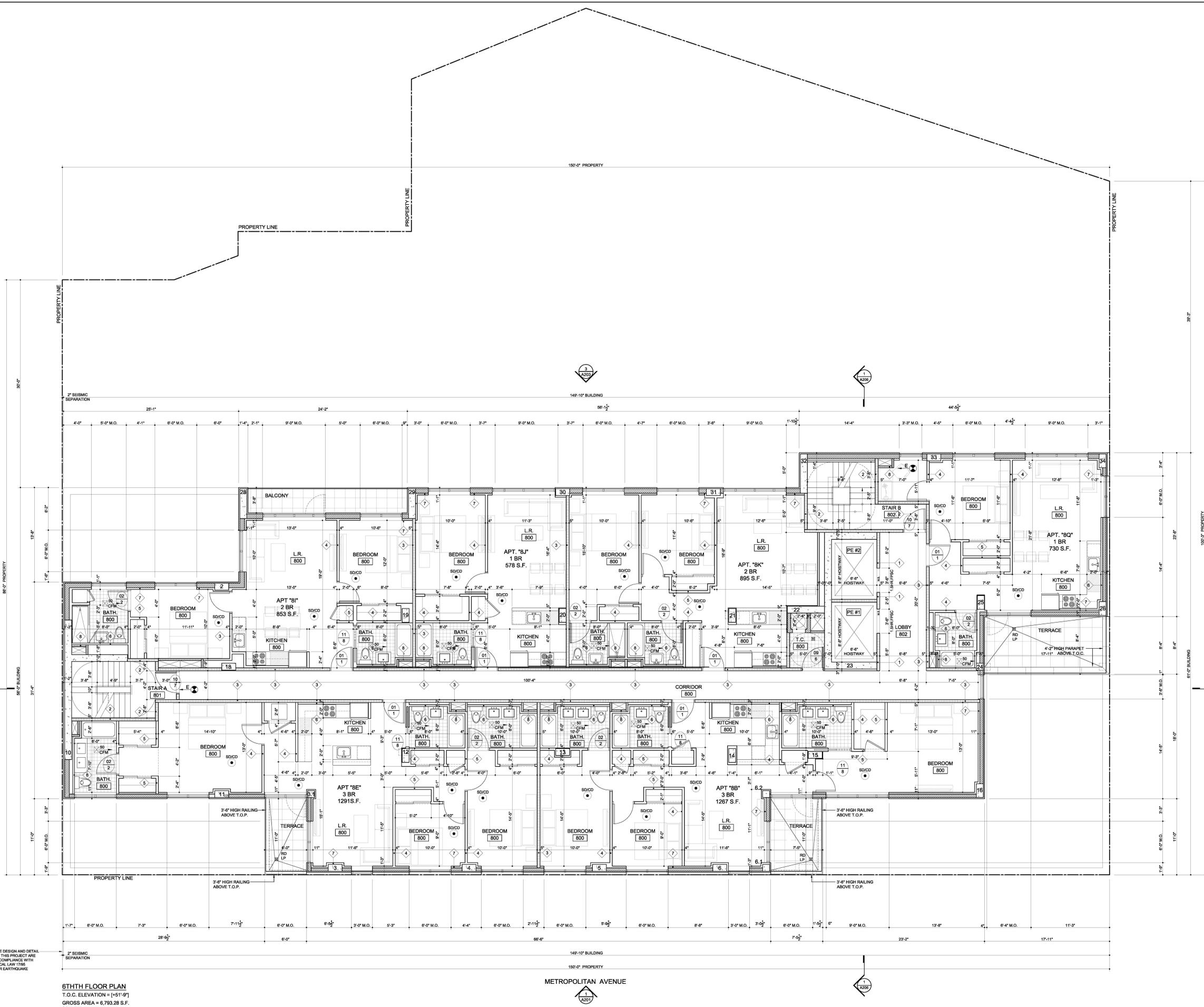
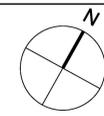
5TH FLOOR PLAN
T.O.C. ELEVATION = +42'-4"
GROSS AREA = 7,080.17 S.F.
SCALE 3/16"=1'-0"

THE DESIGN AND DETAIL ON THIS PROJECT ARE IN COMPLIANCE WITH LOCAL LAW 1785 FOR EARTHQUAKE

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC <small>862 3rd Ave, Suite 130 New York, NY 10022 646-639-8000</small>	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. <small>28 West 31st St, 8th Floor New York, NY 10001 212-268-8800 info@issacstern.com issacstern.com</small>	STRUCTURAL ENGINEER: ADG ENGINEERING PC <small>744 Broad St, 19th Floor Newark, NJ 07102 973-242-2628 info@adg.com</small>	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC <small>2613 East 65th Street Brooklyn, NY 11234 (718) 986-0800</small>	PROJECT TITLE: 781 METROPOLITAN AVENUE <small>Brooklyn, NY</small>	DRAWING TITLE: PROPOSED 5TH FLOOR PLAN SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: <h1>A-106.00</h1>
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ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



HUMBOLD STREET

METROPOLITAN AVENUE

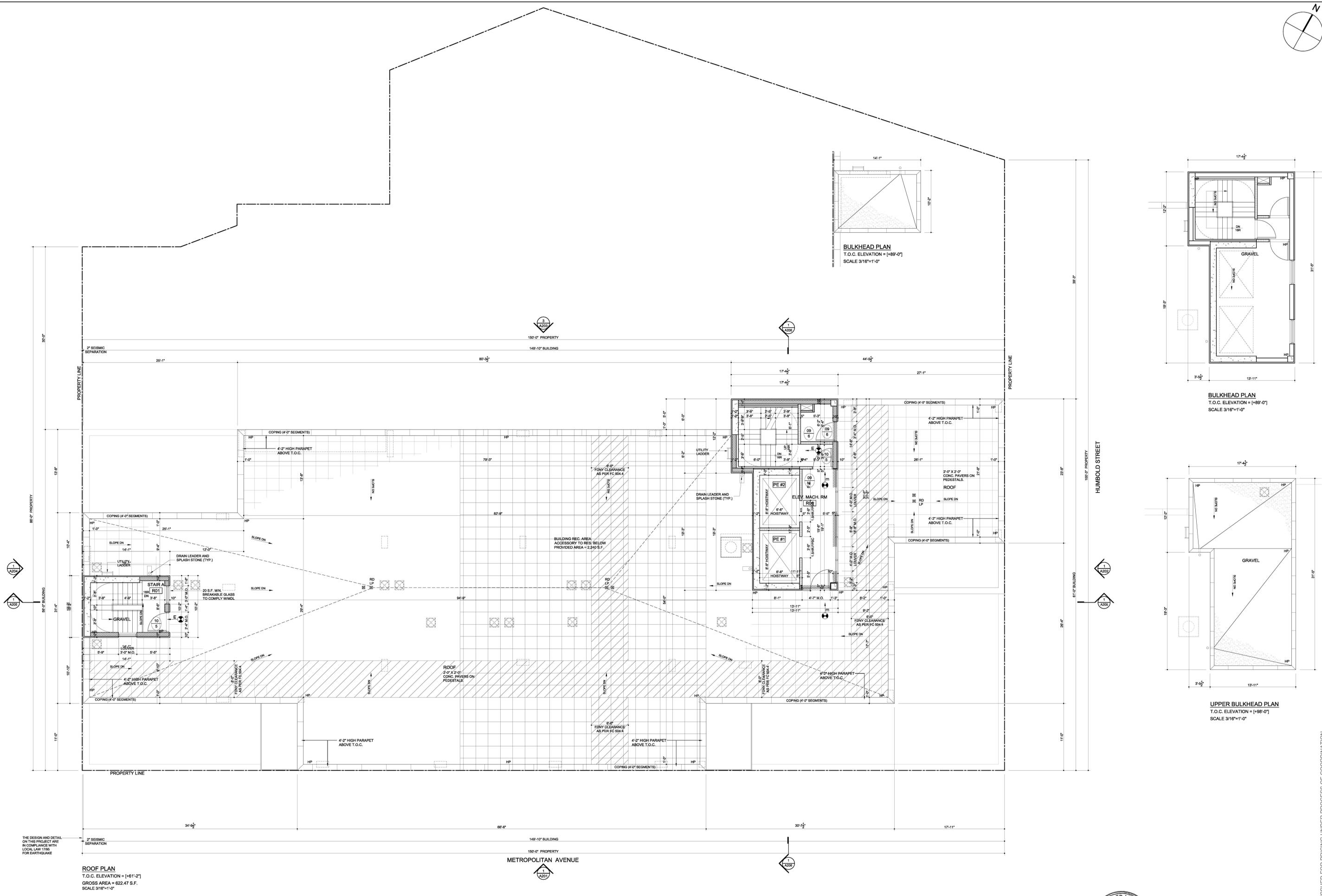
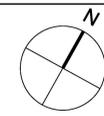
6TH FLOOR PLAN
T.O.C. ELEVATION = +51'-9"
GROSS AREA = 6,793.28 S.F.
SCALE 3/16"=1'-0"

THE DESIGN AND DETAIL ON THIS PROJECT ARE IN COMPLIANCE WITH LOCAL LAW 178E FOR EARTHQUAKE

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC <small>800 3rd Ave, Suite 130 New York, NY 10022 646-639-8000</small>	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. <small>704 Broad St, 18th Floor New York, NY 10001 212-268-8000 info@issacstern.com issacstern.com</small>	STRUCTURAL ENGINEER: ADG ENGINEERING PC <small>704 Broad St, 18th Floor New York, NY 10001 917-242-2628 info@adgeng.com</small>	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC <small>2613 East 65th Street Brooklyn, NY 11234 (718) 998-0800</small>	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: PROPOSED 6TH FLOOR PLAN SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: <h1>A-107.00</h1>
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ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



ROOF PLAN
T.O.C. ELEVATION = [+61'-2"]
GROSS AREA = 622.47 S.F.
SCALE 3/16"=1'-0"

BULKHEAD PLAN
T.O.C. ELEVATION = [+89'-0"]
SCALE 3/16"=1'-0"

BULKHEAD PLAN
T.O.C. ELEVATION = [+89'-0"]
SCALE 3/16"=1'-0"

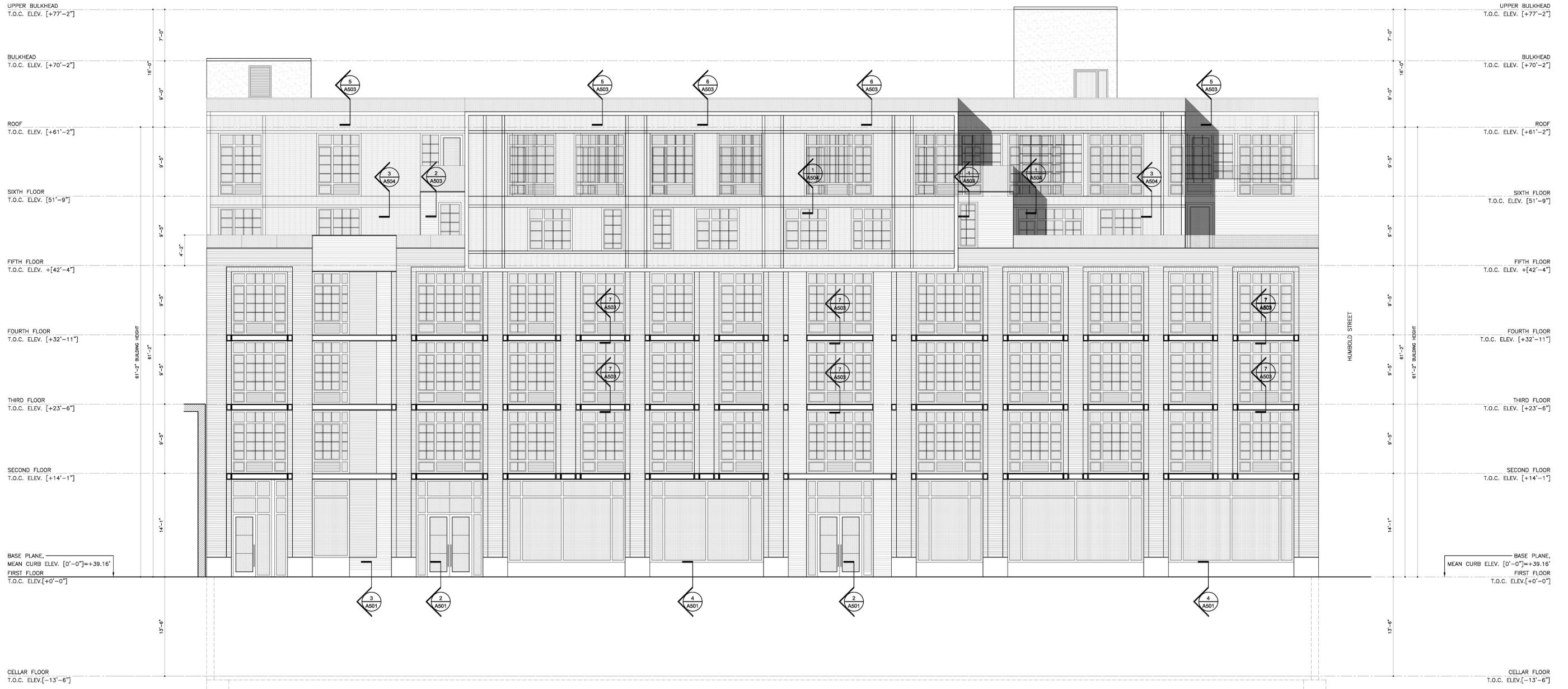
UPPER BULKHEAD PLAN
T.O.C. ELEVATION = [+88'-0"]
SCALE 3/16"=1'-0"

THE DESIGN AND DETAIL ON THIS PROJECT ARE IN COMPLIANCE WITH LOCAL LAW 178 FOR EARTHQUAKE

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC 862 3rd Ave, Suite 130 New York, NY 10022 646-439-8000	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. 764 Broad St, 19th Floor New York, NY 10001 212-268-9900 info@issacstern.com issacstern.com	STRUCTURAL ENGINEER: ADG ENGINEERING PC 28 West 31st St, 9th Floor New York, NY 10001 212-268-9900 info@adgeng.com	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC 2613 East 65th Street Brooklyn, NY 11234 (718) 998-0800	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: PROPOSED ROOF PLAN SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: A-108.00
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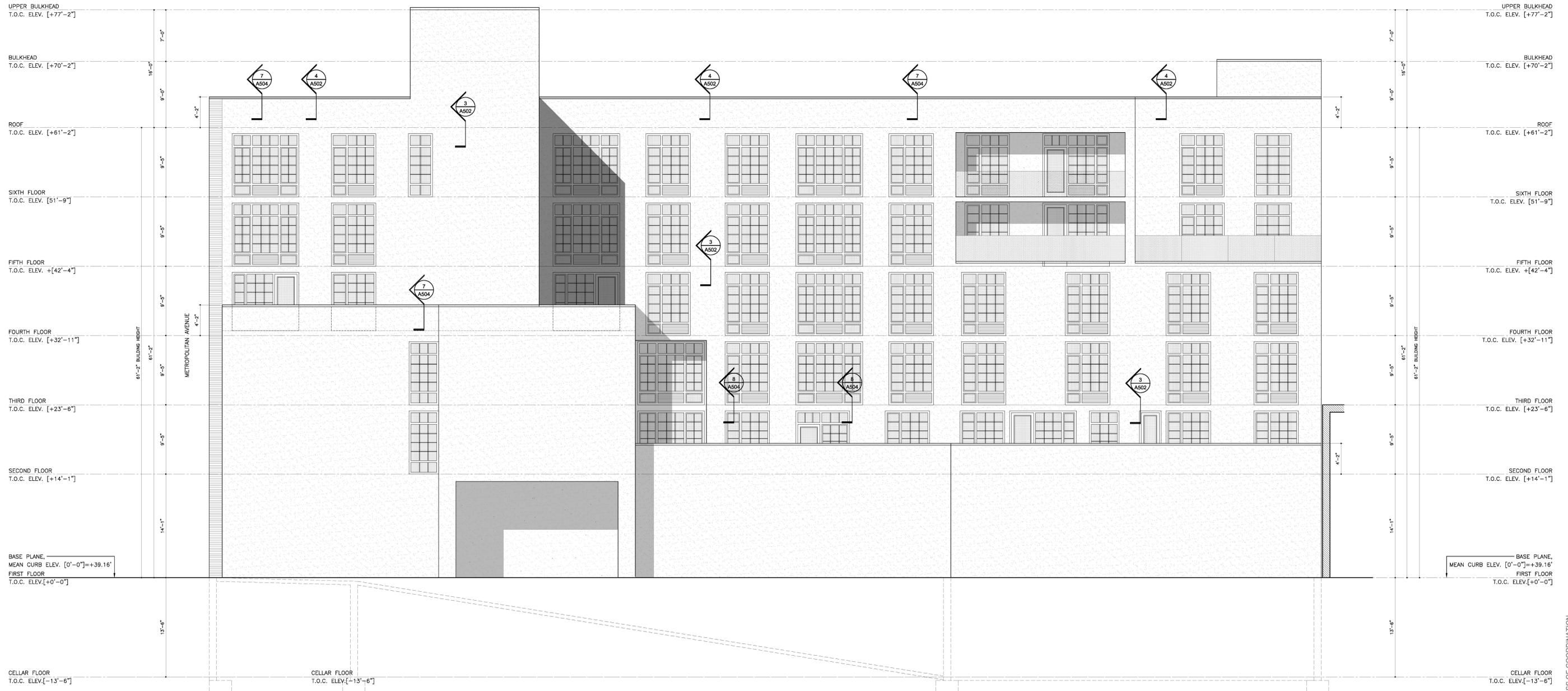
ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



1 METROPOLITAN AVENUE ELEVATION
SCALE: 3/16" = 1'-0"

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION

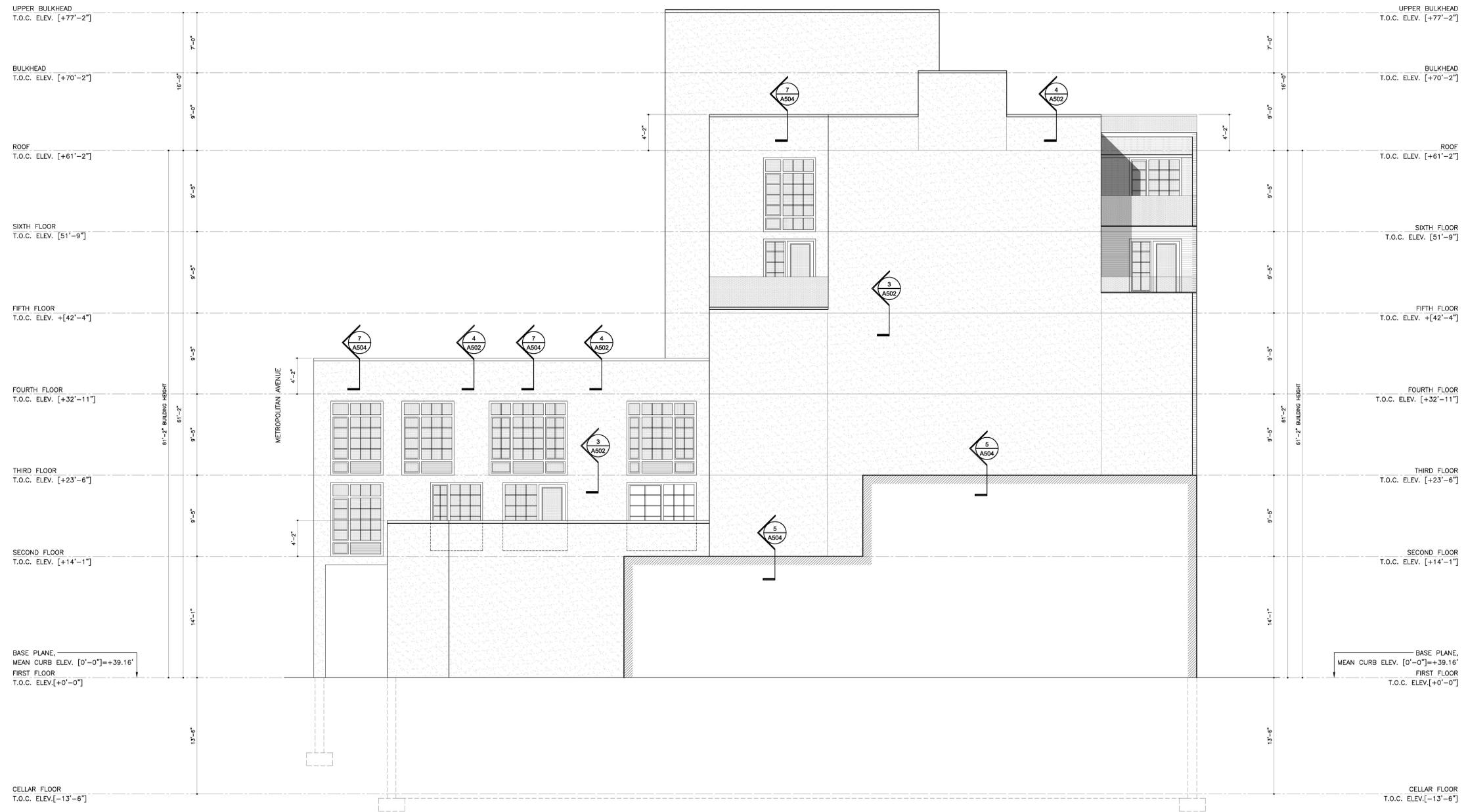
OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC <small>450 3rd Ave, Suite 130 New York, NY 10002 646-438-8000</small>	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. <small>28 West 31st St, 9th Floor New York, NY 10001 212-268-9900 info@issacstern.com issacstern.com</small>	STRUCTURAL ENGINEER: ADG ENGINEERING PC <small>744 Broad St, 19th Floor Brooklyn, NY 11216 312-268-9900 info@adg.com</small>	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC <small>2613 East 65th Street Brooklyn, NY 11234 (718) 998-0800</small>	PROJECT TITLE: 781 METROPOLITAN AVENUE <small>Brooklyn, NY</small>	DRAWING TITLE: PROPOSED SOUTH ELEVATION <small>SCALE: AS SHOWN</small>	ISSUED/REVISION DATE: ISSUED: 11-12-2014		DRAWING NO.: <h1>A-201.00</h1>
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1 REAR ELEVATION
SCALE: 3/16" = 1'-0"

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION

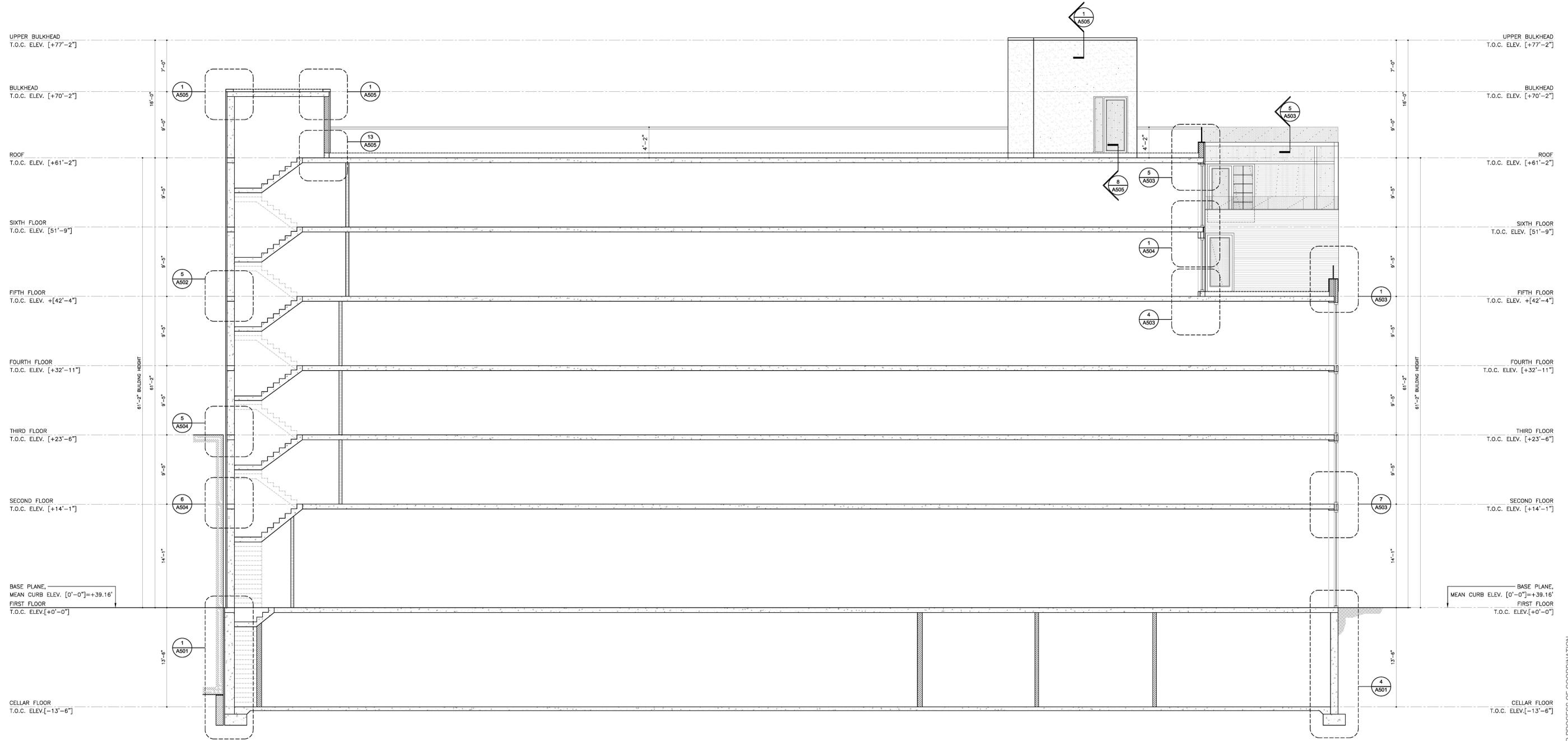
OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC <small>602 3rd Ave, Suite 130 New York, NY 10022 646-438-6000</small>	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. <small>28 West 31st St, 9th Floor New York, NY 10001 212-268-9900 info@issacstern.com issacstern.com</small>	STRUCTURAL ENGINEER: ADG ENGINEERING PC <small>744 Broad St, 19th Floor Brooklyn, NY 11219 312-242-2628 info@adg.com adg.com</small>	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC <small>2613 East 65th Street Brooklyn, NY 11234 (718) 998-0800</small>	PROJECT TITLE: 781 METROPOLITAN AVENUE <small>Brooklyn, NY</small>	DRAWING TITLE: PROPOSED NORTH ELEVATION <small>SCALE: AS SHOWN</small>	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: <div style="text-align: center;">  <h1 style="margin: 0;">A-203.00</h1> </div>
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1 SIDE ELEVATION
SCALE: 3/16" = 1'-0"

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION

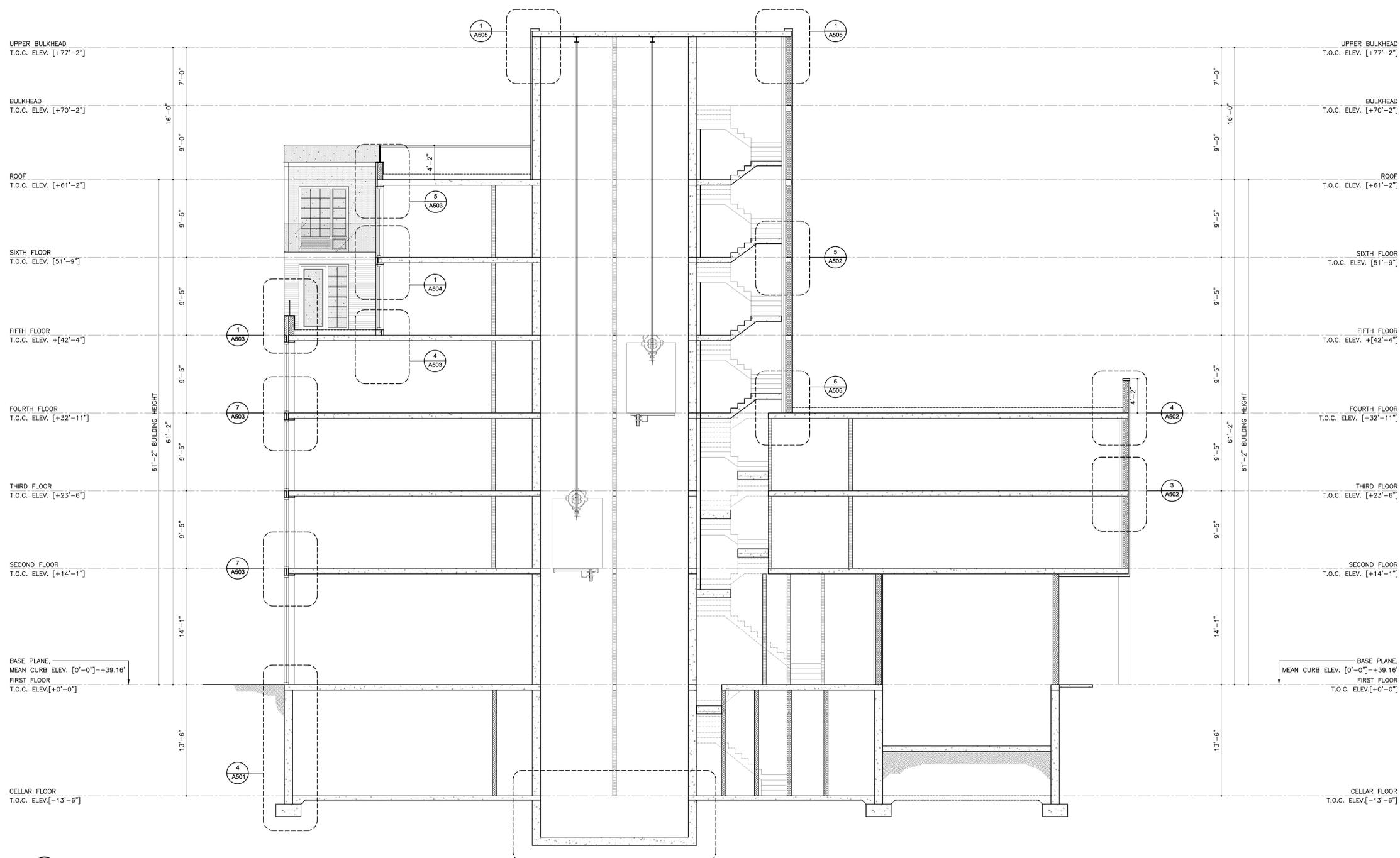
OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC <small>450 3rd Ave, Suite 130 New York, NY 10022 646-439-8000</small>	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. <small>764 Broad St, 19th Floor New York, NY 10003 212-268-8900 info@issacstern.com issacstern.com</small>	STRUCTURAL ENGINEER: ADG ENGINEERING PC <small>28 West 31st St, 9th Floor New York, NY 10001 212-268-8900 info@adg.com</small>	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC <small>2613 East 65th Street Brooklyn, NY 11234 (718) 998-0800</small>	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: PROPOSED WEST ELEVATION SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014		DRAWING NO.: <h1>A-204.00</h1>
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1 CROSS SECTION
SCALE: 3/16" = 1'-0"

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION

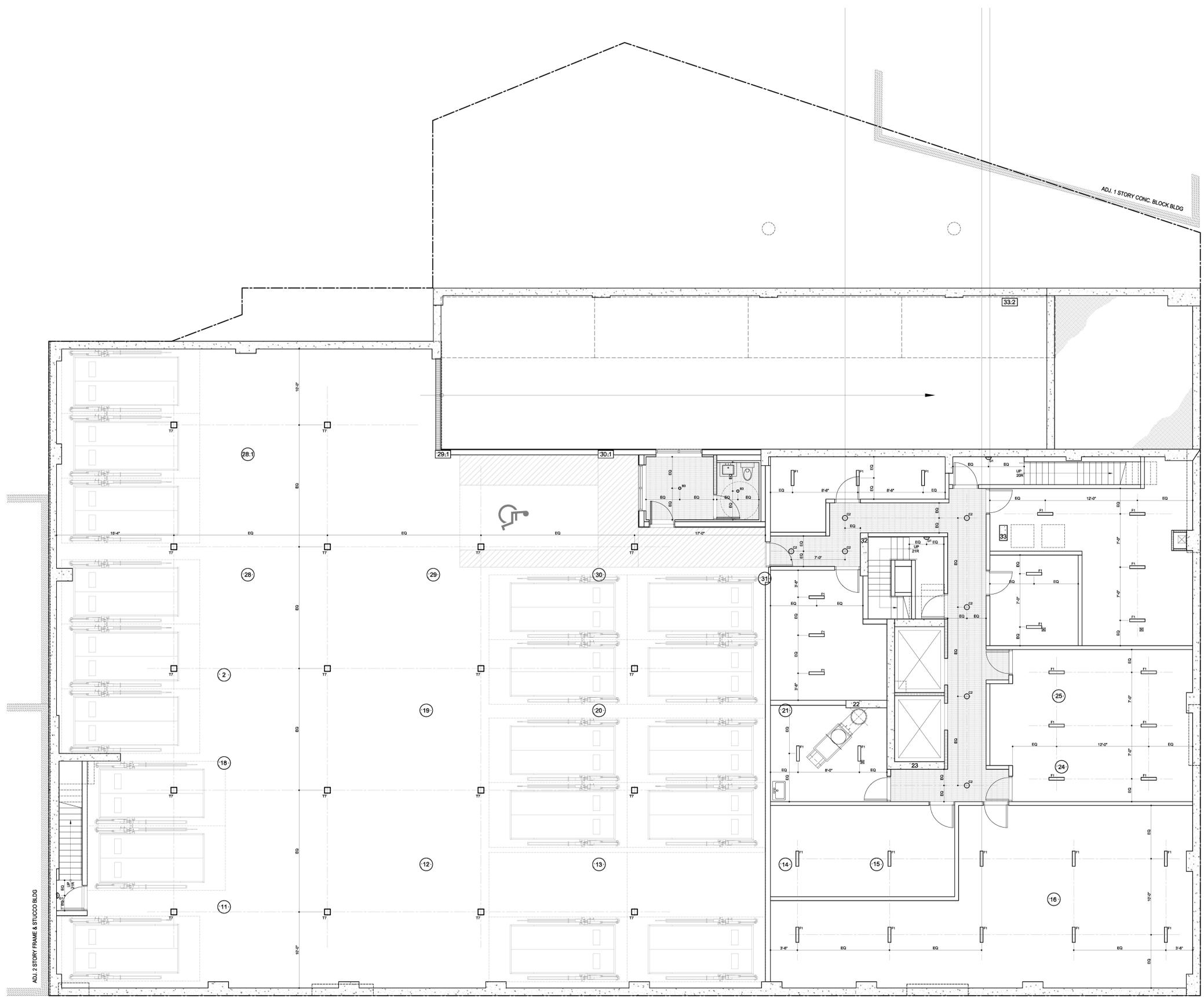
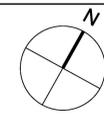
OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC <small>400 3rd Ave, Suite 130 New York, NY 10022 646-639-8000</small>	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. <small>20 West 31st St, 9th Floor New York, NY 10001 212-268-9900 issacstern.com</small>	STRUCTURAL ENGINEER: ADG ENGINEERING PC <small>744 Broad St, 19th Floor Brooklyn, NY 11219 312-268-9900 adg@adg.com</small>	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC <small>2613 East 65th Street Brooklyn, NY 11234 (718) 998-0800</small>	PROJECT TITLE: 781 METROPOLITAN AVENUE <small>Brooklyn, NY</small>	DRAWING TITLE: CROSS SECTION <small>SCALE: AS SHOWN</small>	ISSUED/REVISION DATE: ISSUED: 11-12-2014 	DRAWING NO.: <h1>A-205.00</h1>
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1 CROSS SECTION
SCALE: 3/16" = 1'-0"

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC <small>650 3rd Ave, Suite 130 New York, NY 10022 646-439-8000</small>	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. <small>29 West 31st St, 9th Floor New York, NY 10001 212-268-9900 info@issacstern.com issacstern.com</small>	STRUCTURAL ENGINEER: ADG ENGINEERING PC <small>744 Broad St, 19th Floor Brooklyn, NY 11216 312-268-9900 info@adg.com adg.com</small>	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC <small>2613 East 65th Street Brooklyn, NY 11234 312-268-9900 (718) 998-0800</small>	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: CROSS SECTION SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014		DRAWING NO.: <h1>A-206.00</h1>
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ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



- RCP AND LIGHTING FIXTURES NOTES**
- ELECTRICAL AND LIGHTING SYSTEMS SHOWN ARE DIAGRAMMATIC AND MAY BE MODIFIED TO COORDINATE WITH STRUCTURAL AND ARCHITECTURAL SPECIFICATIONS. INFORMATION NOTED IS FOR ESTIMATING PURPOSES ONLY. INSTALLING CONTRACTOR SHALL FURNISH INFORMATION BASED ON THE ACTUAL EQUIPMENT USED.
 - ALL SYSTEMS INSTALLED SHALL COMPLY WITH ALL APPLICABLE STATE AND LOCAL CODES. ALL ELECTRICAL AND MECHANICAL EQUIPMENT USED SHALL BE U.L. APPROVED.
 - STYLES AND COLORS OF FIXTURES AND EXPOSED EQUIPMENT AS SELECTED.
 - PROVIDE EXIT SIGNS AND EMERGENCY LIGHT FIXTURES AS SHOWN ON DRAWINGS.
 - INSTALL NEW SPRINKLER HEADS AND LIGHT FIXTURES AT THE CENTER OF THE ACOUSTICAL CEILING TILE (IF PROVIDED), UNLESS OTHERWISE NOTED.
 - SWITCH LOCATIONS ARE SHOWN AS A GENERAL GUIDE FOR DESIGN-BUILD WORK. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINATION OF QUANTITIES, SUBJECT TO APPROVAL BY THE ARCHITECT. EXACT LOCATIONS OF ALL ELECTRICAL SWITCHES AND OR RECEPTACLES TO BE DETERMINED IN THE FIELD.
 - ALL LIGHTING FIXTURES DESIGNATED WITH 'NL' ARE UNSWITCHED NIGHT LIGHT FIXTURES.
 - ALL LIGHTING FIXTURES DESIGNATED WITH 'EM' ARE EMERGENCY FIXTURES. PROVIDE BATTERY BACKUP AS REQUIRED.
 - INTERNALLY ILLUMINATED SIGNS SHALL BE MAX. 5W PER SIDE AS PER NYC ECC 605.4
 - REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS FOR:
 - GENERAL TYPE AND SPECIFIC LOCATION OF LIGHT FIXTURES AND GENERAL LOCATION OF SWITCHES.
 - THE LOCATION OF WALL MOUNTED EMERGENCY STROBES.
 - THE LOCATION OF EXIT SIGNS.
 - THE LOCATION OF CEILING-MTD. A.V ITEMS, SUCH AS RECESSED PROJECTION SCREENS AND PROJECTORS.
 - THE LOCATION OF WALL-MTD. LIGHTING FIXTURES 60" AFF OR ABOVE.
 - THE LOCATION OF ABOVE CEILING SMOKE CURTAINS.
 - REFER TO THE ELECTRICAL DESIGN DRAWINGS FOR:
 - CIRCUITING AND WIRING OF LIGHT FIXTURES, AND SWITCHES.
 - LOCATION OF REQUIRED EMERGENCY LIGHT FIXTURES.
 - ENERGY COMPLIANCE FOR POWER AND LIGHTING.
 - REFER TO THE MECHANICAL DESIGN DRAWINGS FOR:
 - DUCTS, AIR MOVEMENT REQUIREMENTS, AND SIZES OF GRILLES AND REGISTERS.
 - ENERGY COMPLIANCE FOR HVAC EQUIPMENT.
 - REFER TO THE FIRE PROTECTION DRAWINGS FOR:
 - LAYOUT, LOCATION, AND SIZE OF SPRINKLER LINES AND HEADS.
 - PRESSURE REQUIREMENTS.
 - SPRINKLER HEAD SPECIFICATIONS.
 - LOCATION OF FIRE PROTECTION RISERS & WALL HYDRANTS.
 - ALL EXTERIOR LIGHTING TO BE PROVIDED WITH A PHOTO SENSOR AND TIME SWITCH CAPABLE OF RETAINING PROGRAMMING WITHOUT POWER FOR AT LEAST 10 HOURS.

INTERIOR LIGHT FIXTURES

FIXT TYPE	DESCRIPTION / MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE WATTAGE W/FIXT.
A1	3-1/4" APERTURE, LOW AND LINE VOLTAGE, ADJUSTABLE PREMIUM DIE-CAST STEP BAFFLE	LIGHTOLIER # 302W-WX	50W E8E5016	120V 50W
B3	3-1/4" APERTURE, LOW AND LINE VOLTAGE, SHOWER LIGHT (WET LOCATION)	LIGHTOLIER # 310W-WX 4-5/8" H. WHITE FROSTED GLASS AND WHITE FLANGE	50W MR16	120V/12V 50W
C1	6" APERTURE, RECESSED COMPACT FLUORESCENT DOWNLIGHT	LIGHTOLIER # 8031CCDW TRM # 803108U HOUSING	28W TRIPLE TUBE COMPACT FLUORESCENT 3000K, 82CR, 0/5 # CFC280T/E830	120V 28W MAX 28W MAX
C2	11" LUMINOUS WHITE CEILING MOUNTED FLUORESCENT INJECTION MOLDED ACRYLIC DIFFUSER	LIGHTOLIER # 750W-13U	(2) 13W Quad Tube 4-Pin General Electric F13DWB9PX 4P	120V 13W
E1	SHATTER-RESISTANT, DECORATIVE SONCEMIRROR LIGHT	LIGHTOLIER HELIOS # 6412PC TWO-LAMP POL. CHROME, 24 1/2" W. BATHROOMS # 6412PC ONE LAMP POL. CHROME, 13 3/4" W.	18W/39W COMPACT FLUORESCENT 3000K, 82CR, 0/5 # FT18W0211/830	120V 18W/39W 18W/39W
F1	ONE LAMP T8 FLUORESCENT CHANNEL	MERCURY 3-4MM-125-OCT-C-ELB-120 4-4MM-125-OCT-C-ELB-120	28W/32W T8 82CR 3000K 0/5 # F028353	120V 28W 54W
G1	16" SQ. WALL MOUNTED FLUORESCENT	LIGHTOLIER # 10351WH	2 OF 27W TWIN TUBE 4-PINE COMPACT FLUORESCENT, 2700K, 82CR	120V 54W

EXTERIOR LIGHT FIXTURES

FIXT TYPE	DESCRIPTION / MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE WATTAGE
T1	EXTERIOR GRADE, WALL MOUNTED COMPACT FLUORESCENT WITH OPAL GLASS DIFFUSER AND BLACK DIE-CAST ALUMINUM BRACKET ARM.	BEGA LIGHTING # 6631P BLACK	13W COMPACT FLUORESCENT 3000K, 82CR 0/5 # OF 130D/E830	120V 26W 26W
T2	RECESSED WALL-SHIELDED DIE-CAST ALUMINUM FACERPLATE AND LINEAR SPREAD SAFETY GLASS.	BEGA LIGHTING # 2301 BK BLACK	(1) 20W T4 GLE 5 MH	120V 20W 20W
T7	CEILING MOUNTED SQUARE SPECTRALYTE GARAGE LUMINAIRE	WIDELITE OF # 8PCF-342 COMPACT FLUORESCENT	80W COMPACT FLUORESCENT	120V/277V 80W 80W

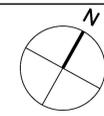
LEGEND

⊕	OUTLET
⊕	GFI OUTLET (KITCHEN, BATHROOM AND EXTERIOR)
⊕	CABLES OUTLET
☎	TELEPHONE
8'-0" CEILING HEIGHT ABOVE F.F.	

PROPOSED CELLAR REFLECTED CEILING PLAN
SCALE: 3/16" = 1'-0"

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC 800 3rd Ave, Suite 130 New York, NY 10002 646-638-8000	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. 28 West 31st St, 8th Floor New York, NY 10001 New York, NY 10011 212-268-8000 info@issacstern.com issacstern.com	STRUCTURAL ENGINEER: ADG ENGINEERING PC 764 Broad St, 19th Floor Brooklyn, NY 11216 3173-242-2628 www.adg.com	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC 2613 East 65th Street Brooklyn, NY 11234 (718) 986-0800	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: PROPOSED CELLAR REFLECTED CEILING PLAN SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: A-301.00
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ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



- RCP AND LIGHTING FIXTURES NOTES**
- ELECTRICAL AND LIGHTING SYSTEMS SHOWN ARE DIAGRAMMATIC AND MAY BE MODIFIED TO COORDINATE WITH STRUCTURAL AND ARCHITECTURAL SPECIFICATIONS. INFORMATION NOTED IS FOR ESTIMATING PURPOSES ONLY. INSTALLING CONTRACTOR SHALL FURNISH INFORMATION BASED ON THE ACTUAL EQUIPMENT USED.
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 - STYLES AND COLORS OF FIXTURES AND EXPOSED EQUIPMENT AS SELECTED.
 - PROVIDE EXIT SIGNS AND EMERGENCY LIGHT FIXTURES AS SHOWN ON DRAWINGS.
 - INSTALL NEW SPRINKLER HEADS AND LIGHT FIXTURES AT THE CENTER OF THE ACOUSTICAL CEILING TILE (IF PROVIDED), UNLESS OTHERWISE NOTED.
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 - INTERNALLY ILLUMINATED SIGNS SHALL BE MAX. 5W PER SIDE AS PER NYC ECC 205.4
 - REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS FOR:
 - GENERAL TYPE AND SPECIFIC LOCATION OF LIGHT FIXTURES AND GENERAL LOCATION OF SWITCHES.
 - THE LOCATION OF WALL MOUNTED EMERGENCY STROBES.
 - THE LOCATION OF EXIT SIGNS.
 - THE LOCATION OF CEILING-MTD. A-V ITEMS, SUCH AS RECESSED PROJECTION SCREENS AND PROJECTORS.
 - THE LOCATION OF WALL-MTD. LIGHTING FIXTURES 60" AFF OR ABOVE.
 - THE LOCATION OF ABOVE CEILING SMOKE CURTAINS.
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 - CIRCUITING AND WIRING OF LIGHT FIXTURES, AND SWITCHES.
 - LOCATION OF REQUIRED EMERGENCY LIGHT FIXTURES.
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 - DUCTS, AIR MOVEMENT REQUIREMENTS, AND SIZES OF GRILLES AND REGISTERS.
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 - REFER TO THE FIRE PROTECTION DRAWINGS FOR:
 - LAYOUT, LOCATION, AND SIZE OF SPRINKLER LINES AND HEADS.
 - PRESSURE REQUIREMENTS.
 - SPRINKLER HEAD SPECIFICATIONS.
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 - ALL EXTERIOR LIGHTING TO BE PROVIDED WITH A PHOTO SENSOR AND TIME SWITCH CAPABLE OF RETAINING PROGRAMMING WITHOUT POWER FOR AT LEAST 10 HOURS.

INTERIOR LIGHT FIXTURES

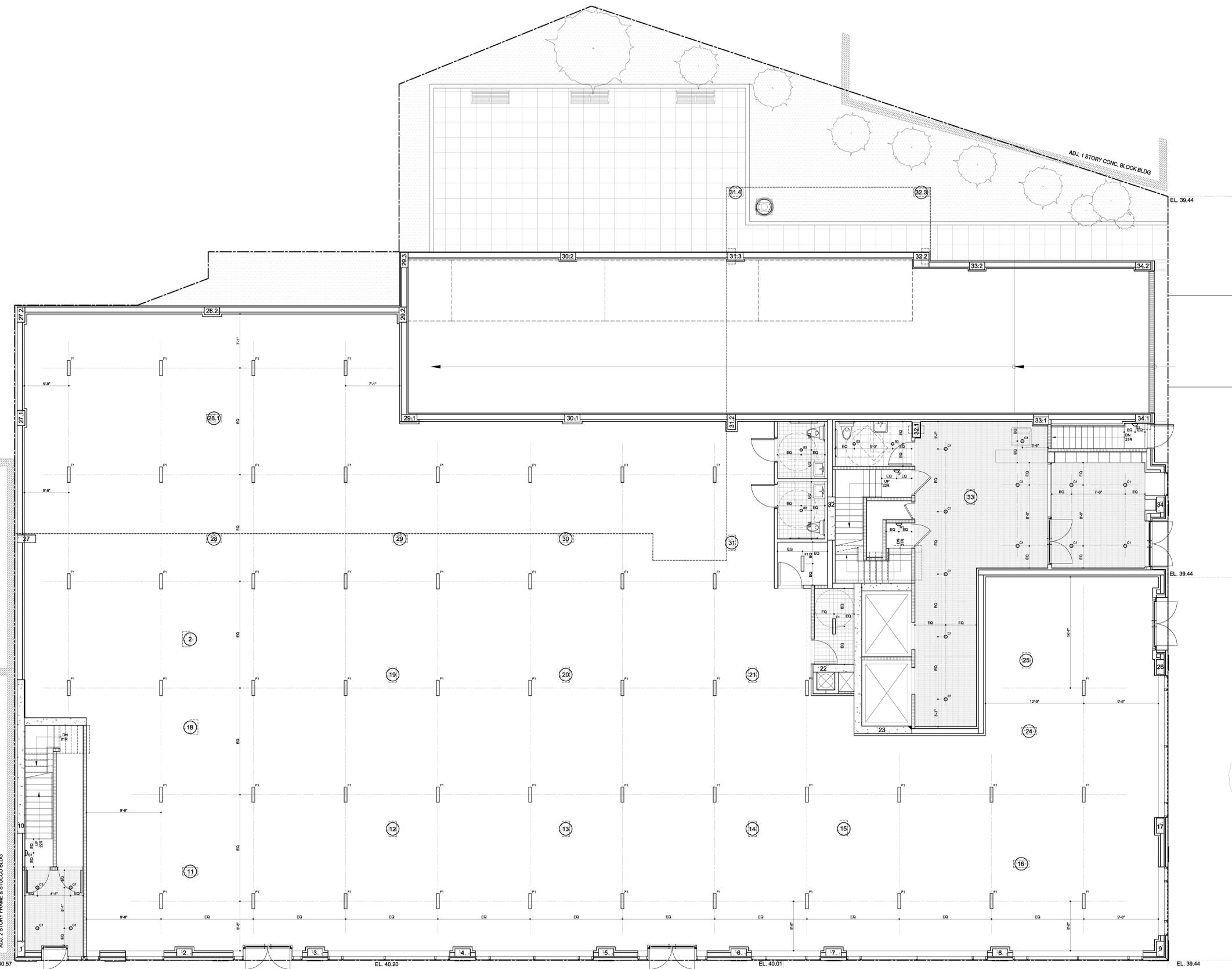
FIXT TYPE	DESCRIPTION	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE WATTAGE W/FIXT.
A1	3-3/4" APERTURE, LOW AND LINE VOLTAGE, ADJUSTABLE PREMIUM DIE-CAST STEP BAFFLE	LIGHTOLIER # 302WHXK 4-1/2" H. WHITE STEP BAFFLE AND SELF-FLANGE	50W E8E8016	120V 50W
B3	3-3/4" APERTURE, LOW AND LINE VOLTAGE, SHOWER LIGHT (WET LOCATION)	LIGHTOLIER # 310WHXK 4-5/8" H. WHITE FROSTED GLASS AND WHITE FLANGE	50W MR16	120V/12V 50W
C1	6" APERTURE, RECESSED COMPACT FLUORESCENT DOWNLIGHT	LIGHTOLIER # 8031CCDW TRM # 8031SBU HOUSING	28W TRIPLE TUBE COMPACT FLUORESCENT 3000K, 82CRI OS # #CF280T/8330	120V 28W MAX 28W MAX
C2	11" LUMINOUS WHITE CEILING MOUNTED FLUORESCENT INJECTION MOLDED ACRYLIC DIFFUSER	LIGHTOLIER # 750WH213U	(2) 13W Quad Tube 4-Pin General Electric F13DWB9PX 4P	120V 13W 13W
E1	SHATTER-RESISTANT, DECORATIVE SCONE/MIRROR LIGHT	LIGHTOLIER HELIX # 6412PC TWO-LAMP POL. CHROME, 24 1/2" W. BATHROOMS # 6412PC ONE LAMP POL. CHROME, 13 3/4" W.	18W/39W COMPACT FLUORESCENT 3000K, 82CRI OS # FT18W0211/830	120V 18W/39W 18W/39W
F1	ONE LAMP TB FLUORESCENT CHANNEL	MERCURY 2-8MM-125-OCT-C-EL8-120 4-8MM-125-OCT-C-EL8-120	28W/32W TB 82CRI 3500K OS # F02838 OS # F02838	120V 28W 54W
G1	16" SQ. WALL MOUNTED FLUORESCENT	LIGHTOLIER # 10351WH	2 OF 27W TWIN TUBE 4-PINE COMPACT FLUORESCENT, 2700K, 82CRI	120V 54W 54W

EXTERIOR LIGHT FIXTURES

FIXT TYPE	DESCRIPTION	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE WATTAGE
T1	EXTERIOR GRADE, WALL MOUNTED COMPACT FLUORESCENT, WITH OPAL GLASS DIFFUSERS AND BLACK DIE-CAST ALUMINUM BRACKET ARM.	BEGA LIGHTING # 6631P BLACK	19W COMPACT FLUORESCENT 3000K, 82CRI OS # CF130D/E830	120V 26W 26W
T2	RECESSED WALL-SHIELDED DIE-CAST ALUMINUM FACEPLATE AND LINEAR SPREAD SAFETY GLASS.	BEGA LIGHTING # 230 BH BLACK	(1) 20W T4 GLE 5 MH	120V 20W 20W
T7	CEILING MOUNTED, SQUARE SPECTRAL-YTE GARAGE LUMINAIRE	WIDELITE OF # 8PCF-242 COMPACT FLUORESCENT	80W COMPACT FLUORESCENT	120V/277V 80W 80W

LEGEND

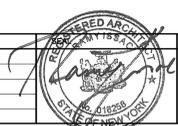
⊕	OUTLET
⊕	GFI OUTLET (KITCHEN, BATHROOM AND EXTERIOR)
⊕	CABLES OUTLET
☎	TELEPHONE
▽	8'-0" CEILING HEIGHT ABOVE F.F.

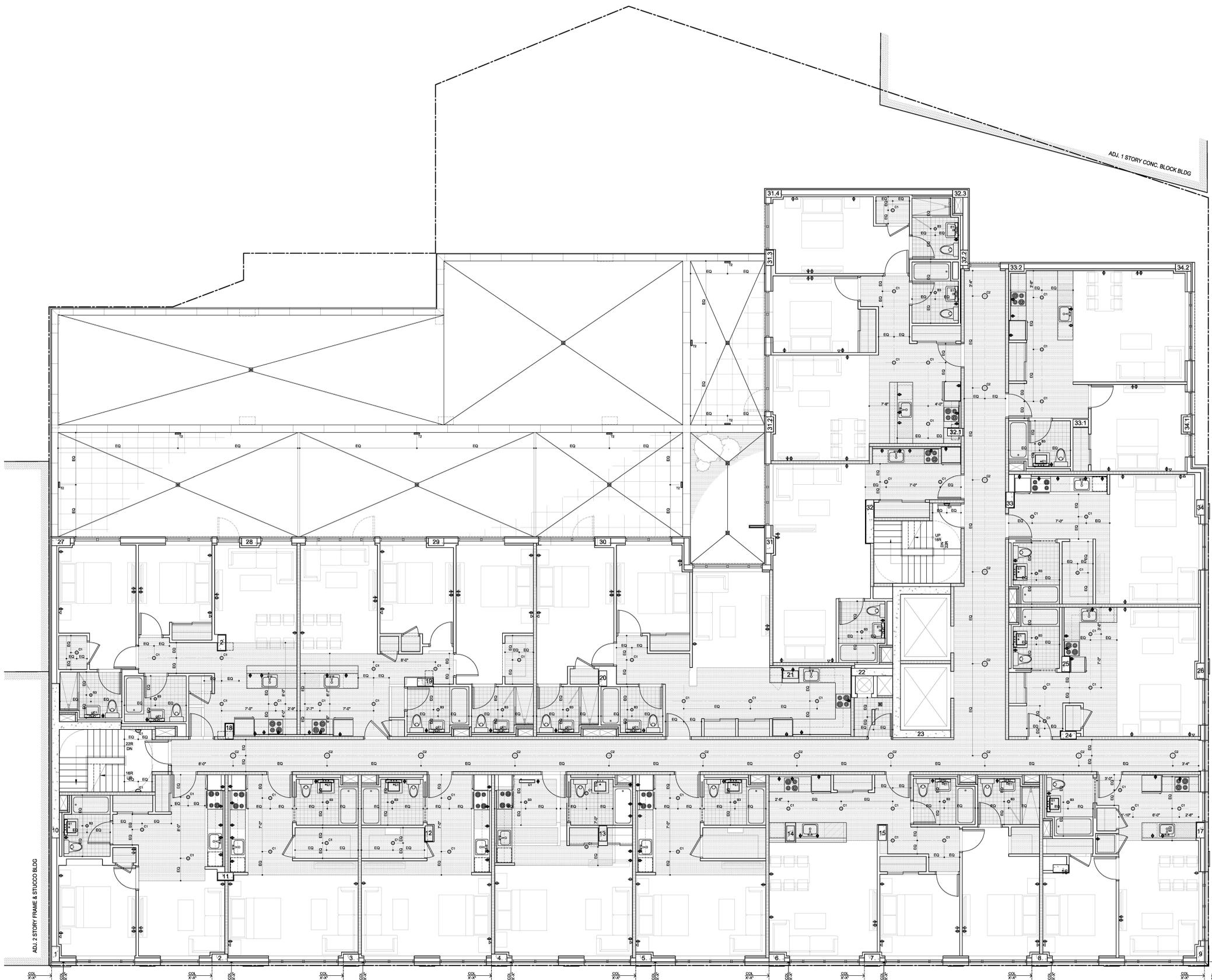
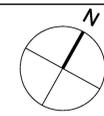


PROPOSED 1ST FLOOR REFLECTED CEILING PLAN
SCALE: 3/16" = 1'-0"

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC 600 3rd Ave, Suite 130 New York, NY 10022 646-638-6000	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. 28 West 31st St, 9th Floor New York, NY 10001 New York, NY 10011 212-268-2600 info@issacstern.com issacstern.com	STRUCTURAL ENGINEER: ADG ENGINEERING PC 744 Broad St, 19th Floor Newark, NJ 07102 212-268-2600 info@adgeng.com	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC 2613 East 65th Street Brooklyn, NY 11234 (718) 986-0800	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: 1ST FLOOR REFLECTED CEILING PLAN SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: A302-00
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ISSUED FOR PRICING UNDER PROCESS OF COORDINATION





ADJ. 1 STORY CONC. BLOCK BLDG

ADJ. 2 STORY FRAME & STUCCO BLDG

PROPOSED 2ND FLOOR REFLECTED CEILING PLAN
SCALE: 3/16" = 1'-0"

INTERIOR LIGHT FIXTURES

FIXT TYPE	DESCRIPTION / MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE WATTAGE W/FIXT.
A1	3-3/4" APERTURE, LOW AND LINE VOLTAGE, ADJUSTABLE PREMIUM DIE-CAST STEP BAFFLE	LIGHTOLIER # 302WHXX	50W E85E016	120V 50W
B3	3-3/4" APERTURE, LOW AND LINE VOLTAGE, SHOWER LIGHT (WET LOCATION)	LIGHTOLIER # 370WHX 4-5/8" H. WHITE FROSTED GLASS AND WHITE FLANGE	50W MR16	120V/12V 50W
C1	6" APERTURE, RECESSED COMPACT FLUORESCENT DOWNLIGHT	LIGHTOLIER # 8031CCDW TRM # 8031SBU HOUSING	26W TRIPLE TUBE COMPACT FLUORESCENT 3000K, 82CRI OS # #CF26T1/E83D	120V 26W MAX 26W MAX
C2	11" LUMINOUS WHITE CEILING MOUNTED FLUORESCENT INJECTION MOLDED ACRYLIC DIFFUSER	LIGHTOLIER # 750WH13U	(2) 13W Quad Tube 4-Pin General Electric F13DWB5PX 4P	120V 13W 13W
E1	SHATTER-RESISTANT, DECODING SCIENCE/MIRROR LIGHT	LIGHTOLIER HELIOS # 5412PC TWO-LAMP POL. CHROME, 24 1/2" W. BATHROOMS # 5412PC ONE LAMP POL. CHROME, 13 3/4" W.	18W/39W COMPACT FLUORESCENT 3000K, 82CRI OS # #18W0211/83D	120V 18W/39W 18W/39W
F1	ONE LAMP T8 FLUORESCENT CHANNEL	MERCURY 3-8MM-125-OCT-C-ELB-120 4-8MM-132-OCT-C-ELB-120	25W/32W T8 82CRI 3000K OS # F02583S OS # F02583S	120V 25W 50W 54W
G1	16" SQ. WALL MOUNTED FLUORESCENT	LIGHTOLIER # 10351WH	2 OF 27W TWIN TUBE 4-PINE COMPACT FLUORESCENT, 2700K, 82CRI	120V 54W 54W

EXTERIOR LIGHT FIXTURES

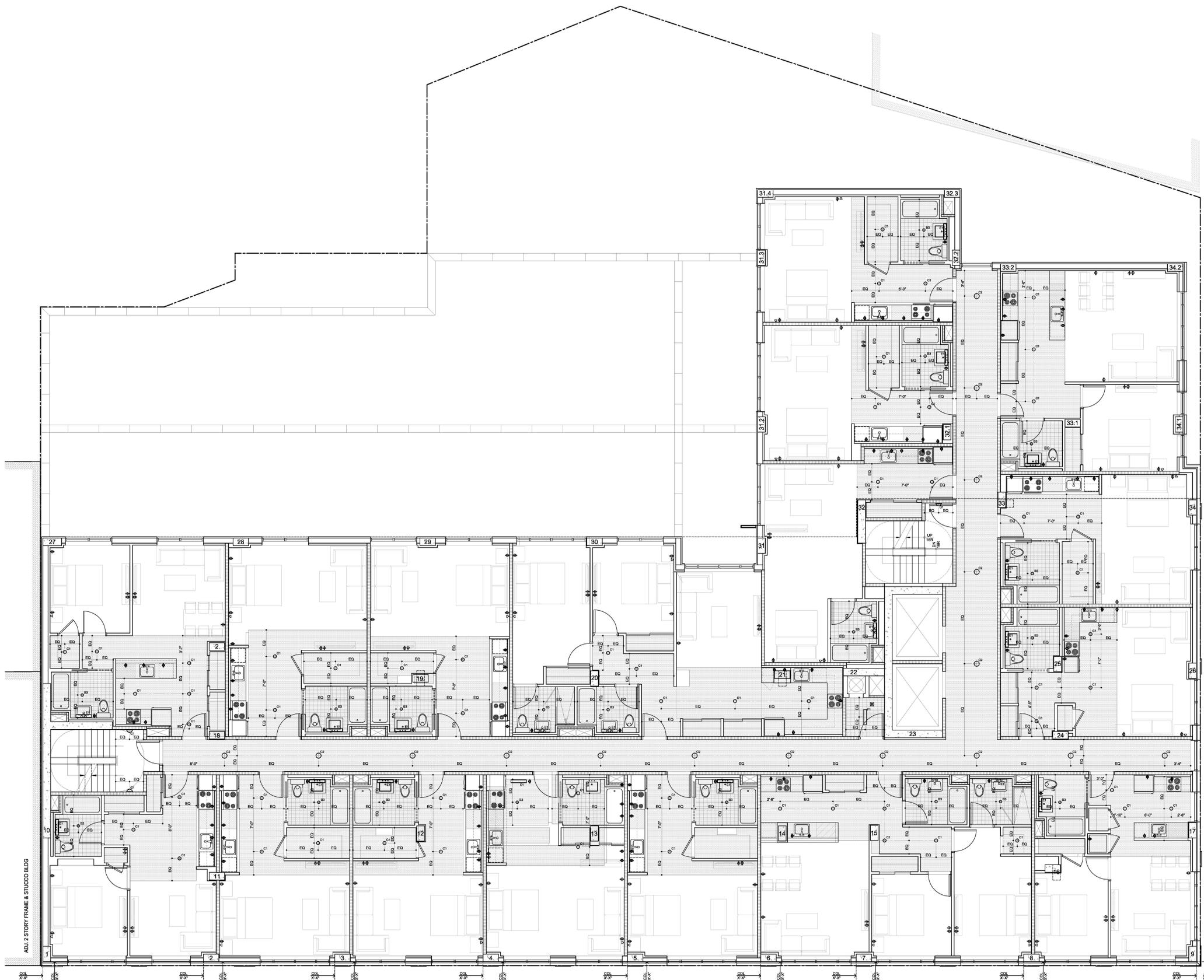
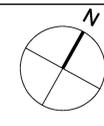
FIXT TYPE	DESCRIPTION / MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE WATTAGE
T1	EXTERIOR GRADE, WALL MOUNTED COMPACT FLUORESCENT WITH OPAL GLASS DIFFUSER AND BLACK DIE-CAST ALUMINUM BRACKET ARM.	BEGA LIGHTING # 6531P BLACK	13W COMPACT FLUORESCENT 3000K, 82CRI OS # CF13DDE/83D	120V 26W 26W
T2	RECESSED WALL-SHIELDED DIE-CAST ALUMINUM FACERPLATE AND LINEAR SPREAD SAFETY GLASS.	BEGA LIGHTING # 2300 WH BLACK	(1) 20W T4 GUR.5 MH	120V 20W 20W
T7	CEILING MOUNTED, SQUARE SPECTRALYTE GARAGE LUMINAIRE	WIDELITE OF # SPCF-242 COMPACT FLUORESCENT	80W COMPACT FLUORESCENT	120V/27V 80W 80W

LEGEND

⊕	OUTLET
⊕	GFI OUTLET (KITCHEN, BATHROOM AND EXTERIOR)
⊕	CABLES OUTLET
☎	TELEPHONE
9'-0"	9'-0" CEILING HEIGHT ABOVE F.F.

