REMEDIAL ACTION WORK PLAN

BETANCES HOUSES VI

472-474 Willis Avenue
Borough of Bronx
New York City, New York

NYSDEC BCP SITE: C203122

NYSDEC SPILL NUMBER: 98-13188

September 2020

GBTS Project: BB17076

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CERTIFICATIONS

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

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



076508 9/10/2020

NYS Professional Engineer # Date

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

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EXECUTIVE SUMMARY

This Remedial Action Work Plan (RAWP) is submitted by Betances VI Partners LLC to the New York State Department of Environmental Conservation (NYSDEC). The Site was admitted into the Brownfield Cleanup Program (BCP) in July 2019 as a volunteer. Betances VI Partners LLC ("the Volunteer") has established this plan to remediate a 0.23-acre site consisting of the property located at 472-474 Willis Avenue, Borough of Bronx, New York City, New York. A Remedial Investigation (RI) was performed in accordance with a New York City Department of Environmental Protection (NYCDEP) approved Phase II Investigation Work Plan (DEP Work Plan), to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document achieves the remedial objectives, complies with applicable environmental standards, criteria and guidance and conforms to applicable laws and regulations.

Site Description/Physical Setting/Site History

The Site is located in Bronx Borough, City of New York, and comprises a newly apportioned Bronx tax lot parcel Block 2291, Lot 101 ("Zoning Lot"), with addresses of 472 Willis Avenue. The Site is the 0.23-acre southern portion of the Zoning Lot 1, with 100 feet of frontage on the east side of Willis Avenue and 100 feet of frontage on the northern side of East 146th Street.

The Site is fully occupied by a vacant one-story building containing three commercial spaces (fronting Willis Avenue) and a former New York City Housing Authority (NYCHA) maintenance garage (fronting East 146th Street). The NYCHA maintenance garage section of the building is "L-shaped", sloping downwards from sidewalk grade to the north (to a final depth of approximately 9 feet below sidewalk grade [bsg]) and then extending to the west. Basement floors below the commercial spaces are at the approximate same elevation as the garage.

The Site is located in a well-developed urban area and the surrounding neighborhood consists of mixed residential and commercial uses, with some community uses and open space/parkland. A Site Location Map, indicating the BCP Site boundary, is provided as Figure 1 and adjoining and area-wide land uses in the vicinity of the Site are shown on Figure 2 (all figures are provided in Appendix A).

A Phase I Environmental Site Assessment of the Site (AKRF, Inc. June 2017) documented historical on-site automotive repair and manufacturing and/or equipment servicing facilities, and automotive, dry

cleaning, and manufacturing facilities at nearby areas, which may have resulted in on-site contamination.

An open NYSDEC spill file (No. 9813188) is reported for the Site. NYSDEC previously indicated to NYCHA that two waste oil underground storage tanks (USTs) and/or a subgrade vault/drywell where waste oil was discharged, may have been present at the Site. Chemical storage has been documented in the garage portion of the building, and evidence of an ongoing leak has been observed, with fresh staining near on-site machinery.

A Limited Phase II Environmental Site Assessment (American Environmental Assessment & Solutions, Inc. December 2017) documented an investigation of potential impacts associated with spill number 9813188. No anomalies indicative of USTs or buried objects were found during a ground penetrating radar (GPR) survey of the Site. Three soil borings were extended through the basement portion of the NYCHA garage and were completed as groundwater monitoring wells. Field evidence of petroleum contamination (odors, discoloration and elevated instrument readings) was encountered at one location near the northern wall at the center of the garage. Laboratory analysis documented elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) in the impacted soil at 6 to 8 feet below the slab, and in groundwater from all borings. No significant concentrations of volatile organic compounds (VOCs) were detected in soil or groundwater samples. The results of the Phase II investigation were incorporated into the final Remedial Investigation (RI) Report prepared for the Site.

Summary of Proposed Redevelopment Plan

The Remedial Action to be performed under the RAWP is intended to make the Site protective of human health and the environment consistent with the contemplated end use. The proposed redevelopment plan and end use is described here to provide the basis for this assessment. However, the Remedial Action contemplated under this RAWP may be implemented independent of the proposed redevelopment plan.

The Site is currently planned for redevelopment as an affordable housing project. Available development plans (see Figure 3 and Appendix C) include the demolition of existing on-site structures and construction of a fifteen-story structure with a building footprint encompassing the entirety of the BCP Site (approximately 10,000 square feet). The building design includes approximately 101 dwelling units (floors 2 to 15), street-level commercial spaces, and a cellar containing utilities, residential laundry and storage.

Total excavation depth for the foundation/subgrade areas is anticipated to be approximately 12 feet bsg (approximate elevation of 8 feet above mean sea level [msl]), above the expected groundwater table (previously documented at a depth between approximately 13.5 to 16 feet bsg [elevation 9.5 to 4 feet above msl]). Current calculations estimate that the excavation area necessary for Site development will generate 1,000 and 1,500 cubic yards of soil for off-site disposal.

It is anticipated that the excavated material may be comprised of up to three waste streams: urban fill; any encountered petroleum contaminated soil (or soil exhibiting nuisance petroleum odors) within or below the development excavation area; and, uncontaminated soil located beneath the fill layer. Figure 4 shows a Soil Excavation Plan.

The proposed use is not consistent with existing zoning and New York City Housing Authority is seeking the following actions for the site:

1. An amendment to Zoning Map 6a to change from an R6 District to an R7X District.
2. An amendment to Zoning Map 6a to change from a C1-4 to a C2-4 commercial overlay.
3. An amendment to the Zoning Resolution APPENDIX F: Inclusionary Housing Designated Areas and Mandatory Inclusionary Housing Areas. The Applicant proposes to add Bronx Community District 1 Mandatory Inclusionary Housing ("MIH") Map #6.

Figure 3 shows a layout of the initial proposed site development.

Summary of Environmental Investigation

1. Conducted a Site inspection to identify Areas of Concern and physical obstructions (i.e. structures, buildings, etc.) and reviewed a previous geophysical survey (no significant subsurface anomalies have been identified);
2. Collected samples from five (5) soil borings (three manual and two mechanized), and submitted ten (10) soil samples (from multiple depths) for chemical analysis to evaluate soil quality;
3. Collected four (4) samples from four (4) permanent groundwater monitoring wells, and submitted samples for chemical analysis to evaluate groundwater quality, with an additional subsequent investigation (at the direction of NYSDEC) to document the presence or absence of "emerging contaminants" (1,4-dioxane and per- and polyfluoroalkyl substances [PFAS]). Depth to groundwater

measurements were taken at the wells to determine static groundwater elevations and to establish groundwater flow direction;

4. Collected three (3) vapor samples from three (3) temporary soil vapor probes, and submitted all samples for analysis of VOCs.

Summary of Environmental Findings

1. Elevation of the property is 20.83 feet above mean sea level (msl) at the southwest corner and 23.75 feet above msl at the northwest corner. The Site slopes gently downward from northwest to southeast. Overall downward slopes are to the south, toward the Harlem River.

2. AEAS installed temporary wells in the three borings installed at the garage and recorded groundwater depths between approximately 13.5 to 16 feet bsg (4.5 to 7 feet below the slab, elevation 10.25 to 7.25 feet msl). Gauging measurements recorded at three off-site sidewalk wells (installed by GTA) during the RI indicated groundwater elevations ranging from approximately 13' to 15' below sidewalk grade (elevation 10.75 – 8.75 feet msl); based on these data, groundwater flow has been determined to flow towards the southwest. Depth to bedrock is unknown (no bedrock was encountered in soil borings to maximum depths of 32 feet bsg).

3. Fill materials are present below the concrete slab. The fill material primarily consisted of silty sand or poorly-graded sand with gravel, with minor amounts of construction debris. The fill layer extended to depths ranging from approximately 8.5 to 15 (elevation 15.25 - 8.75 feet msl). A layer of native glacial soil was encountered beneath the fill layer in each of the borings. The glacial soil deposits consisted of sandy silt, silty sand and poorly-graded sand with varying percentages of gravel.

4. No anomalies indicative of underground tanks or buried objects were encountered during a ground penetrating radar (GPR) survey of the Site.

5. Field evidence of contamination (odors, discoloration and elevated instrument readings) was encountered at one boring location (SB-2) near the northern wall at the center of the garage (documented prior to the RI). Similar contamination was encountered at a boring extended in this area during the RI (B-04), from the groundwater interface at approximately 2.5 feet below the garage slab to the bottom of the boring at 6 feet below the slab [i.e. 11.5 to 15 feet bsg]). Contamination observed at these locations is likely to be associated with open spill number

9813188. No overt evidence of petroleum or chemical contamination was noted at any other sampling locations.

6. The State of New York does not have any standards, criteria or guidance values for volatile chemicals in subsurface vapors (either soil vapor or sub-slab vapor); relatively high levels of VOCs in subsurface soil vapor, however, were identified in the RI Report in order to facilitate a discussion of investigative findings, and values for compounds identified in applicable NYSDOH guidance (compounds associated with vapor intrusion decision matrices) were noted as warranted.

   No significant VOC concentrations were reported in three on-site soil vapor samples. Trace to low-level concentrations of multiple analytes, including petroleum compounds and solvents, were detected in all samples, with a maximum reported VOC level of approximately 20 $\mu g/m^3$ (acetone). These VOC concentrations are consistent with levels typically encountered in urban settings and are likely due to the historical commercial use of this or other nearby sites, or the presence of fill materials.

7. Soil/fill samples collected during the RI (ten samples from five on-site borings), and earlier Phase II investigation, were compared to NYSDEC Part 375-6 Unrestricted Use (UU, Track 1) and restricted category Restricted-Residential Use (RRU, Track 2) Soil Cleanup Objectives (SCOs).

8. Elevated levels of semi-volatile organic compounds (SVOCs) were reported in B-02 (0-2'), at concentrations above RRU SCOs, including the PAHs benzo(a)anthracene (3.8 ppm, RRU SCO 1 ppm), benzo(a)pyrene (3.68 ppm, RRU SCO 1 ppm) and benzo(b)fluoranthene (3.49 ppm, RRU SCO 1 ppm). No significant levels of VOCs or SVOCs were reported for samples collected at boring B-04, where petroleum impacts had been observed (note: investigation prior to the RI documented elevated concentrations of PAHs near this location at 6 to 8 feet below the slab). Metals were detected above RRU SCOs at B-01 (0-2') and B-04 (4-6'), including lead (peak value 534 ppm, RRU SCO 400 ppm) and barium (909 ppm, RRU SCO 400 ppm), with detections of multiple metals above UU SCOs in 9 of 10 samples. VOCs were not reported in any soil samples at concentrations above RRU SCOs (acetone was detected marginally above the UU SCO and several other VOCs were found at low levels). Pesticides (DDD, DDE, DDT and/or dieldrin) were detected in seven of ten samples above UU SCOs (all values below RRU SCOs) and a low-level of one PCB congener was detected in B-04 (0-2').

   Elevated concentrations of SVOCs, metals and pesticides were reported in sub-slab fill soils, indicating the presence of poor quality materials typically encountered in urban settings (no

significant contamination has been found in deeper, native soils). Although field evidence of low grade petroleum contamination was encountered in boring B-04, laboratory data document an absence of any elevated concentrations of VOCs or SVOCs, supporting the conclusion that petroleum impacts are likely to be limited.

9. Groundwater samples collected during the RI (from one on-site and three off-site sidewalk monitoring wells) were compared to Ambient Water Quality Standards and Guidance Values (AWQS) presented in NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1, which are inclusive of groundwater standards specified in NYSDEC 6NYCRR Part 703.5.

   No VOCs or SVOCs were detected above AWQS. Low-level concentrations of tetrachloroethylene and trichloroethylene (PCE and TCE, AWQS 5 ppb) were detected in MW-02 through MW-04 (PCE range 2.1 to 3.6 ppb and TCE less than 1 ppb). Low levels (below 1 ppb) of 1,2-dichloroethylene (DCE, both cis and trans isomers, AWQS 5 ppb) were reported in MW-03. Low levels of MTBE, chloroform, tert-butyl alcohol and/or carbon disulfide were detected groundwater. Total VOCs ranged from 0.35 ppb (MW-09) to 9.73 ppb (MW-03). Low-level concentrations of bis(2-ethylhexyl)phthalate, naphthalene, pentachlorophenol and pyrene were detected at one or more wells at concentrations well below AWQS groundwater. Total SVOCs ranged from 0.8 ppb (MW-09) to 1.3 ppb (MW-02). [Note: Investigations prior to the RI documented PAH contamination in groundwater collected from temporary wells at the garage; these findings, however, may be the result of soil fines entering the sampling point.]

   Total and dissolved metals (sodium, selenium, magnesium, and manganese/iron) were reported at concentrations above AWQS in all groundwater samples, and slightly elevated total and/or dissolve antimony and cobalt were found in one or more wells. Pesticides and PCBs were not detected in any groundwater samples. Trace 1,4-dioxane (0.34 ppb) was detected at MW-03, and low levels of PFAS were detected in all wells. Total PFOS and PFOA ranged from 50.3 ppt in MW-09 to 174.4 ppt in MW-03.

   Groundwater contamination at the Site is limited to low-grade exceedances by metals, many of which are likely to be representative of ambient conditions in the vicinity of the Site. Trace to low-level concentrations of VOCs and SVOCs in groundwater may similarly be related to local groundwater quality rather than on-site releases. There is no evidence of any significant petroleum impacts to groundwater.

Qualitative Human Health Exposure Assessment

The qualitative exposure assessment identified potential completed routes of exposure to construction and remediation workers and trespassers through inhalation, ingestion and dermal contact of organic compounds (primarily petroleum compounds) and metals during excavation activities, and potential dust exposure to off-site receptors and the public adjacent to the site. The Construction Health and Safety Plan (CHASP) and the Community Air Monitoring Plan (CAMP) prepared for the Site identify such exposures and provide instructions for on-site workers and the nearby community to minimize potential on- and off-site exposures during remediation and construction activities. No potential environmental impacts through groundwater to surface water discharge were identified.

Summary of the Remedy

The proposed remedial action achieves all of the remedial action goals established for the project. The proposed remedial action is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants and uses standard, well established industry methods.

The proposed remedial action will consist of:

1. Performance of all required NYS BCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Implementation of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Selection of Track 1 Unrestricted Use SCOs for the protection of public health.
4. Site preparation including setup of Site security, 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 the disposal facility.
6. Removal of any underground storage tanks encountered during demolition of the on-site structure in compliance with applicable local, State and Federal laws and regulations.
7. Removal of all soil/fill consistent with the development plan, and any additional petroleum-contaminated or unknown impacted soils at other areas. Excavation for Site development will be conducted over the entirety of the BCP Site to an approximate depth of 12 feet bsg,

removing fill and extending into native soils. Current calculations estimate that the excavation area necessary for Site development will generate 1,000 – 1,500 cubic yards of soil for off-site disposal.

8. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID, and appropriate on-site segregation as needed.
9. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
10. Transportation and off-Site disposal of all soil/fill material (including debris and/or petroleum-impacted soil) 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. Closure of the active spill file (No. 9813188) in accordance with NYSDEC requirements. Any petroleum impacted soil located deeper than 12 feet bsg, which are considered by NYSDEC to be grossly contaminated, will be excavated and disposed off-site. In the event that such material is practically inaccessible, NYSDEC will provide guidance as to appropriate response actions (e.g., use of in situ chemical oxidation treatment).
12. Import of any necessary materials to be used for backfill, in compliance with this plan and in accordance with applicable laws and regulations.
13. Installation of a Waterproofing Membrane with a minimum 20 mil thickness under the entire building slab and behind sub-grade sidewalls. All membrane seams and penetrations will be sealed according to the manufacturer's recommendations and instructions.
14. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of any pretreatment requirements, in compliance with applicable laws and regulations.

15. Dewatering in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal, or will discharged to the local wastewater system incompliance with any and all municipal requirements, including permits from NYCDEP and/or pre-treatment if warranted.
16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
17. Submission of a Final Engineering Report (FER) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries and lists any changes from this RAWP.

REMEDIAL ACTION WORK PLAN

1.0 INTRODUCTION

This Remedial Action Work Plan (RAWP) is submitted by Betances VI Partners LLC to the New York State Department of Environmental Conservation (NYSDEC). . The Site was admitted into the Brownfield Cleanup Program (BCP) in July 2019 as a volunteer. Betances VI Partners LLC ("the Volunteer") has established this plan to remediate a 0.23-acre site consisting of the property located at 472-474 Willis Avenue, Borough of Bronx, New York City, New York. A Remedial Investigation (RI) was performed in accordance with a New York City Department of Environmental Protection (NYCDEP) approved Phase II Investigation Work Plan (DEP Work Plan), to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP).

