

1570 60th STREET
BROOKLYN, NEW YORK

Remedial Action Work Plan

NYC VCP Project Number 15CVCP161K
OER Project Number 14RH-N334K

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REMEDIAL ACTION WORK PLAN
TABLE OF CONTENTS

EXECUTIVE SUMMARY 7

COMMUNITY PROTECTION STATEMENT..... 16

1.0 PROJECT BACKGROUND 21

 1.1 Site Location and Background..... 21

 1.2 Redevelopment Plan..... 21

 1.3 Description of Surrounding Property 23

 1.4 Summary of Past Site Uses and Areas of Concern 23

 1.5 Summary of Work Performed under the Remedial Investigation..... 24

 1.6 Summary of Findings of Remedial Investigation 25

2.0 REMEDIAL ACTION OBJECTIVES 27

3.0 REMEDIAL ALTERNATIVES ANALYSIS 28

 3.1 Threshold Criteria 30

 3.2 Balancing Criteria 31

4.0 REMEDIAL ACTION..... 38

 4.1 Summary of Preferred Remedial Action..... 38

 4.2 Soil Cleanup Objectives and Soil/ Fill Management 41

 4.3 Engineering Controls..... 45

 4.4 Institutional Controls..... 47

 4.5 Site Management Plan..... 48

 4.6 Qualitative Human Health Exposure Assessment..... 48

5.0 REMEDIAL ACTION MANAGEMENT..... 54

 5.1 Project Organization and Oversight 54

 5.2 Site Security 54

 5.3 Work Hours 54

5.4 Construction Health and Safety Plan 54

5.5 Community Air Monitoring Plan..... 55

5.6 Agency Approvals 57

5.7 Site Preparation..... 57

5.8 Traffic Control 61

5.9 Demobilization..... 61

5.10 Reporting and Record Keeping..... 62

5.11 Complaint Management..... 63

5.12 Deviations From The Remedial Action Work Plan..... 63

6.0 REMEDIAL ACTION REPORT 64

7.0 SCHEDULE..... 68

TABLES

Table 1 Imported Backfill and Clean Soil Limits

FIGURES

Figure 1 Site Location Map
Figure 2 Site Plan
Figure 3 Layout of Proposed Site Development
Figure 4 Surrounding Land Usage
Figure 5 Excavation and Capping Plan
Figure 6 Endpoint Sampling Plan
Figure 7 Vapor Barrier Plan
Figure 8 SSDS Layout
Figure 9 SSDS Details
Figure 10 Truck Route Map
Figure 11 Grid Map

ATTACHMENTS

Attachment A Proposed Development Plans
Attachment B Citizen Participation Plan
Attachment C Sustainability Statement
Attachment D Soil/Materials Management Plan
Attachment E Site-Specific Construction Health and Safety Plan (CHASP)
Attachment F Vapor Barrier Specifications

LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C&D	Construction and Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering Controls and Institutional Controls
ELAP	Environmental Laboratory Accreditation Program
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response
IRM	Interim Remedial Measure
BCA	Brownfield Cleanup Agreement
NOC	Notice of Completion
NYS DEC	New York State Department of Environmental Conservation
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYC OER	New York City Office of Environmental Remediation
NYC VCP	New York City Voluntary Cleanup Program
NYCRR	New York Codes Rules and Regulations
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation

NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PCBs	Professional Engineer Polychlorinated Biphenyls
PE	Professional Engineer
PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-Slab Depressurization System
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

CERTIFICATION

I, Ariel Czemerinski, am currently a registered professional engineer licensed by the State of New York. I performed professional engineering services and had primary direct responsibility for designing the remedial program for the redevelopment project located at 1570 60th Street, Brooklyn, NY, site number 15CVCP161K. I certify to the following:

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

Ariel Czemerinski
Name

076508
PE License Number

Ariel Czemerinski
Signature

6/10/2015
Date



I, Kevin Brussee, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the redevelopment project located at 1570 60th Street, Brooklyn, NY, site number 15CVCP161K. I certify to the following:

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

KEVIN BRUSSEE
QEP Name

Kevin Brussee
QEP Signature

6/10/15
Date

EXECUTIVE SUMMARY

Mapleton Group, LLC is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program to investigate and remediate a 70,200-square foot Site located at 1570 60th Street in Brooklyn, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Background

The Site consists of a single lot located in the Borough Park Section of the Borough of Brooklyn, City of New York, Kings County, New York. Figure 1 shows the Site location. The street address associated with the Site is 1570 60th Street, Brooklyn, New York 11204. The Site is identified as Block 5516, Lot 34 on the New York City (NYC) Tax Map. The Site consists of 530.76 feet of street frontage on 61st Street, 200 feet of street frontage on 16th Avenue, and 196.36 feet of street frontage on 60th Street. The western property boundary is bordered by railroad tracks. The total square footage of the property is approximately 70,200. A map of the Site is shown on Figure 2.

The Site was formerly developed with a one-story, 35,072 ft² building used as a bowling alley, with an asphalt paved parking lot covering the remainder of the Site. However, the building was recently demolished, and the Site is now undeveloped and vacant.

Summary of Redevelopment Plan

The development project consists of 13 new 6-story apartment buildings with full cellar levels, and a cellar level parking garage constructed below the courtyard to be constructed behind the buildings. Six nearly identical apartment buildings will front 61st Street and will have the following street addresses; 1559, 1563, 1567, 1571, and 1575 61st Street. An additional four identical apartment buildings will front 16th Avenue, and they'll have the following street addresses; 6004, 6010, 6014, and 6020 16th Avenue. Three smaller apartment buildings will be

constructed along 60th Street, and they'll have the street addresses 1570, 1574, and 1578 60th Street.

The six buildings fronting 61st Street and the nearly identical four buildings fronting 16th Avenue will each be approximately 50 feet wide and have a depth of approximately 64 feet. The cellar of each of these ten new apartment buildings will consist of the elevator shaft and associated elevator machine room, refuse storage room, meter rooms, storage rooms, and open cellar accessory space for the apartments on the first floor. The open cellar accessory spaces will have windows that face a narrow areaway created between the cellar level parking garage and the building. The elevator machine room and meter rooms in the front of the cellar will be constructed approximately 3 feet lower than the rest of the cellar level. The majority of the cellar level of each building will require excavation to a depth of approximately 12ft, and additional excavation to about 15 to 16ft will be required for the lower front cellar level and elevator pit. Assuming an average excavation depth of approximately 13 ft across the 3,200 ft² footprint of each building, a total of approximately 1,500 cubic yards (2,250 tons) of soil will require excavation for each of the ten buildings.

The three smaller buildings fronting 60st Street will each be approximately 30 feet wide and have a depth of approximately 60 feet. The cellar of each of these three new apartment buildings will consist of the elevator shaft and associated elevator machine room, refuse storage room, meter rooms, storage rooms, and an open cellar accessory space for the apartment on the first floor. The open cellar accessory space will have windows that face a narrow areaway created between the cellar level parking garage and the building. The elevator machine room and meter rooms in the front of the cellar will be constructed approximately 3 feet lower than the rest of the cellar level. The majority of the cellar level of each building will require excavation to a depth of approximately 12ft, and additional excavation to about 15 to 16ft will be required for the lower front cellar level and elevator pit. Assuming an average excavation depth of approximately 13 ft across the 1,800 ft² footprint of each building, a total of approximately 900 cubic yards (1,350 tons) of soil will require excavation for each of the three buildings.

A cellar level parking garage for 53 cars will be constructed behind each of the buildings within the rear courtyard area. A vehicle ramp from 61st Street will provide access to the parking

garage. An additional on-grade parking area for 16 cars will be constructed above a portion of the cellar parking garage. Access to the on-grade parking area will be provided from 60th Street. A 8,230 ft² recreation area will be constructed above the remaining portion of the cellar level parking garage, and the remaining portions of the Site will be capped with concrete. The cellar level parking garage and the ramp will require excavation to a depth of approximately 12 feet across an approximately 18,000 ft² area will generate an additional 8,000 cubic yards (12,000 tons) of soil. Limited excavation (top 1 foot) across the remaining portions of the Site that will be capped with concrete will generate an additional 300 to 500 cubic yards.

The water table is expected at a depth of approximately 40 feet below grade surface (bgs), and will therefore not be encountered during excavation.

Layout of the redevelopment plans for the proposed building is presented on Figures 3. The current zoning designation is R6A. The proposed use is consistent with existing zoning for the property. The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

Summary of Surrounding Property

The area immediately surrounding Site consists of a mix of residential and commercial properties. A railroad line runs along the west side of the Site and continues to the east. Figure 4 shows the surrounding land usage of adjacent properties as well as additional properties located up to 500 feet away from the Site. No hospitals, schools or daycare facilities are located within a 250 ft radius of the Site.

Summary of Past Site Uses and Areas of Concern

A Phase I Environmental Site Assessment (Phase I ESA) performed by Singer Environmental Group Ltd. dated March 7, 2005 and updated May 7, 2010 indicated that according to Sanborn fire insurance maps the eastern portion of the site was used as a disposal plant in the 1920's. The Phase I also indicates that a Certificate of Occupancy dated December 16, 1941 lists the site as a vacant lot used for storage of used auto parts and auto wrecking. The Sanborn maps indicate that the Site was utilized as a bowling alley and associated parking lot from at least 1969 to at least 1995. The Phase I also states that a subsurface investigation conducted by Soil Mechanics

Drilling Corp. on February 23, 2005 for engineering purposes indicated that urban fill was present at the site. The Phase I ESA is included as an appendix. Potential hazards encountered during Phase II ESA activities can include but are not limited to exposure to dust, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and heavy metals from urban fill, soil vapor, and/or groundwater.

Areas of Concern (AOCs) identified for the Site include:

- The presence of historic fill material to depths as great as 5 feet.
- Historic use of a portion of the Site as a disposal plant.

Summary of Work Performed under the Remedial Investigation

Associated Environmental Services, Ltd. performed the following scope of work at the Site in April of 2015:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Performed a geophysical investigation (ground penetrating radar survey) across accessible areas of the Site;
3. Installed twelve soil borings across the Site, and collected 24 soil samples for chemical analysis from the soil borings to evaluate soil quality;
4. Installed 5 groundwater monitoring wells across the Site, and collected 5 groundwater samples for chemical analysis to evaluate groundwater quality; and
5. Installed 6 soil vapor implant across the Site and collected 6 soil vapor samples for chemical analysis.

Summary of Findings of Remedial Investigation

1. The elevation of the Site ranges from approximately 35 to 46 feet.
2. Depth to groundwater at the Site is approximately 42 feet.
3. Groundwater flow direction was determined to be from the northeast to the southwest.
4. Depth to bedrock is at the Site is greater than 100 feet.
5. The stratigraphy of the Site consists of a 5 foot layer of historic fill material underlain by native brown coarse sand with gravel, cobbles and boulders.

6. Soil/fill samples results were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Unrestricted Use and Restricted Residential Use Soil Cleanup Objectives (SCOs). Data collected during the RI showed no PCBs at detectable concentrations. The VOCs benzene (maximum [max] of 480 µg/kg) and acetone (max of 64 µg/kg) were detected above Unrestricted Use SCOs, and several VOCs were detected at trace concentrations below Unrestricted Use SCOs, including tetrachloroethene (max of 960 µg/kg), and ethylbenzene (max of 300 µg/kg). Five SVOCs including, benz(a)anthracene (max of 3,800 µg/kg), benzo(a)pyrene (max of 4,200 µg/kg), benzo(b)fluoranthene (max of 6,200 µg/kg), chrysene (maximum of 3,900 µg/kg), and indeno(1,2,3-cd)pyrene (max of 1,200 µg/kg) were detected exceeding Restricted Residential Use SCOs. Benzo(k)fluoranthene (max of 1,300 µg/kg) only exceeded Unrestricted Use SCOs. The pesticides 4,4'-DDD (max of 16 µg/kg), 4,4'-DDE (max of 45 µg/kg), 4,4'-DDT (max of 140 µg/kg), and dieldrin (34 µg/kg) were detected above Unrestricted Use SCOs within several of the shallow 0-2ft soil samples and two of the deeper 10-12ft soil samples. Seven metals, including beryllium (14.5 mg/kg), chromium (max of 35.2 mg/kg), copper (max of 269 mg/kg), lead (max of 619 mg/kg), mercury (max of 0.76 mg/kg), nickel (max of 126 mg/kg) and zinc (max of 1,540 mg/kg) exceeded Unrestricted Use SCOs. Of these metals, lead also exceeded Restricted Residential Use SCOs. Overall, with the exception of the low level detections of the chlorinated VOC tetrachloroethene, the soil results were consistent with data identified at sites with historic fill material in NYC.
7. Groundwater sample results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples collected during the RI showed no PCBs or pesticides at detectable concentrations. No VOCs were detected above GQS, with the exception of tetrachloroethene (15 µg/L) which was detected within one of the five groundwater samples. Five SVOCs including, benzo(a)anthracene (max of 1 µg/L), benzo(a)pyrene (max of 1.1 µg/L), benzo(b)fluoranthene (max of 1.8 µg/L), benzo(k)fluoranthene (0.65 µg/L), and chrysene (max of 1.1 µg/L) were detected above GQS within two of the five groundwater samples. The dissolved concentration of the metals magnesium (max of 59.2 mg/L), manganese (max of 1.64 mg/L), and sodium (max of 87.5 mg/L), exceeded GQS.

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. Data collected during the RI indicated petroleum VOCs were present at low concentrations and chlorinated VOCs were present at high concentrations. The chlorinated VOC trichloroethene was detected in five of the six soil vapor samples ranging in concentration from 3.96 $\mu\text{g}/\text{m}^3$ to 169 $\mu\text{g}/\text{m}^3$. Tetrachloroethene (PCE) was detected in all six soil samples ranging in concentration from 2.44 $\mu\text{g}/\text{m}^3$ to 10,200 $\mu\text{g}/\text{m}^3$. The chlorinated VOC 1,1,1-trichloroethane (TCA) was detected in three of the six soil vapor samples at a maximum of 111 $\mu\text{g}/\text{m}^3$. Carbon tetrachloride was detected in two of the six soil vapor samples at a maximum concentration of 0.43 $\mu\text{g}/\text{m}^3$. The chlorinated VOCs 1,1,1-trichloroethane (TCA), tetrachloroethene (PCE) and trichloroethene (TCE) were detected at concentrations above the mitigation level range established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

Summary of the Remedial Action

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

The major milestones for the Remedial Action were: A Pre-Application Meeting was held on January 6, 2014. A Remedial Investigation (RI) was performed in April 2015 and a RI Report (Associated Environmental Services Ltd, May 2015) was prepared to evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP).

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.

2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).
6. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. Excavation for the cellar level of each of the thirteen apartment buildings and the cellar level parking garage will be performed to a depth of approximately 13 feet. Additional excavation to about 15 to 16 ft will be required for the lower front cellar level and elevator pit areas. PCE hotspot area at SB-4 will be excavated and removed. Limited excavation (top 1 foot) will be performed in the recreational areas. Approximately, 40,000 tons of soils will be excavated and removed from this Site.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal of all UST's that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. Collection and analysis of twelve end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
11. Transportation and off-Site disposal of all soil/fill material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.

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. Construction of an engineered composite cover across the entire Site that will consist of the following: (1) a 5-inch thick concrete cellar slab with a 4-inch layer of clean granular sub-base beneath the slab for each of the thirteen new buildings, (2) a 6-inch thick concrete cellar slab with a 4-inch layer of clean granular sub-base beneath the slab for the cellar slab parking garage and parking garage ramps, and (3) a 4-inch thick concrete slab with a 4-inch layer of clean granular sub-base beneath the slab for each of the concrete capped areas to be finished as recreation areas.
14. Installation of a vapor barrier system for each of the thirteen new apartment buildings. The vapor barrier system is to be installed beneath the entire building slab and outside of all sub-grade foundation sidewalls to grade to mitigate soil vapor migration into the building. The vapor barrier system for each building will consist of Raven Industries 20-mil vapor barrier (VBP20 Plus) and will be installed below the entire cellar slab throughout the full building area and outside all sub-grade foundation sidewalls to grade. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. The vapor barrier system is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the vapor barrier system was designed and properly installed for each building to mitigate soil vapor migration into the buildings.
15. Installation of separate active sub-slab depressurization systems (SSDS) beneath each of the thirteen new apartment buildings. Each SSD system will consist of a single loop of horizontal pipe set in the middle of a gas permeable layer immediately beneath the building slab and vapor barrier system. The horizontal piping will consist of fabric wrapped, perforated schedule 40 4-inch PVC pipe connected to a 6-inch cast iron riser pipe that penetrates the slab and travels through the building to the roof. The gas permeable layer will consist of a 6-inch thick layer of 2-inch trap rock stone. The active SSDS will be hardwired and will include a RP265 blower installed on the roof line and a pressure gauge and alarm located in an accessible area in the basement. The active sub-slab depressurization system is an Engineering Control for the remedial action. The Remedial Engineer will certify in the RAR that each active sub-slab depressurization

system was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient across the building slab to prevent vapor migration into the building.

16. Construction and operation of a parking garage with high volume air exchange in conformance with NYC Building Code.
17. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
18. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
19. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
20. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.
21. Submission of an approved Site Management Plan (SMP) in the Remedial Action Plan (RAR) for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
22. The property will continue to be registered with a Restrictive Declaration at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

COMMUNITY PROTECTION STATEMENT

The NYC Office of Environmental Remediation (OER) provides governmental oversight for the cleanup of contaminated properties in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of a prior environmental study that shows the location of contamination at the Site, and describes the plans to clean up the Site to protect public health and the environment.

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

Project Information:

- Site Address: 1570 60th Street, Brooklyn, NY 11204
- NYC Voluntary Cleanup Program Project Number: 15CVCP161K

Project Contacts:

- OER Project Manager: Shana Holberton, 212-788-8841
- Site Project Manager: Kevin Brussee, 631-504-6000
- Site Safety Officer: Kevin Waters, 516-287-9023
- Online Document Repository:

<http://www.nyc.gov/html/oer/html/repository/RBrooklyn.shtml>

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

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

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

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

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

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

Community Air Monitoring Plan: Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust and odors. Air samples will be tested in accordance with a detailed plan called the Community Air Monitoring Plan or CAMP. Results will be regularly reported to the NYC 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 applicable NYC noise control standards. If you observe problems in these areas, please contact the on-Site Project Manager or NYC OER Project Manager listed on the first page of this Community Protection Statement document.

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

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

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

Signage: While the cleanup is in progress, a placard will be prominently posted at the main entrance of the property with a laminated project Fact Sheet that states that the project is in the NYC Voluntary Cleanup Program and provides project contact names and numbers, and 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 or the NYC OER Project Manager listed on the first page of this Community Protection Statement document, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

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

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

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

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

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

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

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

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

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

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

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

REMEDIAL ACTION WORK PLAN

1.0 PROJECT BACKGROUND

Mapleton Group, LLC is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program to investigate and remediate a property located at 1570 60th Street in the Borough Park section of Brooklyn, New York (the “Site”). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, and complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Background

The Site consists of a single lot located in the Borough Park Section of the Borough of Brooklyn, City of New York, Kings County, New York. Figure 1 shows the Site location. The street address associated with the Site is 1570 60th Street, Brooklyn, New York 11204. The Site is identified as Block 5516, Lot 34 on the New York City (NYC) Tax Map. The Site consists of 530.76 feet of street frontage on 61st Street, 200 feet of street frontage on 16th Avenue, and 196.36 feet of street frontage on 60th Street. The western property boundary is bordered by railroad tracks. The total square footage of the property is approximately 70,200. A map of the Site is shown on Figure 2.

The Site was formerly developed with a one-story, 35,072 ft² building used as a bowling alley, with an asphalt paved parking lot covering the remainder of the Site. However, the building was recently demolished, and the Site is now undeveloped and vacant.

1.2 Redevelopment Plan

The development project consists of 13 new 6-story apartment buildings with full cellar levels, and a cellar level parking garage constructed below the courtyard to be constructed behind the

buildings. Six nearly identical apartment buildings will front 61st Street and will have the following street addresses; 1559, 1563, 1567, 1571, and 1575 61st Street. An additional four identical apartment buildings will front 16th Avenue, and they'll have the following street addresses; 6004, 6010, 6014, and 6020 16th Avenue. Three smaller apartment buildings will be constructed along 60th Street, and they'll have the street addresses 1570, 1574, and 1578 60th Street.

The six buildings fronting 61st Street and the nearly identical four buildings fronting 16th Avenue will each be approximately 50 feet wide and have a depth of approximately 64 feet. The cellar of each of these ten new apartment buildings will consist of the elevator shaft and associated elevator machine room, refuse storage room, meter rooms, storage rooms, and open cellar accessory space for the apartments on the first floor. The open cellar accessory spaces will have windows that face a narrow areaway created between the cellar level parking garage and the building. The elevator machine room and meter rooms in the front of the cellar will be constructed approximately 3 feet lower than the rest of the cellar level. The majority of the cellar level of each building will require excavation to a depth of approximately 12ft, and additional excavation to about 15 to 16ft will be required for the lower front cellar level and elevator pit. Assuming an average excavation depth of approximately 13 ft across the 3,200 ft² footprint of each building, a total of approximately 1,500 cubic yards (2,250 tons) of soil will require excavation for each of the ten buildings.

The three smaller buildings fronting 60st Street will each be approximately 30 feet wide and have a depth of approximately 60 feet. The cellar of each of these three new apartment buildings will consist of the elevator shaft and associated elevator machine room, refuse storage room, meter rooms, storage rooms, and an open cellar accessory space for the apartment on the first floor. The open cellar accessory space will have windows that face a narrow areaway created between the cellar level parking garage and the building. The elevator machine room and meter rooms in the front of the cellar will be constructed approximately 3 feet lower than the rest of the cellar level. The majority of the cellar level of each building will require excavation to a depth of approximately 12ft, and additional excavation to about 15 to 16ft will be required for the lower front cellar level and elevator pit. Assuming an average excavation depth of approximately 13 ft

across the 1,800 ft² footprint of each building, a total of approximately 900 cubic yards (1,350 tons) of soil will require excavation for each of the three buildings.

A cellar level parking garage for 53 cars will be constructed behind each of the buildings within the rear courtyard area. A vehicle ramp from 61st Street will provide access to the parking garage. An additional on-grade parking area for 16 cars will be constructed above a portion of the cellar parking garage. Access to the on-grade parking area will be provided from 60th Street. A 8,230 ft² recreation area will be constructed above the remaining portion of the cellar level parking garage, and the remaining portions of the Site will be capped with concrete. The cellar level parking garage and the ramp will require excavation to a depth of approximately 12 feet across an approximately 18,000 ft² area will generate an additional 8,000 cubic yards (12,000 tons) of soil. Limited excavation (top 1 foot) across the remaining portions of the Site that will be capped with concrete will generate an additional 300 to 500 cubic yards.

The water table is expected at a depth of approximately 40 feet below grade surface (bgs), and will therefore not be encountered during excavation.

Layout of the redevelopment plans for the proposed building is presented on Figures 3. The current zoning designation is R6A. The proposed use is consistent with existing zoning for the property. The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

1.3 Description of Surrounding Property

The area immediately surrounding Site consists of a mix of residential and commercial properties. A railroad line runs along the west side of the Site and continues to the east. Figure 4 shows the surrounding land usage of adjacent properties as well as additional properties located up to 500 feet away from the Site. No hospitals, schools or daycare facilities are located within a 250 ft radius of the Site.

1.4 Summary of Past Site Uses and Areas of Concern

A Phase I Environmental Site Assessment (Phase I ESA) performed by Singer Environmental Group Ltd. dated March 7, 2005 and updated May 7, 2010 indicated that according to Sanborn fire insurance maps the eastern portion of the site was used as a disposal plant in the 1920's. The

Phase I also indicates that a Certificate of Occupancy dated December 16, 1941 lists the site as a vacant lot used for storage of used auto parts and auto wrecking. The Sanborn maps indicate that the Site was utilized as a bowling alley and associated parking lot from at least 1969 to at least 1995. The Phase I also states that a subsurface investigation conducted by Soil Mechanics Drilling Corp. on February 23, 2005 for engineering purposes indicated that urban fill was present at the site. The Phase I ESA is included as an appendix. Potential hazards encountered during Phase II ESA activities can include but are not limited to exposure to dust, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and heavy metals from urban fill, soil vapor, and/or groundwater.

Areas of Concern (AOCs) identified for the Site include:

- The presence of historic fill material to depths as great as 5 feet.
- Historic use of a portion of the Site as a disposal plant.

1.5 Summary of Work Performed under the Remedial Investigation

Associated Environmental Services, Ltd. performed the following scope of work at the Site in April of 2015:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Performed a geophysical investigation (ground penetrating radar survey) across accessible areas of the Site;
3. Installed twelve soil borings across the Site, and collected 24 soil samples for chemical analysis from the soil borings to evaluate soil quality;
4. Installed 5 groundwater monitoring wells across the Site, and collected 5 groundwater samples for chemical analysis to evaluate groundwater quality; and
5. Installed 6 soil vapor implant across the Site and collected 6 soil vapor samples for chemical analysis.

1.6 Summary of Findings of Remedial Investigation

A remedial investigation was performed and the results are documented in a companion document called “Remedial Investigation Report, 1570 60th Street, Brooklyn, NY”, dated May 2015 (RIR).

1. The elevation of the Site is approximately 38 feet.
2. Depth to groundwater at the Site is approximately 42 feet.
3. Groundwater flow is generally from northeast to southwest beneath the Site.
4. Depth to bedrock is at the Site is greater than 100 feet.
5. The stratigraphy of the Site consists of a very thin layer of historic fill material (2 inches to 2 feet) underlain by a native brown silty sand.
6. Soil/fill samples results were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Unrestricted Use and Restricted Residential Use Soil Cleanup Objectives (SCOs). Data collected during the RI showed no PCBs at detectable concentrations. The VOCs benzene (maximum [max] of 480 µg/kg) and acetone (max of 64 µg/kg) were detected above Unrestricted Use SCOs, and several VOCs were detected at trace concentrations below Unrestricted Use SCOs, including tetrachloroethene (max of 960 µg/kg), and ethylbenzene (max of 300 µg/kg). Five SVOCs including, benz(a)anthracene (max of 3,800 µg/kg), benzo(a)pyrene (max of 4,200 µg/kg), benzo(b)fluoranthene (max of 6,200 µg/kg), chrysene (maximum of 3,900 µg/kg), and indeno(1,2,3-cd)pyrene (max of 1,200 µg/kg) were detected exceeding Restricted Residential Use SCOs. Benzo(k)fluoranthene (max of 1,300 µg/kg) only exceeded Unrestricted Use SCOs. The pesticides 4,4'-DDD (max of 16 µg/kg), 4,4'-DDE (max of 45 µg/kg), 4,4'-DDT (max of 140 µg/kg), and dieldrin (34 µg/kg) were detected above Unrestricted Use SCOs within several of the shallow 0-2ft soil samples and two of the deeper 10-12ft soil samples. Seven metals, including beryllium (14.5 mg/kg), chromium (max of 35.2 mg/kg), copper (max of 269 mg/kg), lead (max of 619 mg/kg), mercury (max of 0.76 mg/kg), nickel (max of 126 mg/kg) and zinc (max of 1,540 mg/kg) exceeded Unrestricted Use SCOs. Of these metals, lead also exceeded Restricted Residential Use SCOs. Overall, with the exception of the low level detections of the

chlorinated VOC tetrachloroethene, the soil results were consistent with data identified at sites with historic fill material in NYC.

7. Groundwater sample results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples collected during the RI showed no PCBs or pesticides at detectable concentrations. No VOCs were detected above GQS, with the exception of tetrachloroethene (15 µg/L) which was detected within one of the five groundwater samples. Five SVOCs including, benzo(a)anthracene (max of 1 µg/L), benzo(a)pyrene (max of 1.1 µg/L), benzo(b)fluoranthene (max of 1.8 µg/L), benzo(k)fluoranthene (0.65 µg/L), and chrysene (max of 1.1 µg/L) were detected above GQS within two of the five groundwater samples. The dissolved concentration of the metals magnesium (max of 59.2 mg/L), manganese (max of 1.64 mg/L), and sodium (max of 87.5 mg/L) exceeded GQS.
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. Data collected during the RI indicated petroleum VOCs were present at low concentrations and chlorinated VOCs were present at high concentrations. The chlorinated VOC trichloroethene was detected in five of the six soil vapor samples ranging in concentration from 3.96 µg/m³ to 169 µg/m³. Tetrachloroethene (PCE) was detected in all six soil samples ranging in concentration from 2.44 µg/m³ to 10,200 µg/m³. The chlorinated VOC 1,1,1-trichloroethane (TCA) was detected in three of the six soil vapor samples at a maximum of 111 µg/m³. Carbon tetrachloride was detected in two of the six soil vapor samples at a maximum concentration of 0.43 µg/m³. The chlorinated VOCs 1,1,1-trichloroethane (TCA), tetrachloroethene (PCE) and trichloroethene (TCE) were detected at concentrations above the mitigation level range 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:

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.

Groundwater

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

Soil Vapor

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

3.0 REMEDIAL ALTERNATIVES ANALYSIS

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

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

As required, a Track 1 Unrestricted Use scenario is evaluated for the remedial action. The following is a detailed description of the alternatives analyzed to address impacted media at the Site:

Alternative 1:

- Selection of 6NYCRR Part 375 Section 6.8 Unrestricted Use Soil Cleanup Objectives.
- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. Based on the results of the Remedial Investigation, it is expected that this alternative would be achieved by removing all historic fill at the Site, which would require the following: excavating the entire Site to a depth of approximately 5 feet below grade. If soil/fill containing analytes at concentrations above Unrestricted

Use SCOs is still present at the base of the excavation after removal of all soil required for construction of each of the new building's cellar levels and cellar level parking garage is complete, additional excavation would 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 Unrestricted Use cleanup, but installation of a vapor barrier beneath the basement foundation and behind foundation sidewalls of the new building as a part of development to prevent any potential future exposures from off-Site soil vapor; and
- Placement of a final cover over the entire Site as part of new development.

Alternative 2:

- Establishment of Site Specific (Track 4) SCO;
- Removal of all soil/fill exceeding Track 4 Site-Specific SCOs and confirmation that Track 4 Site-Specific SCOs have been achieved with post-excavation end point sampling. Redevelopment plans for the Site requires removal of all soil to a depth of approximately 13 feet for each of the new 13 apartment buildings and 13 feet for the cellar level parking garage, and minimal excavation (top 1ft) across the remainder of the Site for at-grade areas that will be capped with concrete. If soil/fill containing analytes at concentrations above Track 4 Site-Specific SCOs is still present at the base of each of these areas, additional excavation would be performed to meet Track 4 Site-Specific SCOs;
- Placement of a composite cover system over the entire Site to prevent exposure to remaining soil/fill;
- Installation of a vapor barrier system beneath the building slab and along foundation side walls to prevent potential exposures from soil vapor;
- Installation and operation of an active Sub Slab Depressurization System (SSDS);
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site;
- Prohibitions of restricted Site uses, such as farming or vegetable gardening, to prevent future exposure pathways; and prohibition of a higher level of land use without OER approval;

- Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these Engineering and Institutional Controls including the performance of periodic inspections and certification that the controls are performing as they were intended. The SMP will note that the property owner and property owner's successors and assigns must comply with the approved SMP; and
- The property will continue to be registered with an Restrictive Declaration at the NYC Buildings Department.

3.1 Threshold Criteria

Protection of Public Health and the Environment

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

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

Alternative 2 would achieve comparable protections of human health and the environment by excavation and removal of most of the historic fill at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 Site-Specific SCO's, as well as by placement of Institutional and Engineering Controls, including a composite cover system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. The active Sub-Slab Depressurization System and the vapor barrier would mitigate any vapor issues from entering the new apartment buildings. Implementing Institutional Controls including a Site Management Plan and continuing the Restrictive Declaration on the property would ensure that the composite cover system remains intact and protective of public health. Establishment of Track 4 Site-Specific SCO's would minimize the risk of contamination leaching into groundwater.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an approved Soil/Materials Management Plan and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a sub-slab depressurization system below each of the apartment buildings and a vapor barrier system for each building (below the each building's cellar slab and behind/outside all foundations walls to grade).

3.2 Balancing Criteria

Compliance with Standards, Criteria and Guidance (SCGs)

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

Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to achieve Track 1 Unrestricted Use SCO's and Protection of Groundwater SCO's. Compliance with SCGs for soil vapor would also be achieved by installing a vapor barrier system below each building's cellar slab and continuing the vapor barrier outside of subgrade foundation walls, as part of development. The cellar level parking garage will utilize high volume air exchange that conforms to the NYC Building Code.

Alternative 2 would achieve compliance with the remedial goals, chemical-specific SCG's and RAOs for soil through removal of soil to meet Track 4 Site-Specific SCO's. Compliance with SCG's for soil vapor would also be achieved by installing a vapor barrier system below each new building's cellar slab and continuing the vapor barrier outside of subgrade foundation walls. A Site Management Plan would ensure that these controls remained protective for the long term. In addition, the cellar level parking garage will utilize high volume air exchange that conforms to the NYC Building Code and will mediate any potential accumulation of soil vapors inside the buildings.

Health and safety measures contained in the CHASP and Community Air Monitoring Plan (CAMP) will be implemented during Site redevelopment under this RAWP. For both

Alternatives, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs. These measures will protect on-site workers and the surrounding community from exposure to Site-related contaminants.

Short-Term Effectiveness and Impacts

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

Both Alternative 1 and 2 have similar short-term effectiveness during their implementation, as each requires excavation of historic fill material. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short-term impacts could potentially be higher for Alternative 1 because excavation of greater amounts of historical fill material would take place in the recreation areas that require minimal excavation (top 1 foot) for installation of a concrete cap. However, focused attention to means and methods during a Track 1 removal action, including community air monitoring and appropriate truck routing, would minimize the overall impact of these activities.

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

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

contact with on-Site contaminants. Construction workers operating under appropriate management procedures and a Construction Health and Safety Plan (CHASP) would provide protection from on-Site contaminants by using personal protective equipment would be worn consistent with the documented risks within the respective work zones.

Long-term effectiveness and permanence

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

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

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

Reduction of toxicity, mobility, or volume of contaminated material

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

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

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

Alternative 2 would remove most of the historic fill at the Site, and all remaining on-Site soil/fill beneath the new buildings and within the recreation courtyard areas will meet Track 4 Site-Specific SCO's.

Alternative 1 would remove a greater total mass of contaminants from the 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 both Alternatives 1 and 2 are readily available and have been proven to be effective in remediating the contaminants present on the Site. They use standard equipment and technologies that are well established in the industry. The reliability of each remedy is also high. There are no special difficulties associated with any of the activities proposed.

Cost effectiveness

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, and disposal costs, engineering expenses) and site

management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action.

Since the redevelopment plan includes minimal excavation (top 1 foot) in some areas of the Site for concrete capped recreation areas, the costs associated with Alternative 1 would be higher than Alternative 2 to remove all historic fill material/soil with analytes above Track 1 Unrestricted Use SCOs. Additional costs could also include installation of additional shoring/underpinning, disposal of additional soil, and import of clean soil for backfill in over-excavated areas. However, long-term costs for Alternative 2 are likely higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2.

The remedial plan would couple the remedial action with the redevelopment of the Site, lowering total costs. The remedial plan will also consider the selection of the most appropriate disposal facilities to reduce transportation and disposal costs during cleanup and redevelopment of the Site.

Community Acceptance

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

This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Attachment B. Observations here will be supplemented by public comment received on the RAWP. Under both alternatives, the overall goals of the remedial program, to protect public health and the environment and eliminate potential contaminant exposures, have been broadly supported by citizens in NYC communities.

Land use

This evaluation criterion addresses the proposed use of the property. This evaluation has considered reasonably anticipated future uses of the Site and takes into account: current use and historical and/or recent development patterns; applicable zoning laws and maps; NYS Department of State's Brownfield Opportunity Areas (BOA) pursuant to section 970-r of the

general municipal law; applicable land use plans; proximity to real property currently used for residential use, and to commercial, industrial, agricultural, and/or recreational areas; environmental justice impacts, Federal or State land use designations; population growth patterns and projections; accessibility to existing infrastructure; proximity of the site to important cultural resources and natural resources, potential vulnerability of groundwater to contamination that might emanate from the site, proximity to flood plains, geography and geology; and current Institutional Controls applicable to the site.

The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with the selected remedy of soil remediation. The proposed future use of the Site includes 13 new 6-story apartment buildings, each with a full cellar level, and a cellar level parking garage that will be constructed in the rear courtyard area. Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs, both of which are protective of public health and the environment for its planned residential use. The proposed use is compliant with the property's zoning and is consistent with recent development patterns. The areas surrounding the site is urban and consists of predominantly mixed residential and commercial buildings in zoning districts designated for commercial and residential uses. The development would remediate a vacant contaminated lot and provide thirteen new modern apartment buildings. The proposed development would clean up the property and make it safer, create new employment opportunities, and other economic benefits from land revitalization.

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

The Site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites, natural resources, waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species. The Site is located in an urban area and not in proximity to fish or wildlife and neither alternative would result in any potential exposure pathways of contaminant migration affecting fish or wildlife. The remedial action is also protective of groundwater natural resources. The Site does not lie in a

Federal Emergency Management Agency (FEMA)-designated flood plain. Both alternatives are equally protective of natural resources and cultural resources. Improvements in the current environmental condition of the property achieved by both alternatives considered in this plan are consistent with the City's goals for cleanup of contaminated land.

Sustainability of the Remedial Action

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

While Alternative 2 would potentially result in lower energy usage based on reducing the volume of material transported off-Site, both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. The remedial plan for either alternative would take into consideration the shortest trucking routes during off-Site disposal of historic fill and other soils, which would reduce greenhouse gas emissions and conserve energy used to fuel trucks. The New York City Clean Soil Bank program is available for reuse of any clean native soils under either alternative. A complete list of green remedial activities considered as part of the NYC VCP is included in a Sustainability Statement.

4.0 REMEDIAL ACTION

4.1 Summary of Preferred Remedial Action

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).
6. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. Excavation for the cellar level of each of the thirteen apartment buildings and the cellar level parking garage will be performed to a depth of approximately 13 feet. Additional excavation to about 15 to 16 ft will be required for the lower front cellar level and elevator pit areas. PCE hotspot area at SB-4 will be excavated and removed. Limited excavation (top 1 foot) will be performed in the recreational areas. Approximately, 40,000 tons of soils will be excavated and removed from this Site.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.

8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal of all UST's that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. Collection and analysis of twelve end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
11. Transportation and off-Site disposal of all soil/fill material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
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. Construction of an engineered composite cover across the entire Site that will consist of the following: (1) a 5-inch thick concrete cellar slab with a 4-inch layer of clean granular sub-base beneath the slab for each of the thirteen new buildings, (2) a 6-inch thick concrete cellar slab with a 4-inch layer of clean granular sub-base beneath the slab for the cellar slab parking garage and parking garage ramps, and (3) a 4-inch thick concrete slab with a 4-inch layer of clean granular sub-base beneath the slab for each of the concrete capped areas to be finished as recreation areas.
14. Installation of a vapor barrier system for each of the thirteen new apartment buildings. The vapor barrier system is to be installed beneath the entire building slab and outside of all sub-grade foundation sidewalls to grade to mitigate soil vapor migration into the building. The vapor barrier system for each building will consist of Raven Industries 20-mil vapor barrier (VBP20 Plus) and will be installed below the entire cellar slab throughout the full building area and outside all sub-grade foundation sidewalls to grade. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. The vapor barrier system is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the vapor barrier

system was designed and properly installed for each building to mitigate soil vapor migration into the buildings.

15. Installation of separate active sub-slab depressurization systems (SSDS) beneath each of the thirteen new apartment buildings. Each SSD system will consist of a single loop of horizontal pipe set in the middle of a gas permeable layer immediately beneath the building slab and vapor barrier system. The horizontal piping will consist of fabric wrapped, perforated schedule 40 4-inch PVC pipe connected to a 6-inch cast iron riser pipe that penetrates the slab and travels through the building to the roof. The gas permeable layer will consist of a 6-inch thick layer of 2-inch trap rock stone. The active SSDS will be hardwired and will include a RP265 blower installed on the roof line and a pressure gauge and alarm located in an accessible area in the basement. The active sub-slab depressurization system is an Engineering Control for the remedial action. The Remedial Engineer will certify in the RAR that each active sub-slab depressurization system was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient across the building slab to prevent vapor migration into the building.
16. Construction and operation of a parking garage with high volume air exchange in conformance with NYC Building Code.
17. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
18. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
19. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
20. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.
21. Submission of an approved Site Management Plan (SMP) in the Remedial Action Plan (RAR) for long-term management of residual contamination, including plans for

operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.

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

4.2 Soil Cleanup Objectives and Soil/ Fill Management

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

<u>Contaminant</u>	<u>Site-Specific SCO's</u>
Total SVOCs	250 ppm
Lead	1,000 ppm
Mercury	1.5 ppm

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan in 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/Fill Excavation and Removal

The location of planned excavations is shown in Figure 5. The total quantity of soil/fill expected to be excavated and disposed off-Site is 40,000 tons. For each disposal facility to be used in the remedial action, a letter from the developer/QEP to the receiving facility requesting approval for disposal and a letter back to the developer/QEP providing approval for disposal will be submitted to OER prior to any transport and disposal of soil at a facility.

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

End-point Sampling

End-point samples will be analyzed for compounds and elements as described below utilizing the following methodology:

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

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

Confirmation End-point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with confirmation end-point soil sampling. Twelve confirmation samples will be collected from the base of the excavation at locations to be determined by OER. To evaluate attainment of Track 4, Site-Specific SCOs, samples will be analyzed for VOCs, SVOCs, and metals according to analytical methods described above.

Hotspot End-point Sampling

A PCE hotspot area at SB-4 will be excavated and removed. For any additional hotspots identified during this remedial program, including any hotspots identified during the remedial action, hotspot removal actions will be performed to ensure that hot-spots are fully removed and end point samples will be collected at the following frequency:

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

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

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

Quality Assurance/Quality Control

The 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 of Soils

Import of soils onto the property 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 0 tons. Soil import is not planned on this project.

Reuse of On-Site Soils

Reuse of on-Site soil will be performed in conformance with the Soil/Materials Management Plan in Attachment D. The estimated quantity of soil to be reused on this project is 0 tons. Reuse soils will meet the SCO's established for this project. Soil reuse is not planned on this project.

4.3 Engineering Controls

The excavation required for the proposed Site development will achieve Track 4 Site Specific SCOs. Engineering Controls will be employed in the remedial action to address residual contamination remaining at the site. The Site has three primary Engineering Control Systems. These are:

- Composite Cover System
- Soil Vapor Barrier System
- Active Sub-Slab Depressurization System

Composite Cover System

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. This composite cover system will be comprised of the following: (1) a 5-inch thick concrete cellar slab with a 4-inch layer of clean granular sub-base beneath the slab for each of the thirteen new buildings, (2) a 6-inch thick concrete cellar slab with a 4-inch layer of clean granular sub-base beneath the slab for the cellar slab parking garage and parking garage ramps, and (3) a 4-inch thick concrete slab with a 4-inch layer of clean granular sub-base beneath the slab for each of the concrete capped areas to be finished as recreation areas

Figure 5 shows the typical design for the composite cover system used on this Site.

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

Vapor Barrier System

Migration of soil vapor from on-Site or off-Site sources into the buildings will be mitigated with a combination of building slab and vapor barrier. 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 vapor barrier will be installed prior to pouring each building's concrete cellar slab. The vapor barrier will extend throughout the area occupied by the footprint of the new buildings and up the foundation sidewalls in accordance with manufacturer specifications. 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 seam, penetrations, and repairs will be sealed either by the tape method or weld method, according to the manufacturer's recommendations and instructions.

A plan view showing the installation location of the proposed vapor barrier system and typical design sections for the vapor barrier on slab and sidewalls is provided in Figure 7. Product specification sheets are provided in Attachment F. The Remedial Action Report will include as-built drawings and diagrams; manufacturer documentation; and photographs.

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

Sub-Slab Depressurization System

Migration of soil vapor into each of the thirteen apartment buildings will be mitigated with the construction of an active Sub-Slab Depressurization System (SSDS) beneath each building. The SSDS system to be installed below each building will consist of a single loop installed below the vapor barrier and cellar slab within porous granular material. The SSDS loop will provide the correct coverage in accordance with USEPA sub-slab depressurization design specifications which recommend a separate vent loop for every 4,000 ft² of slab area. The SSDS will be outfitted with a 6" cast iron riser that will extend to the roof of the building and finished with a

Radonaway RP265 blower/fan. The blower/fan exhaust will be placed at a minimum distance of 15ft from all air intakes. The layout plan for each of the SSD systems is provided in Figure 8. Details of the SSDS systems are provided in Figure 9.

A Dwyer 0-5 inches of water manometer and a Radonaway alarm are to be installed immediately in an accessible area within the basement. Following initial start up of the active SSDS, an initial vacuum gauge reading using a Magnahelic Manometer is to be recorded. The system is designed to establish a vacuum of 0.4 inches of water or higher.

The SSDS is a permanent engineering control. The system will be inspected and its performance certified at specified intervals as required by this RAWP and the Site Management Plan. Maintenance of this SSDS will be described in the Site Management Plan in the Remedial Action Report.

Ventilated Garage

A sub slab ventilated garage will be constructed in courtyard area and will be operated per requirements of NYCDOB codes.

4.4 Institutional Controls

A series of Institutional Controls (IC's) are required under this Remedial Action to assure permanent protection of public health by elimination of exposure to residual materials. These IC's define the program to operate, maintain, inspect and certify the performance of Engineering Controls and Institutional Controls on this property. Institutional Controls would be implemented in accordance with a Site Management Plan included in the final Remedial Action Report (RAR). Institutional Controls would be:

- Continued registration of the Restrictive Declaration for the property. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the SMP which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;

- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for usage type: e.g. commercial use and will not be used for a higher level of use without prior approval by OER.

4.5 Site Management Plan

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

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

Site management activities and EC/IC certification will be scheduled by OER on a periodic basis to be established in the RAR and the SMP and will be subject to review and modification by OER. The Site Management Plan will be based on a calendar year and certification reports will be due for submission to OER by July 30 of the year following the reporting period.

4.6 Qualitative Human Health Exposure Assessment

The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure to the contaminants of concern (COC) that are present at, or migrating from, the Site. The identification of exposure pathways describes the route that the

COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

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

Known and Potential Contaminant Sources

Historic fill material is present below the cellar slab from grade to approximately 2 feet below grade. Based on the results of the RIR, the contaminants of concern are:

Soil

- The chlorinated VOC tetrachloroethene (PCE) was detected at concentrations below Unrestricted Use SCOs. The VOC benzene was detected above Unrestricted Use SCOs;
- SVOCs, including benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene were detected at concentrations exceeding Restricted Residential Use SCOs;
- Pesticides were identified, but none exceeded Restricted Residential Use SCOs; and
- Several metals were detected, but only lead was detected at concentrations exceeding Restricted Residential Use SCOs.

Groundwater

- The VOC tetrachloroethene (PCE) exceeded Groundwater Quality Standards;
- SVOCs, including benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoroanthene, benzo(k)fluoranthene, and chrysene exceeded Groundwater Quality Standards; and

- The metals aluminum, chromium, iron, lead, magnesium, manganese, nickel and sodium exceeded Groundwater Quality Standards.

Soil vapor

- The chlorinated VOCs 1,1,1-trichloroethane (TCA), tetrachloroethylene (PCE) and trichloroethene (TCE) were detected above NYSDOH mitigation thresholds; and
- Petroleum-related VOCs were detected at low concentrations including benzene, toluene, ethyl-benzene and xylenes.

Nature, Extent, Fate and Transport of Contaminants

Soil: A 5ft layer of historic fill material is present across the Site. VOCs, pesticides, SVOCs and metals were detected above Unrestricted Use SCOs in the historic fill material layer. The chlorinated VOC PCE was detected in three soil samples at a concentration below Unrestricted Use SCOs.

Groundwater: Five SVOCs were detected at very low concentrations above GQS in the groundwater samples collected at the Site. The same SVOCs were detected above Restricted Residential Use SCOs within on-Site fill material, but no SVOCs were detected within the deeper soil samples collected from the native soil layer. Therefore, the low concentration of SVOCs in the groundwater sample are considered background, and not indicative of an on-Site spill/release. None of the pesticides detected in on-Site soil were detected within the groundwater sample. The chlorinated VOC PCE was detected within one of the groundwater samples at a concentration above GQS. However, due to the low concentrations detected in on-Site soil (below Unrestricted Use SCOs) and the depth to groundwater at the Site (approximately 40 feet), the PCE concentration detected within the groundwater sample is not likely associated with PCE detected in on-Site soil.