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION





PROPOSED 3RD FLOOR REFLECTED CEILING PLAN
SCALE: 3/16" = 1'-0"

INTERIOR LIGHT FIXTURES

FIXT TYPE	DESCRIPTION / MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE WATTAGE W/FIXT.
A1	3-3/4" APERTURE, LOW AND LINE VOLTAGE, ADJUSTABLE PREMIUM DIE-CAST STEP BAFFLE	LIGHTOLIER # 302WHWX	50W E8E8016	120V 50W
B3	3-3/4" APERTURE, LOW AND LINE VOLTAGE, SHOWER LIGHT (WET LOCATION)	LIGHTOLIER # 370WHX 4-5/8" H. WHITE FROSTED GLASS AND WHITE FLANGE	50W MR16	120V/12V 50W
C1	6" APERTURE, RECESSED COMPACT FLUORESCENT DOWN-LIGHT	LIGHTOLIER # 8631CCDW TRM # 8631CCDW HOUSING	26W TRIPLE TUBE COMPACT FLUORESCENT 3000K, 82CRI OS # #CF26DT/E83D	120V 26W MAX 26W MAX
C2	11" LUMINOUS WHITE CEILING MOUNTED FLUORESCENT INJECTION MOLDED ACRYLIC DIFFUSER	LIGHTOLIER # 750WH213U	(2) 13W Quad Tube 4-Pin General Electric F13DWH5PX 4P	120V 13W 13W
E1	SHATTER-RESISTANT, DECONDENSATIVE SCONCE/MIRROR LIGHT	LIGHTOLIER HELIOS # 8412PC TWO-LAMP POL. CHROME, 24 1/2" W. BATHROOMS # 8412PC ONE LAMP POL. CHROME, 13 3/4" W.	18W/39W COMPACT FLUORESCENT 3000K, 82CRI OS # #18W021183D	120V 18W/39W 18W/39W
F1	ONE LAMP T8 FLUORESCENT CHANNEL	MERCURY 3-6MM-125-OCT-C-ELB-120 4-6MM-125-OCT-C-ELB-120	25W/32W T8 82CRI 3000K OS # F02583S OS # F02583S	120V 25W 50W 54W
G1	16" SQ. WALL MOUNTED FLUORESCENT	LIGHTOLIER # 10351WH	2 OF 27W TWIN TUBE 4-PINE COMPACT FLUORESCENT, 2700K, 82CRI	120V 54W 54W

EXTERIOR LIGHT FIXTURES

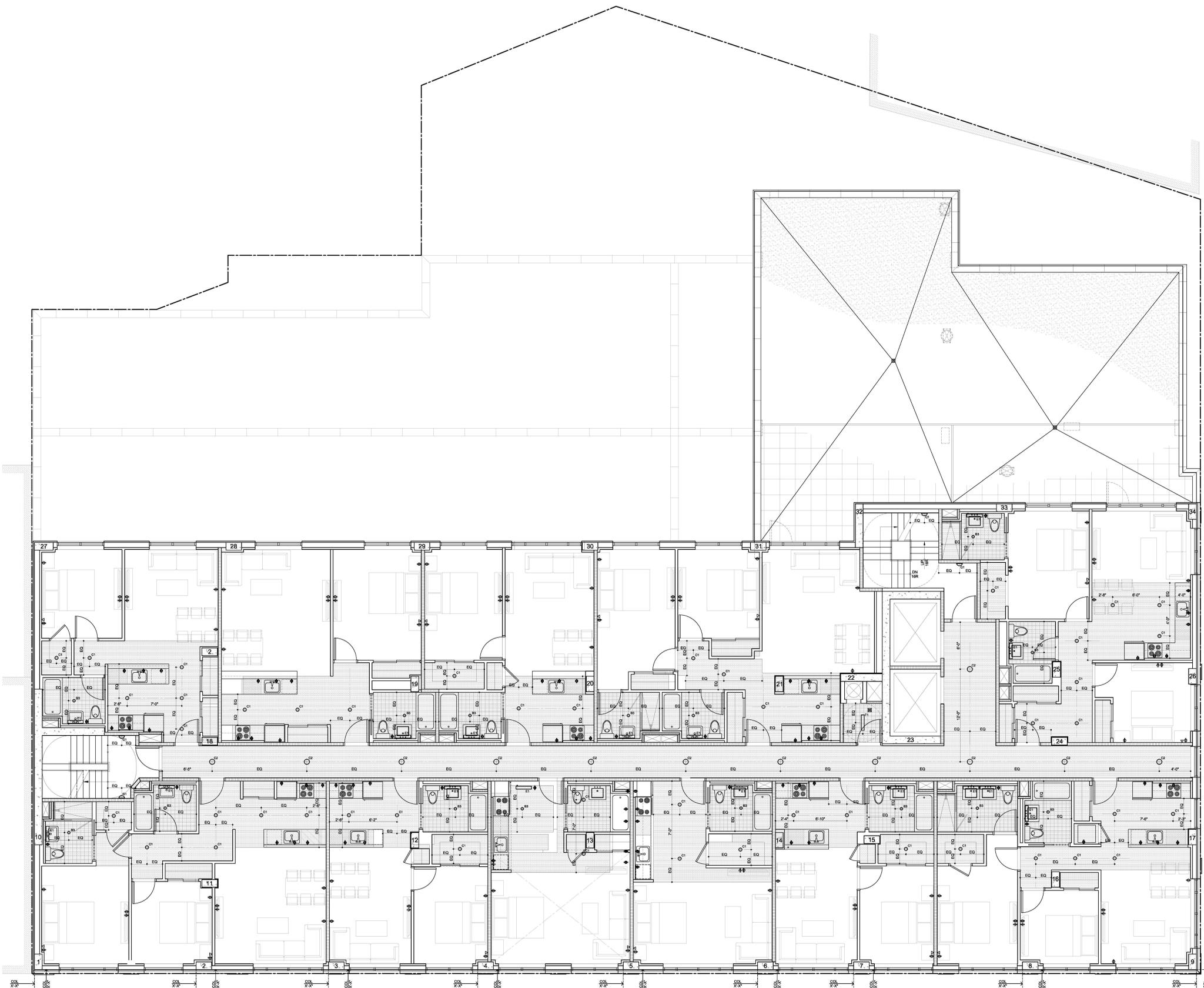
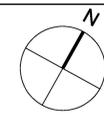
FIXT TYPE	DESCRIPTION / MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE WATTAGE
T1	EXTERIOR GRADE, WALL MOUNTED COMPACT FLUORESCENT WITH OPAL GLASS DIFFUSER AND BLACK DIE-CAST ALUMINUM BRACKET ARM.	BEGA LIGHTING # 6531P BLACK	13W COMPACT FLUORESCENT 3000K, 82CRI OS # CF13DD/E83D	120V 26W 26W
T2	RECESSED WALL-SHIELDED DIE-CAST ALUMINUM FACERPLATE AND LINEAR SPREAD SAFETY GLASS.	BEGA LIGHTING # 2360 MH BLACK	(1) 20W T4 GUR.5 MH	120V 20W 20W
T7	CEILING MOUNTED, SQUARE SPECTRALYTE GARAGE LUMINAIRE	WIDELITE OF # SPCF-242 COMPACT FLUORESCENT	80W COMPACT FLUORESCENT	120V/277V 80W 80W

LEGEND

	OUTLET
	GFI OUTLET (KITCHEN, BATHROOM AND EXTERIOR)
	CABLES OUTLET
	TELEPHONE
	8'-0" CEILING HEIGHT ABOVE F.F.

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION





PROPOSED 4TH FLOOR REFLECTED CEILING PLAN
SCALE: 3/16" = 1'-0"

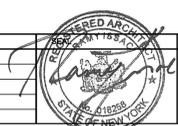
INTERIOR LIGHT FIXTURES					
FIXT TYPE	DESCRIPTION MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE	WATTAGE W/FIXT.
A1	3-3/4" APERTURE, LOW AND LINE VOLTAGE, ADJUSTABLE PREMIUM DIE-CAST STEP BAFFLE	LIGHTOLIER # 302WVWX	50W E8E8016	120V	50W
B3	3-3/4" APERTURE, LOW AND LINE VOLTAGE, SHOWER LIGHT (WET LOCATION)	LIGHTOLIER # 370VWX 4-5/8" H. WHITE FROSTED GLASS AND WHITE FLANGE	50W MR16	120V/12V	50W
C1	6" APERTURE, RECESSED COMPACT FLUORESCENT DOWN-LIGHT	LIGHTOLIER # 8031CCDW TRM # 8031CBU HOUSING	26W TRIPLE TUBE COMPACT FLUORESCENT 3000K, 82CRI OS # CFC26DT/E83D	120V	26W MAX
C2	11" LUMINOUS WHITE CEILING MOUNTED FLUORESCENT INJECTION MOLDED ACRYLIC DIFFUSER	LIGHTOLIER # 750WH213U	(2) 13W Quad Tube 4-Pin General Electric F13DWB5PX 4P	120V	13W
E1	SHATTER-RESISTANT, DECODATIVE SCONCE/MIRROR LIGHT	LIGHTOLIER HELIOS # 8412PC TWO-LAMP POL. CHROME, 24 1/2" W. BATHROOMS # 8412PC ONE LAMP POL. CHROME, 13 3/4" W.	18W/39W COMPACT FLUORESCENT 3000K, 82CRI OS # F18W021183D	120V	18W/39W
F1	ONE LAMP T8 FLUORESCENT CHANNEL	MERCURY 3-8MM-125-OCT-C-ELB-120 4-8MM-132-OCT-C-ELB-120	25W/32W T8 82CRI 3000K OS # F025B35 OS # F025B35	120V	25W
G1	16" SQ. WALL MOUNTED FLUORESCENT	LIGHTOLIER # 10351WH	2 OF 27W TWIN TUBE 4-PINE COMPACT FLUORESCENT, 2700K, 82CRI	120V	54W

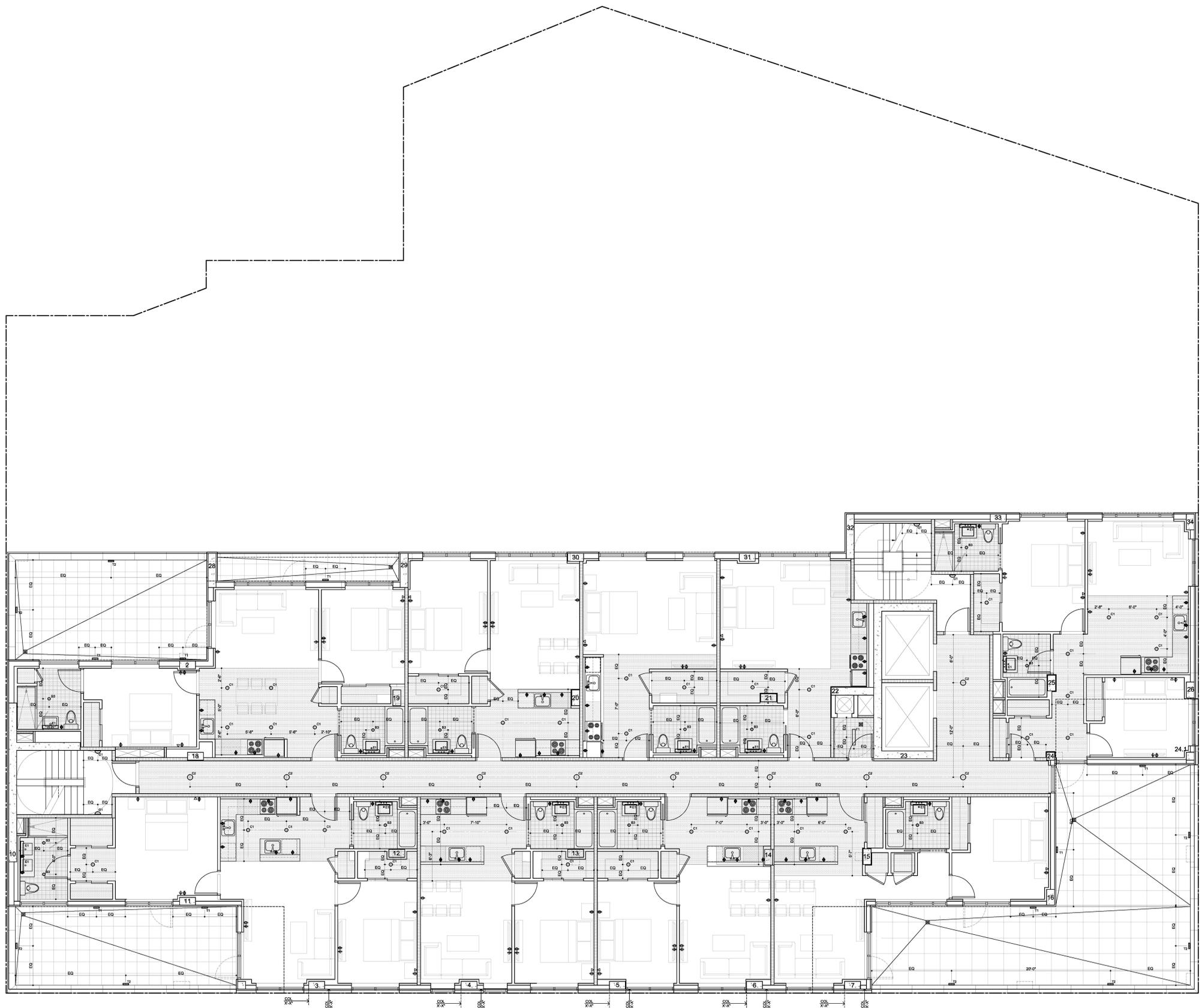
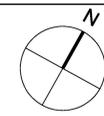
EXTERIOR LIGHT FIXTURES					
FIXT TYPE	DESCRIPTION MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE	WATTAGE
T1	EXTERIOR GRADE, WALL MOUNTED COMPACT FLUORESCENT WITH OPAL GLASS DIFFUSER AND BLACK DIE-CAST ALUMINUM BRACKET ARM.	BEGA LIGHTING # 6531P BLACK	13W COMPACT FLUORESCENT 3000K, 82CRI OS # CF13DD/E83D	120V	26W
T2	RECESSED WALL-SHIELDED DIE-CAST ALUMINUM FACERPLATE AND LINEAR SPREAD SAFETY GLASS.	BEGA LIGHTING # 2301H BLACK	(1) 20W T4 GUR.5 MH	120V	20W
T7	CEILING MOUNTED, SQUARE SPECTRALYTE GARAGE LUMINAIRE	WIDELITE CF # SPCF-242 COMPACT FLUORESCENT	80W COMPACT FLUORESCENT	120V/277V	80W

LEGEND

⊕	OUTLET
⊕	GFI OUTLET (KITCHEN, BATHROOM AND EXTERIOR)
⊕	CABLES OUTLET
⊕	TELEPHONE
⊕	8'-0" CEILING HEIGHT ABOVE F.F.

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION





PROPOSED 5TH FLOOR REFLECTED CEILING PLAN
SCALE: 3/16" = 1'-0"

INTERIOR LIGHT FIXTURES					
FIXT TYPE	DESCRIPTION / MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE	WATTAGE
A1	3-3/4" APERTURE, LOW AND LINE VOLTAGE, ADJUSTABLE PREMIUM DIE-CAST STEP BAFFLE	LIGHTOLIER # 302WHX	50W E8ES016	120V	50W
B3	3-3/4" APERTURE, LOW AND LINE VOLTAGE, SHOWER LIGHT (WET LOCATION)	LIGHTOLIER # 310WHX 4-5/8" H. WHITE FROSTED GLASS AND WHITE FLANGE	50W MR16	120V/12V	50W
C1	6" APERTURE, RECESSED COMPACT FLUORESCENT DOWNLIGHT	LIGHTOLIER # 8031CCDW TRM # 8031CBU HOUSING	26W TRIPLE TUBE COMPACT FLUORESCENT 3000K, 82CRI OS # CCF26DT/E83D	120V	26W MAX
C2	11" LUMINOUS WHITE CEILING MOUNTED FLUORESCENT INJECTION MOLDED ACRYLIC DIFFUSER	LIGHTOLIER # 750WH213U	(2) 13W Quad Tube 4-Pin General Electric F13DWBSPX 4P	120V	13W
E1	SHATTER-RESISTANT, DECODATIVE SCONCE/MIRROR LIGHT	LIGHTOLIER HELIOS # 5412PC TWO-LAMP POL. CHROME, 24 1/2" W. BATHROOMS # 5412PC ONE LAMP POL. CHROME, 13 3/4" W.	18W/39W COMPACT FLUORESCENT 3000K, 82CRI OS # F18W0211/83D	120V	18W/39W
F1	ONE LAMP T8 FLUORESCENT CHANNEL	MERCURY 3-8MM-125-OCT-C-ELB-120 4-8MM-132-OCT-C-ELB-120	25W/32W T8 82CRI 3000K OS # F025B35 OS # F025B35	120V	25W
G1	16" SQ. WALL MOUNTED FLUORESCENT	LIGHTOLIER # 10351WH	2 OF 27W TWIN TUBE 4-PINE COMPACT FLUORESCENT, 2700K, 82CRI	120V	54W

EXTERIOR LIGHT FIXTURES					
FIXT TYPE	DESCRIPTION / MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE	WATTAGE
T1	EXTERIOR GRADE, WALL MOUNTED COMPACT FLUORESCENT WITH OPAL GLASS DIFFUSER AND BLACK DIE-CAST ALUMINUM BRACKET ARM.	BEGA LIGHTING # 6531P BLACK	13W COMPACT FLUORESCENT 3000K, 82CRI OS # CF13DD/E83D	120V	26W
T2	RECESSED WALL-SHIELDED DIE-CAST ALUMINUM FACERPLATE AND LINEAR SPREAD SAFETY GLASS.	BEGA LIGHTING # 2360 MH BLACK	(1) 20W T4 GUR.5 MH	120V	20W
T7	CEILING MOUNTED, SQUARE SPECTRALYTE GARAGE LUMINAIRE	WIDELITE CF # SPCF-242 COMPACT FLUORESCENT	80W COMPACT FLUORESCENT	120V/277V	80W

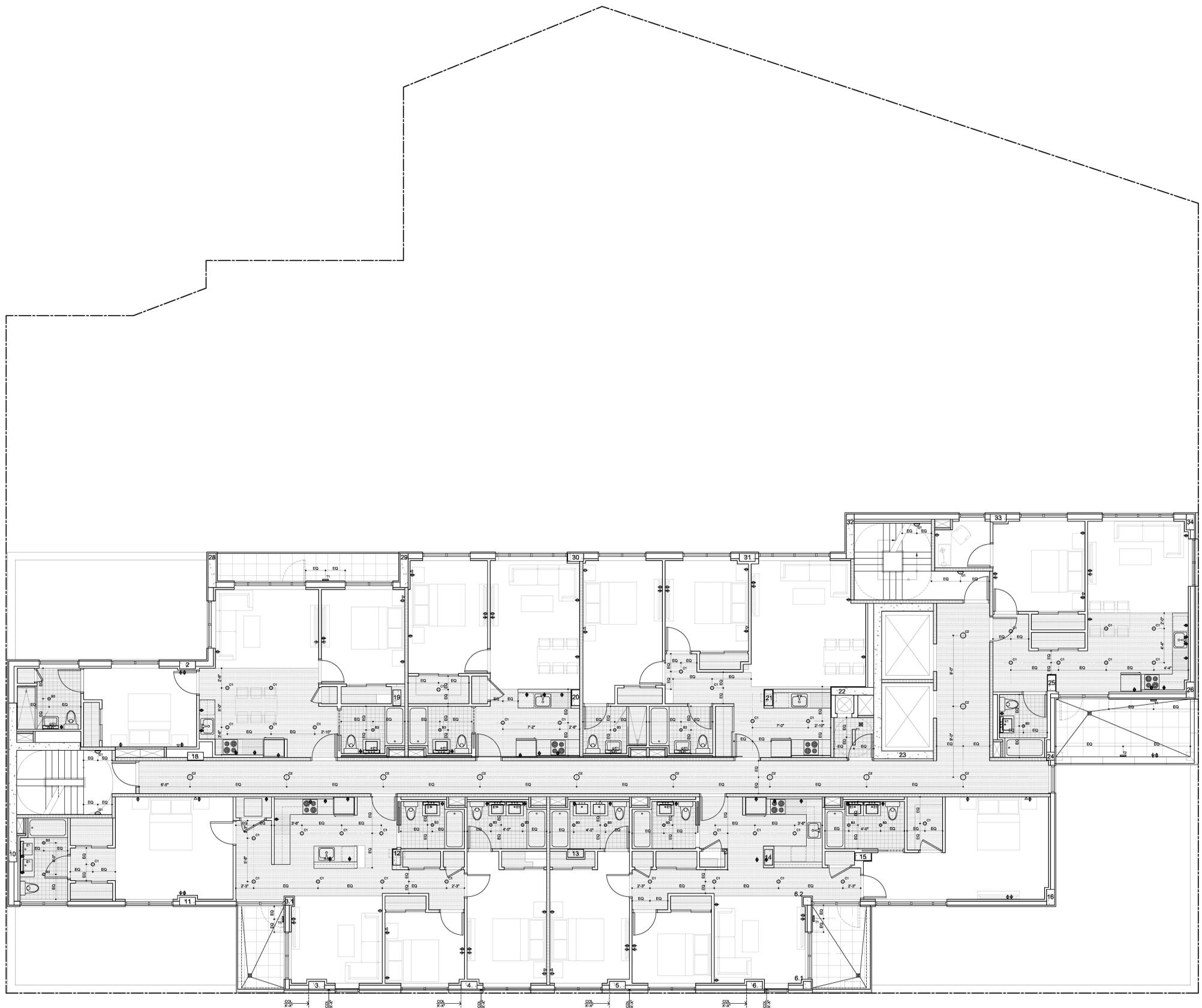
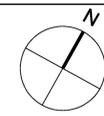
LEGEND

⊕	OUTLET
⊕	GFI OUTLET (KITCHEN, BATHROOM AND EXTERIOR)
⊕	CABLES OUTLET
⊕	TELEPHONE
8'-0"	8'-0" CEILING HEIGHT ABOVE F.F.

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC 862 3rd Ave, Suite 13D New York, NY 10022 646-438-6000	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. 25 West 31st St, 8th Floor New York, NY 10001 212-268-0200 info@issacstern.com issacstern.com	STRUCTURAL ENGINEER: ADG ENGINEERING PC 704 Broad St, 18th Floor Newark, NJ 07102 973-242-2628 info@adg.com	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC 2513 East 65th Street Brooklyn, NY 11234 (718) 966-0800	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: PROPOSED 5TH FLOOR REFLECTED CEILING PLAN SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: A-306.00
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ISSUED FOR PRICING UNDER PROCESS OF COORDINATION





INTERIOR LIGHT FIXTURES

FIXT TYPE	DESCRIPTION MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE WATTAGE W/FIXT.
A1	3-3/4" APERTURE, LOW AND LINE VOLTAGE, ADJUSTABLE PREMIUM DIE-CAST STEP BAFFLE	LIGHTOLIER # 302WHWX	50W E85E016	120V 50W
B3	3-3/4" APERTURE, LOW AND LINE VOLTAGE, SHOWER LIGHT (WET LOCATION)	LIGHTOLIER # 310WHX 4-5/8" H. WHITE FROSTED GLASS AND WHITE FLANGE	50W MR16	120V/12V 50W
C1	6" APERTURE, RECESSED COMPACT FLUORESCENT DOWNLIGHT	LIGHTOLIER # 8531CCDW TRM # 8531SBU HOUSING	26W TRIPLE TUBE COMPACT FLUORESCENT 3000K, 82CRI OS # CFC26DT/E83D	120V 26W MAX 26W MAX
C2	11" LUMINOUS WHITE CEILING MOUNTED FLUORESCENT INJECTION MOLDED ACRYLIC DIFFUSER	LIGHTOLIER # 750WH213U	(2) 13W Quad Tube 4-Pin General Electric F13DWH213U	120V 13W 13W
E1	SHATTER-RESISTANT, DECOGNITIVE SCONCE/MIRROR LIGHT	LIGHTOLIER HELIOS # 8412PC TWO-LAMP POL. CHROME, 24 1/2" W. BATHROOMS # 8412PC ONE LAMP POL. CHROME, 13 3/4" W.	18W/39W COMPACT FLUORESCENT 3000K, 82CRI OS # F18W0211/83D	120V 18W/39W 18W/39W
F1	ONE LAMP T8 FLUORESCENT CHANNEL	MERCURY 3-ARM-125-OCT-C-ELB-120 4-ARM-125-OCT-C-ELB-120	25W/32W T8 82CRI 3000K OS # F025B35 OS # F025B35	120V 25W 50W 54W
G1	16" SQ. WALL MOUNTED FLUORESCENT	LIGHTOLIER # 10351WH	2 OF 27W TWIN TUBE 4-PINE COMPACT FLUORESCENT, 2700K, 82CRI	120V 54W 54W

EXTERIOR LIGHT FIXTURES

FIXT TYPE	DESCRIPTION MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE WATTAGE
T1	EXTERIOR GRADE, WALL MOUNTED COMPACT FLUORESCENT WITH OPAL GLASS DIFFUSER AND BLACK DIE-CAST ALUMINUM BRACKET ARM.	BEGA LIGHTING # 6531P BLACK	13W COMPACT FLUORESCENT 3000K, 82CRI OS # CF13DD/E83D	120V 26W 26W
T2	RECESSED WALL-SHIELDED DIE-CAST ALUMINUM FACERPLATE AND LINEAR SPREAD SAFETY GLASS.	BEGA LIGHTING # 2360 MH BLACK	(1) 20W T4 GUR.5 MH	120V 20W 20W
T7	CEILING MOUNTED, SQUARE SPECTRALYTE GARAGE LUMINAIRE	WIDELITE CF # SPCF-242 COMPACT FLUORESCENT	80W COMPACT FLUORESCENT	120V/277V 80W 80W

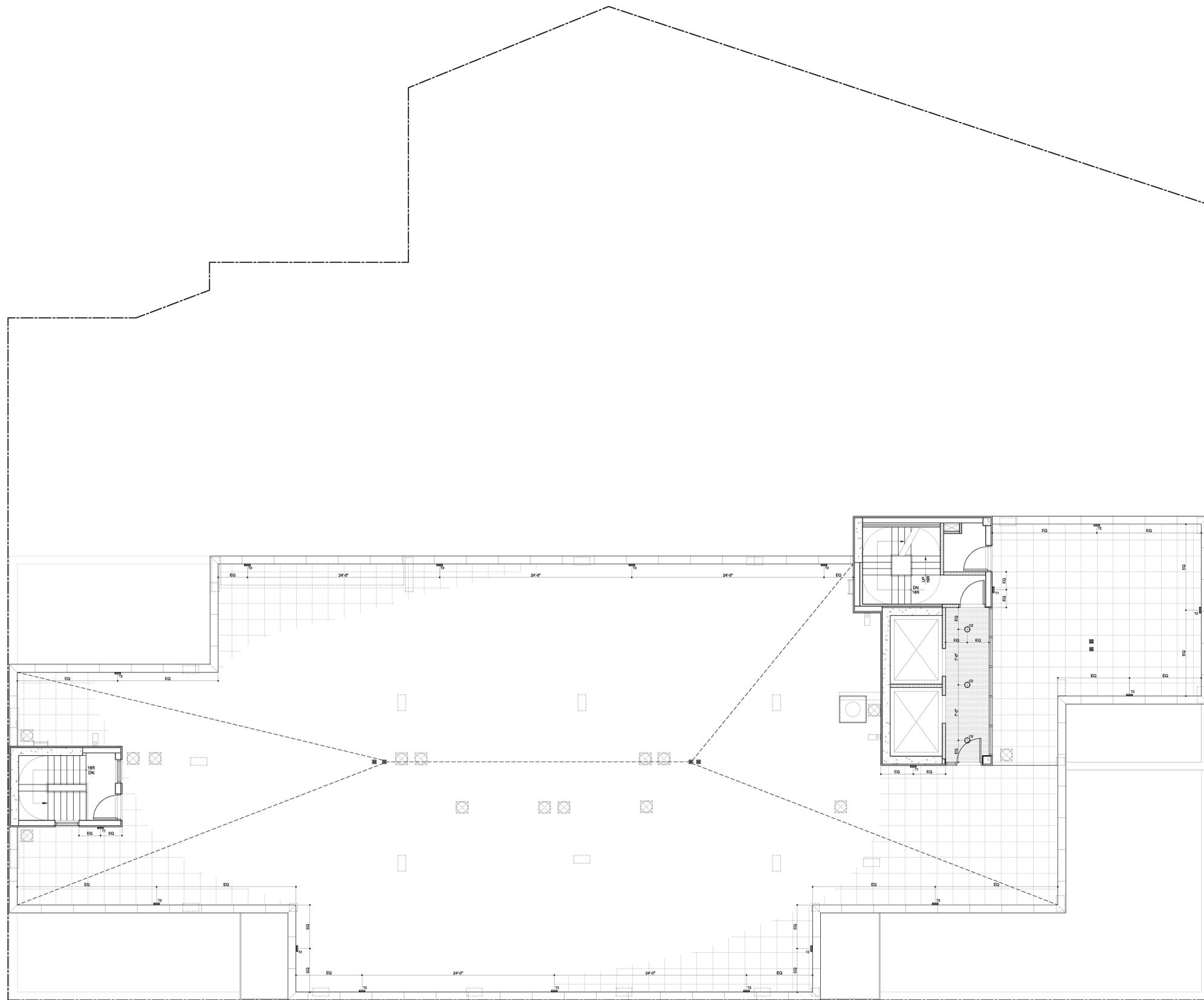
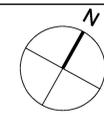
LEGEND

⊕	OUTLET
⊕	GFI OUTLET (KITCHEN, BATHROOM AND EXTERIOR)
⊕	CABLES OUTLET
⊕	TELEPHONE
⊕	8'-0" CEILING HEIGHT ABOVE F.F.

PROPOSED 6TH FLOOR REFLECTED CEILING PLAN
SCALE: 3/16" = 1'-0"

OWNER / DEVELOPER 781 METROPOLITAN ASSET, LLC 802 3rd Ave, Suite 132 New York, NY 10022 646-439-6000	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. 25 West 31st St, 8th Floor New York, NY 10001 212-268-8200 info@issacstern.com issacstern.com	STRUCTURAL ENGINEER: ADG ENGINEERING PC 704 Broad St, 10th Floor Newark, NJ 07102 973-242-2628 info@adgen.com	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC 2513 East 65th Street Brooklyn, NY 11234 (718) 966-0800	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: PROPOSED 6TH FLOOR REFLECTED CEILING PLAN SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: A-307.00
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ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



PROPOSED ROOF LIGHTING PLAN
SCALE: 3/16" = 1'-0"

INTERIOR LIGHT FIXTURES

FIXT TYPE	DESCRIPTION MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE WATTAGE W/FIXT.
A1	3-3/4" APERTURE, LOW AND LINE VOLTAGE, ADJUSTABLE PREMIUM DIE-CAST STEP BAFFLE	LIGHTOLIER # 302WHX 4-1/2" H. WHITE STEP BAFFLE AND SELF-FLANGE	50W E8E8016	120V 50W 50W
B3	3-3/4" APERTURE, LOW AND LINE VOLTAGE, SHOWER LIGHT (WET LOCATION)	LIGHTOLIER # 370WHX 4-5/8" H. WHITE FROSTED GLASS AND WHITE FLANGE	50W MR16	120V/12V 50W 50W
C1	6" APERTURE, RECESSED COMPACT FLUORESCENT DOWNLIGHT	LIGHTOLIER # 8631CCDW TRM # 8631CBU HOUSING	26W TRIPLE TUBE COMPACT FLUORESCENT 3000K, 82CRI, CFC #CF26DT/E83D	120V 26W MAX 26W MAX
C2	11" LUMINOUS WHITE CEILING MOUNTED FLUORESCENT INJECTION MOLDED ACRYLIC DIFFUSER	LIGHTOLIER #750WH213U	(2) 13W Quad Tube 4-Pin General Electric F13DWH5PX 4P	120V 13W 13W
E1	SHATTER-RESISTANT, DECORATIVE SCIENCE MIRROR LIGHT	LIGHTOLIER HELIOS # 5412PC TWO-LAMP POL. CHROME, 24 1/2" W. BATHROOMS # 5410PC ONE LAMP POL. CHROME, 13 3/4" W.	18W/39W COMPACT FLUORESCENT 3000K, 82CRI OS # F18W0211/830	120V 18W/39W 18W/39W
F1	ONE LAMP T8 FLUORESCENT CHANNEL	MERCURY 3-6MM-125-OCT-C-ELB-120 4-6MM-132-OCT-C-ELB-120	25W/32W T8 82CRI 3000K OS # F025B35 OS # F032B35	120V 25W 50W 54W
G1	16" SQ. WALL MOUNTED FLUORESCENT	LIGHTOLIER # 10351WH	2 OF 27W TWIN TUBE 4-PINE COMPACT FLUORESCENT, 2700K, 82CRI	120V 54W 54W

EXTERIOR LIGHT FIXTURES

FIXT TYPE	DESCRIPTION MOUNTING	MANUFACTURER / MFR. CATALOG #	LAMP TYPE / MFR. CAT. #	VOLTAGE WATTAGE
T1	EXTERIOR GRADE, WALL MOUNTED COMPACT FLUORESCENT WITH OPAL GLASS DIFFUSER AND BLACK DIE-CAST ALUMINUM BRACKET ARM.	BEGA LIGHTING # 6531P BLACK	13W COMPACT FLUORESCENT 3000K, 82CRI OS # CF13DD/E830	120V 26W 26W
T2	RECESSED WALL-SHELDIE DIE-CAST ALUMINUM FACERPLATE AND LINEAR SPREAD SAFETY GLASS.	BEGA LIGHTING # 2301H BLACK	(1) 20W T4 GUR.5 MH	120V 20W 20W
T7	CEILING MOUNTED, SQUARE SPECTRALYTE GARAGE LUMINAIRE	WIDELITE CF # SPCF-242 COMPACT FLUORESCENT	80W COMPACT FLUORESCENT	120V/277V 80W 80W

LEGEND

⊕	OUTLET
⊕	GFI OUTLET (KITCHEN, BATHROOM AND EXTERIOR)
⊕	CABLES OUTLET
⊕	TELEPHONE
⊕	8'-0" CEILING HEIGHT ABOVE F.F.

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PARTITION TYPES		PARTITION TYPES		PARTITION TYPES	
<p>2 CONT. BEADS OF CAULKING AROUND PERIMETER OF PART. TOP & BOTTOM 2x6" FIRE CODE "C" GYP. WALLBOARD 1" SHAFT WALL LINER 1 1/2" SOUND INSULATION 2 1/2" OR 4" C-H STUD OR 6" ST. STUD 24" O.C. 1" SHAFT WALL LINER 1 1/2" SOUND INSULATION</p> <p>SECTION</p> <p>2x6" FIRE CODE "C" GYP. WALLBOARD</p> <p>PLAN</p>	<p>MASONRY EQUIVALENT AND IMPACT RESISTANT NOTES:</p> <p>THE FOLLOWING SHALL APPLY TO PARTITION TYPES USED AT STAIR AND ELEVATOR ENCLOSURE LOCATIONS:</p> <ol style="list-style-type: none"> ALL ASSEMBLIES ARE TO COMPLY WITH THE NYC TITLE 1 DEPT. OF BUILDINGS MASONRY EQUIVALENT EXIT ENCLOSURES AND 409.01 IMPACT RESISTANT STAIR AND ELEVATOR SHAFT ENCLOSURES. MATERIALS: G.W.B. SHALL BE IMPACT RESISTANT TYPE, ASTM C 1292-06 STANDARD CLASSIFICATION FOR IMPACT RESISTANT NON-DECORATED INTERIOR GYP/WALL PANEL PRODUCTS AND FIBER-REINFORCED CEMENT PANELS, HARD BODY IMPACT CLASSIFICATION LEVEL 2, AND BOTH BASE AND FINISH LAYERS SHALL BE MIN. 5/8" G.W.B. ASSEMBLY: 2 HR. FIRE RATED MIN. INSTALLATION: <ol style="list-style-type: none"> MIN. 3/2" STUDS 20 GA. SPACED @ 24" O.C. MAX. RUNNER SHALL BE SECURED TO FLOOR AND CEILING STRUCTURE AND SHALL COMPLY WITH STRUCTURAL REQUIREMENTS OF THE BUILDING CODE. ATTACH G.W.B. WITH MIN. NO. 8 SELF DRILLING BUNGE HEAD SCREWS, 1/2" O.C. MAX. W/ MIN. DEPTH OF 9/16" PENETRATION INTO THE WALL CAVITY. WALL PANEL JOINTS SHALL BE STAGGERED FROM BASE LAYER WITH FACE PANEL LAYER. 	<p>CONT. BEADS OF CAULKING AROUND PERIMETER OF PART. TOP & BOTTOM 5/8" FIRE CODE "C" GYP. WALLBOARD 1" SHAFT WALL LINER 1 1/2" SOUND INSULATION 1" J' RUNNER HOR. EXP. JOINT 2 1/2" OR 4" C-H STUD OR 6" ST. STUD 24" O.C. 1" SHAFT WALL LINER 1 1/2" SOUND INSULATION</p> <p>SECTION @ STAIR</p> <p>2x6" FIRE CODE "C" GYP. WALLBOARD</p> <p>PLAN</p>	<p>CONT. BEADS OF CAULKING AROUND PERIMETER OF PART. TOP & BOTTOM 5/8" FIRE CODE "C" GYP. WALLBOARD STUD RUNNER 4" 4" H METAL LINER 2" SOUND INSL. WHERE INDICATED ON PLAN 1 1/2" SOUND INSULATION</p> <p>SECTION</p> <p>2x6" FIRE CODE "C" GYP. WALLBOARD</p> <p>PLAN</p>	<p>CONT. BEADS OF CAULKING AROUND PERIMETER OF PART. TOP & BOTTOM 5/8" FIRE CODE "C" GYP. WALLBOARD (WATER RESISTANT @ BATHROOMS & KITCHENS) STEEL STUD @ 16" O.C. FLOOR</p> <p>SECTION</p> <p>2x6" FIRE CODE "C" GYP. WALLBOARD</p> <p>PLAN</p>	<p>PARTITION NOTES:</p> <ol style="list-style-type: none"> ERECT TYPE "F" PARTITIONS UNLESS OTHERWISE NOTED. REFER TO TYPICAL PARTITION DETAILS FOR TYPICAL BRACING AT NEW PARTITIONS AND FOR PARTITION HEAD AND BASE CONDITIONS. LIMITED HEIGHTS OF PARTITIONS AS NOTED BELOW PROVIDE GENERAL SUBELEMENTS BASED ON HEIGHTS PROVIDED. REFER TO MANUFACTURERS DATA TO CONFIRM THAT STUD SIZE AND GAUGE MEET THE REQUIREMENTS OF THE ARCHITECTURAL SPECIFICATIONS. DRYWALL SHAFR SYSTEMS AT ELEVATORS TO WITHSTAND A LATERAL LOADING OF 100 LBS. PER SQ. FT. WITH DEFLECTION LIMITED TO 1/4" OF THE PARTITION HEIGHTS. STANDARD DRYWALL ASSEMBLIES TO WITHSTAND A LATERAL LOADING OF 100 LBS. PER SQ. FT. WITH DEFLECTION LIMITED TO 1/4" OF THE PARTITION HEIGHTS. DRYWALL ASSEMBLIES AT TILE FINISH TO HAVE A DEFLECTION LIMIT OF 1/8". PROVIDE WATER & MOIST RESISTANT GYP/WALL BOARD AT ALL WET LOCATIONS SUCH AS BUT NOT LIMITED TO EXTERIOR STORAGE CLOSETS, LOCKER ROOMS, BATHROOM, TOILET ROOMS, POWDER ROOMS AND JANITOR CLOSETS. PROVIDE CONTINUOUS BRACER IN LIEU OF GWS AT TUB AND SHOWER SURROUNDINGS. ALL 9/8" TYPE "X" SHEET ROCK IS BASED ON UFG PRECODE "X" MEETING THE REQUIREMENTS OF ASTM C106. EQUIVALENT FIRE RATED SHEET ROCK FOR OTHER SPECIFIED MANUFACTURERS, AS STATED IN SPECIFICATIONS, ARE ACCEPTABLE. WHERE FIRE RATED PARTITIONS MEET OR PASS BY NON-RATED PARTITIONS THE RATED ASSEMBLY MUST BE CONTINUOUSLY MAINTAINED. PARTITION FRAMING & FLOORING MEMBERS ASTM C 106 20 GAUGE (MIN) THICKNESS OF SHEET METAL. STUDS TO BE 1/2" O.C. AT KITCHEN CABINETS AND ELECTRICAL PANELS. BOTTOM TRACK OF ALL PARTITIONS TO MATCH GAUGE OF STUD. SECURE TO SLAB. PROVIDE METAL BRACING AND BRACING BEHIND GWS FOR ALL WALLS. WALL MOUNTED CASEWORK INSTALLATION, FUTURE HANDCAPPED BARS IN ALL BATHROOMS & AND EQUIPMENT SUPPORTED ON DRYWALL PARTITIONS. ELECTRICAL AND SERVICE OUTLETS FOR ADJACENT ROOMS ARE TO BE POSITIONED MINIMUM 24 INCHES APART AND IN SEPARATE STUD SPACES. PROVIDE CONTINUOUS ACoustICAL (NON-HARDENING) CAULKING BEADS ON EACH SIDE OF THE BOTTOM STUD RUNNER AT THE THREE-WAY INTERSECTION BETWEEN THE RUNNER, FLOOR AND DRYWALL. IN ALL ADJUSTABLE PARTITIONS, PROVIDE ADJUSTABLE CAULKING TO CLOSE GAPS BETWEEN ALL SERVICE OUTLETS (ELECTRICAL, TELEPHONE, DATA, ETC.), ANY PENETRATIONS AND DRYWALL. ALL PARTITIONS WHICH DENOTE STC RATINGS (STC) MUST BE CONSTRUCTED TO MEET SOUND TRANSMISSION CLASS RATINGS. PROVIDE DEEP TOP LED TRACK FOR DEFLECTION PURPOSES. WHERE PARTITIONS MEET EXTERIOR WALLS, INSTALL THE NEW PARTITION PERPENDICULAR TO THE EXTERIOR WALLS, ALIGN THE CENTERLINE OF THE PARTITIONS WITH THE WALLS. PROVIDE A HORIZONTAL DIMENSION OF 1/4" (MIN) FROM THE STRIKE FACE OF THE DOOR JAMB TO THE NEAREST RETURNING PARTITION OR MILLWORK AT THE FULL SIDE OF THE DOOR.
<p>1 WALL TYPE 1 - 2HR. UL DESIGN #U438 BSA CAL # 542-68-SM SCALE 3"=1'-0"</p>	<p>MAS. EQUIVALENT NOTES</p>	<p>2 WALL TYPE 2 - 2HR. UL DESIGN #U429 BSA CAL # 542-68-SM SCALE 3"=1'-0"</p>	<p>3 WALL TYPE 3 - 2HR. UL DESIGN #U411 BSA CAL # 301-60-SM SCALE 3"=1'-0"</p>	<p>4 WALL TYPE 4 - 1HR. UL DESIGN #U465 BSA CAL # 301-60-SM SCALE 3"=1'-0"</p>	<p>5 WALL TYPE 5 - 2HR. UL DESIGN #U420 BSA CAL # 173-77-SM SCALE 3"=1'-0"</p>
<p>CONT. BEADS OF CAULKING AROUND PERIMETER OF PART. TOP & BOTTOM STUD RUNNER 2 1/2" STL. STUD 16" O.C. 5/8" FIRE CODE "C" GYP. WALLBOARD UNDERSIDE OF SLAB STUD RUNNER 2 1/2" STL. STUD CEILING TRM SUSP. GYP. RD. C.L.G.</p> <p>SECTION</p>	<p>CONT. BEADS OF CAULKING AROUND PERIMETER OF PART. TOP & BOTTOM STUD RUNNER 1 5/8" STL. STUD 16" O.C. 5/8" FIRE CODE "C" GYP. WALLBOARD 5/8" FIRE CODE "C" GYP. WALLBOARD (WATER RESISTANT @ BATHROOM SIDE) 2ND LAYER ONLY WHERE INDICATED ON PLAN 1 1/2" SOUND INSL. PIPE CHASE VARIES - DIM. ON PLAN</p> <p>SECTION</p> <p>NOTE: PROVIDE 5/8" GYP. BOARD CROSS-BRACING 1'-2" WIDTH 4'-0" O.C. MAX.</p>	<p>CONT. BEADS OF CAULKING AROUND PERIMETER OF PART. TOP & BOTTOM STUD RUNNER STEEL STUD @ 24" O.C. INSULATION WHERE INDICATED ON PLAN 5/8" FIRE CODE "C" GYP. WALLBOARD 5/8" FIRE CODE "C" GYP. WALLBOARD WATER RESISTANT WHERE INDICATED ON PLAN CROSS BRACING 24" O.C.</p> <p>SECTION</p> <p>2x6" FIRE CODE "C" GYP. WALLBOARD</p> <p>PLAN</p>	<p>2 CONT. BEADS OF CAULKING AROUND PERIMETER OF PART. TOP & BOTTOM 5/8" FIRE CODE "C" GYP. WALLBOARD STUD RUNNER 1" SHAFT WALL LINER CONT. STL. STRUCT. ANGLE 1" SHAFT WALL LINER CONT. STL. STRUCT. ANGLE 1" SHAFT WALL LINER 1.5" SHIP 2x6" FIRE CODE "C" GYP. WALLBOARD</p> <p>SECTION</p> <p>2x6" FIRE CODE "C" GYP. WALLBOARD</p> <p>PLAN</p>	<p>2 CONT. BEADS OF CAULKING AROUND PERIMETER OF PART. TOP & BOTTOM 5/8" FIRE CODE "C" GYP. WALLBOARD STUD RUNNER STEEL STUD @ 24" O.C. INSULATION WHERE INDICATED ON PLAN 5/8" FIRE CODE "C" GYP. WALLBOARD 5/8" FIRE CODE "C" GYP. WALLBOARD WATER RESISTANT WHERE INDICATED ON PLAN CROSS BRACING 24" O.C.</p> <p>SECTION</p> <p>2x6" FIRE CODE "C" GYP. WALLBOARD</p> <p>PLAN</p>	<p>6 WALL TYPE 6 - 2HR. UL DESIGN #U420 BSA CAL # 173-77-SM SCALE 3"=1'-0"</p>
<p>1/2" RUNNER UNDERSIDE OF SLAB 1" SHAFT WALL LINER 5/8" GYP. WB FIRE CODE FLOOR SLAB OVERHANG @ FLOOR 1/2" RUNNER</p> <p>ELEVATION</p>	<p>1/2" RUNNER UNDERSIDE OF SLAB 1" SHAFT WALL LINER 5/8" GYP. WB FIRE CODE FLOOR SLAB OVERHANG @ FLOOR 1/2" RUNNER</p> <p>ELEVATION</p>	<p>1/2" RUNNER UNDERSIDE OF SLAB 1" SHAFT WALL LINER 5/8" GYP. WB FIRE CODE FLOOR SLAB OVERHANG @ FLOOR 1/2" RUNNER</p> <p>ELEVATION</p>	<p>1/2" RUNNER UNDERSIDE OF SLAB 1" SHAFT WALL LINER 5/8" GYP. WB FIRE CODE FLOOR SLAB OVERHANG @ FLOOR 1/2" RUNNER</p> <p>ELEVATION</p>	<p>1/2" RUNNER UNDERSIDE OF SLAB 1" SHAFT WALL LINER 5/8" GYP. WB FIRE CODE FLOOR SLAB OVERHANG @ FLOOR 1/2" RUNNER</p> <p>ELEVATION</p>	<p>1/2" RUNNER UNDERSIDE OF SLAB 1" SHAFT WALL LINER 5/8" GYP. WB FIRE CODE FLOOR SLAB OVERHANG @ FLOOR 1/2" RUNNER</p> <p>ELEVATION</p>
<p>1 LOCATION OF DOOR BUCK ANCHORY SCALE 3"=1'-0"</p>	<p>2 DRYWALL PARTITION @ CORNERS TYPICAL DETAIL SCALE 3"=1'-0"</p>	<p>3 'J' RUNNER FASTENING DETAIL SCALE 3"=1'-0"</p>	<p>4 SECTION OF BRANCH DUCT. THRU SHAFT ENCLOSURE SCALE 3"=1'-0"</p>	<p>5 METAL BASE IN STAIRS SCALE 3"=1'-0"</p>	<p>6 DOOR DETAILS @ 1 HOUR PARTITION SCALE 3"=1'-0"</p>
<p>2 HEAD ANCHOR CLIPS LOCATE JAMB ANCHOR CLIPS ABOVE HINGE REIN. & JUST BELOW TOP REIN. 4 PER HT. ON HINGE SIDE, 5 PER HT. ON STRIKE SIDE JAMB ANCHOR CLIPS ABOVE AND BELOW DUST BECK HINGE REINFORCED FLOOR ANCHOR CLIP</p> <p>ELEVATION</p>	<p>CORNER BEAD 2 MIN. P.M.A. METAL STUD SLIT TAPE 5/8" GYP. WALLBOARD 1" SHAFT WALL LINER 5/8" GYP. WALLBOARD AS INDICATED ON PLAN 2 1/2" OR 4" MET. 'E' STUD 'C-H' STUD HINGE REINFORCED CORNER BEAD</p> <p>CORNER BEAD</p>	<p>1/2" RUNNER UNDERSIDE OF SLAB 1" SHAFT WALL LINER 5/8" GYP. WB FIRE CODE FLOOR SLAB OVERHANG @ FLOOR 1/2" RUNNER</p> <p>ELEVATION</p>	<p>UNDERSIDE OF SLAB PACK TIGHTLY WINDUOL METAL ANGLE & VIBRATION GASKET BOTTOM & SIDE 1/4" NEOPRENE GASKET 4 SIDES TYPICAL SHAFT DRYWALL SUSP. CEILING</p> <p>ELEVATION</p>	<p>DRYWALL PARTN (SEE PLANS FOR TYPES) METAL BASE CLIPPED TO WALL STAIR LANDING FIN. FL.</p> <p>ELEVATION</p>	<p>5/8" FIRE CODE "C" GYP. WALLBOARD RUNNER TRACK CUT 2" WIDER THAN JAMB OPG BEND & FASTEN TO VERT. STUD. METAL DOOR FRAME 1 5/8" @ WOOD DOORS GROUT 2 STUDS SECURED TO JAMB ANCHOR CLIPS JAMB ANCHOR CLIPS 4 PER HEIGHT ON HINGE SIDE, 5 PER HEIGHT ON STRIKE SIDE</p> <p>JAMB</p>
<p>7 TYP. DRYWALL PARTITION @ MASONRY PARTITION</p>	<p>8 BUCK DETAILS & 2 HR. PARTITION</p>	<p>9 DUCT AND BEAM @ PARTITION</p>	<p>10 ELEVATION-ROUGH DOOR FRAMING</p>	<p>11 DOOR DETAILS @ 2 HOUR PARTITION</p>	<p>15 TYPICAL PIPE CHASE</p>
<p>MASONRY WALL SLIT TAPE METAL STUD CAULKING MASTIC 5/8" GYP. WALLBOARD</p> <p>ELEVATION</p>	<p>5/8" FIRE CODE GYP. WALLBOARD 1" SHAFT WALL LINER 1/2" RUNNER TRACK CUT 2" WIDER THAN JAMB OPG BEND & FASTEN TO VERT. 'C-H' STUD. METAL DOOR FRAME ROUGH OPG DOOR OPG 'E' STUD SECURED TO JAMB ANCHOR CLIP JAMB ANCHOR CLIPS 4 PER HEIGHT ON HINGE SIDE, 5 PER HEIGHT ON STRIKE SIDE GROUT INSTALLED BEFORE WALLBOARD</p> <p>ELEVATION</p>	<p>UNDERSIDE OF SLAB RUNNER DUCT REINFORCED CHANNEL WHERE 2" OR MORE STUDS ARE INTERRUPTED METAL DRYWALL PARTITION STUDS</p> <p>ELEVATION</p>	<p>STUD SCREWED TOP & BOTTOM RUNNERS</p> <p>ELEVATION</p>	<p>(2) 5/8" FIRE CODE "C" GYP. WALLBOARD RUNNER TRACK CUT 2" WIDER THAN JAMB OPG BEND & FASTEN TO VERT. STUD. METAL DOOR FRAME GROUT 2 STUDS SECURED TO JAMB ANCHOR CLIPS JAMB ANCHOR CLIPS 4 PER HEIGHT ON HINGE SIDE, 5 PER HEIGHT ON STRIKE SIDE</p> <p>JAMB</p>	<p>ROOF DECK CONT. BEADS OF CAULKING AROUND PERIMETER OF PART. TOP & BOTTOM STUD RUNNER 2 1/2" STL. STUD 16" O.C. 5/8" FIRE CODE "C" GYP. WALLBOARD 5/8" FIRE CODE "C" GYP. WALLBOARD (WATER RESISTANT WHERE INDICATED ON PLAN) 1 1/2" SOUND INSULATION WHERE REQD VARIES - DIM. ON PLAN</p> <p>ELEVATION</p>
<p>12 HANGING FIXTURES @ DRYWALL PARTITION</p>	<p>13 1 HOUR PARTITION</p>	<p>14 DRY WALL PARTITION INTERSECTION</p>			
<p>1/4" GAU17 WIRE CONT. MTL. P.L. SECURED TO MTL. STUDS @ HANGING FIXTURES. COORDINATE WITH MFR. FOR HEIGHT & QUANTITY AS REQ. ALSO FOR FASTENING OF IRON LADDER TYPICAL DRYWALL SAFETY SURFETINAL</p> <p>ELEVATION</p>	<p>CONT. BEADS OF CAULKING AROUND PERIMETER OF PART. TOP & BOTTOM STUD RUNNER 5/8" GYP. W.B. WHERE INDICATED ON PLAN 5/8" FIRE CODE GYP. WALLBOARD 1 1/2" SOUND INSL. WHERE INDICATED ON PLAN STEEL STUD - 16" O.C.</p> <p>ELEVATION</p>	<p>5/8" GYP. WALLBOARD SLIT TAPE CAULKING METAL STUD 5/8" GYP. WALLBOARD</p> <p>ELEVATION</p>			

PARTITION TYPES

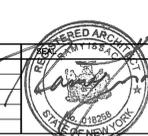
PARTITION TYPES

STANDARD DETAILS

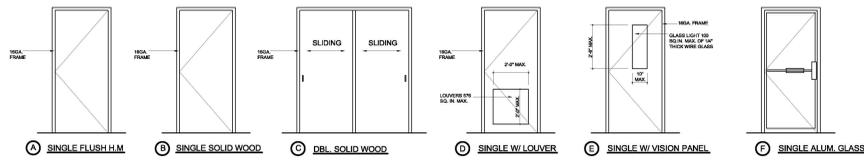
STANDARD DETAILS

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DOOR SCHEDULE

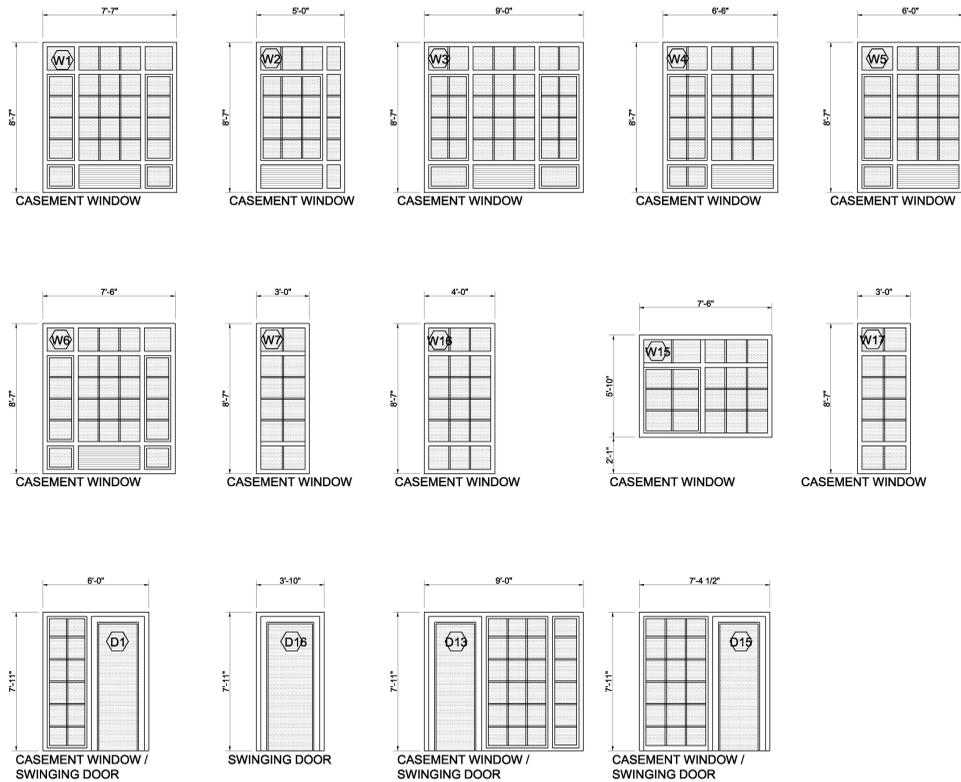


NO.	SIZE	TYP.	MATERIAL	F.R.	MEA NO.	SADDLE	FRAME	REMARKS
01	3'-0" x 7'-0" x 1 3/4"	A	16GA. HM.	1.5 HR.	117-86M	METAL	16GA. MTL.	F.P.S.C. W/ PEEP HOLE & MTL. CHAIN.
02	2'-10" x 7'-0" x 1 3/4"	B	SOLID WOOD	NONE	NONE	***	16GA. MTL.	*** PAINTED COORD. W/ OWNER MARBLE SADDLE AT BATHROOMS WOOD SADDLE AT BEDROOMS.
03	2'-6" x 7'-0" x 1 3/4"	B	SOLID WOOD	NONE	NONE	***	16GA. MTL.	*** PAINTED COORD. W/ OWNER MARBLE SADDLE AT BATHROOMS WOOD SADDLE AT BEDROOMS.
04	(2) X 2'-0" x 7'-0" x 1 3/4"	C	SOLID WOOD	NONE	NONE	METAL	16GA. MTL.	PAINTED COORD. W/ OWNER
05	(2) X 2'-6" x 7'-0" x 1 3/4"	C	SOLID WOOD	NONE	NONE	METAL	16GA. MTL.	PAINTED COORD. W/ OWNER
06	1'-4" x 7'-0" x 1 3/4"	B	SOLID WOOD	NONE	NONE	NONE	16GA. MTL.	PAINTED COORD. W/ OWNER
06A	1'-8" x 7'-0" x 1 3/4"	B	SOLID WOOD	NONE	NONE	NONE	16GA. MTL.	PAINTED COORD. W/ OWNER
06B	(2) X 1'-4" x 7'-0" x 1 3/4"	C	SOLID WOOD	NONE	NONE	NONE	16GA. MTL.	PAINTED COORD. W/ OWNER
07	2'-0" x 7'-0" x 1 3/4"	B	SOLID WOOD	NONE	NONE	NONE	16GA. MTL.	PAINTED COORD. W/ OWNER
08	2'-4" x 7'-0" x 1 3/4"	B	SOLID WOOD	NONE	NONE	NONE	16GA. MTL.	PAINTED COORD. W/ OWNER
09	3'-0" x 7'-0" x 1 3/4"	A D	16GA. HM.	1.5 HR.	117-86M	METAL	16GA. MTL.	F.P.S.C. LOUVERS
09A	3'-4" x 7'-0" x 1 3/4"	A D	16GA. HM.	1.5 HR.	117-86M	METAL	16GA. MTL.	F.P.S.C. LOUVERS
10	3'-0" x 7'-0" x 1 3/4"	A E	16GA. HM.	1.5 HR.	117-86M	METAL	16GA. MTL.	F.P.S.C. GLASS LIGHT 100 SQ.IN. MAX. OF 1/4" THICK WIRE GLASS

HARDWARE SETS

HW SET 1: UNIT ENTRY	HW SET 5: EXTERIOR STAIR DOOR - ROOF	HW SET 10: ATTENDANT BOOTH / EXERCISE RM / GYM
3 Hinge (spring) 1522 4-1/2" x 4-1/2" US26D MK 1 Access Control Lockset VCA53 VMO 5196 VBC 626 YA	3 Hinge TA2714 4-1/2" x 4-1/2" US26D MK 1 "Exit Device (rm, passage)" 7100F MO628F ECK1 630 YA 1 Door Closer UN17500 M 689 NO 1 Threshold 2554SAFG PE 2 Credentia-Long Lasting Keypad 8801925 YA 1 Chime Interviewer 686-101 UL AX 1 Door Bottom 434ARL PE 1 Protection Plate 6055MS US26D RO	1 Continuous Hinge CFM83HD1 PE 1 Mortise Deadlock MS1950 626 AD 2 Cylinder 5196 626 YA 1 Door Closer UN17500 M 689 NO 1 Wall Stop 403 US26D PE 1 Threshold 2554SAFG PE 1 Door Bottom 434ARL PE
HW SET 2: BATHROOMS / BEDROOMS	HW SET 6: STORAGE / MECHANICAL	HW SET 11: LAUNDRY
3 Hinge MK TA2714 4-1/2" x 4-1/2" US26D 1 Tubular Lock TCRS RL202 626 YA 1 Door Stop 516 US26D RO 3 Silencer 608 RO	3 Hinge MK TA2714 4-1/2" x 4-1/2" US26D 1 Mortise Lock MOR5 8805FL 5196 626 YA 1 Surface Closer 5501 M 689 NO 1 Wall Stop 403 US26D RO 1 Gasketing 5773BL PE	3 Hinge TA2714 4-1/2" x 4-1/2" US26D MK 1 Access Control Lockset VCA53 VMO 5196 VBC 626 YA 1 Surface Closer 5501 M 689 NO 1 Wall Stop 403 US26D RO 1 Threshold 403 as per architect detail PE 3 Silencer 608 RO
HW SET 2.1: PUBLIC RESTROOM	HW SET 7: STAIRS	HW SET 12: REFUSE STORAGE
3 Hinge MK TA2714 4-1/2" x 4-1/2" US26D 1 Mortise Lock MOR5 8802FL 626 YA 1 Surface Closer 5501 M 689 NO 1 Door Stop 516 US26D RO 1 Gasketing 5773BL PE	3 Hinge MK TA2714 4-1/2" x 4-1/2" US26D 1 "Exit Device (rm, passage)" 7100F MO628F ECK1 630 YA 1 Surface Closer 8501 M 689 NO 1 Wall Stop 403 US26D RO 1 Threshold 403 as per architect detail PE 3 Silencer 608 RO	3 Hinge TA2714 4-1/2" x 4-1/2" US26D MK 1 Mortise Lock MOR5 8801FL 626 YA 1 Surface Closer 5501 M 689 NO 1 Wall Stop 403 US26D RO 1 Threshold 403 as per architect detail PE 1 Gasketing 5773BL PE
HW SET 3: CLOSET PAIRS	HW SET 8: OFFICE / PACKAGE ROOM	HW SET 13: 1ST FL EXIT DOORS
6 Hinge MK TA2714 4-1/2" x 4-1/2" US26D 2 Tubular Dummy Trim TCRS RL255S 626 YA 2 Roller Latch 590 US26D RO 2 Door Stop 516 US26D RO 2 Silencer 608 RO	3 Hinge MK TA2714 4-1/2" x 4-1/2" US26D 1 Mortise Lock MOR5 8807FL 5196 626 YA 1 Surface Closer 5501 M 689 NO 1 Wall Stop 403 US26D RO 1 Threshold 403 as per architect detail PE 1 Gasketing 5773BL PE	1 Continuous Hinge MCK-FM300 Security Studs US32D MK 1 Exit Device (rm, passage) 7150F MO628F ECK1 630 YA 1 Door Closer UN17500 M 689 NO 1 Threshold 2554SAFG PE 1 Gasketing 2891AS PE 1 Door Bottom 434ARL PE
HW SET 4: CLOSET SINGLE	HW SET 9: PASSAGE	HW SET 14: RETAIL STOREFRONT
3 Hinge MK TA2714 4-1/2" x 4-1/2" US26D 1 Tubular Lock TCRS RL201 626 YA 1 Door Stop 516 US26D RO 3 Silencer 608 RO	3 Hinge MK TA2714 4-1/2" x 4-1/2" US26D 1 Mortise Lock MOR5 8801FL 626 YA 1 Concealed Overhead Stop 6-336 630 RF 1 Door Closer 7500 M 689 NO 1 Drop Plate 7786CN PE 1 Threshold 403 as per architect detail PE 1 Gasketing 5773BL PE	2 Continuous Hinge CFM83HD1 PE 2 Flush Bolt 555 US26D RO 1 Dust Proof Strike 570 US26D RO 1 Mortise Deadlock MS1950 626 AD 2 Cylinder 5196 626 YA 2 Door Closer UN17500 M 689 NO 1 Threshold 2554SAFG PE 1 Gasketing 2891AS PE 2 Sweep 3682CN PE 1 Astragal 5771BL PE
HW SET 4.1: GYM CLOSET	HW SET 15: ROOF EXTERIOR	HW SET 16: MISC.
3 Hinge MK TA2714 NRP 4-1/2" x 4-1/2" US26D 1 Mortise Lock MOR5 8805FL 5196 626 YA 1 Concealed Overhead Stop 6-336 630 RF 3 Silencer 608 RO	1 Vision Front Desk System YA	

WINDOW SCHEDULE



ENERGY ENVELOPE NOTES

- ALL EXTERIOR JOINTS AND OPENINGS IN THE BUILDING ENVELOPE THAT ARE OBSERVABLE SOURCES OF AIR LEAKAGE SHALL BE CALKED, GASKETED, WEATHER-STRIPPED OR OTHERWISE SEALED. PROVIDE FLASHING, WINDOW DAMS, EXPANDED FOAM SEALANT AND CALKING AT ROUGH OPENING WINDOW (ROUGH FRAME JOINTS AND ALL SEAMS TO CREATE A CONTINUOUS AIR BARRIER WITH SURROUNDING WALL SYSTEM.
- ALL CMU AND POURED CONCRETE EXTERIOR WALLS ARE TO BE PROVIDED WITH FLUID APPLIED ELASTOMERIC CONTINUOUS AIR BARRIER. ALL FRAMED METAL STUD WALLS TO BE PROVIDED WITH AIR AND WATER VAPOR BARRIER BUILDING PAPER WRAP INSTALLED OVER THE SHEATHING AND INTEGRATED WITH WINDOW/DOOR FLASHING.
- NYECC 902.4.1 WINDOWS AND DOOR ASSEMBLIES: AIR LEAKAGE OF WINDOW/DOOR ASSEMBLIES SHALL BE DETERMINED IN ACCORDANCE WITH AMAMAWACOSA 1911.5.2(M46) OR NFRC 400 BY AN ACCREDITED, INDEPENDENT LABORATORY, LABELED AND CERTIFIED BY THE MANUFACTURER AND SHALL NOT EXCEED 0.3 CFM / S.F. FOR WINDOWS, SLIDING AND REVOLVING DOORS AND 0.5 CFM / S.F. FOR SWINGING DOORS.
- NYECC 902.4.2 CURTAIN WALL, STOREFRONT GLAZING, AND COMMERCIAL GLAZED SWINGING ENTRANCE DOORS AND REVOLVING DOORS SHALL BE TESTED FOR AIR LEAKAGE AT 1.57 PSF IN ACCORDANCE WITH ASTM E989 FOR CURTAIN WALLS AND STOREFRONT GLAZING. THE MAX. AIR LEAKAGE RATE SHALL BE 0.2 CFM / S.F. OF FENESTRATION AREA. FOR COMMERCIAL GLAZED SWINGING ENTRANCE DOORS AND REVOLVING DOORS, THE MAXIMUM AIR LEAKAGE RATE SHALL BE 1.0 CFM / S.F. OF DOOR AREA WHEN TESTED IN ACCORDANCE WITH ASTM E989.
- SITE CONSTRUCTED DOORS, WINDOWS AND SKYLIGHTS SHALL BE CALKED AT ALL JOINTS AND SEAMS BETWEEN THE UNIT AND THE BUILDING AS PER NYECC 902.4.3, AND SHALL BE FIELD FITTED WITH WEATHER-STRIPPING PER NYECC 902.4.1.
- ALL WINDOWS AND GLAZED DOORS SHALL BE DOUBLE GLAZED AND HAVE THE MIN. U-FACTOR OF 0.35 AND THE MIN. SHGC VALUE OF 0.40 (U.O.N. ON ENERGY DETAIL DRAWINGS). ALL CURTAIN WALL / STOREFRONT GLAZING SHALL HAVE THE MIN. U-FACTOR OF 0.5 AND THE MIN. SHGC VALUE OF 0.40.
- ALL SKYLIGHTS SHALL NOT EXCEED 3% OF GROSS ROOF AREA AND SHALL HAVE THE MIN. U-FACTOR OF 0.60 AND THE MIN. SHGC VALUE OF 0.40 (U.O.N. ON PLAN).
- MANUFACTURED FENESTRATION PRODUCTS MUST BE LABELED FOR U-FACTOR ACCORDING TO APPROVED PROCEDURES.
- INTERIOR WALL INSULATION OF MIN. R-11 SHALL BE INSTALLED IN ALL OPAQUE PORTIONS OF EXTERIOR WALLS WITHIN THE GUTTY OF STEEL FRAMING FRAME @ 2" O.C. (EXCEPT STEEL FRAMED WALLS @ 16" O.C. OR U.O.N. ON PLAN)

PRODUCTS AND MANUFACTURERS:

THE FOLLOWING ARE ACCEPTABLE MANUFACTURERS, UNLESS SPECIFICALLY INDICATED IN THE HARDWARE SETS. UNDERLINED MANUFACTURERS ARE THOSE WHOSE PRODUCTS ARE INDICATED IN THE HARDWARE SETS.
 HINGES & SPRING HINGES: "BOMMER" MCKINNEY
 LOCKSETS, CYLINDERS, & DEADLOCKS: "CORBIN RUSSWIN", YALE, SARGENT
 EXIT DEVICES: "PRECISION", YALE, CORBIN RUSSWIN
 MAGNETIC HOLD OPENS: "RIXSON"
 CLOSERS: "NORTON", YALE, CORBIN RUSSWIN
 STOPS: "ROCKWOOD", BBW, QUALITY
 OVERHEAD STOPS: "RIXSON", YALE, SARGENT
 SILENCERS: "ROCKWOOD", BBW, QUALITY
 SADDLES, SWEEPS & GASKETING: "NATIONAL GUARD".