Residential and commercial use is proposed for the Site; when completed, the Site will contain a 15-story residential building with street-level commercial spaces and a cellar (see Section 1.2 and the BCP application for additional details).

This RAWP summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI), performed during March 2018 (inclusive of data from an earlier Phase II investigation performed by American Environmental in December 2017). It provides an evaluation of a BCP Track 1 cleanup, where Unrestricted Use (UU) Soil Cleanup Objectives (SCOs) are met, and a Track 4 cleanup, where Track 1 SCOs are not met and a composite cover system (e.g., concrete slab) is installed across the entire site. The remedy described in this document is consistent with the procedures defined in NYSDEC DER-10 and complies with all applicable standards, criteria and guidance. The remedy described in this document also complies with all applicable Federal, State and local laws, regulations and requirements. It is anticipated that the NYSDEC and New York State Department of Health (NYSDOH) will issue a determination that this Site does not pose a significant threat to human health and the environment. The RI for this Site did not identify fish and wildlife resources.

A formal Remedial Design document will not be prepared.

1.1 SITE LOCATION AND DESCRIPTION

The Site is located in Bronx Borough, City of New York, and comprises Bronx tax lot parcel Block 2291, 101 ("Zoning Lot"), with addresses of 472 Willis Avenue. The Site is the 0.23-acre southern portion of current Zoning Lot 1, which will be apportioned to new Lot 101, with 100 feet of frontage on the east side of Willis Avenue and 100 feet of frontage on the northern side of East 146th Street. A Site Location Map, indicating the BCP Site boundary, is provided as Figure 1 (all figures are provided in Appendix A).

The Site is fully occupied by a vacant one-story building containing three commercial spaces (fronting Willis Avenue) and a former New York City Housing Authority (NYCHA) maintenance garage (fronting East 146th Street). The NYCHA maintenance garage section of the building is "L-shaped", sloping downwards from sidewalk grade to the north (to a final depth of approximately 9 feet below sidewalk grade [bsg]) and then extending to the west. Basement floors below the commercial spaces are at the approximate same elevation as the garage.

1.2 DESCRIPTION OF SURROUNDING PROPERTY

The BCP Site is bounded by 146th Street to the south, Lot 1 to the north, Lots 32 & 12 to the east, and Willis Avenue to the West. The surrounding neighborhood is a well-developed urban area comprised primarily of residential and commercial properties, with some community uses and open space/parkland. Figure 2 shows the surrounding land usage.

1.3 CONTEMPLATED REDEVELOPMENT PLAN

The Remedial Action to be performed under the RAWP is intended to make the Site protective of human health and the environment consistent with the contemplated end use. The redevelopment plan and end use is described here to provide the basis for this assessment; the Remedial Action contemplated under this RAWP, however, may be implemented independent of the proposed redevelopment plan.

Development plans for the Site (see Figure 3 and Appendix C) include the demolition of the existing on-site structure and construction of a new 15-story residential structure with a building footprint of approximately 10,000 square feet (comprising the entirety of the BCP Site). The proposed structure will provide affordable housing (approximately 101 dwelling units on floors 2 to 15), street-level commercial spaces, and a cellar containing utilities, residential laundry and storage. The proposed use is not consistent with existing zoning and under current plans the site will be rezoned from R6 with C1-4

overlay to R7X (MIH) with a C2-4 commercial overlay. The proposed use is will be consistent with the proposed rezoning of the property. Figure 3 shows a layout of the initial proposed site development.

The entire Site will require soil excavation/removal to a final depth of approximately 12 feet bsg, above the expected groundwater table. Groundwater has been documented at a depth between approximately 13 feet below existing grades (groundwater elevations of approximately 13.5 to 16 feet bsg (4.5 to 7 feet below the slab, elevation 10.25 to 7.25 feet msl). It is anticipated that the excavated material may be comprised of up to three waste streams: urban fill; any encountered petroleum contaminated soil (or soil exhibiting nuisance petroleum odors) within or below the development excavation area; and, uncontaminated soil located beneath the fill layer. Figure 4 shows a Soil Excavation Plan.

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The RI was conducted between October and November 2016. The RI Report, inclusive of data from earlier Phase II and supplemental investigations performed between May 2015 and February 2016, was submitted to NYSDEC in February 2019.

2.1 SUMMARY OF REMEDIAL INVESTIGATIONS PERFORMED

The following environmental work plans and reports (provided as attachments to the BCP application) were developed for the Site:

- Phase II Investigation Work Plan (December 12, 2017), prepared by WCD Group (WCD) and approved by the New York City Department of Environmental Protection (NYCDEP)
- Remedial Investigation Report, February 2019, prepared by WCD

The following work was performed during the RI:

1. Conducted a Site inspection to identify Areas of Concern and physical obstructions (a previous geophysical survey was performed by others prior to the RI);
2. Collected samples of soil (10 samples from 5 soil borings, from multiple depths), groundwater (4 samples from permanent groundwater monitoring wells, 1 located on-site and 3 located at off-site locations) and soil vapor (3 samples from 3 temporary soil vapor probes);

3. Recorded depth to groundwater measurements at the wells to determine static groundwater elevations and to establish groundwater flow direction; and,

4. Submitted soil and groundwater samples for laboratory analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Target Analyte List (TAL) metals, pesticides and polychlorinated biphenyls (PCBs), and soil vapor samples for VOCs, in accordance with the approve NYCDEP Work Plan (laboratory reports for organic compounds included all Target Compound List TCL analytes, as per NYSDEC DER-10 requirements).

2.2 SIGNIFICANT THREAT

The NYSDEC and NYSDOH will determine if this Site poses a significant threat to human health and the environment and provide notice of that determination for public review. It is anticipated that these agencies will determine that no significant threats exist.

2.3 SITE HISTORY

A Phase I Environmental Site Assessment (ESA) of the Site issued in June 2017 (AKRF, Inc.) documented historical automotive repair facilities at 472 and 474 Willis Avenue, and manufacturing and/or equipment servicing facilities at 402 East 147th Street (a historical address associated with the Site). Relevant historical uses identified at nearby areas included automotive, dry cleaning, and manufacturing facilities. An open NYSDEC spill file (No. 9813188) was identified for the Site, potentially related to two on-site waste oil underground storage tanks (USTs) and/or a subgrade vault/drywell (framed with railroad ties) into which waste oil was discharged. Subsequent inspections have documented chemical storage in the NYCHA garage and evidence of an ongoing leak near on-site machinery.

A Limited Phase II ESA issued in Dec 2017 (American Environmental Assessment & Solutions, Inc.; AEAS) documented an investigation of potential impacts associated with spill number 9813188. No anomalies indicative of underground tanks or buried objects were encountered during a ground penetrating radar (GPR) survey of the Site. Three soil borings were extended through the basement portion of the NYCHA garage (northern portion of Site) and were completed as groundwater monitoring wells. Field evidence of contamination (odors, discoloration and elevated instrument readings) was encountered at one location (SB-2, near the northern wall at the center of the garage). Laboratory analysis documented elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) in the impacted soil at 6 to 8 feet

below the slab (in moist to saturated soils), and in groundwater from all borings (potentially from soil fines entering the sampling points). No significant concentrations of volatile organic compounds (VOCs) were detected in soil or groundwater samples.

The RI documented elevated concentrations of SVOCs, metals and pesticides in sub-slab fill soils, indicating the presence of poor quality materials typically encountered in urban settings. Field evidence of low grade petroleum contamination, likely to be associated with open spill number 9813188, was observed in a soil boring extended in the NYCHA garage, in the vicinity of previously encountered petroleum impacts; laboratory data, however, documented an absence of any elevated concentrations of VOCs or SVOCs in impacted soil. Groundwater impacts at the Site were shown to be limited to low-grade metal contamination. Only trace to low-level concentrations of VOCs and SVOCs are present in groundwater (pesticides and PCBs were not detected). Groundwater contamination may reflect local ambient conditions. No significant concentrations of VOCs were reported in soil vapor samples.

2.4 GEOLOGICAL CONDITIONS

Site geological conditions are documented in the RI Report prepared by WCD (February 2019). Geological conditions are summarized as follows:

1. Elevation of the property is 20.83 feet above mean sea level (msl) at the southwest corner and 23.75 feet above msl at the northwest corner. The Site slopes gently downward from northwest to southeast. Overall downward slopes are to the south, toward the Harlem River.
2. Groundwater elevations range from approximately 13’ to 15’ below sidewalk grade (elevation 10.75 – 8.75 feet msl); based on these data, groundwater flow has been determined to flow towards the southwest.
3. Depth to bedrock is 51 to 60 feet below the existing sidewalk grade.
4. Fill materials primarily consisting of silty sand or poorly-graded sand with gravel, with minor amounts of construction debris is present from the surface to ranging from approximately 8.5 to 15 (elevation 15.25 - 8.75 feet msl) feet below the existing sidewalk grade. Fill materials are underlain by glacial soil deposits consisted of sandy silt, silty sand and poorly-graded sand with varying percentages of gravel.

2.5 CONTAMINATION CONDITIONS

2.5.1 Conceptual Model of Site Contamination

The Site has a history of significant commercial use (including automotive repair) and is the location of an active NYSDEC spill event, likely due to the release of waste oil. Urban fill materials containing debris underlie the on-site structure. Elevated concentrations of SVOCs, metals and pesticides are reported in fill materials in the vadose zone, and soils exhibiting overt petroleum impacts (but no or limited laboratory evidence of contamination) are present beneath the floor of the NYCHA garage, extending partially into saturated materials. No significant impacts are present in groundwater, with the exception of low-grade metal contamination. No significant soil vapor impacts have been documented.

These findings indicate localized, low-grade contamination likely to be the result of the presence of poor-quality fill and local groundwater conditions, typical of urban settings. Any impacts from historical site uses appear to be limited and primarily involve petroleum contamination beneath the garage. Existing data suggest that petroleum has naturally attenuated over time and that contaminated soils are likely to primarily exhibit nuisance conditions (findings are not consistent with the presence of a likely significant area of gross contamination). Documented site contaminants are likely to be relatively immobile and do not present a significant risk to off-site properties.

2.5.2 Description of Areas of Concern

Areas of concern include:

- General impacts to soil from historical commercial use of the Site and/or poor-quality urban fill, including elevated concentrations of SVOCs, metals and pesticides; and,
- Petroleum contamination associated with an active spill event at the NYCHA garage.

Based on an evaluation of the environmental data and historical information, disposal of significant amounts of hazardous waste is not suspected at the Site.

2.5.3 Identification of Standards, Criteria and Guidance

The following standards, criteria and guidance (SCG) were referenced during Site Characterizations and Remedial Investigations:

- 6 NYCRR Part 175 – Special Licenses and Permits - Definitions and Uniform Procedures
- 6 NYCRR Part 182 – Endangered & Threatened Species of Fish & Wildlife

- 6 NYCRR Part 371 – Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 375 – Environmental Remediation Programs;
- 6 NYCRR Part 608 – Use and Protection of Waters
- 6 NYCRR Part 661 – Tidal Wetlands – Land Use Regulations
- 6 NYCRR Part 663 – Freshwater Wetlands Maps and Classification
- 6 NYCRR Parts 700-706 – Water Quality Standards
- 29 CFR Part 1910.120 – Hazardous Waste Operations and Emergency Response
- NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation;
- NYSDEC Ambient Water Quality Standards and Guidance Values – TOGS 1.1.1;
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (GESVI)
- NYSDOH Generic Community Air Monitoring Plan
- NYSDEC STARS #1 – Petroleum-Contaminated Soil Guidance Policy
- NYSDEC SPOTS #14 – Site Assessments at Bulk Storage Facilities
- NYSDEC Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites

2.5.4 Soil Vapor Contamination

The State of New York does not have any standards, criteria or guidance values for volatile chemicals in subsurface vapors (either soil vapor or sub-slab vapor); relatively high levels of VOCs in subsurface soil vapor; however, were identified in the RI Report in order to facilitate a discussion of investigative findings, and values for the compounds identified in the NYSDOH GESVI (PCE, trichloroethylene [TCE], 1,1,1-trichloroethane [TCA] and carbon tetrachloride) were noted as warranted.

Trace to low-level concentrations of numerous VOCs, including petroleum compounds and solvents, were detected in all samples. The maximum reported VOC level was for acetone at approximately 20 $\mu g/m^3$. No significant concentrations of VOCs were reported in soil vapor samples. Low levels of VOCs in vapor are not consistent with the presence of a significant contaminant source area at the Site and are similar to levels typically encountered in urban settings. Existing low-grade impacts may be due to historical commercial use of this or other nearby sites, or potentially the presence of fill materials.

Soil vapor data collected prior to the remedy are shown in Table 1 (all tables provided in Appendix B).

2.5.5 Soil/Fill Contamination

Soil/fill samples collected during the RI and earlier Phase II ESA were compared to NYSDEC Part 375-6 UU SCOs (Track 1) and restricted category Restricted-Residential Use (RRU, Track 2) SCOs.

VOCs were not detected in any soil samples at concentrations above RRU SCOs. The only VOC detected at concentrations above UU SCOs was acetone (UU SCO 0.05 ppm), with low-level exceedances reported in B-04 4-6 and B-05 4-6 (peak concentration 0.06 ppm). Trace-level concentrations of several other VOCs were detected in the samples.

Elevated concentrations of SVOCs were detected at sample B-02 0-2, including five compounds above RRU SCOs and two compounds above UU SCOs. Elevated compounds at B-02 0-2 include benzo(a)anthracene (3.8 ppm, RRU SCO 1 ppm), benzo(a)pyrene (3.68 ppm, RRU SCO 1 ppm) and benzo(b)fluoranthene (3.49 ppm, RRU SCO 1 ppm). Numerous other SVOCs were detected in the samples at trace- to low-level concentrations. Note: Previous soil investigation by AEAS documented elevated concentrations of SVOCs (PAHs, only) at 6 to 8 feet below the slab in a boring where petroleum impacts were observed; a RI boring in this area (B-04) did not document any elevated concentrations of SVOCs.

Elevated concentrations of lead above the RRU SCO (400 ppm) were detected in B-01 0-2 (501 ppm) and B-04 4-6 (534 ppm). An elevated concentration of barium was detected above the RRU SCO (400 ppm) in B-04 4-6 (909 ppm). Several other metals were detected above UU SCOs in all samples except B-02 12-14. Elevated concentrations of at least one of the pesticides 4,4'-DDD, 4,4'-DDE, 4,4'-DDT and dieldrin were detected in seven of ten samples above UU SCOs (all values well below RRU SCOs). A low-level of one PCB (Aroclor 1260) was detected in B-04 0-2.

Tables 2 through 5 show exceedances of Track 1 Unrestricted SCOs and Track 2 Restricted-Residential SCOs for all soil/fill at the Site. Figure 5 is a spider map that shows the location and summarizes exceedances of Track 4 RRU SCOs.

2.5.6 Groundwater Contamination

Groundwater samples collected during the RI were compared to Ambient Water Quality Standards and Guidance Values (AWQS) presented in NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1, which are inclusive of groundwater standards specified in NYSDEC 6NYCRR Part 703.5.

No VOCs were detected above AWQS. Low-level concentrations of tetrachloroethylene and trichloroethylene (PCE and TCE, AWQS 5 ppb) were detected in MW-02 through MW-04 (PCE range 2.1 to 3.6 ppb and TCE less than 1 ppb). Low levels (below 1 ppb) of 1,2-dichloroethylene (DCE, both cis and trans isomers, AWQS 5 ppb) were reported in MW-03. Low levels of MTBE, chloroform, tert-butyl alcohol and/or carbon disulfide were detected groundwater. Total VOCs ranged from 0.35 ppb (MW-09) to 9.73 ppb (MW-03).

No SVOCs were detected above AWQS. Low-level concentrations of bis(2-ethylhexyl)phthalate, naphthalene, pentachlorophenol and pyrene were detected at one or more wells at concentrations well below AWQS groundwater. Total SVOCs ranged from 0.8 ppb (MW-09) to 1.3 ppb (MW-02). Previous detections of PAHs in groundwater by AEAS are likely to reflect the presence of soil fines entering temporary well points and are not likely to be representative of dissolved analyte concentrations.