Soil Vapor: TCE, PCE and 1,1,1-TCA were detected in one of the soil vapor samples at concentrations above the mitigation threshold established by New York State DOH. TCE and 1,1,1-TCA were not detected within any of the soil samples collected at the Site, but a low concentration of PCE was detected within several of the soil samples collected at the Site, and

one of the groundwater sample collected at the Site. The elevated PCE concentration in soil gas may be associated with low values of PCE detected in on-Site soil.

Receptor Populations

On-Site Receptors: The Site is currently undeveloped. The former bowling alley building was demolished earlier this year. The majority of the Site remains capped with the former asphalt parking lot. Access to the Site is restricted an 8-ft chain link fence around the Site. On-Site receptors are limited to the Site's owner, contractors, trespassers, site representatives and visitors granted access to the property. During construction, potential on-site receptors include construction workers, site representatives, and visitors. Under proposed future conditions, potential on-site receptors include building occupants, workers and visitors.

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

- Commercial Businesses – existing and future
- Residential Buildings – existing and future
- Building Construction/ Renovation – existing and future
- Pedestrians, Trespassers, Cyclists – existing and future
- Schools – existing and future

Potential Routes of Exposure

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

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

Current Conditions: The Site is currently capped with the asphalt parking lot that surrounded the former bowling alley, but portions of the Site may be uncapped after the building was demolished. Therefore, potential exposure pathways from ingestion, inhalation, or dermal

absorption of soil/ fill exist. Groundwater is not exposed at the Site. The Site is served by the public water supply and groundwater is not used at the Site for potable supply and there is no potential for exposure. Because the Site is currently undeveloped, there is no potential for soil vapor to accumulate on Site.

Construction/ Remediation Conditions: During the remedial action, on-Site workers will come into direct contact with surface and subsurface soils as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale or have dermal contact with exposed impacted soil and fill. Similarly, off-Site receptors could be exposed to dust and vapors from on-Site activities. Due to the depth of groundwater, direct contact with groundwater is not expected. During construction, on-Site and off-Site exposures to contaminated dust from on-Site will be addressed through the Soil/Materials Management Plan, dust controls, and through the implementation of the Community Air-Monitoring Program and a Construction Health and Safety Plan.

Proposed Future Conditions: Under future remediated conditions, all soils in excess of Track Track 4 SCOs will be removed. The Site will be fully capped, preventing potential direct exposure to soil and groundwater remaining in place, and engineering controls (vapor barrier and active SSDS) will prevent any potential exposure due to inhalation by preventing soil vapor intrusion. The Site is served by the public water supply, and groundwater is not used at the Site. There are no plausible off-Site pathways for oral, inhalation, or dermal exposure to contaminants derived from the Site.

Overall Human Health Exposure Assessment

There are potential complete exposure pathways for the current Site condition. There are potential complete exposure pathways that requires mitigation during implementation of the remedy. There are no complete exposure pathways under future conditions after the Site is developed. This assessment takes into consideration the reasonably anticipated use of the Site, which includes a residential structure, site-wide surface cover, an active SSDS, ventilated garage and a subsurface vapor barrier system for each of the new buildings. Under current conditions, on-Site exposure pathways exist for those with access to the Site and trespassers. During remedial construction, on-Site and off-Site exposures to contaminated dust from historic fill

material will be addressed through dust controls, and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

Environmental Media & Exposure Route	Human Exposure Assessment for Proposed Remedial Action
Direct contact with surface and subsurface soils	There is no direct contact with soil because the Site will be completely covered with an engineered composite cover. Future contact with soil will be prevented by the implementation of a Site Management Plan and Soil and Materials Management Plan for any future ground intrusive work
Ingestion of groundwater	The area is served by an upstate water supply and groundwater is not being used for potable water supply. Groundwater use for potable supply onsite is prohibited by municipal law.
Direct contact with groundwater	There is no direct contact with groundwater because the Site will be completely covered with an engineered composite cover. Future contact with groundwater will be prevented by the implementation of a Site Management Plan and Soil and Materials Management Plan for any future ground intrusive work
Direct contact with soil vapor	Contact with soil vapor will be prevented with a soil vapor barrier and an active sub slab depressurization system for each building.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include Kevin Brussee, 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 an 8ft high construction fence constructed around the perimeter of the Site.

5.3 Work Hours

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

5.4 Construction Health and Safety Plan

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

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

Personnel entering any exclusion zone will be trained in the provisions of the HASP and will comply with all requirements of 29 CFR 1910.120. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed.

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

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

5.5 Community Air Monitoring Plan

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

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

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work.

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

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

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

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The

equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

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

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

5.6 Agency Approvals

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

5.7 Site Preparation

Pre-Construction Meeting

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

Mobilization

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

Utility Marker Layouts, Easement Layouts

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

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

Dewatering

Dewatering is not anticipated during remediation and construction.

Equipment and Material Staging

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

Stabilized Construction Entrance

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

Truck Inspection Station

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

Extreme Storm Preparedness and Response Contingency Plan

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

Storm Preparedness

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

Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A site inspection report will be submitted

to OER at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYS DEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to OER. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will be collected and appropriately managed.

Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. Stormwater control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If on-Site petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362 within statutory defined timelines. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYS DEC.

Storm Response Reporting

A site inspection report will be submitted to OER at the completion of site inspection. An inspection report established by OER is available on OER's website (www.nyc.gov/oer) and will be used for this purpose. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. The site inspection report will be sent to the OER project manager and will include the site name,

address, tax block and lot, site primary and alternate contact name and phone number. Damage and soil release assessment will include: whether the project had stockpiles; whether stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil from the site was dislocated and whether any of the soil left the site; estimates of the volume of soil that left the site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of onsite or offsite exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYS DEC; description of corrective actions; schedule for corrective actions. This report should be completed and submitted to OER project manager with photographs within 24 hours of the time of safe entry to the property after the storm event.

5.8 Traffic Control

Drivers of trucks leaving the Site with soil/fill will be instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site is shown on Figure 10.

5.9 Demobilization

Demobilization will include:

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

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

5.10 Reporting and Record Keeping

Daily reports

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

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

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

Record Keeping and Photo Documentation

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

5.11 Complaint Management

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

5.12 Deviations From The Remedial Action Work Plan

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

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

6.0 REMEDIAL ACTION REPORT

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

- Information required by this RAWP;
- Text description with thorough detail of all engineering and institutional controls (if Track 1 remedial action is not achieved)
- As-built drawings for all constructed remedial elements;
- Manifests for all soil or fill disposal;
- Photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 remedial action is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results (including all soil test results from the remedial investigation for soil that will remain on site) and all soil/fill waste characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all soil or fill material removed from the Site including a map showing the location of these excavations and hotspots, tanks or other contaminant source areas;
- Full accounting of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material;
- Account of the origin and required chemical quality testing for material imported onto the Site;
- Continue registration of the property with an Restrictive Declaration by the NYC Department of Buildings (if Track 1 remedial action is not achieved);

- The RAWP and Remedial Investigation Report will be included as appendices to the RAR;
- Reports and supporting material will be submitted in digital form and final PDF's will include bookmarks for each appendix.

Remedial Action Report Certification

I, Ariel Czemerinski, am currently a registered professional engineer licensed by the State of New York. I performed professional engineering services and had primary direct responsibility for implementation of the remedial program for the redevelopment project located at 1570 60th Street, Brooklyn, NY, VCP Site No. 15CVCP161K. I certify to the following:

- I have reviewed this document, to which my signature and seal are affixed.
- Engineering Controls implemented during this remedial action were designed by me or a person under my direct supervision and achieve the goals established in the Remedial Action Work Plan for this site.
- The Engineering Controls constructed during this remedial action were professionally observed by me or by a person under my direct supervision and (1) are consistent with the Engineering Control design established in the Remedial action Work Plan and (2) are accurately reflected in the text and drawings for as-built design reported in this Remedial Action Report.
- The OER-approved Remedial Action Work Plan dated June 2015 and Stipulations in a letter dated [date] were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

Name

PE License Number

Signature

Date

PE Stamp

Remedial Action Report Certification

I, Charles Sosik, am a Qualified Environmental Professional. I had primary direct responsibility for implementation of the remedial program for the redevelopment project located at 1570 60th Street, Brooklyn, NY, VCP Site No. 15CVCP161K. I certify to the following:

- The OER-approved Remedial Action Work Plan dated June 2015 and Stipulations in a letter dated J were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

QEP Name

QEP Signature

Date

7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a 7 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	20
Demobilization	22	1
Submit Remedial Action Report	30	1

TABLES

TABLE 1
Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
METALS							
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
PESTICIDES / PCBs							
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
SEMI-VOLATILES							
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

TABLE 1
Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
VOLATILES							
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 ^d
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.

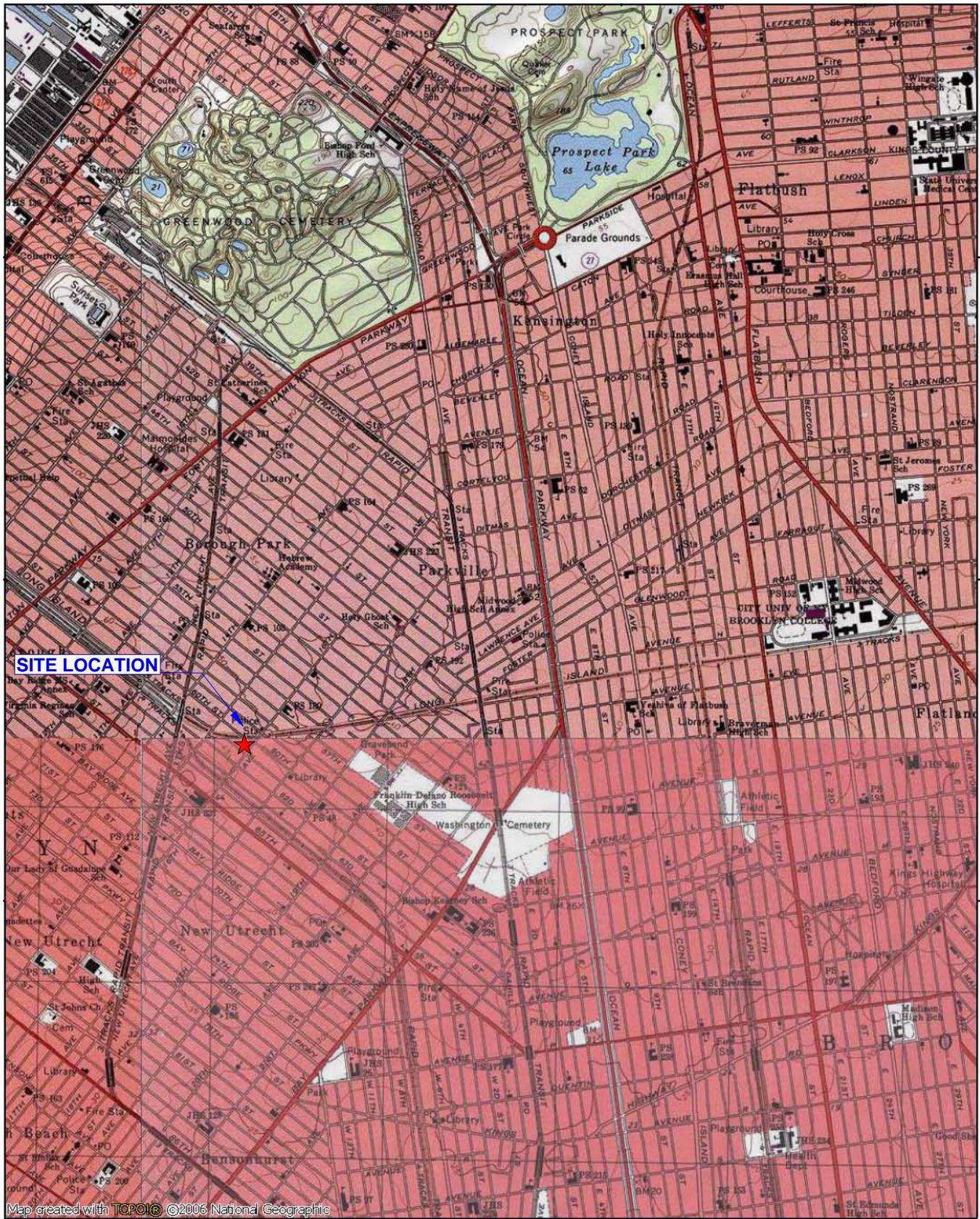
b The SCOs for commercial use were capped at a maximum value of 500 ppm. See TSD section 9.3.

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.

FIGURES

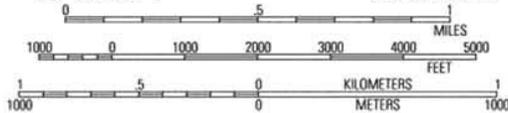


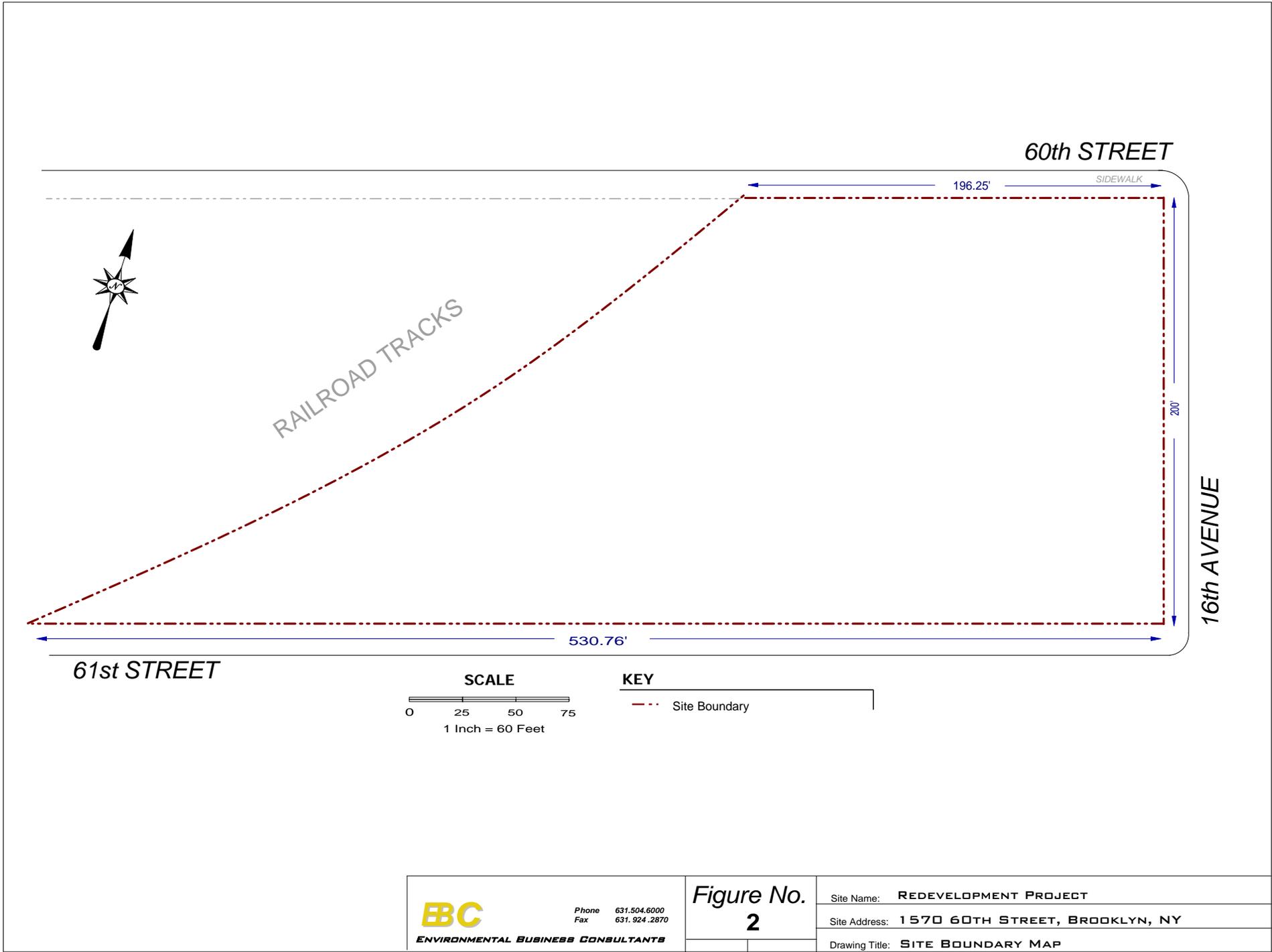
74°00.000' W

73°59.000' W

73°58.000' W

WGS84 73°57.000' W





60th STREET

196.25'

SIDEWALK

RAILROAD TRACKS



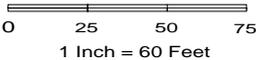
200'

16th AVENUE

530.76'

61st STREET

SCALE



KEY

--- Site Boundary

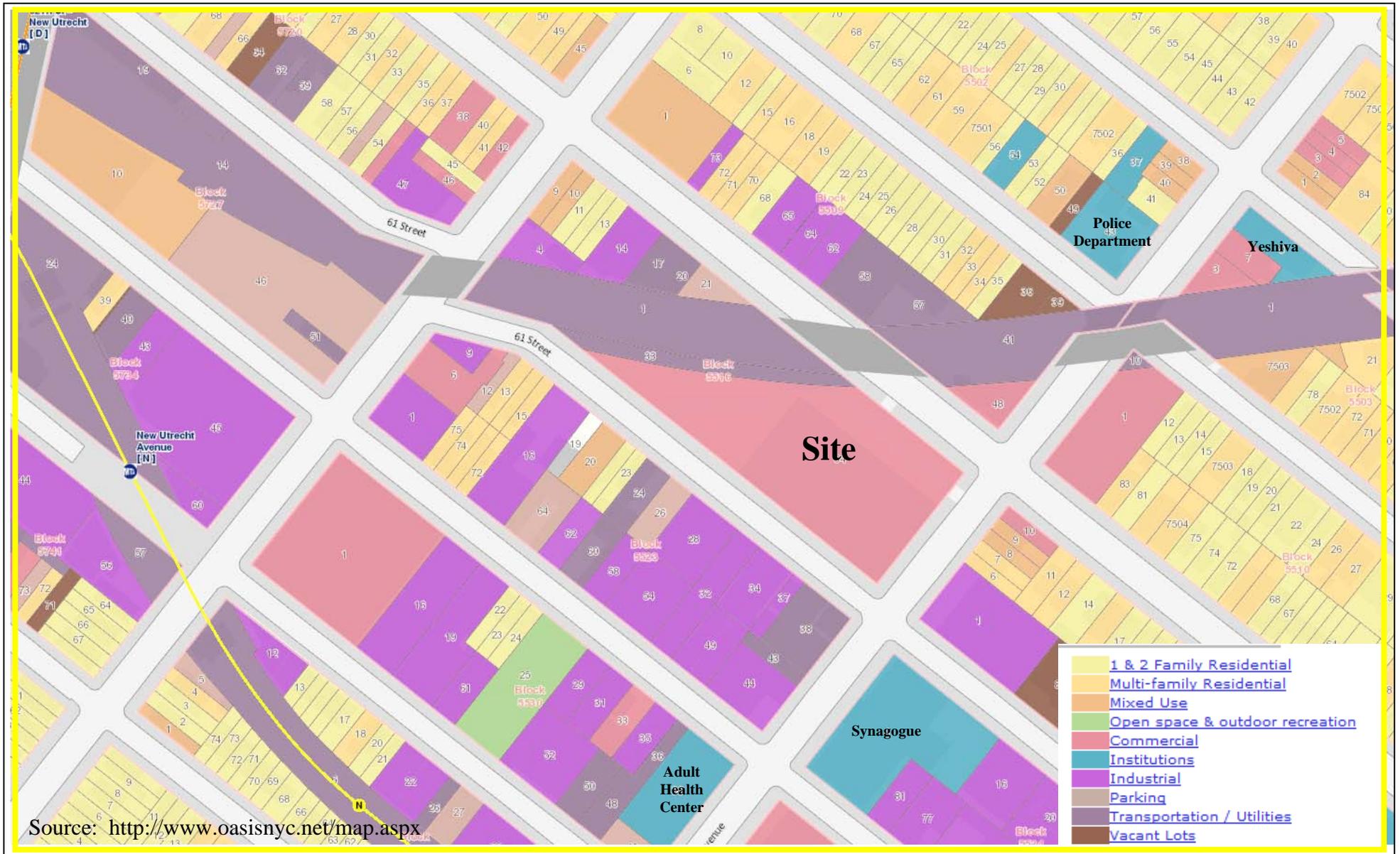


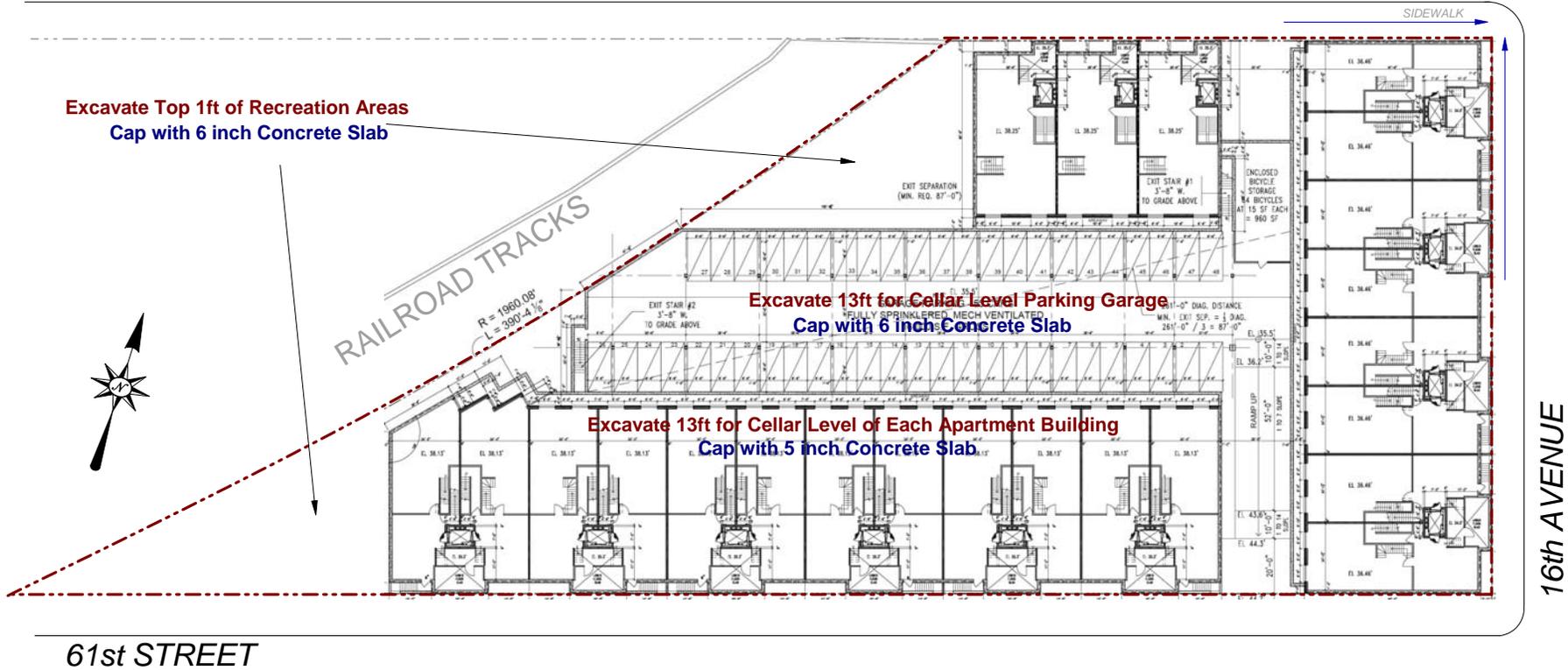
FIGURE 4
SURROUNDING LAND USE MAP

1570 60th STREET, BROOKLYN, NY 11204



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

CELLAR FLOOR PLAN

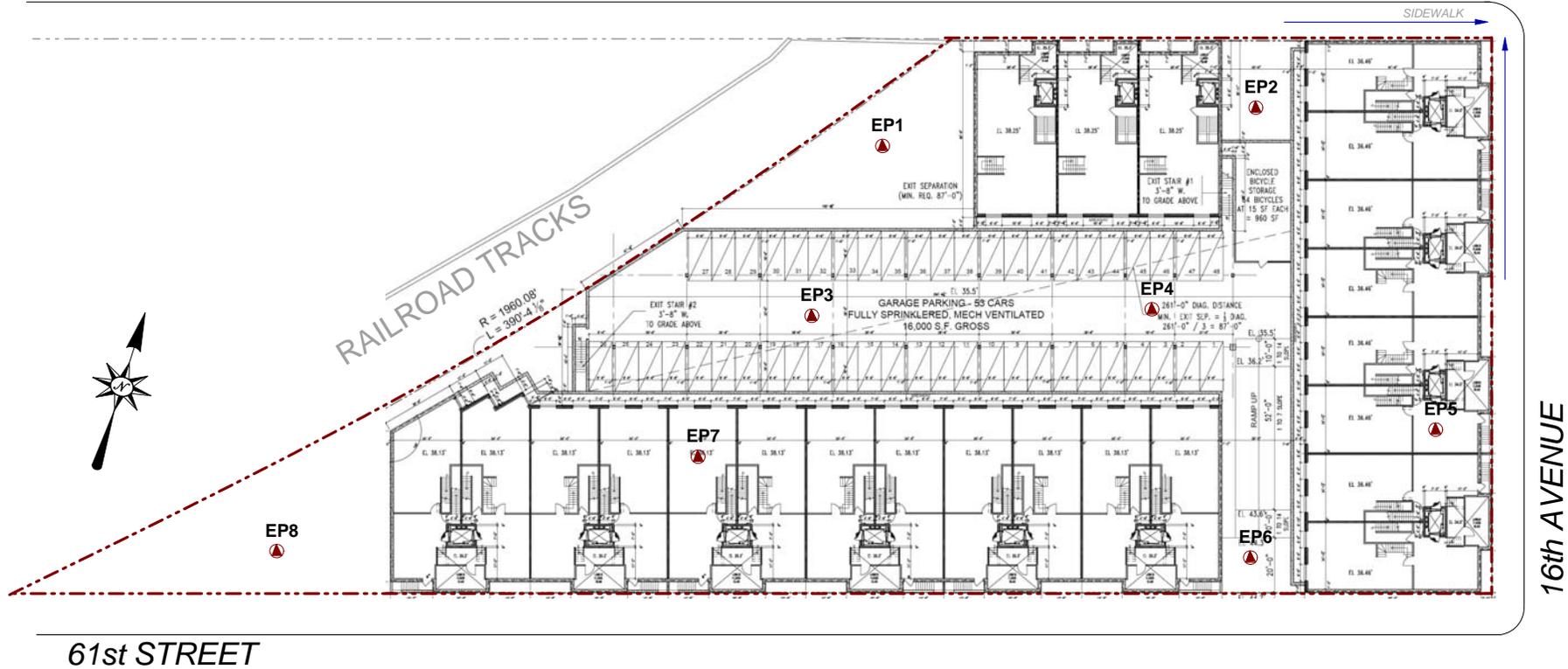


KEY

--- Site Boundary

<p>Phone 631.504.6000 Fax 631.924.2870</p>	<p>Figure No. 5</p>	<p>Site Name: REDEVELOPMENT PROJECT</p>
	<p>Site Address: 1570 60TH STREET, BROOKLYN, NY</p>	<p>Site Name: REDEVELOPMENT PROJECT</p>
	<p>Drawing Title: EXCAVATION AND CAPPING PLAN</p>	<p>Site Name: REDEVELOPMENT PROJECT</p>

CELLAR FLOOR PLAN



KEY

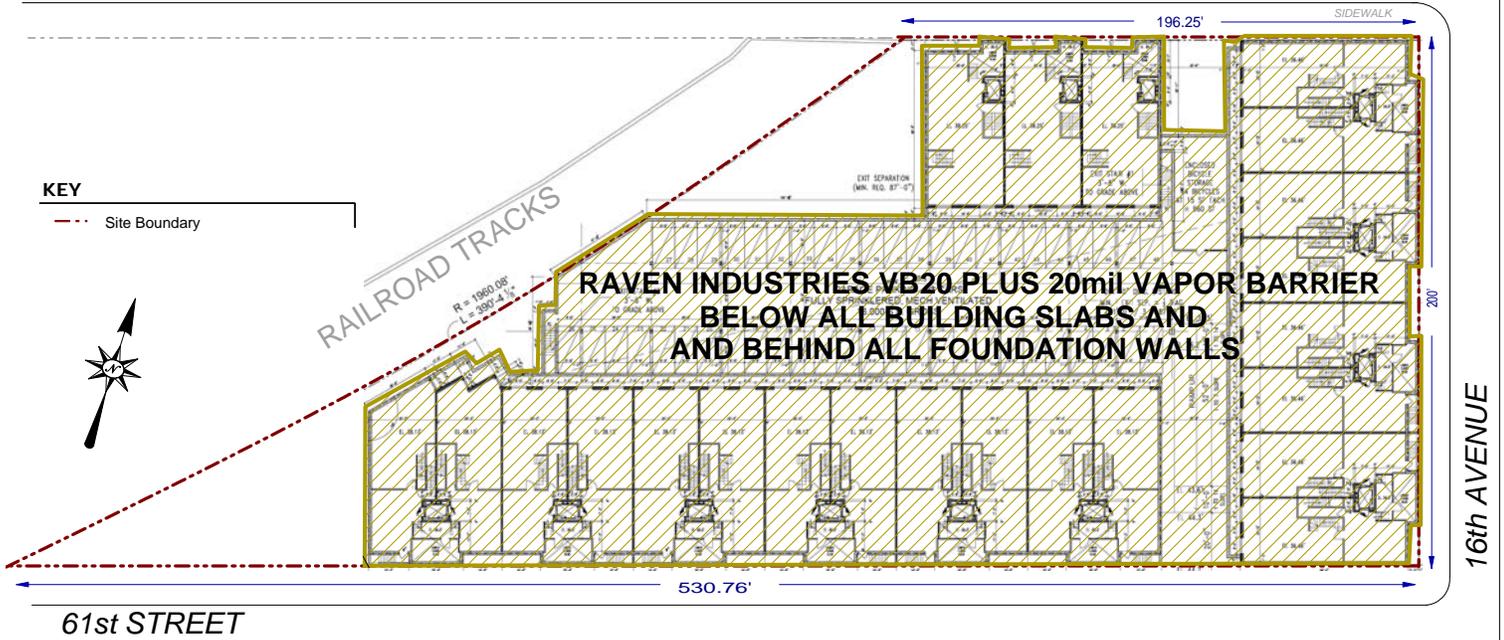
- Site Boundary
- ▲ Endpoint Sample (VOCs, SVOCs, Metals)

ABC
 ENVIRONMENTAL BUSINESS CONSULTANTS
 Phone 631.504.6000
 Fax 631.924.2870

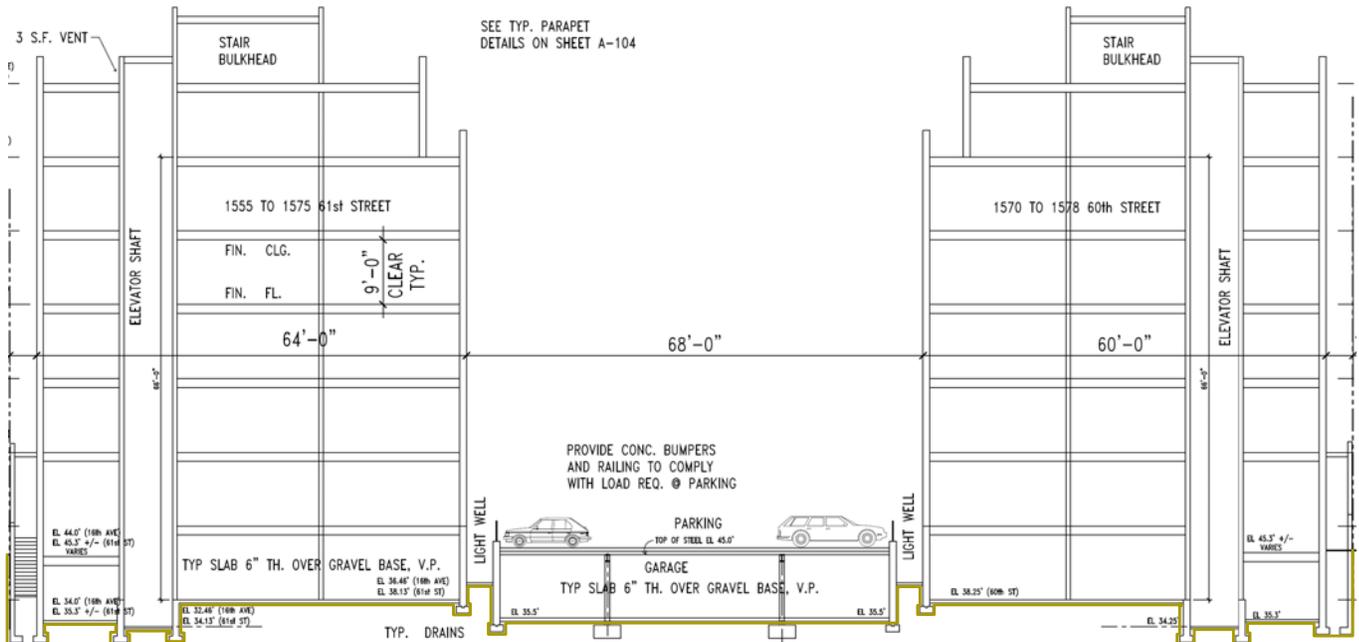
Figure No.
6

Site Name: REDEVELOPMENT PROJECT
 Site Address: 1570 60TH STREET, BROOKLYN, NY
 Drawing Title: ENDPOINT SAMPLING PLAN

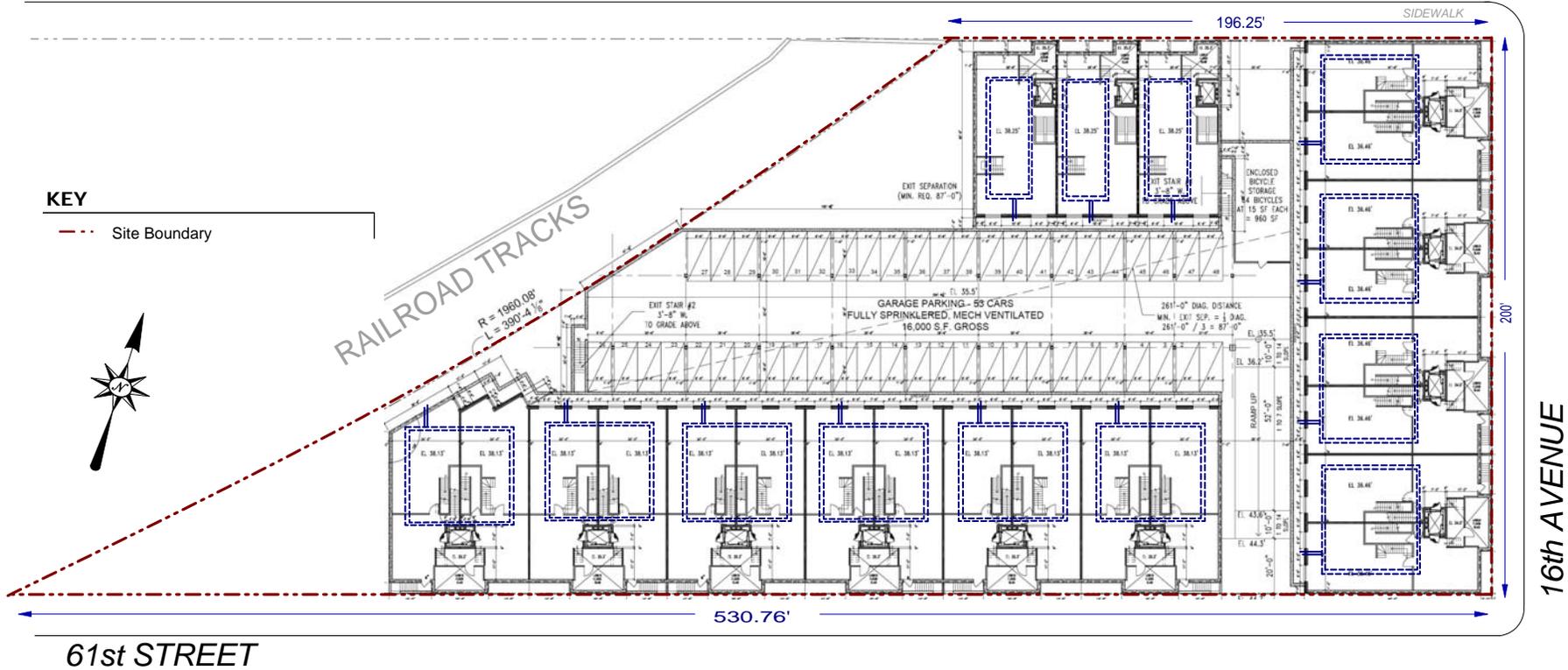
CELLAR FLOOR PLAN



CROSS SECTION

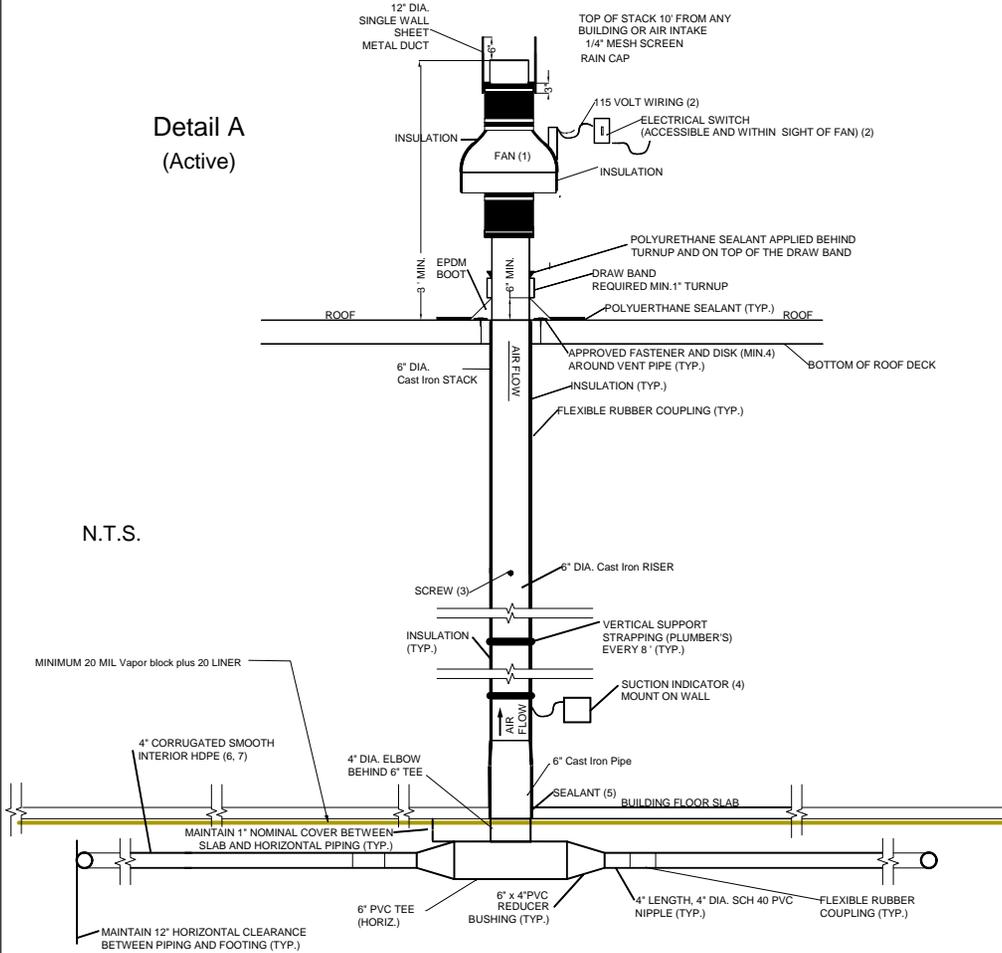


CELLAR FLOOR PLAN



<p>Phone 631.504.6000 Fax 631.924.2870</p>	<p>Figure No.</p> <p>8</p>	<p>Site Name: REDEVELOPMENT PROJECT</p>
		<p>Site Address: 1570 60TH STREET, BROOKLYN, NY</p>
		<p>Drawing Title: SSDS LAYOUT</p>

**Detail A
(Active)**

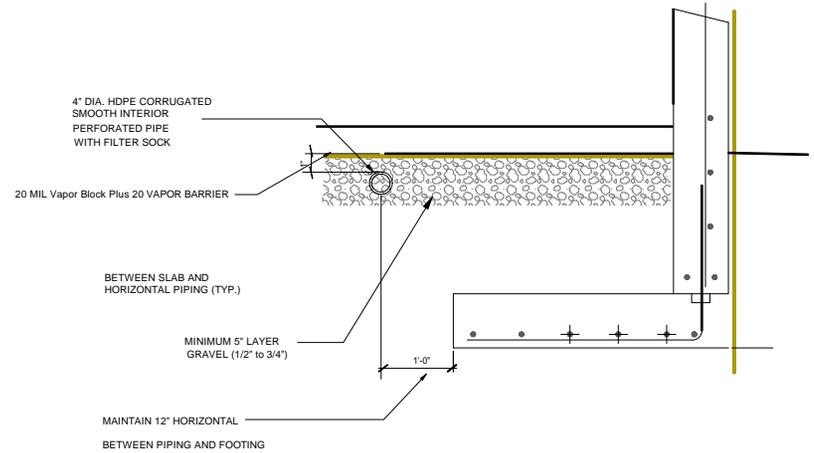


N.T.S.

NOTES:

1. FAN TO BE RADONAWAY HIGH-FLOW IN-LINE FAN, MODEL RP 265, OR APPROVED EQUAL.
2. FAN AND ON/OFF SWITCH TO BE HARD-WIRED TOGETHER TO 115 VOLT CIRCUIT.
3. SECURE RUBBER COUPLING WITH SCREW TO PREVENT FAN ASSEMBLY FROM SLIPPING DOWN VERTICAL PIPE.
4. DWYER MAGNAHELIC DIAL TYPE VACUUM GAUGE MODEL 2002-M OR APPROVED EQUAL.
5. SEAL OPENING WITH ELASTOMERIC JOINT SEALANT AS DEFINED IN ASTM C920.
6. HIGH DENSITY POLYETHYLENE CORRUGATED PERFORATED PIPE ADS N-12 OR APPROVED EQUAL.
7. WRAP 4 HDPE PIPE WITH GEOTEXTILE FABRIC, GSE NW4 OR APPROVED EQUAL.
8. EBC MUST PRE-APPROVE ALL FILLMATERIAL BEFORE DELIVERY TO SITE.