DOOR GUARDS: "ROCKWOOD", BBW, QUALITY
 COAT HOOKS: "ROCKWOOD", BBW, QUALITY
 PROTECTION PLATES: "ROCKWOOD", BBW, QUALITY
 CHIME/INTERVIEWERS: "AUTH"

FINISHES:
 A. PROVIDE FINISH HARDWARE W/ THE FOLLOWING FINISHES UNLESS OTHERWISE SHOWN:

- HINGES:
 A. INTERIOR DOORS:
 1. HOLLOW METAL DOORS X HOLLOW METAL FRAMES: US26D
 2. WOOD DOORS X HOLLOW METAL FRAMES: US26D
 3. WOOD DOORS X WOOD FRAMES: US26D
 B. EXTERIOR DOORS: US26D
- PIVOTS: US26D
- SURFACE CLOSERS: US26D
- FLOOR CLOSERS: US26D
- LOCKSETS AND EXIT DEVICES: US26D
- STOPS: US26D
- PUSHES, PULLS, KICK PLATES: US26D
- FLUSH BOLTS: US26D

DOOR NOTES (BC 1008)

1008.1.1.1 DOOR WIDTH. THE MIN. WIDTH OF EACH DOOR OPENING, MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP WITH THE DOOR OPEN 90 DEGREES, AND WHICH IS PART OF THE REQUIRED MEANS OF EGRESS, SHALL BE SUFFICIENT FOR THE OCCUPANT LOAD THEREOF AND SHALL PROVIDE A CLEAR WIDTH OF NOT LESS THAN 32" DOOR OPENINGS TO STORAGE CLOSETS LESS THAN 10 S.F. IN AREA SHALL NOT BE LIMITED BY THE MIN. WIDTH.

1008.1.1.2 PROJECTIONS INTO CLEAR WIDTH. THERE SHALL NOT BE PROJECTIONS INTO THE REQUIRED CLEAR WIDTH LOWER THAN 34" ABOVE THE FLOOR OR GROUND. PROJECTIONS INTO THE CLEAR OPENING WIDTH BETWEEN 34" AND 80" ABOVE THE FLOOR OR GROUND SHALL BE 4" MAX.

1008.1.1.3 HEIGHT. THE HEIGHT OF DOORS SHALL BE 80" MIN. EXCEPTIONS:
 1. DOOR OPENINGS WITHIN A DWELLING UNIT OR SLEEPING UNIT SHALL BE 78" MIN.

1008.1.2.1 MOUNTING. EGRESS DOORS SHALL BE SIDE-HINGED SWINGING.

1008.1.2.2 DIRECTION OF SWING. ALL DOORS SHALL SWING IN THE DIRECTION OF EGRESS TRAVEL EXCEPT APARTMENT ENTRY DOORS AND EXTERIOR LOBBY DOORS SERVING R-2 OCCUPANCY ONLY.

1008.1.4 FLOOR ELEVATION. THERE SHALL BE A FLOOR OR LANDING ON EACH SIDE OF A DOOR. SUCH FLOOR OR LANDING SHALL BE AT THE SAME ELEVATION ON EACH SIDE OF THE DOOR. LANDINGS SHALL BE LEVEL EXCEPT FOR EXTERIOR LANDINGS, WHICH ARE PERMITTED TO HAVE A SLOPE NOT TO EXCEED 0.25" VERTICAL IN 12" HORIZONTAL (2% SLOPE).

1008.1.5 LANDINGS AT DOORS. LANDINGS SHALL HAVE A WIDTH NOT LESS THAN THE WIDTH OF THE STAIRWAY OR THE DOOR, WHICHEVER IS THE GREATER. DOORS IN THE FULLY OPEN POSITION SHALL NOT REDUCE A REQUIRED DIMENSION BY MORE THAN 7" WHEN A LANDING SERVES AN OCCUPANT LOAD OF 50 OR MORE. DOORS IN ANY POSITION SHALL NOT REDUCE THE LANDING TO LESS THAN 75 PERCENT OF ITS REQUIRED WIDTH. LANDINGS SHALL HAVE A LENGTH MEASURED IN THE DIRECTION OF TRAVEL OF NOT LESS THAN 44".

1008.1.6 THRESHOLDS. THRESHOLDS AT DOORWAYS SHALL NOT EXCEED 0.75 INCH IN HEIGHT FOR SLIDING DOORS SERVING DWELLING UNITS OR 0.9" FOR OTHER DOORS, RAISED THRESHOLDS AND FLOOR LEVEL CHANGES GREATER THAN 0.25" AT DOORWAYS SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN ONE UNIT VERTICAL IN TWO UNITS HORIZONTAL (50-PERCENT SLOPE).

1008.1.8 DOOR OPERATIONS. DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT.

1008.1.8.7 STAIRWAY DOORS. INTERIOR STAIRWAY MEANS OF EGRESS DOORS SHALL BE OPENABLE FROM BOTH SIDES WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT.
 EXCEPTIONS:
 1. STAIRWAY DISCHARGE DOORS SHALL BE OPENABLE FROM THE EGRESS SIDE AND SHALL ONLY BE LOOKED FROM THE OPPOSITE SIDE.

1008.1.9 ENTRANCE DOORS AND EXTERIOR EXIT DOORS. ENTRANCE DOORS AND OTHER EXTERIOR DOORS TO BE EQUIPPED WITH A KEY AND LATCH BOLTS TO BE CONTROLLED BY A MASTER KEY, NOT THE SAME KEYS AS FOR DWELLING UNITS. ALL ENTRANCE DOORS AND EXTERIOR EXIT DOORS TO COMPLY WITH BC 1008.4.1.

1008.4.2 DOORS TO DWELLING UNITS. DOORS TO DWELLING UNITS SHALL BE EQUIPPED WITH A HEAVY DUTY LATCH SET AND HEAVY DUTY DEAD BOLT OPERABLE BY A KEY FROM THE OUTSIDE AND THUMB TURN FROM THE INSIDE. DOORS ARE ALSO TO BE EQUIPPED WITH A CHAIN GUARD AND VIEWING DEVICE. ALL DOORS TO DWELLING UNITS TO COMPLY WITH BC 1008.4.2.

AS PER ZR-28-22 ALL WINDOWS ARE DOUBLE GLAZED

GLAZING MATERIALS:

- NEOPRENE SETTING BLOCKS: SHALL CONFORM TO ASTM D2000-86, TYPE 28C510B14 (80 %) C20F17X11P. SHORE "A" DURETOMETER SHALL BE AS RECOMMENDED BY THE GLASS MANUFACTURER FOR THE INTENDED INSTALLATION.
- PROVIDE SILICONE RUBBER SETTING BLOCKS WHERE REQUIRED FOR COMPATIBILITY.
- SHIMS: SHALL BE SAME MATERIAL AS SPECIFIED FOR SETTING BLOCKS EXCEPT SHORE "A" DURETOMETER HARDNESS SHALL BE 45AS.
- GLAZING TAPES: PREFORMED PRE-SHIMMED COMPRESSIBLE TAPE SEALANT: TREMCO 4407 BY TREMCO, EXTRU-SEAL BY PICORA CORP. OR APPROVED EQUAL.
- MARINE GLAZING GASKET SHALL BE SERRATED OR HAVE 1/4" DIAMETER HOLES EVERY 4"-8" ON CENTER.

HARDWARE:

A. GENERAL: PROVIDE HARDWARE FABRICATED FROM ALUMINUM, STAINLESS STEEL, OR OTHER CORROSION-RESISTANT MATERIAL COMPATIBLE WITH THE FUNCTION FOR WHICH IT IS INTENDED. ALUMINUM AND OF SUFFICIENT STRENGTH TO PERFORM

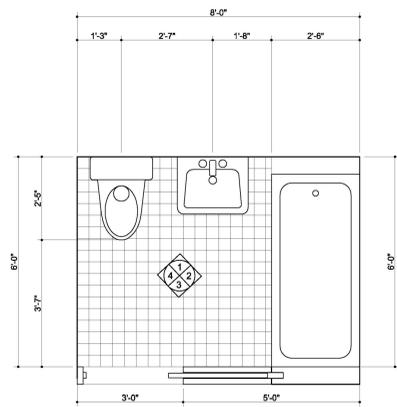
ACCESSORIES:

- GENERAL: PROVIDE THE MANUFACTURERS STANDARD ACCESSORIES THAT COMPLY WITH INDICATED STANDARDS. HEAD STARTERS MATCHING FINISH INDICATED ON THE DRAWING AND WITH A MINIMUM 1/25 INCH THICKNESS AND REINFORCED ON THE CONCEALED SIDE AS REQUIRED TO MAINTAIN ITS PROFILE.
- THE FINISH AND COLOR OF THE SILL SHALL MATCH THE WINDOW FRAMES, UNLESS OTHERWISE SELECTED BY THE ARCHITECT.
- PROVIDE ADJUSTABLE ANCHOR SILLS AT ALL WINDOWS WHERE REQUIRED.

INSULATING GLASS UNITS:

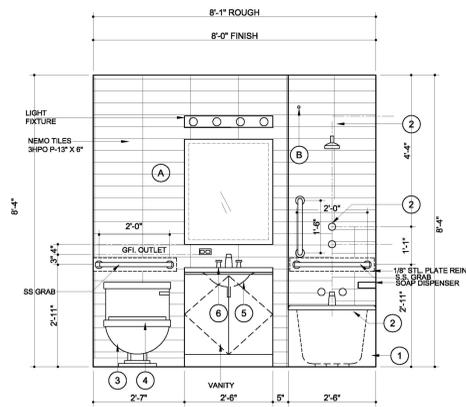
- INSULATING GLASS: SHALL HAVE 1/4" OUTER LITE AND 1/4" INNER LITE OF CLEAR FLOAT GLASS, AND A 1/2" DRY AIR SPACE WITH 0.02" DEW POINT, WITH CLASS A SEALANT-TYPE EDGE CONSTRUCTION TO MAINTAIN A HERMETIC SEAL, 1" THICK. THE GLASS UNIT SHALL HAVE A "LOW-E" COATING ON THE #3 SURFACE AND A SHADING COEFFICIENT COMPLYING WITH THE NEW YORK STATE ENERGY CODE AND AN U-VALUE OF .25 OR LOWER (AS CONFIRMED BY THE MECHANICAL ENGINEER). A. THE TINT OF THE INSULATING GLASS UNIT SHALL BE SELECTED BY THE ARCHITECT.
- TEMPERED GLASS SHALL BE REQUIRED BY THE NEW YORK CITY BUILDING CODE; PROVIDE 1 SHEET OF 1/4" TEMPERED GLASS AT OUTER LITE, 1/2" DRY AIR SPACE WITH +20 DEGREE F DEW POINT; AND AN INNER LITE OF 1/4" CLEAR TEMPERED GLASS WITH CLASS A SEALANT-TYPE EDGE CONSTRUCTION TO MAINTAIN A HERMETIC SEAL, 1" THICK. THE GLASS UNIT SHALL HAVE A "LOW-E" COATING ON THE #3 SURFACE AND A SHADING COEFFICIENT COMPLYING WITH THE NEW YORK STATE ENERGY CODE AND AN U-VALUE OF .25 OR LOWER (AS CONFIRMED BY THE MECHANICAL ENGINEER). A. THE TINT OF THE INSULATING GLASS UNIT SHALL BE SELECTED BY THE ARCHITECT.
- EDGE CONSTRUCTION: TWIN PRIMARY SEALS OF POLYISOBUTYLENE, TUBULAR ALUMINUM OR GALVANIZED STEEL SPACER-BAR FRAME WITH WELDED OR SOLDERED SEALED CORNERS, AND FILLED WITH DESICCANT, AND SECONDARY SEAL OUTSIDE OF BAR, BONDED TO BOTH SHEETS OF GLASS AND BAR, OF SILICONE ELASTOMERIC SEALANT. A. THE COLOR OF THE SPACER MEMBER SHALL BE SELECTED BY THE ARCHITECT.
- LABELING: ALL GLASS SHALL HAVE MANUFACTURERS LABEL LISTING QUALITY, THICKNESS AND COMPLIANCE WITH STANDARDS. SPACERS SHALL BE MARKED WITH MANUFACTURERS IGCC CBA RATING CERTIFICATION AND DATE OF MANUFACTURE.

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION

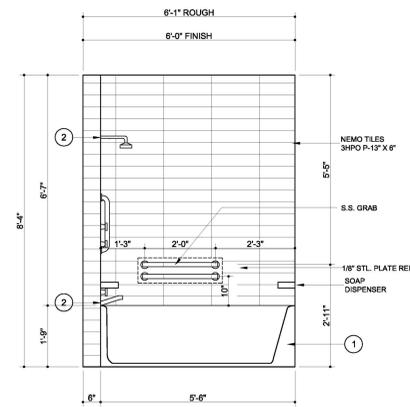


7 ENLARGED BATHROOM PLAN
SCALE 1/2"=1'-0"

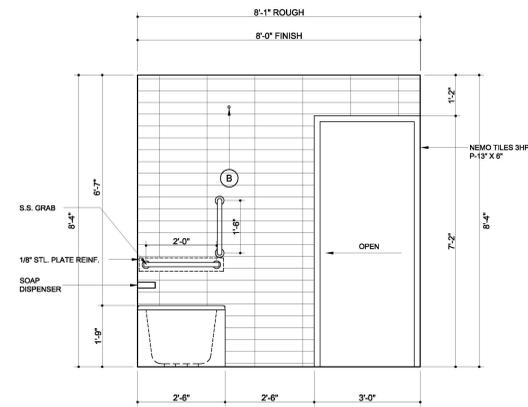
ROOMS:
MIRRORED
SIMILAR



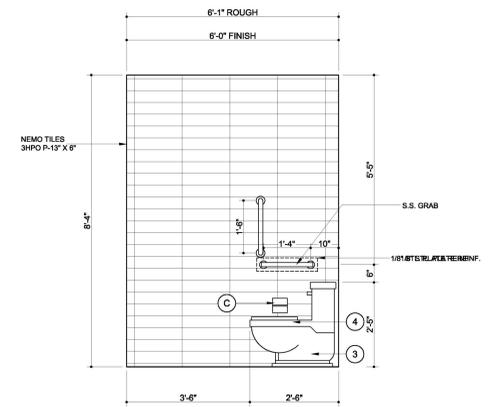
7.1 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



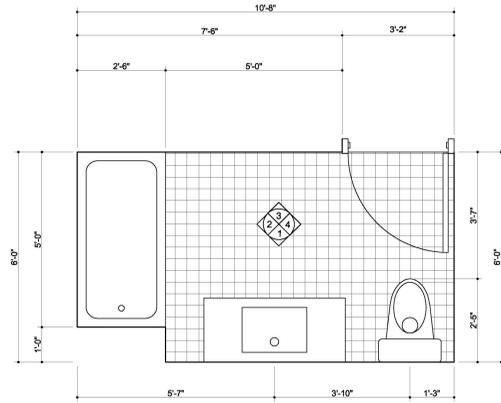
7.2 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



7.3 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"

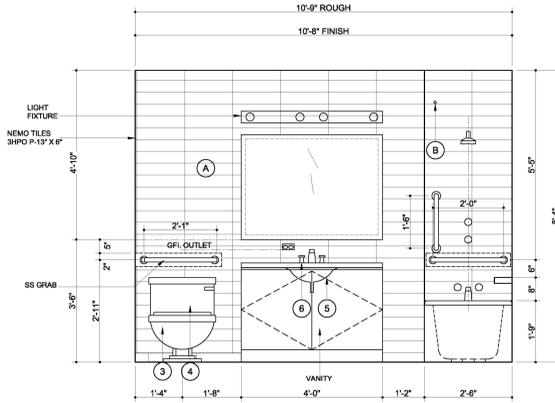


7.4 ENLARGED BATHROOM ELEVATION - TYPE D2
SCALE 1/2"=1'-0"

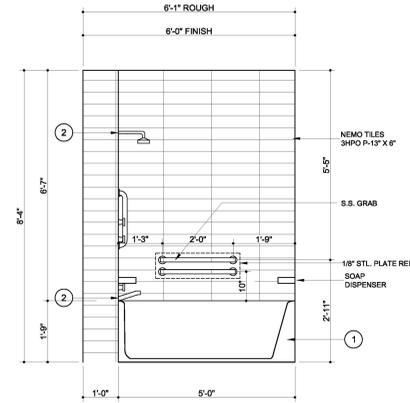


8 ENLARGED BATHROOM PLAN
SCALE 1/2"=1'-0"

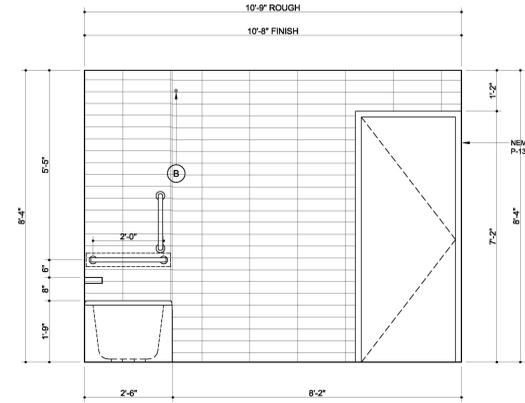
ROOMS:
MIRRORED
SIMILAR



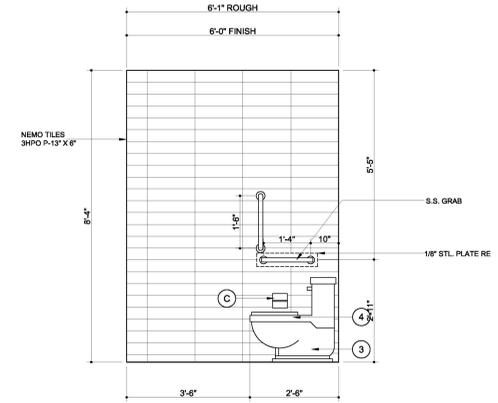
8.1 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



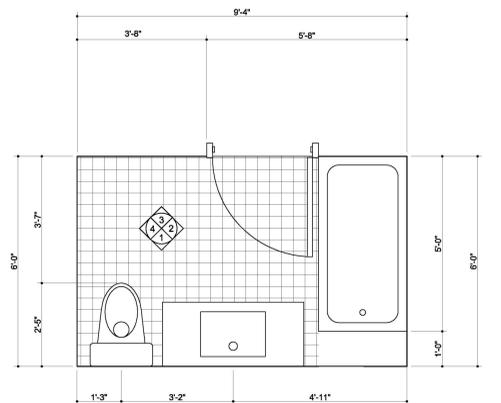
8.2 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



8.3 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"

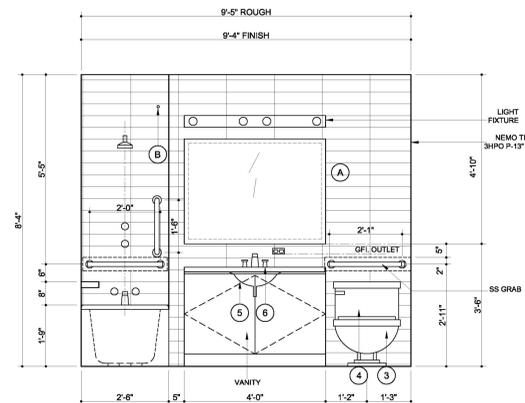


8.4 ENLARGED BATHROOM ELEVATION - TYPE D2
SCALE 1/2"=1'-0"

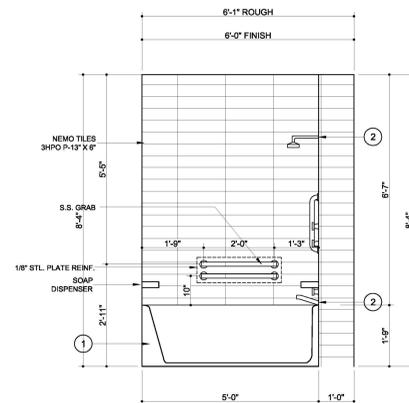


9 ENLARGED BATHROOM PLAN
SCALE 1/2"=1'-0"

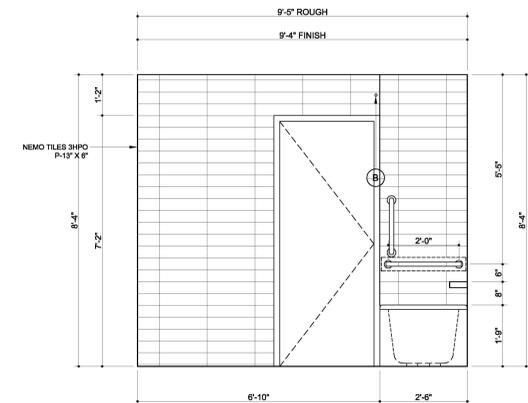
ROOMS:
MIRRORED
SIMILAR



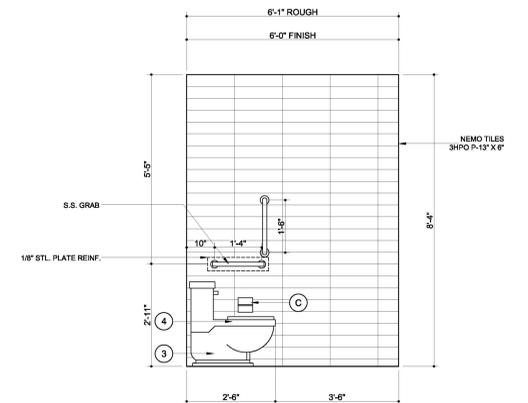
9.1 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



9.2 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



9.3 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



9.4 ENLARGED BATHROOM ELEVATION - TYPE D2
SCALE 1/2"=1'-0"

PLUMBING FIXTURE SCHEDULE/DESIG. THUS ①

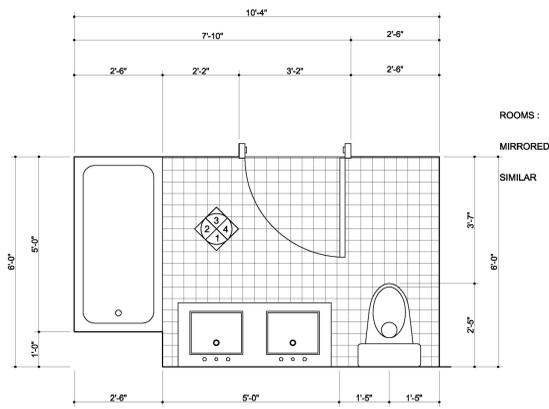
ITEM	DESCRIPTION	MANUFACTURE	MODEL NO.	REMARKS
①	BATH TUB	VERITEK SWANSTONE	SWANSTONE	5' BATHLEF WHITE
②	SHOWERHEAD/POL.	SPEAKMAN	S-2251	8 JET SHOWERHEAD/POL. CHROME
③	TOILET	GERBER	21-012	WHITE
④	LAUREL TOILET SEAT	AMERICAN STANDARD	0000	WHITE WITH ITEM /3 POLISH FIN. WITH ITEM /13
⑤	LAV W/ OVERFLOW	GERBER	12-770	WHITE
⑥	SINGLE CONTROL LAVATORY FAUCET	GERBER	ALLERTON	LEVER HANDLE FOR SINGLE HOLE INSTALLATION, NO ESCUTCHEON PLATE, POLISH FIN. FOR ITEM /12

TOILET ACCESSORIES SCHEDULE/ DESIGN. THUS ②

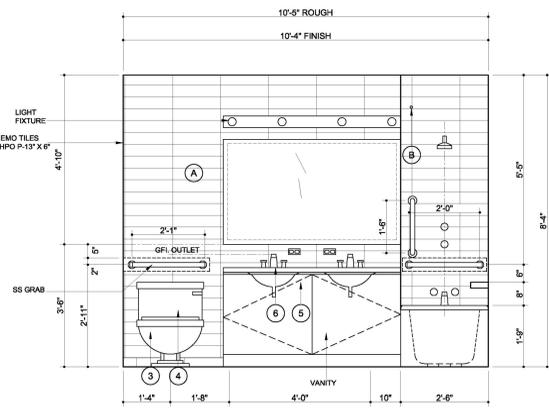
ITEM	DESCRIPTION	MANUFACTURE	MODEL NO.	REMARKS
Ⓐ	MEDICINE CABINET	ROBERN	PLM2430B8	24X30 BEV BLK CABINET
Ⓑ	SHOWER CURTAIN ROD	BOBRICK	B-6047	
Ⓒ	TOILET PAPER DISPENSER	KOHLER	K-14444	POLISHED CROME
Ⓓ	24" TOWEL BAR	KOHLER	K-14436	POLISHED CROME

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION

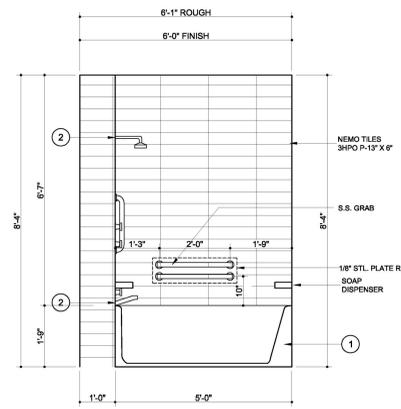
OWNER/DEVELOPER 781 METROPOLITAN ASSET, LLC 862 3rd Ave, Suite 130 New York, NY 10022 646-439-6000	ARCHITECT: ISSAC & STERN ARCHITECTS, P.C. 25 West 31st St, 8th Floor New York, NY 10001 212-268-8200 info@issacstern.com issacstern.com	STRUCTURAL ENGINEER: ADG ENGINEERING PC 25 West 31st St, 8th Floor New York, NY 10001 212-268-8200 info@adgeng.com adgeng.com	MECHANICAL ENGINEER: A & D ENGINEERING, PLLC 2513 East 65th Street Brooklyn, NY 11234 (718) 966-0800	PROJECT TITLE: 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE: ENLARGED BATHROOM PLANS AND ELEVATIONS SCALE: AS SHOWN	ISSUED/REVISION DATE: ISSUED: 11-12-2014	DRAWING NO.: A405-00
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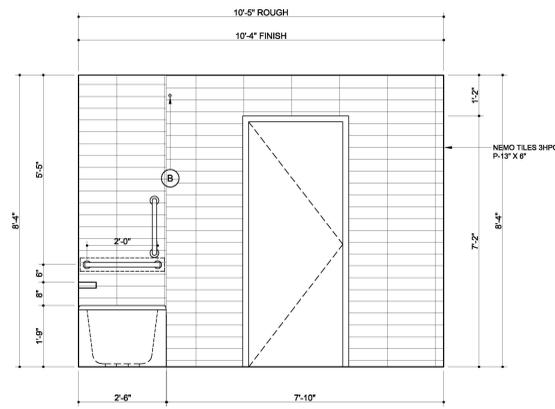
10 ENLARGED BATHROOM PLAN
SCALE 1/2"=1'-0"



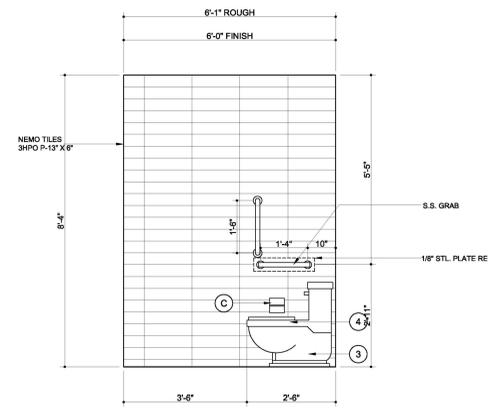
10.1 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



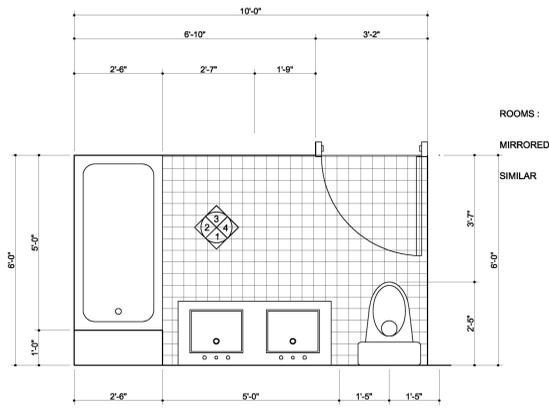
10.2 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



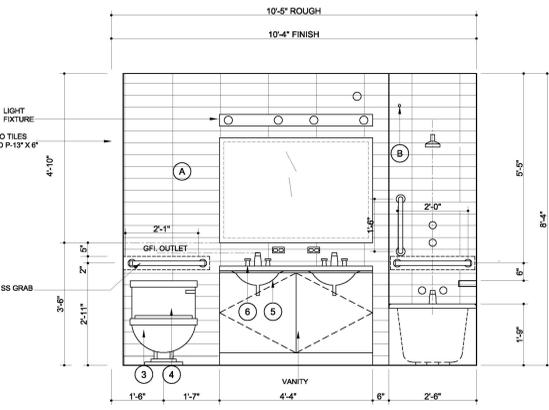
10.3 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



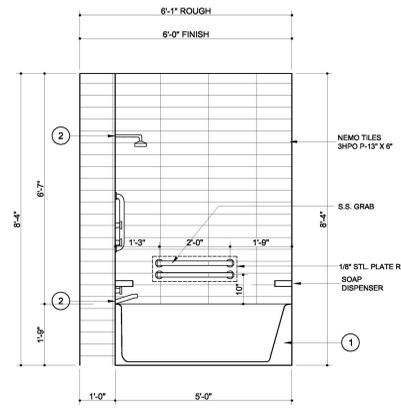
10.4 ENLARGED BATHROOM ELEVATION- TYPE D2
SCALE 1/2"=1'-0"



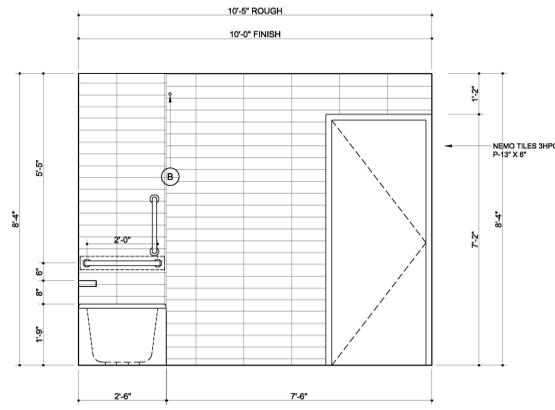
11 ENLARGED BATHROOM PLAN
SCALE 1/2"=1'-0"



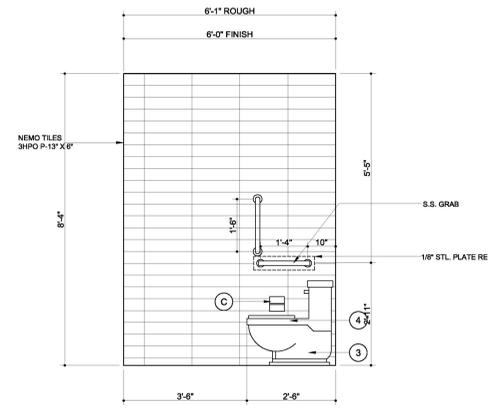
11.1 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



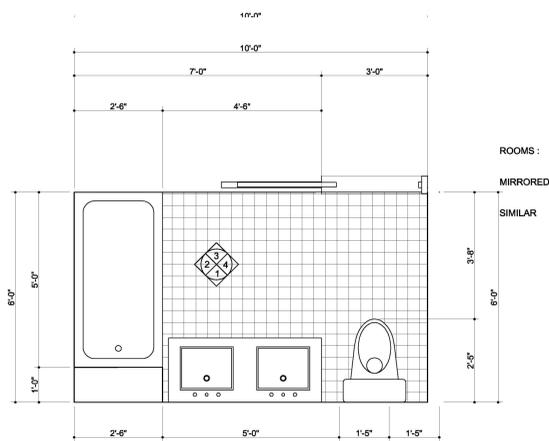
11.2 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



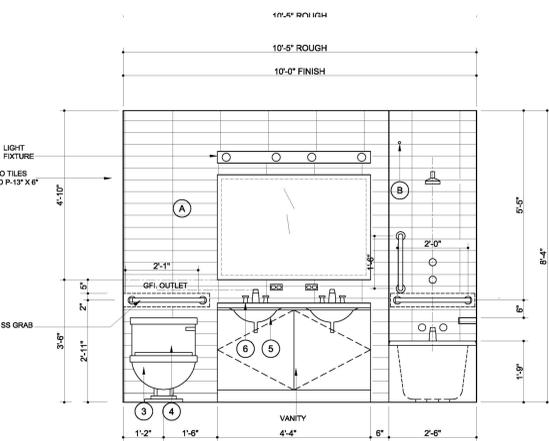
11.3 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



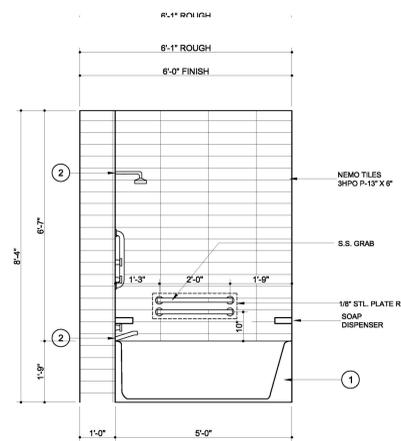
11.4 ENLARGED BATHROOM ELEVATION- TYPE D2
SCALE 1/2"=1'-0"



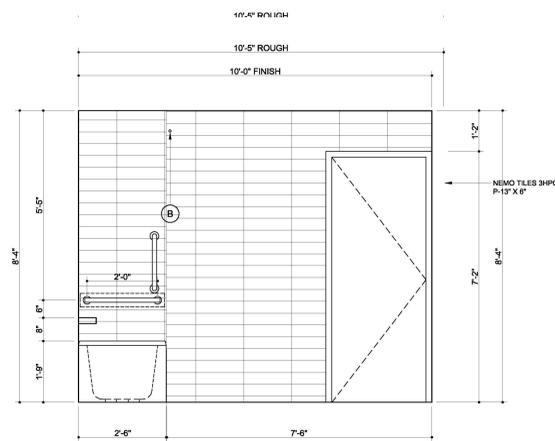
12 ENLARGED BATHROOM PLAN
SCALE 1/2"=1'-0"



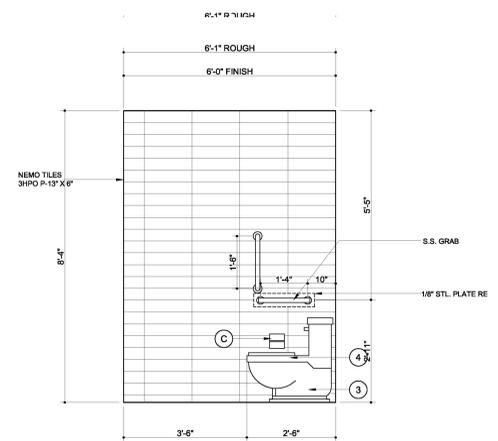
12.1 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



12.2 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



12.3 ENLARGED BATHROOM ELEVATION
SCALE 1/2"=1'-0"



12.4 ENLARGED BATHROOM ELEVATION- TYPE D2
SCALE 1/2"=1'-0"

PLUMBING FIXTURE SCHEDULE/DESIG. THUS ①

ITEM	DESCRIPTION	MANUFACTURE	MODEL NO.	REMARKS
①	BATH TUB	VERITEK SWANSTONE	SWANSTONE	5' BATHLEFT WHITE
②	SHOWERHEAD/POL.	SPEAKMAN	S-2251	8 JET SHOWERHEAD/POL. CHROME
③	TOILET	GERBER	21-012	WHITE
④	LAUREL TOILET SEAT	AMERICAN STANDARD	0000	WHITE WITH ITEM ③ POLISH FIN. WITH ITEM ①/3
⑤	LAV W/ OVERFLOW	GERBER	12-770	WHITE
⑥	SINGLE CONTROL LAVATORY FAUCET	GERBER	ALLERTON	LEVER HANDLE FOR SINGLE HOLE INSTALLATION, NO ESCUTCHEON PLATE, POLISH FIN. FOR ITEM ①/2

TOILET ACCESSORIES SCHEDULE/ DESIGN. THUS ②

ITEM	DESCRIPTION	MANUFACTURE	MODEL NO.	REMARKS
②	MEDICINE CABINET	ROBERN	PLM2430B8	24X30 BEV BLK CABINET
③	SHOWER CURTAIN ROD	BOBRICK	B-6047	
④	TOILET PAPER DISPENSER	KOHLER	K-14444	POLISHED CROME
⑤	24" TOWEL BAR	KOHLER	K-14436	POLISHED CROME

OWNER / DEVELOPER
781 METROPOLITAN ASSET, LLC
862 3rd Ave, Suite 130
New York, NY 10022
646-439-8000

ARCHITECT:
ISSAC & STERN ARCHITECTS, P.C.
25 West 31st St, 9th Floor
New York, NY 10001
212-268-0200
info@issacstern.com
issacstern.com

STRUCTURAL ENGINEER:
ADG ENGINEERING PC
744 Broad St, 19th Floor
Newark, NJ 07102
973-242-2628
adg@adgen.com

MECHANICAL ENGINEER:
A & D ENGINEERING, PLLC
2613 East 65th Street
Brooklyn, NY 11234
(718) 966-0800

PROJECT TITLE:
781 METROPOLITAN AVENUE
Brooklyn, NY

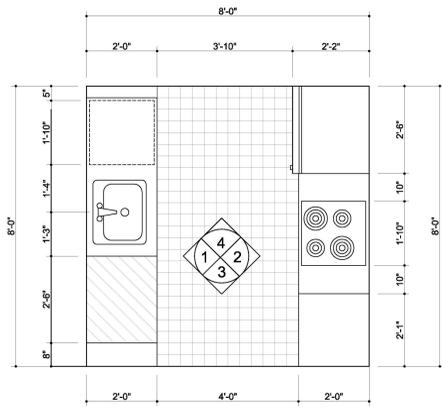
DRAWING TITLE:
ENLARGED BATHROOM PLANS AND ELEVATIONS
SCALE: AS SHOWN

ISSUED/REVISION DATE:
ISSUED: 11-12-2014



DRAWING NO:
A406-00

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION

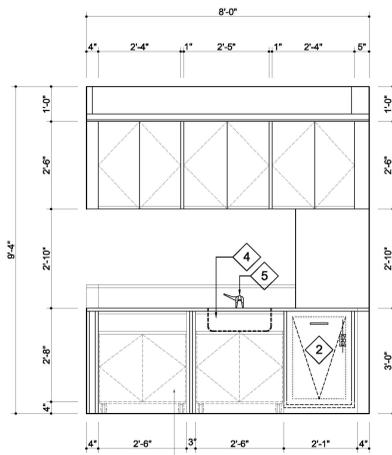


1 ENLARGED KITCHEN PLAN- TYPE 1
SCALE: 1/2"=1'-0"

FL.: 1ST & 2ND FLR
ROOMS
116 | 121 | 138 | 236

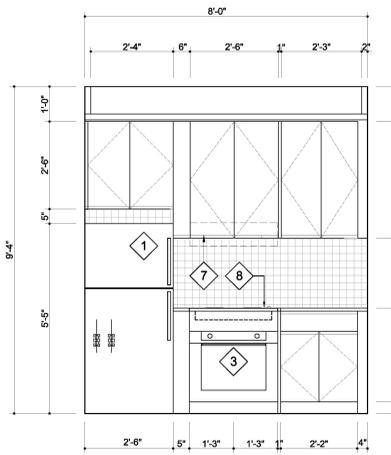
MIRRORED ROOMS
133 | SIM.

SIMILAR ROOMS
134

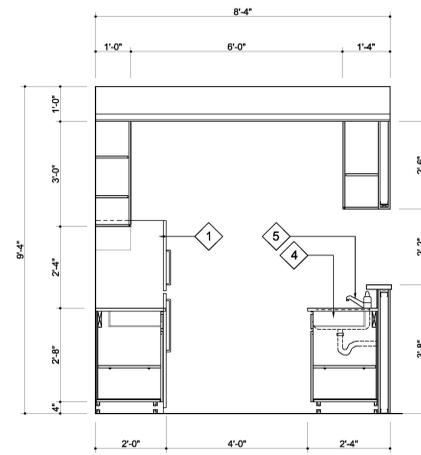


1.1 ELEVATION
SCALE: 1/2"=1'-0"

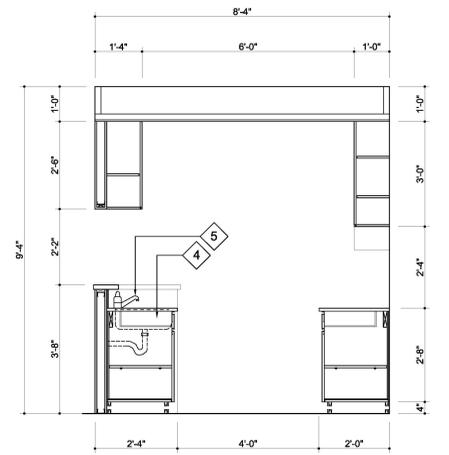
KITCHEN COUNTER TO BE ADJUSTABLE OR REPLACEABLE AS A UNIT AT HEIGHTS BETWEEN 29" AND 36" A.F.F. PROVIDE FINISHED FLOOR AND WALLS UNDER THE COUNTER.



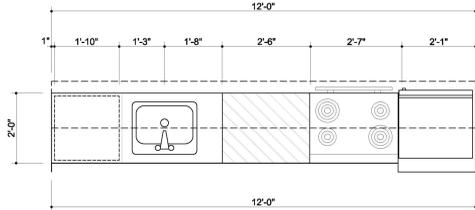
1.2 ELEVATION
SCALE: 1/2"=1'-0"



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



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

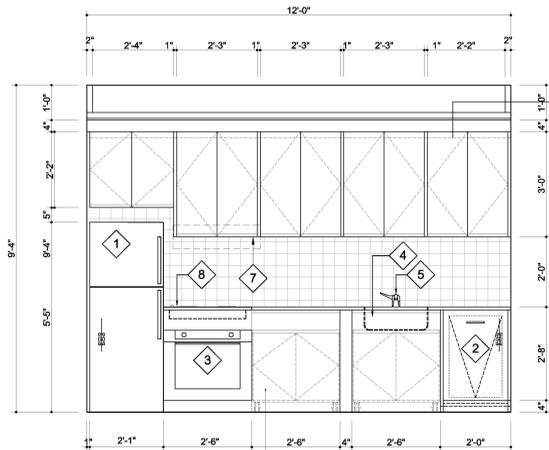


2 ENLARGED KITCHEN PLAN- TYPE 2
SCALE: 1/2"=1'-0"

FL.: 2ND - 5TH FLRS
ROOMS
116 | 121 | 138 | 236

MIRRORED ROOMS

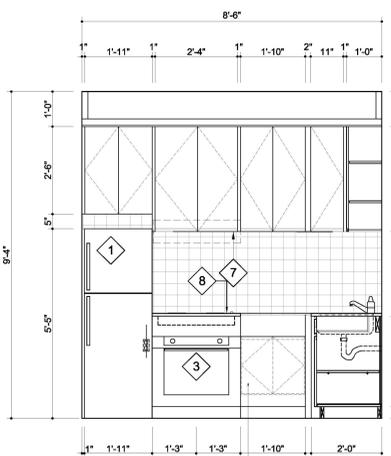
SIMILAR ROOMS



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

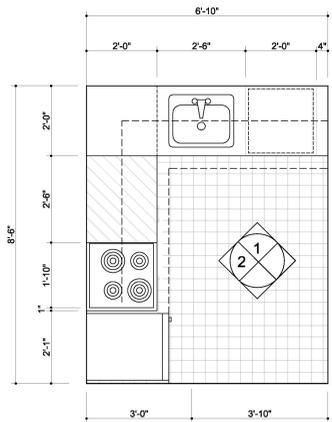
KITCHEN COUNTER TO BE ADJUSTABLE OR REPLACEABLE AS A UNIT AT HEIGHTS BETWEEN 29" AND 36" A.F.F. PROVIDE FINISHED FLOOR AND WALLS UNDER THE COUNTER.

DROP SOFFIT OVER KITCH.



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

KITCHEN COUNTER TO BE ADJUSTABLE OR REPLACEABLE AS A UNIT AT HEIGHTS BETWEEN 29" AND 36" A.F.F. PROVIDE FINISHED FLOOR AND WALLS UNDER THE COUNTER.

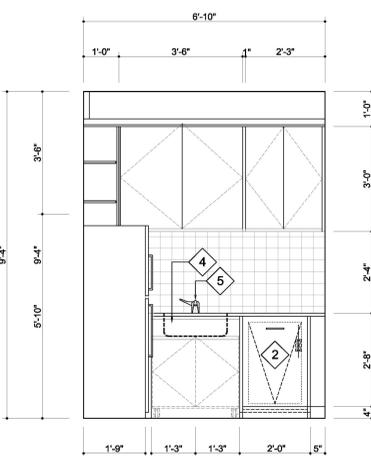


3 ENLARGED KITCHEN PLAN- TYPE 3
SCALE: 1/2"=1'-0"

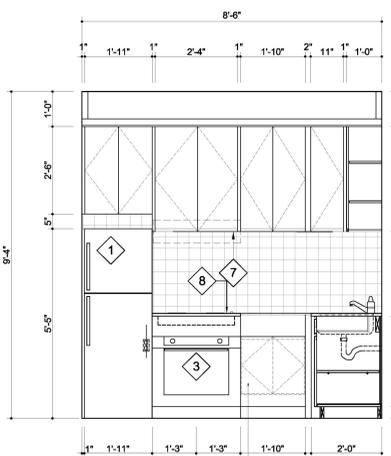
FL.: 2ND FLR
ROOMS
116 | 121 | 138 | 236

MIRRORED ROOMS

SIMILAR ROOMS



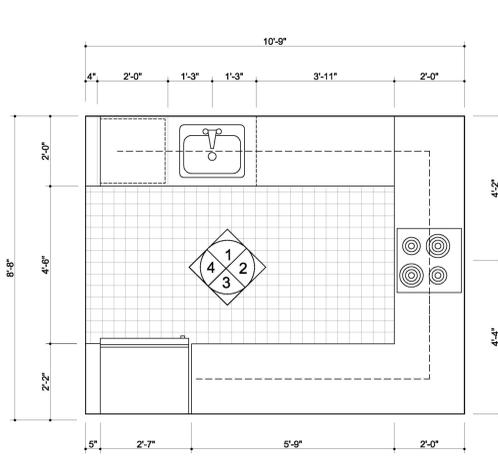
3.1 ELEVATION
SCALE: 1/2"=1'-0"



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

KITCHEN FIXTURE & ACCESSORY SCHEDULE				
SYMBOL	ITEM	MANUFACTURER	MODEL	NOTES
1	REFRIGERATOR	GE ENERGY STAR 15.5 CU TOP FREEZER	GTE16GSHSS	64 3/4"H x 28"W x 31 7/8"D
2	DISHWASHER	BLOMBERG CUSTOM paneled DW	DWT 34200	23.56"W x 33.87"H x 21.62"D
3	BUILT-IN OVEN	FULGOR MILANO	SOVB33021A	29.68"W x 22.06"L x 23.18"H
4	KITCHEN SINK	SIGNATURE PLUMBING SPECIALTIES	KS1096SS12SS	27"W x 19"D x 9"H
5	KITCHEN FAUCET	DANZE SIRIUS DECK MOUNTED FAUCET	D401544	13 1/2"H x 9"L CHROME
6	MICROWAVE	GENERAL ELECTRIC	GE PROFILE PEM 31SFSS	24"W x 12 7/8"D x 12 1/8"H
7	HOOD	FABER INCA SMART HOOD INSERT	INSM28SS	27 5/8"W x 11 3/16"D x 8"H 250 CFM
8	ELECTRIC STOVE TOP	FULGOR MILANO	F3RK30B1	30"W x 21"D x 2 3/16"H
9	KITCHEN WALL TILE	NEMO TLC COMPANY INC.	ASHBURY 5/8X6	



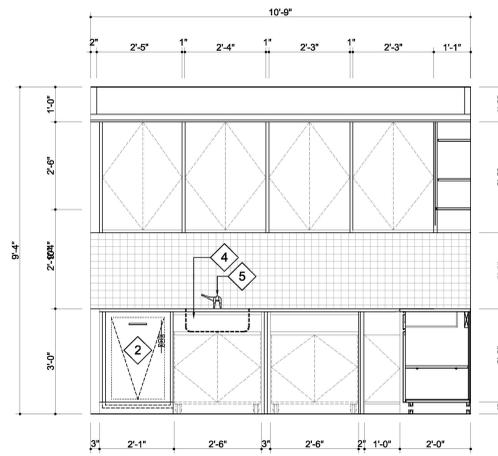


4 ENLARGED KITCHEN PLAN - TYPE 4
SCALE: 1/2"=1'-0"

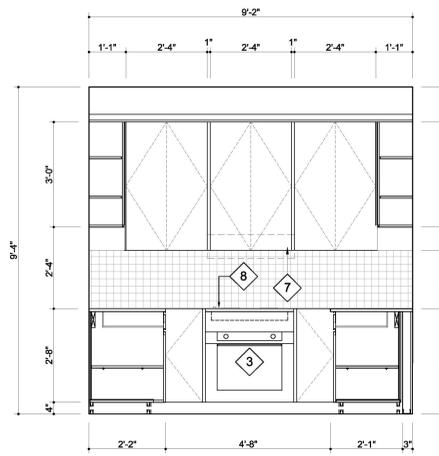
FL : 2ND & 3RD FLRS
ROOMS
116 | 121 | 138 | 236

MIRRORED ROOMS

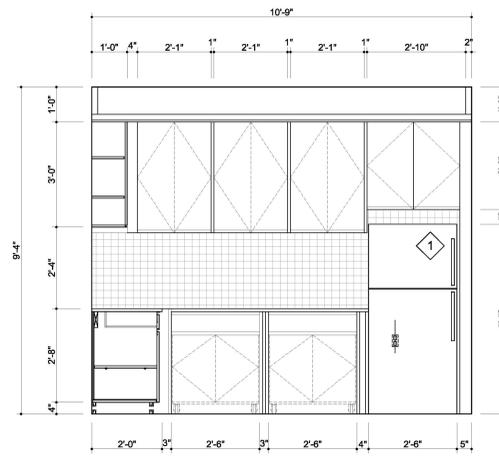
SIMILAR ROOMS



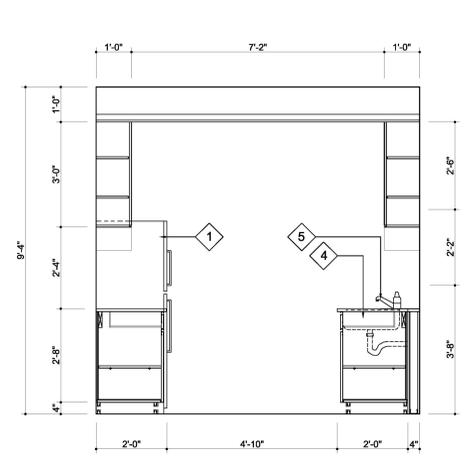
4.1 ELEVATION
SCALE: 1/2"=1'-0"



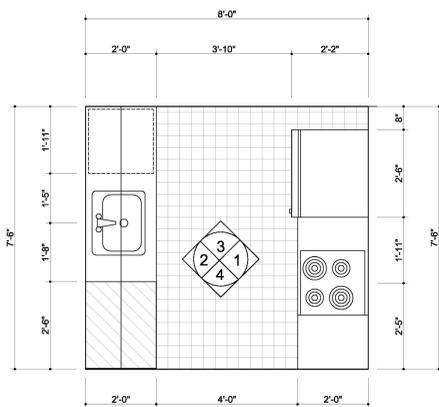
4.2 ELEVATION
SCALE: 1/2"=1'-0"



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



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

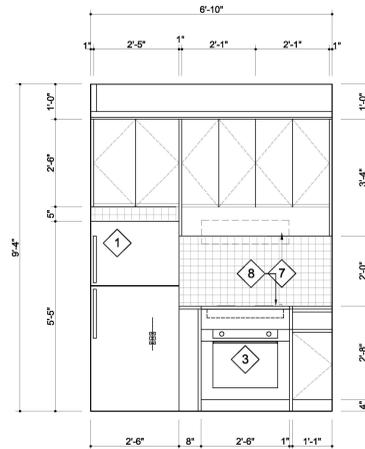


5 ENLARGED KITCHEN PLAN - TYPE 5
SCALE: 1/2"=1'-0"

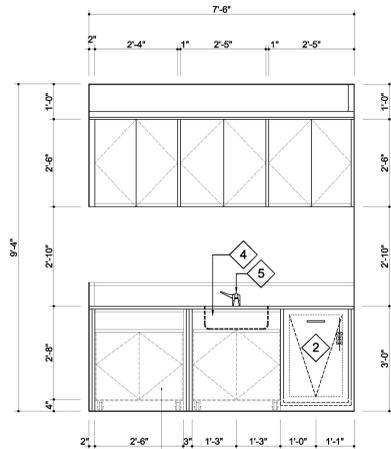
FL : 2ND - 5TH FLRS
ROOMS
116 | 121 | 138 | 236

MIRRORED ROOMS

SIMILAR ROOMS

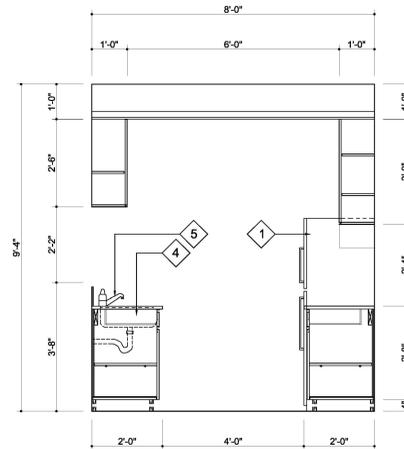


5.1 ELEVATION
SCALE: 1/2"=1'-0"

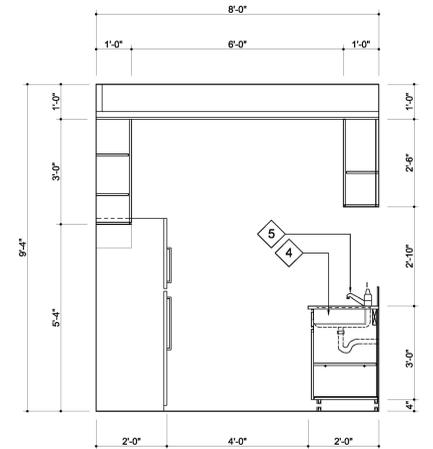


5.2 ELEVATION
SCALE: 1/2"=1'-0"

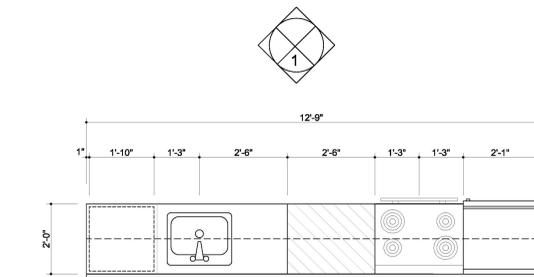
KITCHEN COUNTER TO BE ADJUSTABLE OR REPLACEABLE AS A UNIT AT HEIGHTS BETWEEN 29" AND 36" A.F.F. PROVIDE FINISHED FLOOR AND WALLS UNDER THE COUNTER.



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



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

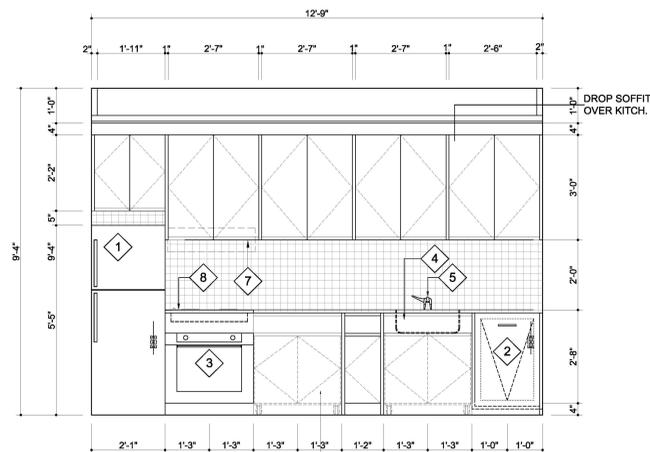


6 ENLARGED KITCHEN PLAN - TYPE 6
SCALE: 1/2"=1'-0"

FL : 2ND - 7TH FLRS
ROOMS
116 | 121 | 138 | 236

MIRRORED ROOMS

SIMILAR ROOMS

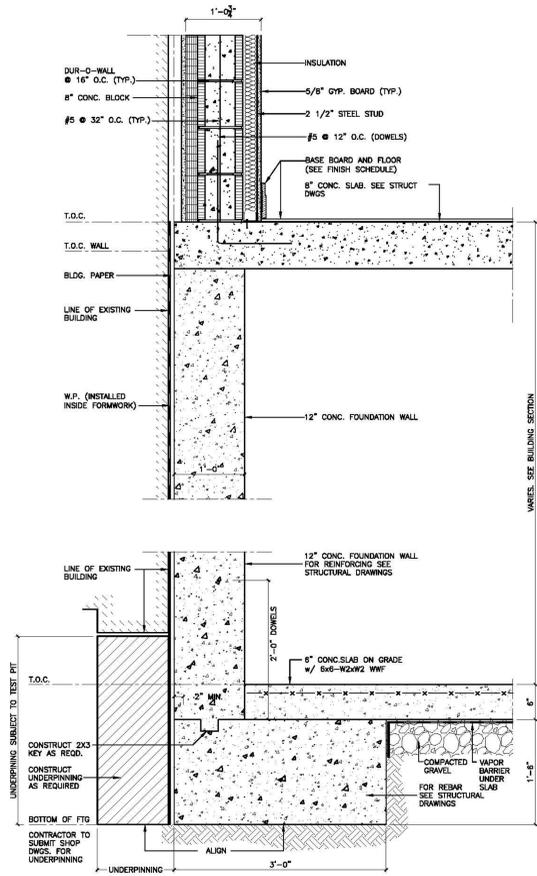


6.1 ELEVATION
SCALE: 1/2"=1'-0"

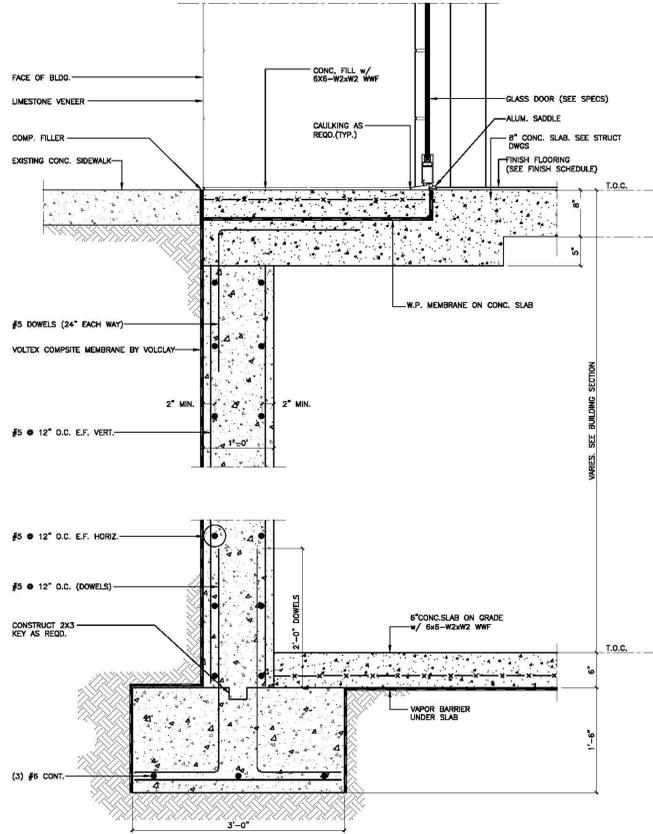
KITCHEN COUNTER TO BE ADJUSTABLE OR REPLACEABLE AS A UNIT AT HEIGHTS BETWEEN 29" AND 36" A.F.F. PROVIDE FINISHED FLOOR AND WALLS UNDER THE COUNTER.