Total metals at concentrations above AWQS were detected in all groundwater samples, as follows (peak concentration noted): sodium (AWQS 20,000 ppb, 443,000 ppb in MW-09), selenium (AWQS 10 ppb, 107 ppb in MW-09), magnesium (AWQS 35,000 ppb, 79,200 ppb in MW-09), and manganese/iron (AWQS 500 ppb, 1,528 ppb in MW-09). All dissolved concentrations for these metals were reported at comparable values. Slightly elevated total concentrations of two other metals were detected in MW-03 (antimony, AWQS 3 ppb, 7 ppb, and cobalt, AWQS 5 ppb, 6 ppb). Slightly elevated concentrations of dissolved antimony were reported in MW-02 (8 ppb) and MW-03 (6 ppb).

Pesticides and PCBs were not detected in any groundwater samples.

Trace 1,4-dioxane (0.34 ppb) was detected at MW-03, and low levels of PFAS were detected in all wells. Total PFOS and PFOA ranged from 50.3 ppt in MW-09 to 174.4 ppt in MW-03.

Tables 8 to 11 show groundwater results, including exceedances of GA groundwater standards in monitor wells prior to the remedy and detected concentrations of 1,4-dioxane and PFAS. Figures 6 and 7 are spider maps that show the location and summarize exceedances of GA groundwater standards prior to the remedy, and detected concentrations of PFAS in groundwater, respectively.

2.6 ENVIRONMENTAL AND PUBLIC HEALTH ASSESSMENTS

2.6.1 Qualitative Human Health Exposure Assessment

An exposure assessment was conducted to qualitatively assess the potential impacts of known environmental contaminants associated with the Site on human health, with attention to all possible exposure pathways (i.e. ingestion, inhalation and direct contact). Both current (existing conditions) and future use (proposed restricted-residential use) scenarios were considered. Contaminants were assessed relative to specific impacted media.

The primary contaminants of concern at the Site are SVOCs, metals and pesticides in fill soils, limited areas of petroleum impacted soils, and metals in groundwater. On-site workers and trespassers present during remediation and/or future development activities are the most likely receptor population.

The following section evaluates the elements associated with exposure pathways, and describes how each of these elements pertains to the Site. For all media, the implementation of a Construction Health and Safety Plan (CHASP) and the Community Air Monitoring Plan (CAMP) will mitigate possible impacts to on-site, off-site and nearby community receptor populations. Any on-site or off-site development activities that involve disturbance, exposure or contact with contaminated soil, soil vapor or groundwater will require monitoring and mitigation plans to address potential direct contact with media, dust generation and contaminant migration.

Soil

Direct contact, ingestion and/or inhalation (of particulate matter) are the primary exposure pathways for contaminated subsurface soils. People can come into contact if they participate in ground-intrusive work at the Site, or are exposed to dust generated during construction activities, which disturb contaminated soil. Within excavation areas, the potential for contact is generally a concern for work conducted within the fill layer, or at depths below the seasonally-high local groundwater elevation.

The potential exists for low-level contamination to remain at on-site areas after remediation and development activities. All potential exposure pathways (direct contact, ingestion or inhalation) will likely be mitigated as subsurface soils would have been remediated and/or access to subsurface soils would be limited by paved areas and building foundations.

Groundwater

Direct contact and/or ingestion are the primary exposure pathways for contaminated groundwater. Impacted groundwater is not being used for drinking water (or any other purposes) at the Site or at off-site areas, as the area is served by the public water supply. No known private wells exist in the vicinity of the Site. People can come into contact if they participate in ground-intrusive work at the Site. The potential for contact is generally a concern for work conducted at depths near or below the seasonally-high local groundwater elevation. Any dissolved contaminants in groundwater downgradient of the Site are anticipated to diminish as a result of Site remediation.

Soil Vapor

Potential exposure pathways include vapor intrusion within any new structures and at off-site properties, and direct contact and/or inhalation of contaminated soil vapor generated during soil excavation or remedial construction. A CAMP would be implemented at the Site (and, as required, at off-site areas) to monitor air quality and minimize potential exposures to vapors for both construction works and the public.

The potential for on-site and off-site exposure to soil vapor is expected to decrease after subsurface soils have been remediated.

2.6.2 Fish & Wildlife Remedial Impact Analysis

The groundwater chemistry and surface water discharge pathway was evaluated. Based on existing data and the long distance to surface water, there are no expected impacts to surface water from contaminants migrating beneath the site.

2.7 INTERIM REMEDIAL ACTION

No Interim Remedial Measures (IRMs) have been performed at the Site.

2.8 REMEDIAL ACTION OBJECTIVES

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

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminated soil.

RAOs for Environmental Protection

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

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Remove the source of ground or surface water contamination.
- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

This section includes a description of the remedial alternatives and provides a comparison and evaluation of the alternatives in terms of required threshold and balancing criteria. As required, a Track 1 Unrestricted Use scenario is evaluated for the remedial action. In comparison, a Track 2 or Track 4 scenario is evaluated.

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 nine criteria and sustainability:

Threshold Criteria

- Protection of human health and the environment;

Balancing Criteria

- 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; and,
- Land use

3.1 SUMMARY OF REMEDIAL ALTERNATIVES

3.1.1 Proposed Remedial Alternatives

Alternative 1 is presented in this RAWP as the alternative whereby the Site meets Track 1 SCOs and consists of the following:

1. Selection of NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) SCOs.
2. 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. Data from soil borings suggest that fill material is present on the Site from immediately beneath driveways and foundation slabs to approximately 8.5 to 15 bsg. For the purpose of this alternatives analysis, Alternative 1 (meeting Track 1 SCOs) is defined by the following actions:
    a. Excavation and disposition of all on-Site material to a depth of approximately 12 feet bsg for Site development, resulting in the removal of an estimated 1,000 – 1,500 cubic yards (inclusive of any encountered USTs, debris and petroleum contaminated soils); and,

b. Additional excavation below the depth planned for Site development in order to remove any grossly contaminated soils (petroleum or other unknown materials), performed in consultation with NYSDEC (the Site will be restored to the elevation necessary for site redevelopment, as needed, through importation of clean material or re-use of acceptable site soils).

3. No Engineering or Institutional Controls (ECs/ICs) are required for a Track 1 cleanup. The concrete slab underlying the proposed new building and a water-proofing membrane would be installed as part of standard building development and are not considered components of the remedy. Additional soil vapor management at this Site may be installed as a precautionary measure, given the urban setting of the Site.

Alternative 2 is presented in this RAWP as the alternative whereby the Site meets either Track 2 or Track 4 SCOs and consists of the following:

1. Selection of NYSDEC 6NYCRR Part 375 Restricted-Residential Use (Track 2 or Track 4 site-specific) SCOs.
2. Excavation and disposition of all on-Site material to a depth of approximately 12 feet bsg for Site development, resulting in the removal of an estimated 1,000 – 1,500 cubic yards (inclusive of any encountered USTs, debris and petroleum contaminated soils). Additional excavation will be conducted below the depth planned for Site development in order to remove any grossly contaminated soils (petroleum or other unknown materials) or soils exceeding Track 4 site-specific RRU SCOs, in consultation with NYSDEC (the Site will be restored to the elevation necessary for site redevelopment through importation of clean material or re-use of acceptable site soils).
3. Documentation of the integrity of remaining Site soils and comparison to Track 2 and Track 4 SCOs. A Track 2 remedy requires the implementation of Institutional Controls and a Track 4 remedy requires the implementation of both Institutional Controls and Engineering Controls.
4. If remaining soils do not obtain Tack 2 SCOs, placement of a composite cover system over the entire Site, in compliance with 6NYCRR Part 375-3.8(e)(4), consisting of the building slab.
5. 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 NYSDEC approval;

6. Establishment of an approved Site Management Plan (SMP) to ensure long-term management of Institutional Controls (and, if required, Engineering Controls for a Track 4 remedy), 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,
7. The property would receive an environmental easement registered with the county clerk memorializing Institutional Controls, any required Engineering Controls, and the SMP.

Based on the extensive excavation required for Site development and the need to remove any grossly contaminated soil associated with the open spill event, both Alternatives are likely to result in the removal of basically the same volumes of soil, and achievement of either Track 1, Track 2, or Track 4 status will be dependent on the results of final confirmatory sampling.

3.1.2 Evaluation of 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 more protective of human health and the environment by removing all soil/fill exceeding Track 1 Unrestricted Use SCOs and petroleum-impacted soil, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contaminants leaching into groundwater from the Site.

Alternative 2 would achieve comparable protections of human health and the environment by excavation and removal of contaminated soils during Site development, as well as any deeper soils to address any additional gross contamination, as in Alternative 1, with the added protections afforded by installation of an Engineering Control (cover system consisting of the building foundation) for a Track 4 remedy and implementing Institutional Controls, including a SMP that would ensure that the cover system remains intact and protective of public health in the future, for both Track 2 and Track 4 remedies.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a CHASP, an approved Soil/Materials Management Plan (SoMP), and CAMP. Potential contact with any contaminated groundwater would be prevented as its use is prohibited by City laws and regulations.

3.1.3 Evaluation of Balancing Criteria

Compliance with Standards, Criteria and Guidance (SCGs)

This evaluation criterion assesses the ability of the alternative for conformance with SCGs that are applicable, relevant and appropriate. Principal SCGs that are applicable, relevant and appropriate for evaluating the alternatives for remediation of this BCP site include the following:

- 29 CFR Part 1910.120 – Hazardous Waste Operations and Emergency Response
- 10 NYCRR Part 67 – Lead
- 6 NYCRR Part 371 – Identification and Listing of Hazardous Wastes (November 1998)
- 6 NYCRR Part 372 – Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (November 1998)
- 6 NYCRR Subpart 374-1 – Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities (November 1998)
- 6 NYCRR Part 375 – 6 NYCRR Part 375 Environmental Remediation Programs Subparts 375-1, 375-3 and 375-6 (December 2006)
- 6 NYCRR Part 376 – Land Disposal Restrictions
- 6 NYCRR Part 608 – Use and Protection of Waters
- 6 NYCRR Parts 700-706 – Water Quality Standards (June 1998)
- 6 NYCRR Part 750-758 – Implementation of NPDES Program in NYS
- 6 NYCRR Part 375-6 Soil Cleanup Objectives
- New York State Groundwater Quality Standards – 6 NYCRR Part 703;
- NYSDEC Ambient Water Quality Standards and Guidance Values – TOGS 1.1.1;
- NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation – May 2010;
- NYSDEC Draft Brownfield Cleanup Program Guide – May 2004;
- NYSDOH Generic Community Air Monitoring Plan
- NYS Waste Transporter Permits – 6 NYCRR Part 364;

- NYS Solid Waste Management Requirements – 6 NYCRR Part 360 and Part 364.
- TAGM 4059 – Making Changes to Selected Remedies (May 1998)
- STARS #1 – Petroleum-Contaminated Soil Guidance Policy
- TAGM 3028 – "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- DER-10, Technical Guidance for Site Investigation and Remediation, May 2010
- DER-23 / Citizen Participation Handbook for Remedial Programs, January 2010
- OSWER Directive 9200.4-17 – Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (November 1997)

Additional regulations and guidance are applicable, relevant, and appropriate to the remedial alternatives and will be complied in connection with implementation of the remedial program; however, the list above is intended to represent the principal SCGs which should be considered in evaluating the remedial alternatives for the BCP site.

Conformance with the appropriate standards for remediation of contaminated soil is an important criterion in evaluating the remedial alternatives for the BCP site. Presently, in New York State 6 NYCRR Part 375 establishes the primary SCGs associated with remediation of contaminated soil at sites which are in the BCP. If proposing remediation pursuant to a Track other than Track 1 (Unrestricted Use), 6 NYCRR Part 375 requires evaluation of at least one remedial alternative pursuant to Track I (Unrestricted Use) and one other alternative developed by the applicant for the proposed use of the BCP site. The proposed remedial alternatives have been prepared in conformance with this requirement.

Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to achieve Track 1 Unrestricted Use SCOs. Alternative 2 would achieve compliance through removal of soil and installation of an Engineering Control (if required by confirmatory sampling) to prevent any soil exposures (composite cover system across the entire site). In addition, Alternative 2 would impose Institutional Controls, including an environmental easement prohibiting any higher use of the Site. Finally, for Alternative 2, a SMP would ensure that any Engineering Controls remained in place and protective for the long term.

For both Alternatives, compliance with SCGs for soil vapor would be achieved by installing a waterproofing membrane system below the new building's basement slab and continuing the waterproofing membrane outside of subgrade foundation walls, as part of site development (no significant vapor contamination has been identified at the Site).

Health and safety measures contained in the CHASP and 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 Alternatives have similar short-term effectiveness during their implementation, as each requires excavation of historical fill and any other contaminated material. Each alternative 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 marginally higher for Alternative 1 if excavation of greater amounts of soil and fill will take place. 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 each remedial alternative is increased truck traffic. Truck traffic would be routed on the most direct course using major thoroughfares where possible and flag persons would be used to protect pedestrians at Site entrances and exits. The number of truck trips required to achieve a Track 1 cleanup (Alternative 1) is not expected to be sustainably greater than the number of such trips required to achieve a Track 2 or Track 4 (Alternative 2) cleanup (this number would be reduced commensurate with the volume of fill material suitable for on-Site reuse). Foe both Alternatives, an estimated 75 truck trips will be required to remove soil for development purposes (includes removal of regulated material).

The potential adverse impact to the community, workers and the environment for each alternative would be minimized through implementation of control plans including a CHASP, a CAMP and a SoMP, during all on-Site soil disturbance activities and would minimize the release of contaminants into the environment. Each alternative provides 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 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 that may be used to manage contaminant residuals that remain at the Site and assessment of containment systems and Institutional Controls that are designed to eliminate exposures to contaminants, and long-term reliability of Engineering Controls.

Alternative 1 would achieve long-term effectiveness and permanence related to on-Site contamination through removal of soil to achieve Track 1 Unrestricted Use SCOs.

Alternative 2 would achieve these goals through removal of soil and installation of an Engineering Control (if required by confirmatory sampling) to prevent any soil exposures (composite cover system across the entire site). For Alternative 2, a SMP would ensure that any engineering controls remained in place and protective for the long term.

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.

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

Alternative 2 would remove a similar volume of contaminated fill and petroleum-impacted soil, and all remaining on-Site soil/fill beneath the new building will be inaccessible beneath a composite cover system.

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 each Alternative 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.

Neither Alternative 1 nor Alternative 2 have meaningful implementability issues.

Cost Effectiveness

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

Alternative 1 could potentially have issues if additional soil removal (beyond that required for development excavations) results in excessive costs for support of excavation and/or dewatering.

Alternative 2 has no meaningful issues (residual contamination that is practically inaccessible due to cost constraints may remain at the Site). Long-term costs for Alternative 2 are higher than Alternative 1 based on the required implementation of a SMP as part of Alternative 2.

Cost estimates for each Remedial Alternative are included as Appendix G.

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 NYS BCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by NYSDEC prior to approval of this plan. The Citizen Participation Plan for the project is provided in Appendix F. Under all 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 the construction of residential and commercial structures, consistent with uses in the neighborhood. All proposed Alternatives are protective of public health and the environment for the planned residential use. The proposed use will be compliant with the property's zoning once the re-zoning application is approved by the Zoning Board. The proposed use 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 an underutilized commercial property and provide a modern mixed-use building. The proposed development would clean up the property and make it safer, create new employment

opportunities, living and commercial space for city residents and associated societal benefits to the community, 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.

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. Each of the alternatives are equally protective of natural resources and cultural resources. Improvements in the current environmental condition of the property achieved by each alternative considered in this plan are consistent with the City's goals for cleanup of contaminated land.

3.2 SELECTION OF THE PREFERRED REMEDY

The preferred remedy for the site is Alternative 1. Data generated during the site investigation support the conclusion that soil removal for Site development, as well as potential additional limited removal beneath the NYCHA garage, have a high probability of removing all soils with analyte concentrations above UU SCOs, thus allowing achievement of a Track 1 remedy. The completion of an effective, acceptable cover system will be achieved during Alternative 1 even though the foundation will not technically be considered an Engineering Control, and the potential for vapor intrusion is reduced as a result of the installation of a vapor barrier (as part of Site development).

If confirmatory sampling indicates an inability to practically meet UU SCOs, the implementation of Alternative 2 is readily accomplished, since the only additional work is essentially administrative (imposition of use restriction through recording of an environmental easement registered with the county clerk memorializing institutional controls, and implementation of a SMP).

Both Alternatives are considered protective of the health of both construction workers and future Site residents.