Detail B



**Detail C
Elevator Shaft**

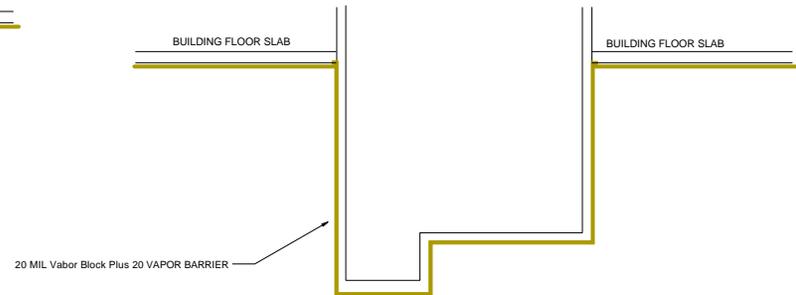


	Figure No. 9	Site Name: REDEVELOPMENT PROJECT
		Site Address: 1570 60TH STREET, BROOKLYN, NY
		Drawing Title: SSDS DETAILS

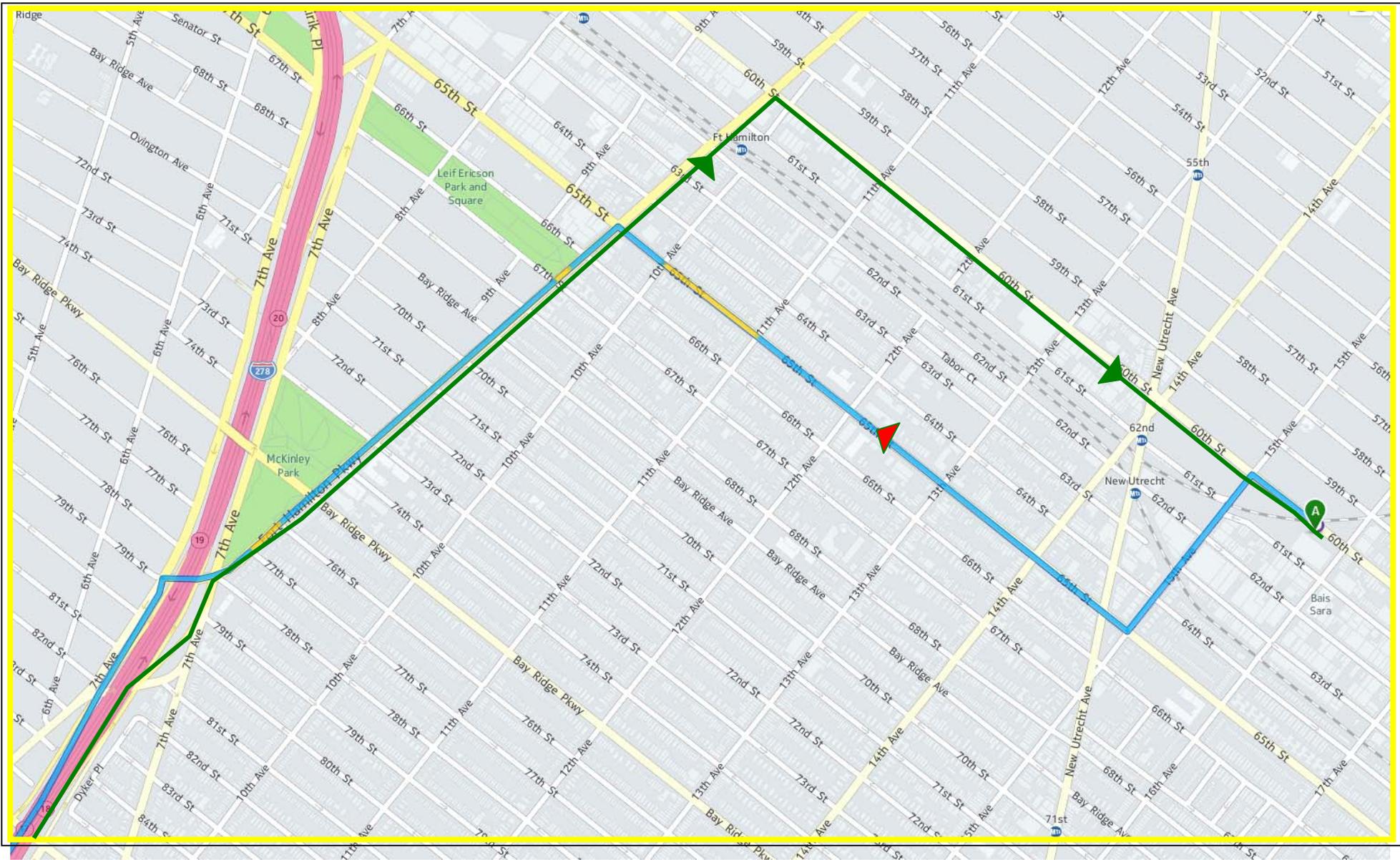


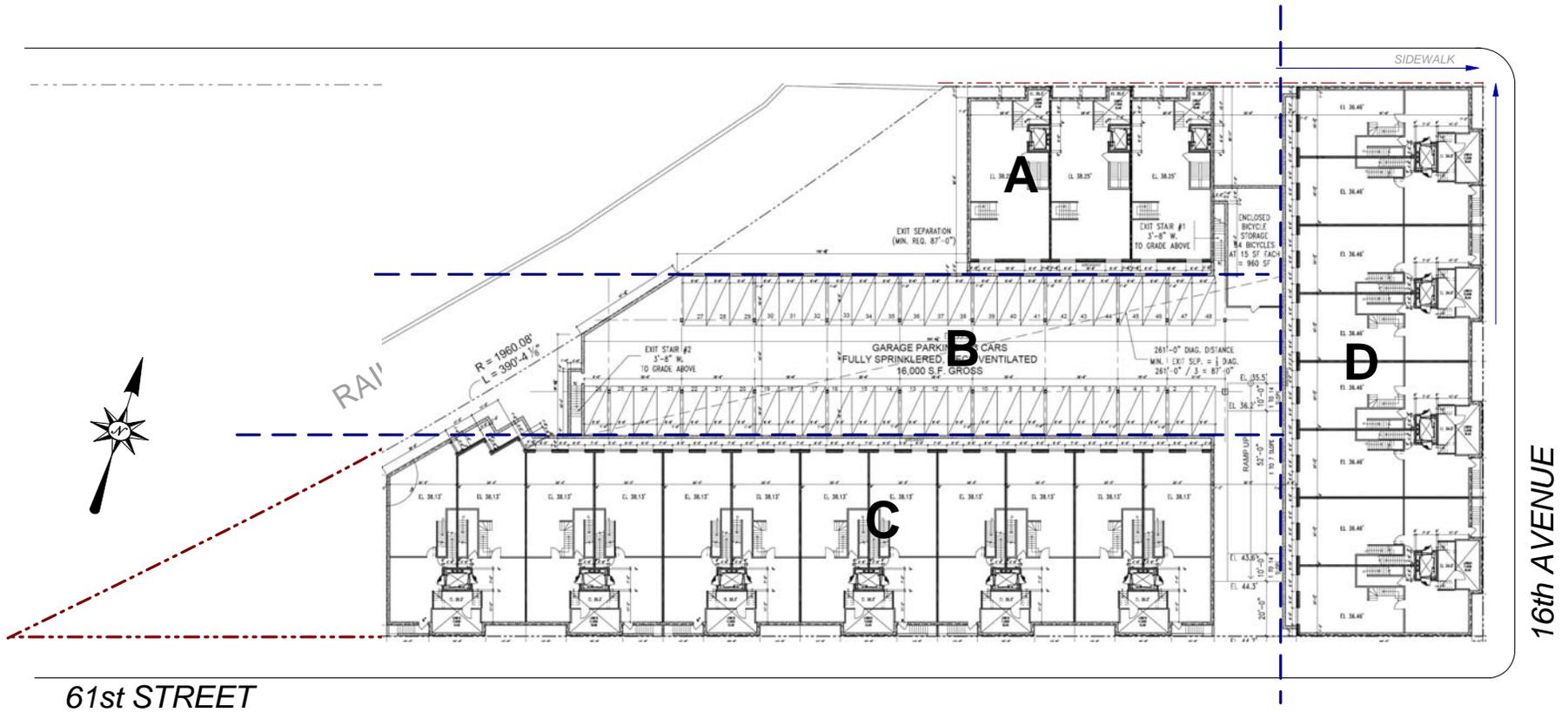
FIGURE 10 – TRUCK ROUTE MAP

1570 60th STREET, BROOKLYN, NY
REMEDIAL ACTION WORK PLAN

EBC

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

CELLAR FLOOR PLAN



 ENVIRONMENTAL BUSINESS CONSULTANTS	Phone 631.504.6000 Fax 631.924.2870	Figure No. 11	Site Name: REDEVELOPMENT PROJECT Site Address: 1570 60TH STREET, BROOKLYN, NY Drawing Title: GRID MAP

ATTACHMENT A
PROPOSED DEVELOPMENT PLANS

PROPOSED APARTMENT BUILDINGS

16th AVE AND 60th, 61st STREET, BROOKLYN, NEW YORK

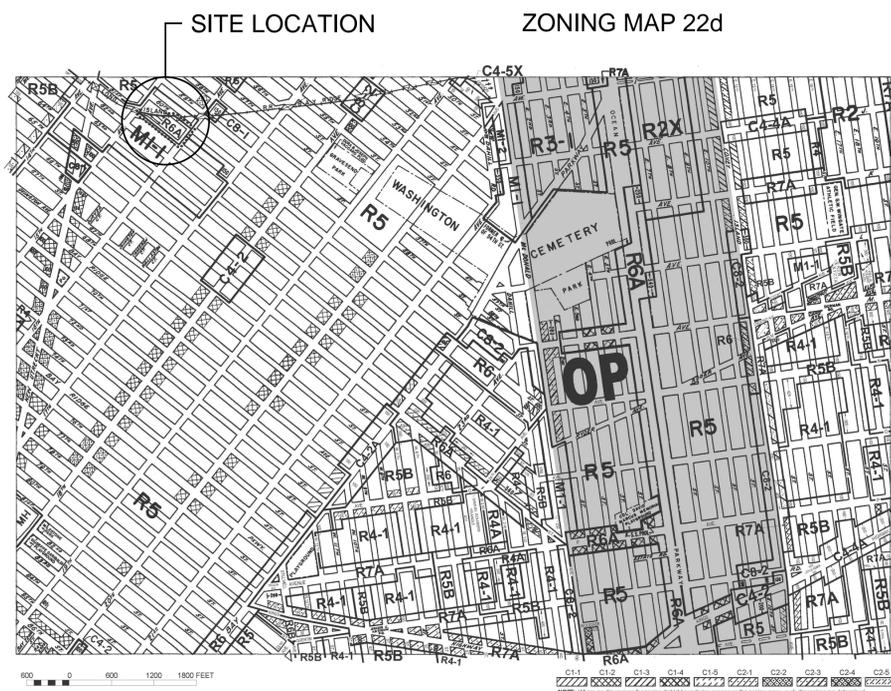
PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

OWNER / DEVELOPER:
MAPLE 60 LLC
 1481 47th STREET
 BROOKLYN, NY 11219
 E-MAIL: BENNY@THELESERGROUP.COM
 TEL: (718) 438-5100
 FAX: (718) 438-0164

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 ARCHITECT, A.I.A.
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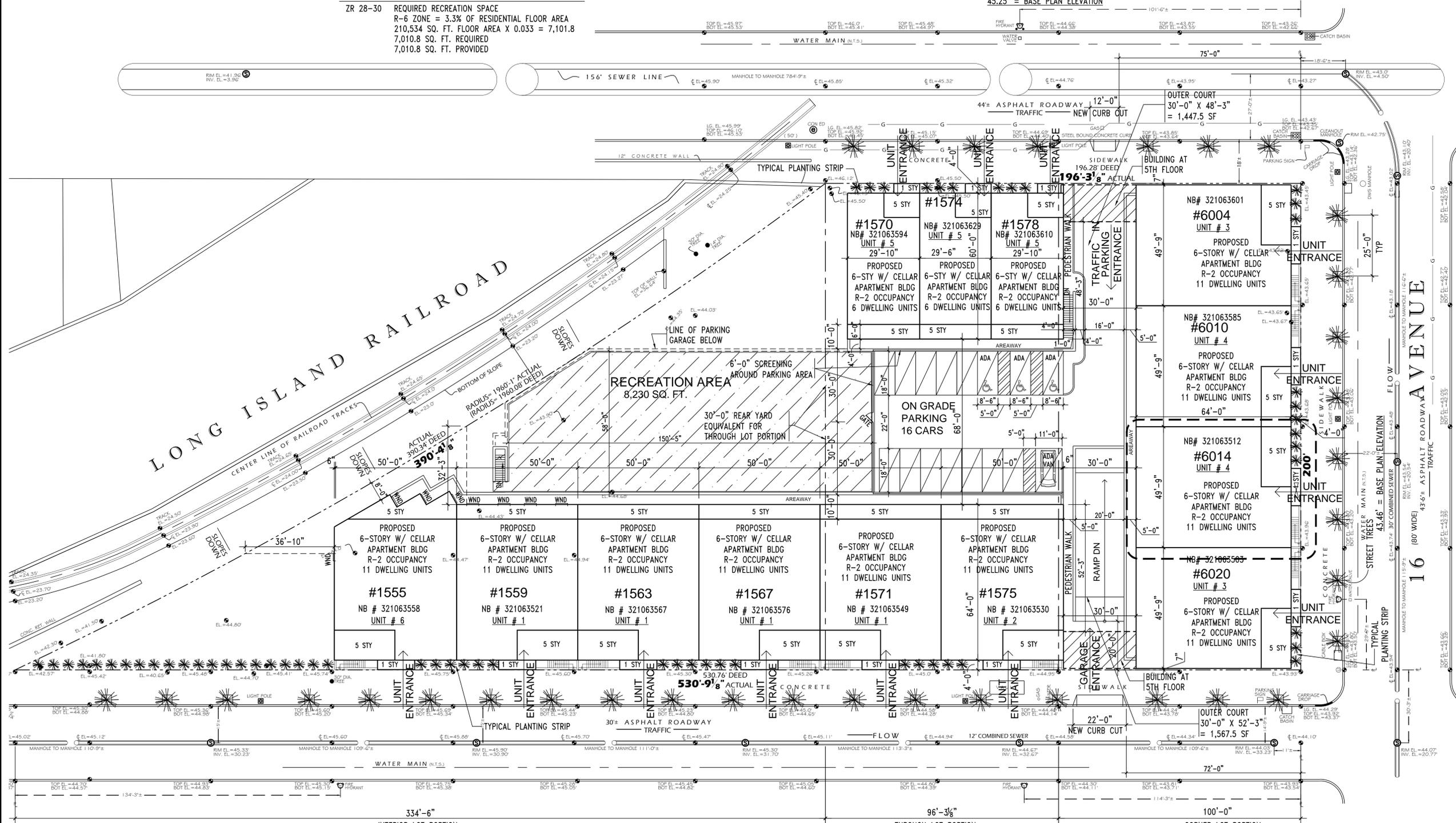
STRUCTURAL ENGINEERS:
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 STRUCTURAL ENGINEERS
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 NEW YORK, NY 10001
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 FAX: (212) 736-0241



REQUIRED RECREATION AREAS
 ZR 28-30 REQUIRED RECREATION SPACE
 R-6 ZONE = 3.3% OF RESIDENTIAL FLOOR AREA
 210,534 SQ. FT. FLOOR AREA X 0.033 = 7,101.8
 7,010.8 SQ. FT. REQUIRED
 7,010.8 SQ. FT. PROVIDED

60' STREET
 (80' WIDE)
 45.25' = BASE PLAN ELEVATION



BASE PLANE ELEVATIONS
61st STREET
 TOP OF CURB ELEVATIONS:
 45.60' + 45.69' + 45.44' + 45.23' + 45.0' + 44.58' + 44.40'
 = 315.94 / 7 = 45.13' = BASE PLAN ELEVATION

60th STREET
 TOP OF CURB ELEVATIONS:
 44.69' + 45.15' + 45.92' = 135.76 / 3
 = 45.25' = BASE PLAN ELEVATION

16th AVENUE
 TOP OF CURB ELEVATIONS:
 43.8' + 43.6' + 43.48' + 43.28' + 43.14'
 = 217.3 / 5 = 43.46' = BASE PLAN ELEVATION

BLOCK: 5516
LOT: 34
ZONING DISTRICT: R6A
ZONING MAP: 22d
LOT AREA: 70,177.9 SQ. FT.

STREET
 THROUGH LOT PORTION
SITE PLAN

LOT AREAS:
 CORNER LOT PORTION: 20,000.0 S.F.
 THROUGH LOT PORTION: 19,252.1 S.F.
 INTERIOR LOT PORTION: 30,925.9 S.F.
TOTAL LOT AREA: 70,178.0 S.F.

STREET TREE CALCULATIONS
 PROPERTY DIMENSIONS 530'-9 1/8" + 200'-0" + 196'-3 1/8" = 927'-0 1/4"
 / 25'-0" = 37.08 = 37 TREES REQUIRED
 34 TREES PROVIDED, 3 TREES TO BE PLANTED OFF-SITE

PROJECT:
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 BROOKLYN, NEW YORK

OWNER / DEVELOPER:
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 1481 47th STREET
 BROOKLYN, NY 11219
 E-MAIL: BENNY@THELESERGROUP.COM
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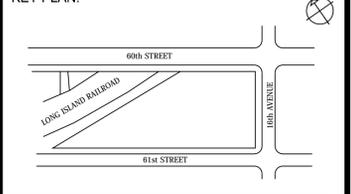
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 FAX: (212) 736-0241

DATE	REVISION
5-18-2015	ISSUED TO DOB
3-20-2015	ISSUED TO DOB
12-31-2014	ISSUED TO DOB

SCALE: 1" = 20'-0"

KEY PLAN:



ADDRESS:
 61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK

DRAWING TITLE:
SITE PLAN
 6014 16th AVENUE

SEAL & SIGNATURE:

DATE: 10688
JOB NO.: 10688
DRAWN BY:
CHECKED BY:
DRAWING NO.:
Z-001.00
 DWG. 3 OF 43

DOB NUMBER:

ZONING CALCULATIONS

ADDRESS: 6014 16th AVENUE, BROOKLYN, NEW YORK
 BLOCK: 5516
 LOT: 34

ZONING DISTRICT: R6A
 ZONING MAP: 22d

LOT AREA: 70,178.0 SQ. FT.

FLOOR AREAS (SQ. FT.)				
FLOOR	GROSS F.A.	MECH DED	QUALITY HOUSING	FAR AREA
6th FL	2,889.1	53.7	24.3	2,811.1
5th FL	3,184.0	59.0	55.6	3,069.4
4th FL	3,184.0	59.0	55.6	3,069.4
3rd FL	3,184.0	59.0	55.6	3,069.4
2nd FL	3,184.0	59.0	55.6	3,069.4
1st FL	3,264.9	33.2	226.3	3,005.4
FAR TOTAL	18,890.0	322.9	473.0	18,094.1
CELLAR	3,264.9			
GROSS TOTAL	22,154.9			

ZONING TABLE	ITEM	REQUIRED / PERMITTED	PROPOSED	COMPLIANCE
MAP 22d	ZONING DISTRICT	R6A	R6A	COMPLIES
22-00	USES PERMITTED	UG 1,2,3,4 UG 5-9, 14	UG 2 RESIDENTIAL	COMPLIES
23-145	RESIDENTIAL FAR	3.00	0.253	COMPLIES
	TOTAL			
23-145	FLOOR AREA PERMITTED	RESIDENTIAL (LOT AREA) 70,178 SQ. FT. X (FAR) 3.00 = 210,534 SQ. FT.	17,720.4	COMPLIES
23-45, 46, 47	YARDS	SIDE = 0" OR 8'-0" REAR = NONE FOR CORNER" FRONT = NONE REQUIRED	0" AND 8'-0"	COMPLIES COMPLIES COMPLIES
23-145	LOT COVERAGE	CORNER LOT = 80% COENER LOT PORTION = 20,000 X 80% = 16,000 SF INTERIOR LOT OR THROUGH LOT = 65%	CORNER PORTION = 3,197.1 SF = 16.0% N/A	COMPLIES
23-633	HEIGHT AND SETBACK	MIN. BASE HEIGHT: 40'-0" MAX. BASE HEIGHT: 60'-0" MAXIMUM BUILDING HEIGHT: 70'-0"	BASE HEIGHT: 59'-0" BASE HEIGHT: 59'-0" BUILDING HEIGHT: 70'-0"	COMPLIES COMPLIES COMPLIES
23-633(b)		SETBACK = 10' WIDE (@ 60'-0" BASE HEIGHT) SETBACK = 15' NARROW (@ 60'-0" BASE HEIGHT) REAR YARD SETBACK = 10' (@60'-0" BASE HEIGHT)	16'-3" N/A	COMPLIES
23-621(c)	DORMERS	MAXIMUM 60% OF THE BASE WIDTH FOR EACH FOOT ABOVE THE MAXIMUM BASE HEIGHT, THE AGGREGATE WIDTH OF ALL DORMERS SHALL BE DECREASED BY ONE PERCENT OF THE STREET WALL WIDTH BUILDING HEIGHT = 70'-0", BASE HEIGHT = 60'-0" 70'-0" - 60'-0" = 10'-0" = 10.0% MAXIMUM DORMER WIDTH = 50% - 10.0% = 50.0%		
		BUILDING WIDTH = 50'-0" X 50% = 25'-0" PERMITTED	DORMER = 25'-0" = 50%	COMPLIES
23-22	DENSITY	R6 = FACTOR = 680 TOTAL RESIDENTIAL FLOOR AREA = 17,720.4 SF 17,720.4 / 680 = 26.1 UNITS PERMITTED	11 UNITS PROPOSED	COMPLIES
25-23	PARKING REQUIREMENTS	R6A (QUALITY HOUSING) = 50% 11 UNITS X 50% = 5.5 PARKING SPACES REQUIRED	6 CARS PROVIDED	COMPLIES
25-62	SIZE AND LOCATION OF PARKING SPACES	EACH 300 SF OF UNOBSTRUCTED STANDING OR MANEUVERING AREA SHALL NE CONSIDERED ONE PARKING SPACE, HOWEVER, AN AREA OF LESS THAN 300 SF, BUT IN NO EVENT SPACE LESS THAN 200 SF, MAY BE CONSIDERED AS ONE PARKING SPACE. IN ANY CASE WHERE A REDUCTION OF THE REQUIRED AREA PER PARKING SPACE IS PERMITTED ON THE BASIS OF THE DEVELOPER'S CERTIFICATION THAT SUCH SPACES WILL BE FULLY ATTENDED.		

ZONING CALCULATIONS - TOTAL SUMMARY															
LOT PORTION	INTERIOR LOT PORTION 30,925.8 SF				THROUGH LOT PORTION 19,252.1 SF					CORNER LOT PORTION 20,000 SF				TOTAL 70,177.9 SF	
	ADDRESS: 61st St.	1555 61st St.	1559 61st St.	1563 61st St.	1567 61st St.	1571 61st St.	1575 61st St.	1570 60th St.	1574 60th St.	1578 60th St.	6020 16th Ave.	6014 16th Ave.	6010 16th Ave.		6004 16th Ave.
FLOOR AREA	18,376.2	18,184.2	18,184.2	18,184.2	18,184.2	18,376.2	9,945.0	9,945.0	9,945.0		17,912.4	18,094.1	18,094.1	17,912.4	210,589.8
FAR	.263	.259	.259	.259	.259	.263	.141	.141	.141		.255	.253	.253	.255	3.0
LOT COVERAGE	3,306.4 6.6%	3,274.4 6.5%	3,274.4 6.5%	3,274.4 6.5%	3,274.4 6.5%	3,306.4 6.6%	1,800.0 3.6%	1,800.0 3.6%	1,800.0 3.6%	25,110.4 50.0%	3,229.1 16.1%	3,197.1 16.0%	3,197.1 16.0%	3,229.1 16.1%	12,852.4 64.3%
DWELLING UNITS	11	11	11	11	11	11	6	6	6		11	11	11	11	128
PARKING CARS	5.5	5.5	5.5	5.5	5.5	5.5	3	3	3		5.5	5.5	5.5	5.5	64

PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

OWNER / DEVELOPER:
MAPLE 60 LLC
 1481 47th STREET
 BROOKLYN, NY 11219
 E-MAIL: BENNY@THELESERGROUP.COM
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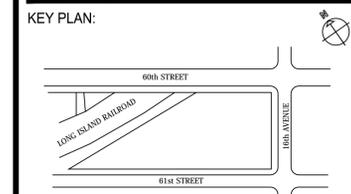
ARCHITECT:
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5-18-2015	ISSUED TO DOB	
3-2-2015	ISSUED TO DOB	
12-31-2014	ISSUED TO DOB	
DATE:	REVISION:	

NORTH ARROW SCALE:

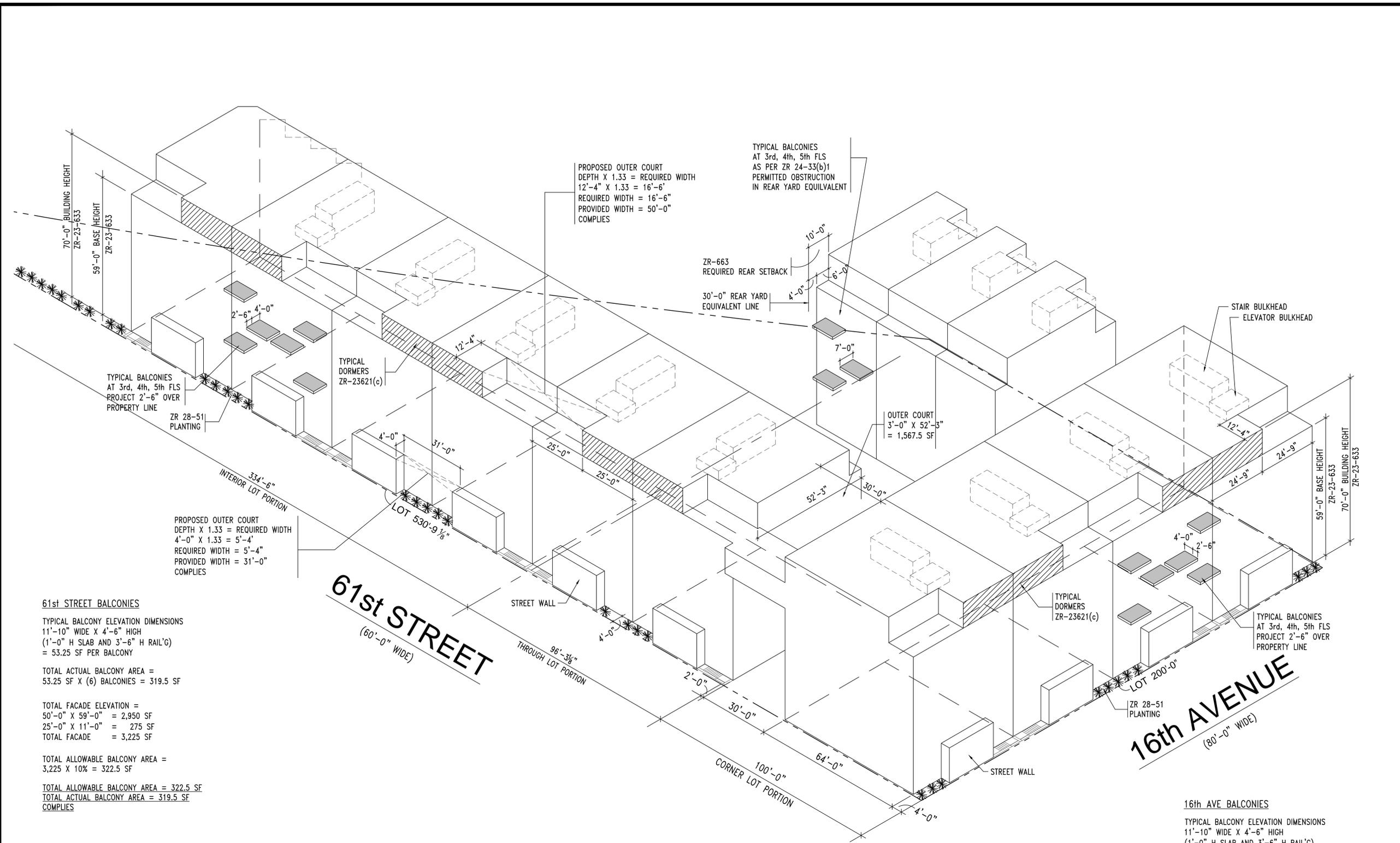


ADDRESS:
 61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK

DRAWING TITLE:
ZONING CALCULATIONS
 6014 16th AVENUE

SEAL & SIGNATURE:
 DATE:
 JOB NO.: 10688
 DRAWN BY:
 CHECKED BY:
 DRAWING No:
Z-002.00
 DWG. 4 OF 43

DOB NUMBER:



PROPOSED OUTER COURT
 DEPTH X 1.33 = REQUIRED WIDTH
 12'-4" X 1.33 = 16'-6"
 REQUIRED WIDTH = 16'-6"
 PROVIDED WIDTH = 50'-0"
 COMPLIES

TYPICAL BALCONIES
 AT 3rd, 4th, 5th FLS
 AS PER ZR 24-33(b)1
 PERMITTED OBSTRUCTION
 IN REAR YARD EQUIVALENT

ZR-663
 REQUIRED REAR SETBACK
 30'-0" REAR YARD
 EQUIVALENT LINE

OUTER COURT
 3'-0" X 52'-3"
 = 1,567.5 SF

PROPOSED OUTER COURT
 DEPTH X 1.33 = REQUIRED WIDTH
 4'-0" X 1.33 = 5'-4"
 REQUIRED WIDTH = 5'-4"
 PROVIDED WIDTH = 31'-0"
 COMPLIES

61st STREET BALCONIES

TYPICAL BALCONY ELEVATION DIMENSIONS
 11'-10" WIDE X 4'-6" HIGH
 (1'-0" H SLAB AND 3'-6" H RAIL'G)
 = 53.25 SF PER BALCONY
 TOTAL ACTUAL BALCONY AREA =
 53.25 SF X (6) BALCONIES = 319.5 SF

TOTAL FACADE ELEVATION =
 50'-0" X 59'-0" = 2,950 SF
 25'-0" X 11'-0" = 275 SF
 TOTAL FACADE = 3,225 SF

TOTAL ALLOWABLE BALCONY AREA =
 3,225 X 10% = 322.5 SF

TOTAL ALLOWABLE BALCONY AREA = 322.5 SF
 TOTAL ACTUAL BALCONY AREA = 319.5 SF
 COMPLIES

16th AVE BALCONIES

TYPICAL BALCONY ELEVATION DIMENSIONS
 11'-10" WIDE X 4'-6" HIGH
 (1'-0" H SLAB AND 3'-6" H RAIL'G)
 = 53.25 SF PER BALCONY
 TOTAL ACTUAL BALCONY AREA =
 53.25 SF X (6) BALCONIES = 319.5 SF

TOTAL FACADE ELEVATION =
 49'-6 1/2" X 59'-0" = 2,923 SF
 24'-9 1/2" X 11'-0" = 272 SF
 TOTAL FACADE = 3,195 SF

TOTAL ALLOWABLE BALCONY AREA =
 3,195 X 10% = 319.5 SF

TOTAL ALLOWABLE BALCONY AREA = 319.5 SF
 TOTAL ACTUAL BALCONY AREA = 319.5 SF
 COMPLIES

PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

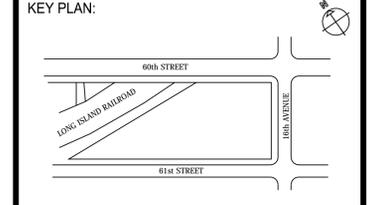
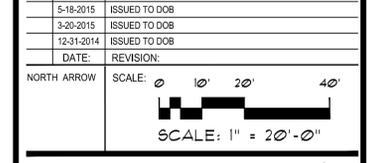
OWNER / DEVELOPER:
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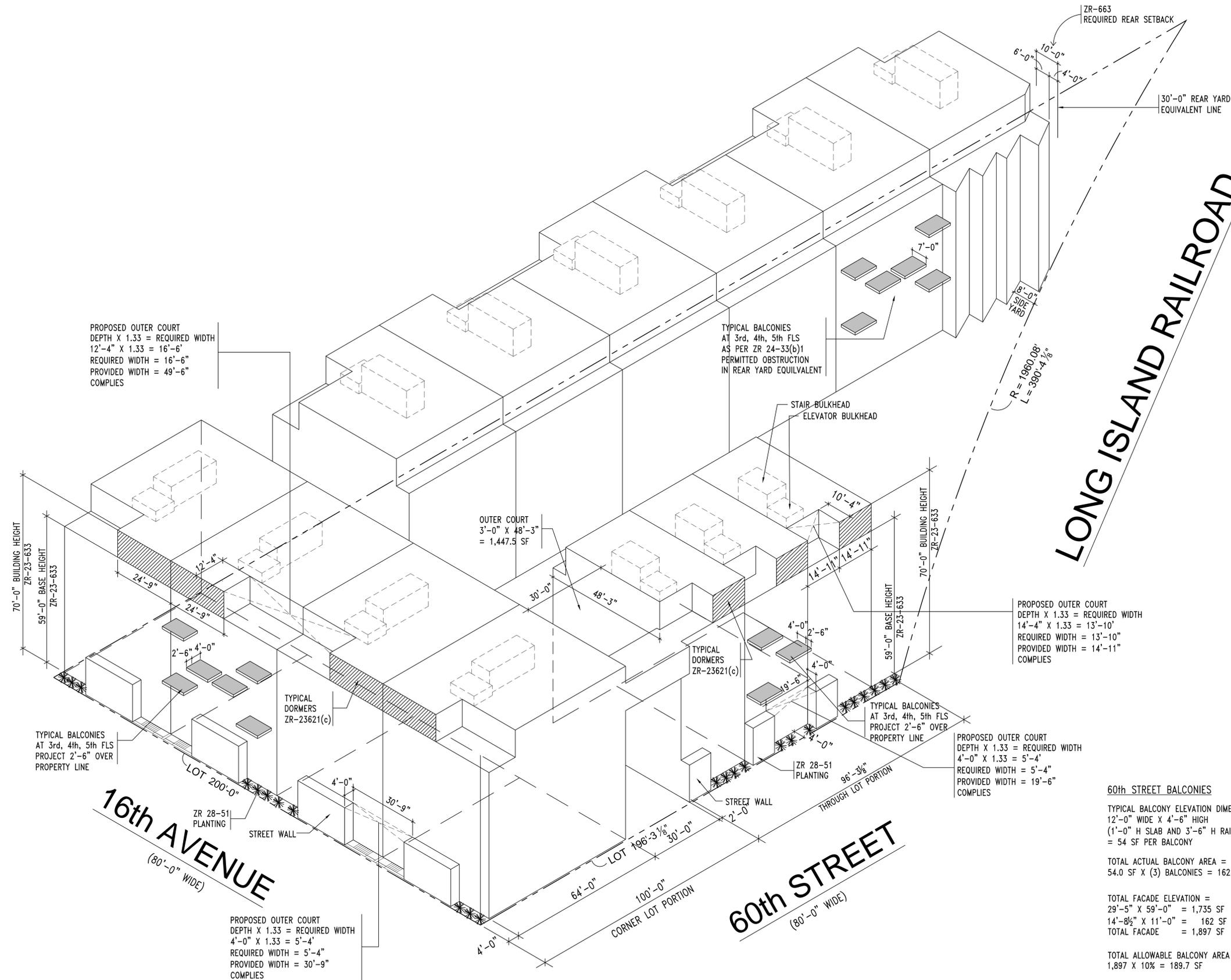


ADDRESS:
 61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK

DRAWING TITLE:
**ZONING
 AXONOMETRIC VIEW I**

SEAL & SIGNATURE:	DATE: JOB NO.: 10688 DRAWN BY: CHECKED BY: DRAWING No: Z-003.00
	DWG. 5 OF 43

DOB NUMBER:



PROPOSED OUTER COURT
 DEPTH X 1.33 = REQUIRED WIDTH
 12'-4" X 1.33 = 16'-6"
 REQUIRED WIDTH = 16'-6"
 PROVIDED WIDTH = 49'-6"
 COMPLIES

TYPICAL BALCONIES
 AT 3rd, 4th, 5th FLS
 AS PER ZR 24-33(b)1
 PERMITTED OBSTRUCTION
 IN REAR YARD EQUIVALENT

OUTER COURT
 3'-0" X 48'-3"
 = 1,447.5 SF

PROPOSED OUTER COURT
 DEPTH X 1.33 = REQUIRED WIDTH
 14'-4" X 1.33 = 13'-10"
 REQUIRED WIDTH = 13'-10"
 PROVIDED WIDTH = 14'-11"
 COMPLIES

TYPICAL BALCONIES
 AT 3rd, 4th, 5th FLS
 PROJECT 2'-6" OVER
 PROPERTY LINE

TYPICAL DORMERS
 ZR-23621(c)

TYPICAL DORMERS
 ZR-23621(c)

TYPICAL BALCONIES
 AT 3rd, 4th, 5th FLS
 PROJECT 2'-6" OVER
 PROPERTY LINE

PROPOSED OUTER COURT
 DEPTH X 1.33 = REQUIRED WIDTH
 4'-0" X 1.33 = 5'-4"
 REQUIRED WIDTH = 5'-4"
 PROVIDED WIDTH = 19'-6"
 COMPLIES

PROPOSED OUTER COURT
 DEPTH X 1.33 = REQUIRED WIDTH
 4'-0" X 1.33 = 5'-4"
 REQUIRED WIDTH = 5'-4"
 PROVIDED WIDTH = 30'-9"
 COMPLIES

60th STREET BALCONIES

TYPICAL BALCONY ELEVATION DIMENSIONS
 12'-0" WIDE X 4'-6" HIGH
 (1'-0" H SLAB AND 3'-6" H RAIL'G)
 = 54 SF PER BALCONY

TOTAL ACTUAL BALCONY AREA =
 54.0 SF X (3) BALCONIES = 162.0 SF

TOTAL FACADE ELEVATION =
 29'-5" X 59'-0" = 1,735 SF
 14'-8 1/2" X 11'-0" = 162 SF
 TOTAL FACADE = 1,897 SF

TOTAL ALLOWABLE BALCONY AREA =
 1,897 X 10% = 189.7 SF

TOTAL ALLOWABLE BALCONY AREA = 189.7 SF
 TOTAL ACTUAL BALCONY AREA = 162.0 SF
 COMPLIES

PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

OWNER / DEVELOPER:
MAPLE 60 LLC
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 BROOKLYN, NY 11219
 E-MAIL: BENNY@THELESERGROUP.COM
 TEL: (718) 438-5100
 FAX: (718) 438-0164

ARCHITECT:
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 126 ATLANTIC AVENUE
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 FAX: (516) 825-3887

STRUCTURAL ENGINEERS:
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 STRUCTURAL ENGINEERS**
 12 WEST 32nd STREET, 8th FLOOR
 NEW YORK, NY 10001
 E-MAIL: NWEXLER@WEXLER.COM
 TEL: (212) 643-1500
 FAX: (212) 643-2277

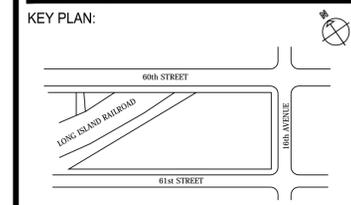
M E P ENGINEERS:
ABRAHAM JOSELOW, PE, PC
 310 FIFTH AVE. 3rd FLOOR
 NEW YORK, NY 10001
 E-MAIL: AROSENTHAL@AJOSELOWPC.COM
 TEL: (212) 736-2584
 FAX: (212) 736-0241

DATE	REVISION
5-18-2015	ISSUED TO DOB
3-20-2015	ISSUED TO DOB
12-31-2014	ISSUED TO DOB

NORTH ARROW

SCALE: 0 10' 20' 40'

SCALE: 1" = 20'-0"



ADDRESS:
 61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK

DRAWING TITLE:
**ZONING
 AXONOMETRIC VIEW II**

SEAL & SIGNATURE:

DATE:
 JOB NO.: 10688
 DRAWN BY:
 CHECKED BY:
 DRAWING No:
Z-004.00
 DWG. 6 OF 43

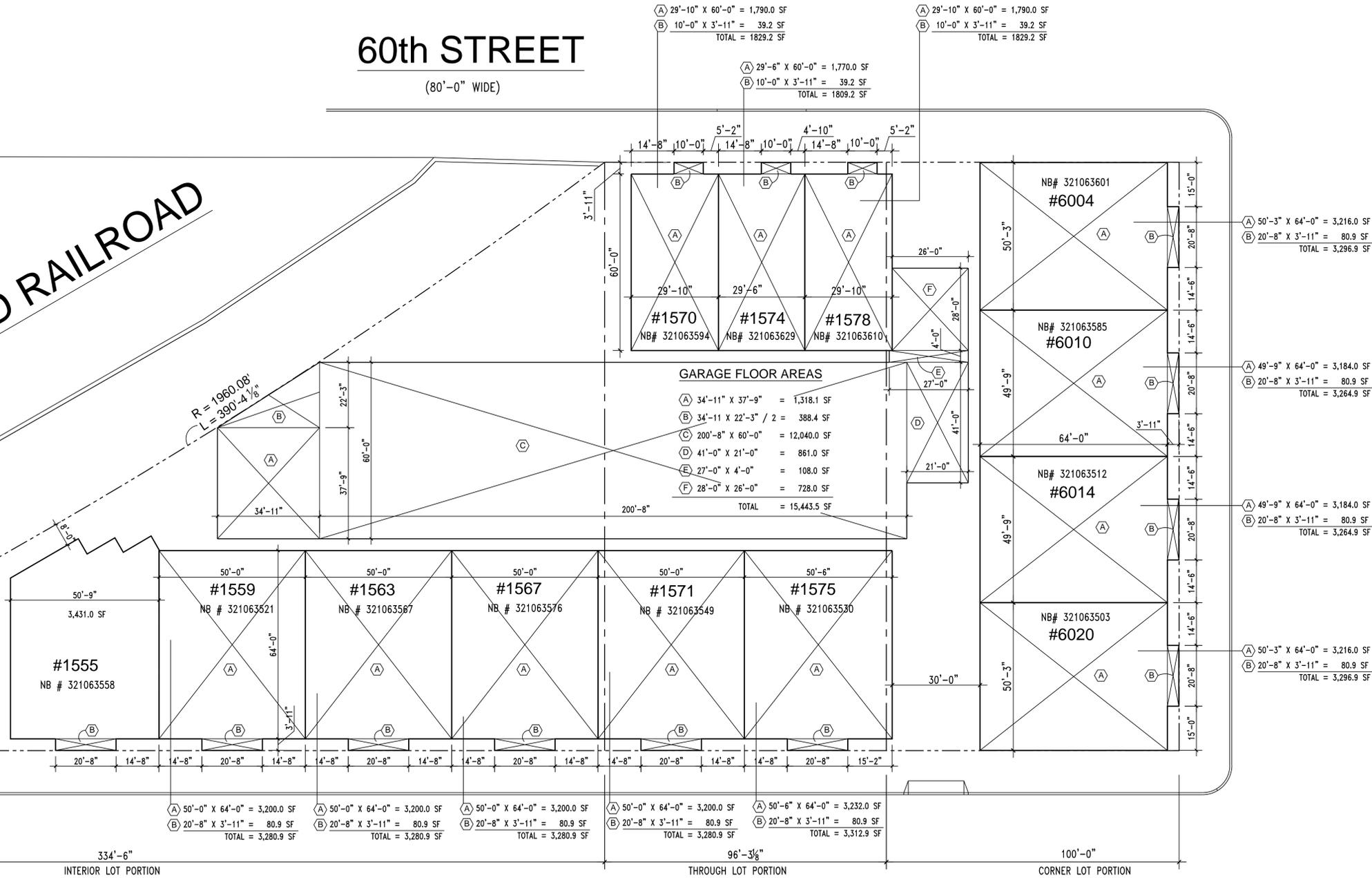
DOB NUMBER:

60th STREET

(80'-0" WIDE)

LONG ISLAND RAILROAD

R = 1960.08'
L = 390'-4 1/8"



GARAGE FLOOR AREAS

- (A) 34'-11" X 37'-9" = 1,318.1 SF
- (B) 34'-11" X 22'-3" / 2 = 388.4 SF
- (C) 200'-8" X 60'-0" = 12,040.0 SF
- (D) 41'-0" X 21'-0" = 861.0 SF
- (E) 27'-0" X 4'-0" = 108.0 SF
- (F) 28'-0" X 26'-0" = 728.0 SF
- TOTAL = 15,443.5 SF**

16th AVENUE
(80'-0" WIDE)

61st STREET

(60'-0" WIDE)

334'-6" INTERIOR LOT PORTION

96'-3 1/8" THROUGH LOT PORTION

100'-0" CORNER LOT PORTION

PROJECT:
MAPLE LANES HOUSING
BROOKLYN, NEW YORK

OWNER / DEVELOPER:
MAPLE 60 LLC
1481 47th STREET
BROOKLYN, NY 11219
E-MAIL: BENNY@THELESERGROUP.COM
TEL: (718) 438-5100
FAX: (718) 438-0164

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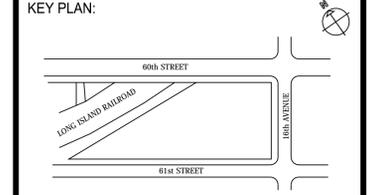
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310 FIFTH AVE. 3rd FLOOR
NEW YORK, NY 10001
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TEL: (212) 736-2584
FAX: (212) 736-0241

5-18-2015	ISSUED TO DOB
4-13-2015	ISSUED TO DOB
DATE:	REVISION:

NORTH ARROW

SCALE: 0 10' 20' 40'

SCALE: 1" = 20'-0"



ADDRESS:
61st STREET AND 16th AVENUE
BROOKLYN, NEW YORK

DRAWING TITLE:
FLOOR AREAS - CELLAR

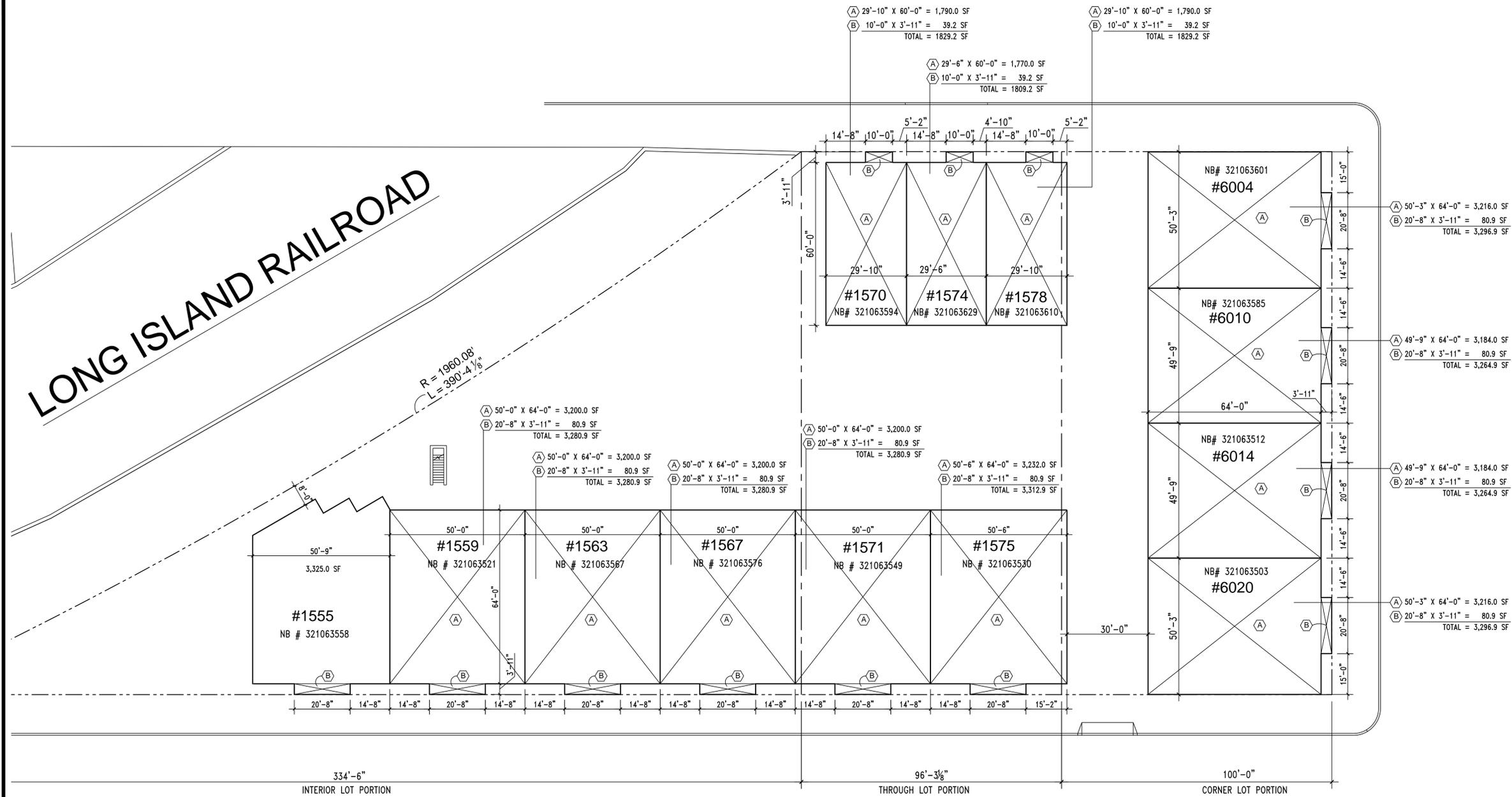
SEAL & SIGNATURE:

DATE: _____
JOB NO.: 10688
DRAWN BY: _____
CHECKED BY: _____
DRAWING No:
Z-006.00
DWG. 8 OF 43

DOB NUMBER:

GROSS FLOOR AREAS														TOTAL
ADDRESS	1555	1559	1563	1567	1571	1575	6020	6014	6010	6004	1570	1574	1578	
6th FL	2,625.0	2,604.1	2,604.1	2,604.1	2,604.1	2,627.2	2,915.2	2,889.1	2,889.1	2,915.2	1,460.2	1,445.5	1,460.2	
5th FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,690.0	3,184.0	3,184.0	3,690.0	1,790.0	1,770.0	1,790.0	
4th FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,216.0	3,184.0	3,184.0	3,216.0	1,790.0	1,770.0	1,790.0	
3rd FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,216.0	3,184.0	3,184.0	3,216.0	1,790.0	1,770.0	1,790.0	
2nd FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,216.0	3,184.0	3,184.0	3,216.0	1,790.0	1,770.0	1,790.0	
1st FL	3,325.0	3,280.9	3,280.9	3,280.9	3,280.9	3,312.9	3,296.9	3,264.9	3,264.9	3,296.9	1,829.2	1,809.2	1,829.2	
SUB TOTAL	18,926.0	18,685.0	18,685.0	18,685.0	18,685.0	18,868.1	19,550.1	18,890.0	18,890.0	19,550.1	10,449.4	10,334.7	10,449.4	220,647.8
CELLAR	3,325.0	3,280.9	3,280.9	3,280.9	3,280.9	3,312.9	3,296.9	3,264.9	3,264.9	3,296.9	1,829.2	1,809.2	1,829.2	15,443.5
TOTAL	22,251.0	21,965.9	21,965.9	21,965.9	21,965.9	22,181.0	22,847.0	22,154.9	21,154.9	22,847.0	12,278.6	12,143.9	12,278.6	15,443.5

LONG ISLAND RAILROAD



16th AVENUE
(80'-0" WIDE)

61st STREET
(60'-0" WIDE)

PROJECT:
MAPLE LANES HOUSING
BROOKLYN, NEW YORK

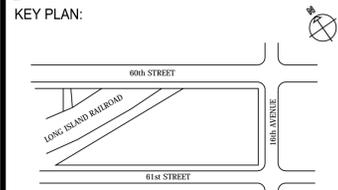
OWNER / DEVELOPER:
MAPLE 60 LLC
1481 47th STREET
BROOKLYN, NY 11219
E-MAIL: BENNY@THELESERGROUP.COM
TEL: (718) 438-5100
FAX: (718) 438-0164

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5-18-2015	ISSUED TO DOB
4-13-2015	ISSUED TO DOB



ADDRESS:
61st STREET AND 16th AVENUE
BROOKLYN, NEW YORK

DRAWING TITLE:
FLOOR AREAS - 1st FLOOR

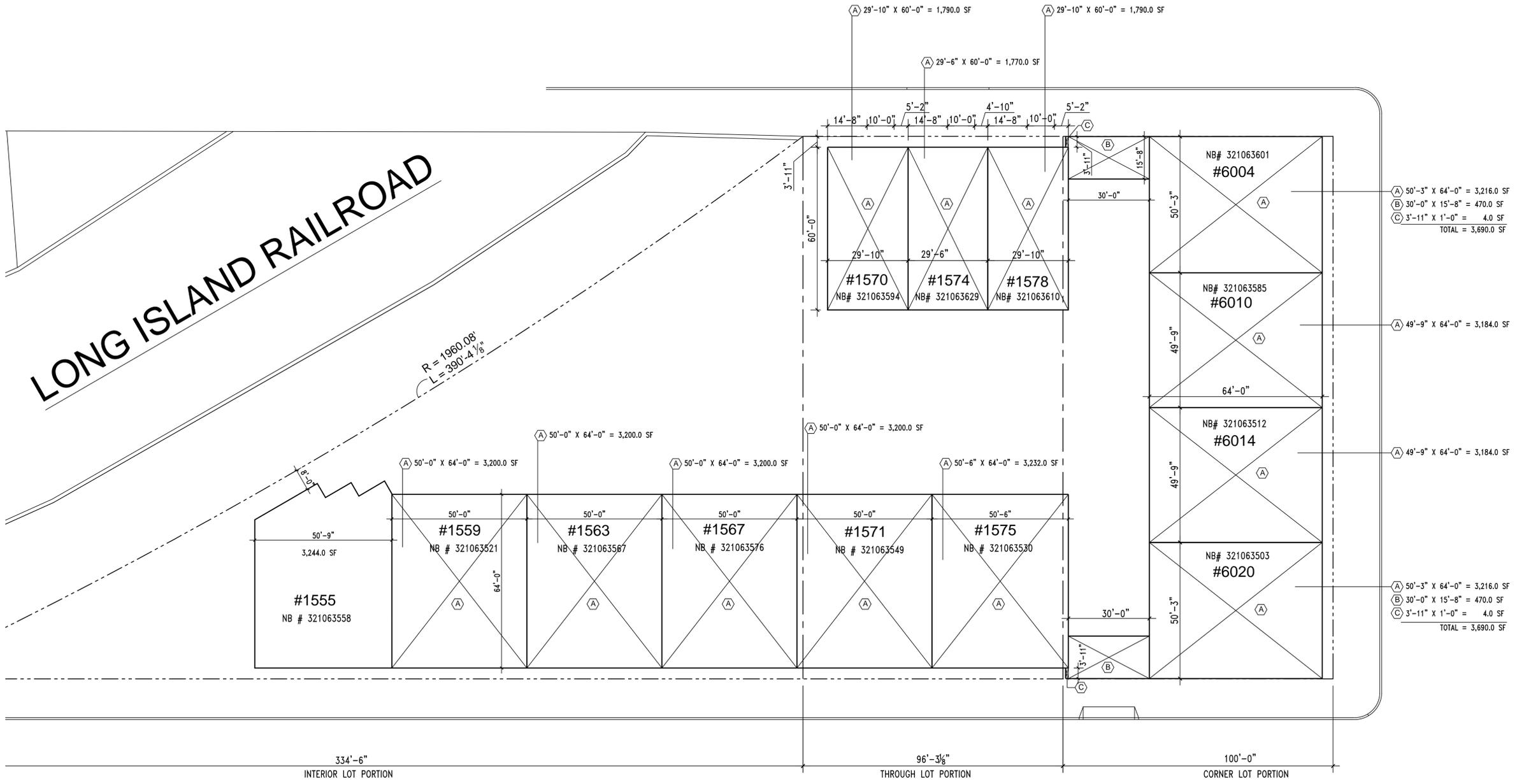
SEAL & SIGNATURE:
DATE:
JOB NO.: 10688
DRAWN BY:
CHECKED BY:
DRAWING No:
Z-007.00
DWG. 9 OF 43