KITCHEN FIXTURE & ACCESSORY SCHEDULE				
SYMBOL	ITEM	MANUFACTURER	MODEL	NOTES
1	REFRIGERATOR	GE ENERGY STAR 15.5 CU TOP FREEZER	GTE16GSHSS	64 3/4"H x 28"W x 31 7/8"D
2	DISHWASHER	BLOMBERG CUSTOM paneled DW	DWT 34200	23.56"W x 33.87"H x 21.62"D
3	BUILT-IN OVEN	FULGOR MILANO	SOVB33021A	29.68"W x 22.06"L x 23.18"H
4	KITCHEN SINK	SIGNATURE PLUMBING SPECIALTIES	KS1056SS12SS	27"W x 19"D x 9"H
5	KITCHEN FAUCET	DANZE SIRIUS DECK MOUNTED FAUCET	D401544	13 1/2"H x 9"L CHROME
6	MICROWAVE	GENERAL ELECTRIC	GE PROFILE PEM 31SFSS	24"W x 12 7/8"D x 12 1/8"H
7	HOOD	FABER INCA SMART HOOD INSERT	INSM28SS	27 5/8"W x 11 3/16"D x 8"H 250 CFM
8	ELECTRIC STOVE TOP	FULGOR MILANO	F3RK30S1	30"W x 21"D x 2 3/16"H
9	KITCHEN WALL TILE	NEMO TLC COMPANY INC.	ASHBURY 5/8X6	

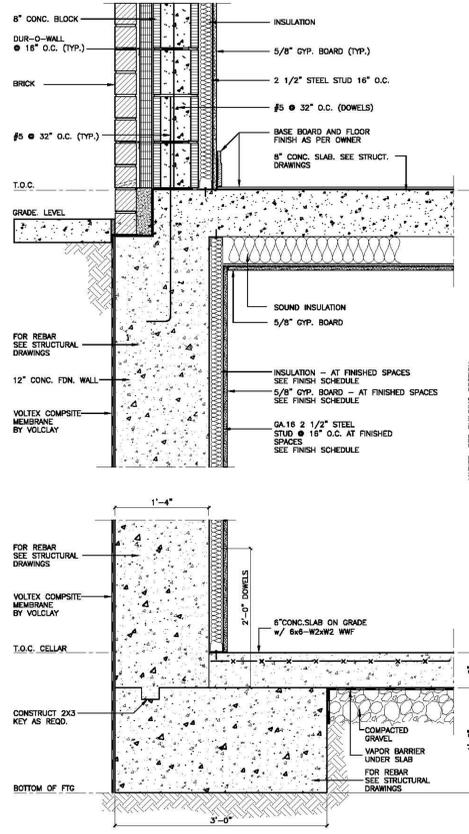




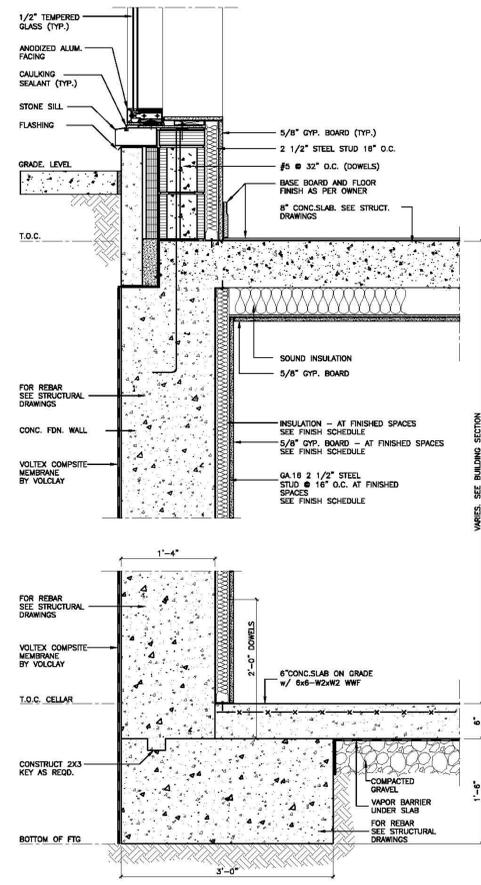
1 TYP. SECTION @ FOUNDATION WALL ADJACENT TO EXISTING BUILDING SCALE 1" = 1'-0"



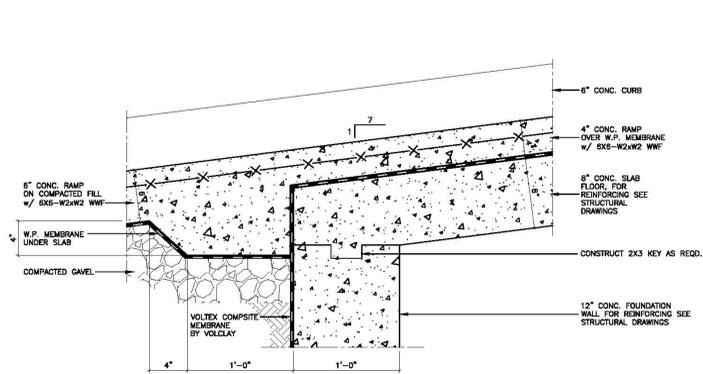
2 SECTION @ FOUNDATION WALL SCALE 1" = 1'-0"



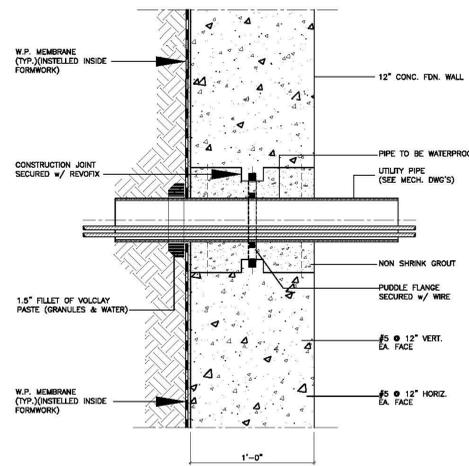
3 SECTION DETAIL @ FOUNDATION WALL SCALE 1" = 1'-0"



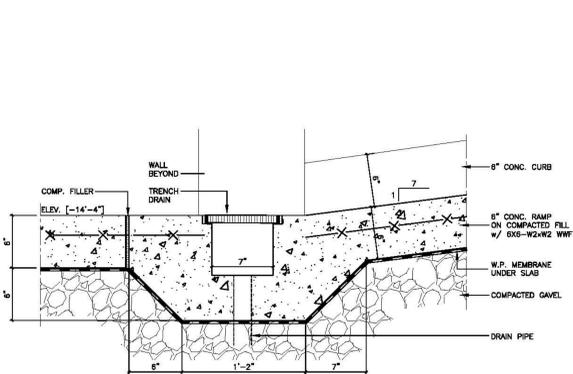
4 SECTION DETAIL @ FOUNDATION WALL SCALE 1" = 1'-0"



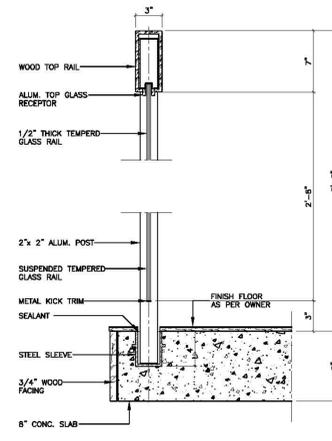
5 SECTION DETAIL SCALE 1/2" = 1'-0"



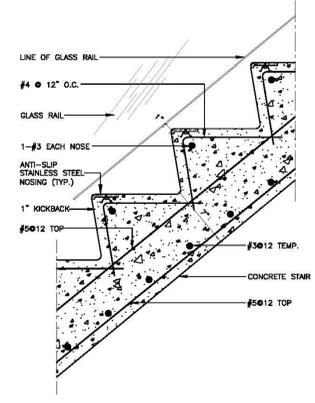
6 TYP. SECTION DETAIL @ UTILITY PENETRATION SCALE 1/2" = 1'-0"



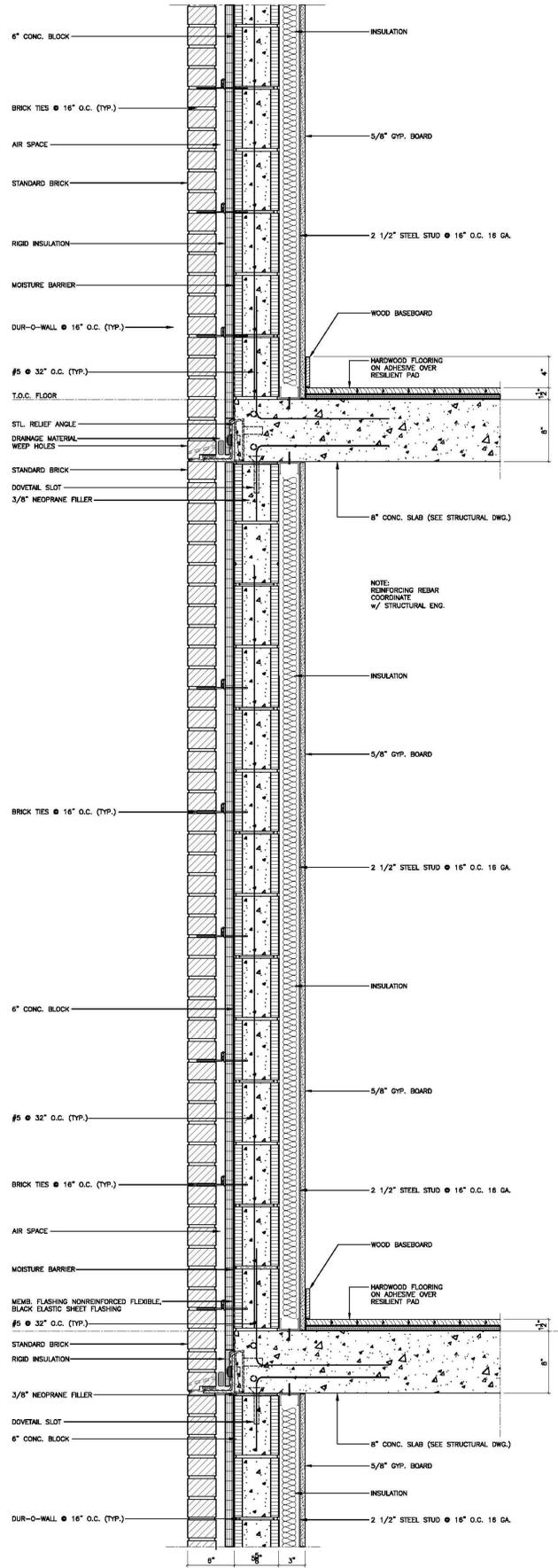
7 SECTION DETAIL @ GARAGE TRENCH DRAIN SCALE 1/2" = 1'-0"



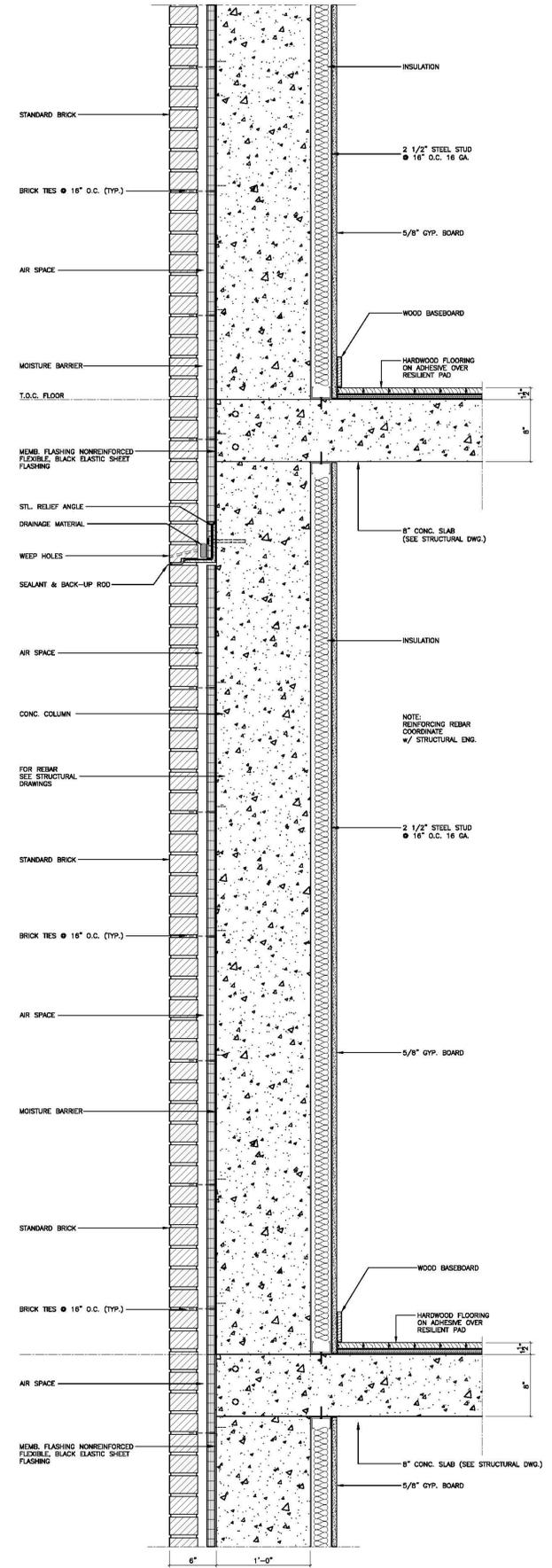
8 SECTION DETAIL GLASS RAILING SCALE 1/2" = 1'-0"



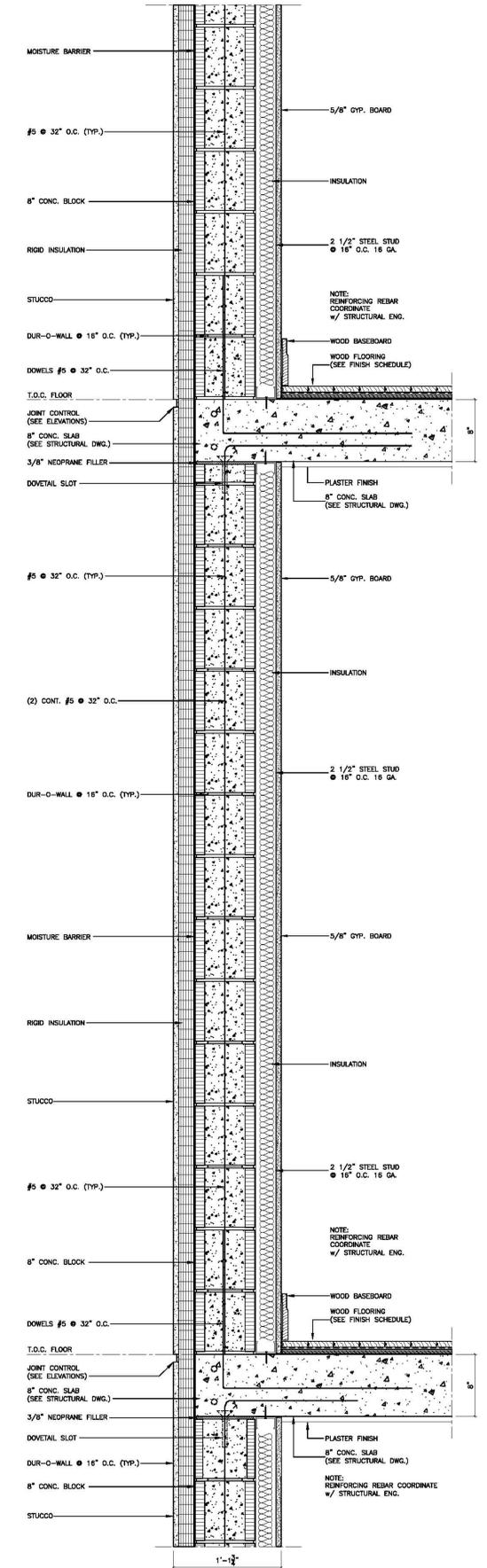
9 CONVENIENCE STAIR SECTION DETAIL SCALE 1/2" = 1'-0"



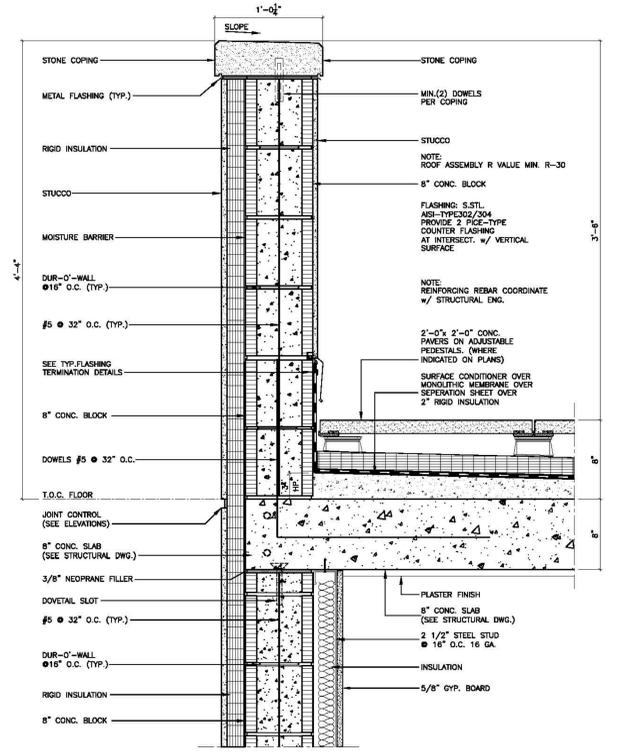
1 SECTION DETAIL @ WALL
SCALE 1/2" = 1'-0"



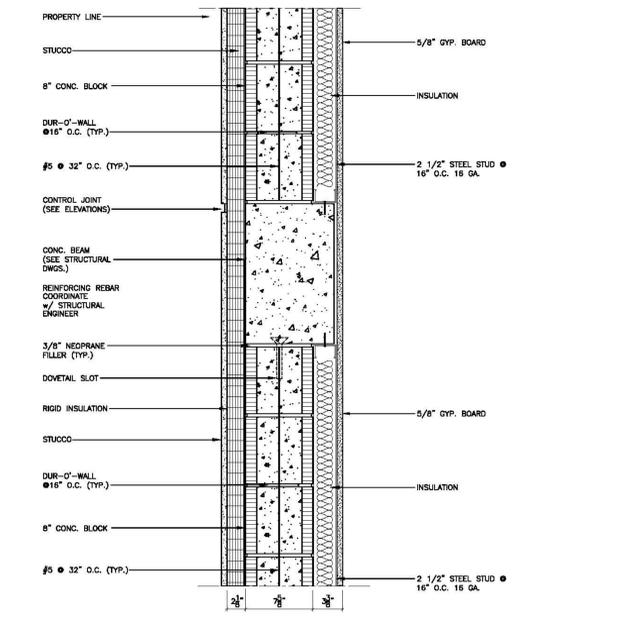
2 SECTION DETAIL @ WALL
SCALE 1/2" = 1'-0"



3 TYPICAL SECTION DETAIL
SCALE 1/2" = 1'-0"



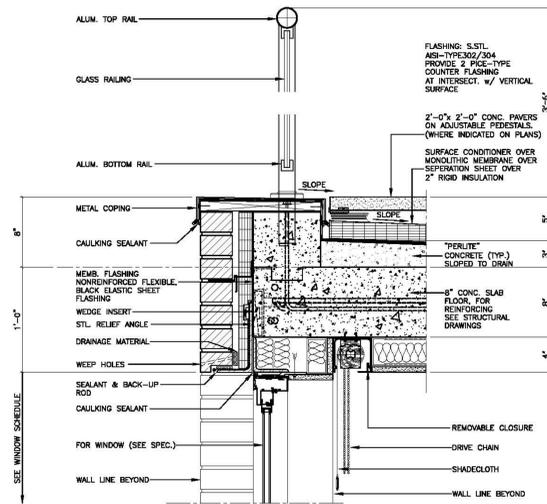
4 SECTION DETAIL @ PARAPET
SCALE 1/2" = 1'-0"



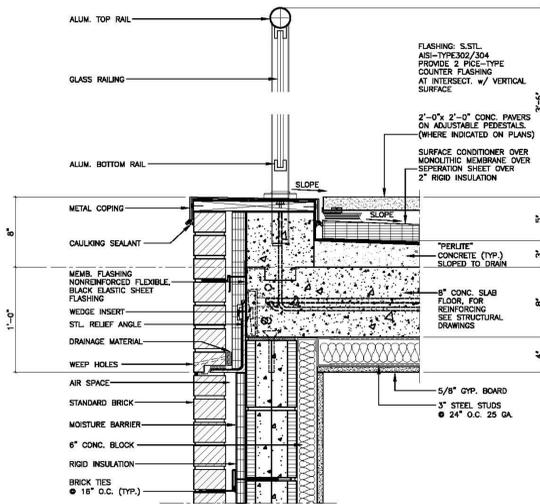
5 WALL SECTION @ ADJACENT BUILDING
SCALE 1/2" = 1'-0"

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION

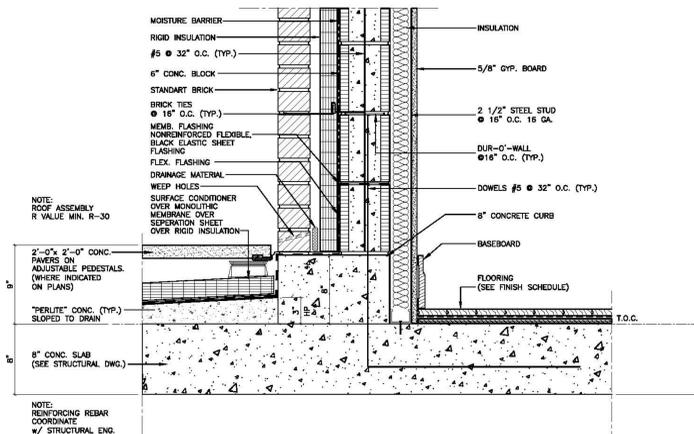




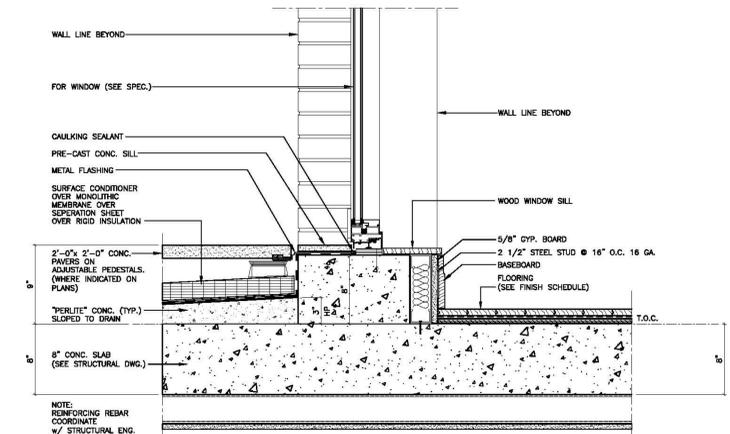
1 SECTION DETAIL @ RAILING
SCALE 1/2" = 1'-0"



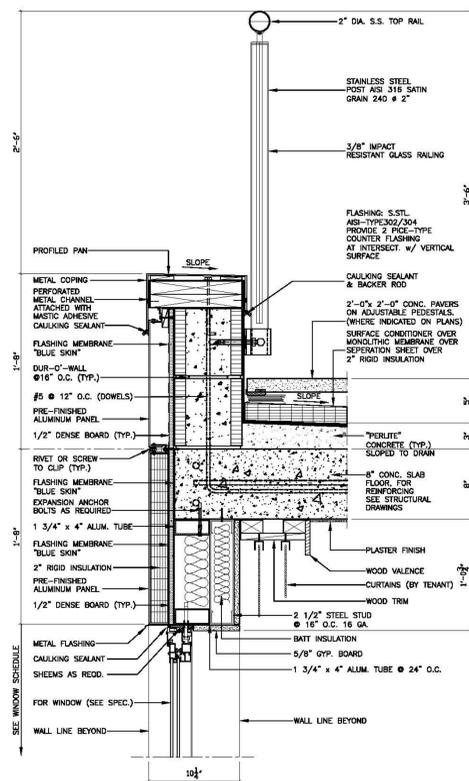
2 SECTION DETAIL @ RAILING
SCALE 1/2" = 1'-0"



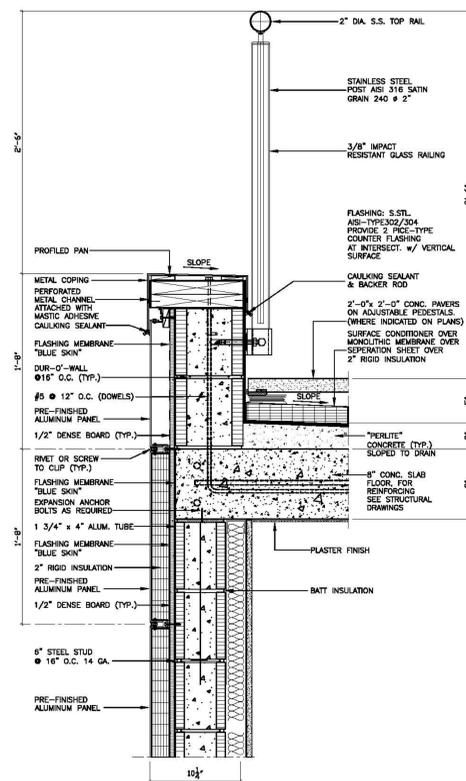
3 SECTION DETAIL @ TERRACE
SCALE 1/2" = 1'-0"



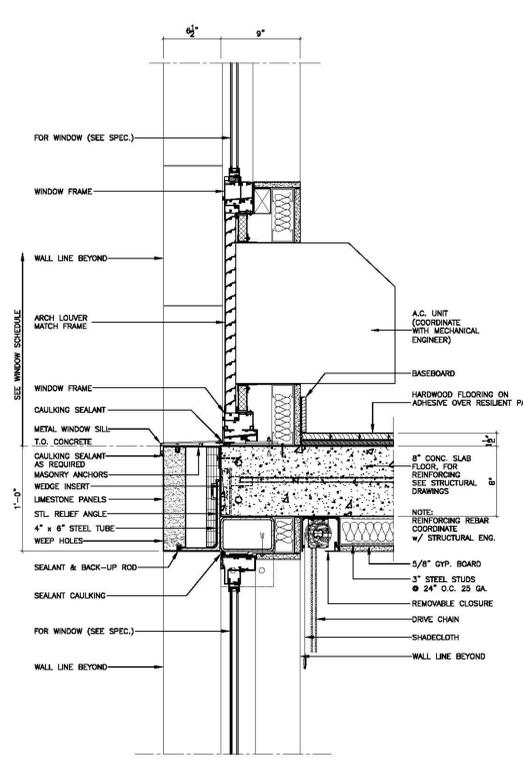
4 SECTION DETAIL @ TERRACE
SCALE 1/2" = 1'-0"



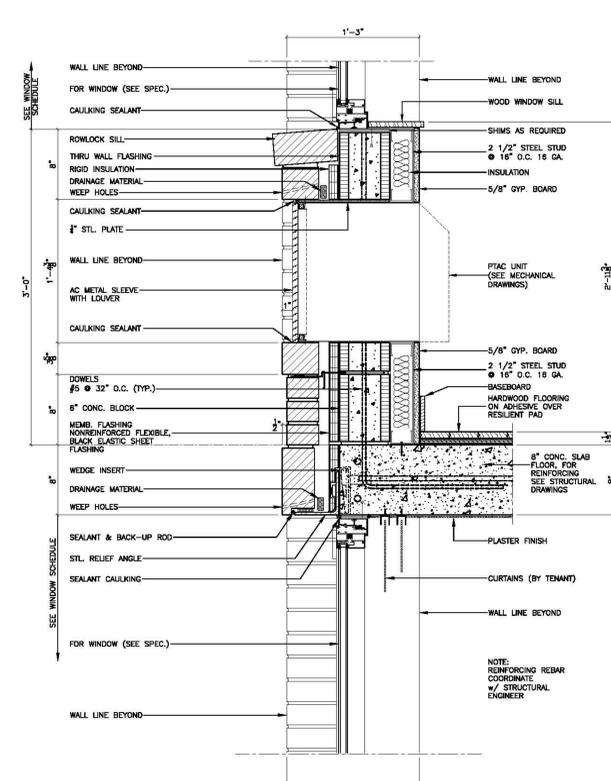
5 SECTION DETAIL @ RAILING
SCALE 1/2" = 1'-0"



6 SECTION DETAIL @ RAILING
SCALE 1/2" = 1'-0"

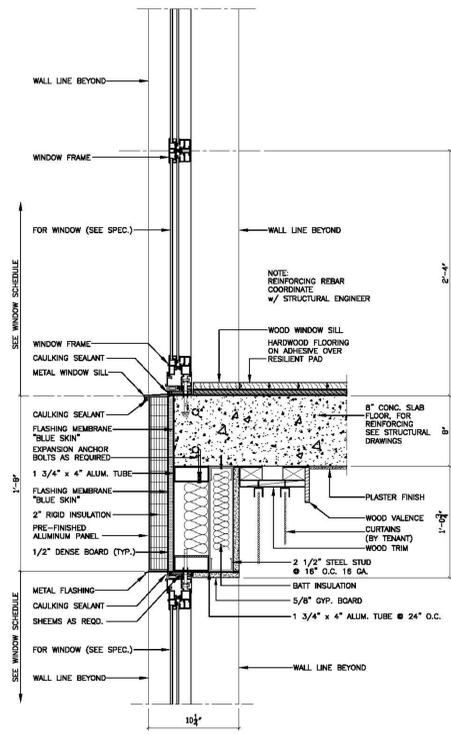


7 SECTION DETAIL @ WINDOW
SCALE 1/2" = 1'-0"

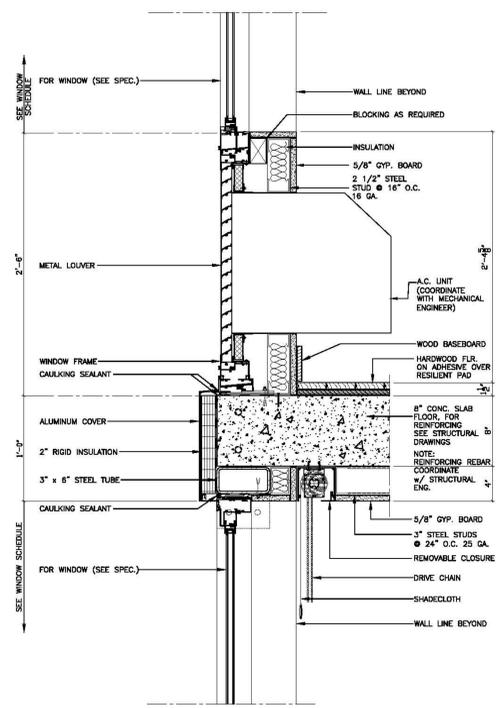


8 SECTION DETAIL @ WINDOW
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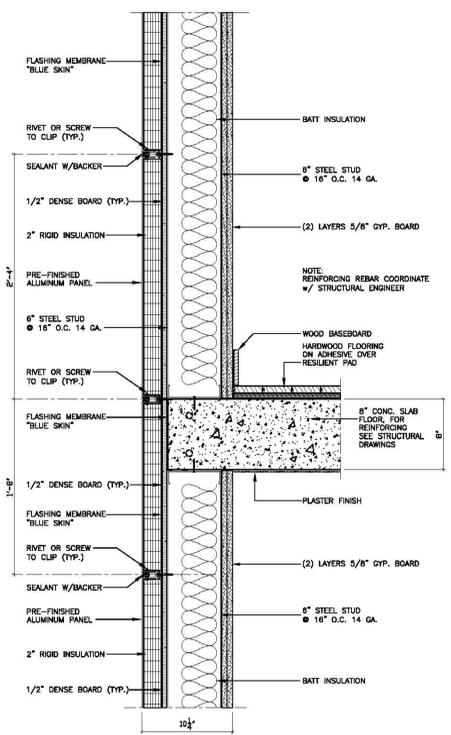
ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



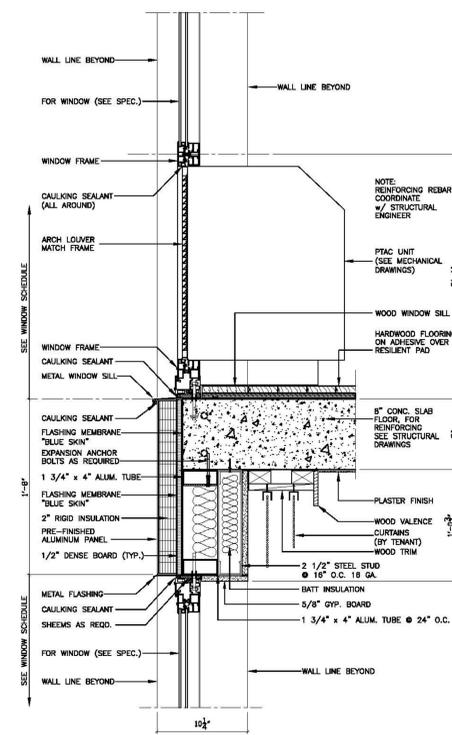
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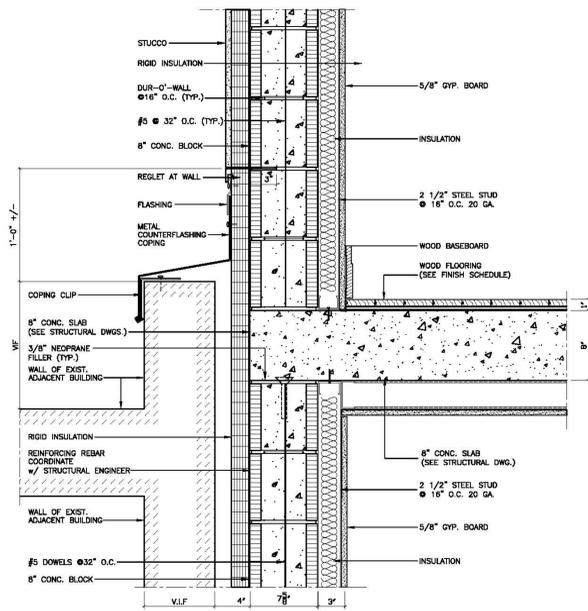
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SCALE 1/2" = 1'-0"



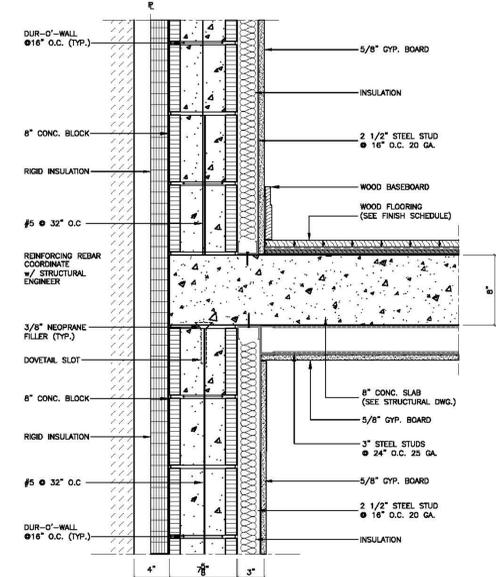
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SCALE 1/2" = 1'-0"



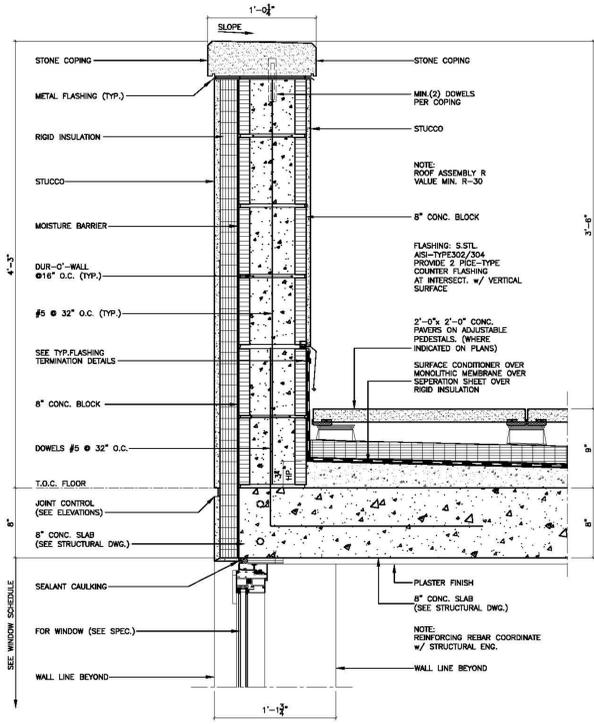
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SCALE 1/2" = 1'-0"



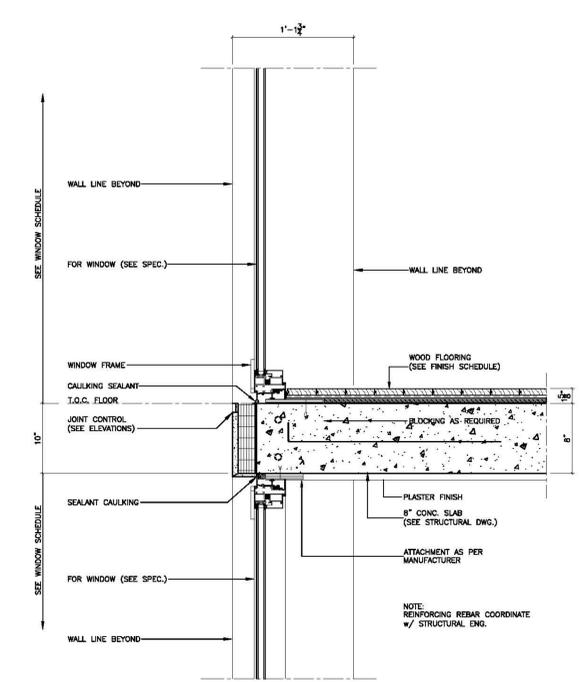
5 TYPICAL SECTION DETAIL
SCALE 1/2" = 1'-0"



6 TYPICAL SECTION DETAIL
SCALE 1/2" = 1'-0"



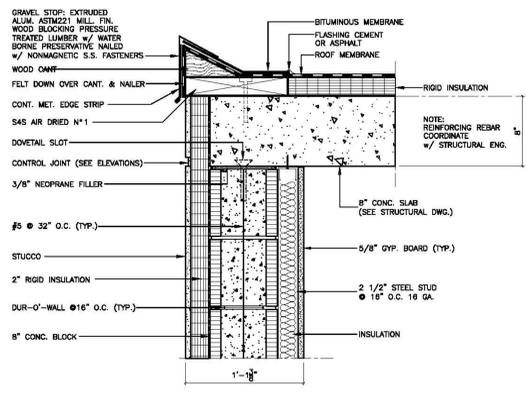
7 SECTION DETAIL @ PARAPET
SCALE 1/2" = 1'-0"



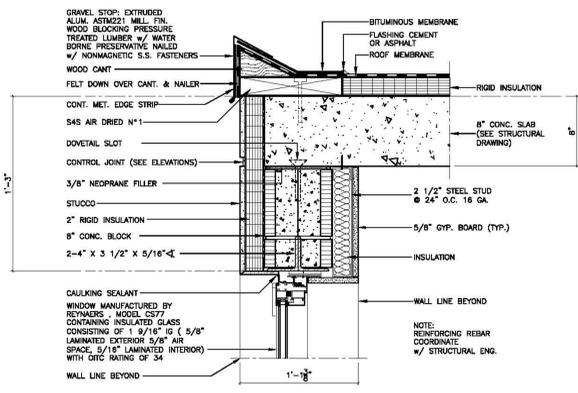
8 TYPICAL SECTION DETAIL
SCALE 1/2" = 1'-0"

OWNER / DEVELOPER ADAM AMERICA REAL ESTATE 600 3rd Ave. 9th Fl. New York, NY 10022 914-437-0000	ARCHITECT ISSAC & STERN ARCHITECTS, P.C. 25 West 21st St. 9th Floor New York, NY 10011 212-268-6900 info@issacstern.com issacstern.com	STRUCTURAL ENGINEER ADG ENGINEERING PC 744 Grand St. 10th Floor New York, NY 10017 212-268-6900 info@adgeng.com adgeng.com	MECHANICAL ENGINEER A & D ENGINEERING, PLLC 2813 East 65th Street Brooklyn, NY 11234 (718) 988-0800	PROJECT TITLE 781 METROPOLITAN AVENUE Brooklyn, NY	DRAWING TITLE SECTION DETAILS SCALE: AS SHOWN	ISSUED/REVISION DATE ISSUED: 09-22-2014	DRAWING NO. A-504.00
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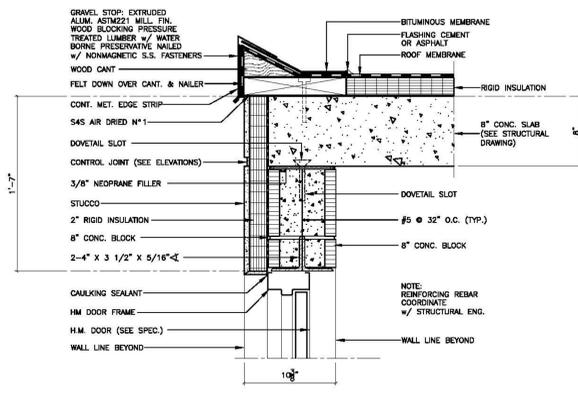
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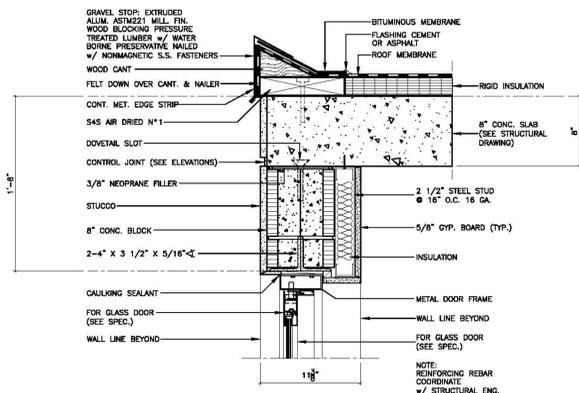
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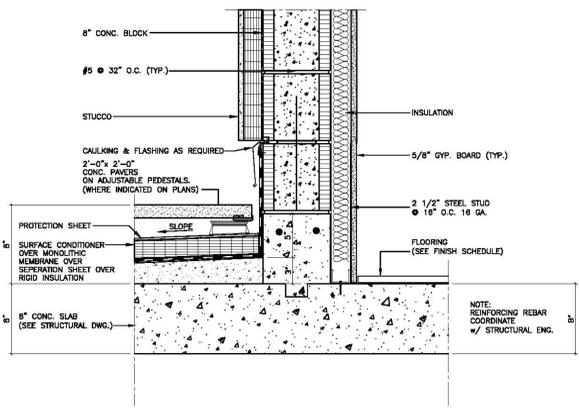
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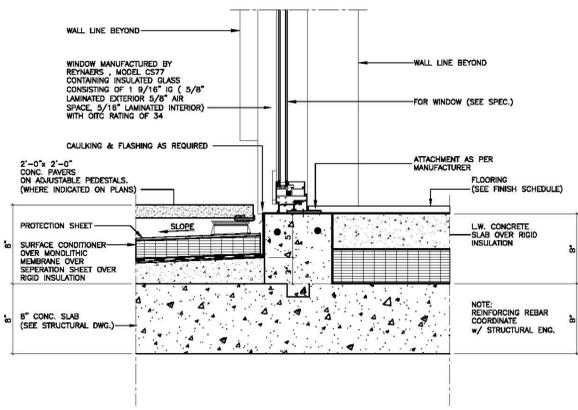
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SCALE 1/2" = 1'-0"



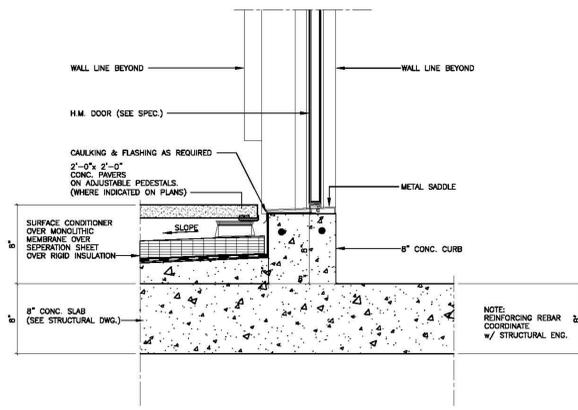
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SCALE 1/2" = 1'-0"



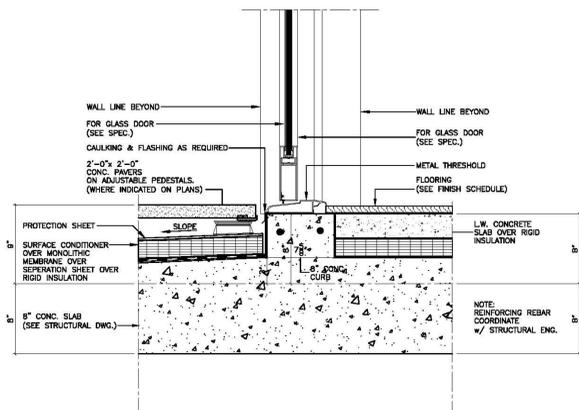
5 SECTION DETAIL @ BULKHEAD
SCALE 1/2" = 1'-0"



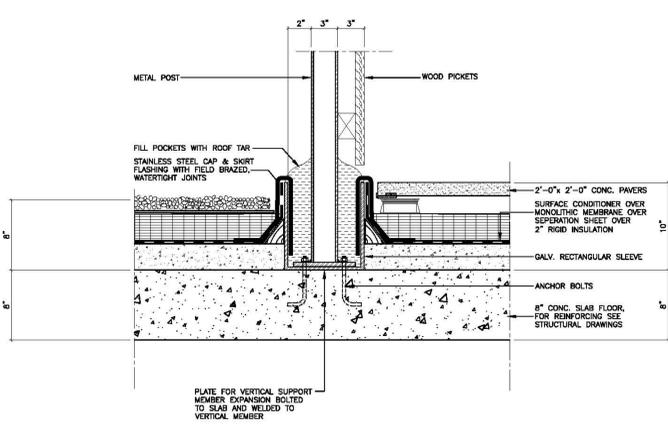
6 SECTION DETAIL @ BULKHEAD WINDOW
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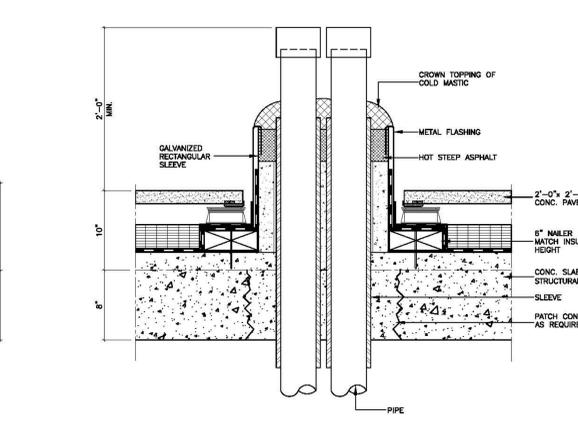
7 SECTION DETAIL @ BULKHEAD DOOR
SCALE 1/2" = 1'-0"



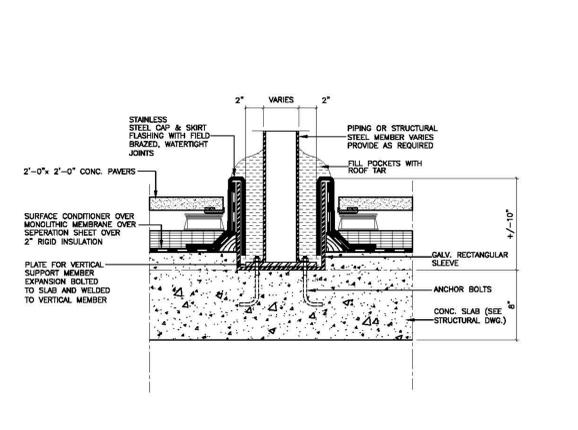
8 SECTION DETAIL @ BULKHEAD DOOR
SCALE 1/2" = 1'-0"



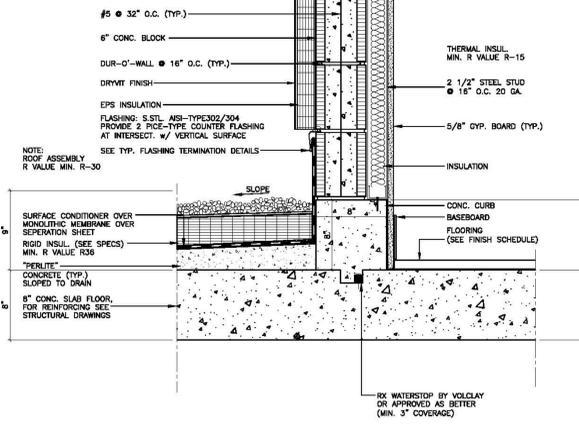
10 SECTION DETAIL @ PITCH POCKET
SCALE 1/2" = 1'-0"



11 TYP. VENT PENETRATION THRU ROOF
SCALE 1/2" = 1'-0"

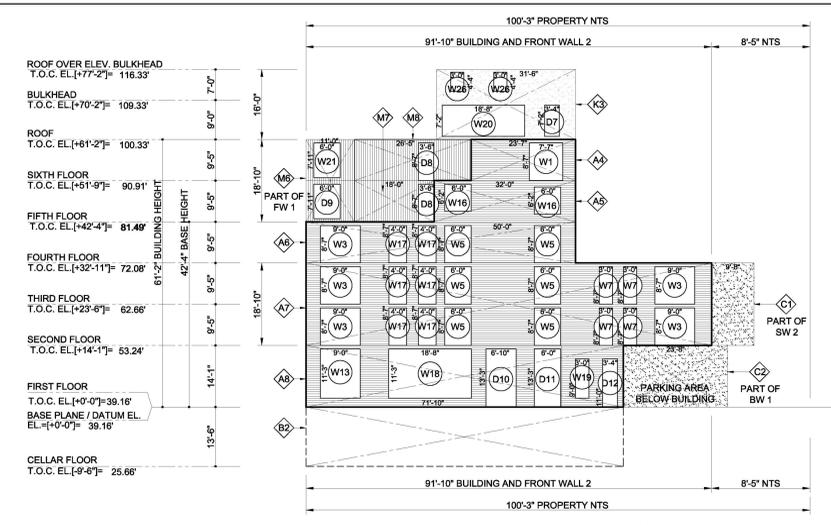
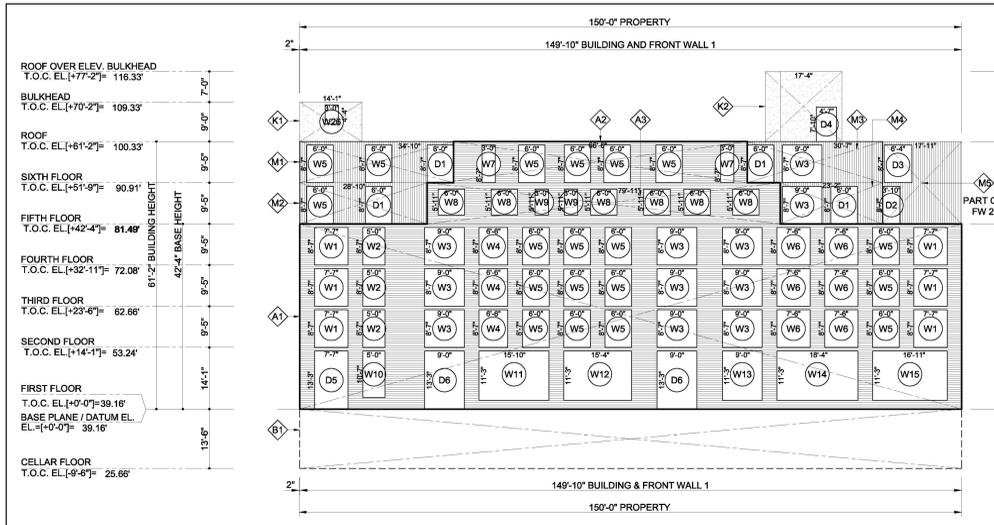


12 TYP. PITCH POCKET SLEEVE
SCALE 1/2" = 1'-0"



13 SECTION DETAIL @ ROOF
SCALE 1/2" = 1'-0"

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



- ENERGY ENVELOPE NOTES**
- ALL EXTERIOR JOINTS AND OPENINGS IN THE BUILDING ENVELOPE THAT ARE OBSERVABLE SURFACES OF AIR LEAKAGE SHALL BE CALKED, GASKETED, WEATHER STRIPPED OR OTHERWISE SEALED. PROVIDE FLASHING, WINDOW DAMS, EXPANDABLE FOAM SEALANT AND CALKING AT ROUGH OPENING / WINDOW / SKYLIGHT FRAME JOINTS AND ALL SEAMS TO CREATE A CONTINUOUS AIR BARRIER WITH SURROUNDING WALL SYSTEM.
 - ALL CMU AND POURED CONCRETE EXTERIOR WALLS ARE TO BE PROVIDED WITH FLUID APPLIED ELASTOMERIC CONTINUOUS AIR BARRIER. ALL FRAMED METAL STUD WALLS TO BE PROVIDED WITH MOISTURE AND AIR INFILTRATION BARRIER (BUILDING PAPER WRAP) INSTALLED OVER THE SHEATHING AND INTEGRATED WITH WINDOW/DOOR FLASHING.
 - NYECC 502.4.1 WINDOWS AND DOOR ASSEMBLIES: AIR LEAKAGE OF WINDOW/DOOR ASSEMBLIES SHALL BE DETERMINED IN ACCORDANCE WITH AMCA/WMACSA 1011.3.2/440, OR NFRC-400 BY AN ACCREDITED, INDEPENDENT LABORATORY. LABELLED AND CERTIFIED BY THE MANUFACTURER AND SHALL NOT EXCEED 0.3 CFM / S.F. FOR WINDOWS, SLIDING AND REVOLVING DOORS AND 0.5 CFM / S.F. FOR SWINGING DOORS.
 - NYECC 502.4.2 CURTAIN WALL, STOREFRONT GLAZING, AND COMMERCIAL-GLAZED SWINGING ENTRANCE DOORS AND REVOLVING DOORS SHALL BE TESTED FOR AIR LEAKAGE AT 1.57 PSF IN ACCORDANCE WITH ASTM E283. FOR CURTAIN WALLS AND STOREFRONT GLAZING, THE MAX AIR LEAKAGE RATE SHALL BE 0.3 CFM / S.F. OF PENETRATION AREA. FOR COMMERCIAL-GLAZED SWINGING ENTRANCE DOORS AND REVOLVING DOORS, THE MAXIMUM AIR LEAKAGE RATE SHALL BE 1.0 CFM / S.F. OF DOOR AREA WHEN TESTED IN ACCORDANCE WITH ASTM E283.
 - SITE CONSTRUCTED DOORS, WINDOWS, AND SKYLIGHTS SHALL BE CALKED AT ALL JOINTS AND SEAMS BETWEEN THE UNIT AND THE BUILDING AS PER NYECC 502.4.3, AND SHALL BE FIELD FITTED WITH WEATHER STRIPPING PER NYECC 502.4.1.
 - ALL WINDOWS AND GLAZED DOORS SHALL BE DOUBLE GLAZED AND HAVE THE MIN. U-FACTOR OF 0.35 AND THE MIN. SHGC VALUE OF 0.40 (U.O.N. ON ENERGY DETAIL DRAWINGS). ALL CURTAIN WALL / STOREFRONT GLAZING SHALL HAVE THE MIN. U-FACTOR OF 0.5 AND THE MIN. SHGC VALUE OF 0.40.
 - ALL SKYLIGHTS SHALL NOT EXCEED 3% OF GROSS ROOF AREA AND SHALL HAVE THE MIN. U-FACTOR OF 0.60 AND THE MIN. SHGC VALUE OF 0.40 (U.O.N. ON PLAN).
 - MANUFACTURED PENETRATION PRODUCTS MUST BE LABELED FOR U-FACTOR ACCORDING TO APPROVED PROCEDURES.
 - INTERIOR WALL INSULATION OF MIN. R-11 SHALL BE INSTALLED IN ALL OPAQUE PORTIONS OF EXTERIOR WALLS WITHIN THE CAVITY OF STEEL FURRING FRAME @24" O.C. (EXCEPT STEEL FRAMED WALLS @16" O.C. OR U.O.N. ON PLAN).

WALLS LEGEND		WALL COMPOSITION	
(A)	NEW CMU WALL TYPE UL DESIGN #1 902 U FACTOR (BTU/Ft ² -hr) = 0.0674 ACTUAL WALL THICKNESS = 15" ALLOWABLE DEDUCTION = 7"	A	4" Brick Veneer 1 1/2" Polystyrene Insul. 8" Conc Mass. Unit Wall Batt Insulation R-11 Inside Air
(B)	NEW BELOW GRADE FOUND. WALL U FACTOR (BTU/Ft ² -hr) = 0.0461 ACTUAL WALL THICKNESS = 14" ALLOWABLE DEDUCTION = NA NO DEDUCTION TAKEN	B	2" Polystyrene Insulation 14" Concrete Aggregate 6" Conc Mass. Unit Votex Membrane Wall Batt Insulation R-11 5/8" Gyp. Board
(C)	NEW BELOW GRADE FOUND. WALL U FACTOR (BTU/Ft ² -hr) = 0.0639 ACTUAL WALL THICKNESS = 13" ALLOWABLE DEDUCTION = NA NO DEDUCTION TAKEN	C	1" Stucco 2" XPS Polystyrene Insul. 6" Conc Mass. Unit Wall Batt Insulation R-11 5/8" Gyp. Board
(E)	NEW BELOW GRADE FOUND. WALL U FACTOR (BTU/Ft ² -hr) = 0.0578 ACTUAL WALL THICKNESS = 9" ALLOWABLE DEDUCTION = NA NO DEDUCTION TAKEN	E	1" Stucco 1" Polystyrene Insulation 6" Metal studs w/ R19 Insul 5/8" Gyp. Board Inside Air
(K)	NEW CMU WALL TYPE UL DESIGN #1 906 U FACTOR (BTU/Ft ² -hr) = 0.0704 ACTUAL WALL THICKNESS = 12" ALLOWABLE DEDUCTION = 4" NO DEDUCTION TAKEN	K	1" Stucco 2" Polystyrene Insulation 6" Conc Mass. Unit Wall Batt Insulation R-11 5/8" Gyp. Board Inside Air
(M)	NEW CMU WALL TYPE UL DESIGN #1 906 U FACTOR (BTU/Ft ² -hr) = 0.0574 ACTUAL WALL THICKNESS = 14" ALLOWABLE DEDUCTION = 6" NO DEDUCTION TAKEN	M	Metal Wall Panel 1" Air space 1 1/2" Polystyrene Insul. 6" Conc Mass. Unit Wall Batt Insulation R-11 5/8" Gyp. Board

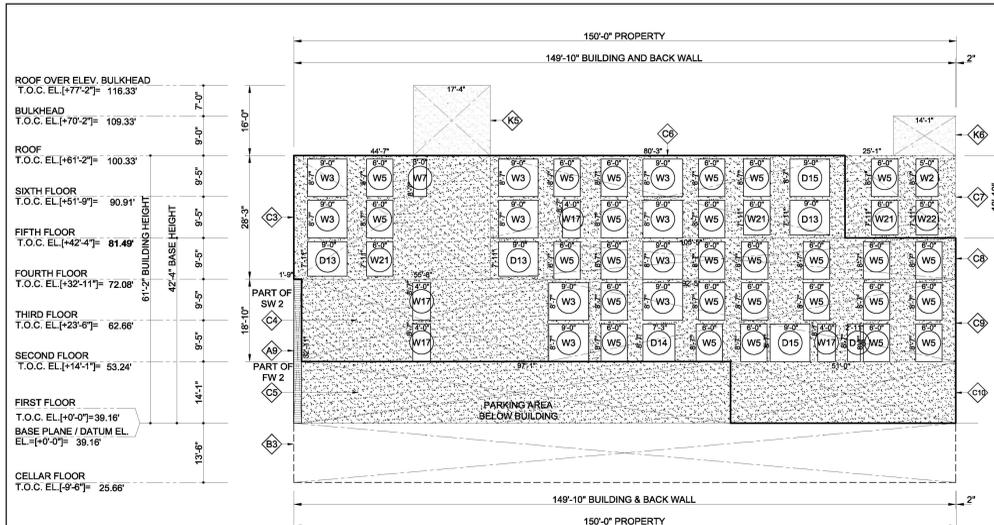
EXTERIOR WALL AND FENESTRATION AREA CALCULATIONS					
WALL/WIN	DIMENSIONS	AREA	NUMBER	TOTAL AREA	REMARKS
FRONT WALL 1 AREA CALC (Wa + Wk + Wm) = W					
(A1)	149' - 10" x 42' - 4"	6342.94 S.F.			
(A2)	66' - 6" x 9' - 5"	626.21 S.F.			
(A3)	79' - 11" x 9' - 5"	752.55 S.F.		7721.70 Wa	
(K1)	14' - 1" x 9' - 5"	126.75 S.F.			
(K2)	17' - 4" x 16' - 0"	277.33 S.F.		404.08 Wk	
(M1)	34' - 10" x 9' - 5"	328.01 S.F.			
(M2)	28' - 10" x 9' - 5"	271.51 S.F.			
(M3)	30' - 7" x 9' - 5"	287.99 S.F.			
(M4)	23' - 2" x 9' - 5"	218.15 S.F.			
(M5)	11' - 0" x 18' - 10"	207.17 S.F.			
(M6)	11' - 0" x 18' - 10"	207.17 S.F.		1520.01 Wm	
TOTAL W = A1+A2+A3+K1+K2+M1+M2+M3+M4+M5+M6 = 9,645.79 S.F.					
FRONT WALL 1 SLAB EDGE AREA CALC. = S					
(SA)	149' - 10" x 0' - 8"	99.89	4	399.56 Sa	
(SA2)	66' - 6" x 0' - 8"	44.33	1	44.33 Sa	
(SA3)	79' - 11" x 0' - 8"	53.28	1	53.28 Sa	
TOTAL Sa = SA1 + SA2 + SA3 = 497.17 S.F.					
(SK)	14' - 1" x 0' - 8"	9.39	1	9.39 Sk	
(SK2)	17' - 4" x 0' - 8"	11.56	1	11.56 Sk	
TOTAL Sk = SK1 + SK2 = 20.94 S.F.					
(SM)	34' - 10" x 0' - 8"	23.22	1	23.22 Sm	
(SM2)	28' - 10" x 0' - 8"	19.22	1	19.22 Sm	
(SM3)	30' - 7" x 0' - 8"	20.39	1	20.39 Sm	
(SM4)	23' - 2" x 0' - 8"	15.44	1	15.44 Sm	
(SM5)	11' - 0" x 0' - 8"	7.33	2	14.67 Sm	
(SM6)	11' - 0" x 0' - 8"	7.33	2	14.67 Sm	
TOTAL Sm = SM1 + SM2 + SM3 + SM4 + SM5 + SM6 = 107.61 S.F.					

EXTERIOR WALL AND FENESTRATION AREA CALCULATIONS					
WALL/WIN	DIMENSIONS	AREA	NUMBER	TOTAL AREA	REMARKS
FRONT WALL 1 FENESTRATION AREA = Fa					
(W1)	7' - 7" x 8' - 7"	65.09	6	390.54	
(W2)	5' - 0" x 8' - 7"	42.92	3	128.75	
(W3)	9' - 0" x 8' - 7"	77.25	9	695.25	
(W4)	6' - 6" x 8' - 7"	55.79	3	167.38	
(W5)	6' - 0" x 8' - 7"	51.50	16	824.00	
(W6)	7' - 6" x 8' - 7"	64.38	6	386.25	
(W7)	3' - 0" x 8' - 7"	25.75	2	51.50	
(W8)	6' - 0" x 5' - 11"	35.60	6	213.00	
(W9)	3' - 0" x 5' - 11"	17.75	2	35.50	
(W10)	5' - 0" x 10' - 7"	52.92	1	52.92	
(W11)	15' - 10" x 11' - 3"	178.13	1	178.13	
(W12)	15' - 4" x 11' - 3"	172.50	1	172.50	
(W13)	9' - 0" x 11' - 3"	101.25	1	101.25	
(W14)	18' - 4" x 11' - 3"	206.25	1	206.25	
(W15)	16' - 11" x 11' - 3"	190.31	1	190.31	
(D6)	7' - 7" x 13' - 3"	100.48	1	100.48	
(D8)	9' - 0" x 13' - 3"	119.25	2	238.50	
TOTAL FENESTRATION AREA Fa = 4,132.50					
OPAQUE WALL AREA CALCULATION = Oa					
Wa - Sa - Fa = 7,721.70 - 497.17 - 4,132.50 = 3,092.03					
FRONT WALL 1 FENESTRATION AREA = Fk					
(W20)	3' - 0" x 4' - 4"	13.00	1	13.00	
(D4)	4' - 7" x 7' - 10"	35.90	1	35.90	
TOTAL FENESTRATION AREA Fk = 48.90					
OPAQUE WALL AREA CALCULATION = Ok					
Wk - Sk - Fk = 404.08 - 20.94 - 48.90 = 334.24					
FRONT WALL 1 FENESTRATION AREA = Fm					
(W3)	9' - 0" x 8' - 7"	77.25	2	154.50	
(W5)	6' - 0" x 8' - 7"	51.50	3	154.50	
(W21)	6' - 0" x 7' - 11"	47.50	2	95.00	
(D1)	6' - 0" x 8' - 7"	51.50	4	206.00	
(D8)	6' - 0" x 7' - 11"	47.50	1	47.50	
TOTAL FENESTRATION AREA Fm = 657.50					
OPAQUE WALL AREA CALCULATION = Om					
Wm - Sm - Fm = 1,520.01 - 107.61 - 657.50 = 754.90					
TOTAL OPAQUE WALL (Oa+Ok+Om) = 4,181.17					
TOTAL SLAB AREA (Sa+Sk+Sm) = 625.72					
TOTAL FENESTRATION (Fa+Fk+Fm) = 4,838.90					
TOTAL WALL AREA (Wa+Wk+Wm) = 9,645.80					
FRONT WALL 1 FENESTRATION AREA (%) = 50.17%					
-F / W x 100 = 4,838.90 / 9,645.79 x 100					
FRONT WALL 1 TYPE B BELOW GRADE AREA					
(B1)	149' - 6" x 13' - 6"	2018.25 S.F.			
TOTAL BELOW GRADE AREA = 2,018.25					

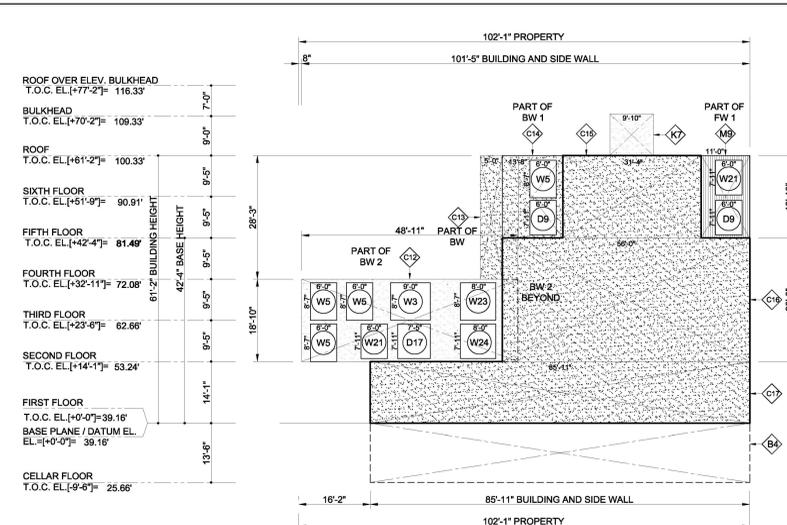
EXTERIOR WALL AND FENESTRATION AREA CALCULATIONS					
WALL/WIN	DIMENSIONS	AREA	NUMBER	TOTAL AREA	REMARKS
FRONT WALL 2 AREA CALC (Wa + Wk + Wm) = W					
(A4)	23' - 7" x 9' - 5"	222.08 S.F.			
(A5)	32' - 0" x 9' - 5"	301.33 S.F.			
(A6)	50' - 0" x 9' - 5"	470.83 S.F.			
(A7)	91' - 10" x 18' - 10"	1729.53 S.F.			
(A8)	71' - 10" x 14' - 1"	1011.65 S.F.			
(A9)	1' - 9" x 32' - 11"	57.60 S.F.		3793.03 Wa	
(K3)	31' - 6" x 16' - 0"	504.00 S.F.			
(K4)	10' - 2" x 9' - 6"	96.58 S.F.		600.58 Wk	
(M7)	17' - 11" x 18' - 10"	337.43 S.F.			
(M8)	18' - 0" x 9' - 5"	169.50 S.F.			
(M9)	26' - 5" x 9' - 5"	248.76 S.F.		755.69 Wm	
TOTAL W = A4+A5+A6+A7+A8+A9+K3+K4+M7+M8+M9 = 5,149.30 S.F.					
FRONT WALL 2 SLAB EDGE AREA CALC. = S					
(SA4)	23' - 7" x 0' - 8"	15.72	1	15.72 Sa	
(SA5)	32' - 0" x 0' - 8"	21.33	1	21.33 Sa	
(SA6)	50' - 0" x 0' - 8"	33.33	1	33.33 Sa	
(SA7)	91' - 10" x 0' - 8"	61.22	2	122.44 Sa	
(SA8)	71' - 10" x 0' - 8"	47.89	1	47.89 Sa	
(SA9)	1' - 9" x 0' - 8"	1.17	3	3.50 Sa	
TOTAL Sa = SA4 + SA5 + SA6 + SA7 + SA8 + SA9 = 244.22 S.F.					
(SK3)	31' - 6" x 0' - 8"	21.00	2	42.00 Sk	
(SK4)	10' - 2" x 0' - 8"	6.78	1	6.78 Sk	
TOTAL Sk = SK3 + SK4 = 48.78 S.F.					
(SM7)	17' - 11" x 0' - 8"	11.94	2	23.89 Sm	
(SM8)	18' - 0" x 0' - 8"	12.00	1	12.00 Sm	
(SM9)	26' - 5" x 0' - 8"	17.61	1	17.61 Sm	
TOTAL Sm = SM5 + SM7 + SM8 = 53.50 S.F.					
FRONT WALL 2 FENESTRATION AREA = Fa					
(W1)	7' - 7" x 8' - 7"	65.09	1	65.09	
(W3)	9' - 0" x 8' - 7"	77.25	5	386.25	
(W5)	6' - 0" x 8' - 7"	51.50	6	309.00	
(W7)	3' - 0" x 8' - 7"	25.75	4	103.00	
(W13)	9' - 0" x 11' - 3"	101.25	1	101.25	
(W16)	6' - 0" x 6' - 2"	37.00	2	74.00	
(W17)	4' - 0" x 8' - 7"	34.33	6	206.00	
(W18)	18' - 8" x 11' - 3"	210.00	1	210.00	
(W19)	3' - 0" x 9' - 0"	27.00	1	27.00	
(W18)	18' - 8" x 11' - 3"	210.00	1	210.00	
(D10)	6' - 10" x 13' - 3"	90.54	1	90.54	
(D11)	6' - 0" x 13' - 3"	79.50	1	79.50	
(D12)	3' - 4" x 11' - 0"	36.67	1	36.67	
TOTAL FENESTRATION AREA Fa = 1,833.21					
OPAQUE WALL AREA CALCULATION = Oa					
Wa - Sa - Fa = 3,793.03 - 244.22 - 1,833.21 = 1,715.60					

EXTERIOR WALL AND FENESTRATION AREA CALCULATIONS					
WALL/WIN	DIMENSIONS	AREA	NUMBER	TOTAL AREA	REMARKS
FRONT WALL 2 FENESTRATION AREA = Fk					
(W20)	18' - 8" x 7' - 2"	133.78	1	133.78	
(W22)	3' - 0" x 7' - 2"	21.50	1	21.50	
(D7)	3' - 0" x 4' - 4"	13.00	2	26.00	
(D7)	3' - 4" x 7' - 2"	23.89	2	47.78	
TOTAL FENESTRATION AREA Fk = 229.06					
OPAQUE WALL AREA CALCULATION = Ok					
Wk - Sk - Fk = 600.58 - 48.78 - 229.06 = 322.75					
FRONT WALL 2 FENESTRATION AREA = Fm					
(D2)	3' - 10" x 8' - 7"	32.90	1	32.90	
(D3)	6' - 4" x 8' - 7"	54.36	1	54.36	
(D6)	3' - 6" x 8' - 7"	30.04	2	60.08	
TOTAL FENESTRATION AREA Fm = 147.35					
OPAQUE WALL AREA CALCULATION = Om					
Wm - Sm - Fm = 755.69 - 53.50 - 147.35 = 554.84					
TOTAL OPAQUE WALL (Oa+Ok+Om) = 2,593.19					
TOTAL SLAB AREA (Sa+Sk+Sm) = 346.50					
TOTAL FENESTRATION (Fa+Fk+Fm) = 2,209.61					
TOTAL WALL AREA (Wa+Wk+Wm) = 5,149.30					
FRONT WALL 2 FENESTRATION AREA (%) = 42.91%					
-F / W x 100 = 2,209.61 / 5,149.30 x 100					
FRONT WALL 2 TYPE B BELOW GRADE AREA					
(B2)	71' - 10" x 13' - 6"	969.75 S.F.			
TOTAL BELOW GRADE AREA = 969.75					

TABLE II - PROGRESS INSPECTIONS FOR ENERGY CODE COMPLIANCE - COMMERCIAL BUILDINGS				
Inspection/Test	Frequency (minimum)	Reference Standard (See ECC Chapter 10) or Other Criteria	ECC or Other Citation	Inspector/Other
IIA - Envelope Inspections				
IIA1	Protection of exposed foundation insulation: Insulation shall be visually inspected to verify proper protection where applied to the exterior of basement or cellar walls, crawl-space walls and/or the perimeter of slab-on-grade floors.	As required during foundation work and prior to backfill	Approved construction documents	303.2.1; ASHRAE 90.1 - 5.8.1.7
IIA2	Insulation placement and R-values: Installed insulation for each component of the conditioned space envelope and at junctions between components shall be visually inspected to ensure that the R-values are marked, that such R-values conform to the R-values identified in the construction documents and that the insulation is properly installed. Certifications for unmarked insulation shall be similarly visually inspected.	As required to verify Continuous enclosure while walls, ceilings and floors are open	Approved construction documents	303.1, 303.1.1, 303.1.2, 502.1, 502.2; ASHRAE 90.1 - 5.5, 5.6 or 11, 5.8.1
IIA3	Fenestration thermal values and product ratings: U-factors and SHGC values of installed fenestration shall be visually inspected for conformance with the U-factors and SHGC values identified in the construction drawings by verifying the manufacturer's NFRC labels or, where not labeled, using the ratings in ECC Tables 303.1(1), (2) and (3). Where ASHRAE 90.1 is used, visible light transmittance values shall also be verified.	As required during installation	Approved construction documents; NFRC 100, NFRC 200	303.1, 303.1.3, 502.3;
IIA4	Fenestration and door assembly product ratings for air leakage: Windows and sliding or swinging door assemblies, except site-built windows and/or doors, shall be visually inspected to verify that installed assemblies are listed and labeled by the manufacturer to the reference standard. For curtain walls and storefront glazing, commercial entrance doors and revolving doors, the testing reports shall be reviewed to verify that the installed assembly complies with the standard cited in the approved plans.	As required during installation, prior to final construction inspection	NFRC 400, AAMA W1014, C/S A 1011.5.2/440; ASTM E283; ANS/DASMA 105	502.4; ASHRAE 90.1 - 5.4.3.2
IIA5	Fenestration areas: Dimensions of windows, doors and skylights shall be verified by visual inspection.	Prior to final inspection		



BACK WALL 1 AND SIDE WALL 2 DIAGRAM
SCALE 1/16"=1'-0"



SIDE WALL 1 AND BACK WALL 2 DIAGRAM
SCALE 1/16"=1'-0"

WALL TYPE	WALL (A)		WALL (B)		WALL (C)		WALL (K)		GLASS AREA	U FACTOR / SHGC	OPAQUE DOORS AREA	U FACTOR	LOUVERS AREA
	OPAQUE WALL	ENTIRE WALL	OPAQUE WALL	ENTIRE WALL	OPAQUE WALL	ENTIRE WALL	OPAQUE WALL	ENTIRE WALL					
FRONT WALL 1	3,092.03	7,721.70	2,018.25	2,018.25	NA	NA	234.24	404.08	754.90	1,520.01	4,838.90	0.37 / 0.4	N/A
FRONT WALL 2	1,715.60	3,793.03	969.75	969.75	NA	NA	322.75	600.58	554.84	755.69	2,209.61	0.37 / 0.4	N/A
SIDE WALL 1	NA	NA	NA	NA	3,171.05	3,382.10	542.72	591.17	NA	NA	0.00	0.37 / 0.4	N/A
SIDE WALL 2	NA	NA	NA	NA	1,074.87	1,230.44	NA	NA	NA	NA	68.87	0.37 / 0.4	N/A
BACK WALL 1	NA	NA	2,022.75	2,022.75	5,252.44	8,859.81	371.58	404.08	NA	NA	3,036.93	0.37 / 0.4	N/A
BACK WALL 2	NA	NA	NA	NA	386.08	921.26	NA	NA	NA	NA	469.97	0.37 / 0.4	N/A
TOTAL	4,807.63	11,514.73	5,010.75	5,010.75	9,884.23	14,393.63	1,571.29	1,999.92	1,309.74	2,275.69	10,624.08		0.00
ROOF AREA	8,613.00												
FLOOR AREAS	65,883.00												
TOTAL GROSS	74,496.00												

EXTERIOR WALL AND FENESTRATION AREA CALCULATIONS					
WALL/WIN	DIMENSIONS	AREA	NUMBER	TOTAL	REMARKS
TYPE			OF UNITS	AREA	
BACK WALL 1 AREA CALC (Wc+ Wk) = W					
C2	23' - 8" x 14' - 1"	333.31 S.F.			
C3	44' - 7" x 28' - 3"	1259.48 S.F.			
C5	97' - 1" x 14' - 1"	1367.26 S.F.			
C6	80' - 3" x 18' - 10"	1511.38 S.F.			
C7	25' - 1" x 18' - 10"	472.40 S.F.			
C8	105' - 5" x 9' - 5"	992.67 S.F.			
C9	92' - 5" x 18' - 10"	1740.51 S.F.			
C10	51' - 0" x 14' - 1"	718.25 S.F.			
C11	3' - 6" x 18' - 10"	65.92 S.F.			
C12	5' - 0" x 28' - 3"	141.25 S.F.			
C13	13' - 8" x 18' - 10"	257.39 S.F.		8859.81 Wc	
C15	17' - 4" x 16' - 0"	277.33 S.F.			
C16	14' - 1" x 9' - 0"	126.75 S.F.		404.08 Wk	
TOTAL W = C2+C3+C5+C6+C7+C8+C9+C10+C11+C12+C13+C14+C15+C16 = 9,263.90 S.F.					
BACK WALL 1 SLAB EDGE AREA CALC. = S					
C23	23' - 7" x 0' - 8"	15.72	1	15.72 Sc	
C24	44' - 7" x 0' - 8"	29.72	3	89.17 Sc	
C25	97' - 1" x 0' - 8"	64.72	1	64.72 Sc	
C26	80' - 3" x 0' - 8"	53.50	2	107.00 Sc	
C27	25' - 1" x 0' - 8"	16.72	2	33.44 Sc	
C28	105' - 5" x 0' - 8"	70.28	1	70.28 Sc	
C29	92' - 5" x 0' - 8"	61.61	2	123.22 Sc	
C30	51' - 0" x 0' - 8"	34.00	1	34.00 Sc	
C31	3' - 6" x 0' - 8"	2.33	2	4.67 Sc	
C32	5' - 0" x 0' - 8"	3.33	3	10.00 Sc	
C33	13' - 8" x 0' - 8"	9.11	2	18.22 Sc	
TOTAL S = C23+C24+C25+C26+C27+C28+C29+C30+C31+C32+C33 = 570.44 S.F.					
C34	17' - 4" x 0' - 8"	11.56	2	23.11 Sk	
C35	14' - 1" x 0' - 8"	9.39	1	9.39 Sk	
TOTAL Sk = SK5 + SK6 = 32.50 S.F.					