The following land use factor evaluation examines whether the selected alternative is acceptable based on the following criteria (below) as required by Article 27, Title 14 of the Environmental Conservation Law 27-1415.

Zoning

The proposed use is not consistent with existing zoning and under current plans the site will be rezoned from R6 with C1-4 overlay to R7X (MIH) with a C2-4 commercial overlay. The implementation of either Alternative and the proposed final use will be consistent with the future rezoning of the property.

Applicable Community Master Plans or Land Use Plans

The implementation of either Alternative is consistent with: current use, and historical and 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; and proximity to real property currently used for residential use, and to commercial, industrial, and recreational areas. The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with both Alternatives. The proposed future use of the Site includes the construction of a fifteen-story mixed-use structure, consistent with existing uses in the neighborhood.

Surrounding Property Uses

The Site is located in an urban area comprised primarily of multi-family residential and commercial properties; the final use and the proposed remedial action are consistent with these surrounding property uses. There are no sensitive receptors within 500 feet of the Site; however, impacts to adjoining/nearby properties during implementation of either Alternative will be minimized through strict adherence to local regulations governing construction activities, and implementation of site-specific plans (see Section 4.1, Governing Documents), including Health and Safety and Community Air Monitoring Plans.

Citizen Participation

This RAWP will be subject to a public review under the NYSDEC BCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by NYSDEC prior to approval of this plan. The Citizen Participation Plan for the project is provided in Appendix F. Observations here will be supplemented by public comment received on the

RAWP. Under Alternative 2, 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.

Environmental Justice Concerns

Implementation of either Alternative would clean up the property and make it safer, create new employment opportunities, living space for future city residents and associated societal benefits to the community, and other economic benefits from land revitalization.

Land Use Designations

The areas surrounding the site are comprised primarily of multi-family residential and commercial properties. The proposed use resulting from the implementation of either Alternative is consistent with these land uses.

Population growth patterns

Implementation of either Alternative and the proposed use is compliant with the property's zoning and is consistent with recent development patterns.

Accessibility to Existing Infrastructure

The site has ready access to city infrastructure including roads, mass transit and public utilities. Implementation of either Alternative is compatible with current and future access and utilization of existing infrastructure.

Proximity to Cultural Resources

The Site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites. Implementation of either Alternative would not negatively impact any important cultural resources.

Proximity to Natural Resources

The Site is located in an urban area and is not in proximity to significant natural resources. Implementation of either Alternative would not result in any potential exposure pathways of contaminant migration affecting fish or wildlife.

Off-Site Groundwater Impacts

Both Alternatives are protective of groundwater natural resources. There are no known uses of groundwater in the vicinity of the Site.

Proximity to Floodplains

The Site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. Implementation of either Alternative would not introduce a receptor sensitive to flooding into an area susceptible to flooding.

Geography and Geology of the Site

Poor quality urban fill is present across the site (the maximum depth of this fill material is at least 15 feet bsg). Fill material is underlain by native sands and silts and bedrock has been measured between 51 to 60 feet. Implementation of either Alternative is consistent with these Site conditions.

Current Institutional Controls

The site is not currently encumbered with any institutional controls.

Sustainability of the Remedial Action

Planned Site construction would not result in significantly higher energy usage than would be incurred by construction conducted in non-contaminated sites. The remedial plan (applicable to either Alternative) would take into consideration the shortest trucking routes during off-site disposal of historical fill and other soils, which would reduce greenhouse gas emissions and conserve energy used to fuel trucks.

3.3 SUMMARY OF SELECTED REMEDIAL ACTIONS

The proposed plan achieves all of the remedial action goals established for the project. The proposed remedial action is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants and uses standard methods that are well established in the industry.

The proposed remedial action will consist of:

1. Performance of all required NYS BCP Citizen Participation activities according to an approved Citizen Participation Plan.

2. Implementation of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Selection of Track 1 Unrestricted Use SCOs for the protection of public health.
4. Site preparation including setup of Site security, 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 the disposal facility.
6. Removal of any underground storage tanks encountered during demolition of the on-site structure in compliance with applicable local, State and Federal laws and regulations.
7. Removal of all soil/fill consistent with the development plan, and any additional petroleum-contaminated or unknown impacted soils at other areas. Excavation for Site development will be conducted over the entirety of the BCP Site to an approximate depth of 12 feet bsg, removing fill and extending into native soils. Current calculations estimate that the excavation area necessary for Site development will generate 1,000 – 1,500 cubic yards of soil for off-site disposal.
8. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID, and appropriate on-site segregation as needed.
9. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
10. Transportation and off-Site disposal of all soil/fill material (including debris and/or petroleum-impacted soil) 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. Closure of the active spill file (No. 9813188) in accordance with NYSDEC requirements. Any petroleum impacted soil located deeper than 12 feet bsg, which are considered by NYSDEC to be grossly contaminated, will be excavated and disposed off-site. In the event that such material is

practically inaccessible, NYSDEC will provide guidance as to appropriate response actions (e.g., use of in situ chemical oxidation treatment).

12. Import of any necessary materials to be used for backfill, in compliance with this plan and in accordance with applicable laws and regulations.
13. Installation of a Waterproofing Membrane with a minimum 20 mil thickness under the entire building slab and behind sub-grade sidewalls. All membrane seams and penetrations will be sealed according to the manufacturer's recommendations and instructions.
14. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of any pretreatment requirements, in compliance with applicable laws and regulations.
15. Dewatering in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal, or will discharged to the local wastewater system incompliance with any and all municipal requirements, including pre-treatment if warranted.
16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
17. Submission of a Final Engineering Report (FER) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries and lists any changes from this RAWP.

4.0 REMEDIAL ACTION PROGRAM

4.1 GOVERNING DOCUMENTS

All remedial work performed under this plan will be in full compliance with the governing documents described in this section of the RAWP.

4.1.1 Construction Health & Safety Plan (CHASP)

All remedial work performed under this plan will be in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA.

The Volunteer and associated parties preparing the remedial documents submitted to the State and those performing the construction work, are completely responsible for the preparation of an appropriate Health and Safety Plan and for the appropriate performance of work according to that plan and applicable laws.

The CHASP and requirements defined in this Remedial Action Work Plan pertain to all remedial and invasive work performed at the Site until the issuance of a Certificate of Completion. A copy of the CHASP is provided as Appendix D.

The site-specific CHASP will be reviewed with Site personnel and appropriate sub-contractors prior to the initiation of fieldwork. All proposed work will be performed in "Level D" personal protective equipment unless field condition warrant additional protection.

The Site Safety Coordinator will be Richard Hooker of Gallagher Bassett Technical Services (GBTS) unless otherwise specified (and approved by) the NYSDEC. A resume will be provided to NYSDEC prior to the start of remedial construction.

Confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gasses. Potential confined spaces on this project include utility trenches and other excavation areas.

4.1.2 Quality Assurance Project Plan (QAPP)

A QAPP, detailing procedures necessary to generate data of sufficient quality and quantity to represent successful performance of the Remedial Action at the Site, is provided as Appendix I. The QAPP includes a Sampling and Analysis Plan (SAP), detailing sampling and analysis of all media (endpoint samples, waste characterization samples, fill and soil cover samples, etc.), and which identifies methods for sample collection and handling.

4.1.3 Soil/Materials Management Plan (SoMP)

All soil removal will follow the SoMP plan as specified in Section 5.4, below. The SoMP includes detailed plans for managing all soils/materials that are disturbed at the Site, including excavation, handling, storage, transport and disposal, and includes all controls that will be applied to these efforts to assure effective, nuisance-free performance in compliance with all applicable Federal, State and local laws and regulations.

All contaminant source removal areas will be surveyed at the completion of excavation. This information will be provided on maps in the FER.

4.1.4 Storm-Water Pollution Prevention Plan (SWPPP)

The Volunteer is responsible for ensuring that a storm water pollution prevention plan (SWPPP) will be prepared for the Site prior to demolition and soil removal activities. The plan will address requirements of New York State Storm-Water Management Regulations including physical methods to control and/or divert surface water flows and to limit the potential for erosion and migration of Site soils, via wind or water, and will accommodate the construction sequencing and staging areas. The erosion and sediment controls will be in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control.

4.1.5 Community Air Monitoring Plan (CAMP)

The NYSDOH Generic CAMP (provided in Appendix J) will be initiated during all ground intrusive activities, and during any other fieldwork that is reasonably likely to generate significant dust or vapors from known or suspected contaminated soils. 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. The implementation of the CAMP will document the presence or absence of VOCs and dust in the air surrounding the work zone, which may migrate off-site due to fieldwork activities. This plan provides guidance on the need for implementing more stringent dust and emission controls based on air quality data.

Mitigation measures may include reducing the surface area of contaminated soil being disturbed at one time, watering exposed soils to reduce fugitive dust and odors, or stopping excavation activities. Dust suppression activities will be conducted during construction activities that will disturb on-site soils and may include misting, reduction in soil movement, or cessation of excavation.

Real-time air monitoring for VOCs and particulate levels at the perimeter of the exclusion zone or work area will be performed. Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be

performed during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence. Exceedances of action levels observed during performance of the CAMP will be reported to the NYSDEC Project Manager and included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

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 shut down.

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

Particulate Monitoring, Response Levels, and Actions

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

If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/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/m^3 of the upwind level and in preventing visible dust migration.

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

4.1.6 Contractors Site Operations Plan (SOP)

The Remedial Engineer has reviewed all plans and submittals for this remedial project (including those listed above and contractor and sub-contractor document submittals) and confirms that they are in compliance with this RAWP. The Remedial Engineer is responsible to ensure that all later document submittals for this remedial project, including contractor and sub-contractor document submittals, are in compliance with this RAWP. All remedial documents will be submitted to NYSDEC and NYSDOH in a timely manner and prior to the start of work.

4.1.7 Citizen Participation Plan

A Citizen Participation Plan, including an overview of the BCP program, background of the Site, a summary of the investigative findings for the Site, and citizen participation activities is provided in Appendix F.

A certification of mailing will be sent by the Volunteer to the NYSDEC project manager following the distribution of all Fact Sheets and notices that includes: (1) certification that the Fact Sheets were mailed, (2) the date they were mailed; (3) a copy of the Fact Sheet, (4) a list of recipients (contact list); and (5) a statement that the repository was inspected on (specific date) and that it contained all of applicable project documents.

No changes will be made to approved Fact Sheets authorized for release by NYSDEC without written consent of the NYSDEC. No other information, such as brochures and flyers, will be included with the Fact Sheet mailing.

Document repositories have been established at the following locations and contain all applicable project documents:

New York Public Library - Mott Haven
Branch Public library
New York
Call for hours (718) 665-4878

NYSDEC
1 Hunter's Point Plaza
47-40 21st Street
Long Island City, NY 11101-5401
Call in advance: (718) 482-4900

4.2 GENERAL REMEDIAL CONSTRUCTION INFORMATION

4.2.1 Project Organization

Principal personnel who will participate in the remedial action include the Professional Engineer (PE), Ariel Czemerinski, of AMC Engineering PLLC and the Qualified Environmental Professional (QEP), James Blaney NYSDEC will be notified of any change to principal personnel.

Resumes of key personnel involved in the Remedial Action are provided in Appendix H.

4.2.2 Remedial Engineer and Qualified Environmental Professional

Remedial Engineer

The Remedial Engineer for this project will be Ariel Czemerinski, of AMC Engineering PLLC. The Remedial Engineer is a registered professional engineer licensed by the State of New York. The Remedial Engineer will have primary direct responsibility for implementation of the remedial program for the Betances Houses VI Site (NYSDEC Site No. TBD). The Remedial Engineer will certify in the FER that the remedial activities were observed by qualified environmental professionals under her supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with that Plan. Other Remedial Engineer certification requirements are listed later in this RAWP.

The Remedial Engineer will coordinate the work of other contractors and subcontractors involved in all aspects of remedial construction, including soil excavation, stockpiling, characterization, removal and disposal, air monitoring, emergency spill response services, import of back fill material, and management of waste transport and disposal. The Remedial Engineer will be responsible for all appropriate communication with NYSDEC and NYSDOH.

The Remedial Engineer will review all pre-remedial plans submitted by contractors for compliance with this Remedial Action Work Plan and will certify compliance in the FER.

The Remedial Engineer will provide the certifications listed in Section 11.2 in the FER.

Qualified Environmental Professional

The Qualified Environmental Professional (QEP) for this project will be James Blaney. The QEP will oversee environmental remedial activities on the Site, document the proper removal of contaminated soils, collect waste characterization as well as site integrity samples, inspect and certify the proper importation of approval fill soils, and assist the Remedial Engineer in the preparation of documents including the FER, the SMP, and periodic status reports.

4.2.3 Remedial Action Construction Schedule

A schedule for performance of the remedial work is provided in Section 10.

4.2.4 Work Hours

The hours for operation of remedial construction will be from 7 a.m. to 5 p.m. These hours conform to NYCDOB construction code requirements or according to specific variances issued by that agency. NYSDEC will be notified by the Volunteer of any variances issued by the City. No remedial work will be conducted on the weekend (Saturday or Sunday) unless expressly permitted by NYSDEC. NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

The Site will be secured at a minimum with a six-foot fence and locking gates to protect the public during all construction activities.

4.2.6 Traffic Control

Traffic control will be provided by the contractor during equipment entrance and egress from the Site. Trucks will follow the approved truck route in Section 5.4.4. 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 south on Willis Avenue to I-87.

4.2.7 Contingency Plan

If unknown conditions are encountered on-site during sub-grade removal (e.g., discovery of a previously unidentified UST), the Contingency Plan (provided in Section 5.5) and all applicable NYSDEC guidelines will be followed to address the condition(s).

4.2.8 Worker Training and Monitoring

The Volunteer is responsible for insuring that all Site contractors provide their workers with applicable training (i.e. HAZWOPER, site safety training and medical monitoring, as necessary).

4.2.9 Agency Approvals

The Volunteer has addressed all SEQRA requirements for this Site. All permits or government approvals required for remedial construction have been, or will be, obtained prior to the start of remedial construction. RAWP acceptance by NYSDEC does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

The planned end use for the Site is in conformance with the current zoning for the property as determined by the City of New York. A Certificate of Completion will not be issued for the project unless conformance with zoning designation is demonstrated.

4.2.10 Pre-Construction Meeting with NYSDEC

A pre-construction meeting among NYSDEC, the Volunteer, the RE and QEP, and the General Contractor will take place prior to the start of remedial construction activities.

4.2.11 Emergency Contact Information

An emergency contact list with names and telephone numbers that will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency is provided below.

Table: Emergency Contact Information

Emergency Agencies	Phone Numbers
EMERGENCY	**911**
Bronx-Lebanon Hospital Center 1650 Grand Concourse	(718) 590-1800 or 911
NYC Police Department 48th Precinct 450 Cross Bronx Expressway	(718) 299-3900 or 911
NYC Fire Department	911
City Hall	(212) 788-3000
Main Water and Sewer	(718) 579-6981
Site Engineer, Ariel Czemerinski (PE), AMC	(516) 417-8588
Site Health and Safety Officer, Richard Hooker, GBTS	(845) 452-1658

4.2.12 Remedial Action Costs

The total estimated cost of the Remedial Action is $1,693,500. An itemized and detailed summary of estimated costs for all remedial activity is provided in Appendix G. This will be revised based on actual costs and submitted as an Appendix to the FER.

4.3 SITE PREPARATION

4.3.1 Agency Notification and Mobilization

Notifications

The NYSDEC will be notified in writing at least five (5) business days prior to the initiation of any of the on-site work and during the course of the fieldwork. Changes to fieldwork scheduling will be provided via facsimile transmission and/or email. All applicable local agencies will also be notified prior to the initiation of site work. NYSDEC will have the opportunity to participate in all remediation project status meetings (adequate notice of these meetings will be provided).

Prior to the implementation of any ground intrusive activities, a request for a complete utility mark-out of the subject property will be submitted as required by New York State Department of Labor regulations. Confirmation of underground utility locations will be secured, and a field check of the utility mark-out will be conducted prior to the initiation of work. Any utilities on the Site will be protected (as necessary) by the contractor or Volunteer.

Site 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. Site mobilization will be conducted in a manner such that erosion and sedimentation control, utility marker and easement layout, and other site preparation tasks are fully instituted before construction begins.

4.3.2 Erosion and Sedimentation Controls

This section describes preventative measures that will be taken to protect the Site from soil erosion and sedimentation during remedial activities. A final ESCP, reflecting final Site development plans and any

approved modifications to the scope of remedial work, will be submitted to the NYSDEC for review and approval prior to the start of construction activities.