DOB NUMBER:

GROSS FLOOR AREAS														TOTAL
ADDRESS	1555	1559	1563	1567	1571	1575	6020	6014	6010	6004	1570	1574	1578	
6th FL	2,625.0	2,604.1	2,604.1	2,604.1	2,604.1	2,627.2	2,915.2	2,889.1	2,889.1	2,915.2	1,460.2	1,445.5	1,460.2	
5th FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,690.0	3,184.0	3,184.0	3,690.0	1,790.0	1,770.0	1,790.0	
4th FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,216.0	3,184.0	3,184.0	3,216.0	1,790.0	1,770.0	1,790.0	
3rd FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,216.0	3,184.0	3,184.0	3,216.0	1,790.0	1,770.0	1,790.0	
2nd FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,216.0	3,184.0	3,184.0	3,216.0	1,790.0	1,770.0	1,790.0	
1st FL	3,325.0	3,280.9	3,280.9	3,280.9	3,280.9	3,312.9	3,296.9	3,264.9	3,264.9	3,296.9	1,829.2	1,809.2	1,829.2	
SUB TOTAL	18,926.0	18,685.0	18,685.0	18,685.0	18,685.0	18,868.1	19,550.1	18,890.0	18,890.0	19,550.1	10,449.4	10,334.7	10,449.4	220,647.8
CELLAR	3,325.0	3,280.9	3,280.9	3,280.9	3,280.9	3,312.9	3,296.9	3,264.9	3,264.9	3,296.9	1,829.2	1,809.2	1,829.2	15,443.5
TOTAL	22,251.0	21,965.9	21,965.9	21,965.9	21,965.9	22,181.0	22,847.0	22,154.9	21,154.9	22,847.0	12,278.6	12,143.9	12,278.6	15,443.5

60th STREET

(80'-0" WIDE)



16th AVENUE
(80'-0" WIDE)

61st STREET

(60'-0" WIDE)

PROJECT:
MAPLE LANES HOUSING
BROOKLYN, NEW YORK

OWNER / DEVELOPER:
MAPLE 60 LLC
1481 47th STREET
BROOKLYN, NY 11219
E-MAIL: BENNY@THELESERGROUP.COM

ARCHITECT:
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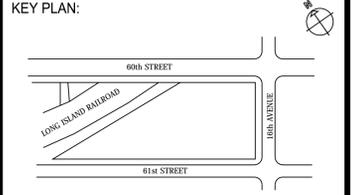
TEL: (212) 736-2584
FAX: (212) 736-0241

DATE	ISSUED TO	REVISION
5-18-2015	ISSUED TO DOB	
4-13-2015	ISSUED TO DOB	
DATE:	REVISION:	

NORTH ARROW

SCALE: 0 10' 20' 40'

SCALE: 1" = 20'-0"



ADDRESS:
61st STREET AND 16th AVENUE
BROOKLYN, NEW YORK

DRAWING TITLE:
FLOOR AREAS - 5th FLOOR

SEAL & SIGNATURE:

DATE:
JOB NO.: 10688
DRAWN BY:
CHECKED BY:
DRAWING No:
Z-009.00
DWG. 11 OF 43

DOB NUMBER:

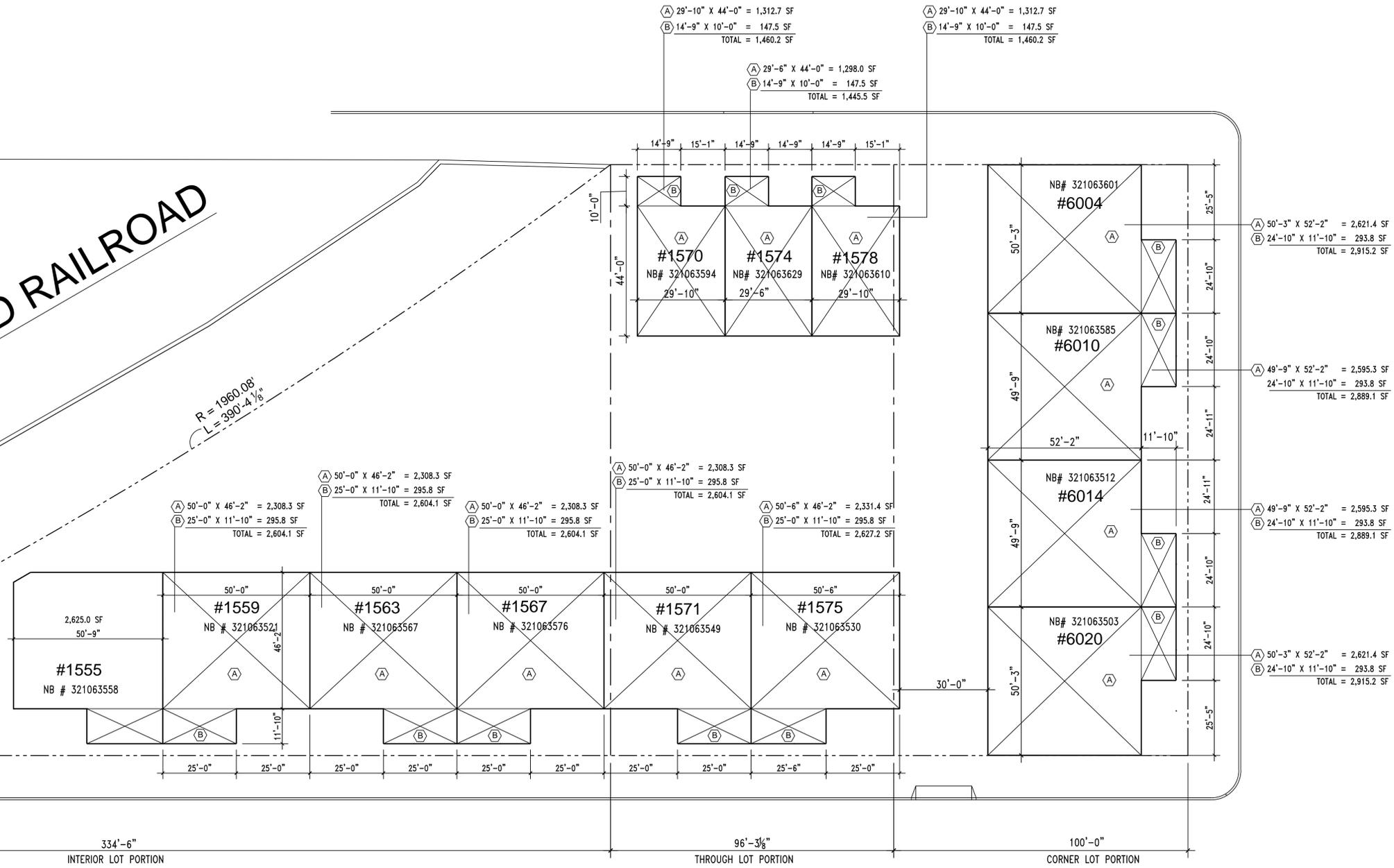
GROSS FLOOR AREAS														PARKING GARAGE	TOTAL
ADDRESS	1555	1559	1563	1567	1571	1575	6020	6014	6010	6004	1570	1574	1578		
6th FL	2,625.0	2,604.1	2,604.1	2,604.1	2,604.1	2,627.2	2,915.2	2,889.1	2,889.1	2,915.2	1,460.2	1,445.5	1,460.2		
5th FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,690.0	3,184.0	3,184.0	3,690.0	1,790.0	1,770.0	1,790.0		
4th FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,216.0	3,184.0	3,184.0	3,216.0	1,790.0	1,770.0	1,790.0		
3rd FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,216.0	3,184.0	3,184.0	3,216.0	1,790.0	1,770.0	1,790.0		
2nd FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,216.0	3,184.0	3,184.0	3,216.0	1,790.0	1,770.0	1,790.0		
1st FL	3,325.0	3,280.9	3,280.9	3,280.9	3,280.9	3,312.9	3,296.9	3,264.9	3,264.9	3,296.9	1,829.2	1,809.2	1,829.2		
SUB TOTAL	18,926.0	18,685.0	18,685.0	18,685.0	18,685.0	18,868.1	19,550.1	18,890.0	18,890.0	19,550.1	10,449.4	10,334.7	10,449.4		
CELLAR	3,325.0	3,280.9	3,280.9	3,280.9	3,280.9	3,312.9	3,296.9	3,264.9	3,264.9	3,296.9	1,829.2	1,809.2	1,829.2		
TOTAL	22,251.0	21,965.9	21,965.9	21,965.9	21,965.9	22,181.0	22,847.0	22,154.9	22,154.9	22,847.0	12,278.6	12,143.9	12,278.6		

60th STREET

(80'-0" WIDE)

LONG ISLAND RAILROAD

R = 1960.08'
L = 390'-4 1/8"



16th AVENUE
(80'-0" WIDE)

61st STREET

(60'-0" WIDE)

PROJECT:
MAPLE LANES HOUSING
BROOKLYN, NEW YORK

OWNER / DEVELOPER:
MAPLE 60 LLC
1481 47th STREET
BROOKLYN, NY 11219
E-MAIL: BENNY@THELESERGROUP.COM
TEL: (718) 438-5100
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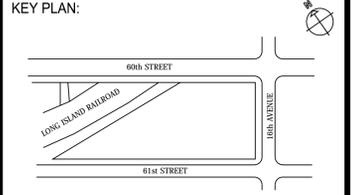
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DATE	REVISION
5-18-2015	ISSUED TO DOB
4-13-2015	ISSUED TO DOB
DATE:	REVISION:

NORTH ARROW

SCALE: 0 10' 20' 40'

SCALE: 1" = 20'-0"



ADDRESS:
61st STREET AND 16th AVENUE
BROOKLYN, NEW YORK

DRAWING TITLE:
FLOOR AREAS - 6th FLOOR

SEAL & SIGNATURE:

DATE:
JOB NO.: 10688
DRAWN BY:
CHECKED BY:
DRAWING No:
Z-010.00
DWG. 12 OF 43

ADDRESS	GROSS FLOOR AREAS													TOTAL	
	1555	1559	1563	1567	1571	1575	6020	6014	6010	6004	1570	1574	1578		PARKING GARAGE
FLOOR															
6th FL	2,625.0	2,604.1	2,604.1	2,604.1	2,604.1	2,627.2	2,915.2	2,889.1	2,889.1	2,915.2	1,460.2	1,445.5	1,460.2		
5th FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,690.0	3,184.0	3,184.0	3,690.0	1,790.0	1,770.0	1,790.0		
4th FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,216.0	3,184.0	3,184.0	3,216.0	1,790.0	1,770.0	1,790.0		
3rd FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,216.0	3,184.0	3,184.0	3,216.0	1,790.0	1,770.0	1,790.0		
2nd FL	3,244.0	3,200.0	3,200.0	3,200.0	3,200.0	3,232.0	3,216.0	3,184.0	3,184.0	3,216.0	1,790.0	1,770.0	1,790.0		
1st FL	3,325.0	3,280.9	3,280.9	3,280.9	3,280.9	3,312.9	3,296.9	3,264.9	3,264.9	3,296.9	1,829.2	1,809.2	1,829.2		
SUB TOTAL	18,926.0	18,685.0	18,685.0	18,685.0	18,685.0	18,868.1	19,550.1	18,890.0	18,890.0	19,550.1	10,449.4	10,334.7	10,449.4	220,647.8	
CELLAR	3,325.0	3,280.9	3,280.9	3,280.9	3,280.9	3,312.9	3,296.9	3,264.9	3,264.9	3,296.9	1,829.2	1,809.2	1,829.2	15,443.5	
TOTAL	22,251.0	21,965.9	21,965.9	21,965.9	21,965.9	22,181.0	22,847.0	22,154.9	22,154.9	22,847.0	12,278.6	12,143.9	12,278.6	274,444.0	

DOB NUMBER:

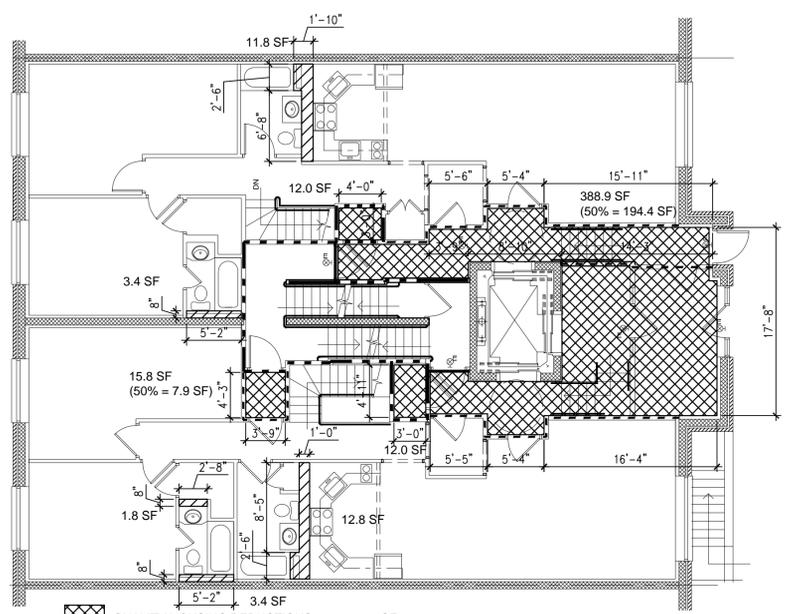
PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

OWNER / DEVELOPER:
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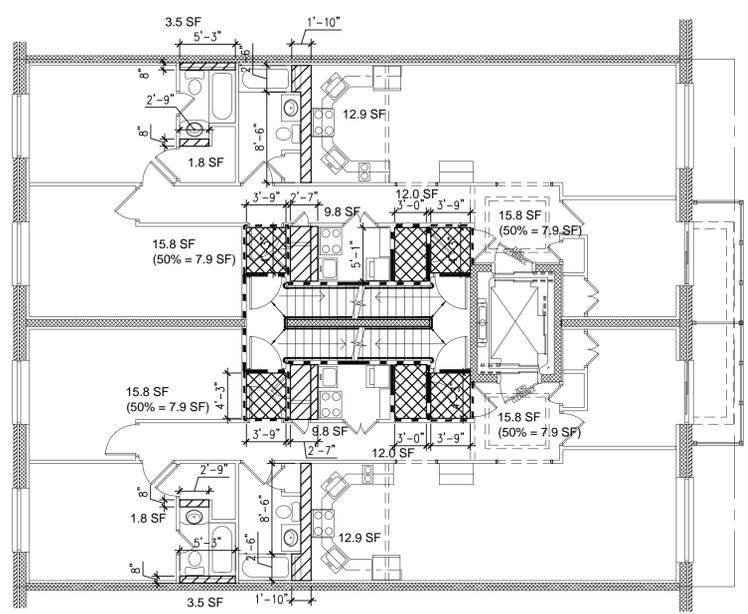
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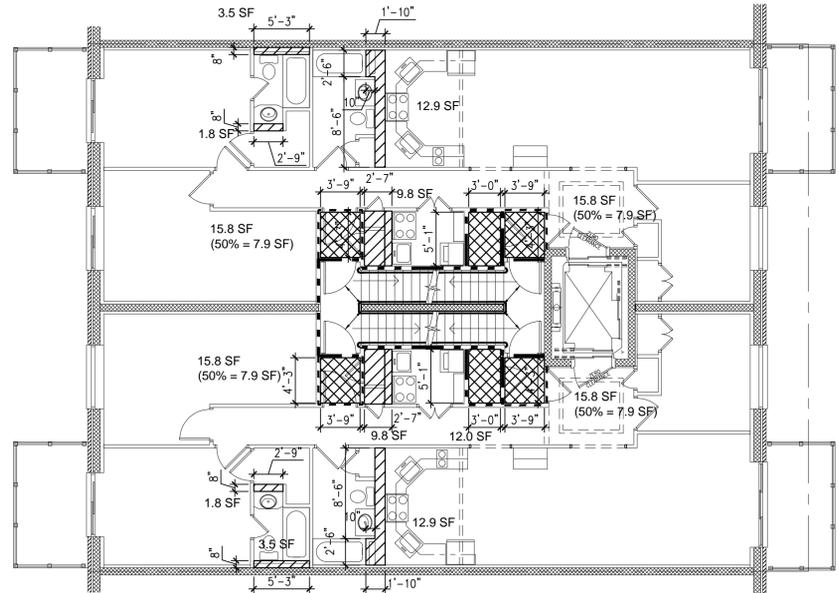
QUALITY HOUSING DEDUCTIONS = 226.3 SF
 MECHANICAL DEDUCTIONS = 33.2 SF

PLAN OF 1st FL



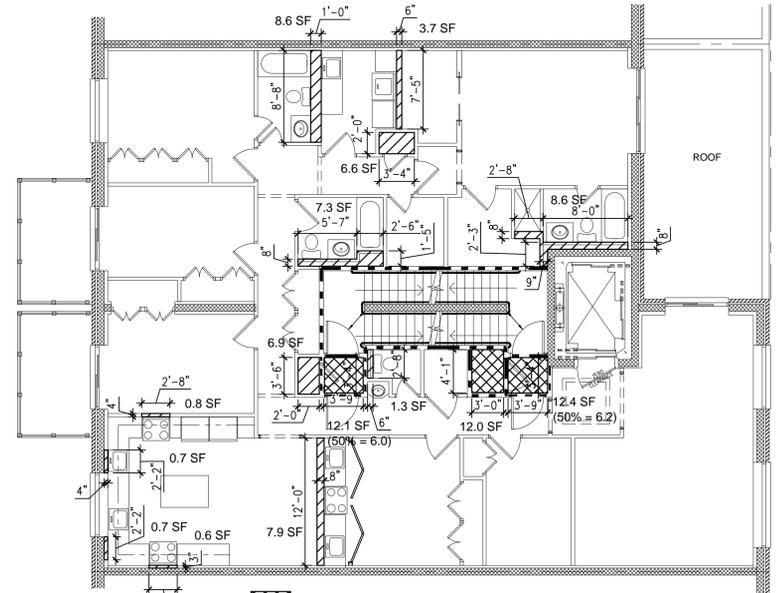
QUALITY HOUSING DEDUCTIONS = 55.6 SF
 MECHANICAL DEDUCTIONS = 59.0 SF

PLAN OF 2nd FL



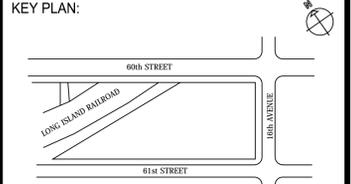
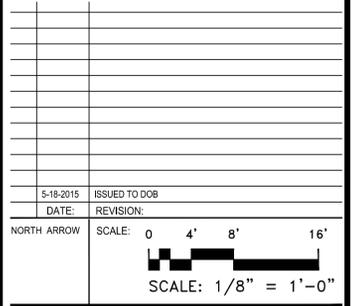
QUALITY HOUSING DEDUCTIONS = 55.6 SF
 MECHANICAL DEDUCTIONS = 59.0 SF

PLAN OF 3rd , 4th, 5th FLS



QUALITY HOUSING DEDUCTIONS = 24.3 SF
 MECHANICAL DEDUCTIONS = 53.7 SF

PLAN OF 6th FL



ADDRESS:
 61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK

DRAWING TITLE:
**50'-0" WIDE UNIT
 MECHANICAL DEDUCTIONS**

SEAL & SIGNATURE:
 DATE:
 JOB NO.: 10688
 DRAWN BY:
 CHECKED BY:
 DRAWING No:
Z-011.00
 DWG. 13 OF 43

DOB NUMBER:

MECHANICAL - QUALITY HOUSING DEDUCTIONS															
FLOOR	ADDRESS	1555	1559	1563	1567	1571	1575	6020	6014	6010	6004	1570	1574	1578	TOTAL
6th FL	QUALITY H								24.3	24.3					
	MECH								53.7	53.7					
5th FL	QUALITY H								55.6	55.6					
	MECH								59.0	59.0					
4th FL	QUALITY H								55.6	55.6					
	MECH								59.0	59.0					
3rd FL	QUALITY H								55.6	55.6					
	MECH								59.0	59.0					
2nd FL	QUALITY H								55.6	55.6					
	MECH								59.0	59.0					
1st FL	QUALITY H								226.3	226.3					
	MECH								33.2	33.2					
TOTAL									795.9	795.9					

REQUIRED RECREATION AREAS
 ZR 28-30 REQUIRED RECREATION SPACE
 R-6 ZONE = 3.3% OF RESIDENTIAL FLOOR AREA
 210,534 SQ. FT. FLOOR AREA X 0.033 = 7,101.8
 7,010.8 SQ. FT. REQUIRED
 7,010.8 SQ. FT. PROVIDED

60TH STREET
 (80' WIDE)
 45.25' = BASE PLAN ELEVATION

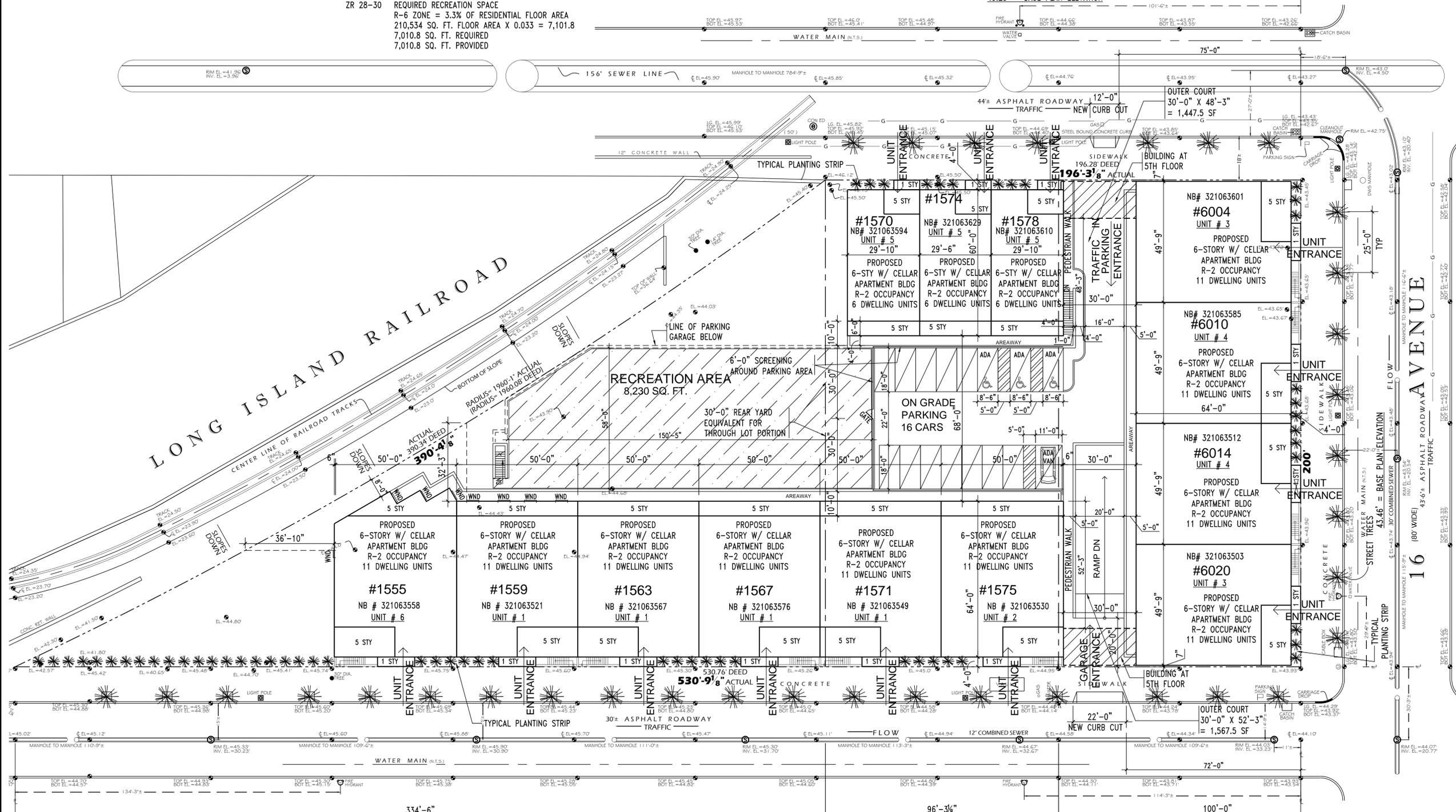
PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

OWNER / DEVELOPER:
MAPLE 60 LLC
 1481 47th STREET
 BROOKLYN, NY 11219
 E-MAIL: BENNY@THELESERGROUP.COM
 TEL: (718) 438-5100
 FAX: (718) 438-0164

ARCHITECT:
JOHN SCHIMENTI, P.C.
 ARCHITECT, A.I.A.
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 TEL: (516) 825-3883
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STRUCTURAL ENGINEERS:
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 STRUCTURAL ENGINEERS
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 NEW YORK, NY 10001
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 TEL: (212) 736-2584
 FAX: (212) 736-0241



BASE PLANE ELEVATIONS

61st STREET
 TOP OF CURB ELEVATIONS:
 45.60' + 45.69' + 45.44' + 45.23' + 45.0' + 44.58' + 44.40'
 = 315.94 / 7 = 45.13' = BASE PLAN ELEVATION

60th STREET
 TOP OF CURB ELEVATIONS:
 44.69' + 45.15' + 45.92' = 135.76 / 3
 = 45.25' = BASE PLAN ELEVATION

16th AVENUE
 TOP OF CURB ELEVATIONS:
 43.8' + 43.6' + 43.48' + 43.28' + 43.14'
 = 217.3 / 5 = 43.46' = BASE PLAN ELEVATION

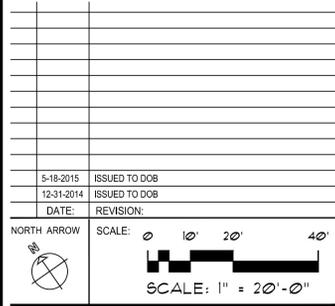
BLOCK: 5516
LOT: 34
ZONING DISTRICT: R6A
ZONING MAP: 22d
LOT AREA: 70,177.9 SQ. FT.

STREET
SITE PLAN

LOT AREAS:
 CORNER LOT PORTION: 20,000.0 S.F.
 THROUGH LOT PORTION: 19,252.1 S.F.
 INTERIOR LOT PORTION: 30,925.9 S.F.

TOTAL LOT AREA: 70,178.0 S.F.

STREET TREE CALCULATIONS
 PROPERTY DIMENSIONS 530'-9 1/8" + 200'-0" + 196'-3 1/8" = 927'-0 1/4"
 / 25'-0" = 37.08 = 37 TREES REQUIRED
 34 TREES PROVIDED, 3 TREES TO BE PLANTED OFF-SITE



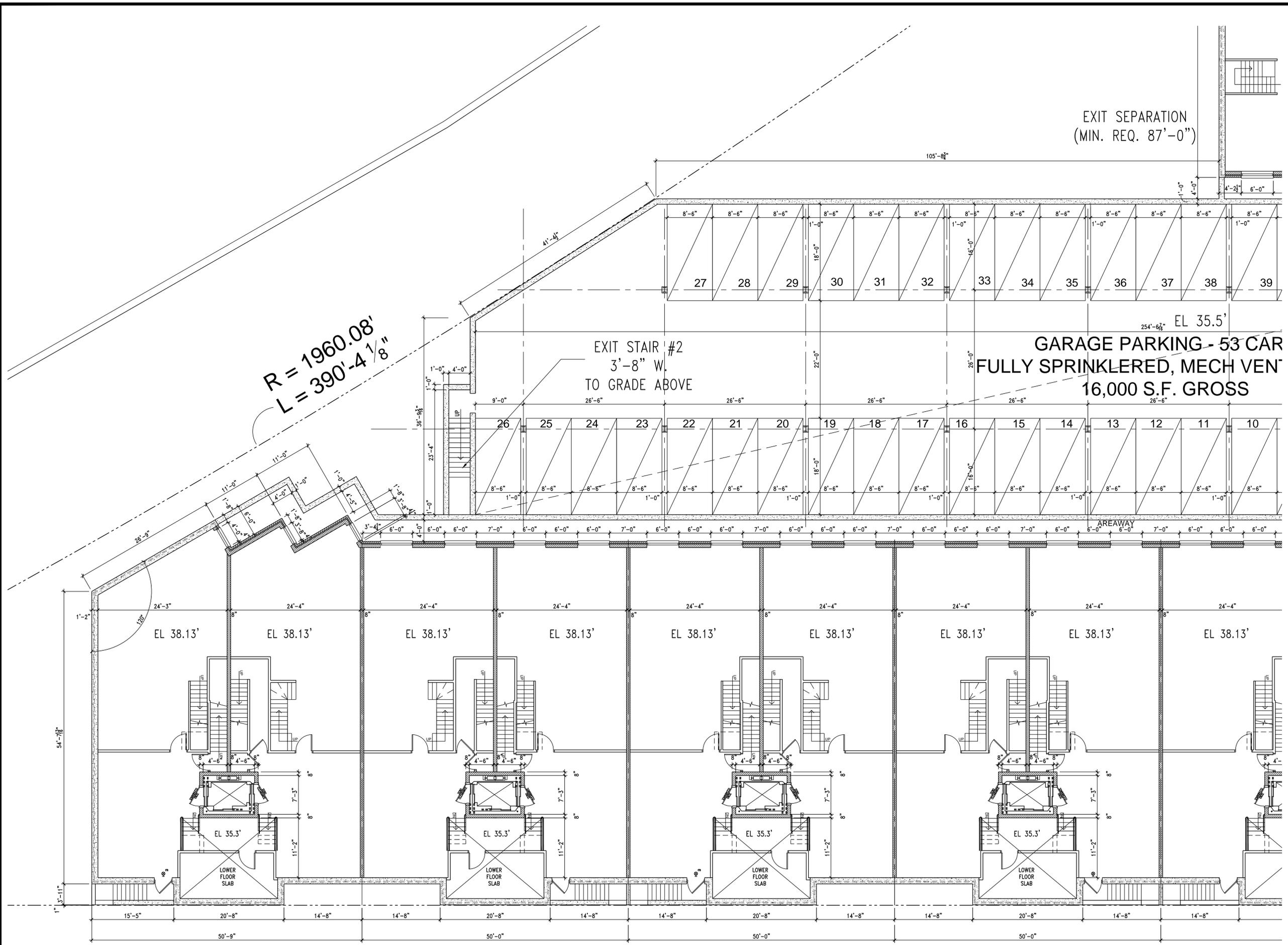
ADDRESS:
 61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK

DRAWING TITLE:
SITE PLAN

SEAL & SIGNATURE:

DATE: _____
 JOB NO.: 10688
 DRAWN BY: _____
 CHECKED BY: _____
 DRAWING NO.: **A-001.00**
 DWG. 14 OF 43

DOB NUMBER:



EXIT SEPARATION
(MIN. REQ. 87'-0")

$R = 1960.08'$
 $L = 390'-4 \frac{1}{8}''$

EXIT STAIR #2
3'-8" W.
TO GRADE ABOVE

GARAGE PARKING - 53 CAR
FULLY SPRINKLERED, MECH VEN
16,000 S.F. GROSS

PROJECT:
MAPLE LANES HOUSING
BROOKLYN, NEW YORK

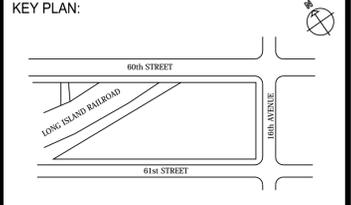
OWNER / DEVELOPER:
MAPLE 60 LLC
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ARCHITECT:
**JOHN SCHIMENTI, P.C.
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E-MAIL: AROSENTHAL@AJOSELOWPC.COM

5-18-2015	ISSUED TO DOB
DATE:	REVISION:
NORTH ARROW	
SCALE: 1/8" = 1'-0"	

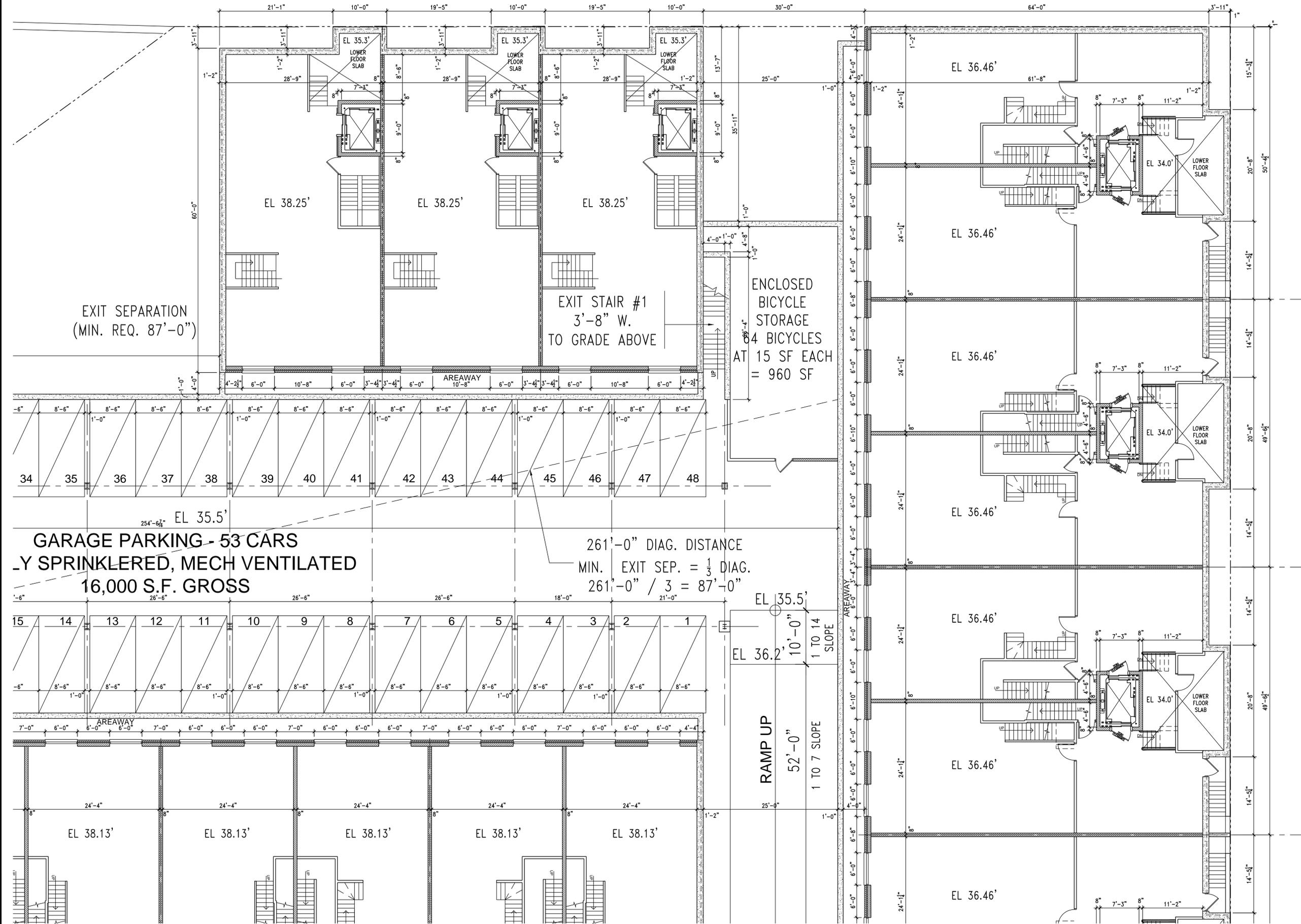


ADDRESS:
61st STREET AND 16th AVENUE
BROOKLYN, NEW YORK

DRAWING TITLE:
**PLAN OF PARKING GARAGE
AND CELLARS I**

SEAL & SIGNATURE: _____ DATE: _____
JOB NO.: 10688
DRAWN BY: _____
CHECKED BY: _____
DRAWING NO.: _____
A-002a.00
DWG. 16 OF 43

DOB NUMBER: _____



PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

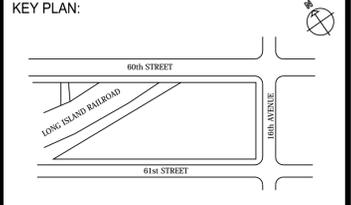
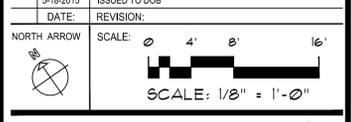
OWNER / DEVELOPER:
MAPLE 60 LLC
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 E-MAIL: BENNY@THELESERGROUP.COM
 TEL: (718) 438-5100
 FAX: (718) 438-0164

ARCHITECT:
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STRUCTURAL ENGINEERS:
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 TEL: (212) 736-2584
 FAX: (212) 736-0241

DATE	ISSUED TO DOB	REVISION:
5-18-2015		



ADDRESS:
61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK

DRAWING TITLE:
PLAN OF PARKING GARAGE AND CELLARS III

SEAL & SIGNATURE: _____ DATE: _____
 JOB NO.: 10688
 DRAWN BY: _____
 CHECKED BY: _____
 DRAWING No:
A-002c.00
 DWG. 18 OF 43

DOB NUMBER: _____

CONSTRUCTION PLAN NOTES

- DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN. ALL PARTITION LOCATIONS SHALL BE AS SHOWN ON PARTITION PLAN. IN CASE OF CONFLICT, NOTIFY ARCHITECT. PARTITION PLAN BY ARCHITECT TAKES PRECEDENCE OVER ALL OTHER PLANS.
- ALL GYPSUM BOARD PARTITIONS SHALL BE TAPED AND SANDED SMOOTH WITH NO VISIBLE JOINTS. PATCH AND REPAIR SURFACES TO MATCH ADJACENT OR ADJOINING SURFACES WHERE REQUIRED. ALL SURFACES SHALL BE ALIGNED AND SANDED SMOOTH.
- ALL PARTITIONS ARE DIMENSIONED FROM FINISH FACE OF GYPSUM BOARD TO FINISH FACE OF GYPSUM BOARD UNLESS OTHERWISE NOTED. ALL DIMENSIONS MARKED "CLEAR" OR "CLR" SHALL BE MAINTAINED AND SHALL ALLOW FOR THICKNESSES OF ALL WALL FINISHES, U.O.N.
- DIMENSIONS NOTED "CLEAR" OR "CLR" MUST BE ACCURATELY MAINTAINED, AND SHALL NOT VARY MORE THAN $\pm 1/8"$ WITHOUT WRITTEN INSTRUCTION FROM ARCHITECT.
- DIMENSIONS MARKED \pm MEAN A TOLERANCE NOT GREATER NOR SMALLER THAN 2 INCHES FROM INDICATED DIMENSION, U.O.N. VERIFY FIELD DIMENSIONS EXCEEDING TOLERANCE WITH THE ARCHITECT. SECURE ARCHITECT'S APPROVAL.
- ALL DIMENSIONS TO THE EXTERIOR WINDOW WALL ARE TO THE INSIDE FACE OF SILL, U.O.N.
- NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES OR CONFLICTS IN THE LOCATIONS OF NEW CONSTRUCTION. UPON COMPLETION OF PARTITION OF THE LAYOUT, NOTIFY THE ARCHITECT. VERIFICATION OF THE LAYOUT TO BE PROVIDED BY THE ARCHITECT PRIOR TO PARTITION INSTALLATION.
- ALL EXPOSED GYPSUM BOARD EDGES TO HAVE METAL EDGE TRIM.
- ALL WORK SHALL BE ERRECTED AND INSTALLED PLUMB, LEVEL, SQUARE AND TRUE, AND IN PROPER ALIGNMENT.
- REFER TO MILLWORK SHOP DRAWINGS FOR SPECIFIC DETAILS OF COORDINATION BETWEEN DRYWALL/MILLWORK CONDITIONS.
- REFER TO REFLECTED CEILING PLANS FOR SOFFITS, CEILING HEIGHTS AND PLUMBER BARRIER LOCATIONS.
- REFER TO SHEET AN.1 FOR ADDITIONAL NOTES, LEGENDS, SYMBOLS, ABBREVIATIONS, AND SCHEDULES.
- REFER TO POWER & SIGNAL AND REFLECTED CEILING PLANS FOR LOCATIONS OF SWITCHES, OUTLETS AND THE LIKE TO BE REMOVED. PATCH AND REPAIR PARTITION TO MATCH ADJACENT SURFACE AND FINISH.
- OBTAIN APPROVAL FROM ARCHITECT PRIOR TO MODIFYING COLUMN FURRING, RELOCATING PIPES AND SIMILAR SYSTEMS AND ITEMS, ADJUSTING ANY AND ALL OTHER FIELD CONDITIONS REQUIRED TO FIT PLANS.
- ALL EXISTING AND NEW FLOOR SLAB PENETRATIONS FOR PIPING SHALL BE FULLY PACKED AND SEALED IN ACCORDANCE WITH THE APPLICABLE BUILDING AND FIRE CODES.
- TRIM THE BOTTOMS OF DOORS TO CLEAR THE TOP OF FINISHED FLOOR, AS APPLICABLE, BY 1/4" INCH MAXIMUM, UNLESS OTHERWISE NOTED. VERIFY SLAB CONDITIONS, TRIM EACH DOOR TO FIT CONDITION, WHERE RADICAL VARIATIONS IN FLOOR ELEVATION EXIST, DOORS SHALL BE ORDERED WITH BOTTOM STILE SIZED TO ACCOMMODATE THESE UNDERCUT CONDITIONS.
- ALL GLASS SHALL BE CLEAR TEMPERED GLASS, UNLESS OTHERWISE NOTED. GLAZING TONG MARKS SHALL NOT BE VISIBLE. CLEAN AND POLISH ALL GLASS PRIOR TO PROJECT DELIVERY.
- DIMENSIONS LOCATING DOORS ARE TO THE INSIDE EDGE OF JAMB, U.O.N.
- "ALIGN" MEANS TO ACCURATELY LOCATE FINISHED FACES IN THE SAME PLANE.
- ALL MILLWORK TO BE FASTENED TO THE PARTITION, PROVIDE BLOCKING FOR ALL MILLWORK NOT SUPPORTED BY SLABS OR ABOVE 4'-0" HT. ALL CONCEALED LUMBER & BLOCKING TO BE FIRE TREATED.
- ALL DOORS SHALL HAVE 1'-6" CLR. ON STRIKE/PULL SIDE OF DOOR. VERIFY AND ADVISE ARCHITECT OF EXCEPTIONS PRIOR TO CLOSING OUT PARTITIONS.

POWER & TEL. PLAN NOTES

- WHEN FLOOR BELOW IS OCCUPIED, PRICE EXTENSIVE FLOOR SLAB PENETRATIONS AND/OR CORING ON AN OVERTIME BASIS.
- SURVEY FIELD CONDITIONS AND VERIFY THAT WORK IS FEASIBLE AS SHOWN. VERIFY LOCATION OF FLOOR OUTLETS AND OTHER OUTLETS IN RELATION TO STRUCTURAL AND OTHER ELEMENTS AS REQUIRED. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.
- ARCHITECTURAL DRAWINGS DETERMINE LOCATION AND TYPE (ARCHITECT TO VERIFY W/ ENGINEER) OF ALL OUTLETS AND TAKE PRECEDENCE OVER ALL OTHERS, U.O.N. ELECTRICAL ENGINEER'S POWER PLAN SHALL GOVERN THE WIRING LAYOUT AND INSTALLATION IN COMPLIANCE WITH ALL LAWS APPLICABLE AND ENFORCED BY GOVERNING AUTHORITIES.
- OUTLETS SHOWN BACK TO BACK ON PARTITION WALLS SHALL BE OFFSET 1'-0", MAXIMUM, OR MOUNTED AT DIFFERENT HEIGHTS IF INDICATED.
- FURNITURE, IF SHOWN, IS FOR REFERENCE ONLY AND IS NOT IN CONTRACT, U.O.N.
- COORDINATE ALL WORK RELATED TO EQUIPMENT WITH MANUFACTURER'S RECOMMENDATIONS, SPECIFICATIONS AND INSTRUCTIONS.
- ALL EXISTING AND NEW FLOOR SLAB PENETRATIONS FOR CONDUIT SHALL BE FULLY PACKED AND SEALED IN ACCORDANCE WITH THE APPLICABLE BUILDING AND FIRE CODES.
- REFER TO FINISH PLAN FOR OUTLET & SWITCH COVERPLATE FINISH. VERIFY SELECTION AND CHOICE WITH THE ARCHITECT PRIOR TO ORDERING MATERIALS.
- COORDINATE NEW ELECTRICAL WITH EXISTING, WHERE OCCURS.
- UPON COMPLETION OF OUTLET LAYOUT, NOTIFY THE ARCHITECT. ARCHITECT SHALL SITE VERIFY ALL OUTLET LOCATIONS PRIOR TO COMMENCEMENT OF CORING OR OUTLET INSTALLATION.
- FURNISH AND INSTALL UNDERWRITERS LABORATORIES, INC. (UL) LABELLED DEVICES THROUGHOUT.
- MAINTAIN A 4-INCH HORIZONTAL CLEARANCE IN ALL DIRECTIONS, MIN. FROM EDGE OF COVERPLATE, FOR WALL MOUNTED OUTLETS, OR FROM EDGE OF MONUMENT FOR FLOOR MOUNTED OUTLETS, WHEN ADJACENT TO A WALL, COLUMN, OR SIMILAR ELEMENTS, U.O.N.
- INDICATED DIMENSIONS ARE TO THE CENTER OF THE COVERPLATE OR MONUMENT; CLUSTERS OF OUTLETS ARE DIMENSIONED TO THE CENTER OF THE CLUSTER, U.O.N.; GANG COVERPLATES SHALL BE ONE-PIECE TYPE, U.O.N.
- OUTLETS INSIDE AND/OR ATTACHED TO CABINERY SHALL BE FURNISHED AND INSTALLED TO MATCH SIMILAR CONDITIONS SUCH AS WALL, FLOOR, AND THE LIKE. FURNISH AND INSTALL BOX EXTENSION OR OTHER APPROPRIATE DEVICES AS REQUIRED. ADJACENT OUTLETS SHALL NOT BE GREATER THAN 6" O.C. APART U.O.N.