BACK WALL 1 FENESTRATION AREA					
WALL/WIN	DIMENSIONS	AREA	NUMBER	TOTAL	REMARKS
TYPE			OF UNITS	AREA	
W2	5' - 0" x 8' - 7"	42.92	1	42.92	
W3	9' - 0" x 8' - 7"	77.25	10	772.50	
W5	6' - 0" x 8' - 7"	51.50	28	1442.00	
W7	3' - 0" x 8' - 7"	25.75	1	25.75	
W17	4' - 0" x 8' - 7"	34.33	2	68.67	
W21	6' - 0" x 7' - 11"	47.50	3	142.50	
W22	5' - 0" x 7' - 11"	39.58	1	39.58	
D9	6' - 0" x 7' - 11"	47.50	1	47.50	
D13	9' - 0" x 7' - 11"	71.25	3	213.75	
D14	7' - 3" x 8' - 7"	62.23	1	62.23	
D15	9' - 0" x 8' - 7"	77.25	2	154.50	
D16	2' - 11" x 8' - 7"	25.03	1	25.03	
TOTAL FENESTRATION AREA Fc = 3,036.93					
OPAQUE WALL AREA CALCULATION = Oc					
Wc-Sk-Fc = 8,859.81-570.44-3,036.93 = 5,252.44					
BACK WALL 1 FENESTRATION AREA = Fk					
TOTAL FENESTRATION AREA Fk = 0.00					
OPAQUE WALL AREA CALCULATION = Ok					
Wk-Sk-Fk = 404.08-9.39-0.00 = 371.58					
TOTAL OPAQUE WALL (Oc+Ok) = 5,624.02					
TOTAL SLAB AREA (Sc+Sk) = 602.94					
TOTAL FENESTRATION (Fc+Fk) = 3,036.93					
TOTAL WALL AREA (Wc+Wk) = 9,263.90					
BACK WALL 1 FENESTRATION AREA (%) = 32.78%					
= F / W x 100 = 3,036.93 / 9,263.90 x 100					
BACK WALL 1 TYPE B BELOW GRADE AREA					
B3	149' - 10" x 13' - 6"	2022.75 S.F.			
TOTAL BELOW GRADE AREA = 2,022.75					

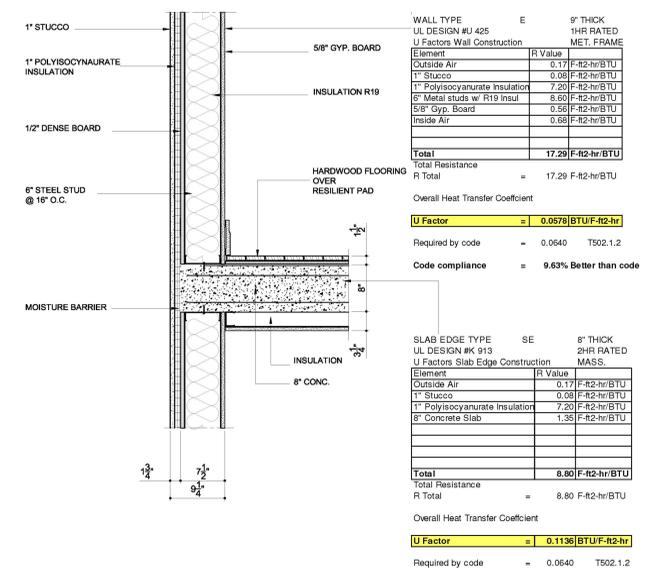
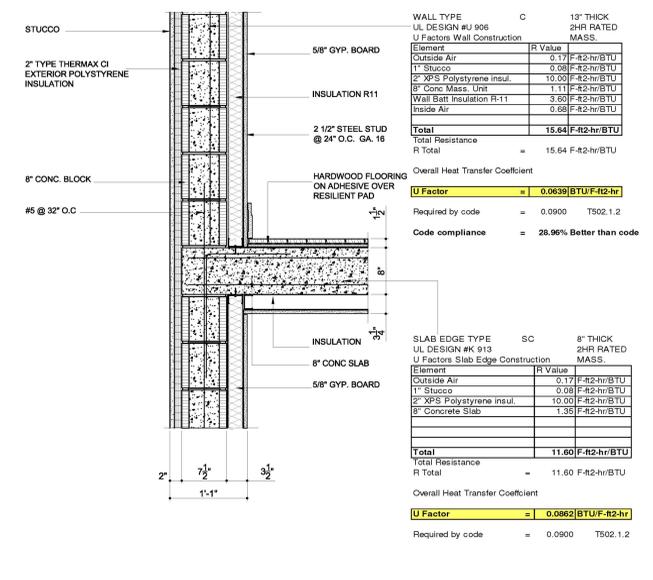
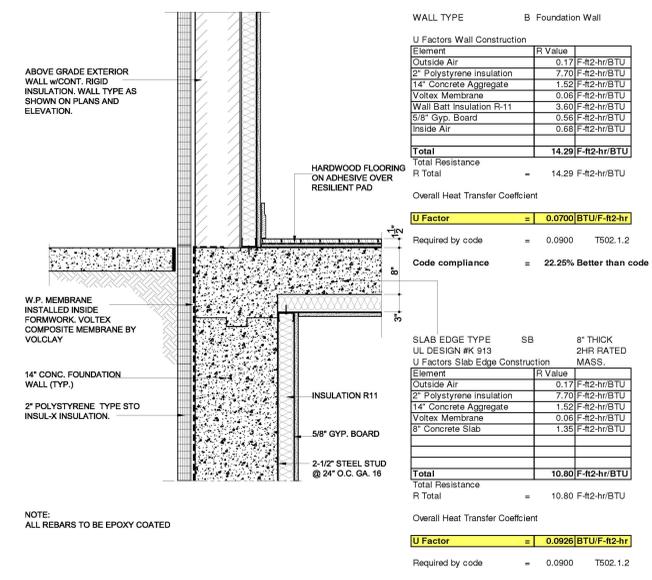
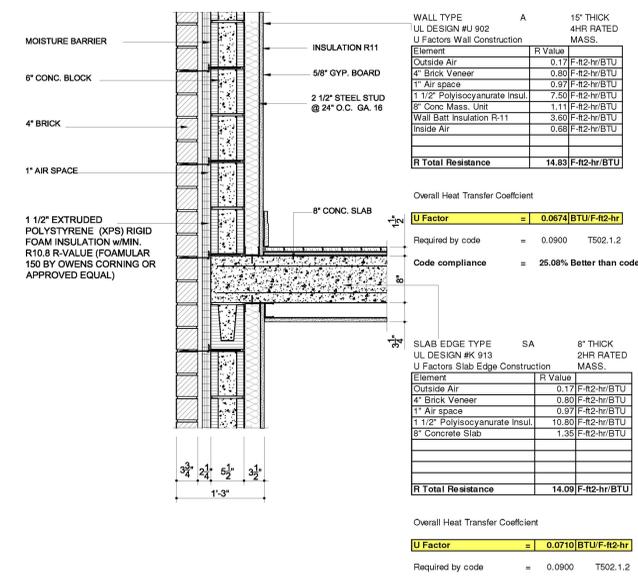
EXTERIOR WALL AND FENESTRATION AREA CALCULATIONS					
WALL/WIN	DIMENSIONS	AREA	NUMBER	TOTAL	REMARKS
TYPE			OF UNITS	AREA	
SIDE WALL 2 AREA CALC (+Wc) = W					
C17	9' - 8" x 18' - 10"	182.06 S.F.			
C18	55' - 8" x 18' - 10"	1048.39 S.F.		1230.44 Wc	
TOTAL W = C17 + C18 = 1,230.44 S.F.					
SIDE WALL 2 SLAB EDGE AREA CALC. = S					
C17	9' - 8" x 0' - 8"	6.44	2	12.89 Sc	
C18	55' - 8" x 0' - 8"	37.11	2	74.22 Sc	
TOTAL S = SC4 + SC1 = 87.11 S.F.					
SIDE WALL 2 FENESTRATION AREA = Fc					
W17	4' - 0" x 8' - 7"	34.33	2	68.67	
TOTAL FENESTRATION AREA Fc = 68.67					
OPAQUE WALL AREA CALCULATION = Oc					
Wc-Sk-Fc = 1,230.44-87.11-68.67 = 1,074.67					
TOTAL OPAQUE WALL (Oc) = 1,074.67					
TOTAL SLAB AREA (Sc) = 87.11					
TOTAL FENESTRATION (Fc) = 68.67					
TOTAL WALL AREA (Wc) = 1,230.45					
SIDE WALL 2 FENESTRATION AREA (%) = 5.58%					
= F / W x 100 = 68.67 / 1,230.44 x 100					

EXTERIOR WALL AND FENESTRATION AREA CALCULATIONS					
WALL/WIN	DIMENSIONS	AREA	NUMBER	TOTAL	REMARKS
TYPE			OF UNITS	AREA	
SIDE WALL 1 AREA CALC (Wc + Wk) = W					
C19	31' - 4" x 18' - 10"	590.11 S.F.			
C18	56' - 0" x 28' - 3"	1582.00 S.F.			
C17	85' - 11" x 14' - 1"	1209.99 S.F.		3382.10 Wc	
C17	9' - 10" x 9' - 0"	88.50 S.F.			
C18	31' - 5" x 16' - 0"	502.67 S.F.		591.17 Wk	
TOTAL W = C15+C16+C17+K7+K8 = 3,973.27 S.F.					
SIDE WALL 1 SLAB EDGE AREA CALC. = S					
C19	31' - 4" x 0' - 8"	20.89	2	41.78 Sc	
C18	56' - 0" x 0' - 8"	37.33	3	112.00 Sc	
C17	85' - 11" x 0' - 8"	57.28	1	57.28 Sc	
TOTAL S = SC15 + SC16 + SC17 = 211.06 S.F.					
SIDE WALL 1 FENESTRATION AREA = Fc					
C19	9' - 10" x 0' - 8"	6.56	1	6.56 Sk	
C18	31' - 5" x 0' - 8"	20.94	2	41.89 Sk	
TOTAL Sk = SK7 + SK8 = 48.44 S.F.					
SIDE WALL 1 FENESTRATION AREA = Fc					
TOTAL FENESTRATION AREA Fc = 0.00					
OPAQUE WALL AREA CALCULATION = Oc					
Wc-Sk-Fc = 3,382.10-211.06-0.00 = 3,171.05					
SIDE WALL 1 FENESTRATION AREA = Fk					
TOTAL FENESTRATION AREA Fk = 0.00					
OPAQUE WALL AREA CALCULATION = Ok					
Wk-Sk-Fk = 3,973.27-48.44-0.00 = 542.72					
TOTAL OPAQUE WALL (Oc+Ok) = 3,713.77					
TOTAL SLAB AREA (Sc+Sk) = 259.50					
TOTAL FENESTRATION (Fc+Fk) = 0.00					
TOTAL WALL AREA (Wc+Wk) = 3,973.28					
SIDE WALL 1 FENESTRATION AREA (%) = 0.00%					
= F / W x 100 = 0.00 / 3,973.27 x 100					
SIDE WALL 1 TYPE B BELOW GRADE AREA					
B4	85' - 11" x 13' - 6"	1159.88 S.F.			
TOTAL BELOW GRADE AREA = 1,159.88					

EXTERIOR WALL AND FENESTRATION AREA CALCULATIONS					
WALL/WIN	DIMENSIONS	AREA	NUMBER	TOTAL	REMARKS
TYPE			OF UNITS	AREA	
BACK WALL 2 AREA CALC (Wc) = W					
C12	48' - 11" x 18' - 10"	921.26 S.F.		921.26 Wc	
TOTAL W = C12 = 921.26 S.F.					
BACK WALL 2 SLAB EDGE AREA CALC. = S					
C12	48' - 11" x 0' - 8"	32.61	2	65.22 Sc	
TOTAL S = SC12 = 65.22 S.F.					
BACK WALL 2 FENESTRATION AREA = Fc					
W3	9' - 0" x 8' - 7"	77.25	1	77.25	
W5	6' - 0" x 8' - 7"	51.50	3	154.50	
W21	6' - 0" x 7' - 11"	47.50	1	47.50	
W24	8' - 0" x 7' - 11"	63.33	1	63.33	
D17	7' - 5" x 7' - 11"	58.72	1	58.72	
TOTAL FENESTRATION AREA Fc = 469.97					
OPAQUE WALL AREA CALCULATION = Oc					
Wc-Sk-Fc = 921.26-65.22-469.97 = 386.08					
TOTAL OPAQUE WALL (Oc) = 386.08					
TOTAL SLAB AREA (Sc) = 65.22					
TOTAL FENESTRATION (Fc) = 469.97					
TOTAL WALL AREA (Wc) = 921.27					
BACK WALL 2 FENESTRATION AREA (%) = 51.01%					
= F / W x 100 = 469.97 / 921.26 x 100					

WALLS LEGEND		WALL COMPOSITION	
(A)	NEW CMJ WALL TYPE UL DESIGN #1092 U FACTOR (BTU-F-12-hr) = 0.0674 ACTUAL WALL THICKNESS = 15" ALLOWABLE DEDUCTION = 7"	A	4" Brick Veneer 1 1/2" Polystyrene Insul. 8" Conc Mass. Unit Wall Batt Insulation R-11 Inside Air
(B)	NEW BELOW GRADE FOUND. WALL U FACTOR (BTU-F-12-hr) = 0.0461 ACTUAL WALL THICKNESS = 14" ALLOWABLE DEDUCTION = NA NO DEDUCTION TAKEN	B	2" Polystyrene Insulation 14" Concrete Aggregate Voltex Membrane Wall Batt Insulation R-11 5/8" Gyp. Board
(C)	NEW BELOW GRADE FOUND. WALL U FACTOR (BTU-F-12-hr) = 0.0639 ACTUAL WALL THICKNESS = 13" ALLOWABLE DEDUCTION = NA NO DEDUCTION TAKEN	C	1" Stucco 2" XPS Polystyrene Insul. 8" Conc Mass. Unit Wall Batt Insulation R-11 5/8" Gyp. Board
(E)	NEW BELOW GRADE FOUND. WALL U FACTOR (BTU-F-12-hr) = 0.0578 ACTUAL WALL THICKNESS = 9" ALLOWABLE DEDUCTION = NA NO DEDUCTION TAKEN	E	1" Stucco 1" Polycyanurate Insulation Metal studs w/ R19 Insul 5/8" Gyp. Board Inside Air
(K)	NEW CMJ WALL TYPE UL DESIGN #1096 U FACTOR (BTU-F-12-hr) = 0.0704 ACTUAL WALL THICKNESS = 12" ALLOWABLE DEDUCTION = 4" NO DEDUCTION TAKEN	K	1" Stucco 2" Polystyrene Insulation 6" Conc Mass. Unit Wall Batt Insulation R-11 5/8" Gyp. Board Inside Air
(M)	NEW CMJ WALL TYPE UL DESIGN #1095 U FACTOR (BTU-F-12-hr) = 0.0574 ACTUAL WALL THICKNESS = 14" ALLOWABLE DEDUCTION = 6" NO DEDUCTION TAKEN	M	Metal Wall Panel 1" Air Space 1 1/2" Polycyanurate Insul. 8" Conc Mass. Unit Wall Batt Insulation R-11 5/8" Gyp. Board
(S)	NEW CMJ WALL TYPE UL DESIGN #1092 U FACTOR (BTU-F-12-hr) = 0.0651 ACTUAL WALL THICKNESS = 15" ALLOWABLE DEDUCTION = 7" NO DEDUCTION TAKEN	S	2 1/2" Lime Stone Panels 2" Polystyrene Insulation 8" Conc Mass. Unit Wall Batt Insulation R-11 5/8" Gyp. Board

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



A SECTION DETAIL @ NEW WALL TYPE A
BRICK VENEER OVER CMU WALL.
SCALE 1"=1'-0"

B SECTION DETAIL @ NEW FOUNDATION WALL B
SCALE 1"=1'-0"

C SECTION DETAIL @ NEW WALL C
STUCCO OVER CMU WALL.
SCALE 1"=1'-0"

E SECTION DETAIL @ NEW WALL E
STUCCO OVER METAL STUDS WALL.
SCALE 1"=1'-0"

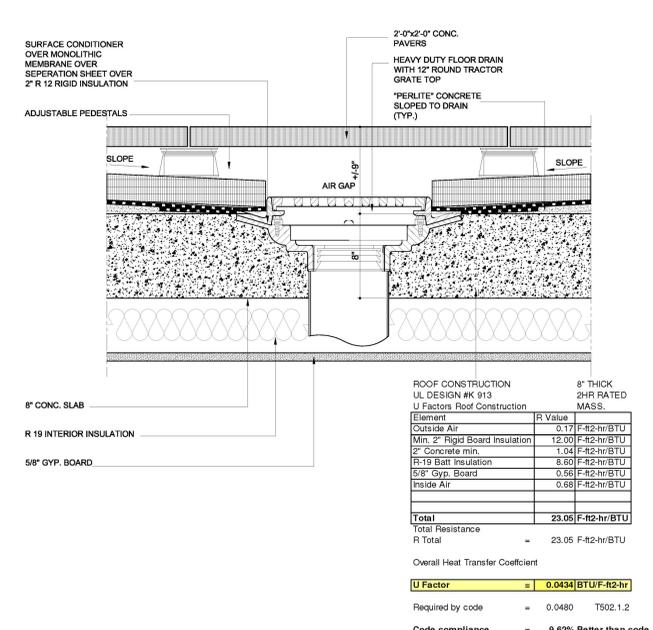
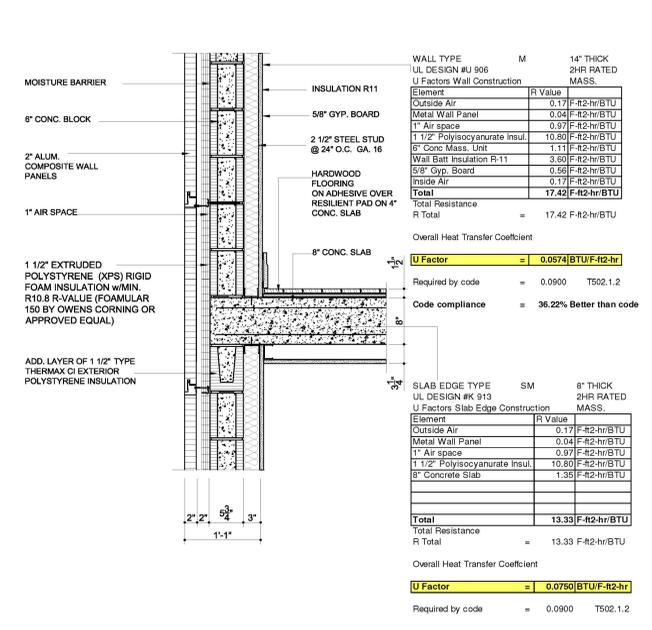
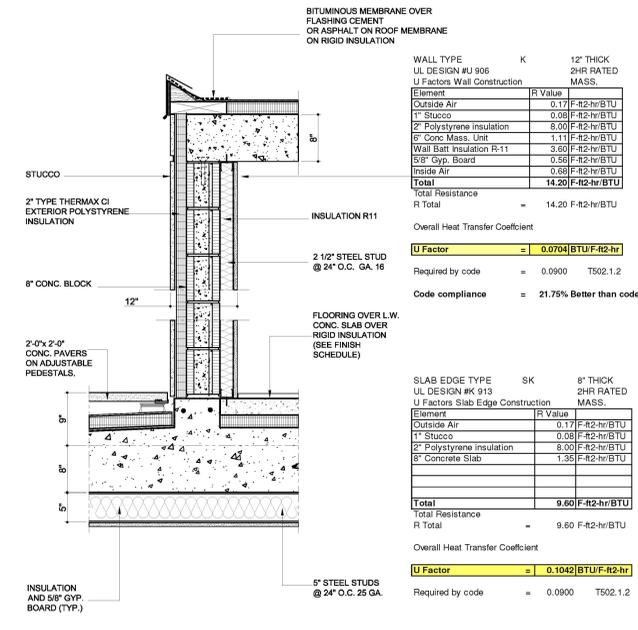


TABLE II - PROGRESS INSPECTIONS FOR ENERGY CODE COMPLIANCE - COMMERCIAL BUILDINGS

Inspection/Test	Frequency (minimum)	Reference Standard (See ECC Chapter 10) or Other Criteria	ECC or Other Citation
II C Electrical Power and Lighting Systems			
II C1 Electrical metering: The presence and operation of individual meters or other means of monitoring individual apartments shall be verified by visual inspection for all apartments.	Prior to final electrical and construction inspection	Approved construction documents	505.7
II C2 Lighting in dwelling units: Lamps in permanently installed lighting fixtures shall be visually inspected to verify compliance with high-efficacy requirements.	Prior to final electrical and construction inspection	Approved construction documents	505.5.3
II C3 Interior lighting power: Installed lighting shall be verified for compliance with the lighting power allowance by visual inspection of fixtures, lamps, ballasts and transformers.	Prior to final electrical and construction inspection	Approved construction documents	505.5; ASHRAE 90.1 - 9.1.1, 9.2.2, 9.5, 9.6; IRCNY §101-07(c)(3)(v)(C)4
II C4 Exterior lighting: Installed lighting shall be verified for compliance with source efficacy and/or the lighting power allowance by visual inspection of fixtures, lamps, ballasts and relevant transformers.	Prior to final electrical and construction inspection	Approved construction documents	505.5; ASHRAE 90.1 - 9.4.4, 9.4.5; IRCNY §101-07(c)(3)(v)(C)4
II C5 Lighting controls: Each type of required lighting controls, including: -occupant sensors -manual interior lighting controls -light-reduction controls	Prior to final electrical and construction inspection	Approved construction documents, including control system narratives	505.2, 505.2.2; ASHRAE 90.1 - 9.4.1, 9.4.1.2 (as modified by section ECC A102)
II C6 Exit signs: Installed exit signs shall be visually inspected to verify that the label indicates that they do not exceed maximum permitted wattage.	Prior to final electrical and construction inspection	Approved construction documents	505.7; ASHRAE 90.1 - 9.4.3
II C7 Tandem wiring: Tandem wiring shall be tested for functionality.	Prior to final electrical and construction inspection	Approved construction documents	505.3; ASHRAE 90.1 - 9.4.2
II C8 Electric motors (including but not limited to fan motors): Where required by the construction documents for energy code compliance, motor listing or labels shall be visually inspected to verify that they comply with the respective	Prior to final electrical and construction inspection	Approved construction documents	503.2.10; ASHRAE 90.1 - 10.4
II D Other			
II D1 Maintenance information: Maintenance	Prior to signoff or	Approved	303.3, 503.2.9.3;

K SECTION DETAIL @ BULKHEAD TYPE K
SCALE 1"=1'-0"

M SECTION DETAIL @ NEW WALL TYPE M
METAL PANELS OVER CMU WALL.
SCALE 1"=1'-0"

R SECTION DETAIL @ NEW ROOF
NOT TO SCALE

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



2010 New York Energy Conservation Construction Code

Section 1: Project Information

Project Type: New Construction
Project Title: 781 Metropolitan Avenue
Construction Site: 781 Metropolitan Avenue, Brooklyn, NY 11211
Owner/Agent: Adam America Real Estate
Designer/Contractor: Rany Isaac, Isaac & Stern Architects

Section 2: General Information

Building Location (for weather data): Kings, New York
Climate Zone: 4a
Building Score Conditioning Type(s): Residential
Activity Type(s): Multifamily

Section 3: Requirements Checklist

Table with columns: Component Name/Description, Gross Area or Perimeter, Cavity R-Value, Cont. R-Value, Proposed U-Factor, Budget U-Factor. Lists roof, exterior wall, and window requirements.

Project Title: 781 Metropolitan Avenue
Data Filename: S:\Work\781 Metropolitan Ave\PROJECT_2014-11-12_no_HPD\DOCUMENTATION\COM_CHECK_781_Metropolitan_Ave_NO_HPD.csk

Table with columns: Window #, Component Name/Description, Gross Area or Perimeter, Cavity R-Value, Cont. R-Value, Proposed U-Factor, Budget U-Factor. Lists window and door requirements.

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.
(b) Other components require supporting documentation for proposed U-factors.

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 certified as meeting requirements.

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.

Project Title: 781 Metropolitan Avenue
Data Filename: S:\Work\781 Metropolitan Ave\PROJECT_2014-11-12_no_HPD\DOCUMENTATION\COM_CHECK_781_Metropolitan_Ave_NO_HPD.csk

Energy Conservation Construction Code requirements in COMcheck Version 3.9.4 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



2010 New York Energy Conservation Construction Code

Section 1: Project Information

Project Type: New Construction
Project Title: 781 Metropolitan Avenue
Construction Site: 781 Metropolitan Avenue, Brooklyn, NY 11211
Owner/Agent: Adam America Real Estate
Designer/Contractor: Rany Isaac, Isaac & Stern Architects

Section 2: Interior Lighting and Power Calculation

Table with columns: Area Category, Floor Area (sq ft), Allowed Watts (W/ft2), Allowed Watts (W x C). Totals: 7449 sq ft, 52149 Watts.

Section 3: Interior Lighting Fixture Schedule

Table with columns: Fixture ID, Description / Lamp / Wattage Per Lamp / Ballast, Lamp/Fixture, # of Fixtures, Fixture Watt, (C x D). Totals: 33850 Watts.

Section 4: Requirements Checklist

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

Project Title: 781 Metropolitan Avenue
Data Filename: S:\Work\781 Metropolitan Ave\PROJECT_2014-11-12_no_HPD\DOCUMENTATION\COM_CHECK_781_Metropolitan_Ave_NO_HPD.csk

- 1. 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.
2. Integrated controls for each space (switch/occupancy sensor).
3. Controls, Switching, and Wiring:
- Lighting is designed as security or emergency areas that must be continuously illuminated.
- Lighting is installed on egress or corridors that are elements of the means of egress.

Section 5: Compliance Statement

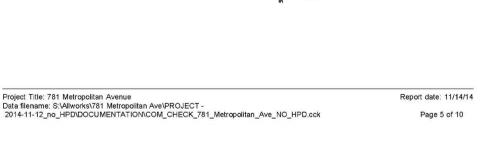
Compliance Statement: The proposed lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application.

Project Title: 781 Metropolitan Avenue
Data Filename: S:\Work\781 Metropolitan Ave\PROJECT_2014-11-12_no_HPD\DOCUMENTATION\COM_CHECK_781_Metropolitan_Ave_NO_HPD.csk

Energy Conservation Construction Code requirements in COMcheck Version 3.9.4 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



2010 New York Energy Conservation Construction Code

Section 1: Project Information

Project Type: New Construction
Project Title: 781 Metropolitan Avenue
Exterior Lighting Zone: 2 (Residentially zoned area)
Construction Site: 781 Metropolitan Avenue, Brooklyn, NY 11211
Owner/Agent: Adam America Real Estate
Designer/Contractor: Rany Isaac, Isaac & Stern Architects

Section 2: Exterior Lighting Area/Surface Power Calculation

Table with columns: Exterior Area/Surface, Quantity, Allowed Watts (W/ft2), Tradable Watts (W x C), Allowed Watts (W x C), Proposed Watts (W x C). Totals: 2010 Watts.

* Wastage tradeoffs are only allowed between tradable areas/surfaces.
** A supplemental allowance equal to 500 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Section 3: Exterior Lighting Fixture Schedule

Table with columns: Fixture ID, Description / Lamp / Wattage Per Lamp / Ballast, Lamp/Fixture, # of Fixtures, Fixture Watt, (C x D). Totals: 2278 Watts.

Section 4: Requirements Checklist

- 1. All exemption details are associated with fixtures that have a control device independent of the control of the nonexempt lighting.
2. Lighting not designated for dusk-to-dawn operation is controlled by either a photo sensor (with time switch), or an astronomical time switch.
3. Lighting designed for dusk-to-dawn operation is controlled by an astronomical time switch or photosensor.
4. All time switches are capable of retaining programming and the time setting during loss of power for a period of at least 10 hours.

Project Title: 781 Metropolitan Avenue
Data Filename: S:\Work\781 Metropolitan Ave\PROJECT_2014-11-12_no_HPD\DOCUMENTATION\COM_CHECK_781_Metropolitan_Ave_NO_HPD.csk

- 1. Compliance: Passes using supplemental allowances.
2. Controls, Switching, and Wiring:
- Lighting that has been claimed as exempt and is identified as such in Section 3 table above.
- Lighting that is specifically designed as required by a health or life safety statute, ordinance, or regulation.
- Emergency lighting that is automatically off during normal building operation.

Section 5: Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application.

Project Title: 781 Metropolitan Avenue
Data Filename: S:\Work\781 Metropolitan Ave\PROJECT_2014-11-12_no_HPD\DOCUMENTATION\COM_CHECK_781_Metropolitan_Ave_NO_HPD.csk

Energy Conservation Construction Code requirements in COMcheck Version 3.9.4 and to comply with the mandatory requirements in the Requirements Checklist.

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Name - Title Signature Date



2010 New York Energy Conservation Construction Code

Section 1: Project Information

Project Type: New Construction
Project Title: 781 Metropolitan Avenue
Construction Site: 781 Metropolitan Avenue, Brooklyn, NY 11211
Owner/Agent: Adam America Real Estate
Designer/Contractor: Rany Isaac, Isaac & Stern Architects

Section 2: General Information

Building Location (for weather data): Kings, New York
Climate Zone: 4a

Section 3: Mechanical Systems List

Table with columns: Quantity, System Type & Description, Proposed Efficiency, Required Efficiency, EER, EER/Fan System. Lists AC-1, AC-3, AC-4, and RTU-1 units.

Section 4: Requirements Checklist

- 1. Equipment minimum efficiency: Packaged Terminal DX Unit: 10.68 EER.
2. Integrated economizer is required for this location and system.
3. Equipment minimum efficiency: Packaged Terminal DX Unit: 10.05 EER.
4. Integrated economizer is required for this location and system.

Project Title: 781 Metropolitan Avenue
Data Filename: S:\Work\781 Metropolitan Ave\PROJECT_2014-11-12_no_HPD\DOCUMENTATION\COM_CHECK_781_Metropolitan_Ave_NO_HPD.csk

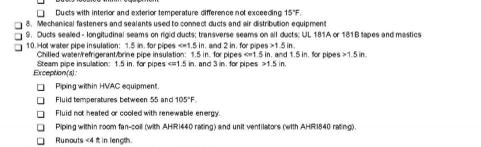
- 1. Standby equipment automatically off when primary system is operating.
2. Minimum temperature control device per system.
3. Minimum humidity control device per installed humidification/dehumidification system.
4. Load calculations per ASHRAE/ACCA Standard 189.
5. Automatic Controls: Setback to 5°F (heat) and 8°F (cool), 7-day clock, 2-hour occupant override, 19-hour backup.

Project Title: 781 Metropolitan Avenue
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Name - Title Signature Date



- Multiple-zone systems without DDC of individual zones communicating with a central control panel.
Systems with a design outdoor airflow less than 1200 cfm.
Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than 1200 cfm.
Total cooling capacity without economizers must be less than 400 kBtu/h.
Motorized, automatic shut-off dampers required on exhaust and outdoor air supply openings.

Section 5: Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application.

Project Title: 781 Metropolitan Avenue
Data Filename: S:\Work\781 Metropolitan Ave\PROJECT_2014-11-12_no_HPD\DOCUMENTATION\COM_CHECK_781_Metropolitan_Ave_NO_HPD.csk

Energy Conservation Construction Code requirements in COMcheck Version 3.9.4 and to comply with the mandatory requirements in the Requirements Checklist.

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Name - Title Signature Date



Section 6: Post Construction Compliance Statement

HVAC record drawings of the actual installation, system capacities, calibration information, and performance data for each equipment provided to the owner by the mechanical contractor.

Project Title: 781 Metropolitan Avenue
Data Filename: S:\Work\781 Metropolitan Ave\PROJECT_2014-11-12_no_HPD\DOCUMENTATION\COM_CHECK_781_Metropolitan_Ave_NO_HPD.csk

Energy Conservation Construction Code requirements in COMcheck Version 3.9.4 and to comply with the mandatory requirements in the Requirements Checklist.

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Name - Title Signature Date

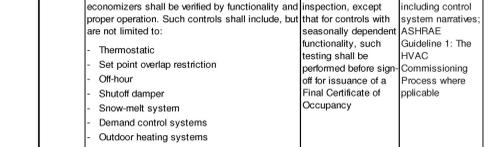


TABLE II - PROGRESS INSPECTIONS FOR ENERGY CODE COMPLIANCE - COMMERCIAL BUILDINGS

Table with columns: Inspection Test, Frequency (minimum), Reference Standard (See Chapter 10 or Other Criteria), ECC or Other Citation. Lists envelope, foundation, and sealing inspections.

TABLE II - PROGRESS INSPECTIONS FOR ENERGY CODE COMPLIANCE - COMMERCIAL BUILDINGS

Table with columns: Inspection Test, Frequency (minimum), Reference Standard (See Chapter 10 or Other Criteria), ECC or Other Citation. Lists fenestration, air leakage, and duct/plenum inspections.

PROFESSIONAL STATEMENT:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK CITY, USING CHAPTER 5.



EN-004.00

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION

ZONING ANALYSIS:

ADDRESS: 781 METROPOLITAN AVE. TAX BLOCK: 2760 TAX LOTS: 28, 35

UNDER THIS APPLICATION TAX LOTS 28 AND 35 ARE COMBINED INTO ONE ZONING LOT (SEE SITE AREA DIAGRAM)

ZONING MAP: 13b CONSTRUCTION CLASSIFICATION: 1B USE GROUP: 2-6 COMMUNITY DISTRICT: BROOKLYN 1 ZONING DISTRICTS: R7A / R6B / C2-4 / IH R7A / C2-4 / IH

Z1 ZONING LOT - SUBJECT TO CORNER LOT REGULATIONS SUBJECT TO INCLUSIONARY HOUSING REGULATIONS

Z2 ZONING LOT - SUBJECT TO INTERIOR LOT REGULATIONS SUBJECT TO INCLUSIONARY HOUSING REGULATIONS

Z3 ZONING LOT - SUBJECT TO CORNER LOT REGULATIONS

Z4 ZONING LOT - SUBJECT TO INTERIOR LOT REGULATIONS

ENTIRE ZONING LOT AREA:

ZONING LOT Z1 AREA (SEE ZONING LOT AREA DIAGRAMS) = 8,600.00 S.F.

ZONING LOT Z2 AREA (SEE ZONING LOT AREA DIAGRAMS) = 4,300.00 S.F.

ZONING LOT Z3 AREA (SEE ZONING LOT AREA DIAGRAMS) = 1,400.00 S.F.

ZONING LOT Z4 AREA (SEE ZONING LOT AREA DIAGRAMS) = 1,648.96 S.F.

15,948.96 S.F.

THIS CONSTRUCTION IS DEVELOPED IN COMPLIANCE WITH:

- CHAPTER 7 OF ARTICLE VII - PROVISIONS FOR ZONING LOTS DIVIDED BY DISTRICT BOUNDARY
- CHAPTER 3 OF ARTICLE II - RESIDENTIAL REGULATIONS
- CHAPTER 3 OF ARTICLE III - COMMERCIAL AND COMMUNITY FACILITY REGULATIONS, AND
- PROPOSED NEW BUILDING WILL COMPLY WITH THE REGULATIONS SET FORTH IN ZR 23-95 FOR A NON COMPENSATED ZONING LOTS IN INCLUSIONARY HOUSING DESIGNATED AREA

ZR-22-00 PROPOSED RESIDENTIAL USE GP 2 IS ALLOWED "AS OF RIGHT"

ZR-32-00 PROPOSED COMMERCIAL MERCANTILE, USE GP 6 IS ALLOWED "AS OF RIGHT"

ZR-35-21 THE PORTIONS OF A BUILDING USED FOR RESIDENTIAL USE ARE SUBJECT TO THE BULK REGULATIONS SET FORTH IN ARTICLE II, CHAPTER 3, AND THE PORTIONS OF A BUILDING USED FOR COMMERCIAL USE ARE SUBJECT TO THE BULK REGULATIONS SET FORTH IN ARTICLE III, CHAPTER 3.

ZR-35-31 THE MAXIMUM FLOOR AREA RATIO PERMITTED FOR A COMMERCIAL USE SHALL BE AS SET FORTH IN ARTICLE II, CHAPTER 3, AND THE MAXIMUM FLOOR AREA RATIO PERMITTED FOR A RESIDENTIAL USE SHALL BE AS SET FORTH IN ARTICLE II, CHAPTER 3, PROVIDED THE TOTAL OF ALL SUCH FAR DOES NOT EXCEED THE GREATEST FAR PERMITTED FOR ANY SUCH USE ON THE ZONING LOT

IN INCLUSIONARY HOUSING DESIGNATED AREAS, MAX. FAR SHALL BE GOVERNED BY ZR 23-95

ZR-77-00 THE MAX. FAR PERMITTED ON EACH PORTION OF ZONING LOT DIVIDED BY BOUNDARY BETWEEN ZONING DISTRICTS SHALL BE DETERMINED BY THE REGULATIONS OF APPLICABLE DISTRICTS AND COMPUTED BY THE PERCENTAGE OF THE ZONING LOT TO WHICH SUCH FAR

ZR-23-95Z MAX. ALLOWABLE FLOOR AREA RATIO CALCULATION

MAX ALLOWABLE BASE FLOOR AREA RATIO IN R7A = 3.45

MAX ALLOWABLE FLOOR AREA RATIO IN R6B = 2.00

Z1 + Z2 MAX ALLOWABLE FAR FOR A MIXED USE BUILDING DEVELOPED SUBJECT TO INCLUSIONARY HOUSING PROGRAM ON A NON COMPENSATED LOT IN ZONING DISTRICT R7A = 3.45

Z1 + Z2 PERCENTAGE OF THE ZONING LOT = (8,600.00 + 4,300.00) / 15,948.96 = 80.88%

Z1 ADJUSTED FAR = 3.45 x 0.8088 = 2.79

Z3 + Z4 MAX ALLOWABLE FAR FOR A MIXED USE BUILDING DEVELOPED SUBJECT TO QUALITY HOUSING PROGRAM IN ZONING DISTRICT R6B = 2.00

Z3 + Z4 PERCENTAGE OF THE ZONING LOT = (1,400.00 + 1,648.96) / 15,948.96 = 19.12%

Z3 - Z4 ADJUSTED FAR = 2 x 0.1912 = 0.38

TOTAL ADJUSTED FAR APPLICABLE TO THE ENTIRE LOT = 2.79036 + 0.3824 = **3.173 FAR**

MAX ALLOWABLE Z.A. ON Z1 + Z2 = 12,900.00 x 3.173 = 40,928.60 S.F.

MAX ALLOWABLE Z.A. ON Z3 + Z4 = 3,048.96 x 3.173 = 9,673.61 S.F.

TOTAL MAX ALLOWABLE Z.A. ON THE ENTIRE ZONING LOT = **50,602.22 S.F.**

PROPOSED Z.A. = 50,502.29 < 50,602.22 THEREFORE **IN COMPLIANCE**

ZR-35-21 MAX. ALLOWABLE FLOOR AREA RATIO FOR A COMMERCIAL OR COMMUNITY FACILITY USE SHALL BE AS SET FORTH IN ARTICLE III, CHAPTER 3

IN DISTRICT, FOR A ZONING LOT CONTAINING A COMMERCIAL USE, THE MAXIMUM FAR IS DETERMINED BY THE RESIDENCE DISTRICT WITHIN WHICH SUCH COMMERCIAL DISTRICT IS MAPPED.

MAX. ALLOWABLE FAR FOR COMMERCIAL USE GOVERNED BY R7A DISTRICT = 2.0

15,948.96 x 2.0 = 31,897.92 S.F.

PROPOSED COMMERCIAL Z.A. = 9,945.96 S.F.

9,945.96 < 31,897.92 THEREFORE **IN COMPLIANCE**

ZR-23-95Z MAX. ALLOWABLE FLOOR AREA RATIO FOR A NON COMPENSATED ZONING LOT

TOTAL MAX. ALLOWABLE Z.A. ON THE ENTIRE ZONING LOT = 50,602.22 S.F.

MAX. ALLOWABLE RESIDENTIAL Z.A. = 40,656.26 S.F.

50,602.22 (MAX. Z.A.) - 9,945.96 (PROPOSED COMM. Z.A.) = 40,656.26 S.F.

TOTAL PROPOSED RESIDENTIAL ZONING AREA = 40,556.33 S.F.

ZR-77-25 MAX. ALLOWABLE LOT COVERAGE

THE MAX. FAR PERCENT OF LOT COVERAGE PERMITTED ON EACH PORTION OF ZONING LOT SHALL BE DETERMINED BY THE REGULATIONS OF ARTICLE II, CHAPTERS 3 AND 4. EACH SUCH LOT COVERAGE SHALL BE MULTIPLIED BY THE LOT AREA OF THE PORTION OF THE ZONING LOT TO WHICH SUCH LOT COVERAGE APPLIES.

ZR-23-145 Z1 MAX. ALLOWABLE LOT COVERAGE CALCULATION

MAX. ALLOWABLE LOT COVERAGE ON ZONING LOT PORTION IN R7A SUBJECT TO CORNER LOT REGULATIONS = 80.00%

MAX. ALLOWABLE LOT COVERAGE = 8,600.00 x 0.8 = 6,880.00 S.F.

ZR-36-21 Z2 MAX. ALLOWABLE LOT COVERAGE ON ZONING LOT PORTION IN R7A

MAX. ALLOWABLE LOT COVERAGE = 65.00%

MAX. ALLOWABLE LOT COVERAGE = 4,300.00 x 0.65 = 2,795.00 S.F.

ZR-36-22 (a) Z3 MAX. ALLOWABLE LOT COVERAGE ON ZONING LOT PORTION IN R6B

MAX. ALLOWABLE LOT COVERAGE = 80.00%

MAX. ALLOWABLE LOT COVERAGE = 1,400.00 x 0.8 = 1,120.00 S.F.

ZR-36-62 Z4 MAX. ALLOWABLE LOT COVERAGE ON ZONING LOT PORTION IN R6B

MAX. ALLOWABLE LOT COVERAGE = 60.00%

MAX. ALLOWABLE LOT COVERAGE = 1,648.96 x 0.6 = 989.38 S.F.

MAX. ALLOWABLE LOT COVERAGE ON THE ENTIRE LOT = **11,784.38 S.F.**

ZR-36-71 Z1+Z3 PROPOSED LOT COVERAGE (SEE LOT COVERAGE DIAGRAM) = 7,822.83 S.F.

Z2 PROPOSED LOT COVERAGE (SEE LOT COVERAGE DIAGRAM) = 2,790.67 S.F.

Z4 PROPOSED LOT COVERAGE (SEE LOT COVERAGE DIAGRAM) = 39.75 S.F.

TOTAL PROPOSED LOT COVERAGE ON THE ENTIRE LOT = **10,653.25 S.F.**

TOTAL PROPOSED LOT COVERAGE = 10,653.25 (66.80%) < 11,784.38 THEREFORE **IN COMPLIANCE**

ZR-77-25 DENSITY REQUIREMENTS

THE MAX. NUMBER OF DWELLING UNITS OR ROOMING UNITS PERMITTED ON THE ZONING LOT SHALL EQUAL THE SUM OF MAX. NUMBER OF DWELLING UNITS PERMITTED ON EACH PORTION OF THE ZONING LOT IN ACCORDANCE WITH THE APPLICABLE DISTRICT REGULATIONS.

ZR-35-40 DENSITY REGULATIONS

THE MAX. NUMBER OF PERMITTED DWELLING UNITS SHALL EQUAL THE MAX. PERMITTED RESIDENTIAL F.A. AS PER ZR 35-91 ABOVE DIVIDED BY THE FACTOR IN ZR 23-20

ZR 23-20 FACTOR FOR DETERMINING MAX. NUMBER OF DWELLING UNITS = 680

MAX. ALLOWABLE # OF DWELLING UNITS = MAX. PERMITTED RES. F.A. / 680 = 50,502.29 (MAX. Z.A.) - 9,945.96 (COMM. Z.A.) / 680 = 60

TOTAL PROPOSED # OF D.U. = 58 < 60 **IN COMPLIANCE**

ZR-35-21 RESIDENCE DISTRICT BULK REGULATIONS OF ARTICLE II, CHAPTER 3 APPLY TO RESIDENTIAL PORTION OF BUILDING IN ACCORDANCE WITH MODIFICATIONS IN ZR 35-20

ZR-35-22 (b) BUILDINGS IN C1 DISTRICT MAPPED WITHIN R7A, STREET WALL LOCATION AND HEIGHT SETBACK REGULATIONS TO BE DETERMINED BY ZR 35-24

AT LEAST 70% OF STREET WALL SHALL BE LOCATED WITHIN 8 FT. OF STREET LINE AND SHALL EXTEND TO THE MIN. BASE HEIGHT PER 35-24 TABLE A. STREET WALL LOCATION PROVISION APPLIES ONLY ALONG ONE STREET ON CORNER LOTS.

PROVIDED STREET WALL ON METROPOLITAN AVE. (100% OF STREET LINE) = 149'-10"

PROVIDED STREET WALL ON HUMBOLDT ST. = 91'-10"

IN COMPLIANCE

ZR-35-24 MIN. BASE HEIGHT FOR Z1 AND Z2 IN DISTRICT R7A / C2-4 / IH = 40.00'

MAX. BASE HEIGHT FOR Z1 AND Z2 IN DISTRICT R7A / C2-4 / IH = 65.00'

MAX. ALLOWABLE BUILDING HEIGHT FOR Z1 AND Z2 = 80.00'

PROPOSED BUILDING HEIGHT IN Z1 AND Z2 (SEE ZONING SECTIONS) = 61.17'

IN COMPLIANCE

ZR-35-24 MIN. BASE HEIGHT FOR Z3 AND Z4 IN DISTRICT R6B = 30.00'

MAX. BASE HEIGHT FOR Z3 AND Z4 IN DISTRICT R6B = 40.00'

MAX. ALLOWABLE BUILDING HEIGHT FOR Z3 AND Z4 IN DISTRICT R6B = 50.00'

PROPOSED BUILDING HEIGHT IN Z3 AND Z4 (SEE ZONING SECTIONS) = 32.92'

IN COMPLIANCE

ZR-23-69B BUILDING IS SET BEYOND 25' OF R6B DISTRICT (SEE SITE PLANS DIAGRAM)

IN COMPLIANCE

ZR-23-32 LOT AREA & LOT WIDTH REGULATIONS

MIN. REQUIRED LOT AREA = 1,700

PROPOSED LOT AREA = 15,948.96 > 1,700 **IN COMPLIANCE**

MIN. LOT WIDTH = 18'

PROPOSED LOT WIDTH ON HUMBOLDT ST. = 100'3" > 18' **IN COMPLIANCE**

ZR-23-45 FRONT YARD NOT REQUIRED

SIDE YARD NOT REQUIRED

ZR-35-53 THE REQUIRED RESIDENTIAL REAR YARD SHALL BE PROVIDED FOR THE RESIDENTIAL PORTION OF THE BUILDING, WITH A WINDOW FACING SUCH REAR YARD.

REAR YARD OF 30' IS REQUIRED FOR THE RESIDENTIAL PORTION

A MIN. 30' REAR YARD IS PROVIDED **IN COMPLIANCE**

ZR-28-25 WHERE MORE THAN 50% OF CORRIDOR AREA HAS DIRECT VIEW LINE TO A WINDOW OF MIN. 20 SQ. FT. THAT CORRIDOR IS 50% DEDUCTIBLE.

ZR-28-41 CORRIDORS SERVING LESS THAN 11 D.U. ARE 50% DEDUCTIBLE.

SUMMARY OF FLOOR AREAS

FLR.	GROSS AREA	QUALITY HOUSING DEDUCTIONS				MECH. DEDUCT.	EXT. WALLS DEDUCT.	RES. Z. AREA	COMM. Z. AREA	TOTAL Z. AREA
		CORR. 50%	CORR. 100%	REFUSE ST.	RECREATION					
CELLAR	13,599.57	NA	NA	NA	NA	NA	NA	NA	NA	
1ST	11,457.51	0.00	0.00	0.00	10.44	237.25	1,263.85	9,945.96	11,209.81	
2ND	10,624.49	453.58	0.00	12.00	168.94	224.89	9,765.08		9,765.08	
3RD	10,624.49	453.58	0.00	12.00	177.28	224.89	9,756.75		9,756.75	
4TH	8,613.17	0.00	656.67	12.00	132.86	209.90	7,601.74		7,601.74	
5TH	7,090.17	0.00	583.40	12.00	123.36	199.35	6,172.06		6,172.06	
6TH	6,793.28	0.00	610.07	12.00	117.53	268.74	5,784.94		5,784.94	
ROOF	622.98	NA	NA	NA			211.90		211.90	
TOTAL	69,425.65	907.15	1,850.14	60.00	2,240.00	730.42	1,365.01	40,556.33	9,945.96	50,502.29

SCHEDULE OF DWELLING UNITS

FLR.	GROSS AREA	NUMBER OF DU	DWELLING UNITS			
			0 BDRM.	1 BDRM.	2 BDRM.	3 BDRM.
CELLAR	13,599.57					
1ST	11,457.51	0				
2ND	10,624.49	15	7	3	5	
3RD	10,624.49	17	9	6	2	
4TH	8,613.17	11	2	5	4	
5TH	7,090.17	9	2	4	3	
6TH	6,793.28	6		2	2	2
ROOF	622.98	0	NA	NA	NA	NA
TOTAL	69,425.65	58	20	16		

OWNER / DEVELOPER: 781 METROPOLITAN ASSET, LLC

ARCHITECT: ISSAC & STERN ARCHITECTS, P.C.

STRUCTURAL ENGINEER: ADG ENGINEERING PC

MECHANICAL ENGINEER: A & D ENGINEERING, PLLC

PROJECT TITLE: 781 METROPOLITAN AVENUE

DRAWING TITLE: ZONING ANALYSIS / DIAGRAMS

ISSUED/REVISION DATE: 11-12-2014

DRAWING NO.: Z-001-00

MIN. DISTANCE BETWEEN WINDOWS AND LOT LINE = 30'. PROPOSED MIN. DISTANCE FROM WINDOW TO LOT LINE IS 30-0" **IN COMPLIANCE**

ZR-36-026 PARKING REGULATIONS

FOR QUALITY HOUSING BUILDING PARKING REGULATIONS SHALL COMPLY WITH ZR 28-50

PARKING REQUIREMENT FOR MARKET D.U. IN R7A / R6B = 50.00%

= (58(TOTAL D.U.) - 1(1)) x 50% = 58 x 0.5 = 29 CARS

ZR-36-33 PARKING REQUIREMENT FOR COMMERCIAL IN C2-4 IS IN ACCORDANCE WITH ZR 28-23 ABOVE AND MODIFICATIONS BELOW.

REQUIRED PARKING SPACES FOR COMMERCIAL USE IN C2-4 = 1 PER 1000 S.F. = 9.95 SPACES

ZR-36-21 REQUIRED PARKING SPACES FOR COMMERCIAL USE IN C2-4 = 1 PER 1000 S.F. = 9.95 SPACES

ZR-36-22 (a) PARKING IS NOT REQUIRED IF REQUIRED PARKING SPACES (10) < 40 THEREFORE **WAIVED**

TOTAL REQUIRED NUMBER OF PARKING SPACES = 0 + 29 = 29.00 CARS

PROVIDED PARKING SPACE ON CELLAR LEVEL = 42 SPACES

TOTAL PARKING SPACES = 42 > 29 THEREFORE **IN COMPLIANCE**

ZR-36-62 REQUIRED ACCESSORY OFF STREET LOADING BERTH C2-4 MAPPED IN R7A NONE REQUIRED FOR THE FIRST 25,000 S.F. OF PROVIDED COMM.

TOTAL PROPOSED COMMERCIAL ZONING AREA ON ENTIRE SITE = 9,945.96 S.F.

9,945.96 < 25,000 S.F. THEREFORE NONE REQUIRED => NONE PROVIDED **IN COMPLIANCE**

ZR-36-71 REQUIRED BICYCLE PARKING SPACE FOR COMMERCIAL USE GROUP 6 = 1 PER 10,000 S.F.

PROPOSED COMMERCIAL AREA = 9,945.96 S.F.

REQUIRED BICYCLE PARKING SPACES = 1

1 BICYCLE SPACE PROPOSED **IN COMPLIANCE**

ZR-25-62 PARKING AREA PER VEHICLE MUST BE > 300 S.F. PER SPACE

OF PARKING SPACES = 19

REQUIRED PARKING AREA = 6,888.29 S.F. / 19 = 362 S.F. > 300 S.F. **IN COMPLIANCE**

ZR-25-91 REQUIRED BICYCLE PARKING SPACES - USE GROUP 2 = 1 PER 2 DWELLING UNITS

REQUIRED BICYCLE PARKING SPACES = D.U. x 50% = 29

MINIMUM REQUIRED SIZE PER SPACE = 15 S.F. x 29 SPACES = 435.00

TOTAL PROPOSED BICYCLE STORAGE = 683.69

TOTAL PROPOSED BICYCLE PARKING = 683.69 > 435.00 **IN COMPLIANCE**

ZR-23-03 REQUIRED ONE STREET TREE FOR EVERY 25' OF STREET FRONTAGE PER ZR 26-41.

LOT FRONTAGE ON METROPOLITAN AVE. = 150.00'

REQUIRED # STREET TREES 150.00 / 25 = 6

LOT FRONTAGE ON HUMBOLDT ST. = 100.00'

REQUIRED # STREET TREES 100.00 / 25 = 4

TOTAL REQUIRED NUMBER OF TREES = 10

PROPOSED NEW TREES ON METROPOLITAN AVE. = 2

PROPOSED NEW TREES ON HUMBOLDT ST. = 4

OF TREES TO BE PLANTED AT AN ALTERNATE LOCATION TOTAL NEW TREES TO BE PLANTED = 10 **IN COMPLIANCE**

CHAPTER 8: THE QUALITY HOUSING PROGRAM

ZR-35-011 IN C2-4 DISTRICT MAPPED WITHIN R7A THE RESIDENTIAL PORTION OF THE BUILDING SHALL COMPLY WITH CHAPTER 8 (QUALITY HOUSING PROGRAM)

ZR-28-20 MIN. SIZE OF D.U. IS LARGER THAN 400 S.F.

APARTMENT 3C = 433.33 S.F. > 400 S.F. **IN COMPLIANCE**

ZR-28-22 ALL WINDOWS ARE DOUBLE GLAZED **IN COMPLIANCE**

ZR-28-23 ONE ENCLOSED REFUSE STORAGE IS REQUIRED AND PROVIDED @ EACH FLOOR.

REFUSE STORAGE & REMOVAL ROOM IS REQUIRED @ 2.9 C.F. / D.U. = 58 x 2.9 = 168.2 C.F.

PROVIDED TRASH COMPACTOR ROOM AT CELLAR = 1,311.84 C.F. > 168.2 **IN COMPLIANCE**

ZR-28-24 AT LEAST ONE WASHING MACHINE REQUIRED PER 20 D.U. = 58 / 20 = 2.9

AT LEAST ONE DRYER REQUIRED PER 40 D.U.

EACH D.U. IS PROVIDED WITH A WASHING MACHINE AND DRYER **IN COMPLIANCE**

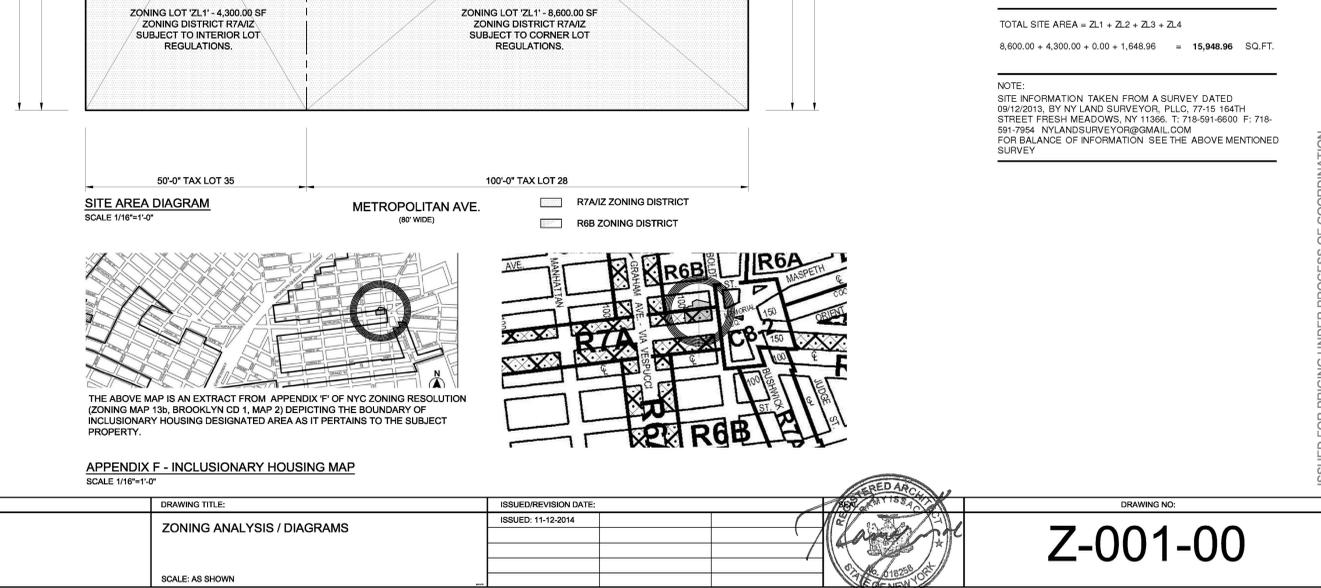
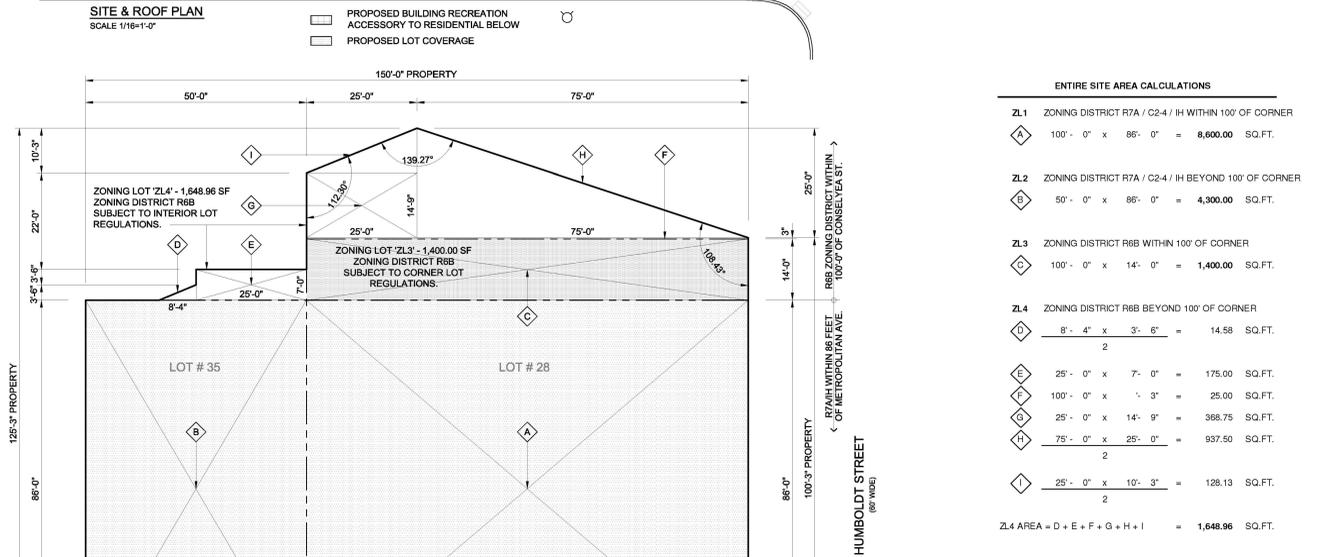
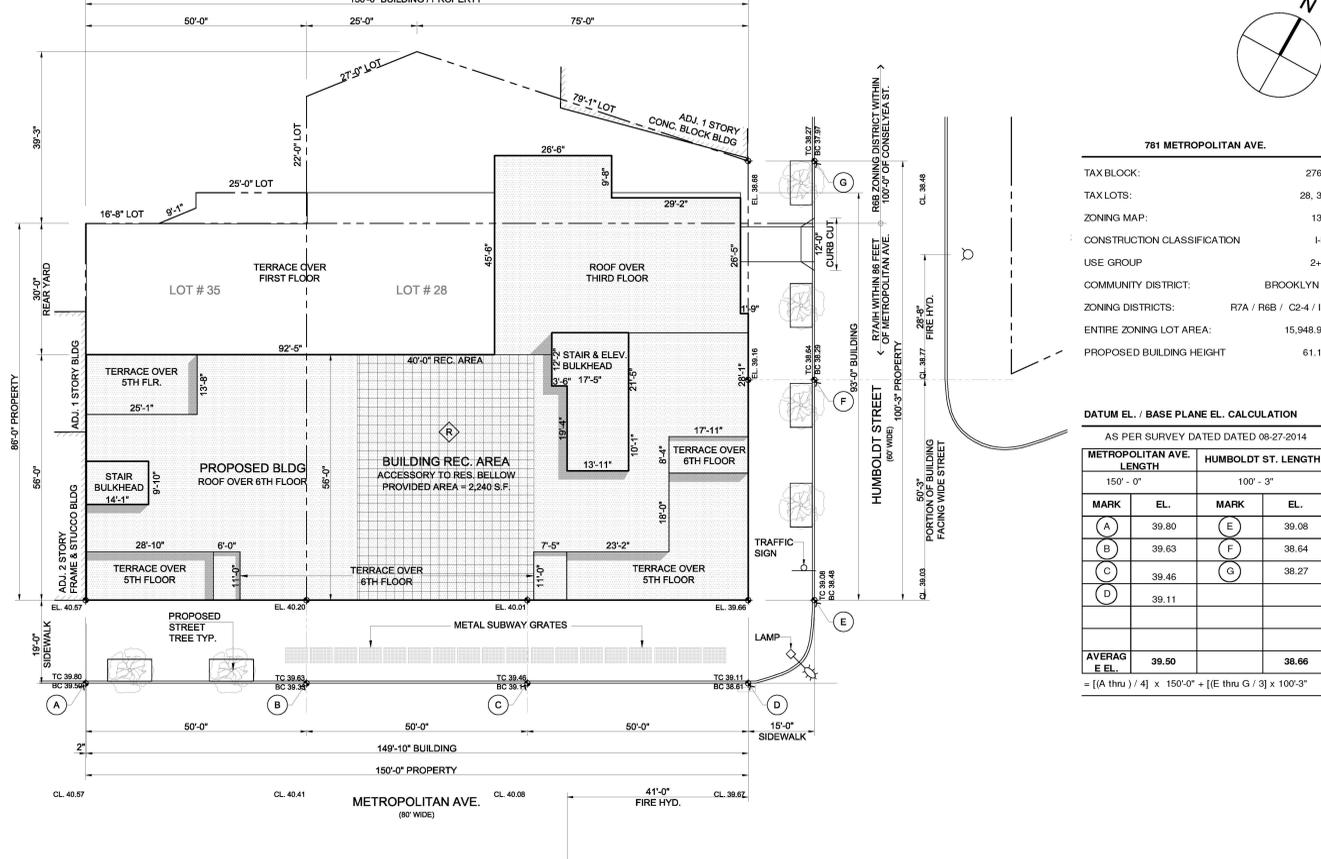
ZR-28-31 RECREATION SPACE IS REQUIRED AND PROVIDED ON THE ROOF.