The final ESCP will include the following elements:

- A location map including the proximity of the Site to relevant off-site features;
- An Existing Conditions Site Plan;
- A grading plan and construction timetable including finished elevations and addressing the sequencing of the project; and,
- The location and type of all erosion and sediment control measures (e.g., silt fence, hay bale checks, stabilized construction entrance, etc.) and sequencing of the measures, if needed.

The remediation will occur in such a way as to permit on-site stormwater to remain on the Site.

4.3.3 Stabilized Construction Entrance(s)

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

4.3.4 Utility Marker and Easements Layout

The Volunteer and its contractors are solely responsible for the identification of utilities that might be affected by work under the RAWP and implementation of all required, appropriate, or necessary health and safety measures during performance of work under this RAWP. The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this RAWP. The Volunteer and its contractors must obtain any local, State or Federal permits or approvals pertinent to such work that may be required to perform work under this RAWP. Approval of this RAWP by NYSDEC does not constitute satisfaction of these requirements.

The presence of utilities and easements on the Site has been investigated by the Remedial Engineer. It has been determined that no risk or impediment to the planned work under this Remedial Action Work Plan is posed by utilities or easements on the Site.

4.3.5 Sheeting and Shoring

Appropriate management of structural stability of on-Site or off-Site structures during on-Site activities including excavation is the sole responsibility of the Volunteer and its contractors. The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan. The Volunteer and its contractors must obtain any local, State or Federal permits or approvals that may be required to perform work under this Plan. Further, the Volunteer and its contractors are solely responsible for the implementation of all required, appropriate, or necessary health and safety measures during performance of work under the approved Plan.

4.3.6 Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations. Specific Site areas will be designated for the staging of equipment and materials. Staging areas will be located and managed such that: a) non-contaminated materials do not contact or become intermixed with contaminated materials; and, b) the likelihood of worker and/or visitor exposures to contaminated media is minimized.

4.3.7 Decontamination Area

Decontamination of field equipment will be conducted to prevent Site cross-contamination, minimize the potential for off-site contamination and to reduce exposures to contaminated media. All decontamination activities will be documented in field logbooks.

Trucks and other heavy equipment remaining on-site will be brushed to remove easily accessible gross accumulations of soil at the end of each work day, and prior to moving between excavation areas or moving toward the Site exit. A dedicated decontamination area will be provided as part of the erosion and sedimentation control for vehicles exiting the Site, and will be designed such that there is continuity between the equipment wash area and the clean egress path. Heavy equipment will be brushed and sprayed with high-pressure water and/or steam to remove soil adhering to surfaces (including wheels and vehicle undercarriages), prior to exiting the Site.

Any non-disposable sampling equipment or personal protective equipment requiring decontamination will be conducted on a decontamination line setup on plastic sheeting, proceeding from dirty to clean. All items (disassembled as needed) will be washed/brushed thoroughly in an Alconox (or similar) solution, then rinsed with clean water (and/or nitric acid and methanol, as appropriate) per established

USEPA decontamination protocols. All down-hole gauging and pumping equipment will be allowed to run fully submerged in both soapy and clean water. Rinse blanks will be collected as per the requirements of the QAPP.

All decontamination stations will be placed in areas that will subsequently be covered by a barrier layer (likely to consist of both buildings/pavement and/or imported clean soil); no decontamination activities will occur in areas where soil meets RRUSCOs and is not subject to an engineering control. Equipment known or suspected to be impacted by petroleum or solvent contamination, grossly contaminated media or materials subject to conditions specified in the Contingency Plan (Section 5.5), will be decontaminated on an engineered pad designed to capture and contain wash water, which will be containerized and characterized prior to off-site disposal at a permitted facility. Based on known contaminant conditions, decontamination rinse water generated during other decontamination activities will be allowed to infiltrate into on-site soils, either directly to the surface (for minor quantities of water that are not likely to exhibit sheet flow) or to the subsurface via engineered discharge pits.

4.3.8 Site Fencing

Site fencing (6 feet in height minimum with a locking gate) will be installed as part of Site preparation, as necessary.

4.3.9 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.

4.3.10 Well Decommissioning

Any existing monitoring wells located within construction areas or otherwise associated with the Site will be properly decommissioned according to technical guidance provided in NYSDEC CP-43: Groundwater Monitoring Well Decommissioning Policy. The monitoring well casing will be exposed to a depth corresponding to the depth of planned excavation in the immediate vicinity of the well, the exposed casing will be cut off at the level of the excavation floor and the remaining subsurface portion of the casing will be grouted in-place, as per CP-43 Section 6.0.

4.4 REPORTING

All daily and monthly Reports will be included in the FER.

4.4.1 Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers by the end of each day following the reporting period and will include:

- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the Site;
- References to alpha-numeric map for Site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP finding, including excursions; and,
- An explanation of notable Site conditions.

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

Daily Reports will include a description of daily activities keyed to an alpha-numeric map for the Site that identifies work areas. These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and all complaints received from the public.

Figure 8 shows a predefined alpha-numeric grid for use in identifying locations described in reports submitted to NYSDEC.

The NYSDEC assigned project number will appear on all reports.

4.4.2 Monthly Reports

Monthly reports prepared in accordance with DER-10 Section 5.7(b) will be submitted to NYSDEC and NYSDOH Project Managers within one week following the end of the month of the reporting period and will include, at a minimum:

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

4.4.3 Other Reporting

Photographs will be taken of all remedial activities and submitted to NYSDEC in digital (JPEG) format. Photos will illustrate all remedial program elements and will be of acceptable quality. Representative photos of the Site prior to any Remedial Actions will be provided. Representative photos will be provided of each contaminant source, source area and Site structures before, during and after remediation. Photos will be included in the daily reports as needed, and a comprehensive collection of photos will be included in the FER.

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

4.4.4 Complaint Management Plan

All complaints from citizens will be promptly reported to NYSDEC. Complaints will be addressed and outcomes will also be reported to NYSDEC in daily reports. Notices to NYSDEC will include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems. Any complaints from the public regarding nuisances or other Site conditions will be handled as follows:

- Information from the person making the complaint (name, phone number, address, etc.) will be obtained, if possible, so follow-up can be completed.
- The nature of the complaint, date, time, and weather conditions will be noted.
- The complaint will be addressed by on-site personnel.
- The person logging the complaint will be re-contacted (if contact information was provided), so that the resolution of the complaint can be documented.
- In the event that the complaint cannot be resolved, the NYSDEC project manager will be contacted in writing.

4.4.5 Deviations from the Remedial Action Work Plan

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

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

Notification will be provided to the NYSDEC by telephone for conditions requiring immediate action (e.g., conditions judged to be a danger to on-site personnel or the surrounding community).

5.0 DETAILS OF PROPOSED REMEDIAL ACTIONS

5.1 SOIL REMOVAL ACTIVITIES

5.1.1 Estimated Volume of Regulated Materials to Be Removed

Figure 4 (Soil Excavation Plan) provides an overview of proposed soil excavation activities. Based on the variable depths of anticipated excavation, it is estimated that 1,000 – 1,500 cubic yards[1] of soil (inclusive of urban fill and any petroleum contaminated soils) will be excavated at this Site for site development purposes.

There is a potential for some of the on-site soils to be of sufficient integrity and acceptable quality meeting UUSCO to permit reuse as fill material to replace the void created by any required additional excavations. The volume of Site material anticipated to be re-used has not be determined at this time. No site materials will be re-used without approval by the NYSDEC and no on-site fill material will be used to regrade areas below the static water level.

5.1.2 Soil Clean-up Objectives

The Soil Cleanup Objectives for this Site are Unrestricted Use SCOs. Should a Track 1 Unrestricted Use remedy not be achieved (based on final confirmatory sampling), Restricted-Residential Use SCOs will be utilized, with the following Track 4 site-specific SCOs, applicable to all remaining soils are:

Total SVOCs	100 ppm
Total VOCs	10 ppm
Lead	1,000 ppm
Barium	1,000 ppm

Soil and materials management will be conducted in accordance with the Soil Management Plan as described below.

Tables 2 through 5 show exceedances of Track 1 Unrestricted SCOs and Track 2 Restricted Residential SCOs for all soil/fill at the Site. Figure 5 is a spider map that show the location and summarize exceedances of RRU SCOs.

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[1] Total based on removal of: 2 feet of soil beneath the existing slab (approximately 750 cy); all soil beneath the existing ramp to the basement area (250 to 450 cy), and a contingency for removal of an additional volume of soil potentially related to the spill event.

5.1.3 Removal of Petroleum-Impacted Soil

An active spill event has been identified on the garage portion of the Site. Following removal for Site development, additional removal will be determined in the field, based on field observations, PID readings and results of post-excavation samples. Excavation will cease when soils are encountered with no field evidence of contamination (e.g., staining or petroleum odor) and when head-space analyses of the soil document consistent PID readings less than 10 ppm. At that point, post-excavation samples will be collected.

5.2 REMEDIAL PERFORMANCE EVALUATION

The following post-excavation endpoint sampling procedures will be followed at both spill site areas. All resulting data will be compared to the Track 4 SCOs presented in Section 5.1.2 above.

5.2.1 End-Point Sampling Frequency

At a minimum, one discreet soil sample will be collected from each 30 feet of wall (minimum of one sample per wall), unless the excavation goes to the property line. One discreet sample will be collected from every 900 square feet of floor (minimum of one sample per floor) in spill site excavation areas. Figure 9 shows endpoint sample locations.

All samples will be analyzed for TCL VOCs and TCL SVOCs. A subset of the confirmatory endpoint samples collected at each excavation area will be analyzed for full list parameters (TCL VOCs, TCL SVOCs, pesticides/PCBs and TAL metals); the number of such samples will be determined in consultation with the NYSDEC Project Manager.

5.2.2 Methodology

Underlying and surrounding soils will be visually inspected and screened with the PID after the removal of all soils necessary for construction.

Soil samples will be collected using dedicated, disposable plastic trowels and latex gloves. Samples will be place in pre-cleaned jars provided by the laboratory. After sample collection, the sample containers will be placed in a cooler and then transported to a NYSDOH-certified laboratory within 48 hours of collection for analysis. Appropriate chain of custody procedures will be followed.

5.2.3 Reporting of Results

All data will be provided to the NYSDEC within 72 hours of receipt. Any recommendations for additional testing will be reviewed with the NYSDEC prior to commencing this fieldwork.

5.2.4 QA/QC

Quality Assurance / Quality Control protocols are fully specified in the QAPP (Appendix I). QA/QC methodology includes the following:

- One duplicate sample for every 20 samples collected will be submitted to the approved laboratory for analysis of the same parameters.
- Collected endpoint samples will be appropriately packaged, placed in coolers and transferred under proper Chain of Custody to the analytical laboratory. 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-packs" to maintain a temperature of 4^{o} C.
- Dedicated disposable sampling materials will be used for the collection endpoint samples, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1 for every eight samples collected.

5.2.5 DUSR

Complete laboratory data packages will be provided to an independent, third-party data validator. A summary of the findings in the Data Usability Summary Reports (DUSRs) will be provided in the FER.

5.2.6 Reporting of End-Point Data in FER

Chemical analysis of end-point and contingency samples will be conducted by a NYSDOH ELAP certified laboratory. The FER will provide all end-point sample results and exceedances of SCOs.

5.3 ESTIMATED MATERIAL REMOVAL QUANTITIES

The estimated quantity of soil/fill to be removed from the Site is 1,000 – 1,500 cubic yards. This volume is comprised of urban fill soils, spill site soils and uncontaminated native soils. Additional soil may be removed based on encountered Site conditions. Some portion of the excavated soils may be reused on site if such material is approved for re-use by the NYSDEC (no spill site soils will be reused).

5.4 SOIL/MATERIALS MANAGEMENT PLAN

5.4.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed by a qualified environmental professional or experienced field geologist under the direction of the Remedial Engineer during all remedial and development excavations into known or potentially contaminated material. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during the remedy and during development phase, such as excavations for foundations and utility work, prior to issuance of the COC.

Grossly contaminated soil will be identified by the presence of: non-aqueous phase liquids (NAPL); visual indications of staining, discoloration or the presence of other obvious signs of contamination; noticeable odors associated with petroleum, solvents or other chemicals; and/or elevated PID readings compared to background levels.

Soil screening will be used to establish temporary excavation end-points by: 1) establishing the absence of soil exhibiting significant field evidence of contamination (grossly contaminated media) or debris materials likely to be associated with contaminants of concern (e.g., urban fill); and, 2) identifying the presence of non-disturbed native soils. The use of direct-reading hand-held screening devices (e.g., PID) will be employed, as appropriate, to determine likely excavation boundaries; final endpoints, however, will only be established through laboratory analysis of confirmatory samples.

All primary contaminant sources (including but not limited to tanks and known petroleum spill sites) identified during Site Characterization, Remedial Investigation, and Remedial Action will be surveyed by a surveyor licensed to practice in the State of New York. This information will be provided on maps in the FER.

Screening will be performed by qualified environmental professionals. Resumes will be provided for all personnel responsible for field screening (i.e. those representing the Remedial Engineer) of invasive work for unknown contaminant sources during remediation and development work.

5.4.2 Stockpile Methods

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 and will be located in areas not subject to flooding or excessive sheet flow during storm events. Material to be

stockpiled will be placed within an area designed and constructed to contain the materials from all sides and prevent runoff and dispersion. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible.

Excavated soil from known and suspected areas of contamination (petroleum spill areas, 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. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting. Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected daily. Results of inspections will be recorded in a logbook maintained at the Site and available for inspection by NYSDEC.

Soil stockpiles will be continuously encircled with silt fences. Hay bales (or equivalent) will be used as needed near catch basins, surface waters and other discharge points.

Water will be available on-site at suitable supply and pressure for use in dust control.

5.4.3 Materials Excavation and Load Out

The Remedial Engineer or a qualified environmental professional under his/her supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the Site has been investigated by the Remedial Engineer. It has been determined that no risk or impediment to the planned work under this Remedial Action Work Plan is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

Vehicles leaving the Site will not be overloaded. The Remedial Engineer's representative will make reasonable efforts to ensure that vehicles are not loaded beyond their NYSDOT weight rating and that all material is secured beneath a tight fitting cover.

A truck wash will be operated on-Site. The Remedial Engineer will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the remedial construction is complete.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site sediment tracking.

The Remedial Engineer will be responsible for ensuring that all egress points for truck and equipment transport from the Site will be clean of dirt and other materials derived from the Site during Site remediation and development. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site -derived materials.

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

The Remedial Engineer will ensure that Site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this Remedial Action Work Plan.

Each spill area or other significant site condition to be remediated (e.g., unknown USTs) will be removed and end-point remedial performance sampling completed before excavations related to Site development commence proximal to the impacted area.

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

Mechanical processing of historical fill and contaminated soil on-Site is prohibited.

5.4.4 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Truck transport routes are as follows: south on Willis Avenue to I-87. All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes.

Figure 10 shows proposed in-bound and out-bound truck routes to the Site. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting 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; and (g) community input.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.

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

Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used. All trucks will be washed prior to leaving the Site. Truck wash waters will be collected and disposed of off-Site in an appropriate manner.

5.4.5 Materials Disposal Off-Site

Waste disposal locations, to be established at a later date, will be reported to the NYSDEC Project Manager prior to the start of remedial excavation. A sample Non-Hazardous Soil Disposal manifest is provided in Appendix E. The total quantity of material expected to be disposed off-Site is anticipated to be approximately 1,000 – 1,500 cubic yards. It is anticipated that the excavated material will be comprised of urban fill soils, spill site soils and uncontaminated native soils. Additional soil may be removed based on encountered Site conditions. Several separate disposal facilities may be secured (as warranted), based on the expected composition of known contaminated soils. Information from the disposal facilities will be sent to the NYSDEC before the initiation of soil removal at the Site.

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-Site management of materials from this Site is prohibited without formal NYSDEC approval.

Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility). No material potentially falling into this category is anticipated on this project.

The following documentation will be obtained and reported by the Remedial Engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter from the Remedial Engineer or BCP Volunteer to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed is contaminated material generated at an environmental remediation Site in New York State. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported (including Site Characterization data); and (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the FER.

Non-hazardous historical fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2

Historical fill and contaminated soils from the Site are prohibited from being disposed at Part 360-16 Registration Facilities (also known as Soil Recycling Facilities).