REFLECTED CEILING PLAN NOTES

- COORDINATE THE WORK OF ALL TRADES INVOLVED IN THE CEILING WORK TO INSURE CLEARANCES FOR FIXTURES, DUCTS, PIPING, CEILING SUSPENSION SYSTEM, ETC., NECESSARY TO MAINTAIN THE FINISHED CEILING HEIGHTS INDICATED ON ARCHITECT'S DRAWINGS. MATCH EXISTING HEIGHT AND VERIFY IN FIELD.
- PERIMETER CEILING ANGLE, WHERE OCCURS, SHALL BE INSTALLED TIGHT TO VERTICAL SURFACES, FREE FROM CURVES, BREAKS OR OTHER IRREGULARITIES AND PAINTED TO MATCH CEILING FINISH.
- FURNISH AND INSTALL ALL FIXTURES, ASSOCIATED TRIM, FIXTURE LAMPS, AND SEISMIC BRACING AS REQUIRED.
- LIGHT FIXTURES, EXIT SIGNS, SPRINKLERS AND OTHER CEILING ELEMENTS SHALL BE LOCATED IN CENTER OF INDIVIDUAL CEILING TILE U.O.N.
- PROVIDE CEILING ACCESS AS REQUIRED FOR EQUIPMENT AND SYSTEM MAINTENANCE, AND MATCH ADJACENT CEILING FINISH U.O.N..
- ALL SOFFITS AND CEILING HEIGHTS ARE DIMENSIONED FROM TOP OF FINISHED FLOOR TO BOTTOM OF FINISHED GYPOBOARD OR CEILING TILE AND SHALL ALLOW FOR THICKNESS OF ALL FLOOR FINISHES.
- THE REFLECTED CEILING PLAN INDICATES THE LOCATION OF CEILING HEIGHTS, LIGHT TYPES, LIGHT FIXTURES, SWITCH LOCATIONS, AND ASSOCIATED ITEMS. REFER TO ENGINEERING DRAWING (LIGHTING PLAN) FOR CIRCUITING, WIRING LAYOUT, AND ADDITIONAL INFORMATION.
- IN THE EVENT OF DISCREPANCIES BETWEEN THE ARCHITECT'S REFLECTED CEILING PLAN AND THE ENGINEER'S LIGHTING PLAN, IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING BEFORE ORDERING MATERIALS OR PROCEEDING WITH WORK.
- ALL SPECIFIC INFORMATION CONCERNING INSTALLATION OF VARIOUS ABOVE-CEILING ELEMENTS ARE TO BE FOUND IN THE HVAC, PLUMBING, FIRE PROTECTION, ELECTRICAL AND LIGHTING DRAWINGS.
- NOTIFY ARCHITECT OF ANY CONFLICTS OF LIGHT FIXTURE LOCATIONS WITH MAIN RUNNERS, DUCTS, STRUCTURES, HVAC, AND/OR (E)CONDUIT PRIOR TO FRAMING FOR LIGHTS. ANY DISCREPANCIES BETWEEN ARCHITECT'S CEILING GRID LOCATION & ACTUAL FIELD CONDITIONS ARE TO BE CLARIFIED WITH THE ARCHITECT PRIOR TO FRAMING.
- SUBMIT GRILLE, SPRINKLER, THERMOSTAT, AND OTHER FIXTURE AND ELEMENT LAYOUTS TO THE ARCHITECT FOR REVIEW AT LEAST 2 WEEKS PRIOR TO INSTALLATION.
- VERIFY FIELD CONDITIONS AND LOCATIONS OF ALL PLUMBING, MECHANICAL DUCTS, STRUCTURAL ELEMENTS AND ANY AND ALL OTHER APPLICABLE ITEMS. INSTALL APPLICABLE NEW PLUMBING, MECHANICAL FANS, DUCTS, CONDUITS, AND OTHER RELATED AND APPURTENANT ITEMS SO AS TO NOT CONFLICT WITH LUMINAIRES AND ANY AND ALL FIELD CONDITIONS.
- FURNISH AND INSTALL UNDERWRITERS LABORATORIES INC. (UL) LABELLED DEVICES THROUGHOUT.
- INSTALL LIGHT FIXTURES WITH PROTECTIVE FILM OR SIMILAR COVER OVER LOUVER, LENS, BAFFLE, AND THE LIKE, TO AVOID FIXTURE SOILING OR DAMAGE; FIXTURES SHALL BE MAINTAINED CLEAN AND AS NEW; LAMPS SHALL BE NEW AT PROJECT COMPLETION.
- REFER TO ENGINEERING DRAWINGS FOR ALL LIFE SAFETY DEVICES REQUIRED BY CODE AND ALL EMERGENCY LIGHT FIXTURES. ARCHITECTURAL DRAWINGS SHALL GOVERN LOCATION OF THESE DEVICES.

FINISH PLAN NOTES

- NO PAINTING OR INTERIOR FINISHING SHALL BE DONE UNDER CONDITIONS WHICH WILL JEOPARDIZE THE QUALITY OR APPEARANCE OF SUCH WORK. ALL WORKMANSHIP WHICH IS JUDGED LESS THAN FIRST QUALITY BY THE ARCHITECT WILL BE REJECTED.
- ALL COLORS ARE TO BE SELECTED BY THE OWNER OR ARCHITECT, U.O.N.
- ALL SURFACES SHALL BE PREPARED TO RECEIVE THE SPECIFIED FINISH. ALL GYPSUM BOARD PARTITIONS SHALL BE TAPED AND SANDED SMOOTH AND PREPARED TO RECEIVE THE SPECIFIED FINISH. PAINT GRADE WOODWORK SHALL BE HAND SANDPAPERED BETWEEN COATS AND DUSTED CLEAN. ALL HOLES, PITCH POCKETS OR SAPPY PORTIONS SHALL BE SCRAPED AND SHELLACKED, OR SEALED WITH NOT SEALER, NAIL HOLES, CRACKS OR DEFECTS SHALL BE PUTTIED AFTER FIRST COAT, WITH PUTTY MATCHING COLOR OF STAIN OR PAINT FINISH. REMOVE OIL OR GREASE WITH MINERAL SPIRITS.
- ALL CRACKS, HOLES, IMPERFECTIONS IN EXISTING WALLS, PARTITIONS OR GYPOBOARD SHALL BE FILLED WITH PATCHING PLASTER AND SMOOTHED OFF TO MATCH ADJOINING SURFACES.
- INTERIOR GYPSUM BOARD SURFACES SHALL BE WIPED WITH A DAMP CLOTH JUST PRIOR TO APPLICATION OF THE FIRST COAT, IN ORDER TO LAY FLAT ANY NAP WHICH MAY HAVE FORMED IN SANDING PROCESS.
- UPON COMPLETION REMOVE ALL PAINT FROM WHERE IT HAS SPILLED, SPLASHED OR SPLATTERED ON EXPOSED ADJACENT SURFACES.
- ALL VENEER STAINS SHALL HAVE UNIFORM COLOR.
- EXAMINE ALL FINISH SURFACES AFTER COMPLETION OF WORK INCLUDING WOOD FLOORING AND MILLWORK INSTALLATION AND PROCEED WITH "TOUCH-UP" AS REQUIRED.
- PROVIDE ARCHITECT WITH A MINIMUM OF (3) 8" x 10" BRUSH-OUTS OF EACH COLOR & FINISH FOR ARCHITECT'S APPROVAL AT LEAST 2 WEEKS PRIOR TO SITE APPLICATION. ON-SITE APPLICATION WILL BE REQUIRED ONE WEEK PRIOR TO FINAL APPROVAL. ARCHITECT RESERVES THE RIGHT TO ADJUST ANY COLOR/FINISH ONCE THE WALL TEST HAS BEEN MADE.
- UNDERSIDE OF SOFFITS (WHERE OCCURS) TO RECEIVE A FINISH TO MATCH ADJACENT VERTICAL FINISH, U.O.N.
- ELECTRICAL SWITCH AND OUTLET COVER PLATES, SURFACE HARDWARE, ETC. SHALL BE INSTALLED AFTER PARTITION AND/OR APPLICATION OF WALLCOVERINGS & CARPET SPECIFIED.
- PRIOR TO SITE APPLICATION, PROVIDE ARCHITECT WITH 8" x 10" SAMPLE CUTTINGS FROM ACTUAL DYE LOTS OF ALL SPECIFIED WALLCOVERINGS FOR ARCHITECT'S APPROVAL AND PROVIDE EXPECTED DELIVERY DATE TO JOB SITE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALLOWING FOR DELIVERY LEAD TIMES FOR ALL FABRICS AND OTHER CUSTOM FINISHES WITHIN THE CONSTRUCTION SCHEDULE. ALL DELIVERY TIMES MUST BE CONFIRMED, AND ANY EXCESSIVE LEAD TIME MUST BE BROUGHT TO THE ARCHITECT'S ATTENTION IMMEDIATELY TO ALLOW FOR RE-SPECIFICATION IF NECESSARY.
- MODIFY EXISTING FLOOR SURFACES AS REQUIRED TO INSTALL NEW FLOORING MATERIALS, THUS PREVENTING NOTICEABLE LUMPS OR DEPRESSIONS.
- SEE FINISH PLAN, ELEVATIONS AND DETAILS FOR CLARIFICATION OF EXTENT OF FINISH MATERIALS.
- PAINT CEILING ACCESS PANELS WHERE THEY OCCUR TO MATCH ADJACENT CEILING FINISH.
- STAINED AND PAINTED SURFACES SHALL BE FINISHED SUCH THAT JOINTS ARE NOT VISIBLE WHEN VIEWED FROM ANY REASONABLE ANGLE.
- WALLCOVERING SEAMS ARE NOT TO OCCUR WITHIN 1'-0" OF CORNERS. APPLY FABRIC SO WALL IS DIVIDED WITH A MINIMUM NUMBER OF SEAMS, AND WITH EQUAL WIDTH PANELS U.O.N.

STRUCTURAL STEEL NOTES

- ALL STRUCTURAL STEEL TO BE NEW AND TO COMPLY WITH AISC SPECIFICATION FOR THE DESIGN FABRICATION AND ERECTION OF THE STRUCTURAL STEEL FOR BUILDINGS - LATEST EDITION.
- ALL STRUCTURAL STEEL SHALL BE A-36 UNLESS OTHERWISE NOTED.
- BEFORE BUILDING PERMIT WILL BE ISSUED, CONTRACTOR TO SUBMIT A STATEMENT THAT THE STEEL WILL BE OBTAINED TO COMPLY WITH THE ABOVE STANDARDS.
- AN AFFIDAVIT OF THE PRODUCER OF THE STEEL CERTIFYING THAT THE STEEL MEETS THE MINIMUM REQUIREMENTS OF THE ABOVE STANDARDS SHALL BE SUBMITTED.
- CONTRACTOR TO SUPPLY ALL TEMPORARY BRACING REQUIRED DURING ERECTION.
- COORDINATE OPENINGS ON ARCHITECTURAL AND MECHANICAL DRAWINGS WITH STRUCTURAL DRAWINGS AND DETAILS.
- CONTRACTOR SHALL INCLUDE ALL LOOSE LINTELS OVER EXTERIOR AND INTERIOR MASONRY OPENINGS NOT SPECIFICALLY INDICATED IN PLANS.
- PROVIDE TWO (2) 3/4" DIAM. ANCHOR BOLTS AT EACH COLUMN.
- ALL STRUCTURAL STEEL CONNECTIONS SHALL BE MADE WITH A MINIMUM OF 3/4" DIAM. HIGH STRENGTH BOLTS OR LARGER AS REQUIRED.
- BEAMS AND COLUMNS SHALL NOT BE CUT BY PLUMBING, ELECTRICAL OR HVAC CONTRACTORS WITHOUT FIRST RECEIVING PERMISSION FROM THE ENGINEER.
- PROVIDE GOVERNMENT ANCHORS AT ENDS OF ALL STRUCTURAL STEEL BEAMS.
- ALL JOISTS ARE TO COMPLY WITH STANDARDS AND SPECIFICATIONS OF THE AISC AND SJI. MANUFACTURER SHALL COMPLY WITH ALL CRITERIA OF THE ABOVE REFERENCE STANDARDS. JOIST BRIDGING SIZE AND SPACING UNLESS OTHERWISE SHOWN OR NOTED SHALL BE AS PER THE AISC AND SJI STANDARDS AND SPECIFICATIONS.
- STRUCTURAL STEEL SHAPES AND PLATES SHALL CONFORM TO ASTM A-36, U.N.
- ALL CONNECTIONS MAY BE BOLTED OR WELDED, UNLESS INDICATED. ALL SHEAR CONNECTIONS SHALL BE EQUIVALENT TO A.I.S.C. "FRAMED BEAM CONNECTIONS, TABLE I" USING 3/4 DIA BOLTS OR EQUIVALENT WELD.
- WELDING TO BE IN ACCORDANCE WITH THE STANDARDS OF THE AMERICAN WELDING SOCIETY (AWS D.1.) LATEST EDITION. USE E-70-XX ELECTRODES. ALL WELDING SHALL BE DONE BY A QUALIFIED WELDER AS PER BUILDING CODE.
- ALL STEEL SHALL RECEIVE ONE SHOP COAT OF PAINT AS PER RS 10-5A SECTION 1.24.1-5
- BEFORE PROCEEDING WITH FABRICATION OF STEEL THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER OF RECORD FOR APPROVAL.
- STEEL DECKING SHALL BE FORM DECK 1-1/2" DEEP, 20 GA., GALVANIZED.

CONCRETE NOTES

CONCRETE NOTES:

- DESIGN, MATERIALS, & METHODS OF CONSTRUCTION SHALL COMPLY WITH THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE ACI 318 OF THE AMERICAN CONCRETE INSTITUTE - LATEST EDITION. ULTIMATE DESIGN STRENGTH OF 28 DAYS FOR ALL REINFORCED CONCRETE IS TO BE 3500 PSI.
- CONCRETE & REINFORCING MATERIALS SHALL CONFORM TO THE FOLLOWING STANDARDS-LATEST
 - PORTLAND CEMENTS AS PER ASTM C150.
 - AIR-ENTRAINING PORTLAND CEMENT AS PER ASTM C175.
 - CONCRETE AGGREGATES AS PER ASTM 33.
 - COLD DRAWN WIRE OR WELDED WIRE FABRIC AS PER ASTM A82-84 AND A185-84.
 - DELETERIOUS SUBSTANCES: AL, ORGANIC
 - REINFORCING BARS SHALL BE INTERMEDIATE GRADE NEW BILLET STEEL, DEFORMED AS PER ASTM A615, GRADE 40, BASIC DESIGN STRESSES 24,000 PSI.
- ALL EXPOSED CONCRETE SHALL BE AIR ENTRAINED.
- THREE TEST CYLINDERS SHALL BE MOLDED FOR EACH 50 CUBIC YARDS OR FRACTION THEREOF OF EACH CLASS OF CONCRETE PLACED IN ANY ONE DAY. SAMPLES SHALL BE TAKEN DIRECTLY FROM MIXER AS PER ASTM C172-1984, CURED AS PER ASTM C31-1984 AND TESTED AT THE AGE OF 28 DAYS AS PER ASTM C39-1984. TEST SHALL BE PERFORMED BY A LICENSED TESTING LABORATORY. REPORTS TO BE FILED WITH THE ENGINEER. TEST CYLINDERS SHALL BE STORED IN ANY INSULATED CURING BOX, LOCATED TO MINIMIZE HAZARD OF DISTURBANCE DURING CURING, FREE FROM VIBRATION, REMOTE FROM TRAFFIC, HEATED TO MAINTAIN PROPER CURING CONDITIONS. BOX SHALL BE PROVIDED BEFORE FIRST LOAD OF CONCRETE IS DELIVERED. CYLINDERS SHALL REMAIN IN CURING BOX AT LEAST 24 HOURS AND READY FOR DELIVERY TO TESTING LABORATORY.
- SLABS ON GROUND SHALL BE 3500-PSI CONCRETE REINFORCED WITH 66-1010 WELDED WIRE MESH 4" x 4"
- WIRE MESH IN SLABS SHALL BE ELECTRICALLY WELDED AND SHALL HAVE AN ULTIMATE TENSILE STRENGTH OF 70,000 PSI.

ON-SITE INSPECTION:

- THE ENGINEER DESIGNATED FOR CONTROLLED INSPECTION SHALL CHECK THE FOLLOWING ITEMS AND PERFORM THE FOLLOWING TESTS:
 - PREPARATION AND TESTING OF CYLINDERS.
 - SLUMP.
 - AIR CONTENT.
 - UNIT WEIGHT.
 - VERIFY THAT WEIGHTS AND RATIO CONFORM TO THE PRE- QUALIFIED MIX, ADJUSTED FOR MOISTURE CONTENT AND GRADUATION OF AGGREGATES.
 - TEMPERATURE.
 - SIZE AND DIMENSIONS OF CONCRETE AND FORM MEMBERS.
 - SIZE AND POSITIONS OF REINFORCING.
 - PLACEMENT OF CONCRETE, TEMPERATURE PROTECTION AGAINST EXCESSIVE TEMPERATURE CURING.
 - FILE AND OBTAINING APPROVAL OF ALL TEST AND INSPECTION REPORTS INCLUDING CONCRETE PRODUCERS CERTIFICATE WITH THE BUILDING DEPARTMENT.

TENANT SAFETY NOTES

TENANT PROTECTION PLAN IBC 28-104.8.41

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE NEW YORK CITY BUILDING CODE AND WITH ALL REGULATIONS OF ANY OTHER AGENCY HAVING JURISDICTION.

OCCUPANCY: NO ONE SHALL OCCUPY THE SPACE DURING CONSTRUCTION.

EGRESS: ALL EXISTING MEANS EGRESS FROM THE BUILDING SHALL BE MAINTAINED CLEAR AND FREE OF ALL OBSTRUCTIONS, SUCH AS BUILDING MATERIALS, TOOLS, ETC.

FIRE SAFETY: THE INTEGRITY OF ALL EXISTING FIREPROOFING SHALL BE MAINTAINED.

ALL FLAMMABLE MATERIALS SHALL BE KEPT TIGHTLY SEALED IN THEIR RESPECTIVE MANUFACTURER'S CONTAINERS. SUCH MATERIALS SHALL BE KEPT AWAY FROM HEAT AND SHALL BE USED AND STORED IN AN ADEQUATELY VENTILATED SPACE.

ALL ELECTRICAL POWER SHALL BE SHUT-OFF WHERE THERE IS EXPOSED CONDUIT.

ALL ELECTRICAL POWER IN THE CONSTRUCTION AREA SHALL BE SHUT-OFF AFTER WORKING HOURS.

THE CONTRACTOR SHALL MAKE SURE THERE IS NO LEAKAGE OF ANY FLAMMABLE GAS USED IN CONSTRUCTION.

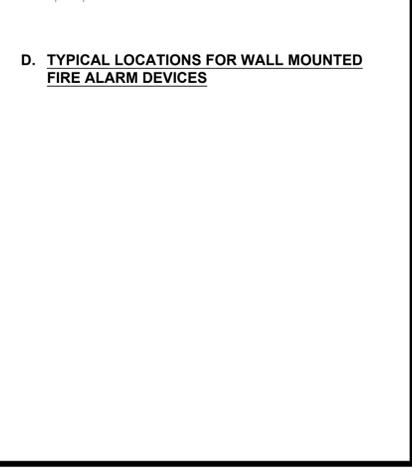
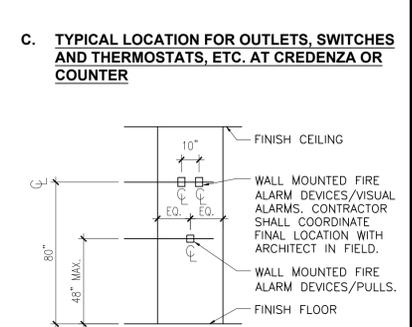
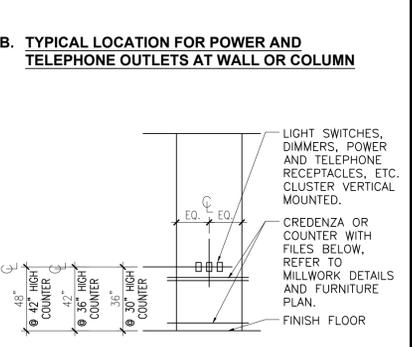
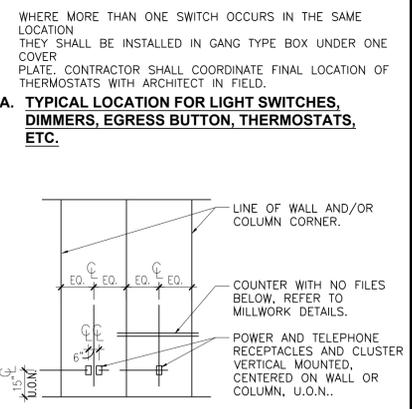
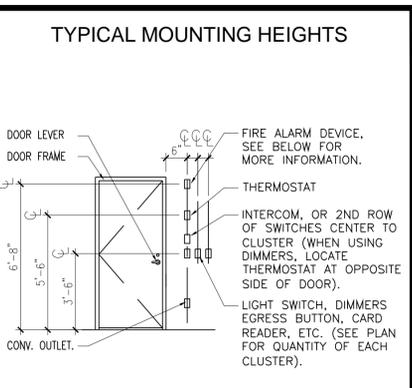
ALL BUILDING MATERIALS STORED AT THE CONSTRUCTION AREA, AND/OR IN ANY AREA OF THE BUILDING, ARE TO BE SECURED IN A LOCKED AREA. ACCESS TO SUCH AREAS SHALL BE CONTROLLED BY OWNER AND/OR GENERAL CONTRACTOR.

HEALTH REQUIREMENTS: CONSTRUCTION OPERATIONS SHALL NOT INVOLVE INTERRUPTION OF HEATING, WATER OR ELECTRICAL SERVICES TO OTHER TENANTS OF THE BUILDING WITHOUT PRIOR NOTICE.

DUST CONTROL: DEBRIS, DUST AND DIRT SHALL BE KEPT TO A MINIMUM AND BE CONFINED TO THE IMMEDIATE CONSTRUCTION AREA AND SHALL BE CLEARED FROM THE BUILDING PERIODICALLY TO AVOID EXCESSIVE ACCUMULATION.

CONTRACTOR SHALL ISOLATE THE CONSTRUCTION AREA FROM OCCUPIED BUILDING AREAS BY MEANS OF TEMPORARY PARTITIONS OR HEAVY DROP CLOTHS.

NOISE RESTRICTIONS: CONSTRUCTIONS OPERATIONS SHALL BE CONFINED TO REGULAR WORKING HOURS: MONDAY THRU FRIDAY, 8:00 AM - 5:00 PM. NO WORK ON SATURDAYS AND SUNDAYS.



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12-31-2014	ISSUED TO DOB
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NORTH ARROW SCALE:

KEY PLAN:

ADDRESS: **61st STREET AND 16th AVENUE, BROOKLYN, NEW YORK**

DRAWING TITLE: **GENERAL NOTES**

SEAL & SIGNATURE: _____ DATE: _____
JOB NO.: 10688
DRAWN BY: _____
CHECKED BY: _____
DRAWING No: **A-005.00**
DWG. 21 OF 43

DOB NUMBER:

MULTIPLE DWELLING NOTES

ARTICLE 3: GENERAL NOTES

- 1 - BUILDING SHALL COMPLY WITH SECTION 29 FOR PAINTING OF COURTS AND SHAFTS.
- 2 - BUILDING SHALL COMPLY WITH SECTION 31 FOR ROOM SIZES AND DIMENSIONS.
- 3 - BUILDING SHALL COMPLY WITH SECTION 53 FOR CONSTRUCTION OF KITCHENS AND KITCHENETTES. ALL COMBUSTIBLE MATERIALS IMMEDIATELY UNDERNEATH OR WITHIN ONE FOOT OF GAS RANGES SHALL BE FIRE-RETARDED WITH 5/8" F.C. GYPSUM BOARD. MINIMUM CLEARANCE OF 2'-0" SHALL BE MAINTAINED ABOVE GAS RANGES.
- 4 - ALL GAS RANGES SHALL BE A.G.A. AND / OR G.S.A. APPROVED AND EQUIPPED WITH ELECTRONIC IGNITION
- 5 - BUILDING SHALL COMPLY WITH SECTION 35 FOR BUILDING ENTRANCE DOORS WITH MINIMUM (5) SQUARE FEET OF GLASS. REQUIRED EXTERIOR ILLUMINATION SHALL BE PROVIDED.
- 6 - BUILDING SHALL COMPLY WITH SECTION 36 FOR SKYLIGHTS AT STAIR BULKHEADS WITH MINIMUM 20 SQUARE FEET OF GLASS AREA.
- 7 - BUILDING SHALL COMPLY WITH SECTION 50g FOR AUTOMATIC SELF-CLOSING AND SELFLOCKING DOORS, INTERCOMMUNICATIONS SYSTEMS, AND ATTENDANTS AT BUILDING ENTRANCE.
- 8 - BUILDING SHALL COMPLY WITH SECTION 51g FOR PEEPHOLES IN APARTMENT ENTRANCE DOORS.
- 9 - BUILDING SHALL COMPLY WITH SECTION 52 FOR INSTALLATION OF HANDRAILS IN STAIRS. STAIR TREADS SHALL BE MINIMUM 9.5" WIDE AND RISERS SHALL BE MAXIMUM 7.75" HIGH. NO REQUIRED STAIR SHALL CONTAIN WINDERS.
- 10 - BUILDING SHALL COMPLY WITH SECTION 53 FOR CONSTRUCTION OF FIRE ESCAPES WITH MAXIMUM 60 DEGREE STAIRWAYS. STEPS SHALL BE MINIMUM (6") IN WIDTH AND (20") IN LENGTH.
- 11 - BUILDING SHALL COMPLY WITH SECTION 57 FOR BELLS AT EACH APARTMENT ENTRANCE.
- 12 - BUILDING SHALL COMPLY WITH SECTION 64 FOR PROVISION OF PARAPETS OR GUARD RAILS, MINIMUM 3'-6", AT ROOF
- 13 - BUILDING SHALL COMPLY WITH SECTION 64 FOR INSTALLATION OF GAS AND ELECTRIC METERS. ALL GAS APPLIANCES SHALL BE PROPERTY VENTED TO THE OUTER AIR AND EQUIPPED WITH AUTOMATIC SHUT-OFF DEVICES.
- 14 - BUILDING SHALL COMPLY WITH SECTION 65 FOR CONSTRUCTION OF BOILER ROOMS EQUIPPED WITH FIREPROOF SELF-CLOSING DOORS.
- 15 - BUILDING SHALL COMPLY WITH SECTION 76 FOR CONSTRUCTION OF BATHROOMS. ALL BATHROOMS SHALL HAVE CERAMIC FLOOR TILE AND MINIMUM 6" HIGH SANITARY TYPE COVER BASE. ALL BATHROOM WALLS SHALL BE WR GYPSUM BOARD.
- 16 - BUILDING SHALL COMPLY WITH SECTION 77 FOR DRAINAGE OF ROOFS COURTS AND YARDS.
- 17 - BUILDING SHALL COMPLY WITH SECTION 84 FOR SOUNDPROOFING BETWEEN APARTMENTS.

NEW CODE: GENERAL NOTES

- 18 - BUILDING SHALL COMPLY WITH C27-979 FOR INSTALLATION OF SMOKE DETECTORS.
- 19 - TO THE EXTENT REQUIRED, BUILDING SHALL COMPLY WITH LL 58/87 FOR HANDICAPPED ACCESS AND ADAPTABILITY.

ARTICLE 4: FIREPROOF MULTIPLE DWELLINGS

- 20 - BUILDING SHALL COMPLY WITH SECTION 102 FOR FIRE-STAIRS EXTENDING FROM ENTRANCE STORY TO ROOF, EQUIPPED WITH FIREPROOF SELF-CLOSING DOORS.
- 21 - BUILDING SHALL COMPLY WITH SECTIONS 105 AND 107 FOR LIGHTING AND VENTILATION OF PUBLIC HALLS AND STAIRS.
- 22 - BUILDING SHALL COMPLY WITH SECTION 107 FOR FIREPROOF SELF-CLOSING DOORS INTO PUBLIC HALLS.

ARTICLE 5: NON-FIREPROOF MULTIPLE DWELLING

- 20 - BUILDING SHALL COMPLY WITH SECTION 143 FOR FIREPROOF CONSTRUCTION OF FIRST FLOOR.
- 21 - BUILDING SHALL COMPLY WITH SECTION 144 FOR NUMBER AND LOCATION OF REQUIRED MEANS OF EGRESS EXTENDING FROM GRADE EXIT TO ROOF.
- 22 - BUILDING SHALL COMPLY WITH SECTION 146 FOR TWO MEANS OF EGRESS FROM EVERY APARTMENT.
- 23 - BUILDING SHALL COMPLY WITH SECTION 147 FOR CONSTRUCTION OF STAIR BULKHEAD OR SCUTTLE.
- 24 - BUILDING SHALL COMPLY WITH SECTION 148 FOR FIREPROOF CONSTRUCTION OF FIRE-STAIRS.
- 25 - BUILDING SHALL COMPLY WITH SECTIONS 148 AND 149 FOR LIGHTING AND VENTILATION OF PUBLIC STAIRS AND HALLS.
- 26 - BUILDING SHALL COMPLY WITH SECTION 149 FOR FIREPROOF CONSTRUCTION OF PUBLIC HALLS.
- 27 - BUILDING SHALL COMPLY WITH SECTION 150 FOR FIREPROOF CONSTRUCTION OF CELLAR / BASEMENT STAIRS.
- 28 - BUILDING SHALL COMPLY WITH SECTION 152 FOR FIRE STOPPING.

ARTICLE 6: CONVERTED DWELLINGS

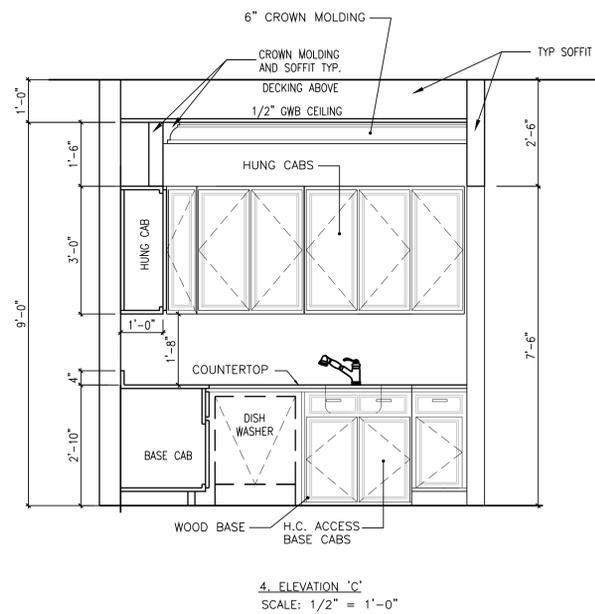
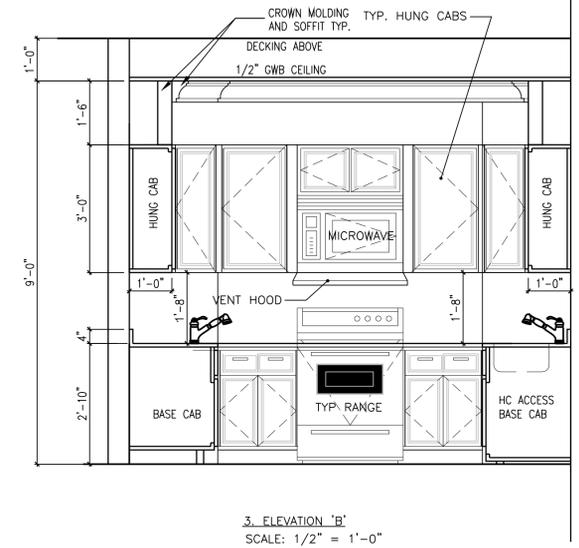
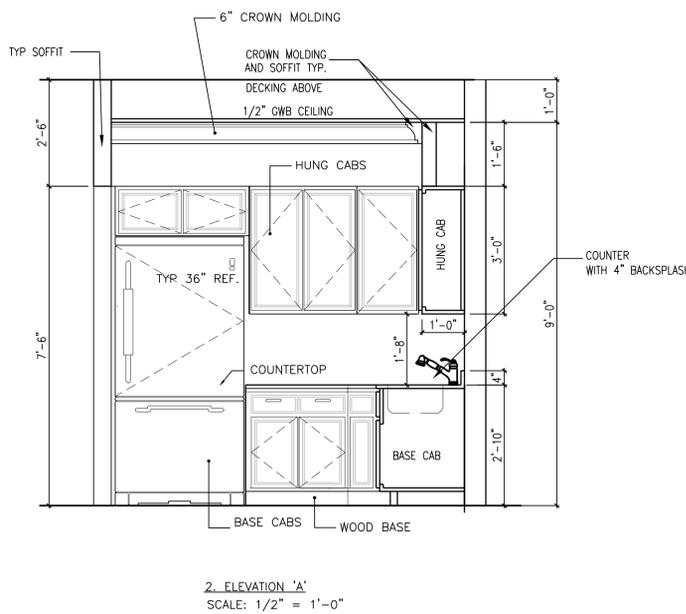
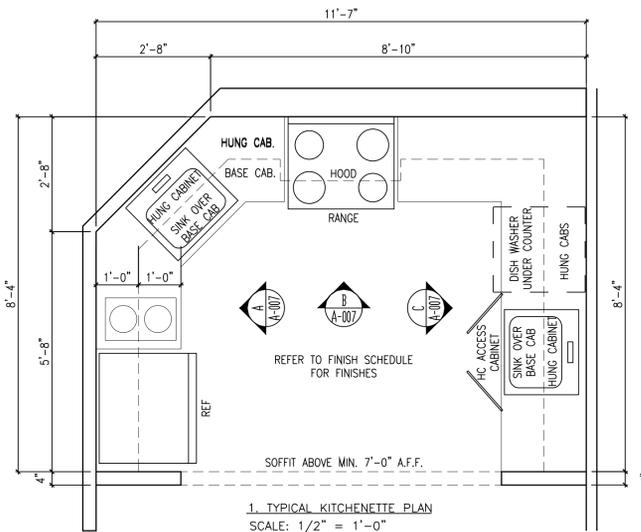
- 29 - BUILDING SHALL COMPLY WITH SECTION 172 FOR THIRTEEN-FOOT MINIMUM REAR YARD OR ACCEPTABLE ALTERNATIVE.
- 30 - BUILDING SHALL COMPLY WITH SECTION 173 FOR LIGHTING AND VENTILATION OF LIVING ROOMS, SIZE AND LOCATION OF WINDOWS.
- 31 - BUILDING SHALL COMPLY WITH SECTION 174 FOR SIZE OF LIVING ROOMS.
- 32 - BUILDING SHALL COMPLY WITH SECTION 178 FOR LIGHTING AND VENTILATION OF PUBLIC HALLS AND STAIRS AND PROVISION (IF NECESSARY) OF SKYLIGHT AND VENTILATORS OVER STAIRWELLS, PROVIDING 9 SQUARE FEET OF GLAZED SURFACE AND 40 SQUARE INCHES OF VENTILATING OPENINGS.
- 33 - BUILDING SHALL COMPLY WITH SECTION 179 FOR ARRANGEMENT OF BEDROOMS AND WATER-CLOSET COMPARTMENTS.
- 34 - BUILDING SHALL COMPLY WITH SECTION 185 FOR FIRE-RETARDING OF CEILING AT LOWEST STORY.
- 35 - BUILDING SHALL COMPLY WITH SECTION 187 FOR SINGLE MEANS OF EGRESS EQUIPPED WITH SPRINKLER SYSTEM, EXTENDING FROM ENTRANCE STORY TO ROOF VIA BULKHEAD OR SCUTTLE.
- 36 - BUILDING SHALL COMPLY WITH SECTION 189.2 FOR FIREPROOF SELF-CLOSING DOORS INTO PUBLIC HALL AND STAIRS.
- 37 - BUILDING SHALL COMPLY WITH SECTION 190 FOR INCOMBUSTIBLE CELLAR STAIRS AND INCOMBUSTIBLE STAIR ENCLOSURE WITH FIREPROOF SELF-CLOSING DOOR.

ARTICLE 7: TENEMENTS

- 38 - BUILDING SHALL COMPLY WITH SECTION 212.4 FOR ACCESS DOORS INTO COURTS AND SHAFTS. (OLT)
- 39 - BUILDING SHALL COMPLY WITH SECTION 213 FOR LIGHTING AND VENTILATION OF LIVING ROOMS, SIZE AND LOCATION OF WINDOWS.
- 40 - BUILDING SHALL COMPLY WITH SECTION 214 FOR SIZE OF LIVING ROOM
- 41 - BUILDING SHALL COMPLY WITH SECTION 217 FOR LIGHTING AND VENTILATION OF PUBLIC HALLS AND STAIRS.
- 42 - BUILDING SHALL COMPLY WITH SECTION 217.7 FOR SKYLIGHT AND VENTILATORS OVER STAIRWELLS, PROVIDING 20 SQUARE FEET OF GLAZED SURFACE AND 40 SQUARE INCHES OF VENTILATING OPENINGS.
- 43 - BUILDING SHALL COMPLY WITH SECTION 218.5 FOR FIRE-RETARDING OF ENTRANCE HALL AND STAIR HALL WALLS AND ARRANGEMENT OF STAIRS.
- 44 - BUILDING SHALL COMPLY WITH SECTION 233 FOR BULKHEADS OR SCUTTLE IN LIEU OF BULKHEAD.
- 45 - BUILDING SHALL COMPLY WITH SECTION 238 FOR FIREPROOF SELF-CLOSING DOORS INTO PUBLIC HALL AND STAIRS.
- 46 - BUILDING SHALL COMPLY WITH SECTION 238.4(b) FOR FIRE-RETARDING OF PUBLIC HALLS AND STAIR SOFFITS.
- 47 - BUILDING SHALL COMPLY WITH SECTION 240 FOR FIRE-RETARDING / FIREPROOFING OF CEILING AT LOWEST STORY.
- 48 - BUILDING SHALL COMPLY WITH SECTION 241 FOR FIRE STOPPING OF PARTITIONS BETWEEN APARTMENTS.

HOUSING MAINTENANCE NOTES

- 1 - BUILDING SHALL COMPLY WITH SECTION D26-14-03 FOR RECEPTACLES FOR GARBAGE SUFFICIENT FOR 72 HOURS ACCUMULATED WASTE. METAL CANS SHALL BE PROVIDED.
- 2 - BUILDING SHALL COMPLY WITH SECTION D26-14.05 FOR COLLECTION OF GARBAGE DAILY FROM DWELLINGS.
- 3 - BUILDING SHALL COMPLY WITH SECTION D26-16.03 FOR DRAINAGE OF ROOFS AND COURTYARDS THROUGH DRAINS CONNECTED TO COMBINED SEWER.
- 4 - BUILDING SHALL COMPLY WITH SECTION D26-17.01 FOR CENTRAL HEATING. MINIMUM 68 DEGREES A.M.-10 P.M.) AND 55 DEGREES (10 P.M.-6 A.M.).
- 5 - BUILDING SHALL COMPLY WITH SECTION D26-17.07 FOR HOT WATER, MINIMUM 120 DEGREES (6 A.M.- MIDNIGHT).
- 6 - BUILDING SHALL COMPLY WITH SECTION D26-17.09 PROHIBITING GAS OR ELECTRIC HEATERS. BUILDING IS CENTRALLY HEATED.
- 7 - BUILDING SHALL COMPLY WITH SECTION D26-19.05 FOR PUBLIC HALL AND STAIR LIGHTING DAILY FROM SUNSET TO SUNRISE OR WHEN NATURAL LIGHT IS INSUFFICIENT.
- 8 - BUILDING SHALL COMPLY WITH SECTION D26-19.07 FOR ENTRANCE, YARD AND COURT LIGHTING DAILY FROM SUNSET TO SUNRISE; MINIMUM 100 WATTS EQUIV. AT BUILDING FRONT. 40 WATTS EQUIV. IN YARD AND COURTS.
- 9 - BUILDING SHALL COMPLY WITH SECTION D26-20.01 FOR PEEPHOLES IN APARTMENT ENTRANCE DOORS
- 10 - BUILDING SHALL COMPLY WITH SECTION D26-20.05 FOR PROVIDING HEAVY DUTY LATCHSETS AND DEAD BOLT OPERABLE BY KEY -AND EQUIPPED WITH A CHAIN DOOR GUARD AT ALL APARTMENT ENTRANCE DOORS.
- 11 - BUILDING SHALL COMPLY WITH SECTION D26-21.01 FOR MAIL SERVICES. MAIL SHALL BE DELIVERED AND RECEPTACLES MAINTAINED.
- 12 - BUILDING SHALL COMPLY WITH SECTION D26-21.03 FOR FLOOR NUMBER SIGNS AT EACH STORY.
- 13 - BUILDING SHALL COMPLY WITH SECTION D26-21.05 FOR STREET NUMBERS ON DWELLING.
- 14 - BUILDING SHALL COMPLY WITH SECTION D26-22.03 FOR JANITORIAL SERVICES PROVIDED 24 HOURS A DAY.
- 15 - BUILDING SHALL COMPLY WITH SECTI- A D26-31.01 FOR ROOM SIZES-, MINIMUM HEIGHT 8' MINIMUM ONE ROOM TO BE 132 SQUARE FEET PER APARTMENT.
- 16 - BUILDING SHALL COMPLY WITH SECTION D26-41.01 FOR REGISTRATION FILED WITH H.P.D.
- 17 - BUILDING SHALL COMPLY WITH SECTION D26-41.15 FOR POSTING OF MULTIPLE DWELLING SERIAL NUMBER IN BUILDING.
- 18 - BUILDING SHALL COMPLY WITH SECTION D26-41.17 FOR IDENTIFICATION OF AGENT OR OWNER ON RENT RECEIPT.



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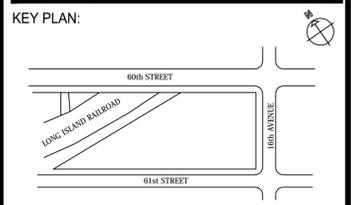
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NO.	DATE	REVISION
1	5-18-2015	ISSUED TO DOB
2	2-6-2015	REVISED KITCHEN DETAIL
1	12-31-2014	ISSUED TO DOB
	DATE:	REVISION:

NORTH ARROW SCALE:

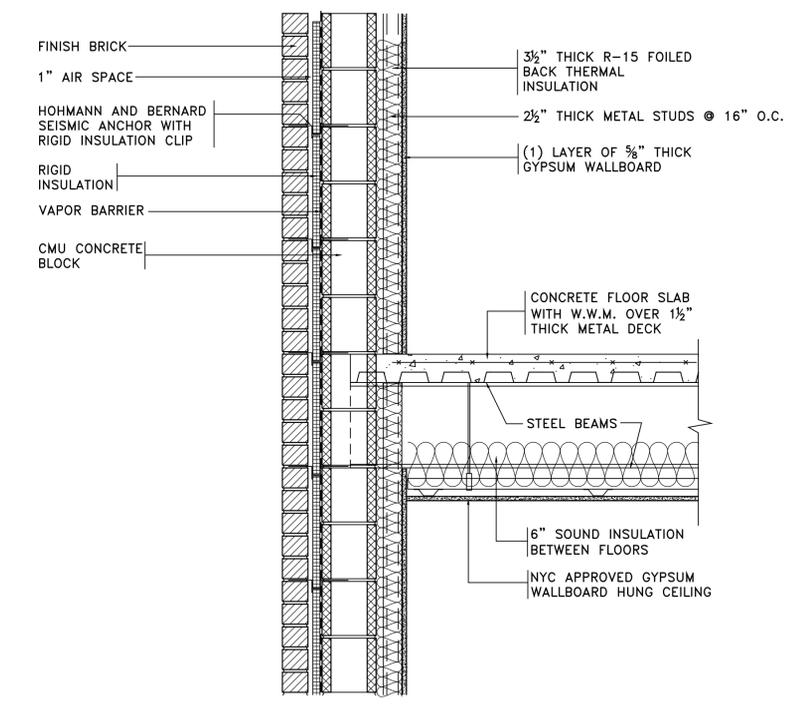
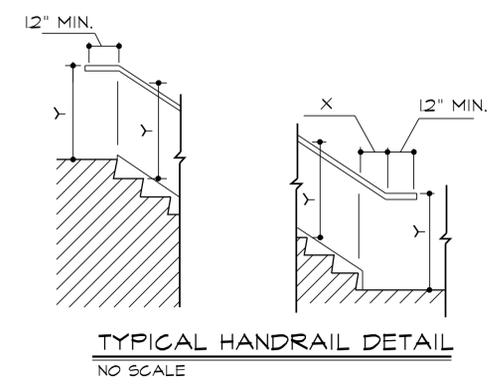
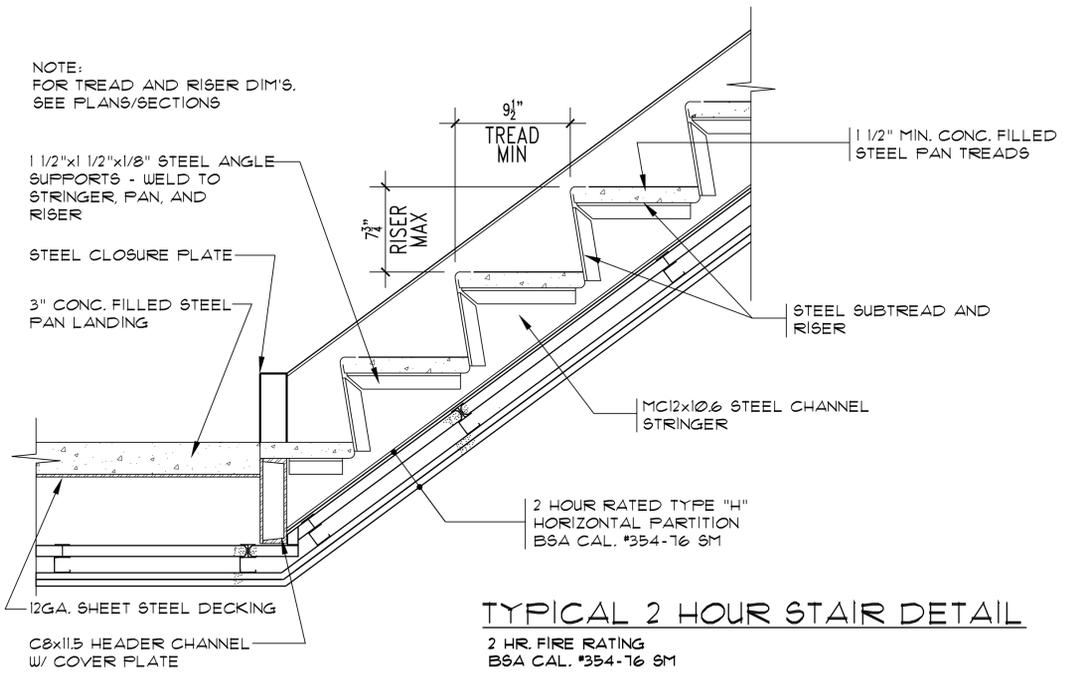


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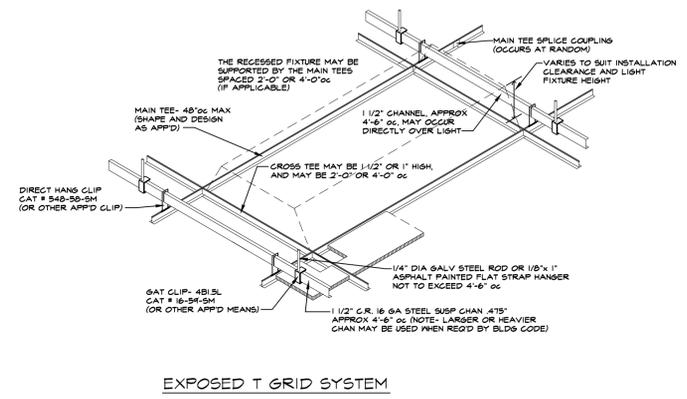
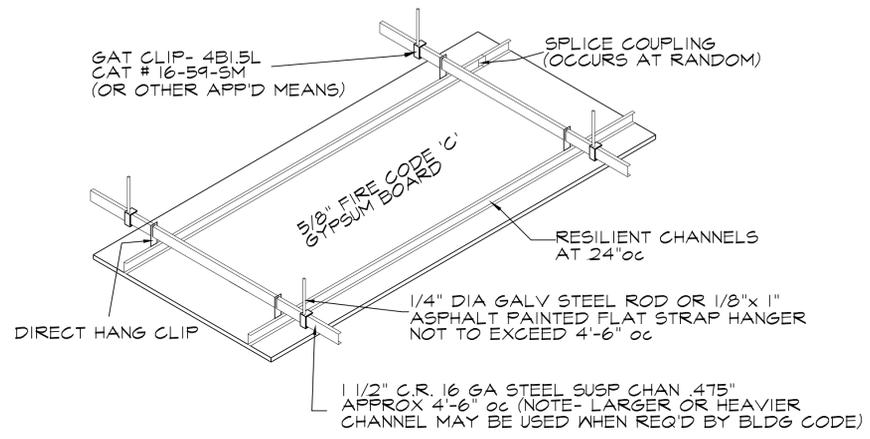
DRAWING TITLE :
HOUSING NOTES
KITCHENETTE DETAILS

SEAL & SIGNATURE:	DATE: JOB NO.: 10688
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	CHECKED BY:
	DRAWING No: A-007.00
	DWG. 23 OF 43

DOB NUMBER:



HUNG CEILING CONSTRUCTION AND INSTALLATION
TO COMPLY WITH RS 5-16 AND SECTION 504.12,
502.5, AND 504.7(d) BSA# 1031-57 SM



- NOTES
- AT EACH END OF LIGHT FIXTURE AN INTERLOCKING CROSS TEE OR LOCKING BAR MUST BE USED (IF APPLICABLE)
 - THE TOTAL WEIGHT OF A LIGHT FIXTURE AND OTHER EQUIPMENT (AIR BOXES, ETC.) AND CEILING MATERIAL SUPPORTED BY THE MAIN BEAM MUST NOT EXCEED THE ALLOWABLE DEFLECTION OF L/360 OF ITS SPAN. DEFLECTION DATA MUST BE FURNISHED AND CERTIFIED BY THE MANUFACTURER
 - SURFACE OR PENDENT FIXTURES MUST BE INDEPENDENTLY SUPPORTED FROM 1 1/2" BLACK IRON OR FROM FLOOR OR ROOF CONSTRUCTION