MIN. REQUIRED AREA OF RECREATION = 40,556.33 x 3.3% = 1,666.58 S.F.

PROVIDED RECREATION AREA AT ROOF = 2,240.00 S.F. **IN COMPLIANCE**

ZR-28-25 WHERE MORE THAN 50% OF CORRIDOR AREA HAS DIRECT VIEW LINE TO A WINDOW OF MIN. 20 SQ. FT. THAT CORRIDOR IS 50% DEDUCTIBLE.

ZR-28-41 CORRIDORS SERVING LESS THAN 11 D.U. ARE 50% DEDUCTIBLE.



781 METROPOLITAN AVE.

TAX BLOCK: 2760

TAX LOTS: 28, 35

ZONING MAP: 13b

CONSTRUCTION CLASSIFICATION: 1B

USE GROUP: 2-6

COMMUNITY DISTRICT: BROOKLYN 1

ZONING DISTRICTS: R7A / R6B / C2-4 / IH

ENTIRE ZONING LOT AREA: 15,948.96

PROPOSED BUILDING HEIGHT: 61.17

DATUM EL. / BASE PLANE EL. CALCULATION

AS PER SURVEY DATED 08-27-2014

METROPOLITAN AVE. LENGTH		HUMBOLDT ST. LENGTH	
MARK	EL.	MARK	EL.
A	39.80	E	39.08
B	39.63	F	38.64
C	39.46	G	38.27
D	39.11		
AVERAGE EL.	39.50		38.66

= [(A thru J) / 4] x 150'-0" + [(E thru G) / 3] x 100'-3"

ENTIRE SITE AREA CALCULATIONS

Z1 ZONING DISTRICT R7A / C2-4 / IH WITHIN 100' OF CORNER

100' - 0" x 86' - 0" = 8,600.00 SQ. FT.

Z2 ZONING DISTRICT R7A / C2-4 / IH BEYOND 100' OF CORNER

50' - 0" x 86' - 0" = 4,300.00 SQ. FT.

Z3 ZONING DISTRICT R6B WITHIN 100' OF CORNER

100' - 0" x 14' - 0" = 1,400.00 SQ. FT.

Z4 ZONING DISTRICT R6B BEYOND 100' OF CORNER

8' - 4" x 3' - 6" = 14.58 SQ. FT.

2

25' - 0" x 7' - 0" = 175.00 SQ. FT.

100' - 0" x 3' - 3" = 25.00 SQ. FT.

25' - 0" x 14' - 9" = 368.75 SQ. FT.

75' - 0" x 25' - 0" = 937.50 SQ. FT.

2

25' - 0" x 10' - 3" = 128.13 SQ. FT.

2

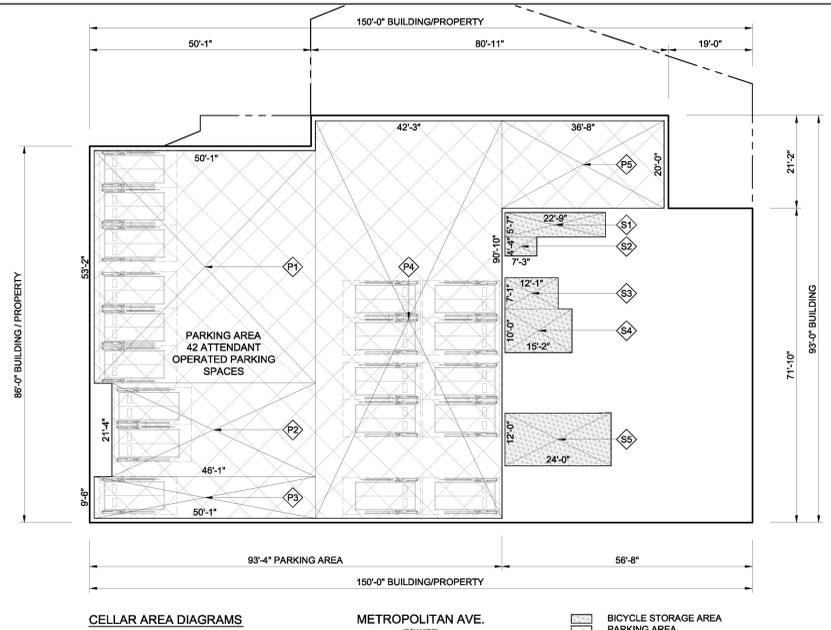
Z4 AREA = D + E + F + G + H + I = 1,648.96 SQ. FT.

TOTAL SITE AREA = Z1 + Z2 + Z3 + Z4

8,600.00 + 4,300.00 + 0.00 + 1,648.96 = 15,948.96 SQ. FT.

NOTE: SITE INFORMATION TAKEN FROM A SURVEY DATED 08/27/2014, BY NY LAND SURVEYORS, PLLC, 77-15 164TH STREET FRESH MEADOWS, NY 11366. T: 718-591-6600 F: 718-591-7954 NYLANDSURVEYORS@GMAIL.COM FOR BALANCE OF INFORMATION SEE THE ABOVE MENTIONED SURVEY

ISSUED FOR PRICING UNDER PROCESS OF COORDINATION



CELLAR BICYCLE STORAGE AREA CALCULATIONS

22'-0" x 5'-7" = 127.02 SQ.FT.
7'-3" x 4'-4" = 31.42 SQ.FT.
12'-1" x 7'-1" = 85.59 SQ.FT.
15'-2" x 10'-0" = 151.67 SQ.FT.
24'-0" x 12'-0" = 288.00 SQ.FT.

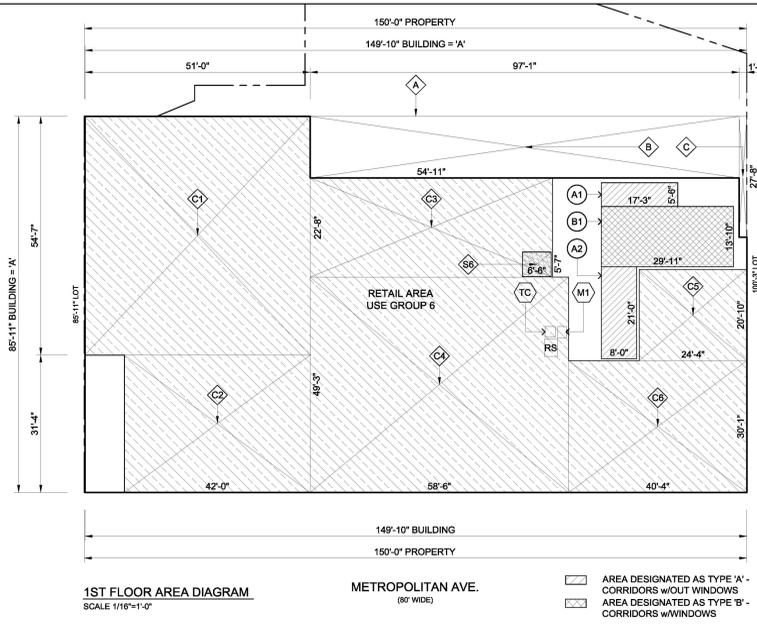
BICYCLE STORAGE AREA (B.A.) = S1 + S2 + S3 + S4 + S5
= 127.02 + 31.42 + 85.59 + 151.67 + 288.00 = **683.69** SQ.FT.

PARKING AREA CALCULATIONS

50'-1" x 53'-2" = 2,662.76 SQ.FT.
46'-1" x 21'-4" = 983.11 SQ.FT.
50'-1" x 9'-6" = 475.79 SQ.FT.
42'-3" x 90'-10" = 3,837.71 SQ.FT.
39'-8" x 20'-0" = 793.33 SQ.FT.

PARKING AREA: = P1+P2+P3+P4+P5
= 2,662.76 + 983.11 + 475.79 + 3,837.71 + 793.33 = **6,692.71** SQ.FT.

TWO (2) LEVEL DRIVE-ON PLATFORM CAR LIFTING DEVICE.
MODEL: S25A aka CAR STACKER.
MEA # 241-04-E
DIMENSIONS: 8'0" W x 14'4" D x 13'4" H
USE: INDOOR / OUTDOOR
COMPLIANCE: RS 27-990, RS 27-001, RS 18.3
CAPACITY: 2 CARS UP TO 6000 lb
QUANTITY: 19
PROVIDED # OF SPACES: 42



1ST FLOOR AREA CALCULATIONS

149'-10" x 85'-11" = 12,873.18 SQ.FT.
97'-1" x 14'-1" = 1,367.26 SQ.FT.
1'-9" x 27'-8" = 48.42 SQ.FT.

GROSS AREA (G.A.) = A - B - C
= 12,873.18 - 1,367.26 - 48.42 = **11,457.51** SQ.FT.

Z.A. = (G.A. - DEDUCTIONS) = **11,209.81** SQ.FT.
= 11,457.51 - 0.00 - 10.44 - 237.25

COMMERCIAL AREA CALCULATIONS

51'-0" x 54'-7" = 2,793.75 SQ.FT.
42'-0" x 31'-4" = 1,316.00 SQ.FT.
54'-11" x 22'-8" = 1,244.78 SQ.FT.
58'-6" x 49'-3" = 2,881.13 SQ.FT.
24'-4" x 20'-10" = 506.94 SQ.FT.
40'-4" x 30'-1" = 1,213.36 SQ.FT.

COMMERCIAL AREA: = C1+C2+C3+C4+C5+C6
= 2,793.75 + 1,316.00 + 1,244.78 + 2,881.13 + 506.94 + 1,213.36 = **9,945.96** SQ.FT.

CORRIDOR AREAS - Z.R. 28-25 DAYLIGHT IN CORRIDORS

A - CORRIDORS w/OUT WINDOWS

A1 17'-3" x 5'-6" = 94.88 SQ.FT.
A2 8'-0" x 21'-0" = 168.00 SQ.FT.

TOTAL A CORRIDORS AREA = **262.88** SQ.FT.

B CORRIDORS w/WINDOWS

B1 29'-11" x 13'-10" = 413.85 SQ.FT.

TOTAL B CORRIDOR AREA = **413.85** SQ.FT.

CORRIDORS B (413.85) - CORRIDORS A (262.88) =>
MORE THAN 50% OF CORRIDORS 'A' & 'B' AREA HAS DIRECT VIEW LINE TO A WINDOW OF MIN. 20 SQ.FT. THEREFORE CORRIDORS ARE 50% DEDUCTABLE.

1ST FLOOR DEDUCTIONS

CHAPTER 8 QUALITY HOUSING ZR 28-21

TYPE	QUANT.	DESIGNATION	SIZE	AREA	TOTAL
M1	1	MECH SHAFT	2'-0" x 2'-6"	5.00	5.00
TC	1	TRASH CHUTE	2'-4" x 2'-4"	5.44	5.44

TOTAL QUALITY HOUSING DEDUCTIONS = **0.00**

MECHANICAL DEDUCTIONS

TYPE	QUANT.	DESIGNATION	SIZE	AREA	TOTAL
M1	1	MECH SHAFT	2'-0" x 2'-6"	5.00	5.00
TC	1	TRASH CHUTE	2'-4" x 2'-4"	5.44	5.44

TOTAL MECHANICAL DEDUCTIONS = **10.44**

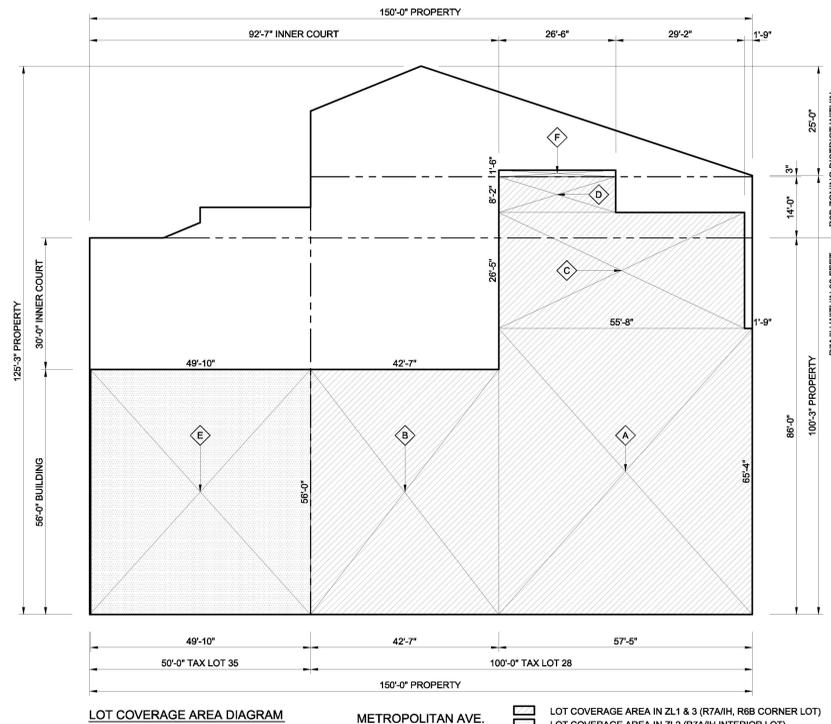
TOTAL EXTERIOR WALL DEDUCTIONS = **237.25**

TOTAL DEDUCTIONS = **247.69**

FIRST FLOOR BICYCLE STORAGE AREA CALCULATIONS

6'-6" x 5'-7" = 36.29 SQ.FT.

BICYCLE STORAGE AREA (B.A.) = **36.29** SQ.FT.



LOT COVERAGE CALCULATIONS

ZL1+ZL3 LOT COVERAGE CALCULATION

A 57'-5" x 65'-4" = 3,751.22 SQ.FT.
B 42'-7" x 56'-0" = 2,384.67 SQ.FT.
C 55'-8" x 26'-5" = 1,470.53 SQ.FT.
D 26'-6" x 8'-2" = 216.42 SQ.FT.

LOT COVERAGE = A + B + C + D = 7,822.83 SQ.FT.
= 3,751.22 + 2,384.67 + 1,470.53 + 216.42

ZL2 LOT COVERAGE CALCULATION

E 49'-10" x 56'-0" = 2,790.67 SQ.FT.

LOT COVERAGE = E = 2,790.67 SQ.FT.

ZL4 LOT COVERAGE CALCULATION

F 26'-6" x 1'-6" = 39.75 SQ.FT.

LOT COVERAGE = F = 39.75 SQ.FT.

ROOF AREA CALCULATIONS

17'-5" x 12'-2" = 211.00 SQ.FT.
13'-11" x 19'-3" = 267.90 SQ.FT.
10'-2" x 14'-1" = 143.18 SQ.FT.

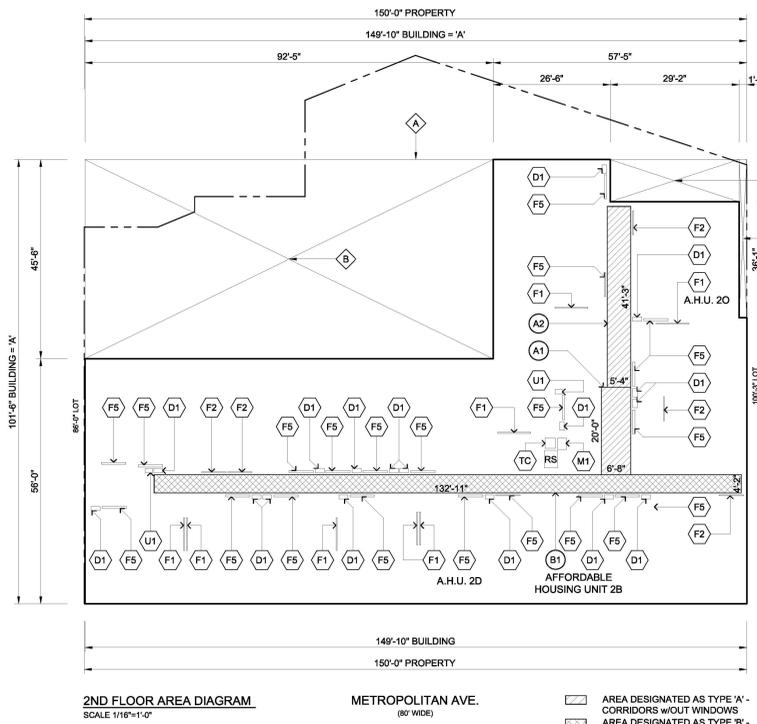
ROOF GROSS AREA (G.A.) = BH1 + BH2 + BH3
= 211.00 + 267.90 + 143.18 = **622.08** SQ.FT.

ROOF ZONING AREA (Z.A.) = BH1 = 211.90 SQ.FT.

ROOF RECREATION AREA CALCULATIONS

R 40'-0" x 56'-0" = 2,240.00 SQ.FT.

ROOF RECREATION AREA = R = 2,240.0 SQ.FT.



2ND FLOOR AREA CALCULATIONS

149'-10" x 101'-6" = 15,208.08 SQ.FT.
92'-5" x 45'-6" = 4,204.96 SQ.FT.
29'-2" x 9'-8" = 281.94 SQ.FT.
1'-9" x 36'-1" = 63.15 SQ.FT.
9'-7" x 3'-6" = 33.54 SQ.FT.

GROSS AREA (G.A.) = A - B - C - D - E
= 15,208.08 - 4,204.96 - 281.94 = **10,624.49** SQ.FT.

ZR-23-XX TERRACE Z.A. (T.Z.A.) = E = 33.54 SQ.FT.

Z.A. = (G.A. - DEDUCTIONS + T.Z.A.) = 9,790.63 SQ.FT.
= 10,624.49 - 455.58 - 168.94 - 224.89 + 33.54

A - CORRIDORS

A1 6'-8" x 20'-0" = 133.33 SQ.FT.
A2 5'-4" x 41'-3" = 220.00 SQ.FT.

TOTAL A CORRIDOR AREA = **353.33** SQ.FT.

B - CORRIDORS

B1 132'-11" x 4'-2" = 553.82 SQ.FT.

TOTAL B CORRIDOR AREA = **553.82** SQ.FT.

TOTAL CORRIDORS AREA = **907.15** SQ.FT.

CORRIDOR B1 (553.82) - CORRIDORS A1 + A2 (353.33) =>
MORE THAN 50% OF TOTAL CORRIDOR AREA HAS DIRECT VIEW LINE TO A WINDOW OF MIN. 20 SQ.FT. THEREFORE CORRIDORS ARE 50% DEDUCTABLE.

CHAPTER 8 QUALITY HOUSING ZR 28-21

CORRIDORS (50%) = (Z.A.) x 0.5 = 907.15 x 0.5 = 453.58

RS - REFUSE STORAGE (4'-0" X 3'-0") = 12.00

TOTAL QUALITY HOUSING DEDUCTIONS = **465.58**

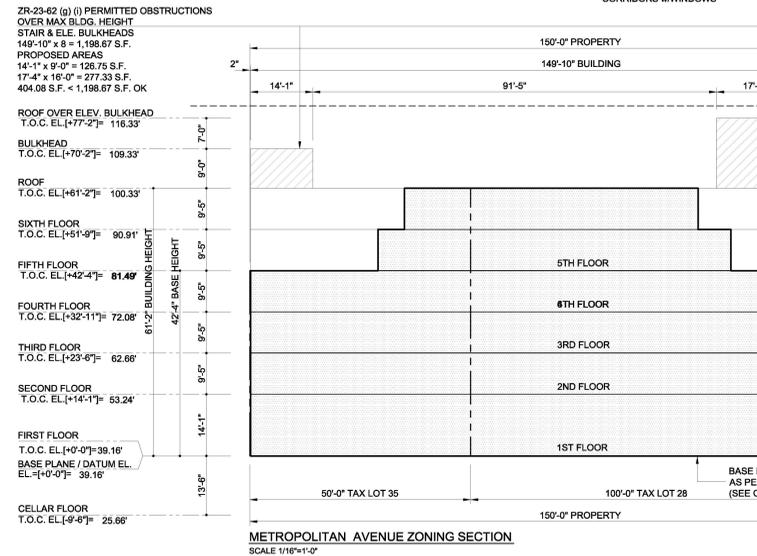
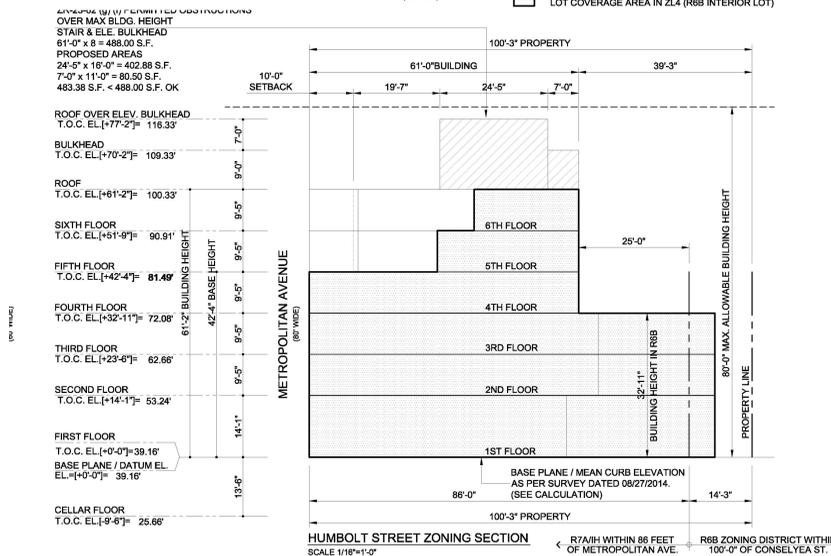
MECHANICAL DEDUCTIONS

TYPE	QUANT.	DESIGNATION	SIZE	AREA	TOTAL
D1	18	MECH VENT	2'-0" x 1'-2"	2.33	42.00
F1	8	PL CHASE	0'-3" x 7'-6"	1.88	15.00
F2	7	PL CHASE	0'-3" x 6'-0"	1.50	10.50
F5	18	PL CHASE	0'-8" x 6'-0"	4.00	72.00
M1	4	MECH SHAFT	2'-0" x 2'-6"	5.00	20.00
U1	2	UTILITY SHAFT	1'-0" x 2'-0"	2.00	4.00
TC	1	TRASH CHUTE	2'-4" x 2'-4"	5.44	5.44

TOTAL MECHANICAL DEDUCTIONS = **168.94**

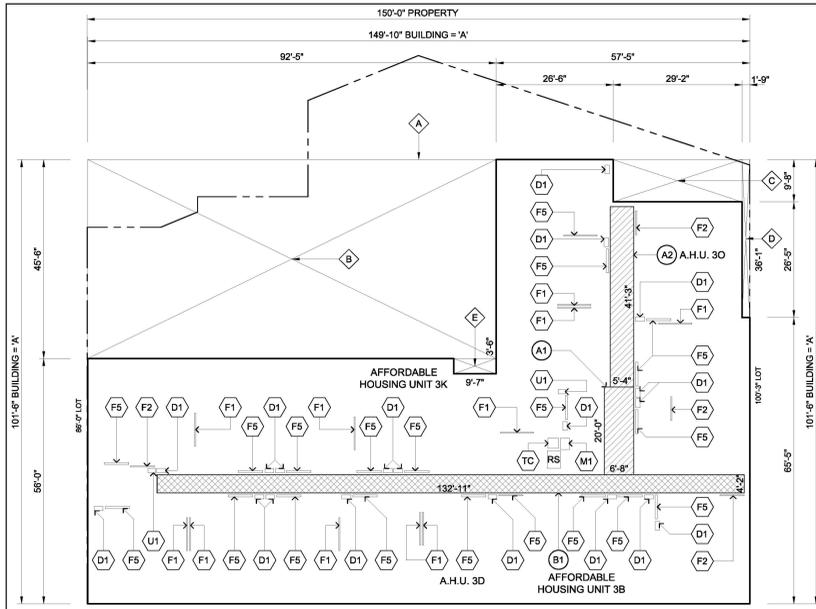
TOTAL EXTERIOR WALL DEDUCTIONS = **224.89**

TOTAL DEDUCTIONS = **859.41**



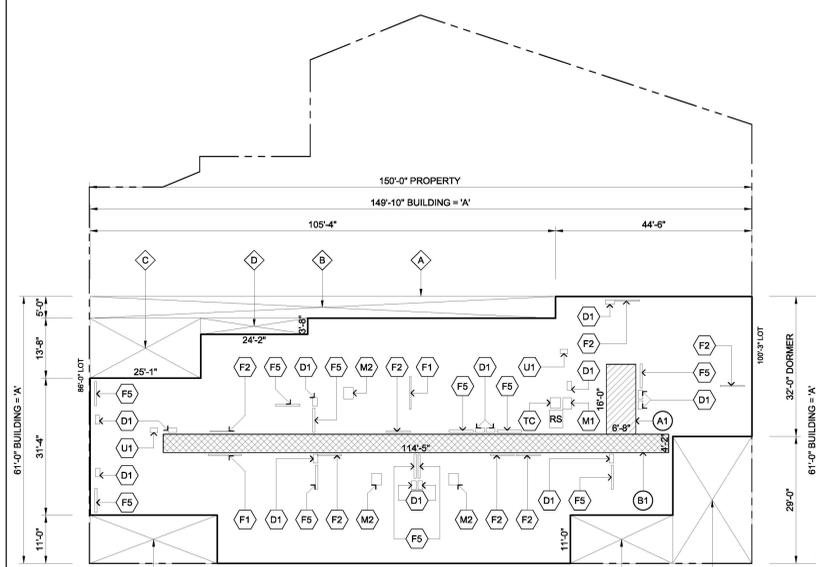
ZR-23-62 (g) (i) PERMITTED OBSTRUCTIONS OVER MAX BLDG. HEIGHT
STAIR & ELE. BULKHEADS
149'-10" x 8 = 1,198.67 S.F.
PROPOSED AREAS
14'-1" x 9'-0" = 126.75 S.F.
17'-4" x 16'-0" = 277.33 S.F.
404.08 S.F. < 1,198.67 S.F. OK





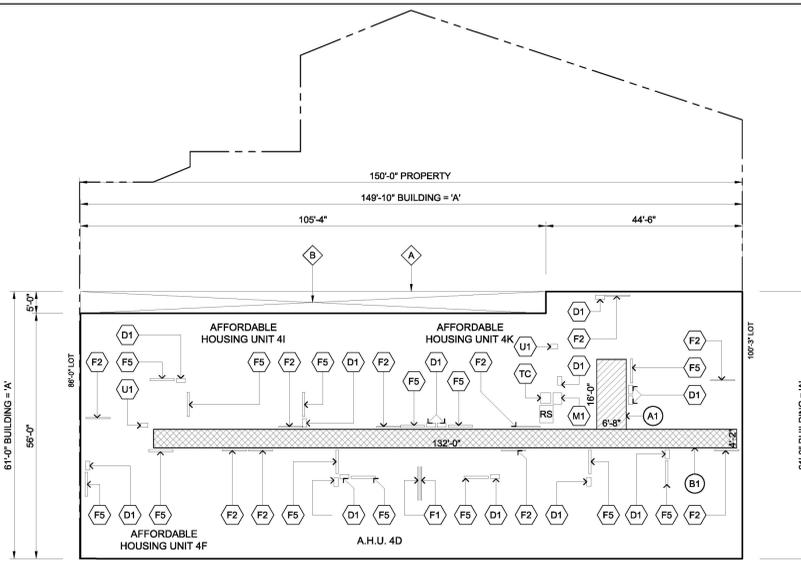
3RD FLOOR AREA CALCULATIONS		3RD FLOOR DEDUCTIONS	
A	149'-10" x 101'-6" = 15,208.08 SQ.FT.	CHAPTER 8 QUALITY HOUSING ZR 28-41	
B	92'-5" x 45'-6" = 4,204.96 SQ.FT.	CORRIDORS (50%) = (ZA) x 0.5 = 907.15 x 0.5 =	453.58
C	29'-2" x 9'-8" = 281.94 SQ.FT.	RS - REFUSE STORAGE = (4'-0" X 3'-0")	12.00
D	1'-9" x 36'-1" = 63.15 SQ.FT.	TOTAL QUALITY HOUSING DEDUCTIONS	465.58
E	9'-7" x 3'-6" = 33.54 SQ.FT.		
GROSS AREA (G.A.) = A - B - C - D - E		MECHANICAL DEDUCTIONS	
= 15,208.08 - 4,204.96 - 281.94 = 10,624.49 SQ.FT.		TYPE	QUANT. DESIGNATION SIZE AREA TOTAL
Z.A. = (G.A. - DEDUCTIONS) = 9,756.75 SQ.FT.		D1	19 MECH VENT 2'-0" x 1'-2" 2.33 44.33
= 10,624.49 - 465.58 - 177.28 = 224.89		F1	12 PL CHASE 0'-3" x 7'-6" 1.88 22.50
		F2	6 PL CHASE 0'-3" x 6'-0" 1.50 9.00
		F5	18 PL CHASE 0'-8" x 6'-0" 4.00 72.00
		M1	4 MECH SHAFT 2'-0" x 2'-6" 5.00 20.00
		U1	2 UTILITY SHAFT 1'-0" x 2'-0" 2.00 4.00
		TC	1 TRASH CHUTE 2'-4" x 2'-4" 5.44 5.44
		TOTAL MECHANICAL DEDUCTIONS 177.28	
		TOTAL EXTERIOR WALL DEDUCTIONS 224.89	
		TOTAL DEDUCTIONS 867.74	

3RD FLOOR AREA DIAGRAM
SCALE 1/16"=1'-0"
METROPOLITAN AVE. (80' WIDE)
AREA DESIGNATED AS TYPE 'A' - CORRIDORS w/OUT WINDOWS
AREA DESIGNATED AS TYPE 'B' - CORRIDORS w/WINDOWS



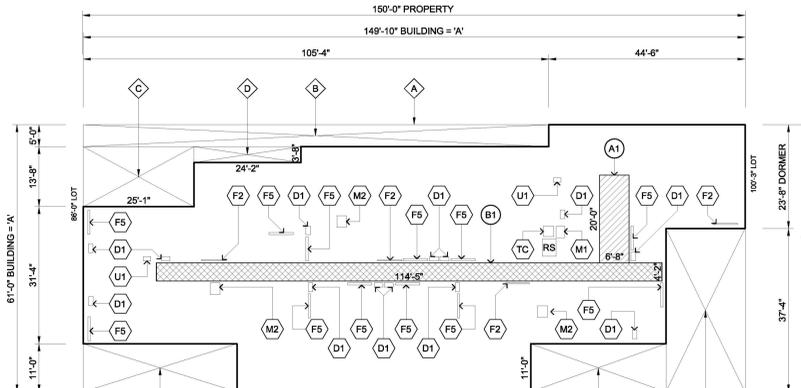
5TH FLOOR AREA CALCULATIONS		5TH FLOOR DEDUCTIONS	
A	149'-10" x 61'-0" = 9,139.83 SQ.FT.	CHAPTER 8 QUALITY HOUSING ZR 28-41	
B	105'-4" x 5'-0" = 526.67 SQ.FT.	CORRIDORS (50%) = (ZA) x 0.5 = 583.40 x 0.5 =	291.70
C	25'-1" x 13'-8" = 342.81 SQ.FT.	RS - REFUSE STORAGE = (4'-0" X 3'-0")	12.00
D	24'-2" x 3'-8" = 86.61 SQ.FT.	TOTAL QUALITY HOUSING DEDUCTIONS	303.70
E	28'-10" x 11'-0" = 317.17 SQ.FT.		
F	23'-2" x 11'-0" = 254.83 SQ.FT.	MECHANICAL DEDUCTIONS	
G	17'-11" x 29'-0" = 519.58 SQ.FT.	TYPE	QUANT. DESIGNATION SIZE AREA TOTAL
GROSS AREA (G.A.) = A - B - C - D - E - F - G		F1	2 PL CHASE 0'-3" x 7'-6" 1.88 3.75
= 9,139.83 - 526.67 - 342.81 - 86.61 - 317.17 - 254.83 - 519.58 = 7,090.17 SQ.FT.		F2	9 PL CHASE 0'-3" x 6'-0" 1.50 13.50
Z.A. = (G.A. - DEDUCTIONS) = 6,463.76 SQ.FT.		F5	11 PL CHASE 0'-8" x 6'-0" 4.00 44.00
= 7,090.17 - 303.70 - 123.36 - 199.35 = 6,463.76		M1	4 MECH SHAFT 2'-0" x 2'-6" 5.00 20.00
		U1	2 UTILITY SHAFT 1'-0" x 2'-0" 2.00 4.00
		TC	1 TRASH CHUTE 2'-4" x 2'-4" 5.44 5.44
		TOTAL MECHANICAL DEDUCTIONS 123.36	
		TOTAL EXTERIOR WALL DEDUCTIONS 199.35	
		TOTAL DEDUCTIONS 626.41	

5TH FLOOR AREA DIAGRAM
SCALE 1/16"=1'-0"
METROPOLITAN AVE. (80' WIDE)
AREA DESIGNATED AS TYPE 'A' - CORRIDORS w/OUT WINDOWS
AREA DESIGNATED AS TYPE 'B' - CORRIDORS w/WINDOWS



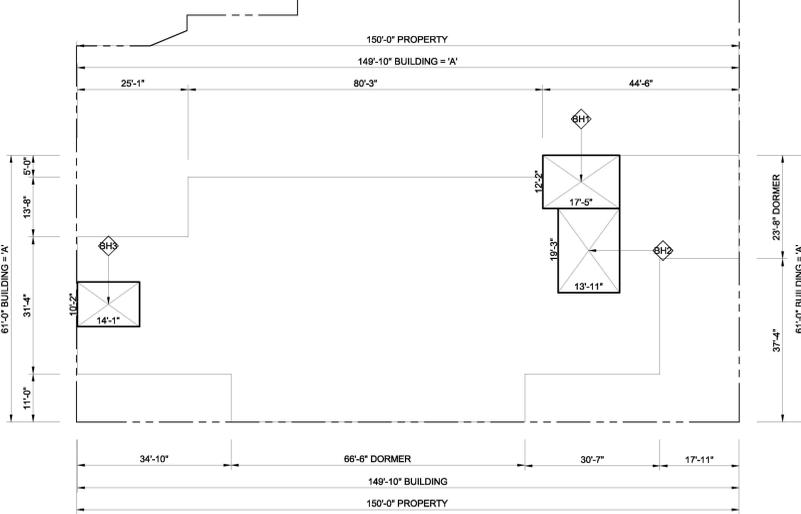
4TH FLOOR AREA CALCULATIONS		4TH FLOOR DEDUCTIONS	
A	149'-10" x 61'-0" = 9,139.83 SQ.FT.	CHAPTER 8 QUALITY HOUSING ZR 28-41	
B	105'-4" x 5'-0" = 526.67 SQ.FT.	CORRIDORS (50%) = (ZA) x 0.5 = 656.67 x 0.5 =	328.33
GROSS AREA (G.A.) = A - B = 9,139.83 - 526.67 = 8,613.17 SQ.FT.		RS - REFUSE STORAGE = (4'-0" X 3'-0")	12.00
Z.A. = (G.A. - DEDUCTIONS) = 7,950.08 SQ.FT.		TOTAL QUALITY HOUSING DEDUCTIONS	340.33
= 8,613.17 - 340.33 - 132.86 - 209.90 = 7,950.08			
		MECHANICAL DEDUCTIONS	
		TYPE	QUANT. DESIGNATION SIZE AREA TOTAL
		D1	14 MECH VENT 2'-0" x 1'-2" 2.33 32.67
		F1	2 PL CHASE 0'-3" x 7'-6" 1.88 3.75
		F2	10 PL CHASE 0'-3" x 6'-0" 1.50 15.00
		F5	13 PL CHASE 0'-8" x 6'-0" 4.00 52.00
		M1	4 MECH SHAFT 2'-0" x 2'-6" 5.00 20.00
		U1	2 UTILITY SHAFT 1'-0" x 2'-0" 2.00 4.00
		TC	1 TRASH CHUTE 2'-4" x 2'-4" 5.44 5.44
		TOTAL MECHANICAL DEDUCTIONS 132.86	
		TOTAL EXTERIOR WALL DEDUCTIONS 209.90	
		TOTAL DEDUCTIONS 663.09	

4TH FLOOR AREA DIAGRAM
SCALE 1/16"=1'-0"
METROPOLITAN AVE. (80' WIDE)
AREA DESIGNATED AS TYPE 'A' - CORRIDORS w/OUT WINDOWS
AREA DESIGNATED AS TYPE 'B' - CORRIDORS w/WINDOWS



6TH FLOOR AREA CALCULATIONS		6TH FLOOR DEDUCTIONS	
A	149'-10" x 61'-0" = 9,139.83 SQ.FT.	CHAPTER 8 QUALITY HOUSING ZR 28-41	
B	105'-4" x 5'-0" = 526.67 SQ.FT.	CORRIDORS (50%) = (ZA) x 0.5 = 610.07 x 0.5 =	305.03
C	25'-1" x 13'-8" = 342.81 SQ.FT.	RS - REFUSE STORAGE = (4'-0" X 3'-0")	12.00
D	24'-2" x 3'-8" = 86.61 SQ.FT.	TOTAL QUALITY HOUSING DEDUCTIONS	317.03
E	34'-10" x 11'-0" = 383.17 SQ.FT.		
F	30'-7" x 11'-0" = 336.42 SQ.FT.	MECHANICAL DEDUCTIONS	
G	17'-11" x 37'-4" = 668.89 SQ.FT.	TYPE	QUANT. DESIGNATION SIZE AREA TOTAL
GROSS AREA (G.A.) = A - B - C - D - E - F - G		F1	2 PL CHASE 0'-3" x 7'-6" 1.88 3.75
= 9,139.83 - 526.67 - 342.81 - 86.61 - 383.17 - 336.42 - 668.89 = 6,793.28 SQ.FT.		F2	4 PL CHASE 0'-3" x 6'-0" 1.50 6.00
Z.A. = (G.A. - DEDUCTIONS) = 6,089.98 SQ.FT.		F5	12 PL CHASE 0'-8" x 6'-0" 4.00 48.00
= 6,793.28 - 317.03 - 117.53 - 268.74 = 6,089.98		M1	4 MECH SHAFT 2'-0" x 2'-6" 5.00 20.00
		U1	2 UTILITY SHAFT 1'-0" x 2'-0" 2.00 4.00
		TC	1 TRASH CHUTE 2'-4" x 2'-4" 5.44 5.44
		TOTAL MECHANICAL DEDUCTIONS 117.53	
		TOTAL EXTERIOR WALL DEDUCTIONS 268.74	
		TOTAL DEDUCTIONS 703.30	

6TH FLOOR AREA DIAGRAM
SCALE 1/16"=1'-0"
METROPOLITAN AVE. (80' WIDE)
AREA DESIGNATED AS TYPE 'A' - CORRIDORS w/OUT WINDOWS
AREA DESIGNATED AS TYPE 'B' - CORRIDORS w/WINDOWS



ROOF AREA CALCULATIONS	
BH1	17'-5" x 12'-2" = 211.90 SQ.FT.
BH2	13'-11" x 19'-3" = 267.90 SQ.FT.
BH3	10'-2" x 14'-1" = 143.18 SQ.FT.
ROOF GROSS AREA (G.A.) = BH1 + BH2 + BH3 = 211.90 + 267.90 + 143.18 = 622.98 SQ.FT.	
ROOF ZONING AREA (Z.A.) = BH1 = 211.90 SQ.FT.	
ROOF RECREATION AREA CALCULATIONS	
R	40'-0" x 56'-0" = 2,240.00 SQ.FT.
ROOF RECREATION AREA = R = 2,240.00 SQ.FT.	

ROOF AREA DIAGRAM
SCALE 1/16"=1'-0"
AREA DESIGNATED AS TYPE 'A' - CORRIDORS w/OUT WINDOWS
AREA DESIGNATED AS TYPE 'B' - CORRIDORS w/WINDOWS

EXTERIOR WALL THICKNESS DEDUCTION CODE ANALYSIS

APPLICABLE CODES

ZONING NY CITY ZONING RESOLUTION - LATEST EDITION

ENERGY 2011 NEW YORK CITY ENERGY CONSERVATION CODE

2007 ASHRAE 90.1 - ENERGY STANDARD FOR BUILDINGS

2009 ASHRAE HANDBOOK - FUNDAMENTALS

ZR-12-10 (12)II ABOVE GRADE EXTERIOR WALL THICKNESS IN EXCESS OF 8" MAY BE DEDUCTED FROM THE FLOOR AREA CALCULATION WHEN THE FOLLOWING CONDITIONS ARE MET (FOR THE PURPOSE OF CALCULATING COMPLIANCE ONLY WALLS ABOVE GRADE ADJOINING SUCH WALL SHALL BE INCLUDED):

- BUILDING CONSTRUCTED AFTER APRIL 30, 2012 **IN COMPLIANCE**
- THE AREA WEIGHTED AVERAGE U-FACTOR (AWU) OF OPAQUE ABOVE-GRADE ASSEMBLIES IS MIN. 20% BETTER THAN THE AWU AS PRESCRIBED BY NYC EOC (SEE TABLE BELOW AND EN003) **IN COMPLIANCE**
- THE AREA WEIGHTED AVERAGE U-FACTOR (AWU) OF ALL ABOVE-GRADE ASSEMBLIES IS MIN. 10% BETTER THAN THE AWU AS PRESCRIBED BY NYC EOC. SEE AWU CALCULATIONS AND SUMMARY BELOW **IN COMPLIANCE**

NYCECC 202 BUILDING CLASSIFICATION - COMMERCIAL GROUP R BUILDING

NYECC 301 CLIMATE ZONE 4A

NYECC 502.1.2 BUILDING ENVELOPE REQUIREMENTS SUMMARY - OPAQUE ASSEMBLIES

WALLS ABOVE GRADE	ALL OTHER COMMERCIAL	GROUP R >3 STORIES
MASS	U - 0.104	U - 0.090
METAL BUILDINGS	U - 0.084	U - 0.084
METAL FRAMED	U - 0.064	U - 0.064
WOOD FRAMED AND OTHERS	U - 0.089	U - 0.064
BELOW-GRADE WALLS	C - 1.140	C - 0.119

NYECC 502.3.1 VERTICAL FENESTRATION SHALL BE MAX. 40% OF ABOVE GRADE WALL AREA.

COMPLIANCE IS DEMONSTRATED THROUGH U-FACTOR ALTERNATIVE APPROACH USING AREA WEIGHTED AVERAGE U-FACTOR (AWU) CALCULATION FOR EACH EXTERIOR WALL AND ITS COMPLIANCE WITH THE REQUIREMENTS OF ZR 12-10. FOR THE PURPOSE OF THESE COMPUTATIONS ONLY, THE EXTERIOR WALLS WERE DESIGNATED AS TYPES A, B, C & K (SEE LEGEND), AND AS FRONT, SIDE AND BACK WALLS (SEE BELOW). THE BUILDING HAVING MULTIPLE FACES THE EXTERIOR WALLS WERE FURTHER DESIGNATED AS FOLLOWS:

- 1 ALL WALLS FACING METROPOLITAN AVENUE = FRONT WALL 1
 - 2 ALL WALLS FACING HUMBOLDT ST. = FRONT WALL 2
 - 3 WALLS FACING THE ADJACENT PROPERTY AT WESTERN SIDE (LEFT SIDE) = SIDE WALL 1
 - 4 ALL WALLS FACING OR IN THE INTERIOR YARD = BACK WALL 1 & 2
 - 3 WALLS FACING THE ADJACENT PROPERTY AT NORTHERN SIDE (RIGHT SIDE) = SIDE WALL 2
- U FACTOR OF EACH WALL TYPE IS COMPUTED USING R VALUE OF ITS COMPONENTS AS DERIVED FROM:
- 2009 ASHRAE HANDBOOK - FUNDAMENTALS, CHAPTER 24, 25 & 26.
 - 2007 ASHRAE 90.1, TABLE A9.2B-EFFECTIVE INSULATION/FRAMING R-VALUE FOR WALL INSULATION BETWEEN STEEL STUDS.
 - 3 COMMERCIALY AVAILABLE R-VALUES OF BUILDING MATERIALS.

ENERGY EFFICIENCY OF PROPOSED OPAQUE WALL

TOTAL UA OF OPAQUE WALL	CODE	80% CODE	PROPOSED	EFFICIENCY
0.990	0.0720	0.0666	0.0666	25.99% BTC

25.99% > 20% MIN. ALLOWABLE ENERGY EFFICIENCY AS PER ZR12-10 (12)II(1) THERE **IN COMPLIANCE**

ENERGY EFFICIENCY OF PROPOSED ENTIRE WALL ASSEMBLY

TOTAL UA OF ENTIRE WALL ASSEMBLY	CODE	80% CODE	PROPOSED	EFFICIENCY
0.1991	0.1593	0.1664	0.1664	16.45% BTC

16.45% > 10% MIN. ALLOWABLE ENERGY EFFICIENCY AS PER ZR12-10 (12)II(2) THERE **IN COMPLIANCE**

NYECC502.3.1 VERTICAL FENESTRATION SHALL BE MAX. 40% OF ABOVE GRADE AREA

TOTAL FENESTRATION AREA	TOTAL WALL AREA
10,624.08	30,183.97

TOTAL VERTICAL FENESTRATION = 10,624.08 / 30,183.97 (*100%) = 35.20% < 40% THERE **IN COMPLIANCE**

FIRE RATING ANALYSIS

APPLICABLE CODES NYC BC 2008 CHAPTER 14 AND CHAPTER 26

NYC BC 7601 CONSTRUCTION TYPE 1B EXTERIOR BEARING WALLS ARE REQUIRED TO BE 2 HOUR FIRE-RATED.

PROVIDED ARE EXTERIOR MASONRY WALL TYPES 'A' THRU 'K' WITH FIRE-RATING OF 2, 3, AND 4 HOURS BASED ON UL DESIGN ASSEMBLIES #9002 (4 HRS), #9004-U906 (3 HRS), AND #912 (2 HRS). **IN COMPLIANCE**

NYC BC 719.1.1 INSULATING MATERIAL IN NON-COMBUSTIBLE CONSTRUCTION MUST COMPLY WITH ASTM E136 AND HAVE FLAME SPREAD < 25 AND SMOKE-DEVELOPMENT INDEX < 50.

NYC BC 719.3 "EXPOSED INSULATION" INSULATING MATERIALS MAY BE INSTALLED EXPOSED IN ANY TYPE OF CONSTRUCTION PROVIDED THEY HAVE A FLAME SPREAD INDEX < 25 AND A SMOKE-DEVELOPMENT INDEX < 50.

1404.11 "EXTERIOR INSULATION FINISH SYSTEM (EIFS)" EIFS SHALL BE CONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF ANSI E99, NYC BC CHAPTER 26, ASTM C908, ASTM E434 FOR SURFACE BURNING CHARACTERISTICS OF FOAM PLASTIC INSULATION.

NYC BC 1405.3.4 "FIRE RATED ASSEMBLY" THE INCLUSION OF EIFS OVER A LISTED FIRE RATED ASSEMBLY SHALL NOT BE DEEMED TO REDUCE THE TESTED OR LISTED RATING. **IN COMPLIANCE**

NYC BC 2803.4.1.1 "THERMAL INSULATION" FOAM PLASTIC INSULATION MAY BE USED IN MASONRY OR CONCRETE FIRE WALL.

NYC BC 2803.5.4 FOAM PLASTIC INSULATION SHALL HAVE A MAXIMUM THICKNESS OF 4" AND SHALL HAVE A FLAME SPREAD INDEX < 25 AND A SMOKE-DEVELOPMENT INDEX < 450 IN ACCORDANCE WITH ASTM E84. PREFABRICATED ALUMINUM PANELS ARE EXEMPT FROM THIS REQUIREMENT.

PROVIDED INSULATION OF MAX 2" THICKNESS. **IN COMPLIANCE**

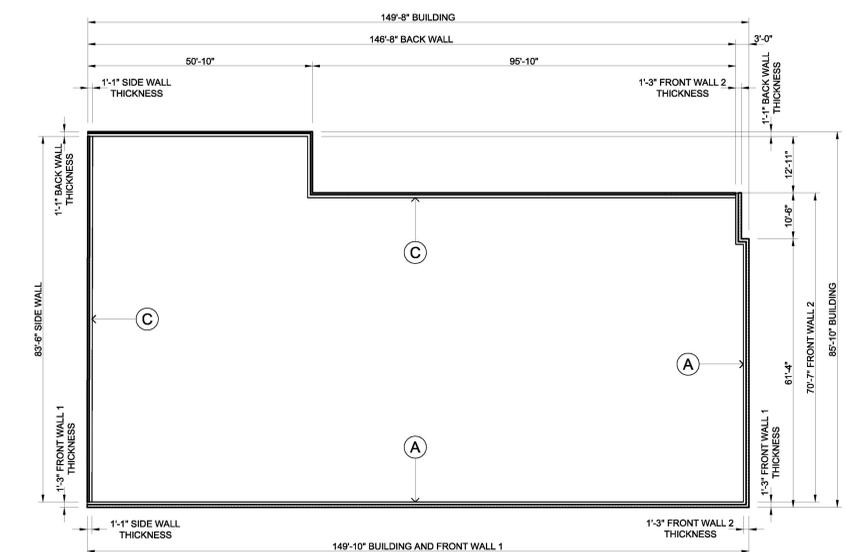
NYC BC 2803.8 FOAM PLASTIC INSULATION DOES NOT REQUIRE SPECIAL APPROVAL WHERE THEY ARE SPECIFICALLY APPROVED BY LARGE-SCALE TESTS SUCH AS FM4880, UL1040, NFPA 286, OR UL1715. **IN COMPLIANCE** SEE UL DESIGN NUMBERS ON WALL DETAILS.

KEY TO DESIGNATIONS

Wa ENTIRE WALL AREA. SMALL CASE LETTER SIGNIFIES WALL TYPE

Oa OPAQUE WALL AREA. SMALL CASE LETTER SIGNIFIES WALL TYPE

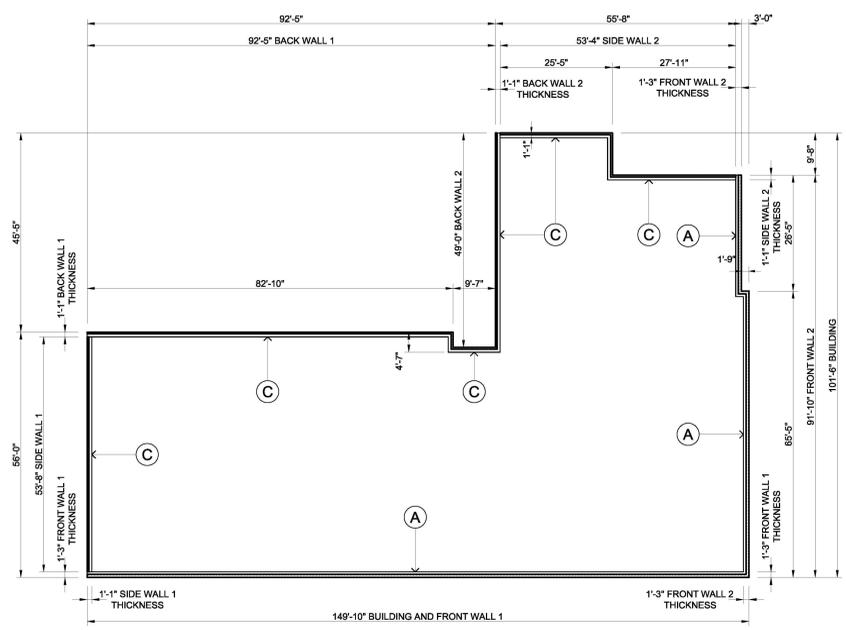
Fa FENESTRATION AREA. SMALL CASE LETTER SIGNIFIES WALL TYPE



1ST FLOOR

WALL LOCATION	WALL TYPE	DIMS	WALL LOCATION	WALL TYPE	DIMS
FRONT WALL 1	A	149'-10"	FRONT WALL 2	A	79'-7"
15" THICK			15" THICK		
TOTAL		149'-10"	TOTAL		84'-1"
SIDE WALL	C	83'-0"	BACK WALL	C	50'-10"
13" THICK			13" THICK		
TOTAL		83'-0"	TOTAL		159'-7"

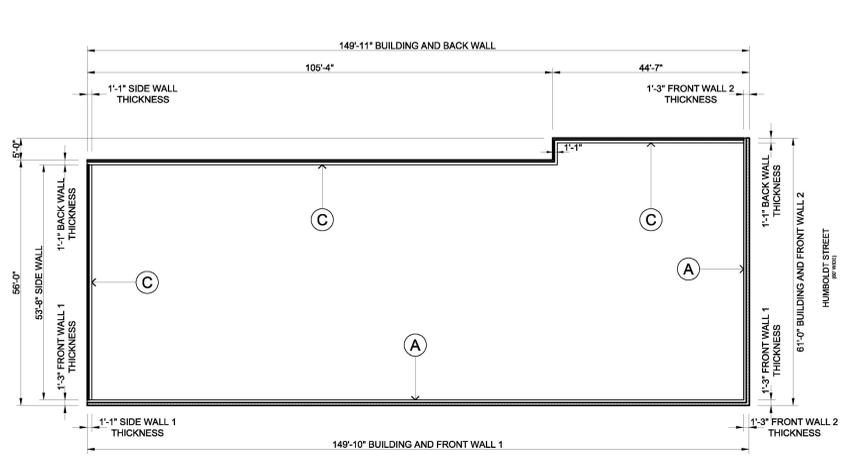
FIRST FLOOR EXTERIOR WALLS CALCS. SCALE: 1/16"=1'-0"



2ND-3RD FLOOR

WALL LOCATION	WALL TYPE	DIMS	WALL LOCATION	WALL TYPE	DIMS
FRONT WALL 1	A	149'-10"	FRONT WALL 2	A	65'-5"
15" THICK			15" THICK		
TOTAL		149'-10"	TOTAL		94'-10"
SIDE WALL 1	C	53'-0"	SIDE WALL 2	C	25'-5"
13" THICK			13" THICK		
TOTAL		53'-0"	TOTAL		63'-0"
BACK WALL 1	C	82'-10"	BACK WALL 2	C	48'-0"
13" THICK			13" THICK		
TOTAL		97'-0"	TOTAL		48'-0"

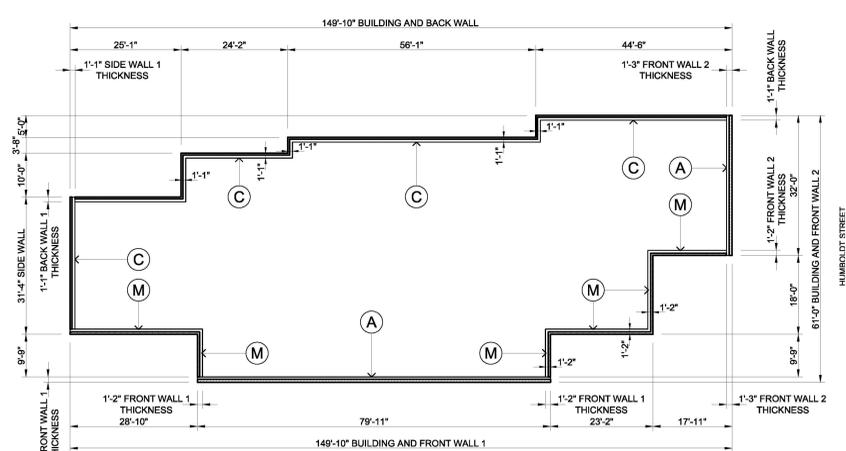
2ND - 3RD FL'S EXTERIOR WALLS CALCS. SCALE: 1/16"=1'-0"



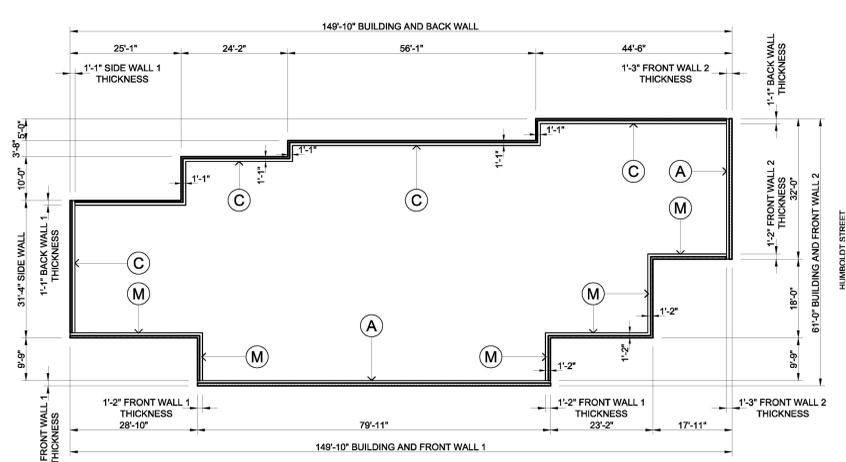
4TH FLOOR

WALL LOCATION	WALL TYPE	DIMS	WALL LOCATION	WALL TYPE	DIMS
FRONT WALL 1	A	149'-10"	FRONT WALL 2	A	61'-0"
15" THICK			15" THICK		
TOTAL		149'-10"	TOTAL		61'-0"
SIDE WALL	C	53'-0"	BACK WALL	C	105'-4"
13" THICK			13" THICK		
TOTAL		53'-0"	TOTAL		154'-11"

4TH FLOOR EXTERIOR WALLS CALCS. SCALE: 1/16"=1'-0"



5TH FLOOR EXTERIOR WALLS CALCS. SCALE: 1/16"=1'-0"



5TH FLOOR EXTERIOR WALLS CALCS. SCALE: 1/16"=1'-0"

WALLS LEGEND

(A)	NEW CMU WALL TYPE	A	4" Brick Veneer
	UL DESIGN #J 902	4HR RATED	1 1/2" Polystyrene Insul.
	U FACTOR (BTU-F-R2-hr)	= 0.0574	8" Conc. Mass. Unit
	ACTUAL WALL THICKNESS	= 15"	Wall Batt Insulation R-11
	ALLOWABLE DEDUCTION	= 7"	Inside Air
(B)	NEW BELOW GRADE FOUND. WALL	B	2" Polystyrene Insulation
	U FACTOR (BTU-F-R2-hr)	= 0.0461	14" Concrete Aggregate
	ACTUAL WALL THICKNESS	= 14"	Voltex Membrane
	ALLOWABLE DEDUCTION	= NA	Wall Batt Insulation R-11
	NO DEDUCTION TAKEN		5/8" Gyp. Board
(C)	NEW BELOW GRADE FOUND. WALL	C	1" Stucco
	U FACTOR (BTU-F-R2-hr)	= 0.0639	2" XPS Polystyrene Insul.
	ACTUAL WALL THICKNESS	= 13"	8" Conc. Mass. Unit
	ALLOWABLE DEDUCTION	= NA	Wall Batt Insulation R-11
	NO DEDUCTION TAKEN		5/8" Gyp. Board
(E)	NEW BELOW GRADE FOUND. WALL	E	1" Stucco
	U FACTOR (BTU-F-R2-hr)	= 0.0578	1" Polystyrene Insulation
	ACTUAL WALL THICKNESS	= 9"	6" Metal studs w/ R19 Insul
	ALLOWABLE DEDUCTION	= NA	Wall Batt Insulation R-11
	NO DEDUCTION TAKEN		Inside Air
(K)	NEW CMU WALL TYPE	K	1" Stucco
	UL DESIGN #J 906	2HR RATE	2" Polystyrene Insulation
	U FACTOR (BTU-F-R2-hr)	= 0.0704	6" Conc. Mass. Unit
	ACTUAL WALL THICKNESS	= 12"	Wall Batt Insulation R-11
	ALLOWABLE DEDUCTION	= 4"	5/8" Gyp. Board
	NO DEDUCTION TAKEN		Inside Air
(M)	NEW CMU WALL TYPE	M	Metal Wall Panel
	UL DESIGN #J 906	2HR RATE	1" Air Space
	U FACTOR (BTU-F-R2-hr)	= 0.0574	1 1/2" Polystyrene Insul.
	ACTUAL WALL THICKNESS	= 14"	6" Conc. Mass. Unit
	ALLOWABLE DEDUCTION	= 6"	Wall Batt Insulation R-11
	NO DEDUCTION TAKEN		5/8" Gyp. Board

ENERGY ENVELOPE NOTES

- ALL EXTERIOR JOINTS AND OPENINGS IN THE BUILDING ENVELOPE THAT ARE OBSERVABLE SOURCES OF AIR LEAKAGE SHALL BE CAULKED, GASKETED, WEATHER STRIPPED OR OTHERWISE SEALED. PROVIDE FLASHING, WINDOW DAMS, EXPANDABLE FOAM SEALANT AND CAULKING AT ROUGH OPENING / WINDOW / SKYLIGHT FRAME JOINTS AND ALL SEAMS TO CREATE A CONTINUOUS AIR BARRIER WITH SURROUNDING WALL SYSTEM.
- ALL CMU AND POURED CONCRETE EXTERIOR WALLS ARE TO BE PROVIDED WITH FLUID APPLIED ELASTOMERIC CONTINUOUS AIR BARRIER. ALL FRAMED METAL STUD WALLS TO BE PROVIDED WITH MOISTURE AND AIR INFILTRATION BARRIER (BUILDING PAPER WRAP) INSTALLED OVER THE SHEATHING AND INTEGRATED WITH WINDOW/DOOR FLASHING.
- NYECC 502.4.1 WINDOWS AND DOOR ASSEMBLIES: AIR LEAKAGE OF WINDOW/DOOR ASSEMBLIES SHALL BE DETERMINED IN ACCORDANCE WITH AAMA WDM/CSA 1011.5.2/440, OR NFRC 400 BY AN ACCREDITED, INDEPENDENT LABORATORY, LABELED AND CERTIFIED BY THE MANUFACTURER AND SHALL NOT EXCEED 0.3 CFM / S.F. OF FENESTRATION AREA, FOR COMMERCIAL GLAZED SWINGING ENTRANCE DOORS AND REVOLVING DOORS. THE MAXIMUM AIR LEAKAGE RATE SHALL BE 1.0 CFM / S.F. OF DOOR AREA WHEN TESTED IN ACCORDANCE WITH ASTM E283.
- NYECC 502.4.2 CURTAIN WALL, STOREFRONT GLAZING, AND COMMERCIAL-GLAZED SWINGING ENTRANCE DOORS AND REVOLVING DOORS SHALL BE TESTED FOR AIR LEAKAGE AT 1.57 PSF IN ACCORDANCE WITH ASTM E283. FOR CURTAIN WALLS AND STOREFRONT GLAZING, THE MAX AIR LEAKAGE RATE SHALL BE 0.3 CFM / S.F. OF FENESTRATION AREA, FOR COMMERCIAL GLAZED SWINGING ENTRANCE DOORS AND REVOLVING DOORS. THE MAXIMUM AIR LEAKAGE RATE SHALL BE 1.0 CFM / S.F. OF DOOR AREA WHEN TESTED IN ACCORDANCE WITH ASTM E283.
- SITE CONSTRUCTED DOORS, WINDOWS, AND SKYLIGHTS SHALL BE CAULKED AT ALL JOINTS AND SEAMS BETWEEN THE UNIT AND THE BUILDING AS PER NYECC 502.4.3, AND SHALL BE FIELD FITTED WITH WEATHER-STRIPPING PER NYECC 502.4.1.
- ALL WINDOWS AND GLAZED DOORS SHALL BE DOUBLE GLAZED AND HAVE THE MIN. U-FACTOR OF 0.35 AND THE MIN. SHGC VALUE OF 0.40 (U.O.N. ON ENERGY DETAIL DRAWINGS). ALL CURTAIN WALL / STOREFRONT GLAZING SHALL HAVE THE MIN. U-FACTOR OF 0.5 AND THE MIN. SHGC VALUE OF 0.40.
- ALL SKYLIGHTS SHALL NOT EXCEED 3% OF GROSS ROOF AREA AND SHALL HAVE THE MIN. U-FACTOR OF 0.80 AND THE MIN. SHGC VALUE OF 0.40 (U.O.N. ON PLAN).
- MANUFACTURED FENESTRATION PRODUCTS MUST BE LABELED FOR U-FACTOR ACCORDING TO APPROVED PROCEDURES.
- INTERIOR WALL INSULATION OF MIN. R-11 SHALL BE INSTALLED IN ALL OPAQUE PORTIONS OF EXTERIOR WALLS WITHIN THE CAVITY OF STEEL FURRING FRAME @24" O.C. (EXCEPT STEEL FRAMED WALLS @16" O.C. OR U.O.N. ON PLAN)

5TH FLOOR

WALL LOCATION	WALL TYPE	DIMS	WALL LOCATION	WALL TYPE	DIMS
FRONT WALL 1	A	79'-11"	FRONT WALL 2	A	32'-0"
15" THICK			15" THICK		
TOTAL		79'-11"	TOTAL		32'-0"
SIDE WALL	M	28'-10"	BACK WALL	M	17'-11"
14" THICK			14" THICK		
TOTAL		71'-0"	TOTAL		39'-11"