Soils that are contaminated but non-hazardous and are being removed from the Site are considered by the Division of Materials Management (DMM) in NYSDEC to be Construction and Demolition (C/D) materials with contamination not typical of virgin soils. These soils may be sent to a permitted Part 360 landfill. They may be sent to a permitted C/D processing facility without permit modifications only upon prior notification of NYSDEC Region 3 DMM. This material is prohibited from being sent or redirected to a Part 360-16 Registration Facility. In this case, as dictated by DMM, special procedures will include, at a minimum, a letter to the C/D facility that provides a detailed explanation that the material is derived from a DER remediation Site, that the soil material is contaminated and that it must not be redirected to on-Site or off-Site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported.

The FER will include an accounting of the destination of all material removed from the Site during this Remedial Action, including excavated soil, contaminated soil, historical fill, solid waste, and hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. This information will also be presented in a tabular form in the FER.

Bill of Lading system or equivalent will be used for off-Site movement of non-hazardous wastes and contaminated soils. This information will be reported in the FER.

Hazardous wastes derived from on-Site will be stored, transported, and disposed of in full compliance with applicable local, State, and Federal regulations.

Appropriately licensed haulers will be used for material removed from this Site and will be in full compliance with all applicable local, State and Federal regulations.

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

5.4.6 Materials Reuse On-Site

Soil and fill that is derived from the property that meets Track 1 UUSCOs established in this plan may be reused on-Site (Track 1 Soil Cleanup Objectives are provided in the QAPP, Appendix I). “Reuse on-Site” means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to Engineering Controls. The Remedial Engineer will ensure that procedures defined for materials reuse in this RAWP are followed and that unacceptable material will not remain on-Site. Acceptable demolition material proposed for reuse on-Site, if any, will be sampled for asbestos.

Petroleum-contaminated soils not be reused on-site.

On-site soils and urban fill determined by the NYSDEC to be acceptable for on-site re-use will not be place below the static water level.

Concrete crushing or processing on-Site is prohibited.

Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site is prohibited for reuse on-Site.

Contaminated on-Site material, including historical fill and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. This will be expressed in the final SMP.

5.4.7 Fluids Management

The proposed maximum depths of excavation are above the static water levels in those portions of the Site; therefore, dewatering is not anticipated. Limited dewatering may be required in areas of deeper excavation for remediation purposes (i.e., petroleum spill areas) as well as any deeper excavations for development purposes (e.g., footings). Any dewatering on the Site will be completed consistent with applicable local, State, and Federal regulations rules and regulations.

If any additional laboratory analysis of groundwater documents significant groundwater contamination (as determined in consultation with NYSDEC), or if fieldwork observations of encountered groundwater document any overt signs of contamination (e.g., strong odors, presence of free product, etc.), then dewatered fluids will not be recharged back to the land surface or subsurface of the Site and all dewatering fluids will be managed off-Site.

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. A City permit will be obtained for any liquids discharged into the municipal sewer system.

Discharge of water generated during remedial construction to surface waters (i.e. a local pond, stream or river) is prohibited without a SPDES permit. No such discharge is anticipated for this project.

5.4.8 Demarcation

Demarcation is not required for a Track 1 cleanup. Should a Track 1 cleanup not be achieved, following the completion of soil removal and any other invasive remedial activities and prior to backfilling, the top of any residual soil/fill contaminated above Track 4 SCOs 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 FER; 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 FER. This demarcation will constitute the top of the 'Residuals Management Zone', the zone that requires adherence to special conditions for disturbance of contaminated residual soils defined in the SMP.

Regardless of the cleanup track, a land survey of the excavation limits must be performed by a New York State licensed surveyor must be included in the Final Engineering Report and in the Site Management Plan.

5.4.9 Backfill from Off-Site Sources

The basement slab of the new structure, underlain by a waterproofing membrane, will cover the entire Site; imported gravel and subgrade aggregate, to be placed in these areas, will therefore cover all or most of the Site. In the event that clean soil is imported to the site for construction purposes, the following protocols for the management and handling of such materials are included as a contingency.

The imported uncontaminated, clean soil cover will be from an approved source/facility and will be evaluated by the Remedial Engineer/QEP to ensure that:

- A segregated stockpile is properly maintained at the source and will not be comingled with any other material prior to importing and grading the clean soil material at the Site;
- Material does not include any prohibited material (e.g., solid waste, including construction and demolition material);
- Screening for evidence of contamination by visual, olfactory and PID soil screening practices prior to testing at the source as well as upon importing to the Site for grading is completed; and
- A grab sample (for VOCs) and a maximum five-part composite sample will be collected from the segregated stockpile at the source, with sampling frequency and laboratory analyses conforming to requirements specified in DER-10 5.4(e), including soil analysis for the following parameters:

TCL VOCs by EPA Method 8260C
TCL SVOCs by EPA Method 8270D
TCL Pesticides by EPA Method 8081B
TCL PCBs by EPA Method 8082A
TAL Metals by EPA Method 6010C/7471B

Upon receipt of the segregated stockpile analytical results collected at the source, a Clean Soil Sampling Report will be submitted to DEC for review/approval prior to importing.

The report will include the following:

- Summary of number of samples collected and analyzed, tabulated data and comparison to the selected Site Use SCOs;
- Analytical data sheets and chain of custody documentation;
- Summary of the weight and volume of imported material;
- Photographs from the segregated stockpile at the source with sample point locations identified;
- An affidavit from the source/facility on company letterhead stating that the segregated stockpile of the weight and volume of material to be imported has been properly maintained at the source and complies with the requirements listed above; and
- A copy of source/facility NYSDEC permit.

The following documentation will be presented in the FER:

- Copies of purchase invoices;
- Truck transportation slips from the source to the Site;
- Confirmation of the weight and volume of NYSDEC approved clean soil imported; and,
- Site plan depicting all areas where the NYSDEC approved clean soil cover has been placed.

All materials proposed for import onto the Site will be approved by the Remedial Engineer and will be in compliance with provisions in this RAWP prior to receipt at the Site.

Material from industrial sites, spill sites, other environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

The FER will include the following certification by the Remedial Engineer: “I certify that all import of soils from off-Site, including source evaluation, approval and sampling, has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan”.

All imported soils will meet NYSDEC approved backfill or cover soil quality objectives for this Site. These NYSDEC approved backfill or cover soil quality objectives are the lower of the protection of groundwater

or the protection of public health soil cleanup objectives for Restricted-Residential Use as set forth in Table 375-6.8(b) of 6 NYCRR Part 375. Non-compliant soils will not be imported onto the Site without prior approval by NYSDEC. Nothing in the approved Remedial Action Work Plan or its approval by NYSDEC should be construed as an approval for this purpose.

Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Nothing in this Remedial Action Work Plan should be construed as an approval for this purpose.

Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers.

5.4.10 Stormwater Pollution Prevention

An ESCP that conforms to the requirements of the NYSDEC Division of Water guidelines and NYS regulations will be developed by the Contractor and approved by the RE. This plan will be provided to the NYSDEC prior to any remedial or development construction activities.

Silt fencing or hay bales will be installed around the entire perimeter of the remedial construction area and be inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the RAWP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

5.4.11 Community Air Monitoring Plan

A CAMP will be implemented during all ground intrusive activities. Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers and included in the Daily Report.

5.4.12 Odor, Dust and Nuisance Control Plan

Suppression of odors, dust and other nuisance conditions will be conducted during all invasive work performed during construction activities. The FER will include the following certification by the Remedial Engineer: "I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology defined in the Remedial Action Work Plan."

Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-Site. Specific odor control methods to be used on a routine basis will include minimizing the generation of vapors and/or odors. If nuisance odors are identified at the Site boundary, or if odor complaints are received, 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. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Volunteer's Remedial Engineer, who is responsible for certifying the FER.

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

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

Dust Control Plan

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

- Dust suppression will be achieved through the use of a dedicated on-Site water truck or other equivalent equipment for road wetting capable of spraying water directly onto off-road areas

including excavations and stockpiles (water will be available on-site at suitable supply and pressure for use in dust control if a dedicated water truck is not utilized).

- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water spraying.
- Materials will be hauled in properly tarped containers or vehicles, which will travel at restricted speeds while on-site.
- All reasonable attempts will be made to keep visible and/or fugitive dust to a minimum and adhere to particulate emissions limits identified in the CAMP.

Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work and will conform, at a minimum, to NYCDEP noise control standards.

5.5 CONTINGENCY PLAN

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated to NYSDEC's Project Manager. Petroleum spills will be reported to the NYSDEC 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 NYSDEC. Chemical analytical testing will be performed for TCL volatiles and semi-volatiles, pesticides/PCBs, and TAL metals, as appropriate.

This section describes actions that must occur upon the discovery of previously unknown contaminated material(s), USTs, demolition debris or other unknown unidentifiable material that requires special

handling. On-site personnel should be prepared to respond appropriately if the following previously unknown materials are encountered (if encountered, this material could result in a recommendation from the Remedial Engineer/QEP for an immediate, temporary shutdown of construction activities):

- Previously unknown tanks (including drums) containing a liquid product that is not likely to be water and is likely to present a threat to worker health or safety;
- Previously unknown demolition debris, which could contain significant quantities of asbestos, the disturbance of which is determined, based on field observations, to violate or likely to violate Federal, State, or local asbestos regulations; and,
- Material which cannot be readily identified.

5.5.1 Procedures for Encountered Underground Storage Tanks

The procedures outlined in this Section will be adhered to if any unknown tanks are encountered during the remedial action.

Closure of any encountered USTs at the Site will be in accordance with the requirements of DER-10, Section 5.5. Any encountered, previously unknown USTs will be visually inspected to determine if liquids are present in the tank. Significant quantities of liquid remaining in the tanks will be drummed on the Site or removed by a properly licensed disposal company and the particular product (e.g., fuel oil, diesel, etc.) will be identified prior to off-site disposal at a permitted facility. Manifests of liquid waste management will be maintained by the RE and will be included in the FER. All encountered USTs will be disposed of pursuant to applicable Petroleum Bulk Storage (PBS) and hazardous waste regulations.

The tanks and all ancillary piping will be removed from the ground and inspected for evidence of failure. A photographic record of the tanks will be generated and evidence of tank failure will be noted. The tanks will be purged of petroleum/chemical vapors, properly stenciled as scrap metal, and transported to a metal recycling facility for destruction. A record of tank destruction will be secured by the RE and will be included in the FER.

Any surrounding soil exhibiting petroleum contamination will be excavated until “clean” soils (soils not exhibiting field evidence of petroleum contamination) are encountered.

Confirmatory soil samples will be collected from the base and from the walls of the tank grave and will be analyzed for both VOCs and SVOCs per CP-51 guidelines.

5.5.2 Procedures for Encountered Demolition Debris

To the extent practical, all clearly identifiable material suspected of containing asbestos will be removed from the waste stream and handled separately (if encountered). The RE will recommend that asbestos material visible in the waste stream be separated and analyzed to determine the percent of asbestos present. All applicable Federal, State and local asbestos handling regulations will be followed.

Depending on the amount of asbestos material identified in the waste stream, the RE may recommend to the Volunteer's Representative that a licensed and accredited asbestos inspector be retained to manage the handling and disposition of asbestos material. Approval to retain an asbestos inspector will be made by the Volunteer's Representative. Samples will be collected by a properly licensed asbestos inspector and submitted to a NYSDOH ELAP- certified laboratory for analysis, depending on the amount and type of material encountered.

Minor amounts of asbestos may be removed from the waste stream and disposed of in accordance with applicable State and local asbestos remediation requirements. An asbestos abatement firm will be retained to properly handle and remove minor amounts of asbestos.

The presence of significant quantities of asbestos will result in a temporary shutdown of the Site.

5.5.3 Procedures for Encountered Unknown Material

Material which cannot be readily identified but which is considered, based on field observations, to be material that needs further investigation before disposal will be properly stockpiled (as per the SoMP) in an area separate from all other stockpiled material.

5.5.4 Screening and Laboratory Analysis

Unknown material will be screened with a PID and all recorded levels will be documented. Samples will be collected and analyzed to identify the compounds present and to assist in determining appropriate disposal practices. Until determined by laboratory analysis otherwise, this material will be considered a hazardous substance. Specific materials known to require sampling and analysis prior to final disposition include all building components and debris containing painted surfaces and/or caulk. A plan to describe the handling and disposal of such materials will be submitted to NYSDEC for review and approval.

If previously unknown underground tanks or other previously unidentified contaminant sources are found during on-site remedial excavation or development related construction, sampling will be performed on product, sediment, and surrounding soils, etc. Chemical analytical work will be for full

scan parameters (TAL metals, TCL volatiles and semi-volatiles, TCL pesticides, and PCBs). These analyses will not be limited to CP-51 petroleum list parameters where tanks are identified without prior approval by NYSDEC. Analyses will not be otherwise limited without NYSDEC approval.

6.0 RESIDUAL CONTAMINATION TO REMAIN ON-SITE

No residual contamination is proposed to remain on the Site beneath the building. If confirmatory sampling does not indicate achievement of Track 1 SCOs, the Engineering Controls (ECs) and Institutional Controls (ICs) detailed in Sections 7.0 and 8.0 below are intended to provide long-term protection from the residual contamination.

The FER will report residual contamination on the Site in tables and maps.

7.0 INSTITUTIONAL CONTROLS

If after the remedy is complete, the Site will have residual contamination remaining in place (i.e. soils with contaminant concentrations above Unrestricted Use SCOs), Institutional Controls for the residual contamination will be incorporated into the remedy as a contingency to render the overall Site remedy protective of public health and the environment. To ensure continual and proper management of residual contamination in perpetuity a Site-specific Environmental Easement will be recorded with Bronx County to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the Environmental Easement and the grantor's successors and assigns adhere to all Institutional Controls (ICs) placed on this Site by this NYSDEC-approved remedy.

The Environmental Easement will provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all Institutional and Engineering Controls. A SMP will be prepared describing appropriate methods and procedures to ensure compliance with all Institutional and Engineering Controls that are required by the Environmental Easement. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the Environmental Easement and grantor's successors and assigns.

Environmental Easement

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left on-Site after the Remedial Action is complete. As part of the remedy, an Environmental Easement approved by NYSDEC will be filed and recorded with the Bronx County Clerk. The Environmental Easement will be submitted as part of the FER.

The Environmental Easement renders the Site a Controlled Property. The Environmental Easement must be recorded with the Bronx County Office of the City Register before the Certificate of Completion can be issued by NYSDEC. A series of Institutional Controls are required under this remedy to prevent future exposure to residual contamination by controlling disturbances of the subsurface soil and restricting the use of the Site to Restricted-Residential Use only. These Institutional Controls are requirements or restrictions placed on the Site that are listed in, and required by, the Environmental Easement.

The Controlled Property (Site) will also have a series of Institutional Controls in the form of Site restrictions and requirements. The Site restrictions that apply to the Controlled Property are:

- Vegetable gardens and farming on the Controlled Property are prohibited;
- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose;
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in the SMP;
- The Controlled Property may be used for Restricted-Residential Use only, provided the long-term Engineering and Institutional Controls included in the SMP are employed;
- The Controlled Property may not be used for a higher level of use, such as Unrestricted Use without an amendment or extinguishment of this Environmental Easement;
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access

such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This annual statement must be certified by an expert that the NYSDEC finds acceptable.

8.0 ENGINEERING CONTROLS

If confirmatory sampling indicates that soils above Track 2 RRU SCOs will remain at the Site, the entire Site will be covered by a composite cover system comprised of the concrete building foundation (see Figure 11, Proposed Engineering Controls). Foundations will have a minimum thickness of 4 inches. All sub-base materials will consist of unregulated stone and/or aggregate from a permitted facility, or otherwise be approved by the NYSDEC project manager as acceptable, clean material. Maintenance of this composite cover system will be described in the SMP in the FER.

9.0 FINAL ENGINEERING REPORT

A Final Engineering Report will be submitted to NYSDEC following implementation of the Remedial Action defined in this RAWP.

9.1 FER ELEMENTS

The FER provides the documentation that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The FER will provide a comprehensive account of the locations and characteristics of all material removed from the Site including the surveyed map(s) of all sources. The FER will include as-built drawings for all constructed elements, calculation and manufacturer documentation for treatment systems, certifications, manifests, bills of lading as well as the complete Site Management Plan (formerly the Operation and Maintenance Plan). The FER will provide a description of the changes in the Remedial Action from the elements provided in the RAWP and associated design documents. The FER will provide a tabular summary of all performance evaluation sampling results and all material characterization results and other sampling and chemical analysis performed as part of the Remedial Action. The FER will provide test results demonstrating that all mitigation and remedial systems are functioning properly. The FER will be prepared in conformance with DER-10.