HUNG CEILING CONSTRUCTION AND INSTALLATION
TO COMPLY WITH RS 5-16 AND SECTION 504.12,
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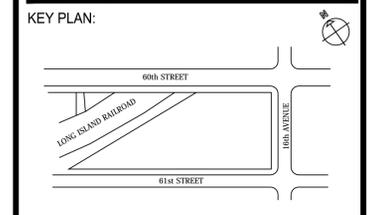
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5-18-2015	ISSUED TO DOB
12-31-2014	ISSUED TO DOB
DATE:	REVISION:
NORTH ARROW	SCALE:

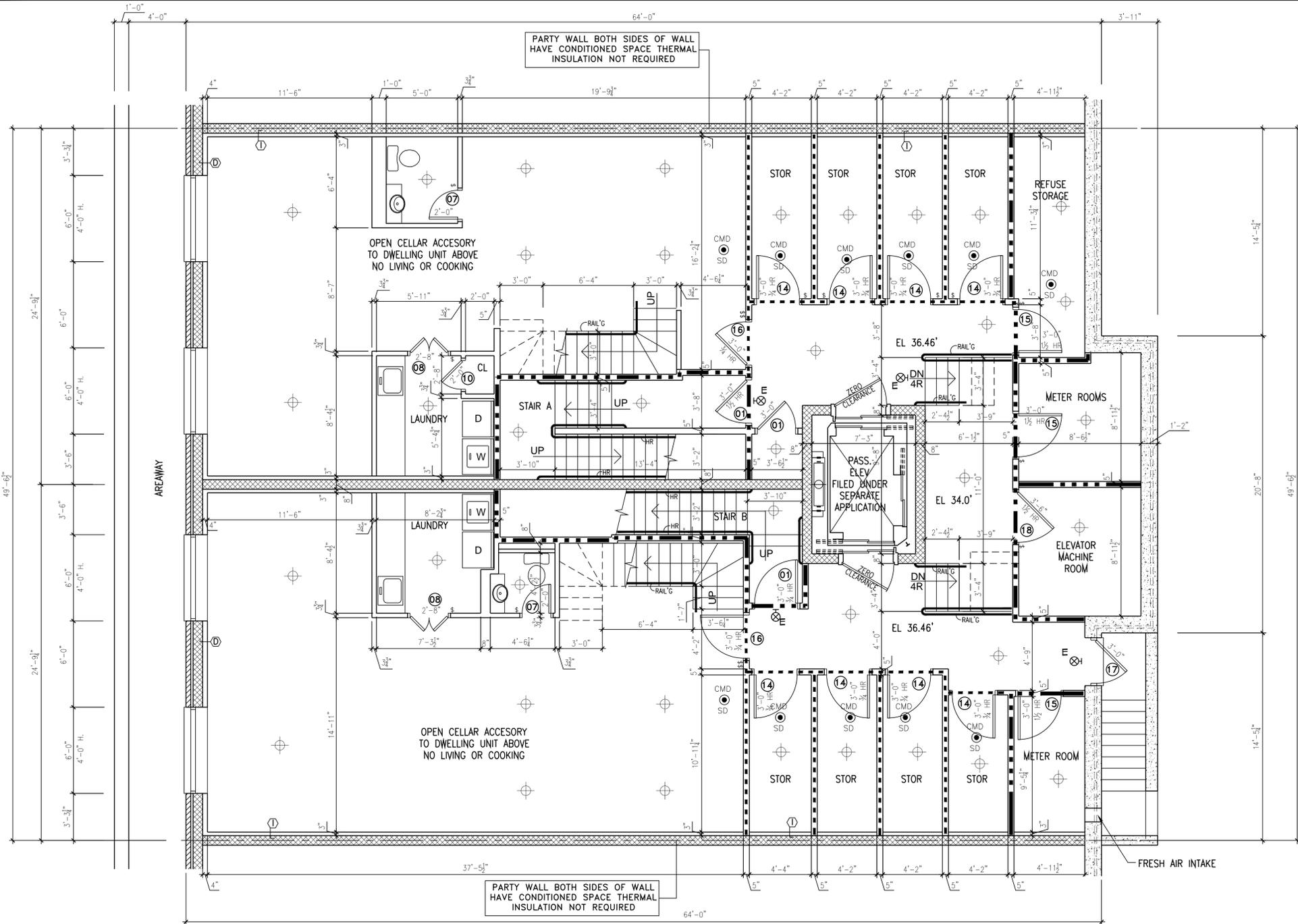


ADDRESS:
61st STREET AND 16th AVENUE
BROOKLYN, NEW YORK

DRAWING TITLE:
DETAILS

SEAL & SIGNATURE:	DATE:
	JOB NO.: 10688
	DRAWN BY:
	CHECKED BY:
	DRAWING No:
	A-009.00
	DWG. 25 OF 43

DOB NUMBER:



PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

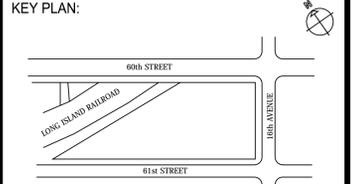
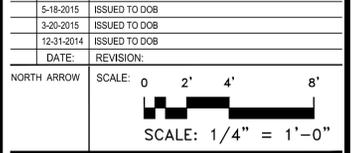
OWNER / DEVELOPER:
MAPLE 60 LLC
 1481 47th STREET
 BROOKLYN, NY 11219
 E-MAIL: BENNY@THELESERGROUP.COM
 TEL: (718) 438-5100
 FAX: (718) 438-0164

ARCHITECT:
JOHN SCHIMENTI, P.C.
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 126 ATLANTIC AVENUE
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 E-MAIL: JOHN@JSCHIMENTI.COM
 TEL: (516) 825-3883
 FAX: (516) 825-3887

STRUCTURAL ENGINEERS:
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 12 WEST 32nd STREET, 8th FLOOR
 NEW YORK, NY 10001
 E-MAIL: NWEXLER@WEXLER.COM
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M E P ENGINEERS:
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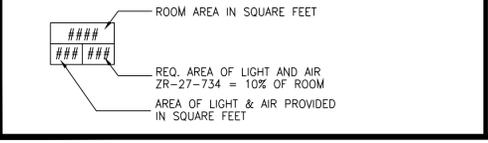
DATE	REVISION
5-18-2015	ISSUED TO DOB
3-20-2015	ISSUED TO DOB
12-31-2014	ISSUED TO DOB



DRAWING LEGEND:

- CMD = CARBON MONOXIDE / SMOKE DETECTOR (SEE TYP. NOTES)
- SD = 18W BIAX HIGH-EFFICACY SURFACE MOUNTED LIGHT FIXTURE
- ⊕ = TYPICAL SINGLE LIGHT SWITCH

ROOM CALCULATIONS



PARTITION LEGEND:

- ALL FIRE RATED PARTITIONS TO BE CAULKED AT TOP AND BOTTOM WITH U.L. APPROVED CAULKING FOR SMOKE TIGHT JOINTS.
- NEW TYPICAL EXTERIOR WALL; 4" BRICK, 2" CAVITY, 8" CMU WALL
- 8" CMU WALL - 2 HOUR RATED
- POURED CONCRETE WALL
- TYPE "C" 2 HOUR PARTITION SEE DETAIL ON DWG # A-301
- TYPE "B" 1 HOUR PARTITION SEE DETAIL ON DWG # A-301
- DRYWALL PARTITIONS SEE DETAILS ON DWG # A-301

GENERAL NOTES

- FIRE RATINGS:**
 ALL STAIRWELLS AND ELEVATOR SHAFTS TO BE 2 HOUR RATED REFER TO PARTITION LEGEND AND NOTES
- SPRINKLER SYSTEM:**
 ENTIRE BUILDING TO HAVE A SPRINKLER SYSTEM TO BE FILED UNDER SEPARATE APPLICATION

NYCECC COMPLIANCE FOR 1ST FLOOR

WORK ITEMS	PROPOSED DESIGN VALUES	CODE PRESCRIBED VALUE & CITATION
ENVELOPE, WINDOWS DOORS, STOREFRONT BASEMENT	PF 35% = SHGC .36 U-FACTOR .42	502.3 0.25 < PF < 0.50 SHGC: NR U-FACTOR .5
INTERIOR PARTITIONS BET. CONDITIONED CORRIDOR AND CONDITIONED APT.	FRAMED: R=13	502.2(1) FRAMED: R=13
PIPING INSULATION	HOT WATER=2" R-VALUE = 2	503.2.8 = 2"
INTERIOR POWER ALLOWANCES (MULTI-FAMILY) 3,200 S.F.	45 X 18W = 810W	505.5.2: 0.7W/S.F. 3,200 S.F. X 0.7 = 2,240 W MAX COMPLIES

CLIMATE ZONE 4 (PERCENTAGE OF FENESTRATION) PF = 35%

TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT THIS APPLICATION IS IN COMPLIANCE WITH ECCNYC 2011

ADDRESS:

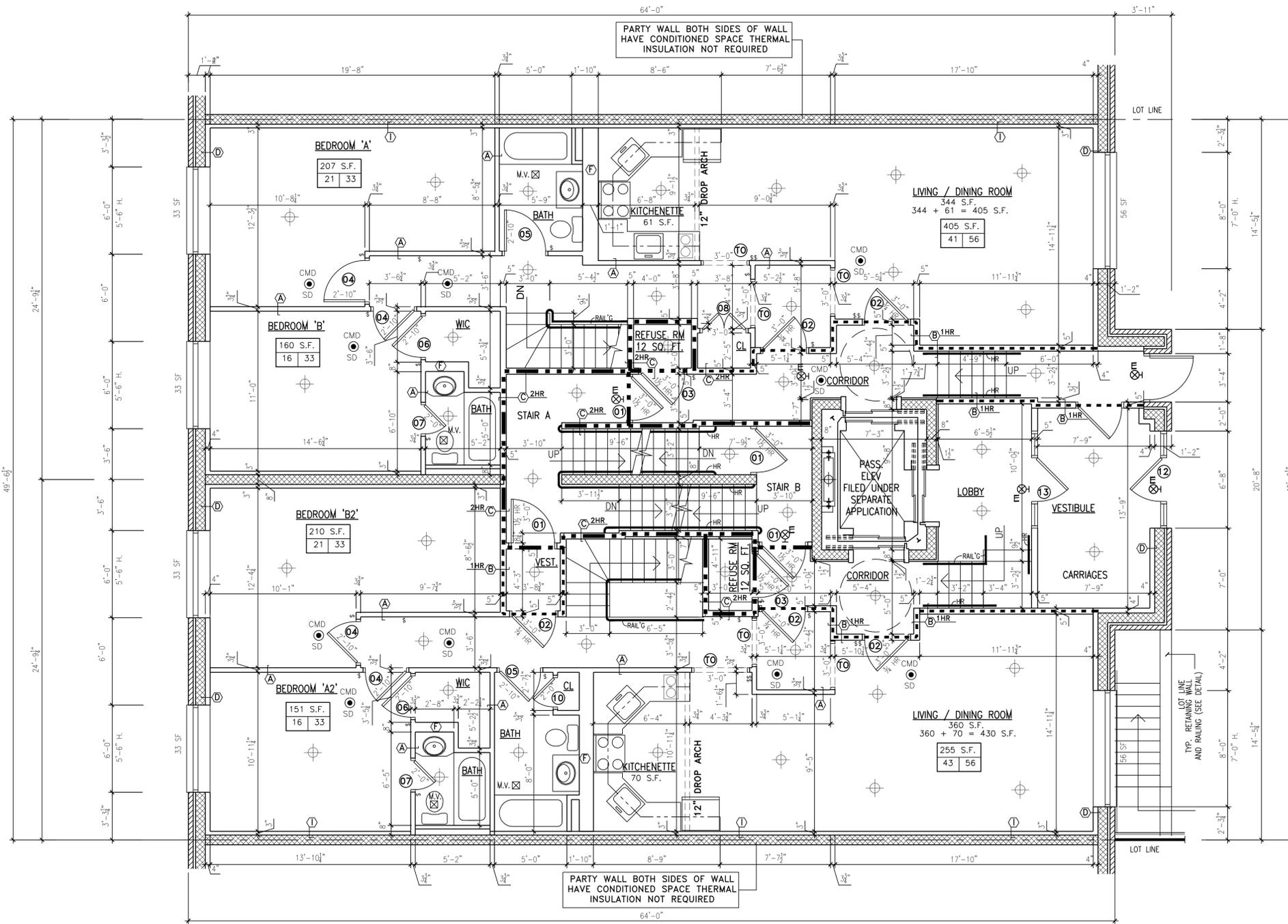
61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK

DRAWING TITLE:

UNIT # 4
CELLAR FLOOR CONST.

SEAL & SIGNATURE:	DATE:	
	JOB NO.:	10688
	DRAWN BY:	
	CHECKED BY:	
DRAWING No:		A-100.00
		DWG. 28 OF 43

DOB NUMBER:



PROJECT:
MAPLE LANES HOUSING
BROOKLYN, NEW YORK

OWNER / DEVELOPER:
MAPLE 60 LLC
1481 47th STREET
BROOKLYN, NY 11219
E-MAIL: BENNY@THELESERGROUP.COM
TEL: (718) 438-5100
FAX: (718) 438-0164

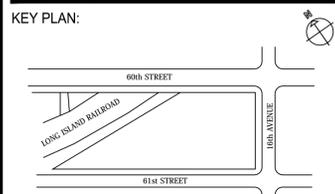
ARCHITECT:
**JOHN SCHIMENTI, P.C.
ARCHITECT, A.I.A.**
126 ATLANTIC AVENUE
LYNBROOK, NEW YORK 11563
E-MAIL: JOHN@JSCHIMENTI.COM
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STRUCTURAL ENGINEERS:
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STRUCTURAL ENGINEERS**
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DATE	REVISION
5-18-2015	ISSUED TO DOB
3-20-2015	ISSUED TO DOB
12-31-2014	ISSUED TO DOB

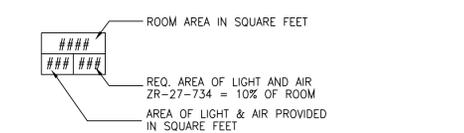
NORTH ARROW SCALE:



DRAWING LEGEND:

- CMD = CARBON MONOXIDE / SMOKE DETECTOR (SEE TYP. NOTES)
- SD = CARBON MONOXIDE / SMOKE DETECTOR (SEE TYP. NOTES)
- ☉ = 18W BIAx HIGH-EFFICACY SURFACE MOUNTED LIGHT FIXTURE
- ⚡ = TYPICAL SINGLE LIGHT SWITCH

ROOM CALCULATIONS



PARTITION LEGEND:

- ALL FIRE RATED PARTITIONS TO BE CAULKED AT TOP AND BOTTOM WITH U.L. APPROVED CAULKING FOR SMOKE TIGHT JOINTS.
- [Pattern] NEW TYPICAL EXTERIOR WALL:
4" BRICK, 2" CAVITY, 8" CMU WALL
- [Pattern] 8" CMU WALL - 2 HOUR RATED
- [Pattern] POURED CONCRETE WALL
- [Pattern] TYPE "C" 2 HOUR PARTITION
SEE DETAIL ON DWG # A-301
- [Pattern] TYPE "B" 1 HOUR PARTITION
SEE DETAIL ON DWG # A-301
- [Pattern] DRYWALL PARTITIONS
SEE DETAILS ON DWG # A-301

GENERAL NOTES

- FIRE RATINGS:**
ALL STAIRWELLS AND ELEVATOR SHAFTS TO BE 2 HOUR RATED
REFER TO PARTITION LEGEND AND NOTES
- SPRINKLER SYSTEM:**
ENTIRE BUILDING TO HAVE A SPRINKLER SYSTEM TO BE FILED UNDER SEPARATE APPLICATION

NYCECC COMPLIANCE FOR 1ST FLOOR

WORK ITEMS	PROPOSED DESIGN VALUES	CODE PRESCRIBED VALUE & CITATION
ENVELOPE, WINDOWS DOORS, STOREFRONT BASEMENT	PF 35% = SHGC .36 U-FACTOR .42	502.3 SHGC: .36 U-FACTOR .5
INTERIOR PARTITIONS BET. CONDITIONED CORRIDOR AND CONDITIONED APT.	FRAMED: R=13	502.2(1) FRAMED: R=13
PIPING INSULATION	HOT WATER=2" R-VALUE = 2	503.2.8 = 2"
INTERIOR POWER ALLOWANCES (MULTI-FAMILY) 3,200 S.F.	45 X 18W = 810W	505.5.2: 0.7W/S.F. 3,200 S.F. X 0.7 = 2,240 W MAX COMPLIES

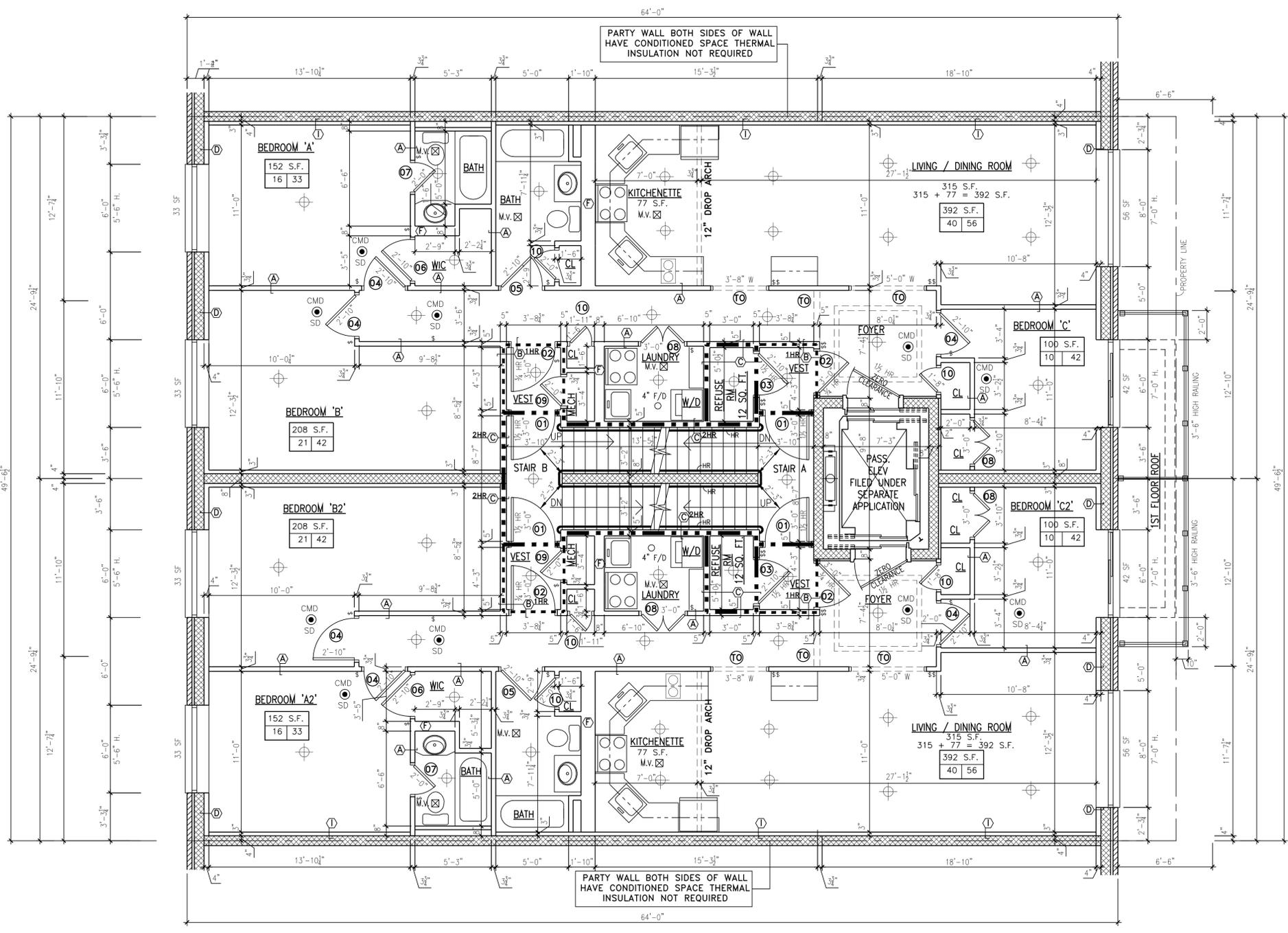
CLIMATE ZONE 4 (PERCENTAGE OF FENESTRATION) PF = 35%
TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT THIS APPLICATION IS IN COMPLIANCE WITH ECCNYC 2011

ADDRESS:
**61st STREET AND 16th AVENUE
BROOKLYN, NEW YORK**

DRAWING TITLE:
**UNIT # 4
1st FLOOR CONST.**

SEAL & SIGNATURE:
DATE: _____
JOB NO.: 10688
DRAWN BY: _____
CHECKED BY: _____
DRAWING No: **A-101.00**
DWG. 29 OF 43

DOB NUMBER:



PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

OWNER / DEVELOPER:
MAPLE 60 LLC
 1481 47th STREET
 BROOKLYN, NY 11219
 E-MAIL: BENNY@THELESERGROUP.COM
 TEL: (718) 438-5100
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ARCHITECT:
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 ARCHITECT, A.I.A.**
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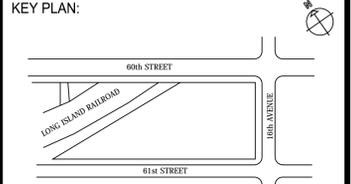
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5-18-2015	ISSUED TO DOB
3-20-2015	ISSUED TO DOB
12-31-2014	ISSUED TO DOB
DATE:	REVISION:

NORTH ARROW

SCALE: 0 2' 4' 8'

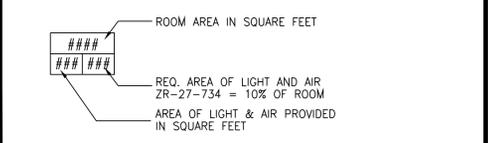
SCALE: 1/4" = 1'-0"



DRAWING LEGEND:

- CMD = CARBON MONOXIDE / SMOKE DETECTOR (SEE TYP. NOTES)
- SD
- ☉ = 18W BIAx HIGH-EFFICACY SURFACE MOUNTED LIGHT FIXTURE
- ⚡ = TYPICAL SINGLE LIGHT SWITCH

ROOM CALCULATIONS



PARTITION LEGEND:

- ** ALL FIRE RATED PARTITIONS TO BE CAULKED AT TOP AND BOTTOM WITH U.L. APPROVED CAULKING FOR SMOKE TIGHT JOINTS.
- NEW TYPICAL EXTERIOR WALL:
4" BRICK, 2" CAVITY, 8" CMU WALL
- 8" CMU WALL - 2 HOUR RATED
- POURED CONCRETE WALL
- TYPE "C" 2 HOUR PARTITION
SEE DETAIL ON DWG # A-301
- TYPE "B" 1 HOUR PARTITION
SEE DETAIL ON DWG # A-301
- DRYWALL PARTITIONS
SEE DETAILS ON DWG # A-301

GENERAL NOTES

- FIRE RATINGS:**
ALL STAIRWELLS AND ELEVATOR SHAFTS TO BE 2 HOUR RATED
REFER TO PARTITION LEGEND AND NOTES
- SPRINKLER SYSTEM:**
ENTIRE BUILDING TO HAVE A SPRINKLER SYSTEM TO BE FILED UNDER SEPARATE APPLICATION

NYCECC COMPLIANCE FOR TYP. FLOOR

WORK ITEMS	PROPOSED DESIGN VALUES	CODE PRESCRIBED VALUE & CITATION
ENVELOPE, WINDOWS DOORS, STOREFRONT BASEMENT	PF 35% = SHGC .36 U-FACTOR .42	502.3 0.25 < PF < 0.50 SHGC: NR U-FACTOR .5
INTERIOR PARTITIONS BET. CONDITIONED CORRIDOR AND CONDITIONED APT.	FRAMED: R=13	502.2(1) FRAMED: R=13
PIPING INSULATION	HOT WATER=2" R-VALUE = 2	503.2.8 = 2"
INTERIOR POWER ALLOWANCES (MULTI-FAMILY) 3,200 S.F.	45 X 18W = 810W	505.5.2: 0.7W/S.F. 3,200 S.F. X 0.7 = 2,240 W MAX COMPLIES

CLIMATE ZONE 4
(PERCENTAGE OF FENESTRATION) PF = 35%

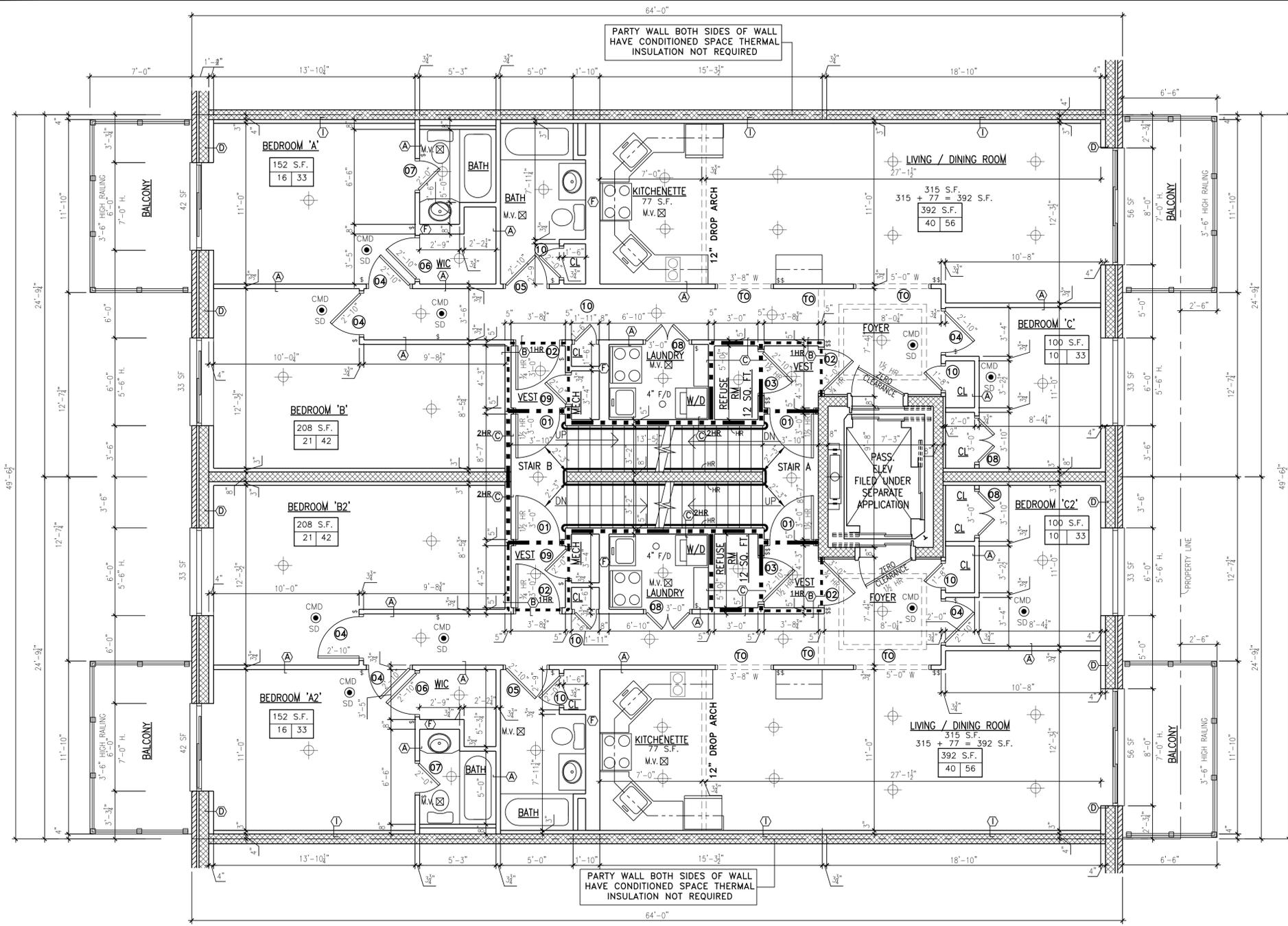
TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT THIS APPLICATION IS IN COMPLIANCE WITH ECCNYC 2011

ADDRESS:
**61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK**

DRAWING TITLE:
**UNIT # 4
 2nd FLOOR CONST.**

SEAL & SIGNATURE:	DATE: JOB NO.: 10688 DRAWN BY: CHECKED BY: DRAWING No: A-102.00
	DWG. 30 OF 43

DOB NUMBER:



PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

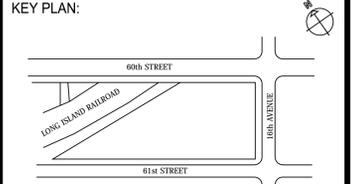
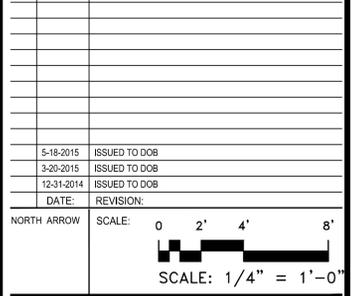
OWNER / DEVELOPER:
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 1481 47th STREET
 BROOKLYN, NY 11219
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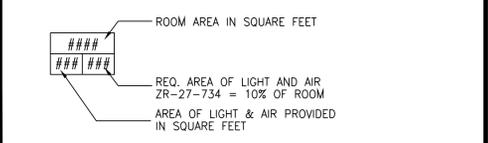
DATE	REVISION
5-18-2015	ISSUED TO DOB
3-20-2015	ISSUED TO DOB
12-31-2014	ISSUED TO DOB



DRAWING LEGEND:

- CMD = CARBON MONOXIDE / SMOKE DETECTOR (SEE TYP. NOTES)
- SD = SMOKE DETECTOR (SEE TYP. NOTES)
- ⊕ = 18W BIAx HIGH-EFFICACY SURFACE MOUNTED LIGHT FIXTURE
- ⚡ = TYPICAL SINGLE LIGHT SWITCH

ROOM CALCULATIONS



PARTITION LEGEND:

- ** ALL FIRE RATED PARTITIONS TO BE CAULKED AT TOP AND BOTTOM WITH U.L. APPROVED CAULKING FOR SMOKE TIGHT JOINTS.
- NEW TYPICAL EXTERIOR WALL:
4" BRICK, 2" CAVITY, 8" CMU WALL
- 8" CMU WALL - 2 HOUR RATED
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- TYPE "C" 2 HOUR PARTITION
SEE DETAIL ON DWG # A-301
- TYPE "B" 1 HOUR PARTITION
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- DRYWALL PARTITIONS
SEE DETAILS ON DWG # A-301

GENERAL NOTES

- FIRE RATINGS:**
ALL STAIRWELLS AND ELEVATOR SHAFTS TO BE 2 HOUR RATED
REFER TO PARTITION LEGEND AND NOTES
- SPRINKLER SYSTEM:**
ENTIRE BUILDING TO HAVE A SPRINKLER SYSTEM TO BE FILED UNDER SEPARATE APPLICATION

NYCECC COMPLIANCE FOR 6TH FLOOR

WORK ITEMS	PROPOSED DESIGN VALUES	CODE PRESCRIBED VALUE & CITATION
ENVELOPE, WINDOWS DOORS, STOREFRONT BASEMENT	PF 35% = SHGC .36 U-FACTOR .42	502.3 SHGC: .36 U-FACTOR .5
INTERIOR PARTITIONS BET. CONDITIONED CORRIDOR AND CONDITIONED APT.	FRAMED: R=13	502.2(1) FRAMED: R=13
PIPING INSULATION	HOT WATER=2" R-VALUE = 2	503.2.8 = 2"
INTERIOR POWER ALLOWANCES (MULTI-FAMILY) 2,897 S.F.	33 X 18W = 594W	505.5.2: 0.7W/S.F. 3,200 S.F. X 0.7 = 2,027 W MAX COMPLIES

CLIMATE ZONE 4
 (PERCENTAGE OF FENESTRATION) PF = 35%

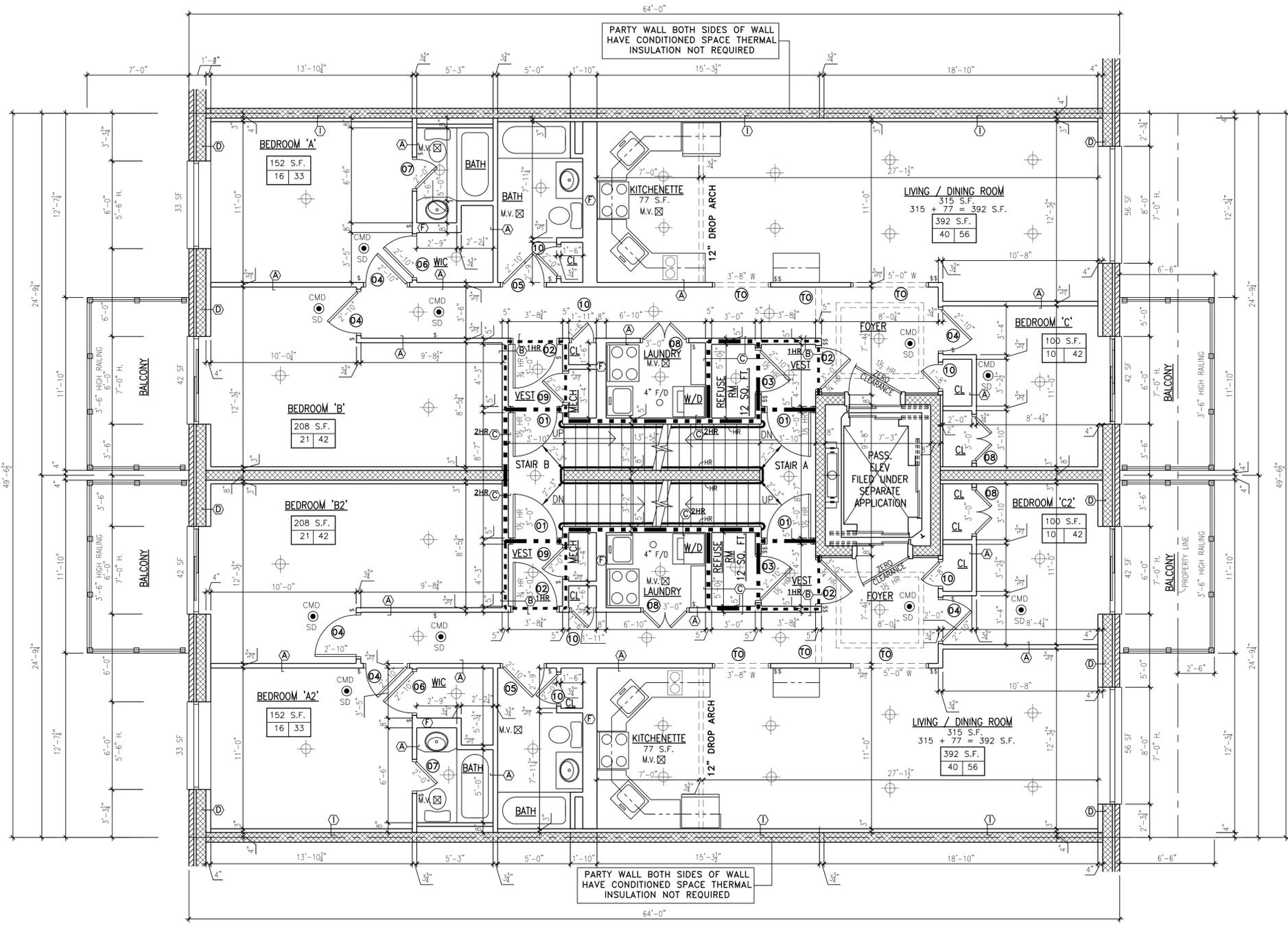
TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT THIS APPLICATION IS IN COMPLIANCE WITH ECCNYC 2011

ADDRESS:
**61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK**

DRAWING TITLE:
**UNIT # 4
 3rd FLOOR CONST.**

SEAL & SIGNATURE:
 DATE: _____
 JOB NO.: 10688
 DRAWN BY: _____
 CHECKED BY: _____
 DRAWING NO.: **A-103.00**
 DWG. 31 OF 43

DOB NUMBER:



PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

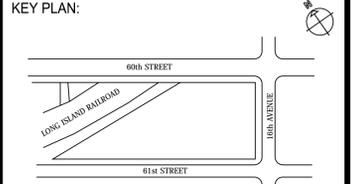
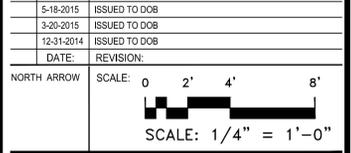
OWNER / DEVELOPER:
MAPLE 60 LLC
 1481 47th STREET
 BROOKLYN, NY 11219
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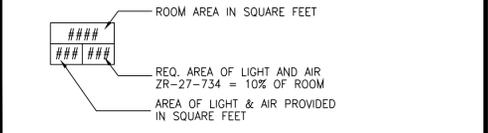
DATE	REVISION
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DRAWING LEGEND:

- CMD = CARBON MONOXIDE / SMOKE DETECTOR (SEE TYP. NOTES)
- SD = SMOKE DETECTOR (SEE TYP. NOTES)
- ☉ = 18W BIAx HIGH-EFFICACY SURFACE MOUNTED LIGHT FIXTURE
- ⌘ = TYPICAL SINGLE LIGHT SWITCH

ROOM CALCULATIONS



PARTITION LEGEND:

- ALL FIRE RATED PARTITIONS TO BE CAULKED AT TOP AND BOTTOM WITH U.L. APPROVED CAULKING FOR SMOKE TIGHT JOINTS.
- NEW TYPICAL EXTERIOR WALL:
4" BRICK, 2" CAVITY, 8" CMU WALL
- 8" CMU WALL - 2 HOUR RATED
- POURED CONCRETE WALL
- TYPE "C" 2 HOUR PARTITION
SEE DETAIL ON DWG # A-301
- TYPE "B" 1 HOUR PARTITION
SEE DETAIL ON DWG # A-301
- DRYWALL PARTITIONS
SEE DETAILS ON DWG # A-301

GENERAL NOTES

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REFER TO PARTITION LEGEND AND NOTES
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NYCECC COMPLIANCE FOR 6TH FLOOR

WORK ITEMS	PROPOSED DESIGN VALUES	CODE PRESCRIBED VALUE & CITATION
ENVELOPE, WINDOWS DOORS, STOREFRONT BASEMENT	PF 35% = SHGC .36 U-FACTOR .42	502.3 0.25 < PF < 0.50 SHGC: NR U-FACTOR .5
INTERIOR PARTITIONS BET. CONDITIONED CORRIDOR AND CONDITIONED APT.	FRAMED: R=13	502.2(1) FRAMED: R=13
PIPING INSULATION	HOT WATER=2" R-VALUE = 2	503.2.8 = 2"
INTERIOR POWER ALLOWANCES (MULTI-FAMILY) 2,897 S.F.	33 X 18W = 594W	505.5.2: 0.7W/S.F. 3,200 S.F. X 0.7 = 2,207 W MAX COMPLIES

CLIMATE ZONE 4
 (PERCENTAGE OF FENESTRATION) PF = 35%

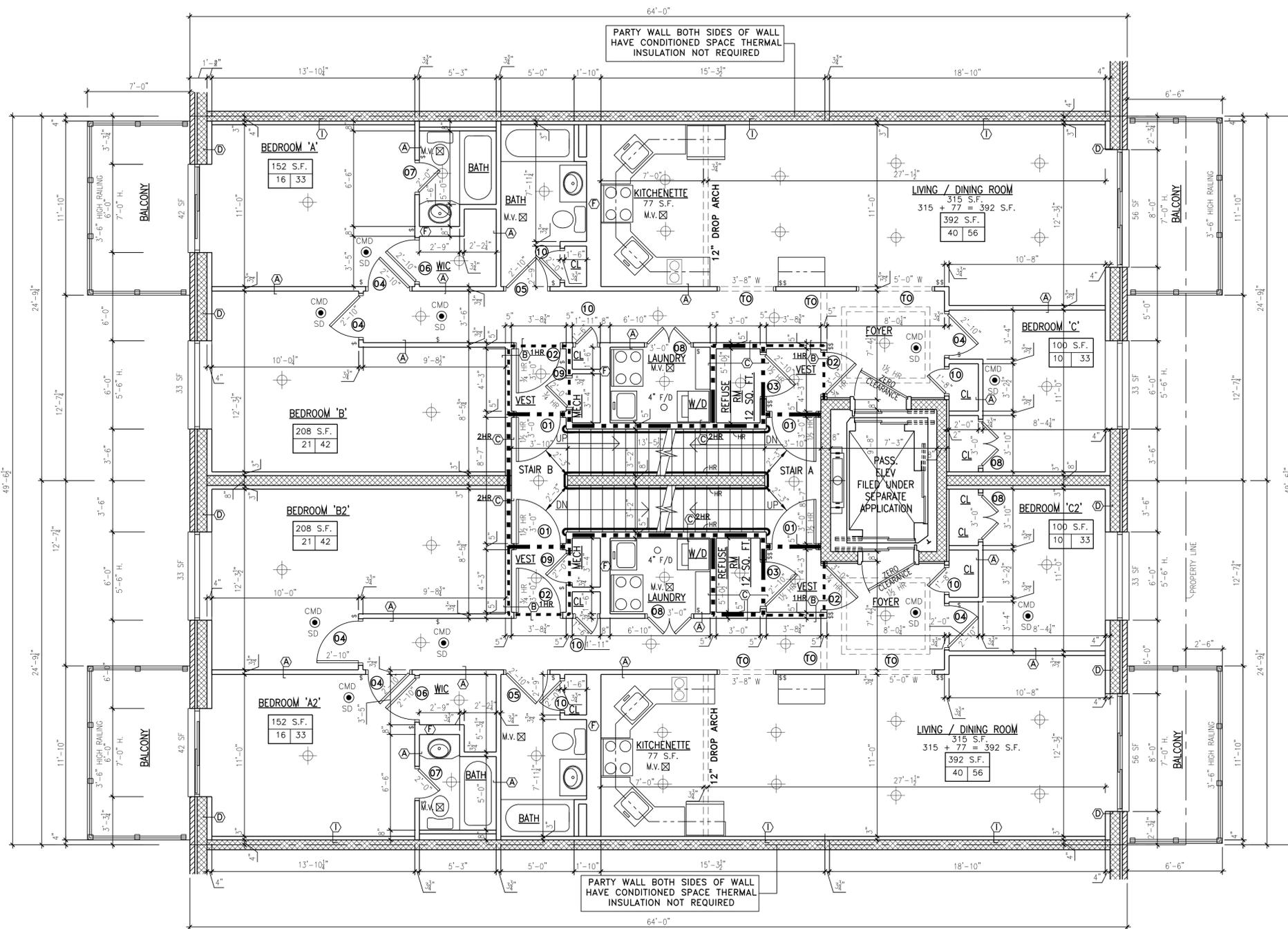
TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT THIS APPLICATION IS IN COMPLIANCE WITH ECCNYC 2011

ADDRESS:
**61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK**

DRAWING TITLE:
**UNIT # 4
 4th FLOOR CONST.**

SEAL & SIGNATURE:	DATE: JOB NO.: 10688 DRAWN BY: CHECKED BY: DRAWING NO: A-104.00
	DWG. 32 OF 43

DOB NUMBER:



PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

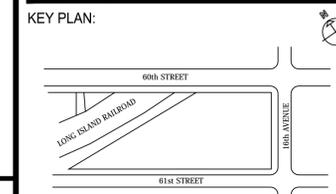
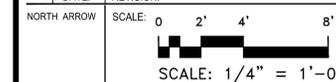
OWNER / DEVELOPER:
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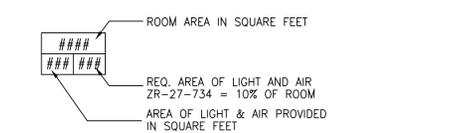
DATE	REVISION
5-18-2015	ISSUED TO DOB
3-20-2015	ISSUED TO DOB
12-31-2014	ISSUED TO DOB
DATE:	REVISION:



DRAWING LEGEND:

- CMD = CARBON MONOXIDE / SMOKE DETECTOR (SEE TYP. NOTES)
- SD = SMOKE DETECTOR (SEE TYP. NOTES)
- ☉ = 18W BIAx HIGH-EFFICACY SURFACE MOUNTED LIGHT FIXTURE
- ⚡ = TYPICAL SINGLE LIGHT SWITCH

ROOM CALCULATIONS



PARTITION LEGEND:

- ** ALL FIRE RATED PARTITIONS TO BE CAULKED AT TOP AND BOTTOM WITH U.L. APPROVED CAULKING FOR SMOKE TIGHT JOINTS.
- NEW TYPICAL EXTERIOR WALL: 4" BRICK, 2" CAVITY, 8" CMU WALL
- 8" CMU WALL - 2 HOUR RATED
- POURED CONCRETE WALL
- TYPE "C" 2 HOUR PARTITION SEE DETAIL ON DWG # A-301
- TYPE "B" 1 HOUR PARTITION SEE DETAIL ON DWG # A-301
- DRYWALL PARTITIONS SEE DETAILS ON DWG # A-301

GENERAL NOTES

- FIRE RATINGS:**
 ALL STAIRWELLS AND ELEVATOR SHAFTS TO BE 2 HOUR RATED REFER TO PARTITION LEGEND AND NOTES
- SPRINKLER SYSTEM:**
 ENTIRE BUILDING TO HAVE A SPRINKLER SYSTEM TO BE FILED UNDER SEPARATE APPLICATION

NYCECC COMPLIANCE FOR 6TH FLOOR

WORK ITEMS	PROPOSED DESIGN VALUES	CODE PRESCRIBED VALUE & CITATION
ENVELOPE, WINDOWS DOORS, STOREFRONT BASEMENT	PF 35% = SHGC .36 U-FACTOR .42	502.3 0.25 < PF < 0.50 SHGC: NR U-FACTOR .5
INTERIOR PARTITIONS BET. CONDITIONED CORRIDOR AND CONDITIONED APT.	FRAMED: R=13	502.2(1) FRAMED: R=13
PIPING INSULATION	HOT WATER=2" R-VALUE = 2	503.2.8 = 2"
INTERIOR POWER ALLOWANCES (MULTI-FAMILY) 2,897 S.F.	33 X 18W = 594W	505.5.2: 0.7W/S.F. 3,200 S.F. X 0.7 = 2,027 W MAX COMPLIES

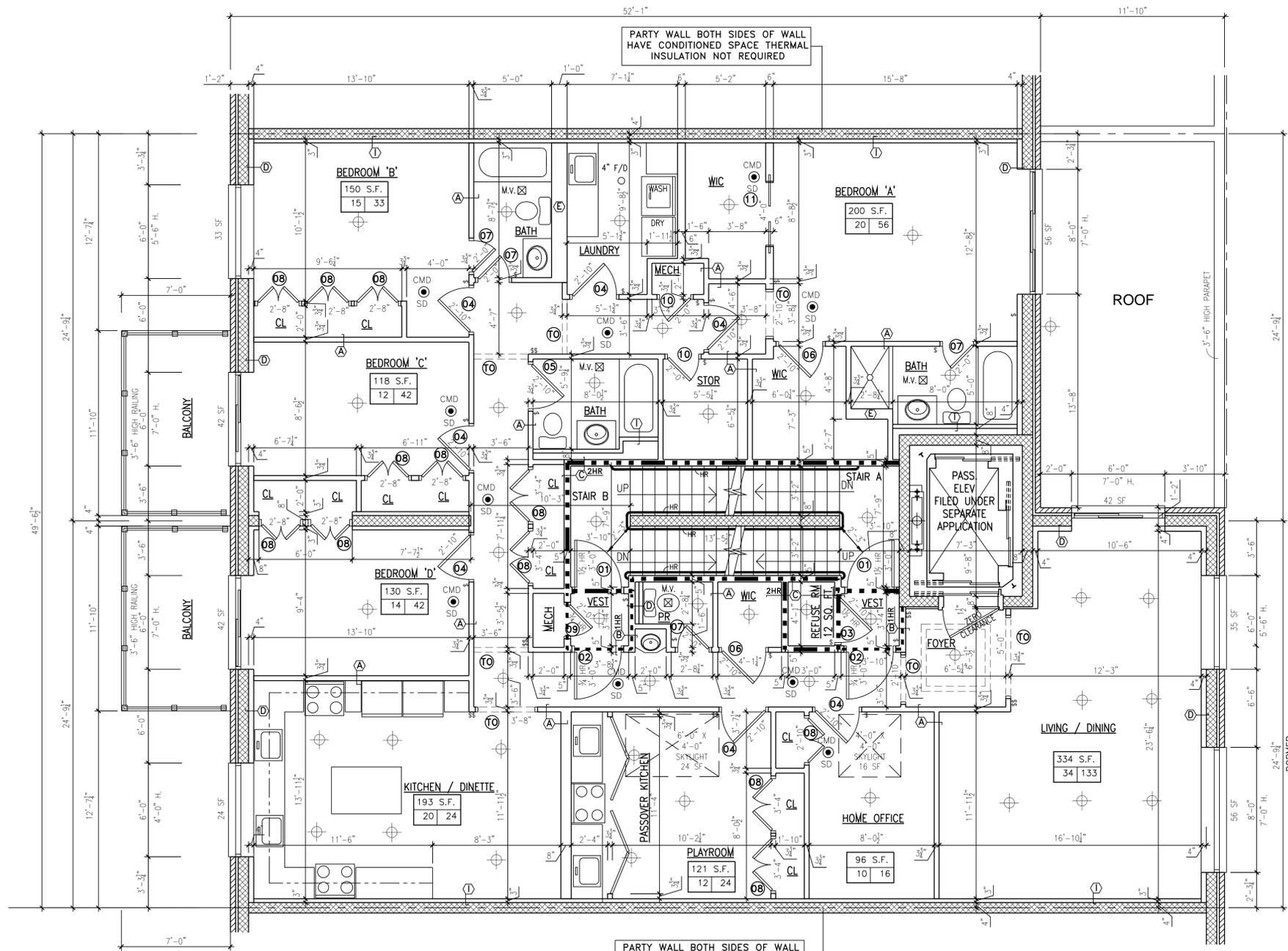
CLIMATE ZONE 4 (PERCENTAGE OF FENESTRATION) PF = 35%
 TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT THIS APPLICATION IS IN COMPLIANCE WITH ECCNYC 2011

ADDRESS:
61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK

DRAWING TITLE:
UNIT # 4
5th FLOOR CONST.