6TH FLOOR

WALL LOCATION	WALL TYPE	DIMS	WALL LOCATION	WALL TYPE	DIMS
FRONT WALL 1	A	66'-0"	FRONT WALL 2	A	23'-8"
15" THICK			15" THICK		
TOTAL		66'-0"	TOTAL		23'-8"
SIDE WALL	M	34'-10"	BACK WALL	M	30'-7"
14" THICK			14" THICK		
TOTAL		269'-0"	TOTAL		56'-5"

ZR12-10 (12)(ii)(1,2) - EXTERIOR WALLS PERFORMANCE ANALYSIS									
WALL LOCATION	WALL			U FACTOR PROPOSED (B)	UA (A)	U FACTOR CODE (D)	UA CODE (E=AxK)	U FACTOR PROPOSED (B)	UA (A)
	TYPE	ASSEMBLY	MARK						
FRONT WALL 1 - OPAQUE ASSEMBLIES	TYPE A	MASS.	Oa	0.0674	3,092.03	0.0900	278.28		
	TYPE A	MASS.	Sa	0.0710	497.17	0.0900	44.75		
	TYPE K	MASS.	Ck	0.0704	334.24	0.0900	30.08		
	TYPE K	MASS.	Sk	0.1042	20.94	0.0900	1.89		
	TYPE M	MASS.	Om	0.0574	754.90	0.0900	67.94		
	TYPE M	MASS.	Sm	0.0750	107.61	0.0900	9.69		
FRONT WALL 2 - OPAQUE ASSEMBLIES	TYPE A	MASS.	Oa	0.0674	1,715.60	0.0900	154.40		
	TYPE A	MASS.	Sa	0.0710	244.22	0.0900	21.98		
	TYPE K	MASS.	Ck	0.0704	322.75	0.0900	29.05		
	TYPE K	MASS.	Sk	0.1042	48.78	0.0900	4.39		
	TYPE M	MASS.	Om	0.0574	554.84	0.0900	49.94		
	TYPE M	MASS.	Sm	0.0750	53.50	0.0900	4.82		
SIDE WALL 1 - OPAQUE ASSEMBLIES	TYPE C	MASS.	Oc	0.0639	3,171.05	0.0900	285.39		
	TYPE C	MASS.	Sc	0.0862	211.06	0.0900	19.00		
	TYPE K	MASS.	Ck	0.0704	542.72	0.0900	48.85		
	TYPE K	MASS.	Sk	0.1042	48.44	0.0900	4.36		
SIDE WALL 2 - OPAQUE ASSEMBLIES	TYPE C	MASS.	Oc	0.0639	1,074.67	0.0900	96.72		
	TYPE C	MASS.	Sc	0.0862	87.11	0.0900	7.84		
BACK WALL 1 - OPAQUE ASSEMBLIES	TYPE C	MASS.	Oc	0.0639	5,252.44	0.0900	472.72		
	TYPE C	MASS.	Sc	0.0862	570.44	0.0900	51.34		
	TYPE K	MASS.	Ck	0.0704	371.58	0.0900	33.44		
	TYPE K	MASS.	Sk	0.1042	32.50	0.0900	2.93		
BACK WALL 2 - OPAQUE ASSEMBLIES	TYPE C	MASS.	Oc	0.0639	386.08	0.0900	34.75		
	TYPE C	MASS.	Sc	0.0862	65.22	0.0900	5.87		
FRONT WALL 1 - FENESTRATION	TYPE A	FENESTRATION	Fa	0.3500	4,132.50	0.4000	1653.00		
	TYPE K	FENESTRATION	Fk	0.3500	48.90	0.4000	19.56		
	TYPE M	FENESTRATION	Fm	0.3500	667.50	0.4000	263.00		
FRONT WALL 2 - FENESTRATION	TYPE A	FENESTRATION	Fa	0.3500	1,833.21	0.4000	733.28		
	TYPE K	FENESTRATION	Fk	0.3500	229.06	0.4000	91.62		
	TYPE M	FENESTRATION	Fm	0.3500	147.35	0.4000	58.94		
SIDE WALL 1 - FENESTRATION	TYPE C	FENESTRATION	Fc	0.3500	0.00	0.4000	0.00		
	TYPE K	FENESTRATION	Fk	0.3500	0.00	0.4000	0.00		
SIDE WALL 2 - FENESTRATION	TYPE C	FENESTRATION	Fc	0.3500	68.67	0.4000	27.47		
	TYPE K	FENESTRATION	Fk	0.3500	0.00	0.4000	0.00		
BACK WALL 1 - FENESTRATION	TYPE C	FENESTRATION	Fc	0.3500	3,036.93	0.4000	1214.77		
	TYPE K	FENESTRATION	Fk	0.3500	0.00	0.4000	0.00		
BACK WALL 2 - FENESTRATION	TYPE C	FENESTRATION	Fc	0.3500	469.97	0.4000	187.99		
	TYPE K	FENESTRATION	Fk	0.3500	0.00	0.4000	0.00		
TOTAL FENESTRATION					10,624.06		4,249.63		
ENTIRE WALL ASSEMBLY					30,183.97		6,010.02		

SUMMARY OF DEDUCTION OF EXTERIOR WALL THICKNESS IN EXCESS OF 8" (AS PER ZR 12-10)									
WALL LOCATION	WALL TYPE	ACTUAL THICKNESS (INCHES)	LENGTH OF WALL (FEET)	ACTUAL AREA (SQ.FT.)	DEDUCTION THICKNESS (INCHES)	DEDUCTION AREA (SQ.FT.)	SUPPORTING DOCUMENTATION	U FACTOR	UA
1ST FLOOR	FRONT WALL 1	A	15 in.	149' 0"	186.25	7 in.	86.92		
	FRONT WALL 2	A	15 in.	84' 1"	106.10	7 in.	49.05		
	SIDE WALL	C	13 in.	83' 6"	90.46	5 in.	34.79		
	BACK WALL	C	13 in.	159' 7"	172.88	5 in.	66.49		
	TOTAL FL				554.69		237.29		
	2ND FLOOR	FRONT WALL 1	A	15 in.	149' 10"	187.29	7 in.	87.40	
FRONT WALL 2	A	15 in.	53' 8"	67.08	7 in.	31.31			
SIDE WALL 1	C	13 in.	94' 10"	102.74	5 in.	39.51			
SIDE WALL 2	C	13 in.	63' 0"	88.25	5 in.	26.25			
BACK WALL 1	C	13 in.	97' 0"	106.08	5 in.	40.42			
BACK WALL 2	C	13 in.	49' 0"	53.08	5 in.	20.42			
TOTAL 2ND FL				530.44		224.89			
				1060.86		446.78			
4TH FLOOR	FRONT WALL 1	A	15 in.	149' 10"	187.29	7 in.	87.40		
	FRONT WALL 2	A	15 in.	61' 0"	76.25	7 in.	35.58		
	SIDE WALL	C	13 in.	63' 8"	58.14	5 in.	22.36		
	BACK WALL	C	13 in.	154' 11"	167.83	5 in.	64.55		
TOTAL 4TH FL				469.51		206.90			
5TH FLOOR	FRONT WALL 1	A	15 in.	79' 6"	99.38	7 in.	46.38		
	FRONT WALL 1	M	14 in.	71' 6"	83.42	6 in.	35.75		
	FRONT WALL 2	A	14 in.	32' 0"	37.33	6 in.	16.00		
	FRONT WALL 2	M	14 in.	35' 11"	41.90	6 in.	17.96		
	SIDE WALL	C	13 in.	31' 4"	33.94	5 in.	13.08		
	BACK WALL	C	13 in.	168' 6"	182.54	5 in.	70.21		
TOTAL 5TH FL				478.51		199.35			
6TH FLOOR	FRONT WALL 1	A	15 in.	66' 6"	83.13	7 in.	38.79		
	FRONT WALL 1	M	14 in.	209' 6"	244.42	6 in.	104.75		
	FRONT WALL 2	A	15 in.	23' 8"	29.58	7 in.	13.81		
	FRONT WALL 2	M	14 in.	56' 3"	65.63	6 in.	28.13		
	SIDE WALL	C	13 in.	31' 4"	33.94	5 in.	13.08		
	BACK WALL	C	13 in.	168' 6"	182.54	5 in.	70.21		
TOTAL 6TH FL				639.24		268.74			
BLDG. TOTAL					3,222.84		1,368.01		

AWAU = AREA WEIGHTED AVERAGE U-FACTOR
 BTC = BETTER THAN CODE

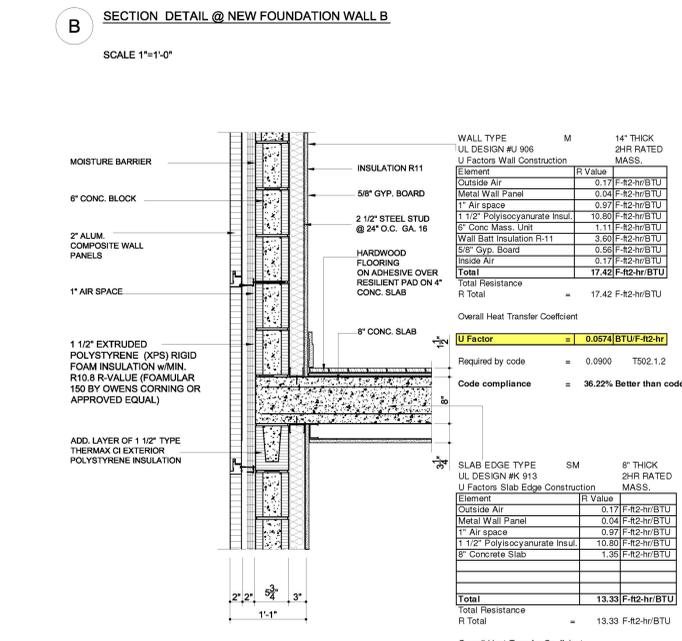
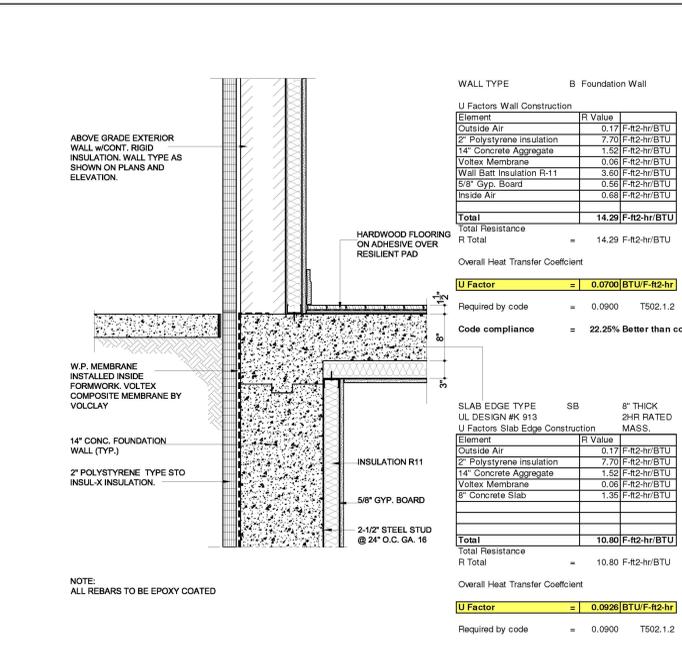
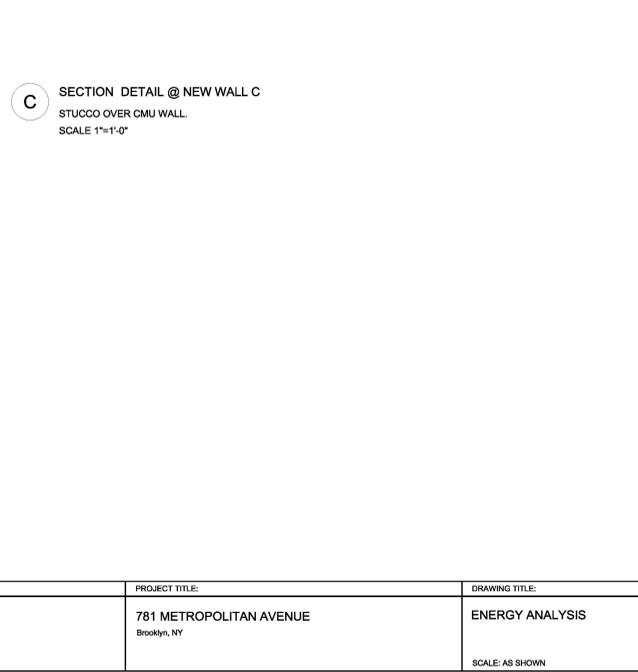
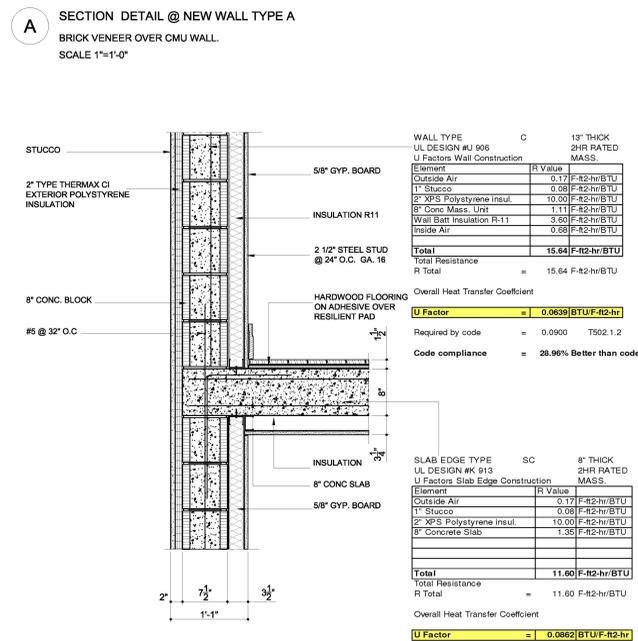
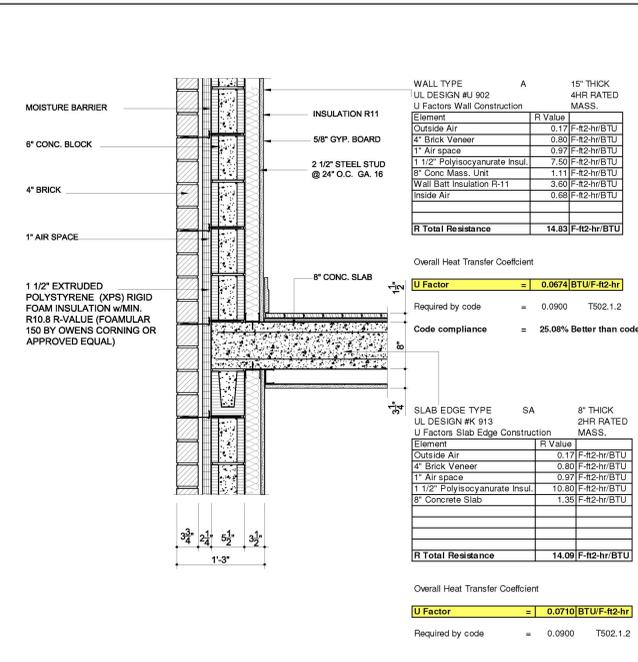
TOTAL AMOUNT OF FLOOR AREA BEING DEDUCTED DUE TO EXTERIOR WALL THICKNESS IN EXCESS OF 8" AS PER ZR12-10

ENERGY EFFICIENCY OF PROPOSED OPAQUE WALL			
TOTAL UA OF OPAQUE WALL	CODE	80% CODE	PROPOSED
	0.0900	0.0720	0.0666
25.99% > 20% MIN. ALLOWABLE ENERGY EFFICIENCY AS PER ZR12-10 (12)(ii)(1) THEREFORE IN COMPLIANCE			

ENERGY EFFICIENCY OF PROPOSED ENTIRE WALL ASSEMBLY			
TOTAL UA OF ENTIRE WALL ASSEMBLY	CODE	80% CODE	PROPOSED
	0.1991	0.1593	0.1664
16.45% > 10% MIN. ALLOWABLE ENERGY EFFICIENCY AS PER ZR12-10 (12)(ii)(2) THEREFORE IN COMPLIANCE			

NYECC502.3.1 VERTICAL FENESTRATION SHALL BE MAX. 40% OF ABOVE GRADE AREA	
TOTAL FENESTRATION AREA	TOTAL WALL AREA
10,624.06	30,183.97
TOTAL VERTICAL FENESTRATION = 10,624.06 / 30,183.97 (*100%) = 35.20% < 40% THEREFORE IN COMPLIANCE	

BTC = BETTER THAN CODE



ATTACHMENT B
CITIZEN PARTICIPATION PLAN

ATTACHMENT B

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and Adam America Real Estate have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, Adam America Real Estate will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Kate Glass, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at 212-676-4925.

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

brownfields@cityhall.nyc.gov.

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

Repository Name: Leonard Library

Repository Address: 81 Devoe, Brooklyn, NY

Repository Telephone Number: 718-486-3365

Repository Hours of Operation:

Mon	10:00AM - 6:00PM
Tue	1:00 PM - 8:00 PM
Wed	10:00 AM - 6:00 PM
Thu	10:00 AM - 6:00 PM
Fri	10:00 AM - 6:00 PM
Sat	10:00 AM - 5:00 PM
Sun	closed

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

Identify Issues of Public Concern. The major issues of concern to the public will be potential impacts of nuisance odors and dust during the disturbance of historic fill soils at the Site. This work will be performed in accordance with procedures which will be specified under a detailed Remedial Program which considers and takes preventive measures for exposures to future

residents of the property and those on adjacent properties during construction. Detailed plans to monitor the potential for exposure including a Construction Health and Safety Plan and a Community Air Monitoring Plan are required components of the remedial program. Implementation of these plans will be under the direct oversight of the New York City Department of Environmental Remediation (NYCOER).

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

- On-Site air monitoring for worker protection,
- Perimeter air monitoring for community protection.

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

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

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

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

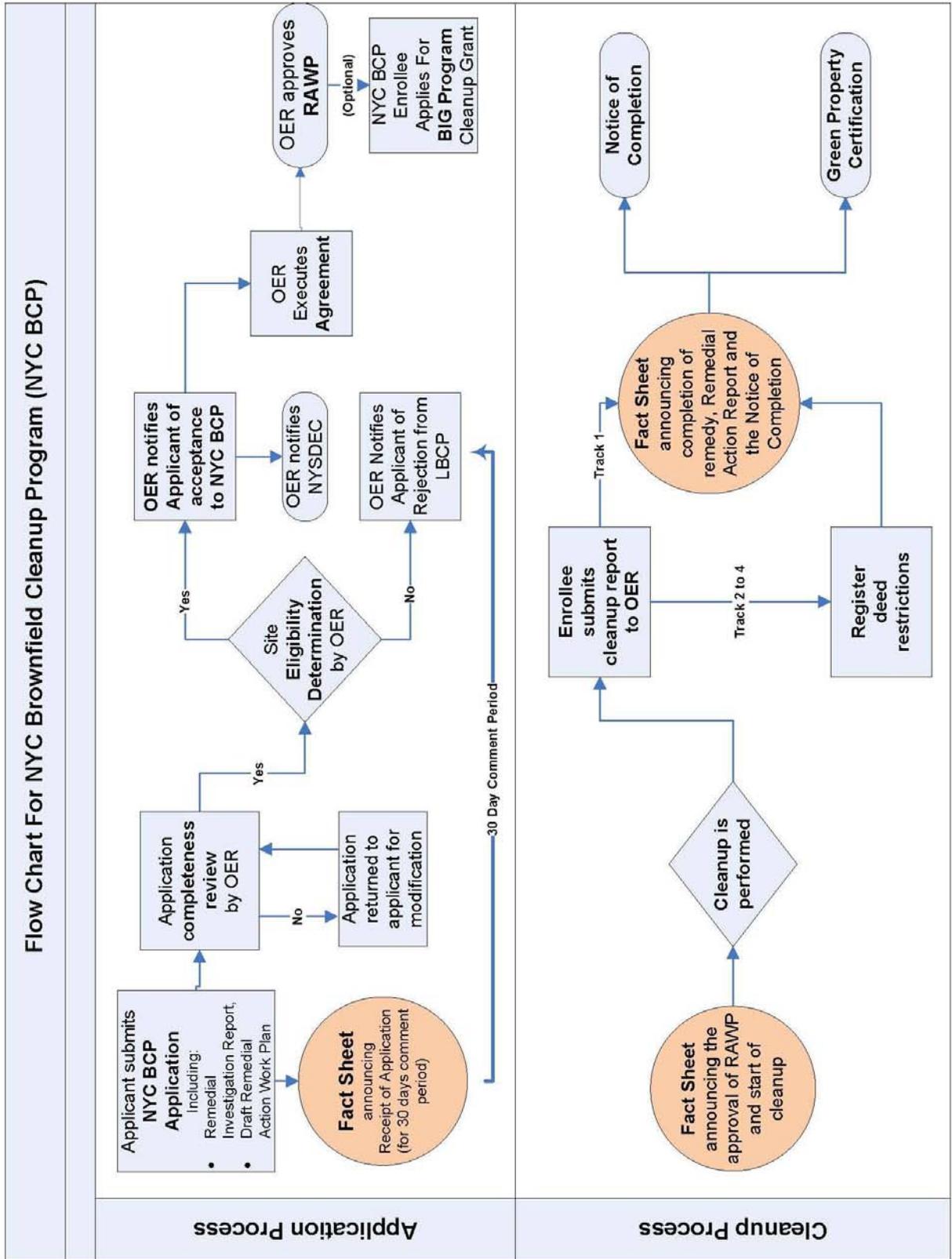
Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the availability of the Remedial Investigation Report and Remedial Action Work Plan and the initiation of a 30-day public comment period on the Remedial Action Work Plan. The Fact Sheet summarizes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

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

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

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

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



ATTACHMENT C
SUSTAINABILITY STATEMENT

ATTACHMENT C SUSTAINABILITY STATEMENT

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

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

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

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

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

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

Recycled concrete materials and other backfill materials will be locally sourced reducing the energy consumption associated with transporting these materials to the Site. 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.



Paperless Voluntary Cleanup Program. Adam America Real Estate is participating in OER's Paperless Voluntary Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

Low-Energy Project Management Program. Adam America Real Estate 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.

ATTACHMENT D
SOIL/MATERIALS MANAGEMENT PLAN

ATTACHMENT D

SOIL/MATERIALS MANAGEMENT PLAN

1.1 SOIL SCREENING METHODS

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

1.2 STOCKPILE METHODS

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

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

1.3 CHARACTERIZATION OF EXCAVATED MATERIALS

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

1.4 MATERIALS EXCAVATION, LOAD-OUT AND DEPARTURE

The PE/QEP overseeing the remedial action will:

- oversee remedial work and the excavation and load-out of excavated material;
- ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP;
- ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site; and
- 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 will be west on Metropolitan Avenue to Interstate 278 - Brooklyn Queens Expressway.

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 Adam America Real Estate 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 Adam America Real Estate. 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.

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

1.7 MATERIALS REUSE ON-SITE

Soil and fill that is derived from the property that meets the soil cleanup objectives established in this plan may be reused on-Site. The soil cleanup objectives for on-Site reuse are listed in Table 1. '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 Table 1.

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

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

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

All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this RAWP. The RAR will report the source of the fill, evidence

that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.

Source Screening and Testing

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

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

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

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

1.10 FLUIDS MANAGEMENT

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

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

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

1.11 STORM-WATER POLLUTION PREVENTION

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

1.12 CONTINGENCY PLAN

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

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

1.13 ODOR, DUST AND NUISANCE CONTROL

Odor Control

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

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

Dust Control

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

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

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

Other Nuisances

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

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

ATTACHMENT E
SITE SPECIFIC CONSTRUCTION
HEALTH AND SAFETY PLAN

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123-125 FRANKLIN AVENUE, BROOKLYN, NY

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STATEMENT OF COMMITMENT

This Construction Health and Safety Plan (CHASP) has been prepared to ensure that workers are not exposed to risks from hazardous materials during the Remedial Action at 771-785 Metropolitan Avenue, Brooklyn, NY.

This CHASP, which applies to persons present at the site actually or potentially exposed to hazardous materials, describes emergency response procedures for actual and potential 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.

1.0 INTRODUCTION AND SITE ENTRY REQUIREMENTS

This document describes the health and safety guidelines developed by Environmental Business Consultants (EBC) for the planned Remedial Action at 771-785 Metropolitan Avenue, Brooklyn, NY to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials or wastes during remedial activities. 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 related to excavation, loading and other soil disturbance activities and is based on the best information available. The CHASP may be revised by EBC at the request of the developer and/or a regulatory agency upon receipt of new information regarding site conditions. Changes will be documented by written amendments signed by EBC's project manager, site safety officer and/or the EBC health and safety consultant.

1.1 Training Requirements

Personnel entering the exclusion zone or decontamination zone are required to be certified in health and safety practices for hazardous waste site operations as specified in the Federal OSHA Regulations CFR 1910.120e (revised 3/6/90).

Paragraph (e - 3) of the above referenced regulations requires that all on-site management personnel directly responsible for or who supervise employees engaged in hazardous waste operations, must initially receive 8 hours of supervisor training related to managing hazardous waste work.

Paragraph (e - 8) of the above referenced regulations requires that workers and supervisors receive 8 hours of refresher training annually on the items specified in Paragraph (e-1) and/or (e-3).

Additionally all on-site personnel must receive adequate site-specific training in the form of an on-site Health and Safety briefing prior to participating in field work with emphasis on the following:

- Protection of the adjacent community from hazardous vapors and / or dust which may be released during intrusive activities.
- Identification of chemicals known or suspected to be present on-site and the health effects and hazards of those substances.
- The need for vigilance in personnel protection, and the importance of attention to proper use, fit and care of personnel protective equipment.
- Decontamination procedures.
- Site control including work zones, access and security.
- Hazards and protection against heat or cold.
- The proper observance of daily health and safety practices, such as entry and exit of work zones and site. Proper hygiene during lunch, break, etc.
- Emergency procedures to be followed in case of fire, explosion and sudden release of hazardous gases.

Health and Safety meetings will be conducted on a daily basis and will cover protective clothing and other equipment to be used that day, potential and chemical and physical hazards, emergency procedures, and conditions and activities from the previous day.

1.2 Medical Monitoring Requirements

Field personnel and visitors entering the exclusion zone or decontamination zone must have completed appropriate medical monitoring required under OSHA 29 CFR 1910.120(f) if respirators or other breathing related PPE is needed. 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.

1.3 Site Safety Plan Acceptance, Acknowledgment and Amendments

The project superintendent and the site safety officer are responsible for informing personnel (EBC 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 HASP are acknowledged by completing forms included in **Appendix B**.

1.4 Key Personnel - Roles and Responsibilities

Personnel responsible for implementing this Health and Safety Plan are:

Name	Title	Address	Contact Numbers
Mrs. Chawinie Reilly	Health & Safety Manager	1808 Middle Country Rd Ridge, NY 11961	(631) 504-6000
Mr. Kevin Waters	Site Safety Officer	1808 Middle Country Rd Ridge, NY 11961	(631) 504-6000

The project manager is responsible for overall project administration and, with guidance from the 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 site safety officer is also responsible for coordinating health and safety activities related to hazardous material exposure on-site. The site safety officer 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 street address for the subject site is 771-785 Metropolitan Avenue, and is situated on the north side of Metropolitan Avenue between Humboldt Street and Graham Avenue in Brooklyn, New York. The Site is located in the City of New York and Borough of Brooklyn (New York County). The Site is designated as Block 2760, Lots 28 and 35 by the City of New York, Department of Assessment.

The Lots are irregularly shaped consisting of 150 feet of street frontage on Metropolitan Avenue and approximately 100 feet of street frontage on Humboldt Street for a total of approximately 15,000 ft². The entire footprint Lot 35 is currently developed with a single-story commercial building that is vacant and previously used as a shoe store. Lot 28 is developed with a single-story commercial building occupying the west side of the lot that is currently vacant and previously used as a White Castle restaurant. The remaining portion of the lot is developed as a parking lot.

2.1 Previous Investigations

2.1.1 Phase II Subsurface Investigation Report (EBC October 2014)

In accordance with the approved Phase II Work Plan, a total of eleven soil borings (B1-B11), three monitoring wells and six soil gas implants were installed on September 11 and October 10, 2014 to gain representative soil, groundwater and soil vapor information across the site.

Soil Borings

All borings were advanced with Geoprobe™ direct push equipment using either a 54LT or 6712DT track mounted probe. Soil samples were collected continuously using either a 4 ft or 5 ft dual tube sampling system with disposable acetate liners. Soil borings B1-B7 were advanced to a depth of 15 feet. Delineation borings B8-B11 were advanced to a total depth of 6 feet. Two soil samples were retained from borings B1-B7 including the 0-2 ft and either the 8-10 ft or 12-14 ft intervals. Samples from the delineation borings included samples from the 0-2, 2-4, and 4-6 ft intervals with the exception of B8 in which only 2-4 ft interval was obtained.

Soil cores from each boring were characterized by an environmental professional (EP) and field screened for the presence of VOCs using a photo-ionization detector (PID). The EP's field observations and PID readings were recorded for each boring in a soil boring log. No petroleum odors, PID readings or physical evidence of petroleum were detected in any of the soil borings.

A total of twenty-eight soil samples were collected in pre-cleaned, laboratory supplied glassware, stored in a cooler with ice and submitted for analysis to Phoenix Environmental Laboratory, Inc. of Manchester, CT, a New York State ELAP certified environmental laboratory (ELAP Certification No. 11301). All soil samples were analyzed for the presence of VOCs by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270, pesticides/PCBs by EPA Methods 8081/8082 and target analyte list (TAL) metals.

Monitoring Wells / Groundwater Sampling

EBC collected groundwater samples from three temporary monitoring wells (MW1-MW3) to the water table (approx. 24 ft bgs) and installing a one-inch diameter PVC well 10-feet below the water table interface. A groundwater sample was then collected from each temporary well by

hand oscillation utilizing dedicated polyethylene tubing and a stainless steel check valve. Groundwater samples were collected in pre-cleaned, laboratory supplied glassware, stored in a cooler with ice and submitted to ALS for analysis of VOCs by EPA Method 8260, SVOCs by EPA Method 8270, pesticides/PCBs by EPA Methods 8081/8082 and TAL metals.

Soil Gas Sampling

To evaluate the potential for VOC contamination site-wide, six soil vapor sampling probes (SG1-SG6) were installed on September 15, 2014. The vapor probes that were installed were by the Geoprobe™ Model AT86 series, which are constructed of a 6 inch length of double woven stainless steel wire. Each probe was attached to ¼ inch polyethylene tubing which extended approximately 18 inches beyond that needed to reach the surface. The tubing was capped with a ¼ inch plastic end to prevent the infiltration of foreign particles into the tube. Coarse sand was placed around the probe to a height of approximately 1 foot above the bottom of the probe. The remainder of the borehole was sealed with a bentonite slurry to the surface.

Samples were then collected following NYSDOH sampling procedures over a 2-hour period using a 6-liter Summa® canister. Samples were submitted to a NYSDOH certified laboratory for analysis of VOCs by EPA method TO15.

Findings

The Phase II Investigation Report prepared by EBC concluded that the Subsurface soil at the site consisted of urban fill, which was primarily comprised of brick, concrete, wood and other debris in a brown sandy matrix to a depth of approximately 3 feet, underlain by native brown silty-sand to the termination depth of 15 feet below grade. The fill material contained several SVOCs, one PCB and metals above NYSDEC Part 375 Unrestricted Use and / or Restricted Residential Soil Cleanup Objectives. No pesticides were reported above SCOs. The parameters detected and the concentrations reported, with the exception of the lead hot-spot identified at the B5 location, are consistent with that commonly reported in historic fill materials and are not associated with any release of contamination at the Site.

There were no PCBs reported above standards in any of the groundwater samples. Two SVOCs were reported above standards, however, one is noted as a common laboratory introduced contaminate and the other is at a low level and is not of concern, likely associated with background conditions. As a result these SVOCs are commonly reported above standards when analyzed at a lab which can actually detect and report concentrations in this low range and are considered background. Three metals including iron, magnesium, and sodium were reported above their respective groundwater standard. These metals are typically found in groundwater above standards throughout Brooklyn and Queens and reflect traces of salt water intrusion from historical groundwater pumping.

2.2 Redevelopment Plans

The entire footprint of Lot 35 is currently developed with a single-story commercial building that is vacant. Lot 28 is developed with a single-story commercial building occupying the west side of the lot that is currently vacant. The remaining portion of the lot is developed as a parking lot. The current commercial buildings will be demolished and the Site will be developed with a new 6-story commercial and residential building with a cellar level requiring excavation to

approximately 14 below grade.

2.3 Description of Remedial Action

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and implementation of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan;
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds;
3. Selection of NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs) for the foot print of the building and Site-Specific (Track 4) SCOs for the rear yard;
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas;
5. Completion of a Waste Characterization Study and additional soil samples to be collected from the northeast and southeast portions of the property, adjacent to the former junkyard areas and installation of one groundwater monitoring well adjacent to former boring location B5; prior to excavation activities. Waste characterization soil samples will be collected at a frequency specified by disposal facility. A Waste Characterization Report documenting sample procedures, location, analytical results and disposal facility(s) approval letters will be submitted to NYCOER prior to the start of the remedial action. A total of 4 soil samples (0-2 feet and 2-4 feet intervals) from two separate waste characterization test pits will be collected on the northern portion of the Site which the developer is planning to landscape and a total of 2 soil samples (12-14 feet) from two separate waste characterization test pits will be collected. Also one ground water well will be installed in the vicinity of B5 and EBC will collect one ground water sample. Soil and groundwater samples will be analyzed for VOCs, SVOCs, PCBs, pesticides and metals;
6. Excavation and removal of soil/fill exceeding NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs) for the foot print of the building and Site-Specific (Track 4) SCOs for the rear yard. For development purposes, the entire 15,000 sf Site will be excavated to depth of 14 feet for the new building's footings and foundation. Approximately 11,394 tons of soil will be removed;
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site;
8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials;

9. Removal of underground storage tanks (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations;
10. 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;
11. Collection and analysis of end-point and hot spot samples to determine the performance of the remedy with respect to attainment of SCOs;
12. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations;
13. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations;
14. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations;
15. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP;

If Track 1 Unrestricted Use SCOs are not achieved for the building foot print, the following construction elements implemented as part of new development will constitute Engineering Controls:

1. Installation of a vapor barrier system below the mechanical and storage rooms in the cellar level of the building as well as behind foundation walls. The vapor barrier will consist of the Raven Industries' VaporBlock 20 Plus or equivalent system. VaporBlock 20 Plus is a seven layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins;
16. As part of new development, construction and maintenance of an engineered composite cover consisting of a 4 inch thick concrete basement slab (building foot print) and 2 feet of clean fill or 5-inch concrete cap for the rear yard to prevent human exposure to residual soil/fill remaining under the Site;
17. As part of new development, construction and operation of a ventilated parking garage as per NYC Building Department's codes and requirements;
18. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency; and
20. The property will continue to be registered with an E-Designation by 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.

3.0 HAZARD ASSESSMENT

This section identifies the hazards associated with the proposed scope of work, 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 Physical Hazards

3.1.1 Tripping Hazards

An area of risk associated with on-site activities are presented by uneven ground, concrete, curbstones or equipment which may be present at the site thereby creating a potential tripping hazard. During intrusive work, care should be taken to mark or remove any obstacles within the exclusion zone.

3.1.2 Climbing Hazards

During site activities, workers may have to work on excavating equipment by climbing. The excavating contractor will conform with any applicable NIOSH and OSHA requirements or climbing activities.

3.1.3 Cuts and Lacerations

Field activities that involve excavating activities usually involve contact with various types of machinery. A first aid kit approved by the American Red Cross will be available during all intrusive activities.

3.1.4 Lifting Hazards

Improper lifting by workers is one of the leading causes of industrial injuries. Field workers in the excavation program may be required to lift heavy objects. Therefore, all members of the field crew should be trained in the proper methods of lifting heavy objects. All workers should be cautioned against lifting objects too heavy for one person.

3.1.5 Utility Hazards

Before conducting any excavation, the excavation contractor will be responsible for locating and verifying all existing utilities at each excavation.

3.1.6 Traffic Hazards

All traffic, vehicular and pedestrian, shall be maintained and protected at all times consistent with local, state and federal agency regulations regarding such traffic and in accordance with NYCDOT guidelines. The excavation contractor shall carry on his operations without undue interference or delays to traffic. The excavation contractor shall furnish all labor, materials, guards, barricades, signs, lights, and anything else necessary to maintain traffic and to protect his work and the public, during operations.

3.2 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.

3.2.1 Heat Stress

The combination of high ambient temperature, high humidity, physical exertion, and personal protective apparel, which limits the dissipation of body heat and moisture, can cause heat stress.

The following prevention, recognition and treatment strategies will be implemented to protect personnel from heat stress. Personnel will be trained to recognize the symptoms of heat stress and to apply the appropriate treatment.

1. Prevention

- a. Provide plenty of fluids. Available in the support zone will be a 50% solution of fruit punch and water or plain water.
- b. Work in Pairs. Individuals should avoid undertaking any activity alone.
- c. Provide cooling devices. A spray hose and a source of water will be provided to reduce body temperature, cool protective clothing and/or act as a quick-drench shower in case of an exposure incident.
- d. Adjustment of the work schedule. As is practical, the most labor-intensive tasks should be carried out during the coolest part of the day.

2. Recognition and Treatment

a. Heat Rash (or prickly heat):

Cause: Continuous exposure to hot and humid air, aggravated by chafing clothing.

Symptoms: Eruption of red pimples around sweat ducts accompanied by intense itching and tingling.

Treatment: Remove source of irritation and cool skin with water or wet cloths.

b. Heat Cramps (or heat prostration)

Cause: Profuse perspiration accompanied by inadequate replenishment of body water and electrolytes.

Symptoms: Muscular weakness, staggering gait, nausea, dizziness, shallow breathing, pale and clammy skin, approximately normal body temperature.

Treatment: Perform the following while making arrangement for transport to a medical facility. Remove the worker to a contamination reduction zone. Remove protective clothing. Lie worker down on back in a cool place and raise feet 6 to 12 inches. Keep warm, but loosen all clothing. If conscious, provide sips of salt-water solution, using one teaspoon of salt in 12 ounces of water. Transport to a medical facility.

c. Heat Stroke

Cause: Same as heat exhaustion. This is also an extremely serious condition.

Symptoms: Dry hot skin, dry mouth, dizziness, nausea, headache, rapid pulse.

Treatment: Cool worker immediately by immersing or spraying with cool water or sponge bare skin after removing protective clothing. Transport to hospital.

3.2.2 Cold Exposure

Exposure to cold weather, wet conditions and extreme wind-chill factors may result in excessive loss of body heat (hypothermia) and /or frostbite. To guard against cold exposure and to prevent cold injuries, appropriate warm clothing should be worn, warm shelter must be readily available, rest periods should be adjusted as needed, and the physical conditions of on-site field personnel should be closely monitored. Personnel and supervisors working on-site will be made aware of the signs and symptoms of frost bite and hypothermia such as shivering, reduced blood pressure, reduced coordination, drowsiness, impaired judgment, fatigue, pupils dilated but reactive to light and numbing of the toes and fingers.

3.3 Chemical Hazards

“Urban fill” materials, present throughout the New York City area typically contain elevated levels of semi-volatile organic compounds and metals. These “contaminants” are not related to a chemical release occurring on the site, but are inherent in the reworked fill material in the area which contains ash and bits of tar and asphalt. Considering the previous sampling results and the past and present use of the site, the following compounds are considered for the site as potential contaminants: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), PCBs, pesticides, and heavy metals such as arsenic, cadmium, chromium, lead, copper, mercury, silver and zinc.

The primary routes of exposure to these contaminants are inhalation, ingestion and absorption.

Appendix C includes information sheets for suspected chemicals that may be encountered at the site.

3.3.1 Respirable Dust

Dust may be generated from vehicular traffic and/or excavation 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 or groundwater will be mitigated with the implementation of latex gloves, hand washing and decontamination exercises when necessary.

3.3.2 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.

3.3.3 Organic Vapors

Elevated levels of VOCs were detected in both soil and soil vapor samples collected during previous investigations at the site. 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 in Section 5 and/or the Community Air Monitoring Plan.

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.

- 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 Site Safety Officer with the intent to provide the most protective and efficient worker PPE.

4.3 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 drilling locations, active venting, etc.) will be implemented before requiring the use of respiratory protection.

5.0 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.

5.1 Air Monitoring Requirements

If excavation work is performed, air will be monitored for VOCs with a portable ION Science 3000EX photoionization detector, or the equivalent. If necessary, Lower Explosive Limit (LEL) and oxygen will be monitored with a Combustible Gas Indicator (CGI). If appropriate, fugitive dust will be monitored using a MiniRam Model PDM-3 aerosol monitor. 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.

The designated site safety officer will record air monitoring data and ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. Instruments will be zeroed daily and checked for accuracy. Monitoring results will be recorded in a field notebook and will be transferred to instrument reading logs.

5.2 Work Stoppage Responses

The following responses will be initiated whenever one or more of the action levels necessitating a work stoppage are exceeded:

- 1 The SSO will be consulted immediately
- 2 All personnel (except as necessary for continued monitoring and contaminant migration, if applicable) will be cleared from the work area (eg from the exclusion zone).
- 3 Monitoring will be continued until intrusive work resumes.

5.3 Action Levels During Excavation Activities

Instrument readings will be taken in the breathing zone above the excavation pit unless otherwise noted. Each action level is independent of all other action levels in determining responses.

Organic Vapors (PID)	LEL %	Responses
0-1 ppm above background	0%	<ul style="list-style-type: none"> • Continue excavating • Level D protection • Continue monitoring every 10 minutes

1-5 ppm Above Background, Sustained Reading	1-10%	<ul style="list-style-type: none"> • Continue excavating • Go to Level C protection or employ engineering controls • Continue monitoring every 10 minutes
5-25 ppm Above Background, Sustained Reading	10-20%	<ul style="list-style-type: none"> • Discontinue excavating, unless PID is only action level exceeded. • Level C protection or employ engineering controls • Continue monitoring for organic vapors 200 ft downwind • Continuous monitoring for LEL at excavation pit
>25 ppm Above Background, Sustained Reading	>20%	<ul style="list-style-type: none"> • Discontinue excavating • Withdraw from area, shut off all engine ignition sources. • Allow pit to vent • Continuous monitoring for organic vapors 200 ft downwind.

Notes: Air monitoring will occur in the breathing zone 30 inches above the excavation pit. Readings may also be taken in the excavation pit but will not be used for action levels.

If action levels for any one of the monitoring parameters are exceeded, the appropriate responses listed in the right hand column should be taken. If instrument readings do not return to acceptable levels after the excavation pit has been vented for a period of greater than one-half hour, a decision will then be made whether or not to seal the pit with suppressant foam.

If, during excavation activities, downwind monitoring PID readings are greater than 5 ppm above background for more than one-half hour, excavation will stop until sustained levels are less than 5 ppm (see Community Air Monitoring Plan).

6.0 SITE CONTROL

6.1 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.

Due to the dimensions of the Site and the work area, it is expected that an exclusion zone will include the entire fenced area with the exception of the construction entrance area, which will serve as the decontamination zone. A support zone if needed will be located outside of the fenced area. All onsite workers engaged in the excavation of hazardous or contaminated materials must provide evidence of OSHA 24 or 40-hour Hazardous Waste Operations and Emergency Response Operations training to conduct work within the exclusion zone established by the site safety officer. 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. 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.

7.0 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 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.

7.1 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.

7.2 Emergency Telephone Numbers

General Emergencies	911
New York City Police	911
Astoria Urgent Medical Care	1-718-721-0101
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
Site Safety Officer	1-631-504-6000
Alternate Site Safety Officer	1-631-504-6000

7.3 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 manager's 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 key personnel are planned for this project:

- | | |
|-------------------------------|-------------------------------------|
| • Project Manager | Mrs. Chawinie Reilly (631) 504-6000 |
| • Construction Superintendent | To be added |
| • Site Safety Officer | Mr. Kevin Waters (631) 504-6000 |

7.4 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 D**) 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 (**Appendix D**), and information on the chemical(s) to which they may have been exposed (**Appendix C**).

7.5 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.

7.6 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.

7.7 Spill Control Procedures

Spills associated with site activities may be attributed to project 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.

7.8 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.

APPENDIX A
SITE SAFETY ACKNOWLEDGEMENT FORM



DAILY BRIEFING SIGN-IN SHEET

Date: _____ Person Conducting Briefing: _____

Project Name and Location: _____

1. AWARENESS (topics discussed, special safety concerns, recent incidents, etc...):

2. OTHER ISSUES (HASp changes, attendee comments, etc...):

3. ATTENDEES (Print Name):

1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

APPENDIX B
SITE SAFETY PLAN AMENDMENTS

SITE SAFETY PLAN AMENDMENT FORM

Site Safety Plan Amendment #: _____

Site Name: _____

Reason for Amendment: _____

Alternative Procedures: _____

Required Changes in PPE: _____

Project Superintendent (signature)

Date

Health and Safety Consultant (signature)

Date

Site Safety Officer (signature)

Date

APPENDIX C

CHEMICAL HAZARDS

CHEMICAL HAZARDS

The attached International Chemical Safety Cards are provided for contaminants of concern that have been identified in soils and/or groundwater at the site.

International Chemical Safety Cards

TOLUENE

ICSC: 0078



Methylbenzene
Toluol
Phenylmethane
 $C_6H_5CH_3 / C_7H_8$
Molecular mass: 92.1

ICSC # 0078
CAS # 108-88-3
RTECS # [XS5250000](#)
UN # 1294
EC # 601-021-00-3
October 10, 2002 Peer reviewed



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	STORAGE	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	Fireproof. Separated from strong oxidants.	F symbol Xn symbol R: 11-38-48/20-63-65-67 S: 2-36/37-46-62 UN Hazard Class: 3 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0078

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

TOLUENE

ICSC: 0078

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>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.</p> <p>CHEMICAL DANGERS: Reacts violently with strong oxidants causing fire and explosion hazard.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 50 ppm as TWA (skin) A4 BEI issued (ACGIH 2004). MAK: 50 ppm 190 mg/m³ H Peak limitation category: II(4) Pregnancy risk group: C (DFG 2004). OSHA PEL[†]: TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak) NIOSH REL: TWA 100 ppm (375 mg/m³) ST 150 ppm (560 mg/m³) NIOSH IDLH: 500 ppm See: 108883</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.</p> <p>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.</p> <p>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.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>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</p>	<p>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</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is toxic to aquatic organisms.</p>	
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NOTES

Depending on the degree of exposure, periodic medical examination is suggested. Use of alcoholic beverages enhances the harmful effect.

Transport Emergency Card: TEC (R)-30S1294
NFPA Code: H 2; F 3; R 0;

ADDITIONAL INFORMATION

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ICSC: 0078 **TOLUENE**

(C) IPCS, CEC, 1994

<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

TETRACHLOROETHYLENE

ICSC: 0076



1,1,2,2-Tetrachloroethylene
 Perchloroethylene
 Tetrachloroethene
 $C_2Cl_4 / Cl_2C=CCl_2$
 Molecular mass: 165.8

ICSC # 0076
 CAS # 127-18-4
 RTECS # [KX3850000](#)
 UN # 1897
 EC # 602-028-00-4
 April 13, 2000 Validated



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			
EXPOSURE		STRICT HYGIENE! PREVENT GENERATION OF MISTS!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea. Weakness. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Dry skin. Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety goggles , face shield .	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Give plenty of water to drink. Rest.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. 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 let this chemical enter the environment. Personal protection: filter respirator for organic gases and vapours.	Separated from metals ,(see Chemical Dangers), food and feedstuffs . Keep in the dark. Ventilation along the floor.	Do not transport with food and feedstuffs. Marine pollutant. Xn symbol N symbol R: 40-51/53 S: (2-)23-36/37-61 UN Hazard Class: 6.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0076

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

TETRACHLOROETHYLENE

ICSC: 0076

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: The vapour is heavier than air.</p> <p>CHEMICAL DANGERS: On contact with hot surfaces or flames this substance decomposes forming toxic and corrosive fumes (hydrogen chloride, phosgene, chlorine). The substance decomposes slowly on contact with moisture producing trichloroacetic acid and hydrochloric acid. Reacts with metals such as aluminium, lithium, barium, beryllium.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 25 ppm as TWA, 100 ppm as STEL; A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued; (ACGIH 2004). MAK: skin absorption (H); Carcinogen category: 3B; (DFG 2004). OSHA PEL⁺: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 3-hours) NIOSH REL: Ca Minimize workplace exposure concentrations. See Appendix A NIOSH IDLH: Ca 150 ppm See: 127184</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance is irritating to the eyes , the skin and the respiratory tract . If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system. Exposure at high levels may result in unconsciousness.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the liver and kidneys. This substance is probably carcinogenic to humans.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 121°C Melting point: -22°C Relative density (water = 1): 1.6 Solubility in water, g/100 ml at 20°C: 0.015</p>	<p>Vapour pressure, kPa at 20°C: 1.9 Relative vapour density (air = 1): 5.8 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.09 Octanol/water partition coefficient as log Pow: 2.9</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is toxic to aquatic organisms. The substance may cause long-term effects in the aquatic environment.</p>	
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NOTES

Depending on the degree of exposure, periodic medical examination is suggested. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding. An added stabilizer or inhibitor can influence the toxicological properties of this substance, consult an expert. Card has been partly updated in April 2005. See section Occupational Exposure Limits.

Transport Emergency Card: TEC (R)-61S1897

NFPA Code: H2; F0; R0;

ADDITIONAL INFORMATION

<p>ICSC: 0076</p>	<p>TETRACHLOROETHYLENE</p>
<p>(C) IPCS, CEC, 1994</p>	

<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only</p>
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modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

m-XYLENE

ICSC: 0085



meta-Xylene
1,3-Dimethylbenzene
m-Xylol
 $C_6H_4(CH_3)_2 / C_8H_{10}$
Molecular mass: 106.2

ICSC # 0085
CAS # 108-38-3
RTECS # [ZE2275000](#)
UN # 1307
EC # 601-022-00-9
August 03, 2002 Validated



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 27°C explosive vapour/air mixtures may be formed.	Above 27°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE!	
• INHALATION	Dizziness. Drowsiness. Headache. Nausea.	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.
• EYES	Redness. Pain.	Safety spectacles.	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	STORAGE	PACKAGING & LABELLING
Ventilation. 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 let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants strong acids	Note: C Xn symbol R: 10-20/21-38 S: 2-25 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0085

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

m-XYLENE

ICSC: 0085

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: As a result of flow, agitation, etc., electrostatic charges can be generated.</p> <p>CHEMICAL DANGERS: Reacts with strong acids strong oxidants</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 100 ppm as TWA 150 ppm as STEL A4 (ACGIH 2001). BEI (ACGIH 2001). MAK: 100 ppm 440 mg/m³ Peak limitation category: II(2) skin absorption (H); Pregnancy risk group: D (DFG 2005). EU OEL: 50 ppm as TWA 100 ppm as STEL (skin) (EU 2000). OSHA PEL[±]: TWA 100 ppm (435 mg/m³) NIOSH REL: TWA 100 ppm (435 mg/m³) ST 150 ppm (655 mg/m³) NIOSH IDLH: 900 ppm See: 95476</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance is irritating to the eyes and the skin The substance may cause effects on the central nervous system If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The liquid defats the skin. The substance may have effects on the central nervous system Animal tests show that this substance possibly causes toxicity to human reproduction or development.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 139°C Melting point: -48°C Relative density (water = 1): 0.86 Solubility in water: none Vapour pressure, kPa at 20°C: 0.8</p>	<p>Relative vapour density (air = 1): 3.7 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 27°C c.c. Auto-ignition temperature: 527°C Explosive limits, vol% in air: 1.1-7.0 Octanol/water partition coefficient as log Pow: 3.20</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is toxic to aquatic organisms.</p>	
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NOTES

Depending on the degree of exposure, periodic medical examination is indicated. The recommendations on this Card also apply to technical xylene. See ICSC 0084 o-Xylene and 0086 p-Xylene.

NFPA Code: H 2; F 3; R 0;
Transport Emergency Card: TEC (R)-30S1307-III

ADDITIONAL INFORMATION

ICSC: 0085	m-XYLENE
(C) IPCS, CEC, 1994	

<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

p-XYLENE

ICSC: 0086



para-Xylene
1,4-Dimethylbenzene
p-Xylol
 $C_6H_4(CH_3)_2 / C_8H_{10}$
Molecular mass: 106.2

ICSC # 0086
CAS # 106-42-3
RTECS # [ZE2625000](#)
UN # 1307
EC # 601-022-00-9
August 03, 2002 Validated



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 27°C explosive vapour/air mixtures may be formed.	Above 27°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
• INHALATION	Dizziness. Drowsiness. Headache. Nausea.	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.
• EYES	Redness. Pain.	Safety spectacles.	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	STORAGE	PACKAGING & LABELLING
Ventilation. 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 let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants, strong acids	Note: C Xn symbol R: 10-20/21-38 S: 2-25 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0086

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

p-XYLENE

ICSC: 0086

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: As a result of flow, agitation, etc., electrostatic charges can be generated.</p> <p>CHEMICAL DANGERS: Reacts with strong acids strong oxidants</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 100 ppm as TWA 150 ppm as STEL A4 (ACGIH 2001). BEI (ACGIH 2001). MAK: 100 ppm 440 mg/m³ Peak limitation category: II(2) skin absorption (H); Pregnancy risk group: D (DFG 2005). EU OEL: 50 ppm as TWA 100 ppm as STEL (skin) (EU 2000). OSHA PEL[±]: TWA 100 ppm (435 mg/m³) NIOSH REL: TWA 100 ppm (435 mg/m³) ST 150 ppm (655 mg/m³) NIOSH IDLH: 900 ppm See: 95476</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance is irritating to the eyes and the skin The substance may cause effects on the central nervous system If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The liquid defats the skin. The substance may have effects on the central nervous system. Animal tests show that this substance possibly causes toxicity to human reproduction or development.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 138°C Melting point: 13°C Relative density (water = 1): 0.86 Solubility in water: none Vapour pressure, kPa at 20°C: 0.9</p>	<p>Relative vapour density (air = 1): 3.7 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 27°C c.c. Auto-ignition temperature: 528°C Explosive limits, vol% in air: 1.1-7.0 Octanol/water partition coefficient as log Pow: 3.15</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is toxic to aquatic organisms.</p>	
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NOTES

Depending on the degree of exposure, periodic medical examination is indicated. The recommendations on this Card also apply to technical xylene. See ICSC 0084 o-Xylene and 0085 m-Xylene.

Transport Emergency Card: TEC (R)-30S1307-III
NFPA Code: H 2; F 3; R 0;

ADDITIONAL INFORMATION

ICSC: 0086	p-XYLENE
(C) IPCS, CEC, 1994	

<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

o-XYLENE

ICSC: 0084



ortho-Xylene
 1,2-Dimethylbenzene
 o-Xylol
 $C_6H_4(CH_3)_2 / C_8H_{10}$
 Molecular mass: 106.2

ICSC # 0084
 CAS # 95-47-6
 RTECS # [ZE2450000](#)
 UN # 1307
 EC # 601-022-00-9
 August 03, 2002 Validated



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 32°C explosive vapour/air mixtures may be formed.	Above 32°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea.	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.
•EYES	Redness. Pain.	Safety spectacles.	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	STORAGE	PACKAGING & LABELLING
Ventilation. 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 let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants and strong acids .	Note: C Xn symbol R: 10-20/21-38 S: 2-25 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0084

European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

o-XYLENE

ICSC: 0084

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: As a result of flow, agitation, etc., electrostatic charges can be generated.</p> <p>CHEMICAL DANGERS: Reacts with strong acids and strong oxidants .</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 100 ppm as TWA; 150 ppm as STEL A4 (ACGIH 2001). BEI specified by (ACGIH 2001). EU OEL: 50 ppm as TWA; 100 ppm as STEL (skin) (EU 2000). OSHA PEL[†]: TWA 100 ppm (435 mg/m³) NIOSH REL: TWA 100 ppm (435 mg/m³) ST 150 ppm (655 mg/m³) NIOSH IDLH: 900 ppm See: 95476</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance is irritating to the eyes and the skin . The substance may cause effects on the central nervous system . If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.</p> <p>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.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 144°C Melting point: -25°C Relative density (water = 1): 0.88 Solubility in water: none Vapour pressure, kPa at 20°C: 0.7</p>	<p>Relative vapour density (air = 1): 3.7 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 32°C c.c. Auto-ignition temperature: 463°C Explosive limits, vol% in air: 0.9-6.7 Octanol/water partition coefficient as log Pow: 3.12</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is toxic to aquatic organisms.</p>	
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NOTES

Depending on the degree of exposure, periodic medical examination is indicated. The recommendations on this Card also apply to technical xylene. See ICSC 0086 p-Xylene and 0085 m-Xylene.

Transport Emergency Card: TEC (R)-30S1307-III

NFPA Code: H 2; F 3; R 0;

Card has been partially updated in January 2008: see Occupational Exposure Limits.

ADDITIONAL INFORMATION

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ICSC: 0084	(C) IPCS, CEC, 1994	o-XYLENE
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<p>IMPORTANT LEGAL</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only</p>
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NOTICE:

modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

DICHLOROMETHANE

ICSC: 0058



Methylene chloride
DCM
CH₂Cl₂
Molecular mass: 84.9

ICSC # 0058
CAS # 75-09-2
RTECS # [PA8050000](#)
UN # 1593
EC # 602-004-00-3
December 04, 2000 Validated



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible under specific conditions. 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 (see Chemical Dangers).	Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS! STRICT HYGIENE!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea. Weakness. Unconsciousness. Death.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Dry skin. Redness. Burning sensation.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain. Severe deep burns.	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	Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Do NOT induce vomiting. Give plenty of water to drink. Rest.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: filter respirator for organic gases and vapours. Do NOT let this chemical enter the environment. Ventilation. 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.	Separated from metals (see Chemical Dangers), food and feedstuffs . Cool. Ventilation along the floor.	Do not transport with food and feedstuffs. Xn symbol R: 40 S: (2-)23-24/25-36/37 UN Hazard Class: 6.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0058

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

DICHLOROMETHANE

ICSC: 0058

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: The vapour is heavier than air. As a result of flow, agitation, etc., electrostatic charges can be generated.</p> <p>CHEMICAL DANGERS: On contact with hot surfaces or flames this substance decomposes forming toxic and corrosive fumes. Reacts violently with metals such as aluminium powder and magnesium powder, strong bases and strong oxidants causing fire and explosion hazard. Attacks some forms of plastic rubber and coatings.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 50 ppm as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued; (ACGIH 2004). MAK: Carcinogen category: 3A; (DFG 2004). OSHA PEL: 1910.1052 TWA 25 ppm ST 125 ppm NIOSH REL: Ca See Appendix A NIOSH IDLH: Ca 2300 ppm See: 75092</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance is irritating to the eyes , the skin and the respiratory tract . Exposure could cause lowering of consciousness. Exposure could cause the formation of methaemoglobin.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the central nervous system and liver . This substance is possibly carcinogenic to humans.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 40°C Melting point: -95.1°C Relative density (water = 1): 1.3 Solubility in water, g/100 ml at 20°C: 1.3 Vapour pressure, kPa at 20°C: 47.4</p>	<p>Relative vapour density (air = 1): 2.9 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.9 Auto-ignition temperature: 556°C Explosive limits, vol% in air: 12-25 Octanol/water partition coefficient as log Pow: 1.25</p>
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<p>ENVIRONMENTAL DATA</p>	<p>This substance may be hazardous in the environment; special attention should be given to ground water contamination.</p>	
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NOTES

Addition of small amounts of a flammable substance or an increase in the oxygen content of the air strongly enhances combustibility. Depending on the degree of exposure, periodic medical examination is suggested. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding. R30 is a trade name. Card has been partly updated in April 2005. See section Occupational Exposure Limits.

Transport Emergency Card: TEC (R)-61S1593

NFPA Code: H2; F1; R0;

ADDITIONAL INFORMATION

<p>ICSC: 0058</p>	<p>DICHLOROMETHANE</p>
<p>(C) IPCS, CEC, 1994</p>	

<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only</p>
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modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

METHYL TERT-BUTYL ETHER

ICSC: 1164



tert-Butyl methyl ether
 MTBE
 Methyl-1,1-dimethylethyl ether
 2-Methoxy-2-methyl propane
 $(\text{CH}_3)_3\text{COCH}_3 / \text{C}_5\text{H}_{12}\text{O}$
 Molecular mass: 88.2

ICSC # 1164
 CAS # 1634-04-4
 RTECS # [KN525000](#)
 UN # 2398
 EC # 603-181-00-X
 November 04, 2000 Validated



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking. NO contact with oxidants.	Powder, AFFF, foam, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE			
•INHALATION	Drowsiness. Dizziness. Headache. Weakness. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness.	Safety goggles or face shield.	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. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Give a slurry of activated charcoal in water to drink. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	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. Personal protection: filter respirator for organic gases and vapours.	Fireproof. Separated from strong oxidants, strong acids.	F symbol Xi symbol R: 11-38 S: 2-9-16-24 UN Hazard Class: 3 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1164

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

METHYL TERT-BUTYL ETHER

ICSC: 1164

<p>I M P O R T A N T A D V I S O R Y</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: The vapour is heavier than air and may travel along the ground; distant ignition possible.</p> <p>CHEMICAL DANGERS: Reacts violently with strong oxidants causing fire hazard. The substance decomposes on contact with acids.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 50 ppm as TWA; A3; (ACGIH 2004). MAK: 50 ppm, 180 mg/m³; Peak limitation category: I(1.5); Carcinogen category: 3B; Pregnancy risk group: C; (DFG 2004).</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance is irritating to the skin. If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. Exposure far above the OEL could cause lowering of consciousness.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 55°C Melting point: -109°C Relative density (water = 1): 0.7 Solubility in water, g/100 ml at 20°C: 4.2 Vapour pressure, kPa at 20°C: 27 Relative vapour density (air = 1): 3.0</p>	<p>Relative density of the vapour/air-mixture at 20°C (air = 1): 1.5 Flash point: -28°C c.c. Auto-ignition temperature: 375°C Explosive limits, vol% in air: 1.6-15.1 Octanol/water partition coefficient as log Pow: 1.06</p>
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<p>ENVIRONMENTAL DATA</p>	<p>It is strongly advised not to let the chemical enter into the environment because it persists in the environment.</p>	
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NOTES

Much less likely to form peroxides than other ethers. Card has been partly updated in October 2004. See sections Occupational Exposure Limits, EU classification, Emergency Response.

Transport Emergency Card: TEC (R)-30GF1-I+II

ADDITIONAL INFORMATION

ICSC: 1164

METHYL TERT-BUTYL ETHER

(C) IPCS, CEC, 1994

<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

ETHYLBENZENE

ICSC: 0268



Ethylbenzol
Phenylethane
EB

$C_8H_{10} / C_6H_5C_2H_5$

Molecular mass: 106.2

ICSC # 0268

CAS # 100-41-4

RTECS # [DA0700000](#)

UN # 1175

EC # 601-023-00-4

March 13, 1995 Validated



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. Do NOT use compressed air for filling, discharging, or handling.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
• INHALATION	Cough. Dizziness. Drowsiness. Headache.	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.
• EYES	Redness. Pain. Blurred vision.	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	(Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Give a slurry of activated charcoal in water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Collect leaking liquid in covered containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Personal protection: A filter respirator for organic gases and vapours.	Fireproof. Separated from strong oxidants.	F symbol Xn symbol R: 11-20 S: 2-16-24/25-29 UN Hazard Class: 3 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0268

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ETHYLBENZENE

ICSC: 0268

I M P O R T A N T D A T A	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID, WITH AROMATIC ODOUR.</p> <p>PHYSICAL DANGERS: The vapour mixes well with air, explosive mixtures are easily formed.</p> <p>CHEMICAL DANGERS: Reacts with strong oxidants. Attacks plastic and rubber.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 100 ppm as TWA 125 ppm as STEL A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued (ACGIH 2005). MAK: skin absorption (H); Carcinogen category: 3A; (DFG 2004). OSHA PEL[†]: TWA 100 ppm (435 mg/m³) NIOSH REL: TWA 100 ppm (435 mg/m³) ST 125 ppm (545 mg/m³) NIOSH IDLH: 800 ppm 10%LEL See: 100414</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its vapour, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.</p> <p>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 system Exposure far above the OEL could cause lowering of consciousness.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact with skin may cause dermatitis.</p>
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PHYSICAL PROPERTIES	<p>Boiling point: 136°C Melting point: -95°C Relative density (water = 1): 0.9 Solubility in water, g/100 ml at 20°C: 0.015 Vapour pressure, kPa at 20°C: 0.9 Relative vapour density (air = 1): 3.7</p>	<p>Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 18°C c.c. Auto-ignition temperature: 432°C Explosive limits, vol% in air: 1.0-6.7 Octanol/water partition coefficient as log Pow: 3.2</p>
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ENVIRONMENTAL DATA	<p>The substance is harmful to aquatic organisms.</p>	
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NOTES

The odour warning when the exposure limit value is exceeded is insufficient.

Transport Emergency Card: TEC (R)-30S1175 or 30GF1-I+II
NFPA Code: H2; F3; R0

ADDITIONAL INFORMATION

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ICSC: 0268 **ETHYLBENZENE**

(C) IPCS, CEC, 1994

IMPORTANT LEGAL NOTICE:	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

DICHLORODIFLUOROMETHANE

ICSC: 0048



Difluorodichloromethane
 R 12
 CFC 12
 CCl_2F_2
 Molecular mass: 120.9
 (cylinder)

ICSC # 0048
 CAS # 75-71-8
 RTECS # [PA8200000](#)
 UN # 1028
 July 03, 2002 Validated



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			In case of fire: keep cylinder cool by spraying with water.
EXPOSURE			
•INHALATION	Cardiac arrhythmia. Confusion. Drowsiness. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	ON CONTACT WITH LIQUID: FROSTBITE.	Cold-insulating gloves.	ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. 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.	

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation.	Separated from incompatible materials . See Chemical Dangers. Cool. Ventilation along the floor.	Special insulated cylinder. UN Hazard Class: 2.2

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0048 Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

DICHLORODIFLUOROMETHANE

ICSC: 0048

<p>I M P O R T A N T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS COMPRESSED LIQUEFIED GAS , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: The gas is heavier than air and may accumulate in low ceiling spaces causing deficiency of oxygen.</p> <p>CHEMICAL DANGERS: On contact with hot surfaces or flames this substance decomposes forming toxic and corrosive gases(hydrogen chloride ICSC 0163,phosgene ICSC 0007,hydrogen fluoride ICSC 0283,carbonyl fluoride ICSC 0633). Reacts violently with metals such as zinc and powdered aluminium . Attacks magnesium and its alloys.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 1000 ppm as TWA A4 (ACGIH 2001). MAK: 1000 ppm; 5000 mg/m³; IV, C (DFG 2001). OSHA PEL: TWA 1000 ppm (4950 mg/m³) NIOSH REL: TWA 1000 ppm (4950 mg/m³) NIOSH IDLH: 15,000 ppm See: 75718</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation.</p> <p>INHALATION RISK: On loss of containment this liquid evaporates very quickly displacing the air and causing a serious risk of suffocation when in confined areas.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: Rapid evaporation of the liquid may cause frostbite. The substance may cause effects on the cardiovascular system and central nervous system , resulting in cardiac disorders and central nervous system depression. Exposure could cause lowering of consciousness. See Notes.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:</p>
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PHYSICAL PROPERTIES	<p>Boiling point: -30°C Melting point: -158°C Relative density (water = 1): 1.5 Solubility in water, g/100 ml at 20°C: 0.03</p>	<p>Vapour pressure, kPa at 20°C: 568 Relative vapour density (air = 1): 4.2 Octanol/water partition coefficient as log Pow: 2.16</p>
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ENVIRONMENTAL DATA	<p>This substance may be hazardous to the environment; special attention should be given to its impact on the ozone layer.</p>	
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NOTES

High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death. Check oxygen content before entering area. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding. Turn leaking cylinder with the leak up to prevent escape of gas in liquid state. Freon 12, Frigen 12, Halon 122 are trade names.