Where determined to be necessary by NYSDEC, a Financial Assurance Plan will be required to ensure the sufficiency of revenue to perform long-term operations, maintenance and monitoring tasks defined in the SMP and Environmental Easement. This determination will be made by NYSDEC in the context of the FER review.

The FER will include written and photographic documentation of all remedial work performed under this remedy.

The FER will include an itemized tabular description of actual costs incurred during all aspects of the Remedial Action.

The FER will provide a thorough summary of all residual contamination left on the Site after the remedy is complete. Residual contamination includes all contamination that exceeds the Track 1 Unrestricted Use SCO in 6NYCRR Part 375-6. A table that shows exceedances from Track 1 Unrestricted SCOs for all soil/fill remaining at the Site after the Remedial Action and a map that shows the location and summarizes exceedances from Track 1 Unrestricted SCOs for all soil/fill remaining at the Site after the Remedial Action will be included in the FER.

The FER will provide a thorough summary of all residual contamination that exceeds the SCOs defined for the Site in the RAWP and must provide an explanation for why the material was not removed as part of the Remedial Action. A table that shows residual contamination in excess of Site SCOs and a map that shows residual contamination in excess of Site SCOs will be included in the FER.

The FER will include an accounting of the destination of all material removed from the Site, including excavated contaminated soil, historical fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. It will provide an accounting of the origin and chemical quality of all material imported onto the Site.

Before approval of a FER and issuance of a Certificate of Completion, all project reports must be submitted in digital form on electronic media (PDF).

9.2 SITE MANAGEMENT PLAN

If a Track 2 or Track 4 remedy is achieved, a SMP will be required. Its implementation will be the last phase of remediation and begins with the approval of the FER and issuance of the Certificate of

Completion (COC) for the Remedial Action. The SMP is submitted as part of the FER but will be written in a manner that allows its removal and use as a complete and independent document. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all Site Management responsibilities defined in the Environmental Easement and the SMP are performed.

The SMP is intended to provide a detailed description of the procedures required to manage residual contamination left in place at the Site following completion of the Remedial Action in accordance with the BCA with the NYSDEC. This includes: (1) development, implementation, and management of all Engineering and Institutional Controls; (2) development and implementation of monitoring systems and a Monitoring Plan; (3) development of a plan to operate and maintain any treatment, collection, containment, or recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual); (4) submittal of Site Management Reports, performance of inspections and certification of results, and demonstration of proper communication of Site information to NYSDEC; and (5) defining criteria for termination of treatment system operation.

To address these needs, this SMP will include the following plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) as needed, an Operation and Maintenance Plan for any vapor interceptor systems; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. The SMP will be prepared in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation and the guidelines provided by NYSDEC.

Site management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annually for the first three years; modifications to this frequency may be proposed in that third year. The SMP will be based on a calendar year and will be due for submission to NYSDEC by March 1 of the year following the reporting period.

No exclusions for handling of residual contaminated soils will be provided in the SMP. All handling of residual contaminated material will be subject to provisions contained in the SMP.

9.3 CERTIFICATIONS

The following certification will appear in front of the Executive Summary of the FER. The certification will be signed by the Remedial Engineer Ariel Czemerinski who is a Professional Engineer registered in New York State. This certification will be appropriately signed and stamped. The certification will include the following statements:

I, Ariel Czemerinski, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 472-474 Willis Avenue (NYSDEC Site No. C203122).

I certify that the Site description presented in this FER is identical to the Site descriptions presented in the Environmental Easement, the Site Management Plan, and the Brownfield Cleanup Agreement for 472-474 Willis Avenue and related amendments.

I certify that the Remedial Action Work Plan dated August 2020 and approved by the NYSDEC was implemented and that all requirements in this document have been substantively complied with.

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

I certify that all use restrictions, Institutional Controls, Engineering Controls, and all operation and maintenance requirements applicable to the Site are contained in an Environmental Easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded. A Site Management Plan has been submitted by the Volunteer for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by the NYSDEC.

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

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

I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology and soil screening methodology defined in the Remedial Action Work Plan.

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

It is a violation of Article 130 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 130, New York State Education Law.

10.0 SCHEDULE

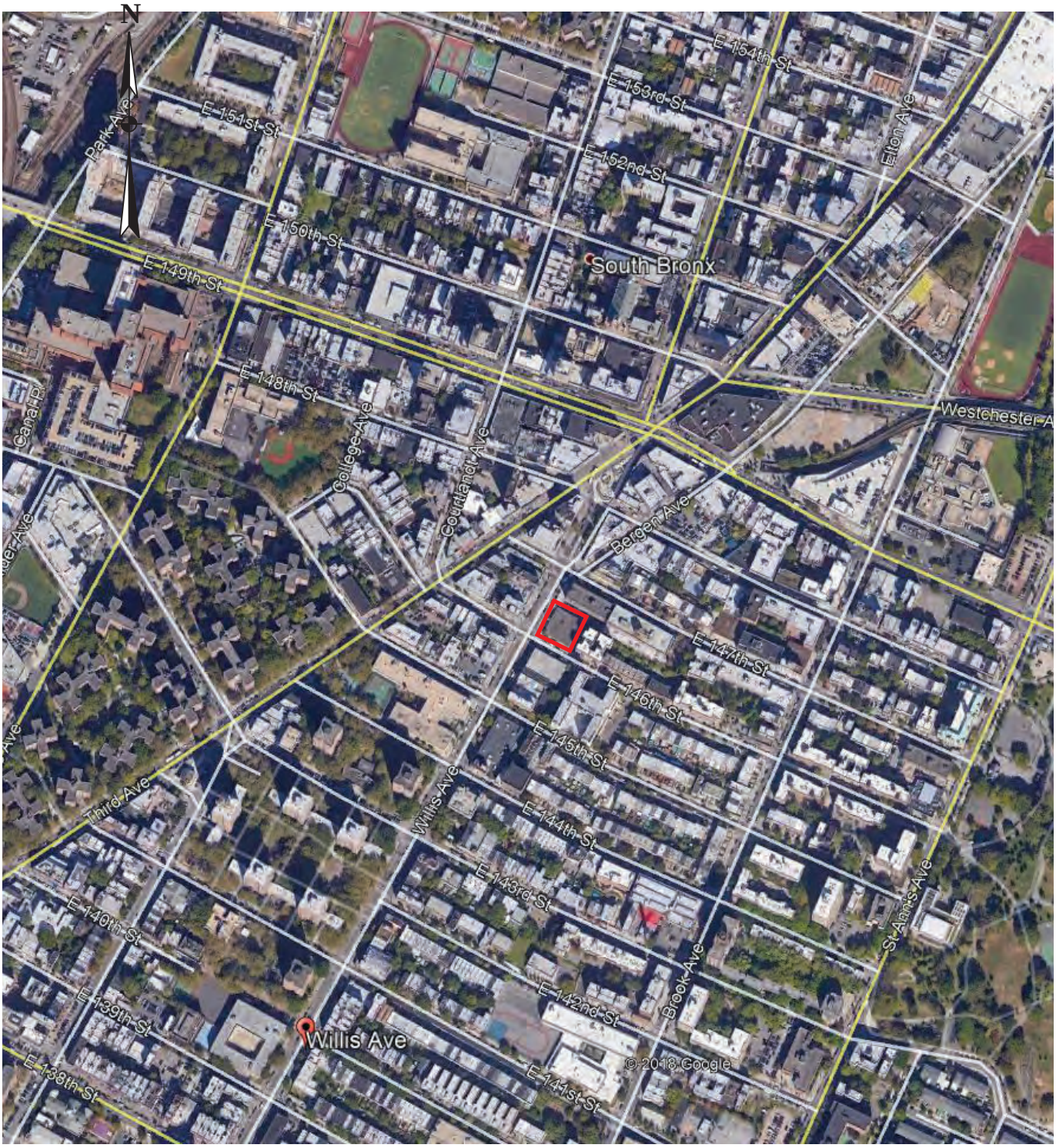
Demolition of existing structures and soil excavation will commence in December 2020. Currently, a two-month soil excavation period is anticipated. If the schedule for remediation and development activities changes, it will be updated and submitted to NYSDEC.

The current project schedule is presented below:

Date	Action
November 2020	NYSDEC approval of RAWP
March 2021	Demolition/Start of Excavation
Fall 2021/Spring 2022	Preparation of FER/SMP
Summer 2022	Secure FER approval

APPENDIX A

Figures



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 1: Site Location Map

472-474 Willis Avenue
Borough of Bronx, New York

Legend:

subject property border

0 250 500

SCALE IN FEET (APPROXIMATELY)

File: BB17076.50

August 2020

Appendix A



Legend:

- 1 & 2 Family Residential
- Multi-familly Residential
- Mixed Use
- Open space & outdoor recreation
- Commercial
- Institutions
- Industrial
- Parking
- Transporation/Utilities
- Vacant Lots

Subject Property

0 100 200
SCALE IN FEET
(APPROXIMATELY)

Source Map provided by http://www.oasisnyc.net/map.aspx.

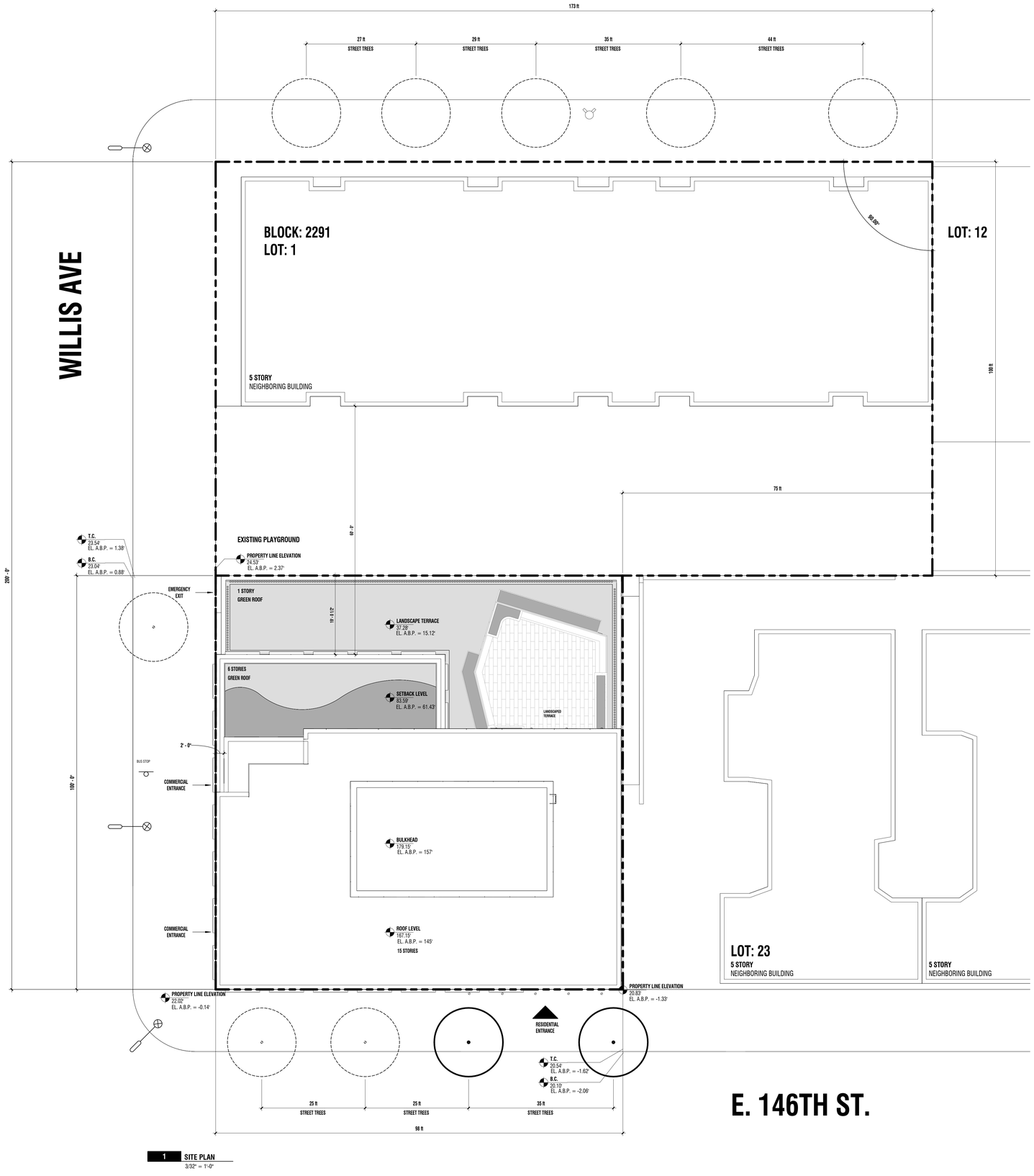
Figure 2: Area Land Uses Map

472-474 Willis Avenue
Borough of Bronx, New York

File: BB17076.50

August 2020

Appendix A



1 SITE PLAN
3/32" = 1'-0"

LEGEND

- EXISTING TREE
- PROPOSED TREE
- HYDRANT
- STREET LIGHT

think!
architecture and design pllc

ARCHITECT
think! architecture and design pllc
1 METROTECH CENTER NORTH, 6TH FLOOR
BROOKLYN, NY 11201
P 646.688.5898

CLIENT
LEMLE & WOLFF COMPANIES
5925 BROADWAY
BRONX, NY 10463
P 718.884.7676

STRUCTURAL
CUONO ENGINEERING PLLC
42 NORTH MAIN STREET
PORT CHESTER, NY 10573
P 914.305.5679

MEP
RODKIN CARDINALE P.C.
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

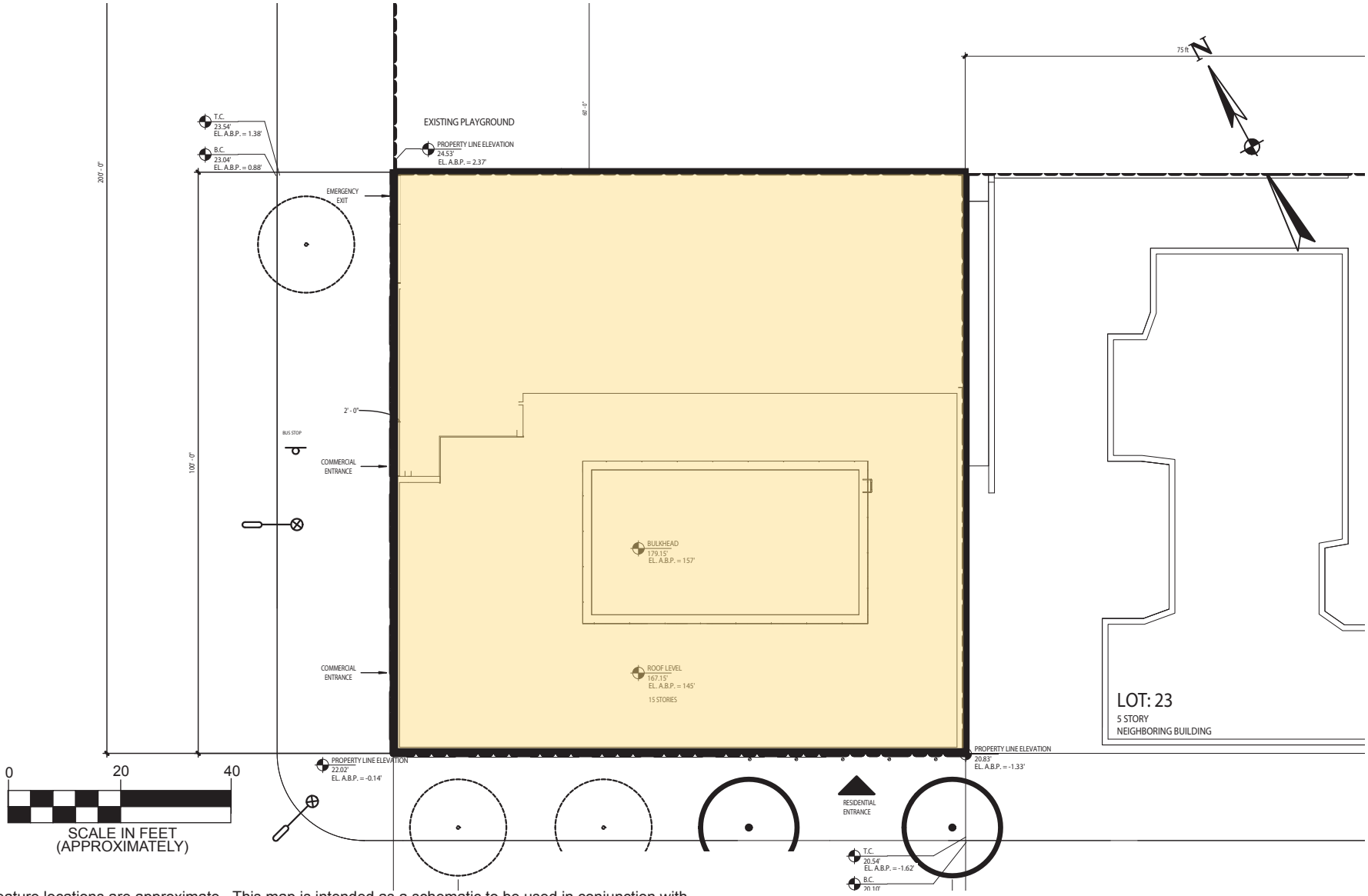
472-474 WILLIS AVE. BRONX, NY, 10455

SITE PLAN

SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	As indicated
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-001.00
NYC DOB NUMBER:	