SEAL & SIGNATURE:	DATE: JOB NO.: 10688 DRAWN BY: CHECKED BY: DRAWING NO: A-105.00
	DWG. 33 OF 43

DOB NUMBER:



23-621(c) DORMERS MAXIMUM 60% OF THE BASE WIDTH
 FOR EACH FOOT ABOVE THE MAXIMUM BASE HEIGHT, THE AGGREGATE WIDTH OF ALL DORMERS SHALL BE DECREASED BY ONE PERCENT OF THE STREET WALL WIDTH
 BUILDING HEIGHT = 70'-0", BASE HEIGHT = 60'-0"
 70'-0" - 60'-0" = 10'-0" = 10.0% = 10.0%
 MAXIMUM DORMER WIDTH = 50% - 10.0% = 50.0%

6 1st STREET

PROJECT: **MAPLE LANES HOUSING**
 BROOKLYN, NEW YORK

OWNER / DEVELOPER:
MAPLE 60 LLC
 1481 47th STREET
 BROOKLYN, NY 11219
 E-MAIL: BENNY@THELESERGROUP.COM

ARCHITECT:
JOHN SCHIMENTI, P.C. ARCHITECT, A.I.A.
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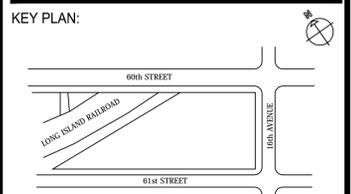
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NORTH ARROW

SCALE: 0 2' 4' 8'

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



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CMD = CARBON MONOXIDE / SMOKE DETECTOR (SEE TYP. NOTES)
 SD = 18W BIAx HIGH-EFFICACY SURFACE MOUNTED LIGHT FIXTURE
 \$ = TYPICAL SINGLE LIGHT SWITCH

ROOM CALCULATIONS

ROOM AREA IN SQUARE FEET

REQ. AREA OF LIGHT AND AIR
 ZR-27-734 = 10% OF ROOM

AREA OF LIGHT & AIR PROVIDED
 IN SQUARE FEET

PARTITION LEGEND:

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CLIMATE ZONE 4
 (PERCENTAGE OF FENESTRATION) PF = 35%

TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT THIS APPLICATION IS IN COMPLIANCE WITH ECCNYC 2011

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 BROOKLYN, NEW YORK**

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**UNIT # 4
 6th FLOOR CONST.**

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 DRAWN BY: _____
 CHECKED BY: _____
 DRAWING No: **A-106.00**
 DWG. 34 OF 43

DOB NUMBER:

PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

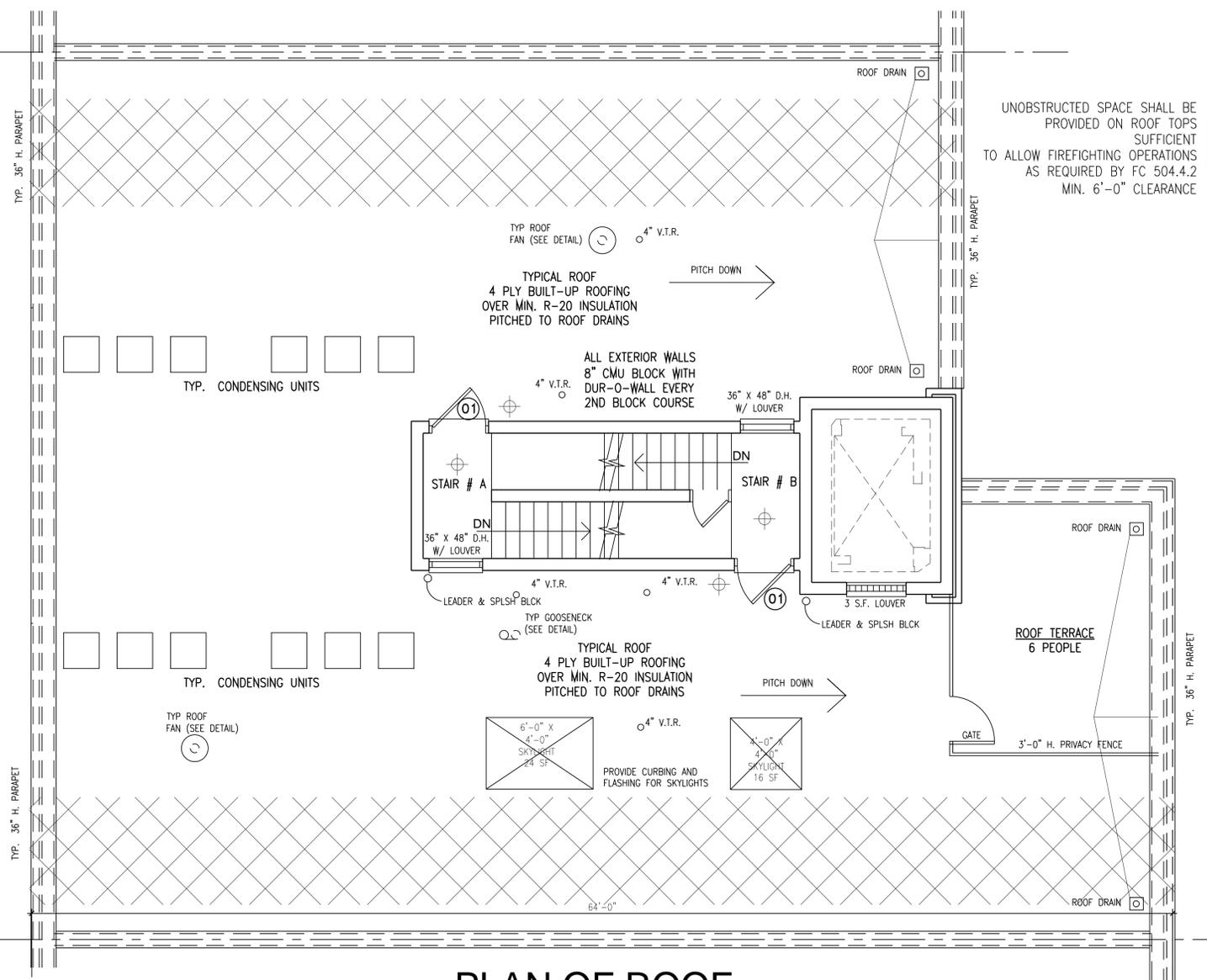
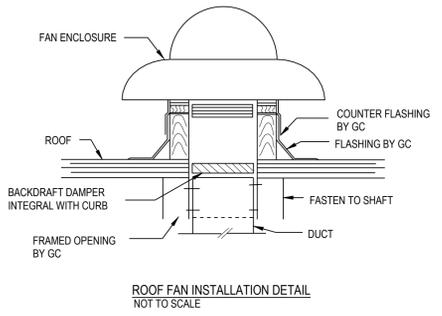
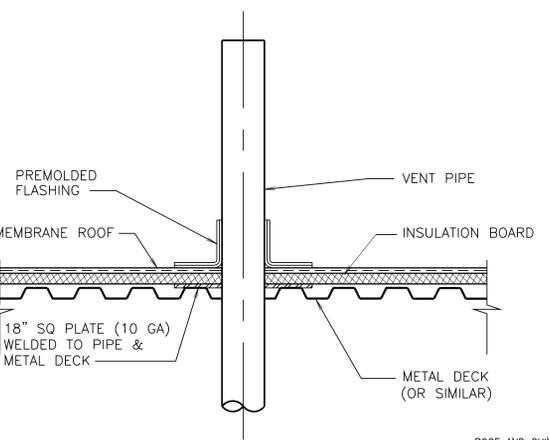
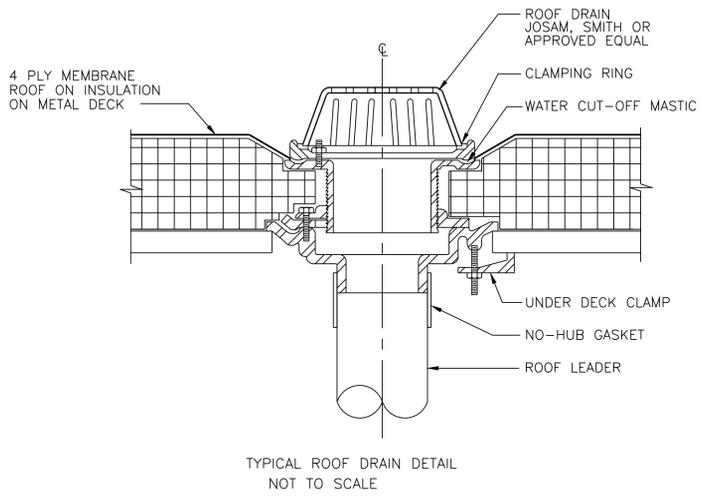
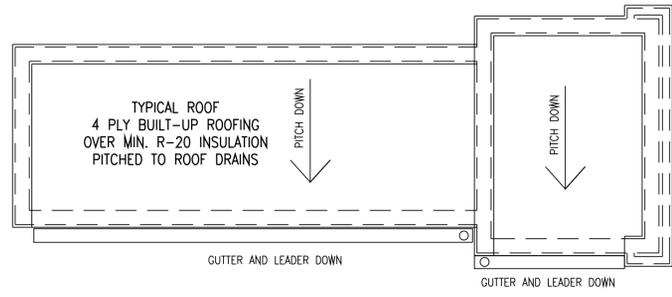
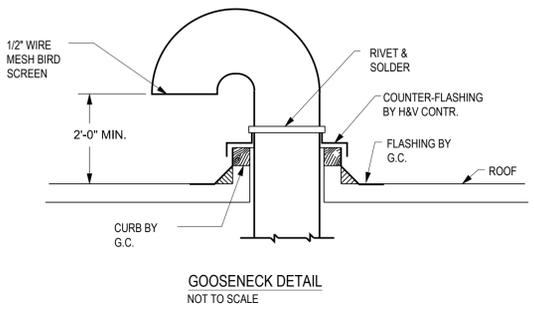
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PLAN OF BULKHEAD ROOF



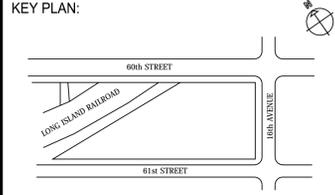
UNOBSTRUCTED SPACE SHALL BE PROVIDED ON ROOF TOPS SUFFICIENT TO ALLOW FIREFIGHTING OPERATIONS AS REQUIRED BY FC 504.4.2 MIN. 6'-0\"/>

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12-31-2014	ISSUED TO DOB	
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NORTH ARROW

SCALE: 0 2' 4' 8'

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



ADDRESS:
 61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK

DRAWING TITLE:
**UNIT # 4
 ROOF CONSTRUCTION**

SEAL & SIGNATURE:	DATE:
	JOB NO.: 10688
	DRAWN BY:
	CHECKED BY:
	DRAWING No:
	A-107.00
	DWG. 35 OF 43

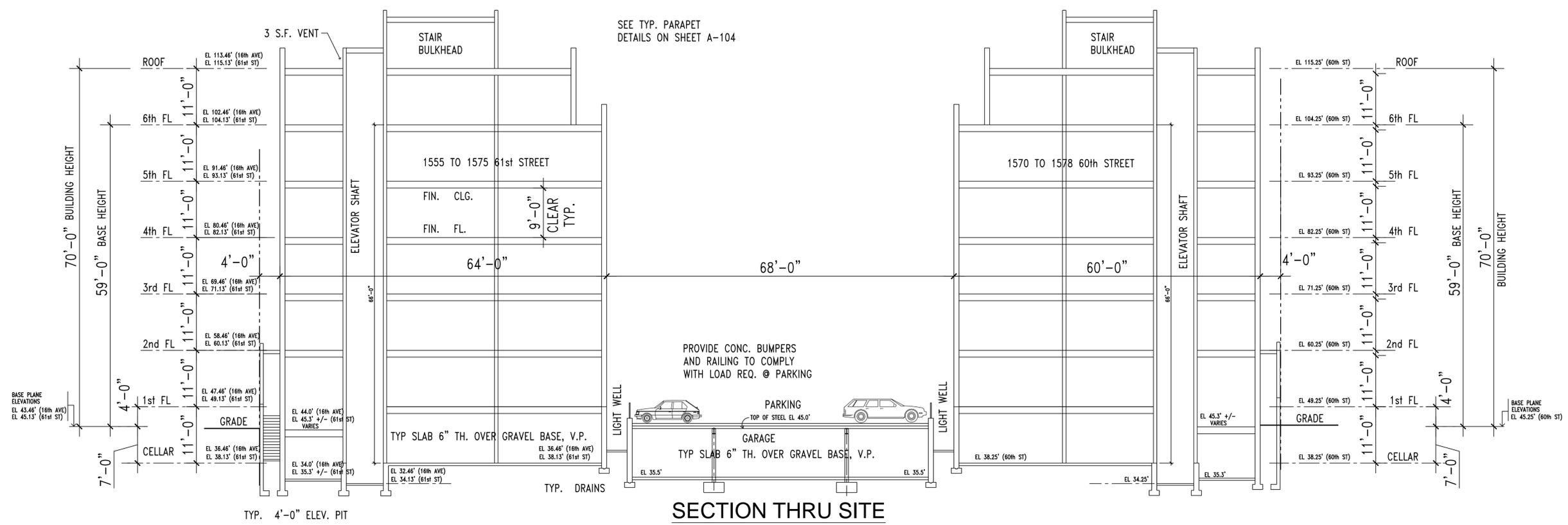
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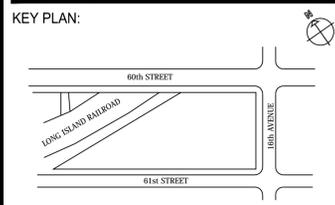
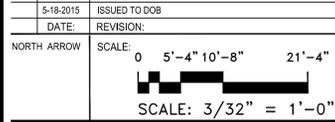
CMD	= CARBON MONOXIDE / SMOKE DETECTOR (SEE TYP. NOTES)
SD	= 18W BIAx HIGH-EFFICACY SURFACE MOUNTED LIGHT FIXTURE
⊕	= TYPICAL SINGLE LIGHT SWITCH

- ROOF AND CHIMNEY NOTES:**
- 1) PROVIDE A 6'-0" WIDE FIRE DEPARTMENT PASSAGE ACCESS AT ROOF.
 - 2) ALL CHIMNEY SHALL BE A MIN. OF 3'-0" ABOVE THE HIGHEST CONSTRUCTION WITHIN 10' OF THE CHIMNEY OUTLET.
 - 3) STAIR ENCLOSURE VENTILATION TO COMPLY WITH SECTION 910.1 OF THE BUILDING CODE, 3.5% OF STAIR AREA WITH A OPERABLE WINDOW AND 1/3 LOUVERS. WINDOWS TO COMPLY WITH BC 910.5.1.
 - 4) ALL PARAPETS TO BE MIN. OF 3'-6" ABOVE ROOF.
 - 5) ALL PIPING TO BE IN PITCH POCKETS AND BE 3'-0" ABOVE ROOF.
 - 6) PITCH ALL ROOFS TO ROOF DRAINS.
 - 7) PROVIDE FLASHING AT ALL CONNECTION TO MECHANICAL EQUIPMENT AND VENTS.
 - 8) ALL ROOF COLORS (SRI OF 78 OR BETTER) TO COMPLY WITH ENERGY CODE.
 - 9) PROVIDE WATERPROOF DETAILS AT STAIR DOORS.
 - 10) ROOF TO A 4 PLY RUBBER CODE OVER R-20 OR BETTER.
 - 11) MECHANICAL ROOM TO HAVE REQUIRED INTAKE VENTS
 - 12) ALL BATHROOM AND KITCHENS TO HAVE VENT FANS AT ROOF.
 - 12) ALL DUCT TO BE APPROVED TYPE.
 - 13) ALL PARAPETS TO HAVE CAST STONE COPING, PITCHED IN WITH ANCHORS AND FLASHING.

PLAN OF ROOF



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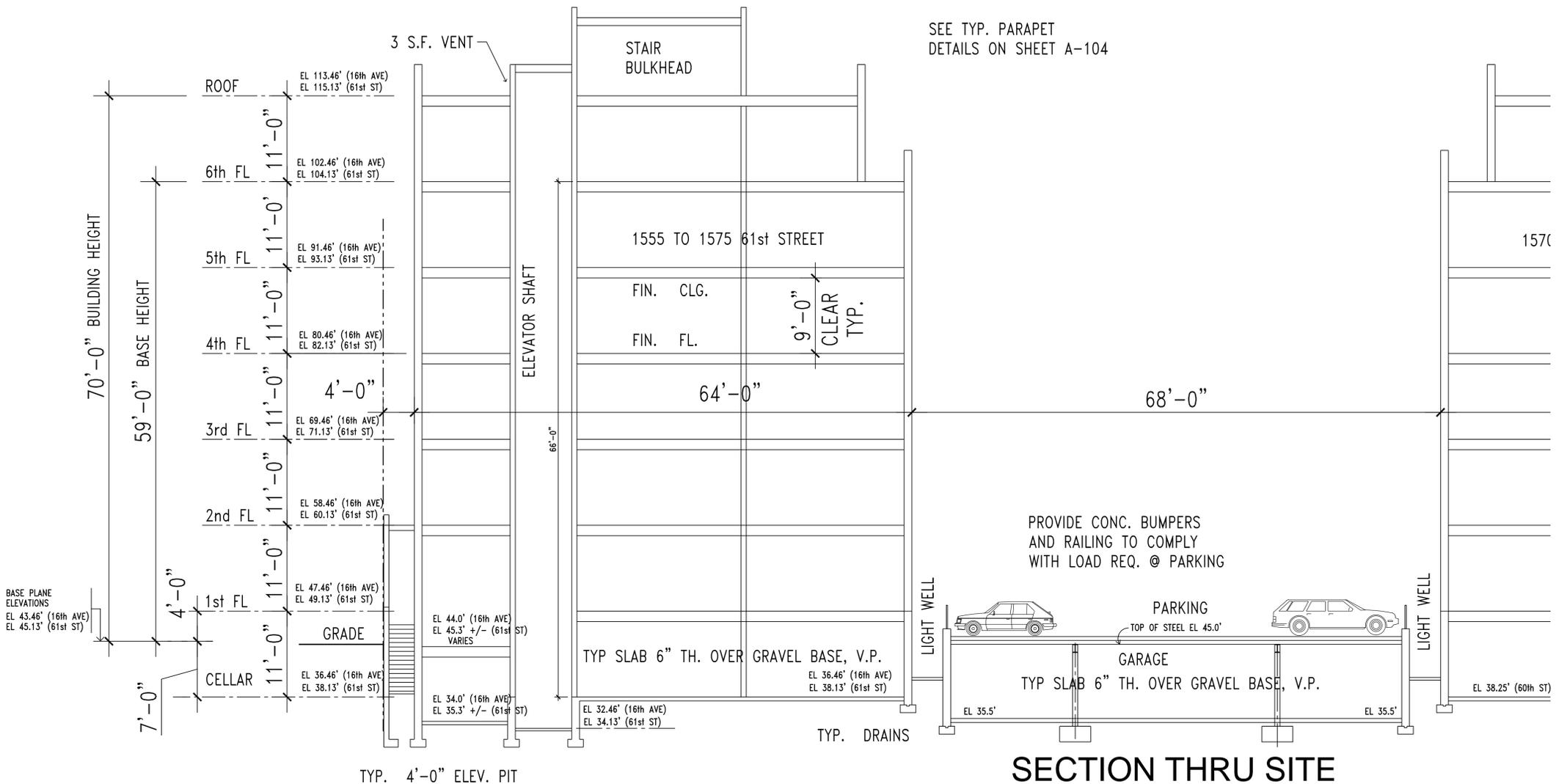


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DWG. 37 OF 43	

DOB NUMBER:



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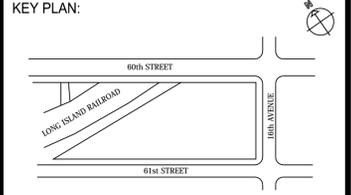
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DATE:	REVISION:
NORTH ARROW	
SCALE: 1/8" = 1'-0"	



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61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK

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SECTION THRU SITE I

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	A-201a.00
	DWG. 38 OF 43

DOB NUMBER:

DOOR SCHEDULE

FLOOR	DOOR SYMBOL	SIZE	THICKNESS	MATERIAL	FRAME	JAMB	SADDLE	UNDERCUT	DOOR TYPE	0 HR RATING	3/4 HR	1/2 HR	SELF-CLOSING	HARDWARE	KICK-PLATE	REMARKS	LOCATION	
TYPICAL FLOORS 2-8	1	3'-0" X 7'-0"	1 1/2"	HM	HM				I							STAIR		
	2	3'-0" X 7'-0"	1 1/2"	HM	HM				VI					KEY LOCK		APT. ENTRY		
	3	3'-0" X 7'-0"	1 1/2"	HM	HM				I					KEY LOCK		REFUGE ROOM		
	4	2'-10" X 6'-8"	5/8"	WD	HM				XII					PASS LOCK		TYP. BEDROOM		
	5	3'-0" X 6'-8"	5/8"	WD	HM				XII					PASS LOCK		TYP. BATHROOM		
	6	2'-10" X 6'-8"	5/8"	WD	HM				XII							ADA CLOSET		
	7	2'-0" X 6'-8"	5/8"	WD	HM				XII							BATHROOM		
	8	VARIABLES X 6'-8" SEE PLANS	5/8"	WD	HM				XIII							CLOSET		
	9	2'-0" X 6'-8"	5/8"	HM	HM				III							MECHANICAL CLOSET		
	10	VARIABLES X 6'-8" SEE PLANS	5/8"	WD	HM				XII							CLOSET		
	11	(2) 2'-0" X 6'-8"	5/8"	WD	WD				XI							WALK-IN CLOSET		
	12	3'-0" X 7'-0"	1 1/2"	HM	HM				XV							VESTIBULE		
	13	3'-0" X 7'-0"	1 1/2"	HM	HM				XV							STREET ENTRANCE		
	14	3'-0" X 7'-0"	1 1/2"	HM	HM				I							STORAGE		
	15	3'-0" X 7'-0"	1 1/2"	HM	HM				I							MECHANICAL		
	16	3'-0" X 7'-0"	1 1/2"	HM	HM				I							CELLAR CORRIDOR		
	17	3'-0" X 7'-0"	1 1/2"	HM	HM				I							CELLAR EXTERIOR ENTRANCE		
	18	3'-6" X 7'-0"	1 1/2"	HM	HM				I							COMPACTOR AND ELEVATOR MACHINE ROOM		
	19																	
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DOOR NOTES

ANSI A117.1-1992
A4.13 DOORS

4.13.8* THRESHOLDS AT DOORWAYS. THRESHOLDS, IF PROVIDED, AT DOORWAYS SHALL BE 1/2 IN (1.3 MM) HIGH MAXIMUM EXCEPT THAT THRESHOLDS FOR EXTERIOR RESIDENTIAL SLIDING DOORS SHALL BE 3/4 IN (1.9 MM) HIGH MAXIMUM. RAISED THRESHOLDS AND FLOOR LEVEL CHANGES SHALL COMPLY WITH 4.5.2.

4.13.9* DOOR HARDWARE. HANDLES, PULLS, LATCHES, LOCKS, AND OTHER OPERABLE PARTS ON ACCESSIBLE DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, TIGHT FINCHING, OR TWISTING OF THE WRIST TO OPERATE. SUCH HARDWARE SHALL BE MOUNTED WITHIN REACH RANGES SPECIFIED IN 4.2. WHEN SLIDING DOORS ARE IN THE FULLY OPEN POSITION, OPERATING HARDWARE SHALL BE EXPOSED AND USABLE FROM BOTH SIDES.

4.13.10* DOOR CLOSERS. DOOR CLOSERS SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 90 DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO AN OPEN POSITION OF 12 DEGREES WILL BE 5 SECONDS MINIMUM.

4.13.11* DOOR-OPENING FORCE. FIRE DOORS SHALL HAVE THE MINIMUM OPENING FORCE ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY. THE REQUIRED FORCE FOR PUSHING OPEN OR PULLING OPEN DOORS OTHER THAN FIRE DOORS SHALL BE AS FOLLOWS:

- INTERIOR HINGED DOOR: 5.0 LB (22.2 N) MAXIMUM
- SLIDING/FOLDING DOOR: 5.0 LB (22.2 N) MAXIMUM

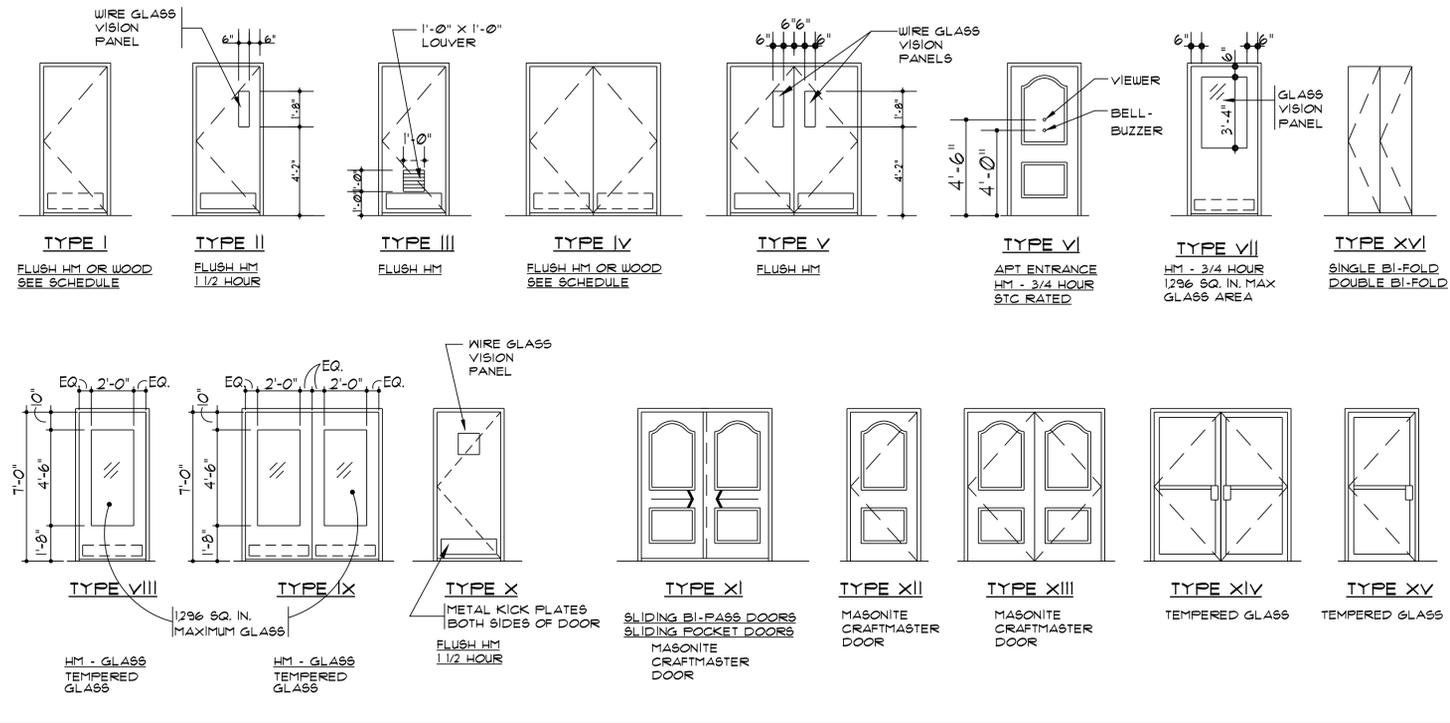
THESE FORCES DO NOT APPLY TO THE FORCE REQUIRED TO RETRACT LATCH BOLTS OR DISENGAGE OTHER DEVICES THAT HOLD THE DOOR IN A CLOSED POSITION.

4.13.12 AUTOMATIC DOORS. AUTOMATIC DOORS SHALL COMPLY WITH ANSI/BHMA A156.10.

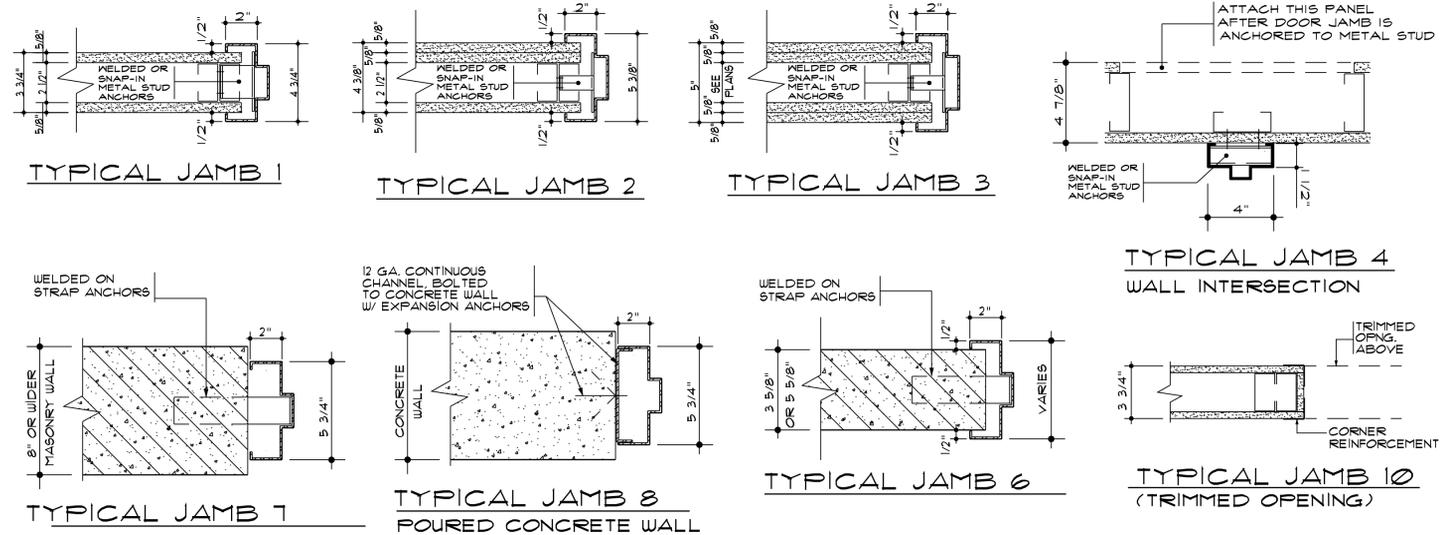
4.13.13 POWER-ASSISTED DOORS AND LOW-ENERGY POWER-OPERATED DOORS. POWER-ASSISTED DOORS SHALL COMPLY WITH ANSI/BHMA A156.19. THE TIME REQUIRED FOR SUCH DOORS TO OPEN TO THE BACK CHECK POSITION SHALL BE 3 SECONDS MINIMUM. THE FORCE REQUIRED TO STOP DOOR MOVEMENT SHALL BE 15 LB (66.6 N) MAXIMUM.

4.13.14* DOOR SURFACE. THE BOTTOM 12 IN (305 MM) OF ALL DOORS EXCEPT AUTOMATIC DOORS, POWER ASSISTED DOORS, AND SLIDING DOORS SHALL HAVE A SMOOTH UNINTERRUPTED SURFACE TO ALLOW THE DOOR TO BE OPENED BY A WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION. WHEN NARROW STILE AND RAIL DOORS ARE USED, A 12 IN (305 MM) HIGH MINIMUM, SMOOTH PANEL, EXTENDING THE FULL WIDTH OF THE DOOR, SHALL BE ON THE PUSH SIDE(S) OF THE DOOR WHICH WILL ALLOW THE DOOR TO BE OPENED BY A WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION. CAVITIES CREATED BY KICK PLATES SHALL BE CAPPED.

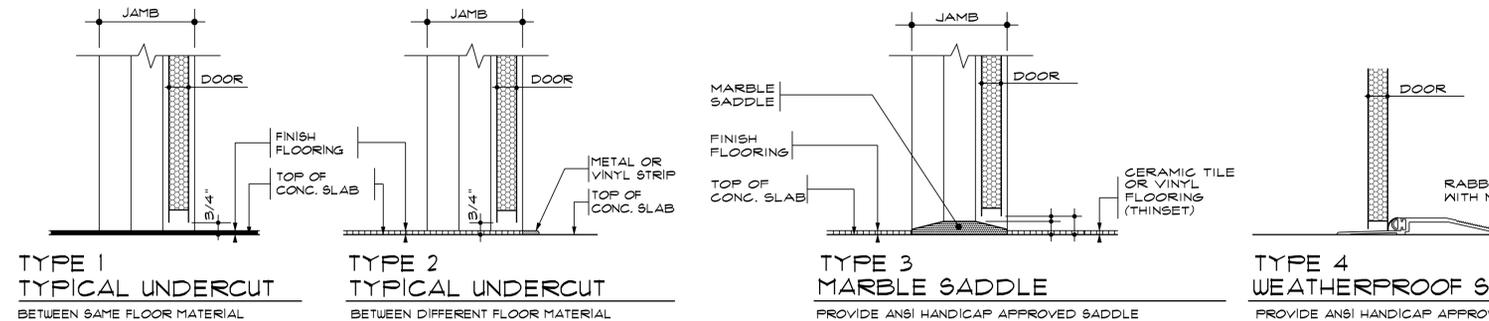
DOOR TYPES



DOOR FRAMES



DOOR SADDLES



PROJECT:
MAPLE LANES HOUSING
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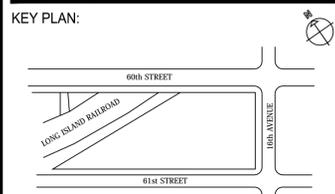
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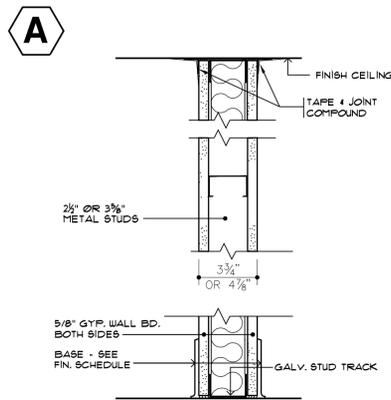


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DRAWING TITLE:
DOOR SCHEDULE

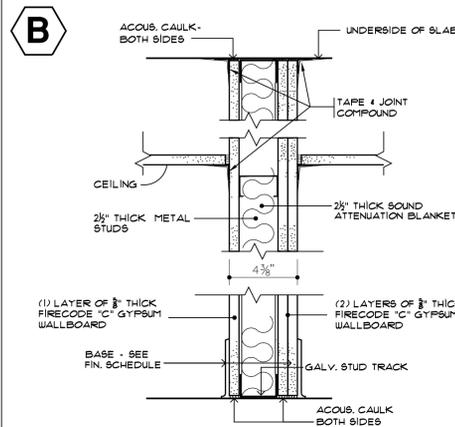
SEAL & SIGNATURE:
DATE: 10/6/15
JOB NO.: 10688
DRAWN BY:
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A-300.00
DWG. 41 OF 43

DOB NUMBER:



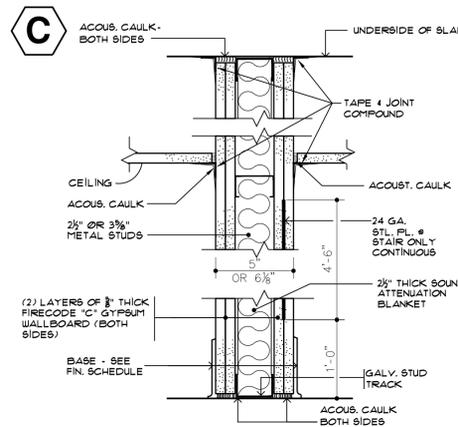
INTERIOR APT PARTITIONS

A 2 1/2" METAL STUDS SEE SCHEDULE FOR SPACING
A1 3 1/2" METAL STUDS SEE SCHEDULE FOR SPACING



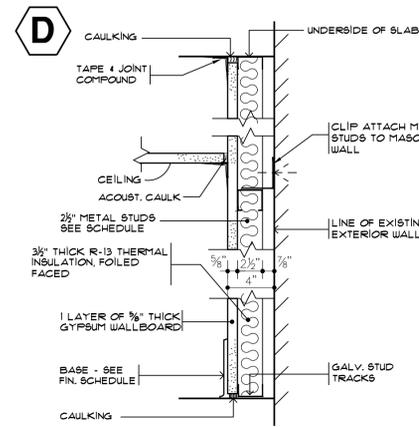
**1 HOUR PARTITION
 TENANT DIVIDING
 OR CORRIDOR PARTITION**

5TC RATING = 90 BSA CAL. NO 453-13-5M
 MEA NO. III-12-M (ASSEMBLY '3)
 CONSTRUCT FROM FLOOR TO UNDERSIDE OF FLOOR OR ROOF SLAB ABOVE



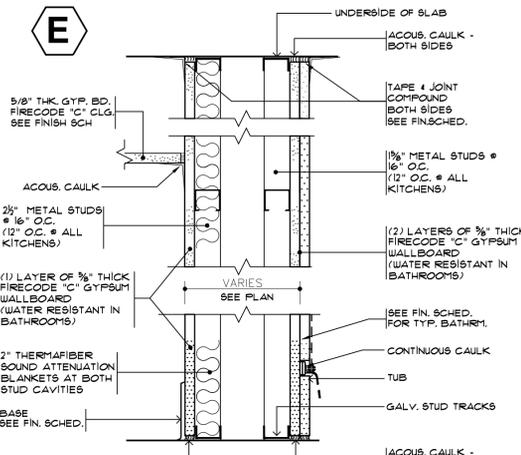
2 HOUR PARTITION

2 HR. RATING 5TC 53
 BSA CAL. #301-60-5M
 MEA III-12-M
 SEE PARTITION "K" ON THIS DRAWING FOR MASONRY EQUIVALENT



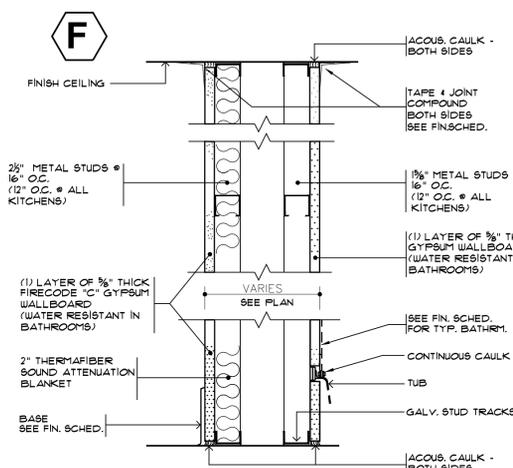
EXTERIOR FURRED PARTITION

D 2 1/2" METAL STUDS SEE SCHEDULE
D1 3 1/2" METAL STUDS SEE SCHEDULE FOR SPACING



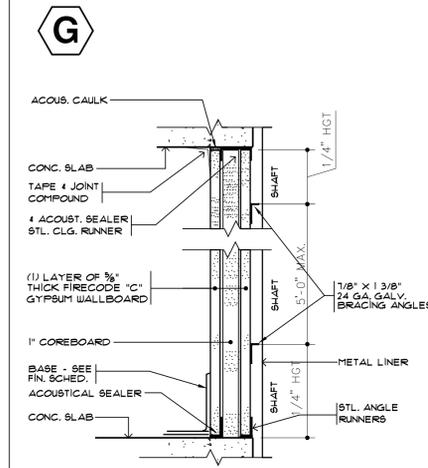
**PLUMBING CHASE DETAIL
 1 HOUR RATED**

BSA CAL. #16-108M
 MEA III-12M



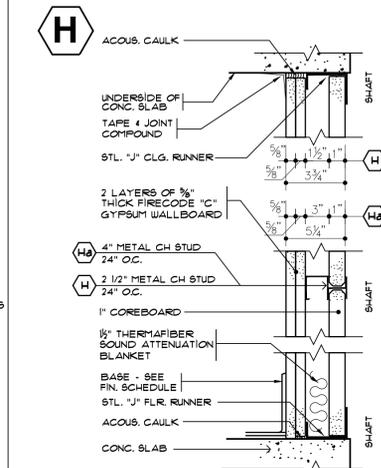
**PLUMBING CHASE DETAIL
 WITHIN APARTMENTS**

F 2 1/2" METAL STUDS # 16" O.C. # ALL KITCHENS
F1 3 1/2" METAL STUDS # 12" O.C. # ALL BATHROOMS



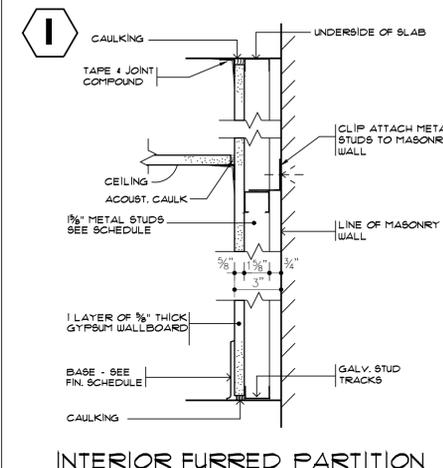
DUCT SHAFT DETAIL

2 HR. FIRE RATING
 BSA CAL. #930-41 5M



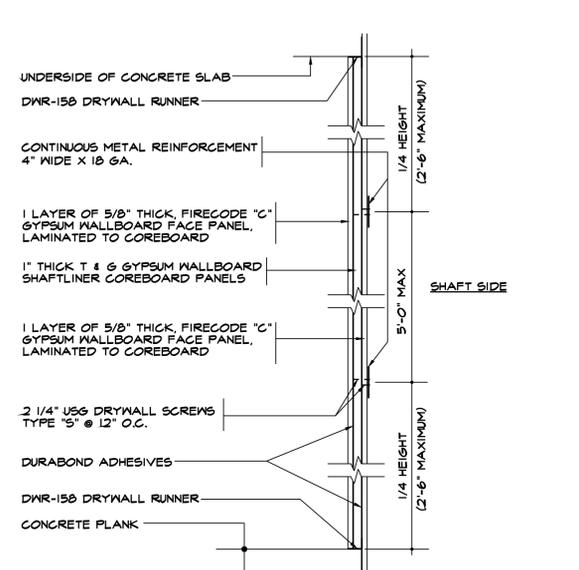
H ELEVATOR SHAFT WALL
 2 HR. FIRE RATING
 BSA CAL. #354-16 5M
H1 ELEVATOR SHAFT WALL

H 4" METAL CH STUD 74" O.C.
H1 2 1/2" METAL CH STUD 74" O.C.

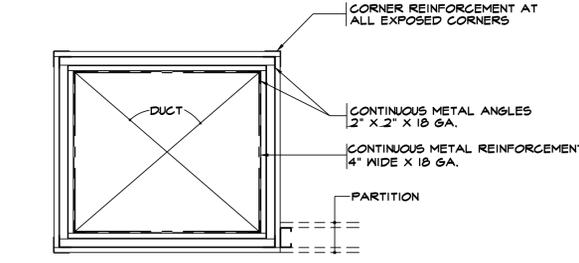


INTERIOR FURRED PARTITION

I 1 1/2" METAL STUDS SEE SCHEDULE
I1 2 1/2" METAL STUDS SEE SCHEDULE FOR SPACING



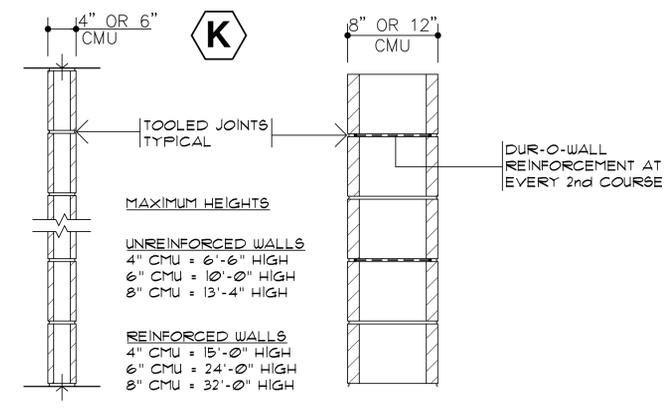
SECTION



PLAN

DUCT SHAFT DETAILS

N



**TYPICAL
 INTERIOR
 MASONRY
 PARTITIONS**

6" CMU = 2 HOUR = UL DESIGN NO. U906
 8" CMU = 2 HOUR = UL DESIGN NO. U905

METAL STUD SCHEDULE (FOR NON-BEARING WALL ONLY)						
METAL STUD HEIGHTS						
SPACING	24" O.C.			16" O.C.		
	CLASS	25 GA.	22 GA.	20 GA.	25 GA.	22 GA.
6"	15'-0"	22'-0"	23'-3"	20'-0"	25'-3"	26'-6"
3 1/2"	13'-6"	15'-0"	16'-0"	16'-0"	17'-3"	18'-3"
2 1/2"	10'-9"	11'-6"	12'-3"	12'-6"	13'-0"	14'-0"
1 1/2"	7'-3"	-	-	8'-3"	-	-
CHASE WALL (DOUBLE STUD PARTITIONS)						
SPACING	24" O.C.			16" O.C.		
	CLASS	25 GA.	22 GA.	20 GA.	25 GA.	22 GA.
3 1/2"	19'-3"	-	-	22'-9"	-	-
2 1/2"	15'-6"	-	-	17'-6"	-	-
1 1/2"	11'-6"	-	-	13'-3"	-	-

PROJECT:
MAPLE LANES HOUSING
 BROOKLYN, NEW YORK

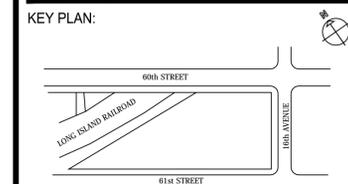
OWNER / DEVELOPER:
MAPLE 60 LLC
 1481 47th STREET
 BROOKLYN, NY 11219
 E-MAIL: BENNY@THELESERGROUP.COM
 TEL: (718) 438-5100
 FAX: (718) 438-0164

ARCHITECT:
**JOHN SCHIMENTI, P.C.
 ARCHITECT, A.I.A.**
 126 ATLANTIC AVENUE
 LYNBROOK, NEW YORK 11563
 E-MAIL: JOHN@JSCHIMENTI.COM
 TEL: (516) 825-3883
 FAX: (516) 825-3887

STRUCTURAL ENGINEERS:
**WEXLER ASSOCIATES
 STRUCTURAL ENGINEERS**
 12 WEST 32nd STREET, 8th FLOOR
 NEW YORK, NY 10001
 E-MAIL: NWEXLER@WEXLER.COM
 TEL: (212) 643-1500
 FAX: (212) 643-2277

M E P ENGINEERS:
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 310 FIFTH AVE. 3rd FLOOR
 NEW YORK, NY 10001
 E-MAIL: AROSENTHAL@AJOSELOWPC.COM
 TEL: (212) 736-2584
 FAX: (212) 736-0241

DATE	REVISION
5-18-2015	ISSUED TO DOB
12-31-2014	ISSUED TO DOB
DATE:	REVISION:



ADDRESS:
 61st STREET AND 16th AVENUE
 BROOKLYN, NEW YORK

DRAWING TITLE:
PARTITION DETAILS

SEAL & SIGNATURE:
 DATE:
 JOB NO.: 10688
 DRAWN BY:
 CHECKED BY:
 DRAWING No:
A-301.00
 DWG. 42 OF 43

DOB NUMBER:

ATTACHMENT B
CITIZEN PARTICIPATION PLAN

ATTACHMENT B

CITIZEN PARTICIPATION PLAN

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

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

added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at brownfields@cityhall.nyc.gov.