Transport Emergency Card: TEC (R)-20G2A

ADDITIONAL INFORMATION

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ICSC: 0048	(C) IPCS, CEC, 1994	DICHLORODIFLUOROMETHANE
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IMPORTANT LEGAL NOTICE:	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

CHLOROFORM

ICSC: 0027



Trichloromethane
Methane trichloride
Formyl trichloride
CHCl₃

Molecular mass: 119.4

ICSC # 0027
CAS # 67-66-3
RTECS # [FS9100000](#)
UN # 1888
EC # 602-006-00-4
November 04, 2000 Validated



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. See Notes. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF ADOLESCENTS AND CHILDREN!	
•INHALATION	Cough. Dizziness. Drowsiness. Headache. Nausea. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Redness. Pain. Dry skin.	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. Vomiting. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Give plenty of water to drink. Rest. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Consult an expert! 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 let this chemical enter the environment. Personal protection: complete protective clothing including self-contained breathing apparatus.	Separated from food and feedstuffs and incompatible materials ,(see Chemical Dangers). Ventilation along the floor.	Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs. Xn symbol R: 22-38-40-48/20/22 S: 2-36/37 UN Hazard Class: 6.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the

ICSC: 0027

European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

CHLOROFORM

ICSC: 0027

<p style="text-align: center;">I M P O R T A N T A D V E R T I S E</p>	<p>PHYSICAL STATE; APPEARANCE: VOLATILE COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: The vapour is heavier than air.</p> <p>CHEMICAL DANGERS: On contact with hot surfaces or flames this substance decomposes forming toxic and corrosive fumes (hydrogen chloride ICSC0163,phosgene ICSC0007 andchlorine fumes ICSC0126). Reacts violently withstrong bases,strong oxidants, some metals, such as aluminium, magnesium and zinc, causing fire and explosion hazard. Attacks plastic, rubber and coatings.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 10 ppm as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans); (ACGIH 2004). MAK: 0.5 ppm, 2.5 mg/m³; Peak limitation category: II(2); skin absorption (H); Carcinogen category: 4; Pregnancy risk group: C; (DFG 2004). OSHA PEL[†]: C 50 ppm (240 mg/m³) NIOSH REL: Ca ST 2 ppm (9.78 mg/m³) 60-minute See Appendix A NIOSH IDLH: Ca 500 ppm See: 67663</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance is irritating to the eyes . The substance may cause effects on the central nervous system , liver and kidneys . The effects may be delayed. Medical observation is indicated.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The liquid defats the skin. The substance may have effects on the liver and kidneys . This substance is possibly carcinogenic to humans.</p>
<p style="text-align: center;">PHYSICAL PROPERTIES</p>	<p>Boiling point: 62°C Melting point: -64°C Relative density (water = 1): 1.48 Solubility in water, g/100 ml at 20°C: 0.8</p>	<p>Vapour pressure, kPa at 20°C: 21.2 Relative vapour density (air = 1): 4.12 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.7 Octanol/water partition coefficient as log Pow: 1.97</p>
<p style="text-align: center;">ENVIRONMENTAL DATA</p>	<p>The substance is toxic to aquatic organisms.</p> 	
NOTES		
<p>Turns combustible on addition of small amounts of a flammable substance or an increase in the oxygen content of the air. 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. Do NOT use in the vicinity of a fire or a hot surface, or during welding. Card has been partly updated in April 2005. See section Occupational Exposure Limits.</p> <p style="text-align: right;">Transport Emergency Card: TEC (R)-61S1888</p> <p style="text-align: right;">NFPA Code: H 2; F 0; R 0;</p>		
ADDITIONAL INFORMATION		
<p>ICSC: 0027 CHLOROFORM</p> <p style="text-align: center;">(C) IPCS, CEC, 1994</p>		

**IMPORTANT
LEGAL
NOTICE:**

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International Chemical Safety Cards

ACETONE

ICSC: 0087



2-Propanone
Dimethyl ketone
Methyl ketone
 C_3H_6O / CH_3COCH_3
Molecular mass: 58.1

ICSC # 0087
CAS # 67-64-1
RTECS # [AL3150000](#)
UN # 1090
EC # 606-001-00-8
April 22, 1994 Validated
Fi, review at IHE: 10/09/89



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking.	Powder, alcohol-resistant foam, water in large amounts, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE			
•INHALATION	Sore throat. Cough. Confusion. Headache. Dizziness. Drowsiness. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Dry skin.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness. Pain. Blurred vision. Possible corneal damage.	Safety spectacles or face shield . Contact lenses should not be worn.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Nausea. Vomiting. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: self-contained breathing apparatus. 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. Then wash away with plenty of water.	Fireproof. Separated from strong oxidants. Store in an area without drain or sewer access.	F symbol Xi symbol R: 11-36-66-67 S: 2-9-16-26 UN Hazard Class: 3 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0087

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ACETONE

ICSC: 0087

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: The vapour is heavier than air and may travel along the ground; distant ignition possible.</p> <p>CHEMICAL DANGERS: The substance can form explosive peroxides on contact with strong oxidants such as acetic acid, nitric acid, hydrogen peroxide. Reacts with chloroform and bromoform under basic conditions, causing fire and explosion hazard. Attacks plastic.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 500 ppm as TWA, 750 ppm as STEL; A4 (not classifiable as a human carcinogen); BEI issued; (ACGIH 2004). MAK: 500 ppm 1200 mg/m³ Peak limitation category: I(2); Pregnancy risk group: D; (DFG 2006). OSHA PEL[±]: TWA 1000 ppm (2400 mg/m³) NIOSH REL: TWA 250 ppm (590 mg/m³) NIOSH IDLH: 2500 ppm 10%LEL See: 67641</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation and through the skin.</p> <p>INHALATION RISK: A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The vapour irritates the eyes and the respiratory tract. The substance may cause effects on the central nervous system , liver , kidneys and gastrointestinal tract .</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the blood and bone marrow .</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 56°C Melting point: -95°C Relative density (water = 1): 0.8 Solubility in water: miscible Vapour pressure, kPa at 20°C: 24</p>	<p>Relative vapour density (air = 1): 2.0 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.2 Flash point: -18°C c.c. Auto-ignition temperature: 465°C Explosive limits, vol% in air: 2.2-13 Octanol/water partition coefficient as log Pow: -0.24</p>
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<p>ENVIRONMENTAL DATA</p>	
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NOTES

Use of alcoholic beverages enhances the harmful effect.

Transport Emergency Card: TEC (R)-30S1090

NFPA Code: H 1; F 3; R 0;

Card has been partially updated in July 2007: see Occupational Exposure Limits.
Card has been partially updated in January 2008: see Storage.

ADDITIONAL INFORMATION

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ICSC: 0087	ACETONE
(C) IPCS, CEC, 1994	

<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

BENZENE

ICSC: 0015



Cyclohexatriene
Benzol
C₆H₆
Molecular mass: 78.1

ICSC # 0015
CAS # 71-43-2
RTECS # [CY1400000](#)
UN # 1114
EC # 601-020-00-8
May 06, 2003 Peer reviewed



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	STORAGE	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.	Fireproof. Separated from food and feedstuffs oxidants halogens	Do not transport with food and feedstuffs. Note: E F symbol T symbol R: 45-46-11-36/38-48/23/24/25-65 S: 53-45 UN Hazard Class: 3 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0015

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZENE

ICSC: 0015

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>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.</p> <p>CHEMICAL DANGERS: Reacts violently with oxidants, nitric acid, sulfuric acid and halogens causing fire and explosion hazard. Attacks plastic and rubber.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 0.5 ppm as TWA 2.5 ppm as STEL (skin) A1 BEI (ACGIH 2004). MAK: H Carcinogen category: 1 Germ cell mutagen group: 3A (DFG 2004). OSHA PEL: 1910.1028 TWA 1 ppm ST 5 ppm See Appendix F NIOSH REL: Ca TWA 0.1 ppm ST 1 ppm See Appendix A NIOSH IDLH: Ca 500 ppm See: 71432</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation through the skin and by ingestion</p> <p>INHALATION RISK: A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.</p> <p>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 system , resulting in lowering of consciousness Exposure far above the occupational exposure limit value may result in unconsciousness death</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The liquid defats the skin. The substance may have effects on the bone marrow immune system , resulting in a decrease of blood cells. This substance is carcinogenic to humans.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>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</p>	<p>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</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is very toxic to aquatic organisms.</p>	
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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.

Transport Emergency Card: TEC (R)-30S1114 / 30GF1-II
NFPA Code: H2; F3; R0

ADDITIONAL INFORMATION

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ICSC: 0015 **BENZENE**

(C) IPCS, CEC, 1994

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International Chemical Safety Cards

1,3,5-TRIMETHYLBENZENE

ICSC: 1155



Mesitylene
 C_9H_{12}
 Molecular mass: 120.2

ICSC # 1155
 CAS # 108-67-8
 RTECS # [OX6825000](#)
 UN # 2325
 EC # 601-025-00-5
 March 06, 2002 Peer reviewed



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Alcohol-resistant foam, dry powder, carbon dioxide.
EXPLOSION	Above 50°C explosive vapour/air mixtures may be formed.	Above 50°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
•INHALATION	Confusion. Cough. Dizziness. Drowsiness. Headache. Sore throat. Vomiting.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness. Dry skin.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	(See Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
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. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants. Well closed. Keep in a well-ventilated room.	Marine pollutant. Xi symbol N symbol R: 10-37-51/53 S: 2-61 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1155

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

1,3,5-TRIMETHYLBENZENE

ICSC: 1155

<p>I M P O R T A N T N O T I C E</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS:</p> <p>CHEMICAL DANGERS: The substance decomposes on burning producing toxic and irritating fumes. Reacts violently with strong oxidants causing fire and explosion hazard.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV (as mixed isomers): 25 ppm; (ACGIH 2001). MAK (all isomers): 20 ppm; 100 mg/m³; class II 1 © (2001) OSHA PEL[†]: none NIOSH REL: TWA 25 ppm (125 mg/m³) NIOSH IDLH: N.D. See: IDLH INDEX</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation.</p> <p>INHALATION RISK: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance is irritating to the eyes the skin and the respiratory tract If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The liquid defats the skin. Lungs may be affected by repeated or prolonged exposure, resulting in chronic bronchitis. The substance may have effects on the central nervous system blood See Notes.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 165°C Melting point: -45°C Relative density (water = 1): 0.86 Solubility in water: very poor Vapour pressure, kPa at 20°C: 0.25</p>	<p>Relative vapour density (air = 1): 4.1 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.01 Flash point: 50°C (c.c.) Auto-ignition temperature: 550°C Octanol/water partition coefficient as log Pow: 3.42</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is harmful to aquatic organisms. Bioaccumulation of this chemical may occur in fish.</p>	
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NOTES

Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is indicated. See ICSC 1433 1,2,4-Trimethylbenzene (Pseudocumene), ICSC 1362 1,2,3-Trimethylbenzene (Hemimellitene), ICSC 1389 Trimethylbenzene (mixed isomers).

Transport Emergency Card: TEC (R)-30S2325
NFPA Code: H0; F2; R0

ADDITIONAL INFORMATION

ICSC: 1155	1,3,5-TRIMETHYLBENZENE
(C) IPCS, CEC, 1994	

<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

1,2,4-TRIMETHYLBENZENE

ICSC: 1433



Pseudocumene
 C_9H_{12}
 Molecular mass: 120,2

ICSC # 1433
 CAS # 95-63-6
 RTECS # [DC3325000](#)
 UN # 1993
 EC # 601-043-00-3
 March 06, 2002 Peer reviewed



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Alcohol-resistant foam, dry powder, carbon dioxide.
EXPLOSION	Above 44°C explosive vapour/air mixtures may be formed.	Above 44°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
• INHALATION	Confusion. Cough. Dizziness. Drowsiness. Headache. Sore throat. Vomiting.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
• SKIN	Redness. Dry skin.	Protective gloves.	Rinse skin with plenty of water or shower.
• EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• INGESTION	(See Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
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: filter respirator for organic gases and vapours.	Fireproof. Separated from strong oxidants. Well closed. Keep in a well-ventilated room.	Xn symbol N symbol R: 10-20-36/37/38-51/53 S: 2-26-61 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1433

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

1,2,4-TRIMETHYLBENZENE

ICSC: 1433

I M P O R T A N T D A T A	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS:</p> <p>CHEMICAL DANGERS: The substance decomposes on burning producing toxic and irritating fumes Reacts violently with strong oxidants causing fire and explosion hazard.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: (as mixed isomers) 25 ppm as TWA (ACGIH 2004). MAK: (as mixed isomers) 20 ppm 100 mg/m³ Peak limitation category: II(2) Pregnancy risk group: C (DFG 2004). OSHA PEL[†]: none NIOSH REL: TWA 25 ppm (125 mg/m³) NIOSH IDLH: N.D. See: IDLH INDEX</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation.</p> <p>INHALATION RISK: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance is irritating to the eyes the skin and the respiratory tract If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The liquid defats the skin. Lungs may be affected by repeated or prolonged exposure , resulting in chronic bronchitis The substance may have effects on the central nervous system blood See Notes.</p>
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PHYSICAL PROPERTIES	<p>Boiling point: 169°C Melting point: -44°C Relative density (water = 1): 0.88 Solubility in water: very poor Relative vapour density (air = 1): 4.1</p>	<p>Relative density of the vapour/air-mixture at 20°C (air = 1): 1.01 Flash point: 44°C c.c. Auto-ignition temperature: 500°C Explosive limits, vol% in air: 0.9-6.4 Octanol/water partition coefficient as log Pow: 3.8</p>
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ENVIRONMENTAL DATA	<p>The substance is toxic to aquatic organisms. Bioaccumulation of this chemical may occur in fish.</p>	
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NOTES

Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is suggested. See also ICSC 1155 1,3,5-Trimethylbenzene (Mesitylene), ICSC 1362 1,2,3-Trimethylbenzene (Hemimellitene), ICSC 1389 Trimethylbenzene (mixed isomers). 1,3,5-Trimethylbenzene (Mesitylene) is classified as a marine pollutant.

Transport Emergency Card: TEC (R)-30GF1-III
NFPA Code: H0; F2; R0;

ADDITIONAL INFORMATION

ICSC: 1433	1,2,4-TRIMETHYLBENZENE
<small>(C) IPCS, CEC, 1994</small>	

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International Chemical Safety Cards

1,1,1-TRICHLOROETHANE

ICSC: 0079



Methyl chloroform
 Methyltrichloromethane
 alpha-Trichloroethane
 $C_2H_3Cl_3 / CCl_3CH_3$
 Molecular mass: 133.4

ICSC # 0079
 CAS # 71-55-6
 RTECS # [KJ2975000](#)
 UN # 2831
 EC # 602-013-00-2
 April 19, 2007 Validated



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible under specific conditions. Heating will cause rise in pressure with risk of bursting. Gives off irritating or toxic fumes (or gases) in a fire. See Notes.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
•INHALATION	Cough. Sore throat. Headache. Dizziness. Drowsiness. Nausea. Ataxia. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Dry skin. Redness.	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	Nausea. Vomiting. Abdominal pain. Diarrhoea. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Do NOT induce vomiting. Rinse mouth. Give a slurry of activated charcoal in water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: self-contained breathing apparatus. Ventilation. Collect leaking and spilled liquid in sealable, suitable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment.	Separated from food and feedstuffs and strong oxidants, aluminium, manganese and zinc. Cool. Dry. Store in an area without drain or sewer access.	Do not transport with food and feedstuffs. Note: F Xn symbol N symbol R: 20-59 S: 2-24/25-59-61 UN Hazard Class: 6.1 UN Packing Group: III Signal: Warning

Excl mark-Health haz
 Causes mild skin irritation
 Causes eye irritation
 May cause drowsiness or dizziness
 May cause damage to cardiovascular system if inhaled
 Harmful to aquatic life

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0079

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

1,1,1-TRICHLOROETHANE

ICSC: 0079

<p>I M P O R T A N T I N F O R M A T I O N</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: The vapour is heavier than air.</p> <p>CHEMICAL DANGERS: The substance decomposes on burning, producing toxic and corrosive fumes . Reacts violently with aluminium and its alloys with magnesium, bases , strong oxidants , acetone, and zinc</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 350 ppm as TWA, 450 ppm as STEL; A4 (not classifiable as a human carcinogen); BEI issued (ACGIH 2006). MAK: 200 ppm, 1100 mg/m³; Peak limitation category: II(1); skin absorption (H); Pregnancy risk group: C; (DFG 2006). OSHA PEL[±]: TWA 350 ppm (1900 mg/m³) NIOSH REL: C 350 ppm (1900 mg/m³) 15-minute See Appendix C (Chloroethanes) NIOSH IDLH: 700 ppm See: 71556</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its vapour and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance is mildly irritating to the eyes , the respiratory tract and the skin . The substance may cause effects on the central nervous system , resulting in lowering of consciousness . Exposure at high levels may result in cardiac dysrhythmia.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The liquid defats the skin.</p>
<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 74°C Melting point: -30°C Relative density (water = 1): 1.34 Solubility in water: (poor) Vapour pressure, kPa at 20°C: 13.3</p>	<p>Relative vapour density (air = 1): 4.6 Flash point: see Notes Auto-ignition temperature: 537°C Explosive limits, vol% in air: 8-16 Octanol/water partition coefficient as log Pow: 2.49</p>
<p>ENVIRONMENTAL DATA</p>	<p>The substance is harmful to aquatic organisms.</p>	

NOTES

Combustible vapour/air mixtures difficult to ignite, may be developed under certain conditions. The substance burns only in excess oxygen or if a strong source of ignition is present. Do NOT use in the vicinity of a fire or a hot surface, or during welding. Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is suggested. An added stabilizer or inhibitor can influence the toxicological properties of this substance, consult an expert.

Transport Emergency Card: TEC (R)-61S2831 or 61GTI-III

NFPA Code: H2; F1; R0

Card has been partially updated in February 2009: see Chemical Dangers.

ADDITIONAL INFORMATION

ICSC: 0079

1,1,1-TRICHLOROETHANE

(C) IPCS, CEC, 1994

**IMPORTANT
LEGAL
NOTICE:**

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International Chemical Safety Cards

TRICHLOROFLUOROMETHANE

ICSC: 0047



Trichloromonofluoromethane
 Fluorotrichloromethane
 CFC 11
 R 11
 CCl_3F
 Molecular mass: 137.4

ICSC # 0047
 CAS # 75-69-4
 RTECS # [PB6125000](#)
 July 03, 2002 Validated

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			In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE			
•INHALATION	Cardiac arrhythmia. Confusion. Drowsiness. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	ON CONTACT WITH LIQUID: FROSTBITE. Dry skin.	Cold-insulating gloves.	ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. 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.	

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation.	Separated from incompatible materials . See Chemical Dangers. Cool.	

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0047

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

TRICHLOROFLUOROMETHANE

ICSC: 0047

I	PHYSICAL STATE; APPEARANCE: COLOURLESS GAS OR HIGHLY VOLATILE	ROUTES OF EXPOSURE: The substance can be absorbed into the body by
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PHYSICAL PROPERTIES	<p>Boiling point: 24°C Melting point: -111°C Relative density (water = 1): 1.49 Solubility in water, g/100 ml at 20°C: 0.1</p>	<p>Vapour pressure, kPa at 20°C: 89.0 Relative vapour density (air = 1): 4.7 Relative density of the vapour/air-mixture at 20°C (air = 1): 4.4 Octanol/water partition coefficient as log Pow: 2.53</p>
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ENVIRONMENTAL DATA	<p>This substance may be hazardous to the environment; special attention should be given to its impact on the ozone layer.</p>	
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NOTES

High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death. Check oxygen content before entering area. The occupational exposure limit value should not be exceeded during any part of the working exposure. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding. Turn leaking cylinder with the leak up to prevent escape of gas in liquid state. Freon 11, Frigen 11, Halon 11 are trade names. Card has been partly updated in October 2004. See sections Occupational Exposure Limits, EU classification, Emergency Response.

ADDITIONAL INFORMATION

ICSC: 0047	TRICHLOROFLUOROMETHANE
(C) IPCS, CEC, 1994	

IMPORTANT LEGAL NOTICE:	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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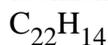
International Chemical Safety Cards

DIBENZO(a,h)ANTHRACENE

ICSC: 0431



1,25,6-Dibenzanthracene



Molecular mass: 278.4

ICSC # 0431
 CAS # 53-70-3
 RTECS # [HN2625000](#)
 EC # 601-041-00-2
 October 23, 1995 Peer reviewed



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	STORAGE	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.	Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0431

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

DIBENZO(a,h)ANTHRACENE

ICSC: 0431

I	PHYSICAL STATE; APPEARANCE: COLOURLESS CRYSTALLINE POWDER.	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.
M	PHYSICAL DANGERS:	INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration
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CHEMICAL DANGERS:

of airborne particles can, however, be reached quickly.

OCCUPATIONAL EXPOSURE LIMITS:

TLV not established.

EFFECTS OF SHORT-TERM EXPOSURE:

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).

ADDITIONAL INFORMATION

ICSC: 0431

DIBENZO(a,h)ANTHRACENE

(C) IPCS, CEC, 1994

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International Chemical Safety Cards

CHRYSENE

ICSC: 1672



Benzoaphenanthrene
1,2-Benzophenanthrene
1,2,5,6-Dibenzonaphthalene
 $C_{18}H_{12}$
Molecular mass: 228.3

ICSC # 1672
CAS # 218-01-9
RTECS # [GC0700000](#)
UN # 3077
EC # 601-048-00-0
October 12, 2006 Validated



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray. Dry powder. Foam. Carbon dioxide.
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.	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	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	STORAGE	PACKAGING & LABELLING
Personal protection: P3 filter respirator for toxic particles. 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.	Separated from strong oxidants, Provision to contain effluent from fire extinguishing. Store in an area without drain or sewer access.	T symbol N symbol R: 45-68-50/53 S: 53-45-60-61 UN Hazard Class: 9 UN Packing Group: III Signal: Warning Aqua-Cancer Suspected of causing cancer Very toxic to aquatic life with long lasting effects Very toxic to aquatic life

SEE IMPORTANT INFORMATION ON BACK

International Chemical Safety Cards

CHRYSENE

ICSC: 1672

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS TO BEIGE CRYSTALS OR POWDER</p> <p>PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air.</p> <p>CHEMICAL DANGERS: The substance decomposes on burning producing toxic fumes Reacts violently with strong oxidants</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: A3 (confirmed animal carcinogen with unknown relevance to humans); (ACGIH 2006). MAK not established.</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful concentration of airborne particles can be reached quickly when dispersed</p> <p>EFFECTS OF SHORT-TERM EXPOSURE:</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: This substance is possibly carcinogenic to humans.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 448°C Melting point: 254 - 256°C Density: 1.3 g/cm³</p>	<p>Solubility in water: very poor Octanol/water partition coefficient as log Pow: 5.9</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is very toxic to aquatic organisms. Bioaccumulation of this chemical may occur in seafood. It is strongly advised that this substance does not enter the environment.</p>	
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NOTES

Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home. This substance does not usually occur as a pure substance but as a component of polyaromatic hydrocarbon (PAH) mixtures. Human population studies have associated PAH's exposure with cancer and cardiovascular diseases.

Transport Emergency Card: TEC (R)-90GM7-III

ADDITIONAL INFORMATION

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ICSC: 1672

CHRYSENE

(C) IPCS, CEC, 1994

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International Chemical Safety Cards

BENZO(k)FLUORANTHENE

ICSC: 0721



Dibenzo(b,jk)fluorene
8,9-Benzofluoranthene
11,12-Benzofluoranthene
 $C_{20}H_{12}$
Molecular mass: 252.3

ICSC # 0721
CAS # 207-08-9
RTECS # [DF6350000](#)
EC # 601-036-00-5
March 25, 1999 Peer reviewed



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	STORAGE	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.	Provision to contain effluent from fire extinguishing. Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0721

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZO(k)FLUORANTHENE

ICSC: 0721

I M	PHYSICAL STATE; APPEARANCE: YELLOW CRYSTALS	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol and through the skin.
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PHYSICAL DANGERS:

CHEMICAL DANGERS:

Upon heating, toxic fumes are formed.

OCCUPATIONAL EXPOSURE LIMITS:

TLV not established.

MAK:

Carcinogen category: 2;
(DFG 2004).

INHALATION RISK:

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.

EFFECTS OF SHORT-TERM EXPOSURE:

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/m³. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

ICSC: 0721

BENZO(k)FLUORANTHENE

(C) IPCS, CEC, 1994

IMPORTANT LEGAL NOTICE:

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International Chemical Safety Cards

BENZO(b)FLUORANTHENE

ICSC: 0720



Benz(e)acephenanthrylene
 2,3-Benzofluoranthene
 Benzo(e)fluoranthene
 3,4-Benzofluoranthene
 $C_{20}H_{12}$
 Molecular mass: 252.3

ICSC # 0720
 CAS # 205-99-2
 RTECS # [CU1400000](#)
 EC # 601-034-00-4
 March 25, 1999 Peer reviewed



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	STORAGE	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.	Provision to contain effluent from fire extinguishing. Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0720

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZO(b)FLUORANTHENE

ICSC: 0720

I	PHYSICAL STATE; APPEARANCE: COLOURLESS CRYSTALS	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation
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PHYSICAL DANGERS:

CHEMICAL DANGERS:

Upon heating, toxic fumes are formed.

OCCUPATIONAL EXPOSURE LIMITS:

TLV: A2 (suspected human carcinogen); (ACGIH 2004).

MAK:

Carcinogen category: 2;

(DFG 2004).

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 SHORT-TERM EXPOSURE:

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/m³. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

ICSC: 0720

BENZO(b)FLUORANTHENE

(C) IPCS, CEC, 1994

IMPORTANT LEGAL NOTICE:

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International Chemical Safety Cards

BENZO(a)PYRENE

ICSC: 0104



Benz(a)pyrene
3,4-Benzopyrene
Benzo(d,e,f)chrysene
 $C_{20}H_{12}$
Molecular mass: 252.3

ICSC # 0104
CAS # 50-32-8
RTECS # [DJ3675000](#)
EC # 601-032-00-3
October 17, 2005 Peer reviewed



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	STORAGE	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.	Separated from strong oxidants.	T symbol N symbol R: 45-46-60-61-43-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0104

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZO(a)PYRENE

ICSC: 0104

<p>I M P O R T A N T A D V I S I O N</p>	<p>PHYSICAL STATE; APPEARANCE: PALE-YELLOW CRYSTALS</p> <p>PHYSICAL DANGERS:</p> <p>CHEMICAL DANGERS: Reacts with strong oxidants causing fire and explosion hazard.</p> <p>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).</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.</p> <p>INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE:</p> <p>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.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 496°C Melting point: 178.1°C Density: 1.4 g/cm³</p>	<p>Solubility in water: none (<0.1 g/100 ml) Vapour pressure : negligible Octanol/water partition coefficient as log Pow: 6.04</p>
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<p>ENVIRONMENTAL DATA</p>	<p>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.</p>	
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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

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ICSC: 0104	(C) IPCS, CEC, 1994	BENZO(a)PYRENE
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<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

BENZ(a)ANTHRACENE

ICSC: 0385



1,2-Benzoanthracene
Benzo(a)anthracene
2,3-Benzphenanthrene
Naphthanthracene
 $C_{18}H_{12}$
Molecular mass: 228.3

ICSC # 0385
CAS # 56-55-3
RTECS # [CV9275000](#)
EC # 601-033-00-9
October 23, 1995 Validated



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	STORAGE	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.	Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0385

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ICSC: 0385

BENZ(a)ANTHRACENE

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS TO YELLOW BROWN FLUORESCENT FLAKES OR POWDER.</p> <p>PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air.</p> <p>CHEMICAL DANGERS:</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: A2 (suspected human carcinogen); (ACGIH 2004). MAK: Carcinogen category: 2 (as pyrolysis product of organic materials) (DFG 2005).</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.</p> <p>INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE:</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: This substance is probably carcinogenic to humans.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Sublimation point: 435°C Melting point: 162°C Relative density (water = 1): 1.274 Solubility in water: none</p>	<p>Vapour pressure, Pa at 20°C: 292 Octanol/water partition coefficient as log Pow: 5.61</p>
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<p>ENVIRONMENTAL DATA</p>	<p>Bioaccumulation of this chemical may occur in seafood.</p>	
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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 and August 2006: see sections Occupational Exposure Limits, EU classification.

ADDITIONAL INFORMATION

<p>ICSC: 0385</p>	<p>BENZ(a)ANTHRACENE</p>
<p>(C) IPCS, CEC, 1994</p>	

<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

INDENO(1,2,3-cd)PYRENE

ICSC: 0730



o-Phenylenepyrene
2,3-Phenylenepyrene
 $C_{22}H_{12}$
Molecular mass: 276.3

ICSC # 0730
CAS # 193-39-5
RTECS # [NK9300000](#)
March 25, 1999 Peer reviewed

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	STORAGE	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.	Provision to contain effluent from fire extinguishing. Well closed.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0730

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

INDENO(1,2,3-cd)PYRENE

ICSC: 0730

I	PHYSICAL STATE; APPEARANCE: YELLOW CRYSTALS	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol and through the skin.
M	PHYSICAL DANGERS:	INHALATION RISK:
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CHEMICAL DANGERS:
Upon heating, toxic fumes are formed.

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.

OCCUPATIONAL EXPOSURE LIMITS:
TLV not established.
MAK:
Carcinogen category: 2;
(DFG 2004).

EFFECTS OF SHORT-TERM EXPOSURE:

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/m³. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

ICSC: 0730

INDENO(1,2,3-cd)PYRENE

(C) IPCS, CEC, 1994

IMPORTANT LEGAL NOTICE:

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International Chemical Safety Cards

DIELDRIN

ICSC: 0787



1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo-1,4-exo- 5,8-dimethanonaphthalene
3,4,5,6,9,9-Hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2alpha,3beta,6beta,6alpha,7beta,7alpha)-2,7,3,6-
dimethanonaphth(2,3-b)oxirene

HEOD

$C_{12}H_8Cl_6O$

Molecular mass: 380.9

ICSC # 0787

CAS # 60-57-1

RTECS # [IO1750000](#)

UN # 2761

EC # 602-049-00-9

March 26, 1998 Validated



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Liquid formulations containing organic solvents may be flammable. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: all extinguishing agents allowed.
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST! STRICT HYGIENE! AVOID EXPOSURE OF ADOLESCENTS AND CHILDREN!	
•INHALATION	(See Ingestion).	Ventilation (not if powder).	Fresh air, rest. Refer for medical attention.
•SKIN	MAY BE ABSORBED! See Ingestion.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
•EYES		Safety goggles, or face shield.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Convulsions. Dizziness. Headache. Nausea. Vomiting. Muscle twitching.	Do not eat, drink, or smoke during work. Wash hands before eating.	Give a slurry of activated charcoal in water to drink. Do NOT induce vomiting. Rest. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Do NOT wash away into sewer. Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. (Extra personal protection: chemical protection suit including self-contained breathing apparatus).	Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs and incompatible materials: See Chemical Dangers. Well closed. Keep in a well-ventilated room. Store in an area without drain or sewer access.	Do not transport with food and feedstuffs. Severe marine pollutant. T+ symbol N symbol R: 25-27-40-48/25-50/53 S: 1/2-22-36/37-45-60-61 UN Hazard Class: 6.1 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

International Chemical Safety Cards

DIELDRIN

ICSC: 0787

I M P O R T A N T D A T A	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS CRYSTALS</p> <p>PHYSICAL DANGERS:</p> <p>CHEMICAL DANGERS: The substance decomposes on heating producing toxic fumes including hydrogen chloride. Reacts with oxidants and acids. Attacks metal due to the slow formation of hydrogen chloride in storage.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV (as TWA): 0.25 mg/m³, A4 (skin) (ACGIH 1997). MAK: (Inhalable fraction) 0.25 mg/m³ ; Peak limitation category: II(8) skin absorption (H); (DFG 2007). OSHA PEL: TWA 0.25 mg/m³ skin NIOSH REL: Ca TWA 0.25 mg/m³ skin See Appendix A NIOSH IDLH: Ca 50 mg/m³ See: 60571</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body through the skin and by ingestion.</p> <p>INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly on spraying.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The substance may cause effects on the central nervous system, resulting in convulsions. Medical observation is indicated.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The substance accumulates in the human body. Cumulative effects are possible: see Acute Hazards/Symptoms.</p>
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PHYSICAL PROPERTIES	Melting point: 175-176°C Density: 1.7 g/cm ³ Solubility in water: none	Vapour pressure, Pa at 20°C: 0.0004 Octanol/water partition coefficient as log Pow: 6.2
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ENVIRONMENTAL DATA	The substance is very toxic to aquatic organisms. This substance may be hazardous to the environment; special attention should be given to honey bees, birds. In the food chain important to humans, bioaccumulation takes place, specifically in aquatic organisms. It is strongly advised not to let the chemical enter into the environment because it persists in the environment. The substance may cause long-term effects in the aquatic environment. Avoid release to the environment in circumstances different to normal use.	
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NOTES

Depending on the degree of exposure, periodic medical examination is indicated. If the substance is formulated with solvent(s) also consult the card(s) (ICSC) of the solvent(s). Carrier solvents used in commercial formulations may change physical and toxicological properties. Do NOT take working clothes home. Alvit, Dieldrex, Dieldrite, Illoxol, Octalox, Panoram, and Quintox are trade names. Also consult ICSC #0774, Aldrin.

Transport Emergency Card: TEC (R)-61G41b.

Card has been partially updated in August 2007: see Storage, Occupational Exposure Limits.

ADDITIONAL INFORMATION

ICSC: 0787

DIELDRIN

(C) IPCS, CEC, 1994

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International Chemical Safety Cards

POLYCHLORINATED BIPHENYL (AROCLOR 1254)

ICSC: 0939



Chlorobiphenyl (54% chlorine)
Chlorodiphenyl (54% chlorine)
PCB
Molecular mass: 327 (average)

ICSC # 0939
CAS # 11097-69-1
RTECS # [TQ1360000](#)
UN # 2315
EC # 602-039-00-4
October 20, 1999 Peer reviewed



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: powder, carbon dioxide.
EXPLOSION			
EXPOSURE		PREVENT GENERATION OF MISTS! STRICT HYGIENE!	
•INHALATION		Ventilation.	Fresh air, rest. Refer for medical attention.
•SKIN	MAY BE ABSORBED! Dry skin. Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
•EYES		Safety goggles, face shield.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Headache. Numbness.	Do not eat, drink, or smoke during work.	Rest. Refer for medical attention.
SPILLAGE DISPOSAL		STORAGE	PACKAGING & LABELLING
Consult an expert! Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. Personal protection: complete protective clothing including self-contained breathing apparatus.		Separated from food and feedstuffs. Cool. Dry. Keep in a well-ventilated room.	Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs. Severe marine pollutant. Note: C Xn symbol N symbol R: 33-50/53 S: 2-35-60-61 UN Hazard Class: 9 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0939

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

POLYCHLORINATED BIPHENYL (AROCLOR 1254)

ICSC: 0939

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: LIGHT YELLOW VISCOUS LIQUID.</p> <p>PHYSICAL DANGERS:</p> <p>CHEMICAL DANGERS: The substance decomposes in a fire producing irritating and toxic gases .</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 0.5 mg/m³ as TWA; (skin); A3; (ACGIH 2004). MAK: 0.05 ppm, 0.70 mg/m³; H; Peak limitation category: II(8); Carcinogen category: 3B; Pregnancy risk group: B; (DFG 2004). OSHA PEL: TWA 0.5 mg/m³ skin NIOSH REL*: Ca TWA 0.001 mg/m³ See Appendix A *Note: The REL also applies to other PCBs. NIOSH IDLH: Ca 5 mg/m³ See: IDLH INDEX</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20° C.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE:</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact with skin may cause dermatitis. Chloracne is the most visible effect. The substance may have effects on the liver . Animal tests show that this substance possibly causes toxic effects upon human reproduction.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Relative density (water = 1): 1.5 Solubility in water: none</p>	<p>Vapour pressure, Pa at 25°C: 0.01 Octanol/water partition coefficient as log Pow: 6.30 (estimated)</p>
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<p>ENVIRONMENTAL DATA</p>	<p>In the food chain important to humans, bioaccumulation takes place, specifically in aquatic organisms. It is strongly advised not to let the chemical enter into the environment.</p>	
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NOTES

Changes into a resinous state (pour point) at 10°C. Distillation range: 365°-390°C. Card has been partly updated in October 2004. See sections Occupational Exposure Limits, EU classification, Emergency Response.
Transport Emergency Card: TEC (R)-90GM2-II-L

ADDITIONAL INFORMATION

<p>ICSC: 0939</p>	<p>POLYCHLORINATED BIPHENYL (AROCLOR 1254) (C) IPCS, CEC, 1994</p>
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<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

ARSENIC

ICSC: 0013



Grey arsenic
As
Atomic mass: 74.9

ICSC # 0013
CAS # 7440-38-2
RTECS # [CG0525000](#)
UN # 1558
EC # 033-001-00-X

October 18, 1999 Peer reviewed



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	STORAGE	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.	Separated from strong oxidants, acids, halogens, food and feedstuffs. Well closed.	Do not transport with food and feedstuffs. Marine pollutant. T symbol N symbol R: 23/25-50/53 S: 1/2-20/21-28-45-60-61 UN Hazard Class: 6.1 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0013

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ARSENIC

ICSC: 0013

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: ODOURLESS, BRITTLE, GREY, METALLIC-LOOKING CRYSTALS.</p> <p>PHYSICAL DANGERS:</p> <p>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</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 0.01 mg/m³ as TWA A1 (confirmed human carcinogen); BEI issued (ACGIH 2004). MAK: Carcinogen category: 1; Germ cell mutagen group: 3A; (DFG 2004). OSHA PEL: 1910.1018 TWA 0.010 mg/m³ NIOSH REL: Ca C 0.002 mg/m³ 15-minute See Appendix A NIOSH IDLH: Ca 5 mg/m³ (as As) See: 7440382</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.</p> <p>INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly, when dispersed.</p> <p>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 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.</p> <p>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 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.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Sublimation point: 613°C Density: 5.7 g/cm³</p>	<p>Solubility in water: none</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is toxic to aquatic organisms. It is strongly advised that this substance does not enter the environment.</p>	
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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).

Transport Emergency Card: TEC (R)-61GT5-II

ADDITIONAL INFORMATION

ICSC: 0013 **ARSENIC**

(C) IPCS, CEC, 1994

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International Chemical Safety Cards

ZINC POWDER

ICSC: 1205



Blue powder
Merrillite
Zn
Atomic mass: 65.4
(powder)

ICSC # 1205
CAS # 7440-66-6
RTECS # [ZG8600000](#)
UN # 1436 (zinc powder or dust)
EC # 030-001-00-1
October 24, 1994 Peer reviewed



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 open flames, NO sparks, and NO smoking. NO contact with acid(s), base (s) and incompatible substances (see Chemical Dangers).	Special powder, dry sand, NO other agents. NO water.
EXPLOSION	Risk of fire and explosion on contact with acid(s), base(s), water and incompatible substances.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Prevent deposition of dust.	In case of fire: cool drums, etc., by spraying with water but avoid contact of the substance with water.
EXPOSURE		PREVENT DISPERSION OF DUST! STRICT HYGIENE!	
• INHALATION	Metallic taste and metal fume fever. Symptoms may be delayed (see Notes).	Local exhaust.	Fresh air, rest. Refer for medical attention.
• SKIN	Dry skin.	Protective gloves.	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. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Extinguish or remove all ignition sources. Do NOT wash away into sewer. Sweep spilled substance into containers. then remove to safe place. Personal protection: self-contained breathing apparatus.	Fireproof. Separated from acids, bases oxidants Dry.	Airtight. F symbol N symbol R: 15-17-50/53 S: 2-7/8-43-46-60-61 UN Hazard Class: 4.3 UN Subsidiary Risks: 4.2

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1205

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ZINC POWDER

ICSC: 1205

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: ODOURLESS GREY TO BLUE POWDER.</p> <p>PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air. If dry, it can be charged electrostatically by swirling, pneumatic transport, pouring, etc.</p> <p>CHEMICAL DANGERS: Upon heating, toxic fumes are formed. The substance is a strong reducing agent and reacts violently with oxidants. Reacts with water and reacts violently with acids and bases forming flammable/explosive gas (hydrogen - see ICSC0001) Reacts violently with sulfur, halogenated hydrocarbons and many other substances causing fire and explosion hazard.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV not established.</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation and by ingestion.</p> <p>INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: Inhalation of fumes may cause metal fume fever. The effects may be delayed.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact with skin may cause dermatitis.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 907°C Melting point: 419°C Relative density (water = 1): 7.14</p>	<p>Solubility in water: reaction Vapour pressure, kPa at 487°C: 0.1 Auto-ignition temperature: 460°C</p>
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<p>ENVIRONMENTAL DATA</p>	
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NOTES

Zinc may contain trace amounts of arsenic, when forming hydrogen, may also form toxic gas arsine (see ICSC 0001 and ICSC 0222). Reacts violently with fire extinguishing agents such as water, halons, foam and carbon dioxide. The symptoms of metal fume fever do not become manifest until several hours later. Rinse contaminated clothes (fire hazard) with plenty of water.

Transport Emergency Card: TEC (R)-43GWS-II+III
NFPA Code: H0; F1; R1;

ADDITIONAL INFORMATION

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ICSC: 1205

ZINC POWDER

(C) IPCS, CEC, 1994

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International Chemical Safety Cards

SODIUM

ICSC: 0717



Natrium
Na
Atomic mass: 23.0

ICSC # 0717
CAS # 7440-23-5
RTECS # [VY0686000](#)
UN # 1428
EC # 011-001-00-0
April 06, 2006 Validated



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) or 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	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Consult an expert! Chemical protection suit including self-contained breathing apparatus. Cover the spilled material with dry powder.	Fireproof. Keep under mineral oil. Dry. Well closed.	Airtight. Unbreakable packaging; put breakable packaging into closed unbreakable container. F symbol C symbol R: 14/15-34 S: (1/2)-5 -8-43-45 UN Hazard Class: 4.3 UN Packing Group: I Signal: Danger Flame-Corr In contact with water releases flammable gases which may ignite spontaneously Causes severe skin burns and eye damage

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0717

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

SODIUM

ICSC: 0717

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: SILVERY SOLID IN VARIOUS FORMS</p> <p>PHYSICAL DANGERS:</p> <p>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) .</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV not established. MAK not established.</p>	<p>ROUTES OF EXPOSURE: Serious local effects by all routes of exposure.</p> <p>INHALATION RISK:</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: See ICSC 0360 (Sodium hydroxide)</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 880°C Melting point: 97.4°C Density: 0.97 g/cm³</p>	<p>Solubility in water: reaction Vapour pressure, Pa at 20°C: negligible Auto-ignition temperature: 120-125°C</p>
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<p>ENVIRONMENTAL DATA</p>	
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NOTES

Sodium is always kept under mineral oil. Reacts violently with fire extinguishing agents such as water and carbon dioxide .

Transport Emergency Card: TEC (R)-43S1428a
NFPA Code: H3; F3; R2;

ADDITIONAL INFORMATION

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<p>ICSC: 0717</p>	<p>SODIUM</p>
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International Chemical Safety Cards

SILVER

ICSC: 0810



Argentum
C.I. 77820
Ag

ICSC # 0810
CAS # 7440-22-4
RTECS # [VW3500000](#)
September 10, 1997 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible, except as powder.		
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST!	
• INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
• SKIN		Protective gloves.	Rinse skin with plenty of water or shower.
• 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.	

SPILLAGE DISPOSAL	STORAGE	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.	Separated from ammonia, strong hydrogen peroxide solutions, strong acids.	

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0810

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

SILVER

ICSC: 0810

I	PHYSICAL STATE; APPEARANCE: WHITE METAL, TURNS DARK ON EXPOSURE TO OZONE, HYDROGEN SULFIDE OR SULFUR.	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation and by ingestion.
M		
P	PHYSICAL DANGERS:	INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.
O	CHEMICAL DANGERS: Shock-sensitive compounds are formed with acetylene.	
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Reacts with acids causing fire hazard. Contact with strong hydrogen peroxide solution will cause violent decomposition to oxygen gas. Contact with ammonia may cause formation of compounds that are explosive when dry.

OCCUPATIONAL EXPOSURE LIMITS:

TLV (metal): 0.1 mg/m³ (ACGIH 1997).
 EU OEL: 0.1 mg/m³ as TWA (EU 2000).
 OSHA PEL: TWA 0.01 mg/m³
 NIOSH REL: TWA 0.01 mg/m³
 NIOSH IDLH: 10 mg/m³ (as Ag) See: [IDLH INDEX](#)

EFFECTS OF SHORT-TERM EXPOSURE:

Inhalation of high amounts of metallic silver vapours may cause lung damage with pulmonary oedema.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:

The substance may cause a grey-blue discoloration of the eyes, nose, throat and skin (argyria/argyrosis).

PHYSICAL PROPERTIES	Boiling point: 2212°C	Relative density (water = 1): 10.5
	Melting point: 962°C	Solubility in water: none

ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to aquatic organisms.	
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NOTES

Card has been partially updated in March 2008: see Occupational Exposure Limits.

ADDITIONAL INFORMATION

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ICSC: 0810	(C) IPCS, CEC, 1994	SILVER
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International Chemical Safety Cards

NICKEL

ICSC: 0062



Ni
Atomic mass: 58.7
(powder)

ICSC # 0062
CAS # 7440-02-0
RTECS # [QR5950000](#)
EC # 028-002-00-7
October 17, 2001 Peer reviewed

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	STORAGE	PACKAGING & LABELLING
Vacuum spilled material. Carefully collect remainder, then remove to safe place. Personal protection: P2 filter respirator for harmful particles.	Separated from strong acids.	Xn symbol R: 40-43 S: 2-22-36

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0062

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

NICKEL

ICSC: 0062

I	<p>PHYSICAL STATE; APPEARANCE: SILVERY METALLIC SOLID IN VARIOUS FORMS.</p> <p>PHYSICAL DANGERS:</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of the dust.</p>
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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/m³ 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). OSHA PEL*†: TWA 1 mg/m³ *Note: The PEL does not apply to Nickel carbonyl. NIOSH REL*: Ca TWA 0.015 mg/m³ [See Appendix A](#) *Note: The REL does not apply to Nickel carbonyl. NIOSH IDLH: Ca 10 mg/m³ (as Ni) See: [7440020](#)

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/cm³

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.

ADDITIONAL INFORMATION

ICSC: 0062

NICKEL

(C) IPCS, CEC, 1994

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International Chemical Safety Cards

MERCURY

ICSC: 0056



Quicksilver
Liquid silver
Hg
Atomic mass: 200.6

ICSC # 0056
CAS # 7439-97-6
RTECS # [OV4550000](#)
UN # 2809
EC # 080-001-00-0
April 22, 2004 Peer reviewed



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	STORAGE	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.	Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs Well closed.	Special material. Do not transport with food and feedstuffs. T symbol N symbol R: 23-33-50/53 S: 1/2-7-45-60-61 UN Hazard Class: 8 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0056

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

MERCURY

ICSC: 0056

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: ODOURLESS, HEAVY AND MOBILE SILVERY LIQUID METAL.</p> <p>PHYSICAL DANGERS:</p> <p>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.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 0.025 mg/m³ as TWA (skin) A4 BEI issued (ACGIH 2004). MAK: 0.1 mg/m³ Sh Peak limitation category: II(8) Carcinogen category: 3B (DFG 2003). OSHA PEL_f: C 0.1 mg/m³ NIOSH REL: Hg Vapor: TWA 0.05 mg/m³ skin Other: C 0.1 mg/m³ skin NIOSH IDLH: 10 mg/m³ (as Hg) See: 7439976</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its vapour and through the skin, also as a vapour!</p> <p>INHALATION RISK: A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.</p> <p>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.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The substance may have effects on the central nervous system kidneys, resulting in irritability, emotional instability, tremor, mental and memory disturbances, speech disorders. Danger of cumulative effects. Animal tests show that this substance possibly causes toxic effects upon human reproduction.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 357°C Melting point: -39°C Relative density (water = 1): 13.5 Solubility in water: none</p>	<p>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</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is very toxic to aquatic organisms. In the food chain important to humans, bioaccumulation takes place, specifically in fish.</p>	
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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.

Transport Emergency Card: TEC (R)-80GC9-II+III

ADDITIONAL INFORMATION

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ICSC: 0056	(C) IPCS, CEC, 1994	MERCURY
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<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

MANGANESE

ICSC: 0174






Mn
Atomic mass: 54.9
(powder)



ICSC # 0174
CAS # 7439-96-5
RTECS # [OO9275000](#)
November 27, 2003 Validated

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	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers. Carefully collect remainder, then remove to safe place. (Extra personal protection: P2 filter respirator for harmful particles.)	Separated from acids. Dry.	

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0174

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

MANGANESE

ICSC: 0174

I	<p>PHYSICAL STATE; APPEARANCE: GREY - WHITE POWDER</p> <p>PHYSICAL DANGERS:</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.</p>
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<p>M P O R T A N T D A T A</p>	<p>Dust explosion possible if in powder or granular form, mixed with air.</p> <p>CHEMICAL DANGERS: Reacts slowly with water more rapidly with steam and acids forming flammable/explosive gas (hydrogen - see ICSC0001) causing fire and explosion hazard.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 0.2 mg/m³ (as TWA); (ACGIH 2003). MAK: (Inhalable fraction) 0.5 mg/m³; Pregnancy risk group: C; (DFG 2007). OSHA PEL*: C 5 mg/m³ *Note: Also see specific listings for Manganese cyclopentadienyl tricarbonyl and Methyl cyclopentadienyl manganese tricarbonyl. NIOSH REL*: TWA 1 mg/m³ ST 3 mg/m³ *Note: Also see specific listings for Manganese cyclopentadienyl tricarbonyl, Methyl cyclopentadienyl manganese tricarbonyl, and Manganese tetroxide. NIOSH IDLH: 500 mg/m³ (as Mn) See: 7439965</p>	<p>INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The aerosol is irritating to the respiratory tract .</p> <p>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.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 1962°C Melting point: 1244°C Density: 7.47 g/cm³</p>	<p>Solubility in water: none</p>
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<p>ENVIRONMENTAL DATA</p>	<p>This substance may be hazardous in the environment; special attention should be given to aquatic organisms.</p>	
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NOTES

Depending on the degree of exposure, periodic medical examination is suggested. The recommendations on this Card also apply to ferro manganese.

ADDITIONAL INFORMATION

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ICSC: 0174	(C) IPCS, CEC, 1994	MANGANESE
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<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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International Chemical Safety Cards

LEAD

ICSC: 0052



Lead metal
Plumbum
Pb
Atomic mass: 207.2
(powder)

ICSC # 0052
CAS # 7439-92-1
RTECS # [OF7525000](#)
October 08, 2002 Peer reviewed

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	STORAGE	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.	Separated from food and feedstuffs incompatible materials See Chemical Dangers.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0052

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: BLUISH-WHITE OR SILVERY-GREY SOLID IN VARIOUS FORMS. TURNS TARNISHED ON EXPOSURE TO AIR.</p> <p>PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air.</p> <p>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.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 0.05 mg/m³ 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/m³ (EU 2002). OSHA PEL*: 1910.1025 TWA 0.050 mg/m³ See Appendix C *Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C. NIOSH REL*: TWA 0.050 mg/m³ See Appendix C *Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C. NIOSH IDLH: 100 mg/m³ (as Pb) See: 7439921</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation and by ingestion.</p> <p>INHALATION RISK: A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE:</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The substance may have effects on the blood bone marrow central nervous system peripheral nervous system kidneys , resulting in anaemia, encephalopathy (e.g., convulsions), peripheral nerve disease, abdominal cramps and kidney impairment. Causes toxicity to human reproduction or development.</p>
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PHYSICAL PROPERTIES	Boiling point: 1740°C Melting point: 327.5°C	Density: 11.34 g/cm ³ Solubility in water: none
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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.	
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NOTES

Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home.
 Transport Emergency Card: TEC (R)-51S1872

ADDITIONAL INFORMATION

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ICSC: 0052	LEAD
(C) IPCS, CEC, 1994	

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International Chemical Safety Cards

COPPER

ICSC: 0240



Cu
(powder)

ICSC # 0240

CAS # 7440-50-8

RTECS # [GL5325000](#)

September 24, 1993 Validated

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	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers. Carefully collect remainder. Then remove to safe place. (Extra personal protection: P2 filter respirator for harmful particles).	Separated from - See Chemical Dangers.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0240

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

COPPER

ICSC: 0240

<p>I</p> <p>M</p> <p>P</p>	<p>PHYSICAL STATE; APPEARANCE: RED POWDER, TURNS GREEN ON EXPOSURE TO MOIST AIR.</p> <p>PHYSICAL DANGERS:</p> <p>CHEMICAL DANGERS:</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation and by ingestion.</p> <p>INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.</p>
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Shock-sensitive compounds are formed with acetylenic compounds, ethylene oxides and azides. Reacts with strong oxidants like chlorates, bromates and iodates, causing explosion hazard.

EFFECTS OF SHORT-TERM EXPOSURE:
Inhalation of fumes may cause metal fume fever. See Notes.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 0.2 mg/m³ fume (ACGIH 1992-1993).
TLV (as Cu, dusts & mists): 1 mg/m³ (ACGIH 1992-1993).
Intended change 0.1 mg/m³
Inhal.,
A4 (not classifiable as a human carcinogen);
MAK: 0.1 mg/m³ (Inhalable fraction)
Peak limitation category: II(2) Pregnancy risk group: D (DFG 2005).
OSHA PEL*: TWA 1 mg/m³ *Note: The PEL also applies to other copper compounds (as Cu) except copper fume.
NIOSH REL*: TWA 1 mg/m³ *Note: The REL also applies to other copper compounds (as Cu) except Copper fume.
NIOSH IDLH: 100 mg/m³ (as Cu) See: [7440508](https://www.cdc.gov/niosh/publications/7440508/)

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
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ENVIRONMENTAL DATA	
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NOTES

The symptoms of metal fume fever do not become manifest until several hours.

ADDITIONAL INFORMATION

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ICSC: 0240

COPPER

(C) IPCS, CEC, 1994

IMPORTANT LEGAL NOTICE:

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International Chemical Safety Cards

CHROMIUM

ICSC: 0029



Chrome
Cr
Atomic mass: 52.0
(powder)

ICSC # 0029
CAS # 7440-47-3
RTECS # [GB4200000](#)
October 27, 2004 Peer reviewed

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	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Personal protection: P2 filter respirator for harmful particles.		R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0029

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

CHROMIUM

ICSC: 0029

I	PHYSICAL STATE; APPEARANCE: GREY POWDER	ROUTES OF EXPOSURE:
M	PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air.	INHALATION RISK: A harmful concentration of airborne particles can be reached quickly when dispersed.
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CHEMICAL DANGERS:

Chromium is a catalytic substance and may cause reaction in contact with many organic and inorganic substances , causing fire and explosion hazard.

EFFECTS OF SHORT-TERM EXPOSURE:

May cause mechanical irritation to the eyes and the respiratory tract.

OCCUPATIONAL EXPOSURE LIMITS:

TLV: (as Cr metal, Cr(III) compounds) 0.5 mg/m³ as TWA A4 (ACGIH 2004).

MAK not established.

OSHA PEL*: TWA 1 mg/m³ [See Appendix C](#) *Note: The PEL also applies to insoluble chromium salts.

NIOSH REL: TWA 0.5 mg/m³ [See Appendix C](#)

NIOSH IDLH: 250 mg/m³ (as Cr) See: [7440473](#)

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:

PHYSICAL PROPERTIES

Boiling point: 2642°C
Melting point: 1900°C
Density: 7.15 g/cm³

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

ICSC: 0029

CHROMIUM

(C) IPCS, CEC, 1994

IMPORTANT LEGAL NOTICE:

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International Chemical Safety Cards

CADMIUM

ICSC: 0020



Cd
Atomic mass: 112.4

ICSC # 0020
CAS # 7440-43-9
RTECS # [EU980000](#)
UN # 2570
EC # 048-002-00-0
April 22, 2005 Peer reviewed



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	STORAGE	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.	Fireproof. Dry. Keep under inert gas. Separated from ignition sources, oxidants acids, food and feedstuffs	Airtight. Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs. Note: E T+ symbol N symbol R: 45-26-48/23/25-62-63-68-50/53 S: 53-45-60-61 UN Hazard Class: 6.1

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0020

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

CADMIUM

ICSC: 0020

I M P O R T A N T A D V I S I O N	<p>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.</p> <p>PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air.</p> <p>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.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: (Total dust) 0.01 mg/m³ (Respirable fraction) 0.002 mg/m³ as TWA A2 (suspected human carcinogen); BEI issued (ACGIH 2005). MAK: skin absorption (H); Carcinogen category: 1; Germ cell mutagen group: 3A; (DFG 2004). OSHA PEL*: 1910.1027 TWA 0.005 mg/m³ *Note: The PEL applies to all Cadmium compounds (as Cd). NIOSH REL*: Ca See Appendix A *Note: The REL applies to all Cadmium compounds (as Cd). NIOSH IDLH: Ca 9 mg/m³ (as Cd) See: IDLH INDEX</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.</p> <p>INHALATION RISK: A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.</p> <p>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.</p> <p>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.</p>
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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
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ENVIRONMENTAL DATA	
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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

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ICSC: 0020	CADMIUM
(C) IPCS, CEC, 1994	

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International Chemical Safety Cards

BARIUM SULFATE

ICSC: 0827



Barium sulphate
Blanc fixe
Artificial barite
BaSO₄
Molecular mass: 233.43

ICSC # 0827

CAS # 7727-43-7

RTECS # [CR0600000](#)

October 20, 1999 Peer reviewed

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			
EXPOSURE		PREVENT DISPERSION OF DUST!	
• INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
• SKIN		Protective gloves.	Remove contaminated clothes. 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		Do not eat, drink, or smoke during work.	Rinse mouth.
SPILLAGE DISPOSAL		STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Personal protection: P1 filter respirator for inert particles.			R: S:
SEE IMPORTANT INFORMATION ON BACK			
ICSC: 0827		Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.	

International Chemical Safety Cards

BARIUM SULFATE

ICSC: 0827

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: ODOURLESS TASTELESS, WHITE OR YELLOWISH CRYSTALS OR POWDER.</p> <p>PHYSICAL DANGERS:</p> <p>CHEMICAL DANGERS: Reacts violently with aluminium powder.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 10 mg/m³ as TWA; (ACGIH 2004). MAK: (Inhalable fraction) 4 mg/m³; (Respirable fraction) 1.5 mg/m³; (DFG 2004). OSHA PEL[†]: TWA 15 mg/m³ (total) TWA 5 mg/m³ (resp) NIOSH REL: TWA 10 mg/m³ (total) TWA 5 mg/m³ (resp) NIOSH IDLH: N.D. See: IDLH INDEX</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol.</p> <p>INHALATION RISK: Evaporation at 20°C is negligible; a nuisance-causing concentration of airborne particles can, however, be reached quickly.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE:</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Lungs may be affected by repeated or prolonged exposure to dust particles, resulting in baritosis (a form of benign pneumoconiosis).</p>
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PHYSICAL PROPERTIES	<p>Melting point (decomposes): 1600°C Density: 4.5 g/cm³</p>	Solubility in water: none
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ENVIRONMENTAL DATA	
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NOTES

Occurs in nature as the mineral barite; also as barytes, heavy spar. Card has been partly updated in October 2005. See section Occupational Exposure Limits.

ADDITIONAL INFORMATION

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ICSC: 0827	BARIUM SULFATE
(C) IPCS, CEC, 1994	

<p>IMPORTANT LEGAL NOTICE:</p>	<p>Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.</p>
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APPENDIX D
HOSPITAL INFORMATION AND MAP
FIELD ACCIDENT REPORT

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.)? _____

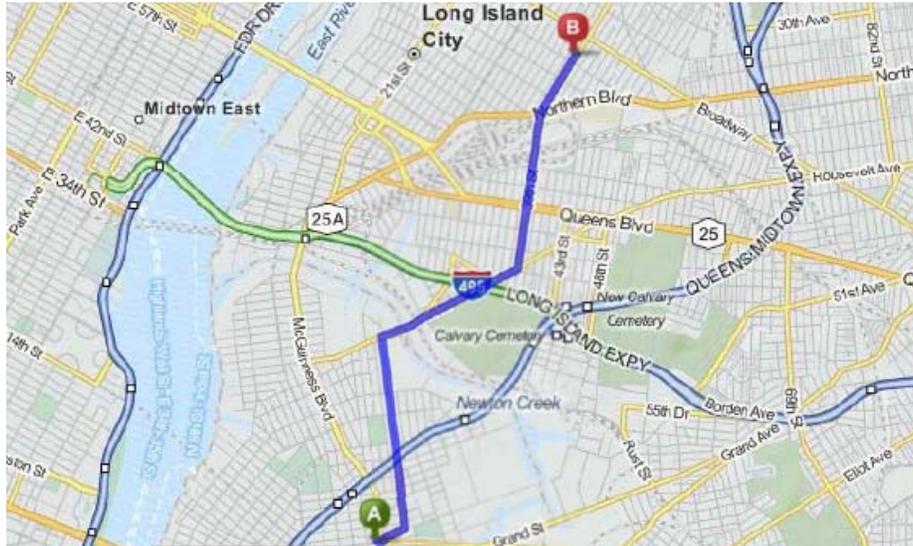
(If not, it is the EMPLOYEE'S sole responsibility to process his/her claim through his/her Health and Welfare Fund.)

INDICATE STREET NAMES, DESCRIPTION OF VEHICLES, AND NORTH ARROW

HOSPITAL INFORMATION AND MAP

The hospital nearest the site is:

A
 3274 Steinway Street, Astoria, New York 11103
 718-721-0101
 3.66 Miles – About 12 Minutes



A 771 Metropolitan Ave, Brooklyn, NY 11211-3701

1. Start out going east on Metropolitan Ave toward Humboldt St. [Map](#)
 2. Take the 1st left onto Humboldt St. [Map](#)
*Legion Bar is on the right
 If you reach Bushwick Ave you've gone a little too far*
 3. Take the 1st right onto Maspeth Ave. [Map](#)
Legion Bar is on the corner
 4. Turn left onto Kingsland Ave. [Map](#)
*Kingsland Ave is 0.1 miles past Woodpoint Rd
 If you reach Olive St you've gone a little too far*
 5. Turn right onto Greenpoint Ave. [Map](#)
*Greenpoint Ave is 0.3 miles past Norman Ave
 If you reach the end of Kingsland Ave you've gone about 0.1 miles too far*
 6. Turn left onto 39th St. [Map](#)
*39th St is just past 50th Ave
 Bengol Food is on the left
 If you reach 39th Pl you've gone a little too far*
 7. 39th St becomes Steinway St. [Map](#)
 8. 3274 STEINWAY ST is on the left. [Map](#)
*Your destination is just past 34th Ave
 If you reach Broadway you've gone about 0.1 miles too far*
- B Astoria Urgent Medical Care**
 3274 Steinway St, Astoria, NY 11103
 (718) 721-0101

ATTACHMENT F
VAPOR BARRIER SPECIFICATIONS

VAPORBLOCK® PLUS™ VBP20

Under-Slab Vapor / Gas Barrier

Product Description

VaporBlock® Plus™ 20 is a seven-layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission. VaporBlock® Plus™ 20 is a highly resilient underslab / vertical wall barrier designed to restrict naturally occurring gases such as radon and/or methane from migrating through the ground and concrete slab. VaporBlock® Plus™ 20 is more than 100 times less permeable than typical high-performance polyethylene vapor retarders against Methane, Radon and other harmful VOCs.

VaporBlock® Plus™ 20 is one of the most effective underslab gas barriers in the building industry today far exceeding ASTM E-1745 (Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs) Class A, B and C requirements. Available in a 20 (Class A) mil thicknesses designed to meet the most stringent requirements. VaporBlock® Plus™ 20 is produced within the strict guidelines of our ISO 9001:2008 Certified Management System.

Product Use

VaporBlock® Plus™ 20 resists gas and moisture migration into the building envelop when properly installed to provide protection from toxic/harmful chemicals. It can be installed as part of a passive or active control system extending across the entire building including floors, walls and crawl spaces. When installed as a passive system it is recommended to also include a ventilated system with sump(s) that could be converted to an active control system with properly designed ventilation fans.

VaporBlock® Plus™ 20 works to protect your flooring and other moisture-sensitive furnishings in the building's interior from moisture and water vapor migration, greatly reducing condensation, mold and degradation.

Size & Packaging

VaporBlock® Plus™ 20 is available in 10' x 150' rolls to maximize coverage. All rolls are folded on heavy-duty cores for ease in handling and installation. Other custom sizes with factory welded seams are available based on minimum volume requirements. Installation instructions and ASTM E-1745 classifications accompany each roll.



Under-Slab Vapor/Gas Retarder

Product

Part

VaporBlock Plus 20 VBP 20

APPLICATIONS

Radon Barrier	Under-Slab Vapor Retarder
Methane Barrier	Foundation Wall Vapor Retarder
VOC Barrier	

VaporBlock® Plus™
UNDERSLAB VAPOR RETARDER / GAS BARRIER

VAPORBLOCK® PLUS™ VBP20



Under-Slab Vapor / Gas Barrier

		VAPORBLOCK PLUS 20	
PROPERTIES	TEST METHOD	IMPERIAL	METRIC
APPEARANCE		White/Gold	
THICKNESS, NOMINAL		20 mil	0.51 mm
WEIGHT		102 lbs/MSF	498 g/m ²
CLASSIFICATION	ASTM E 1745	CLASS A, B & C	
TENSILE STRENGTH LBF/IN (N/CM) AVERAGE MD & TD (NEW MATERIAL)	ASTM E 154 Section 9 (D-882)	58 lbf	102 N
IMPACT RESISTANCE	ASTM D 1709	2600 g	
MAXIMUM USE TEMPERATURE		180° F	82° C
MINIMUM USE TEMPERATURE		-70° F	-57° C
PERMEANCE (NEW MATERIAL)	ASTM E 154 Section 7 ASTM E 96 Procedure B	0.0051 Perms grains/(ft ² ·hr·in·Hg)	0.0034 Perms g/(24hr·m ² ·mm Hg)
RADON DIFFUSION COEFFICIENT	K124/02/95	< 1.1 x 10 ⁻¹³ m ² /s	
METHANE PERMEANCE	ASTM D 1434	< 1.7 x 10 ⁻¹⁰ m ² /d·atm 0.32 GTR (Gas Transmission Rate) ml/m ² ·D·ATM	

VaporBlock® Plus™ Placement

All instructions on architectural or structural drawings should be reviewed and followed.

Detailed installation instructions accompany each roll of VaporBlock® Plus™ and can also be located on our website.

ASTM E-1643 also provides general installation information for vapor retarders.



VaporBlock® Plus™ is a seven-layer co-extruded barrier made using high quality virgin-grade polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage.



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