Repositories: A document repository is maintained online. Internet access to view OER's document repositories is available at public libraries. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. The library nearest the Site is:

Public Library Nearest the Site: Brooklyn Library – Mapleton Branch

Repository Address: 1702 60th Street, Brooklyn, NY 11204

Repository Telephone Number: 718-256-2117

Repository Hours of Operation:

Mon	10:00 AM - 6:00 PM
Tue	1:00 PM - 8:00 PM
Wed	11:00 AM - 8:00 PM
Thu	1:00 PM - 8:00 PM
Fri	10:00 AM - 6:00 PM
Sat	10:00 AM - 5:00 PM
Sun	closed

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

Public Notice and Public Comment: Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be reviewed and approved

by OER prior to distribution and mailed by the Enrollee. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

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

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

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 and Reduced Consumption of Non-Renewable Resources: Reuse of clean, locally-derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction.

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.

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

As a part of construction, an active sub-slab depressurization system and a 20-mil vapor barrier will be installed to eliminate the risk of future migration of soil vapor contamination from off-Site. In addition, the entire Site will be capped with the building's concrete cellar slab, which would prevent future on-Site spills from impacting sub-surface soil.

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

Paperless Voluntary Cleanup Program: Mapleton Group, LLC is participating in OER's Paperless Voluntary Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

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

Trees and Plantings: Trees and other plantings provide habitat and add to NYC's environmental quality in a wide variety of ways. Native plant species and native habitat provide optimal support to local fauna, promote local biodiversity, and require less maintenance. The number of trees planted or preserved, will be reported in square feet in the RAR.

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 final remedial report. Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of final signoff by OER.

1.2 Stockpile Methods

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

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

1.3 Characterization of Excavated Materials

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

1.4 Materials Excavation, Load-Out, and Departure

The PE/QEP overseeing the remedial action will:

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

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

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

1.5 Off-Site Materials Transport

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

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

1.6 Materials Disposal Off-Site

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

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

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

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

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

If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), including transport to a Part 360-16 Registration Facility, a formal request will be made for approval by OER with an associated plan compliant with 6NYCRR Part 360-16. This request and plan will include the location, volume and a description of the material to be recycled, including verification that the material is not impacted by site uses and that the material complies with receipt requirements for recycling under 6NYCRR Part 360. This material will be appropriately handled on-Site to prevent mixing with impacted material.

1.7 Materials Reuse On-Site

Soil and fill that is derived from the property that meets the Soil Cleanup Objectives (SCOs) established in this plan may be reused on-Site. The SCOs for on-Site reuse are listed in Section 4.2 of this cleanup plan. 'Reuse on-Site' means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on land with comparable levels of contaminants in soil/fill material, compliant with applicable laws and regulations, and addressed pursuant to the NYC VCP agreement subject to Engineering and Institutional Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this remedial plan are followed. The expected location for placement of reused material is shown in Section 4.2.

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

1.8 Demarcation

After completion of hotspot removal and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods: (1) placement of a demarcation layer. The demarcation layer will consist of geosynthetic fencing or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer.

A description or map of the approximate depth of the demarcation layer will be provided in the SMP; or (2) a land survey of the top elevation of residual soil/fill before the placement of cover soils, pavement and associated sub-soils, or other materials or structures or, (3) all materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete. Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RAR.

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

1.9 Import of Backfill Soil From Off-Site Sources

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in Section 4.2. Imported soils will not exceed groundwater protection standards established in Part 375. Imported soils for Track 1 remedial action projects will not exceed Track 1 SCO's.

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

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

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;
- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC.
- All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this remedial plan. The final remedial report will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.
- All material will be subject to source screening and chemical testing.
- Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:
 - Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
 - The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
 - Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

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

Recycled concrete aggregate (RCA) will be imported from facilities permitted or registered by NYSDEC. Facilities will be identified in the final remedial report. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting

requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

1.10 Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). The NYC DEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

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

1.11 Stormwater Pollution Prevention

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

materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

1.12 Contingency Plan for Unknown Contamination Sources

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

1.13 Odor, Dust, and Nuisance Control

Odor Control

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

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

Dust Control

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

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles.

- Use of properly anchored tarps to cover stockpiles.
- Exercise extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

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

Other Nuisances

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

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

ATTACHMENT E
SITE SPECIFIC CONSTRUCTION
HEALTH AND SAFETY PLAN

REDEVELOPMENT PROJECT

1570 60TH STREET
BROOKLYN, NEW YORK

CONSTRUCTION HEALTH AND SAFETY PLAN

June 2015

Prepared for:

Mapleton Group, LLC
1481 47th Street
Brooklyn, NY 11219
montague115@aol.com

Prepared By:

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

1808 Middle Country Road
Ridge, NY 11961

HEALTH AND SAFETY PLAN

Site: **Redevelopment Project**

Location: **1570 60th Street, Brooklyn, NY**

Prepared By: **ENVIRONMENTAL BUSINESS CONSULTANTS**

Date Prepared: **June 2015**

Version: **1**

Revision: **0**

Project Description:

Waste types: **Solid**

Characteristics: **Volatile organic compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), pesticides, metals present in historic fill**

Overall Hazard: **Low**

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CONSTRUCTION HEALTH AND SAFETY PLAN Table of Contents

STATEMENT OF COMMITMENT	SC-1
1.0 INTRODUCTION AND SITE ENTRY REQUIREMENTS	1
1.1 Scope	1
1.2 Application	1
1.3 Site Safety Plan Acceptance, Acknowledgment and Amendments	1
1.4 Key Personnel - Roles and Responsibilities	1
2.0 SITE BACKGROUND AND SCOPE OF WORK	3
3.0 HAZARD ASSESSMENT	6
3.1 Physical Hazards	6
3.1.1 Tripping Hazards	6
3.1.2 Climbing Hazards	6
3.1.3 Cuts and Lacerations	6
3.1.4 Lifting Hazards	6
3.1.5 Utility Hazards	6
3.1.6 Traffic Hazards	6
3.2 Work in Extreme Temperatures	7
3.2.1 Heat Stress	8
3.2.2 Cold Exposure	8
3.3 Chemical Hazards	9
3.3.1 Respirable Dust	9
3.3.2 Dust Control and Monitoring during Earthwork	9
3.3.3 Organic Vapors	9
4.0 PERSONAL PROTECTIVE EQUIPMENT	10
4.1 Level D	10
4.2 Level C	10
4.3 Activity-Specific Levels of Personal Protection	11
5.0 AIR MONITORING AND ACTION LEVELS	12
5.1 Air Monitoring Requirements	12
5.2 Work Stoppage Responses	12
5.3 Action Levels During Excavation Activities	12
6.0 SITE CONTROL	14
6.1 Work Zones	14
7.0 CONTINGENCY PLAN/EMERGENCY RESPONSE PLAN	15
7.1 Emergency Equipment On-site	15
7.2 Emergency Telephone Numbers	15
7.3 Personnel Responsibilities During an Emergency	15
7.4 Medical Emergencies	16
7.5 Fire or Explosion	19
7.6 Evacuation Routes	16
7.7 Spill Control Procedures	17
7.8 Vapor Release Plan	17

Table of Contents (Continued)

FIGURES

Figure 1 Route to Hospital (Appendix D)

APPENDICES

APPENDIX A SITE SAFETY ACKNOWLEDGMENT FORM
APPENDIX B SITE SAFETY PLAN AMENDMENTS
APPENDIX C CHEMICAL HAZARDS
APPENDIX D HOSPITAL INFORMATION, MAP AND FIELD ACCIDENT REPORT

STATEMENT OF COMMITMENT

This Health and Safety Plan (HASP) has been prepared to ensure that workers are not exposed to risks from hazardous materials during the Remedial Activities planned for 1570 60th Street, Brooklyn, NY.

This HASP, 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 HASP 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. The General Contractor and their subcontractors and suppliers are retained as independent contractors and are responsible for ensuring the health and safety of their own employees. The General contractor has the option of adopting this HASP or providing its own for the planned scope of work under the Remedial Action Plan.



1.0 INTRODUCTION

This document describes the health and safety guidelines developed by Environmental Business Consultants (EBC) for implementation of a Remedial Action Work Plan at the Redevelopment - Project located 1570 60th Street, Brooklyn, NY, to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials or wastes during the removal of underground storage tanks and the excavation and loading of contaminated soil. 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 subsurface sample collection activities and is based on the best information available. The CHASP may be revised by EBC at the request of Mapleton Group, LLC (“the Developer”) and/or the New York State Department of Environmental Conservation (NYSDEC) or New York City Office of Environmental Remediation (NYCOER) 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 Scope

This CHASP addresses the potential hazards related to the site Remedial Action Plan (RAP). The RAP activities are as described below:

- 1) Site mobilization of General Contractor (GC) and Subcontractors for building renovation, installation of active sub-slab depressurization system and new elevator pit with vapor barrier.

1.2 Application

The HASP applies to all personnel involved in the above tasks who wish to gain access to active work areas, including but not limited to:

- General Contractor
- EBC employees and subcontractors;
- Client representatives; and
- Federal, state or local representatives.

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 HASP. 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 Construction Health and Safety Plan are:

Name	Title	Address	Contact Numbers
Mr. Kevin Brussee	EBC Project Manager	1808 Middle Country Road Ridge, NY 11961	(631) 504-6000 Cell (631) 338-1749
Mr. Kevin Waters	EBC Site Safety Officer	1808 Middle Country Road 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 Site consists of a single lot located in the Borough Park Section of the Borough of Brooklyn, City of New York, Kings County, New York. The street address associated with the Site is 1570 60th Street, Brooklyn, New York 11204. The Site is identified as Block 5516, Lot 34 on the New York City (NYC) Tax Map. The Site consists of 530.76 feet of street frontage on 61st Street, 200 feet of street frontage on 16th Avenue, and 196.36 feet of street frontage on 60th Street. The western property boundary is bordered by railroad tracks. The total square footage of the property is approximately 70,200.

The Site was formerly developed with a one-story, 35,072 ft² building used as a bowling alley, with an asphalt paved parking lot covering the remainder of the Site. However, the building was recently demolished, and the Site is now undeveloped and vacant.

2.1 Prior Investigations

2.1.1 Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (Phase I ESA) performed by Singer Environmental Group Ltd. dated March 7, 2005 and updated May 7, 2010 indicated that according to Sanborn fire insurance maps the eastern portion of the site was used as a disposal plant in the 1920's. The Phase I also indicates that a Certificate of Occupancy dated December 16, 1941 lists the site as a vacant lot used for storage of used auto parts and auto wrecking. The Sanborn maps indicate that the Site was utilized as a bowling alley and associated parking lot from at least 1969 to at least 1995. The Phase I also states that a subsurface investigation conducted by Soil Mechanics Drilling Corp. on February 23, 2005 for engineering purposes indicated that urban fill was present at the site. The Phase I ESA is included as an appendix. Potential hazards encountered during Phase II ESA activities can include but are not limited to exposure to dust, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and heavy metals from urban fill, soil vapor, and/or groundwater.

2.1.2 Remedial Investigation Report

Associated Environmental Services, Ltd. performed the following scope of work at the Site in April of 2015:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Performed a geophysical investigation (ground penetrating radar survey) across accessible areas of the Site;
3. Installed twelve soil borings across the Site, and collected 24 soil samples for chemical analysis from the soil borings to evaluate soil quality;
4. Installed 5 groundwater monitoring wells across the Site, and collected 5 groundwater samples for chemical analysis to evaluate groundwater quality; and
5. Installed 6 soil vapor implant across the Site and collected 6 soil vapor samples for chemical analysis.

Summary of Environmental Findings

1. The elevation of the Site ranges from approximately 35 to 46 feet.

2. Depth to groundwater at the Site is approximately 42 feet.
3. Groundwater flow direction was determined to be northeast to southwest.
4. Depth to bedrock is at the Site is greater than 100 feet.
5. The stratigraphy of the Site consists of a 5 foot layer of historic fill material underlain by a native brown coarse sand with gravel, cobbles and boulders.
6. Soil/fill samples results were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Unrestricted Use and Restricted Residential Use Soil Cleanup Objectives (SCOs). Data collected during the RI showed no PCBs at detectable concentrations. The VOCs benzene (maximum [max] of 480 µg/kg) and acetone (max of 64 µg/kg) were detected above Unrestricted Use SCOs, and several VOCs were detected at trace concentrations below Unrestricted Use SCOs, including tetrachloroethene (max of 960 µg/kg), and ethylbenzene (max of 300 µg/kg). Five SVOCs including, benz(a)anthracene (max of 3,800 µg/kg), benzo(a)pyrene (max of 4,200 µg/kg), benzo(b)fluoranthene (max of 6,200 µg/kg), chrysene (maximum of 3,900 µg/kg), and indeno(1,2,3-cd)pyrene (max of 1,200 µg/kg) were detected exceeding Restricted Residential Use SCOs. Benzo(k)fluoranthene (max of 1,300 µg/kg) only exceeded Unrestricted Use SCOs. The pesticides 4,4'-DDD (max of 16 µg/kg), 4,4'-DDE (max of 45 µg/kg), 4,4'-DDT (max of 140 µg/kg), and dieldrin (34 µg/kg) were detected above Unrestricted Use SCOs within several of the shallow 0-2ft soil samples and two of the deeper 10-12ft soil samples. Seven metals, including beryllium (14.5 mg/kg), chromium (max of 35.2 mg/kg), copper (max of 269 mg/kg), lead (max of 619 mg/kg), mercury (max of 0.76 mg/kg), nickel (max of 126 mg/kg) and zinc (max of 1,540 mg/kg) exceeded Unrestricted Use SCOs. Of these metals, lead also exceeded Restricted Residential Use SCOs. Overall, with the exception of the low level detections of the chlorinated VOC tetrachloroethene, the soil results were consistent with data identified at sites with historic fill material in NYC.
7. Groundwater sample results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples collected during the RI showed no PCBs or pesticides at detectable concentrations. No VOCs were detected above GQS, with the exception of tetrachloroethene (15 µg/L) which was detected within one of the five groundwater samples. Five SVOCs including, benzo(a)anthracene (max of 1 µg/L), benzo(a)pyrene (max of 1.1 µg/L), benzo(b)fluoranthene (max of 1.8 µg/L), benzo(k)fluoranthene (0.65 µg/L), and chrysene (max of 1.1 µg/L) were detected above GQS within two of the five groundwater samples. The dissolved concentration of the metals magnesium (max of 59.2 mg/L), manganese (max of 2.9 mg/L), and sodium (max of 87.5 mg/L), exceeded GQS.
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. Data collected during the RI indicated petroleum VOCs were present at low concentrations and chlorinated VOCs were present at high concentrations. The chlorinated VOC trichloroethene was detected in five of the six soil vapor samples ranging in concentration from 3.96 µg/m³ to 169 µg/m³. Tetrachloroethene (PCE) was detected in all six soil samples ranging in concentration from 2.44 µg/m³ to 10,200 µg/m³. The chlorinated VOC 1,1,1-trichloroethane (TCA) was detected in two of the six soil vapor samples at a maximum of 111 µg/m³. Carbon tetrachloride was detected in two of the six soil vapor samples at a maximum concentration of 0.43 µg/m³. The chlorinated VOCs 1,1,1-trichloroethane (TCA), tetrachloroethene (PCE) and trichloroethene (TCE) concentrations were detected

at concentrations above the mitigation level range established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

2.2 Redevelopment Plans

The development project consists of 12 new 6-story apartment buildings with full cellar levels, and a cellar level parking garage constructed below the courtyard to be constructed behind the buildings. Six nearly identical apartment buildings will front 61st Street and will have the following street addresses; 1559, 1563, 1567, 1571, and 1575 61st Street. An additional four identical apartment buildings will front 16th Avenue, and they'll have the following street addresses; 6004, 6010, 6014, and 6020 16th Avenue. Three smaller apartment buildings will be constructed along 60th Street, and they'll have the street addresses 1570, 1574, and 1578 60th Street.

The six buildings fronting 61st Street and the nearly identical four buildings fronting 16th Avenue will each be approximately 50 feet wide and have a depth of approximately 64 feet. The cellar of each of these ten new apartment buildings will consist of the elevator shaft and associated elevator machine room, refuse storage room, meter rooms, storage rooms, and open cellar accessory space for the apartments on the first floor. The open cellar accessory spaces will have windows that face a narrow areaway created between the cellar level parking garage and the building. The elevator machine room and meter rooms in the front of the cellar will be constructed approximately 3 feet lower than the rest of the cellar level. The majority of the cellar level of each building will require excavation to a depth of approximately 12ft, and additional excavation to about 15 to 16ft will be required for the lower front cellar level and elevator pit. Assuming an average excavation depth of approximately 13 ft across the 3,200 ft² footprint of each building, a total of approximately 1,500 cubic yards (2,250 tons) of soil will require excavation for each of the ten buildings.

The three smaller buildings fronting 60st Street will each be approximately 30 feet wide and have a depth of approximately 60 feet. The cellar of each of these three new apartment buildings will consist of the elevator shaft and associated elevator machine room, refuse storage room, meter rooms, storage rooms, and an open cellar accessory space for the apartment on the first floor. The open cellar accessory space will have windows that face a narrow areaway created between the cellar level parking garage and the building. The elevator machine room and meter rooms in the front of the cellar will be constructed approximately 3 feet lower than the rest of the cellar level. The majority of the cellar level of each building will require excavation to a depth of approximately 12ft, and additional excavation to about 15 to 16ft will be required for the lower front cellar level and elevator pit. Assuming an average excavation depth of approximately 13 ft across the 1,800 ft² footprint of each building, a total of approximately 900 cubic yards (1,350 tons) of soil will require excavation for each of the three buildings.

A cellar level parking garage for 53 cars will be constructed behind each of the buildings within the rear courtyard area. A vehicle ramp from 61st Street will provide access to the parking garage. An additional on-grade parking area for 16 cars will be constructed above a portion of the cellar parking garage. Access to the on-grade parking area will be provided from 60th Street. A 8,230 ft² recreation area will be constructed above the remaining portion of the cellar level parking garage, and the remaining portions of the Site will be capped with concrete. The cellar level parking garage and the ramp will require excavation to a depth of approximately 12 feet across an approximately 18,000 ft² area will generate an additional 8,000 cubic yards (12,000

tons) of soil. Limited excavation (top 1 foot) across the remaining portions of the Site that will be capped with concrete will generate an additional 300 to 500 cubic yards.

The water table is expected at a depth of approximately 40 feet below grade surface (bgs), and will therefore not be encountered during excavation.

The current zoning designation is R6A. The proposed use is consistent with existing zoning for the property. The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

2.3 Description of Remedial Action Plan

Site activities included within the Remedial Action Plan that are included within the scope of this HASP include the following:

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-specific Soil Cleanup Objectives (SCOs). Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).
6. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. Excavation for the cellar level of each of the thirteen apartment buildings and the cellar level parking garage will be performed to a depth of approximately 13 feet. Limited excavation (top 1 foot) will be performed in the recreational areas.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal of all UST's that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
11. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.

12. Construction of an engineered composite cover across the entire Site that will consist of the following: (1) a 5-inch thick concrete cellar slab with a 4-inch layer of clean granular sub-base beneath the slab for each of the thirteen new buildings, (2) a 6-inch thick concrete cellar slab with a 4-inch layer of clean granular sub-base beneath the slab for the cellar slab parking garage and parking garage ramps, and (3) a 4-inch thick concrete slab with a 4-inch layer of clean granular sub-base beneath the slab for each of the concrete capped areas to be finished as recreation areas.
13. Installation of a vapor barrier system for each of the thirteen new apartment buildings. The vapor barrier system is to be installed beneath the entire building slab and outside of all sub-grade foundation sidewalls to grade to mitigate soil vapor migration into the building. The vapor barrier system for each building will consist of Raven Industries 20-mil vapor barrier (VBP20 Plus) and will be installed below the entire cellar slab throughout the full building area and outside all sub-grade foundation sidewalls to grade. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. The vapor barrier system is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the vapor barrier system was designed and properly installed for each building to mitigate soil vapor migration into the buildings.
14. Installation of separate active sub-slab depressurization systems (SSDS) beneath each of the thirteen new apartment buildings. Each SSD system will consist of a single loop of horizontal pipe set in the middle of a gas permeable layer immediately beneath the building slab and vapor barrier system. The horizontal piping will consist of fabric wrapped, perforated schedule 40 4-inch PVC pipe connected to a 6-inch cast iron riser pipe that penetrates the slab and travels through the building to the roof. The gas permeable layer will consist of a 6-inch thick layer of 2-inch trap rock stone. The active SSDS will be hardwired and will include a RP265 blower installed on the roof line and a pressure gauge and alarm located in an accessible area in the basement. The active sub-slab depressurization system is an Engineering Control for the remedial action. The Remedial Engineer will certify in the RAR that each active sub-slab depressurization system was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient across the building slab to prevent vapor migration into the building.
15. Construction and operation of a parking garage with high volume air exchange in conformance with NYC Building Code.
16. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
17. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
18. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
19. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.
20. Submission of an approved Site Management Plan (SMP) in the Remedial Action Plan (RAR) for long-term management of residual contamination, including plans for

operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.

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

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 or 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

Soil collected from the site during the Remedial Investigation did not identify any contaminants above Unrestricted Use SCOs. However, historic fill material with elevated levels of SVOCs, metals and/or pesticides may be present.

Volatile organic compounds detected in on-site soil include the following:

Benzene	Acetone	Tetrachloroethene
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Semi-Volatile organic compounds typically reported to be present at elevated concentrations in historic fill materials at the Site are the following:

Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(a)pyrene
Benzo(k)fluoranthene	Chrysene	Indeno(1,2,3-cd)pyrene

Metals typically reported to be present at elevated concentrations in historic fill material at the Site are the following:

Beryllium	Chromium	Copper	Mercury	Lead	Nickel	Zinc
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Pesticides reported to be present at elevated concentrations in historic fill material are the following:

4,4'-DDD	4,4'-DDE	4,4'-DDT	Dieldrin
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The primary routes of exposure to identified contaminants in soil to on-site construction workers are through inhalation, ingestion and absorption.

Appendix C includes information sheets for all detected 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 $\mu\text{g}/\text{m}^3$ 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*

Although no VOCs were detected within any of the soil samples collected at the Site, the site safety officer will periodically monitor organic vapors with a Photo-ionization 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 clothes, 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 sustained concentrations of measured total organic vapors in the breathing zone exceed background concentrations (using a portable OVA, or equivalent), by more 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.

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 excavations, 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

		<p>engineering controls</p> <ul style="list-style-type: none"> • 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 not be required. All onsite workers during excavation of historic fill 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. The exclusion zone is defined by the site safety officer but will typically be a 50-foot area around work activities. Gross decontamination (as determined by the site Health and Safety Officer) is conducted in the exclusion zone; all other decontamination is performed in the decontamination zone or trailer, if provided.

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
Suffolk County Police	911
NYC Fire Department	911
Coney Island Hospital	(718) 616-3000
NYSDEC Spills Hotline	1-800-457-7362
NYSDEC Project Manager	(718) 482-4010
NYC Department of Health	(212) 676-2400
National Response Center	1-800-424-8802
Poison Control	1-800-222-1222
Project Manager	1-631-504-6000
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

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

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

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

<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

I M P O R T A N T D A T A	<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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PHYSICAL PROPERTIES	Sublimation point: 435°C Melting point: 162°C Relative density (water = 1): 1.274 Solubility in water: none	Vapour pressure, Pa at 20°C: 292 Octanol/water partition coefficient as log Pow: 5.61
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ENVIRONMENTAL DATA	Bioaccumulation of this chemical may occur in seafood.	
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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

ICSC: 0385	BENZ(a)ANTHRACENE
(C) IPCS, CEC, 1994	

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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 D A T A</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

BENZO(a)PYRENE

(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

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

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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

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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

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

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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

BERYLLIUM

ICSC: 0226



Glucinium
Be
Atomic mass: 9.0

ICSC # 0226
CAS # 7440-41-7
RTECS # [DS1750000](#)
UN # 1567
EC # 004-001-00-7
October 20, 1999 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	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST! AVOID ALL CONTACT!	IN ALL CASES CONSULT A DOCTOR!
•INHALATION	Cough. Shortness of breath. Sore throat. Weakness. Symptoms may be delayed (see Notes).	Local exhaust. Breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness. Pain.	Face shield or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Consult an expert! Carefully collect the spilled substance into containers; if appropriate moisten first, then remove to safe place. Chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment.	Separated from strong acids, bases food and feedstuffs	Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs. Note: E T+ symbol R: 49-25-26-36/37/38-43-48/23 S: 53-45 UN Hazard Class: 6.1 UN Subsidiary Risks: 4.1 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0226

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International Chemical Safety Cards

BERYLLIUM

ICSC: 0226

I M P O R T A N T D A T A	PHYSICAL STATE; APPEARANCE: GREY TO WHITE POWDER.	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.
	PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air.	INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.
	CHEMICAL DANGERS: Reacts with strong acids and strong bases forming flammable/explosive gas (hydrogen - see ICSC0001) Forms shock sensitive mixtures with some chlorinated solvents, such as carbon tetrachloride and trichloroethylene.	EFFECTS OF SHORT-TERM EXPOSURE: The aerosol of this substance is irritating to the respiratory tract Inhalation of dust or fumes may cause chemical pneumonitis. Exposure may result in death. The effects may be delayed. Medical observation is indicated.
	OCCUPATIONAL EXPOSURE LIMITS: TLV: 0.002 mg/m ³ as TWA 0.01 mg/m ³ as STEL A1 (confirmed human carcinogen); (ACGIH 2004). Intended change 0.00002 mg/m ³ Skin, Inhal. SEN (ACGIH 2005). MAK: sensitization of respiratory tract and skin (Sah); Carcinogen category: 1; (DFG 2004). OSHA PEL: TWA 0.002 mg/m ³ C 0.005 mg/m ³ 0.025 mg/m ³ 30-minute maximum peak NIOSH REL: Ca Not to exceed 0.0005 mg/m ³ See Appendix A NIOSH IDLH: Ca 4 mg/m ³ (as Be) See: IDLH INDEX	EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact may cause skin sensitization. Lungs may be affected by repeated or prolonged exposure to dust particles , resulting in chronic beryllium disease (cough, weight loss, weakness). This substance is carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: above 2500°C Melting point: 1287°C Density: 1.9 g/cm ³	Solubility in water: none
ENVIRONMENTAL DATA	The substance is very toxic to aquatic organisms.	
NOTES		
Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home.		
Transport Emergency Card: TEC (R)-61GTF3-II NFPA Code: H3; F1; R0		
ADDITIONAL INFORMATION		
ICSC: 0226 BERYLLIUM		
(C) IPCS, CEC, 1994		



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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.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:

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](#)

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

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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/docs/2005-109/)

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact may cause skin sensitization.

PHYSICAL PROPERTIES

Boiling point: 2595°C
Melting point: 1083°C
Relative density (water = 1): 8.9

Solubility in water:
none

ENVIRONMENTAL DATA

NOTES

The symptoms of metal fume fever do not become manifest until several hours.

ADDITIONAL INFORMATION

ICSC: 0240

COPPER

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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 T A D 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

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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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

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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

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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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1. PRODUCT AND COMPANY IDENTIFICATION

Product name : 4,4'-DDD PESTANAL,250 MG (2,2-BIS(4-CHL&

Product Number : 35486
 Brand : Fluka

Company : Sigma-Aldrich
 3050 Spruce Street
 SAINT LOUIS MO 63103
 USA

Telephone : +1 800-325-5832
 Fax : +1 800-325-5052
 Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

Toxic by ingestion, Harmful by skin absorption., Possible carcinogen.

GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

Hazard statement(s)

H301 Toxic if swallowed.
 H312 Harmful in contact with skin.
 H351 Suspected of causing cancer.
 H400 Very toxic to aquatic life.
 H413 May cause long lasting harmful effects to aquatic life.

Precautionary statement(s)

P273 Avoid release to the environment.
 P280 Wear protective gloves/protective clothing.
 P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

HMIS Classification

Health hazard: 2
 Chronic Health Hazard: *
 Flammability: 0
 Physical hazards: 0

NFPA Rating

Health hazard: 2
 Fire: 0
 Reactivity Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Skin Harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.
Ingestion Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : 1,1-Dichloro-2,2-bis(4-chlorophenyl)ethane
4,4'-DDD
TDE

Formula : C₁₄H₁₀Cl₄
Molecular Weight : 320.04 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane			
72-54-8	200-783-0	-	-

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves.

Eye protection

Face shield and safety glasses

Skin and body protection

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form solid

Safety data

pH	no data available
Melting point	94.0 - 96.0 °C (201.2 - 204.8 °F)
Boiling point	193.0 °C (379.4 °F) at 1.3 hPa (1.0 mmHg)
Flash point	no data available
Ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	< 0.00001 hPa (< 0.00001 mmHg) at 25.0 °C (77.0 °F)
Density	1.38 g/cm ³
Water solubility	no data available
Partition coefficient: n-octanol/water	log Pow: 6.02

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Conditions to avoid

no data available

Materials to avoid

Strong oxidizing agents

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas

Hazardous decomposition products formed under fire conditions. - Nature of decomposition products not known.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD50 Oral - Hamster - > 5,000 mg/kg

TDLo Oral - Human - 428.5 mg/kg

Remarks: Endocrine:Adrenal cortex hypoplasia.

TDLo Oral - rat - 6,000 mg/kg

Remarks: Cardiac:Other changes. Gastrointestinal:Other changes. Kidney, Ureter, Bladder:Changes in both tubules and glomeruli.

TDLo Oral - rat - 14 mg/kg

Remarks: Liver:Changes in liver weight. Endocrine:Estrogenic. Musculoskeletal:Other changes.

TDLo Oral - rat - 2,100 mg/kg

Remarks: Behavioral:Altered sleep time (including change in righting reflex).

LD50 Dermal - rabbit - 1,200 mg/kg

Remarks: Behavioral:Excitement. Behavioral:Convulsions or effect on seizure threshold. Skin irritation

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Limited evidence of carcinogenicity in animal studies

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Specific target organ toxicity - single exposure (GHS)

no data available

Specific target organ toxicity - repeated exposure (GHS)

no data available

Aspiration hazard

no data available

Potential health effects**Inhalation**

May be harmful if inhaled. May cause respiratory tract irritation.

Ingestion

Toxic if swallowed.

Skin

Harmful if absorbed through skin. May cause skin irritation.

Eyes May cause eye irritation.

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information

RTECS: KI0700000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish LC50 - other fish - 1.18 - 9 mg/l - 96.0 h
LC50 - Lepomis macrochirus (Bluegill) - 0.04 - 0.05 mg/l - 96.0 h
LC50 - Oncorhynchus mykiss (rainbow trout) - 0.06 - 0.09 mg/l - 96.0 h
LC50 - Pimephales promelas (fathead minnow) - 3.47 - 5.58 mg/l - 96.0 h

Toxicity to daphnia and other aquatic invertebrates. EC50 - Daphnia pulex (Water flea) - 0.01 mg/l - 48 h

Persistence and degradability

no data available

Bioaccumulative potential

Indication of bioaccumulation.

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Product

Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN-Number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solids, organic, n.o.s. (2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane)
Reportable Quantity (RQ): 1 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN-Number: 2811 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane)
Marine pollutant: No

IATA

UN-Number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solid, organic, n.o.s. (2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane)

15. REGULATORY INFORMATION

OSHA Hazards

Toxic by ingestion, Harmful by skin absorption., Possible carcinogen.

DSL Status

This product contains the following components that are not on the Canadian DSL nor NDSL lists.

2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	CAS-No. 72-54-8
---	--------------------

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Acute Health Hazard

Massachusetts Right To Know Components

2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	CAS-No. 72-54-8	Revision Date
---	--------------------	---------------

Pennsylvania Right To Know Components

2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	CAS-No. 72-54-8	Revision Date
---	--------------------	---------------

New Jersey Right To Know Components

2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	CAS-No. 72-54-8	Revision Date
---	--------------------	---------------

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer. 2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	CAS-No. 72-54-8	Revision Date
--	--------------------	---------------

16. OTHER INFORMATION

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.



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72-55-9 msds



MSDS 250,000+

MSDS : 2,2-Bis-(4-chlorophenyl)-1,1-dichloroethylene, 99%

CAS : 72-55-9

SYNONYMS : p,p'-DDE ; ethylene,1,1-dichloro-2,2-bis-(p-chlorophenyl)- ; DDT dehydrochloride ; DDE; 1-1'-(Dichloroethenylidene)bis(4-chlorobenzene)

[MSDS Safety Sheet](#)

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AdChoices

Catalog of Chemical Suppliers, Buyers, Custom Synthesis Companies And Equipment Manufacturers
[2,2-Bis-(4-chlorophenyl)-1,1-dichloroethylene, 99% 72-55-9]

Suppliers:

Not Available

Buyers:

Not Available

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AdChoices

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

```

+-----+-----+-----+-----+
| CAS# | Chemical Name | % | EINECS# |
+-----+-----+-----+-----+
| 72-55-9 | 2,2-Bis-(4-chlorophenyl)-1,1-dichloro | 99 | 200-784-6 |
| ethylene | | |
+-----+-----+-----+-----+

```

Hazard Symbols: XN

Risk Phrases: 22 33

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Harmful if swallowed. Danger of cumulative effects.Cancer suspect
agent.Possible risks of irreversible effects.

Potential Health Effects

Eye:

May cause eye irritation.

Skin:

May cause skin irritation.

Ingestion:

May cause irritation of the digestive tract. May be harmful if
swallowed. Ingestion of large amounts may cause liver and/or kidney
damage.

Inhalation:

May cause respiratory tract irritation.

Chronic:

May cause cancer according to animal studies. Adverse reproductive
effects have been reported in animals. Laboratory experiments have
resulted in mutagenic effects.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:

Flush eyes with plenty of water for at least 15 minutes,
occasionally lifting the upper and lower eyelids. Get medical aid.

Skin:

Get medical aid. Flush skin with plenty of water for at least 15
minutes while removing contaminated clothing and shoes. Wash clothing
before reuse.

Ingestion:

If victim is conscious and alert, give 2-4 cupfuls of milk or water.

Never give anything by mouth to an unconscious person. Get medical
aid immediately.

Inhalation:

Remove from exposure and move to fresh air immediately. If not
breathing, give artificial respiration. If breathing is difficult,
give oxygen. Get medical aid.

Notes to Physician:

Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Will burn if involved in a fire.

Extinguishing Media:

For large fires, use water spray, fog or regular foam. For small fires, use dry chemical, carbon dioxide, water spray or regular foam. Cool containers with flooding quantities of water until well after fire is out.

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Do not ingest or inhale. Use with adequate ventilation.

Storage:

Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

CAS# 72-55-9:

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State: Crystals

Color: white

Odor: None reported.

pH: Not available.

Vapor Pressure: 6.5106 mm Hg @ 20 C

Viscosity: Not available.

Boiling Point: 336 deg C

Freezing/Melting Point: 88.00 - 90.00 deg C

Autoignition Temperature: Not available.

Flash Point: Not available.

Explosion Limits, lower: Not available.

Explosion Limits, upper: Not available.

Decomposition Temperature:

Solubility in water: 0.010 ppm

Specific Gravity/Density:

Molecular Formula: C14H8Cl4

Molecular Weight: 318.02

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Incompatible materials, dust generation, strong oxidants.

Incompatibilities with Other Materials:

Strong oxidizing agents - strong bases.

Hazardous Decomposition Products:

Hydrogen chloride, carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:

CAS# 72-55-9: KV9450000

LD50/LC50:

CAS# 72-55-9: Oral, mouse: LD50 = 700 mg/kg; Oral, rat: LD50 = 880 mg/kg.

Carcinogenicity:

2,2-Bis-(4-chlorophenyl)-1,1-dichloroethylene -

California: carcinogen, initial date 1/1/89

Other:

See actual entry in RTECS for complete information.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:

Estimated BCF value = 8,300 based on water solubility. Estimated Koc value = 8,300. There was no movement of DDE reported in soil column mobility experiments.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.

**** SECTION 14 - TRANSPORT INFORMATION ****

IATA

Not regulated as a hazardous material.

IMO

Not regulated as a hazardous material.

RID/ADR

Not regulated as a hazardous material.

USA RQ: CAS# 72-55-9: 1 lb final RQ; 0.454 kg final RQ

**** SECTION 15 - REGULATORY INFORMATION ****

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN

Risk Phrases:

R 22 Harmful if swallowed.

R 33 Danger of cumulative effects.

Safety Phrases:

S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)

CAS# 72-55-9: 3

Canada

None of the chemicals in this product are listed on the DSL/NDSL list.

CAS# 72-55-9 is listed on Canada's Ingredient Disclosure List.

US FEDERAL

TSCA

CAS# 72-55-9 is not listed on the TSCA inventory.

It is for research and development use only.

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 9/28/1998 Revision #3 Date: 3/18/2003

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

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ALL MSDS PAGES IN THIS GROUP

NAME	CAS
M-Benzoyloxybenzyl Alcohol, 97%	1700-30-7
Octaphenylcyclotetrasiloxane, 98%	546-56-5
Cetylpyridinium chloride	123-03-5
3,4-Difluorophenol, 99%	2713-33-9
1-Benzyl-4-Hydroxypiperidine, 97%	4727-72-4
4-tert-Butylbenzoyl chloride	1710-98-1
Borane-morpholine complex, 97%	4856-95-5
Benzyl Ether, 99%	103-50-4
5-Amino-1-Naphthol (Pract)	83-55-6
Pyridinium-P-Toluenesulfonate 98%	24057-28-1
Pyrogallol Red, 98% (Titr.)	32638-88-3
Amberlite ira 416	9002-26-0
3-Methoxybenzotrile, 98%	1527-89-5
1-Adamantanemethanol, 99%	770-71-8
Inosine, 99%	58-63-9
Pentafluoropropionic Acid	422-64-0
Pyruvic Acid	127-17-3
Potassium hydrogen fluoride, 99+%	7789-29-9
Aluminum Nitride, 98% Particle Size <10 Micron	24304-00-5
Nickel(II) hydroxide, c.p., 60-61% Ni	12054-48-7
1-Adamantanamine sulfate, 99%	31377-23-8
S-(Thiobenzoyl)-Thioglycolic Acid, 97%	942-91-6
N,N-Dimethyl-P-Nitroaniline	100-23-2
Benzofuroxan	480-96-6
cis-2-Aminomethyl-1-cyclohexanol hydrochloride, 99%	24947-68-0
Silver Phosphate, 98% (Titr.)	7784-09-0

4-Cyano-4-Phenylpiperidine Hydrochloride, 99% (TLC)	51304-58-6
Methanesulfonamide	3144-09-0
gamma-Octanoic lactone, 98%	104-50-7
Cis,cis,cis-1,2,3,4-cyclopentane- tetracarboxylic dianhydride,	4802-47-5
Tetrachloroethylene Carbonate, 98+%	22432-68-4
Oxamic Acid, 98%	471-47-6
1O,11-Dihydro-5H-Dibenzo(A,D)-Cycloheptene, 98%	833-48-7
Thallium (I) Sulfate, 99.9+%	7446-18-6
N-(2,6-Dimethylphenylcarbonyl-Methyl)-Iminodiacetic Acid, 99%	59160-29-1
P-(Dimethylamino)cinnamic Acid, 99%	1552-96-1
Biebrich Scarlet, 99% (UV-VIS)	4196-99-0
4-Chlorobenzenediazonium hexafluoro- phosphate	1582-27-0
Ammonium hexachloroiridate(IV), 99.99%	16940-92-4
Methylamine-d2 deuteriochloride, 98+ atom % D	593-51-1
2,2-Bis-(4-chlorophenyl)-1,1-dichloroethylene, 99%	72-55-9
Nitro red	56431-61-9
Methyl 2,3-dichlorobenzoate, 98+%	2905-54-6
Isopropyl Bromoacetate, 98% (GC)	29921-57-1
1-Iodo-4-Nitrobenzene, 99%	636-98-6
4-Ethylcyclohexanol, 99% cis/trans mixture	4534-74-1
Fluorescamine	38183-12-9
Tris(2,2,6,6-Tetramethyl-3,5-Heptanedionato)Dysprosium(III), 99+%	15522-69-7
3-Amino-2,2,5,5-Tetramethyl-1-Pyrrolidinyloxy, 99% (Titr.)	34272-83-8
3,4-Dihydroxyphenylacetic Acid,98%	102-32-9

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International Chemical Safety Cards

DDT

ICSC: 0034



Dichlorodiphenyltrichloroethane
 1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane
 2,2-bis(p-Chlorophenyl)-1,1,1-trichloroethane
 1,1'-(2,2,2-Trichloroethylidene)bis(4-chlorobenzene)
 p,p'-DDT
 $C_{14}H_9Cl_5$
 Molecular mass: 354.5



ICSC # 0034
 CAS # 50-29-3
 RTECS # [KJ3325000](#)
 UN # 2761
 EC # 602-045-00-7
 April 20, 2004 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible. Liquid formulations containing organic solvents may be flammable. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames.	Powder, water spray, foam, carbon dioxide.
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST! STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION	Cough.	Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness.	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	Tremors. Diarrhoea. Dizziness. Headache. Vomiting. Numbness. Paresthesias. Hyperexcitability. Convulsions.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Give a slurry of activated charcoal in water to drink. Rest. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Do NOT let this chemical enter the environment. Sweep spilled substance into sealable non-metallic containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: P3 filter respirator for toxic particles.	Provision to contain effluent from fire extinguishing. Separated from iron, aluminum and its salts, food and feedstuffs See Chemical Dangers.	Do not transport with food and feedstuffs. Severe marine pollutant. T symbol N symbol R: 25-40-48/25-50/53 S: 1/2-22-36/37-45-60-61 UN Hazard Class: 6.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0034

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: 0034

DDT

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS CRYSTALS WHITE POWDER. TECHNICAL PRODUCT IS WAXY SOLID.</p> <p>PHYSICAL DANGERS:</p> <p>CHEMICAL DANGERS: On combustion, forms toxic and corrosive fumes including hydrogen chloride. Reacts with aluminium and iron.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 1 mg/m³ as TWA A3 (ACGIH 2004). MAK: 1 mg/m³ H Peak limitation category: II(8) (DFG 2003). OSHA PEL: TWA 1 mg/m³ skin NIOSH REL: Ca TWA 0.5 mg/m³ See Appendix A NIOSH IDLH: Ca 500 mg/m³ See: 50293</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by ingestion.</p> <p>INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly especially if powdered.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: May cause mechanical irritation. The substance may cause effects on the central nervous system, resulting in convulsions and respiratory depression. Exposure at high levels may result in death. Medical observation is indicated.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The substance may have effects on the central nervous system and liver. This substance is possibly 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>Boiling point: 260°C Melting point: 109°C Density: 1.6 g/cm³</p>	<p>Solubility in water: poor Octanol/water partition coefficient as log Pow: 6.36</p>
-----------------------------------	--	---

<p>ENVIRONMENTAL DATA</p>	<p>The substance is very toxic to aquatic organisms. This substance may be hazardous to the environment; special attention should be given to birds. Bioaccumulation of this chemical may occur along the food chain, for example in milk and aquatic organisms. This substance does enter the environment under normal use. Great care, however, should be given to avoid any additional release, e.g. through inappropriate disposal.</p>	
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NOTES

Depending on the degree of exposure, periodic medical examination is indicated. Carrier solvents used in commercial formulations may change physical and toxicological properties. Do NOT take working clothes home. Consult national legislation. Agritan, Azotox, Anofex, Ixodex, Gesapon, Gesarex, Gesarol, Guesapon, Clofenotane, Zeidane, Dicophane, Neocid are trade names.

Transport Emergency Card: TEC (R)-61GT7-III

ADDITIONAL INFORMATION

<p>ICSC: 0034</p>	<p>DDT</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

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,6aalpha,7beta,7aalpha)-2,7,3,6-
dimethanonaphth(2,3-b)oxirene

HEOD



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

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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

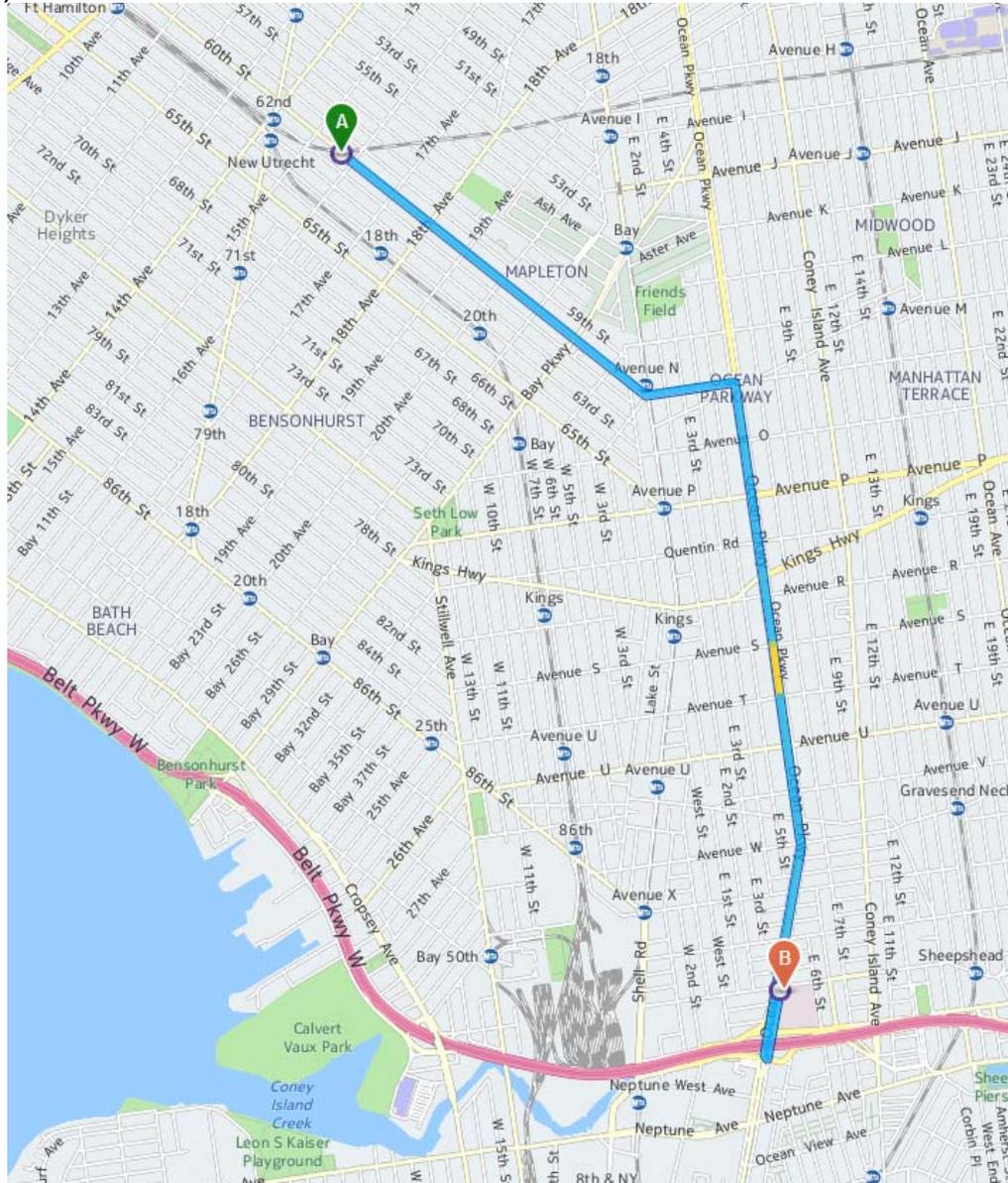
HOSPITAL INFORMATION AND MAP

The hospital nearest the site is:

Coney Island Hospital

2601 Ocean Parkway, Brooklyn, NY 11235

(718) 616-3000



Directions

START

1. Head toward 16th Avenue on 60th Street. Continue 1.2 miles
2. Turn slightly left onto Avenue N. Continue 0.3 miles
3. Turn right onto Ocean Parkway. Continue 2.2 miles
4. Make a U-turn to head north on Ocean Parkway.
5. The Hospital is on the right. The trip takes 4.3 miles (17 mins)

2601 Ocean Parkway, Brooklyn, NY 11235

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.



Engineered Films Division

P.O. Box 5107
Sioux Falls, SD 57117-5107
Ph: (605) 335-0174 • Fx: (605) 331-0333

Limited Warranty available at www.RavenEFD.com

Toll Free: 800-635-3456
Email: efdsales@ravenind.com
www.ravenefd.com

10/10 EFD 1125