4/10/2018 1:21:13 PM



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

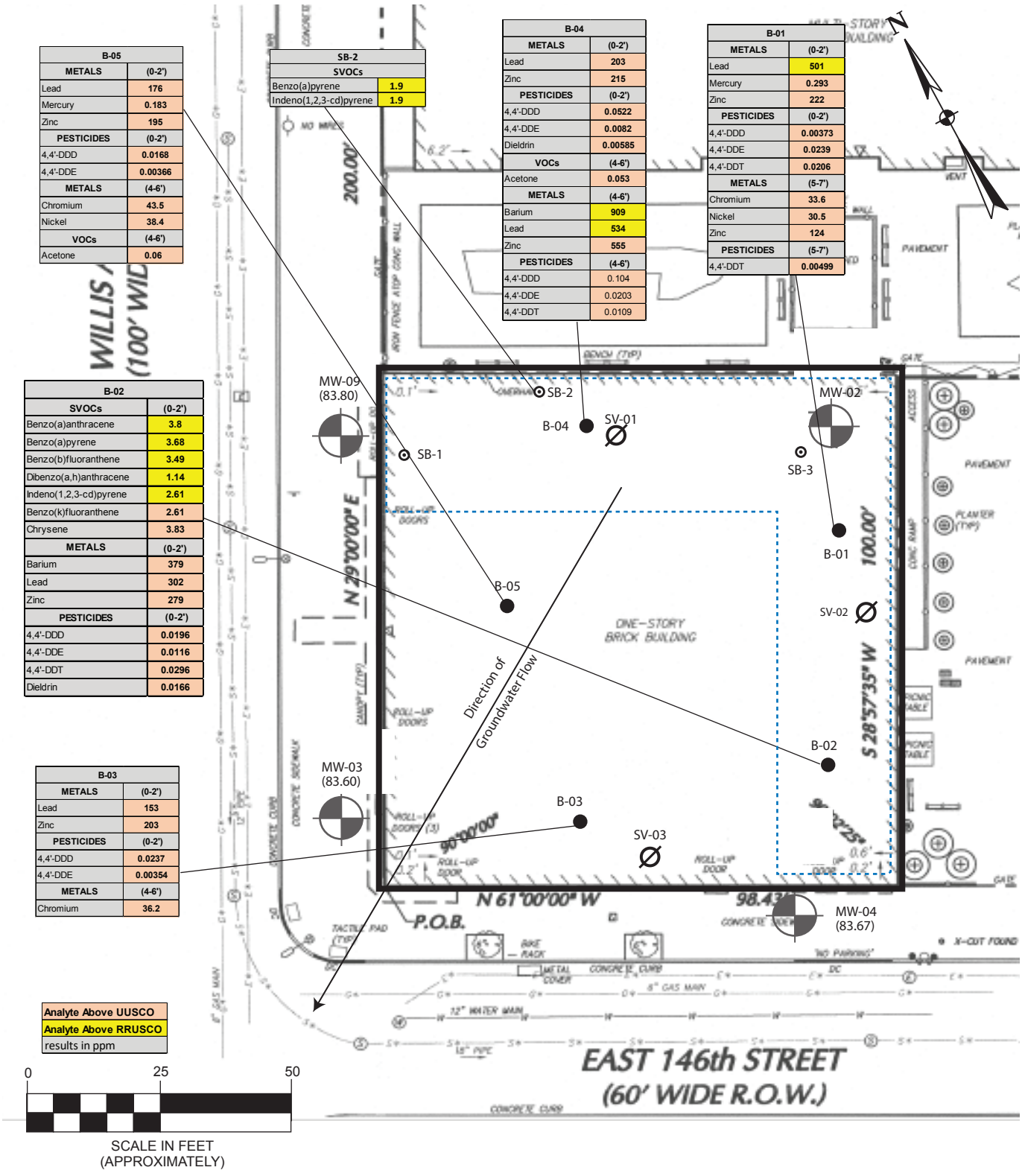
Figure 4: Soil Excavation Plan

472-474 Willis Avenue
Borough of Bronx, New York

Legend:

- subject property border
- excavated to approx. 13' below sidewalk grade

File: BB17076.50
August 2020
Scale as shown
Appendix A



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

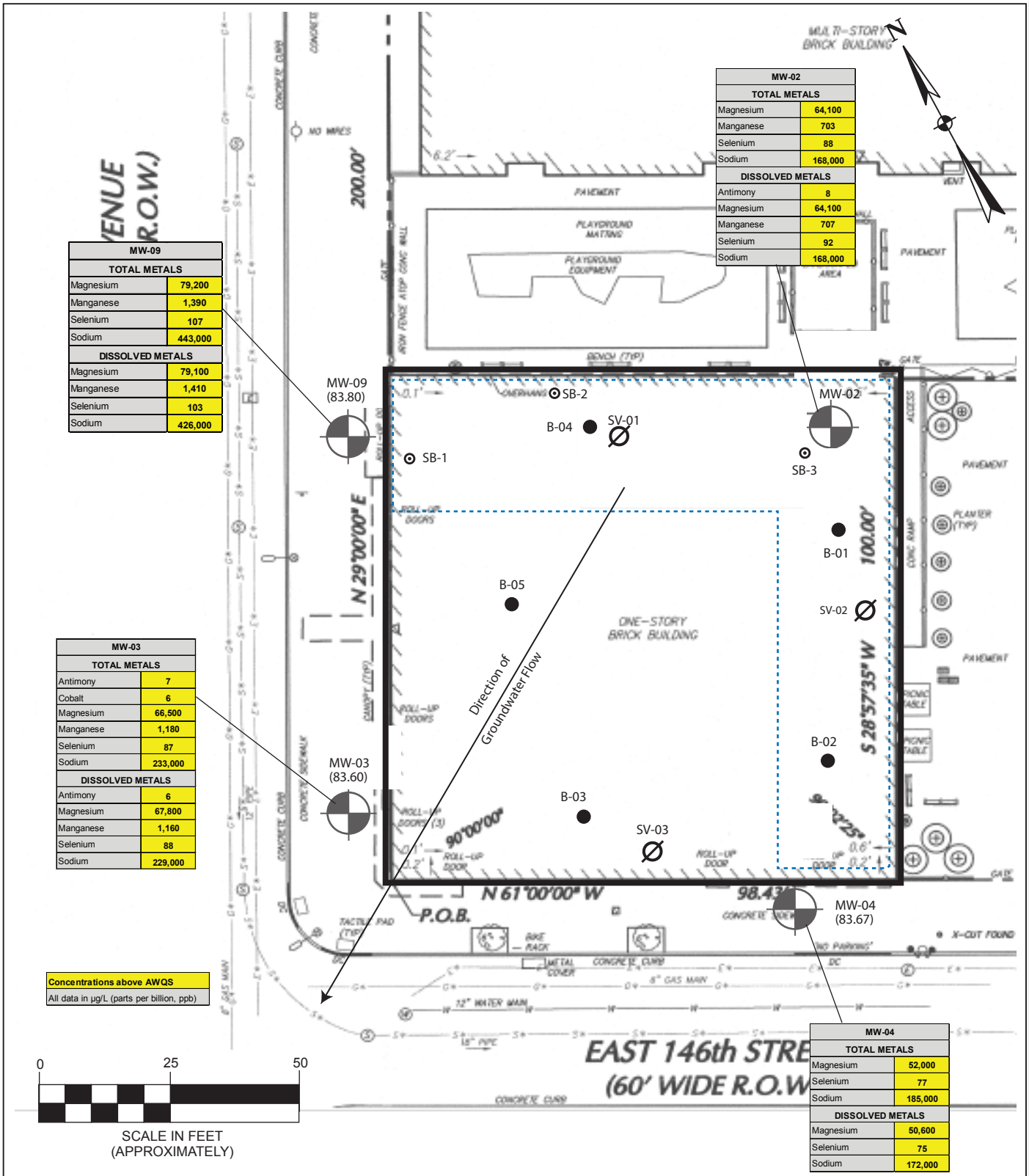
Figure 5: Soil Exceedances

472-474 Willis Avenue
Borough of Bronx, New York

Legend:

- subject property border
- NYCHA garage area
- monitoring well location
- American Environmental boring location - 2017
- boring location
- soil vapor location

File: BB17076.40
August 2020
Scale as shown
Appendix A



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 6: Groundwater Exceedances

472-474 Willis Avenue
Borough of Bronx, New York

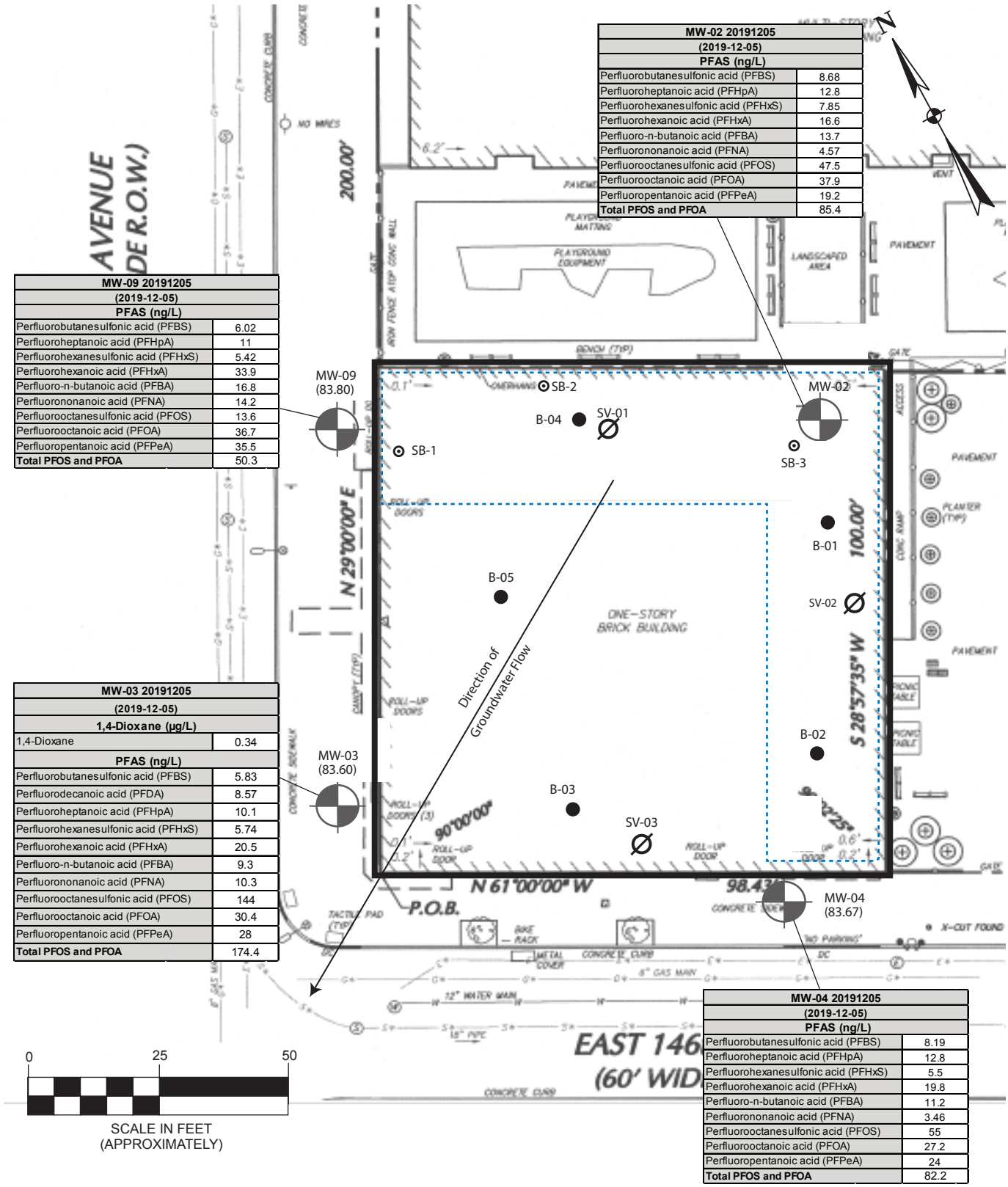
Legend:
- subject property border
- monitoring well location
- American Environmental boring location - 2017
- boring location
- soil vapor location
- NYCHA garage area

File: BB17076.50

August 2020

Scale as shown

Appendix A



MW-09 20191205	
(2019-12-05)	
PFAS (ng/L)	
Perfluorobutanesulfonic acid (PFBS)	6.02
Perfluoroheptanoic acid (PFHpA)	11
Perfluorohexanesulfonic acid (PFHxS)	5.42
Perfluorohexanoic acid (PFHxA)	33.9
Perfluoro-n-butanoic acid (PFBA)	16.8
Perfluorononanoic acid (PFNA)	14.2
Perfluorooctanesulfonic acid (PFOS)	13.6
Perfluorooctanoic acid (PFOA)	36.7
Perfluoropentanoic acid (PFPeA)	35.5
Total PFOS and PFOA	50.3

MW-02 20191205	
(2019-12-05)	
PFAS (ng/L)	
Perfluorobutanesulfonic acid (PFBS)	8.68
Perfluoroheptanoic acid (PFHpA)	12.8
Perfluorohexanesulfonic acid (PFHxS)	7.85
Perfluorohexanoic acid (PFHxA)	16.6
Perfluoro-n-butanoic acid (PFBA)	13.7
Perfluorononanoic acid (PFNA)	4.57
Perfluorooctanesulfonic acid (PFOS)	47.5
Perfluorooctanoic acid (PFOA)	37.9
Perfluoropentanoic acid (PFPeA)	19.2
Total PFOS and PFOA	85.4

MW-03 20191205	
(2019-12-05)	
1,4-Dioxane (µg/L)	
1,4-Dioxane	0.34
PFAS (ng/L)	
Perfluorobutanesulfonic acid (PFBS)	5.83
Perfluorodecanoic acid (PFDA)	8.57
Perfluoroheptanoic acid (PFHpA)	10.1
Perfluorohexanesulfonic acid (PFHxS)	5.74
Perfluorohexanoic acid (PFHxA)	20.5
Perfluoro-n-butanoic acid (PFBA)	9.3
Perfluorononanoic acid (PFNA)	10.3
Perfluorooctanesulfonic acid (PFOS)	144
Perfluorooctanoic acid (PFOA)	30.4
Perfluoropentanoic acid (PFPeA)	28
Total PFOS and PFOA	174.4

MW-04 20191205	
(2019-12-05)	
PFAS (ng/L)	
Perfluorobutanesulfonic acid (PFBS)	8.19
Perfluoroheptanoic acid (PFHpA)	12.8
Perfluorohexanesulfonic acid (PFHxS)	5.5
Perfluorohexanoic acid (PFHxA)	19.8
Perfluoro-n-butanoic acid (PFBA)	11.2
Perfluorononanoic acid (PFNA)	3.46
Perfluorooctanesulfonic acid (PFOS)	55
Perfluorooctanoic acid (PFOA)	27.2
Perfluoropentanoic acid (PFPeA)	24
Total PFOS and PFOA	82.2

All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 7: 1,4 Dioxane and PFAS in Groundwater

472-474 Willis Avenue
Borough of Bronx, New York

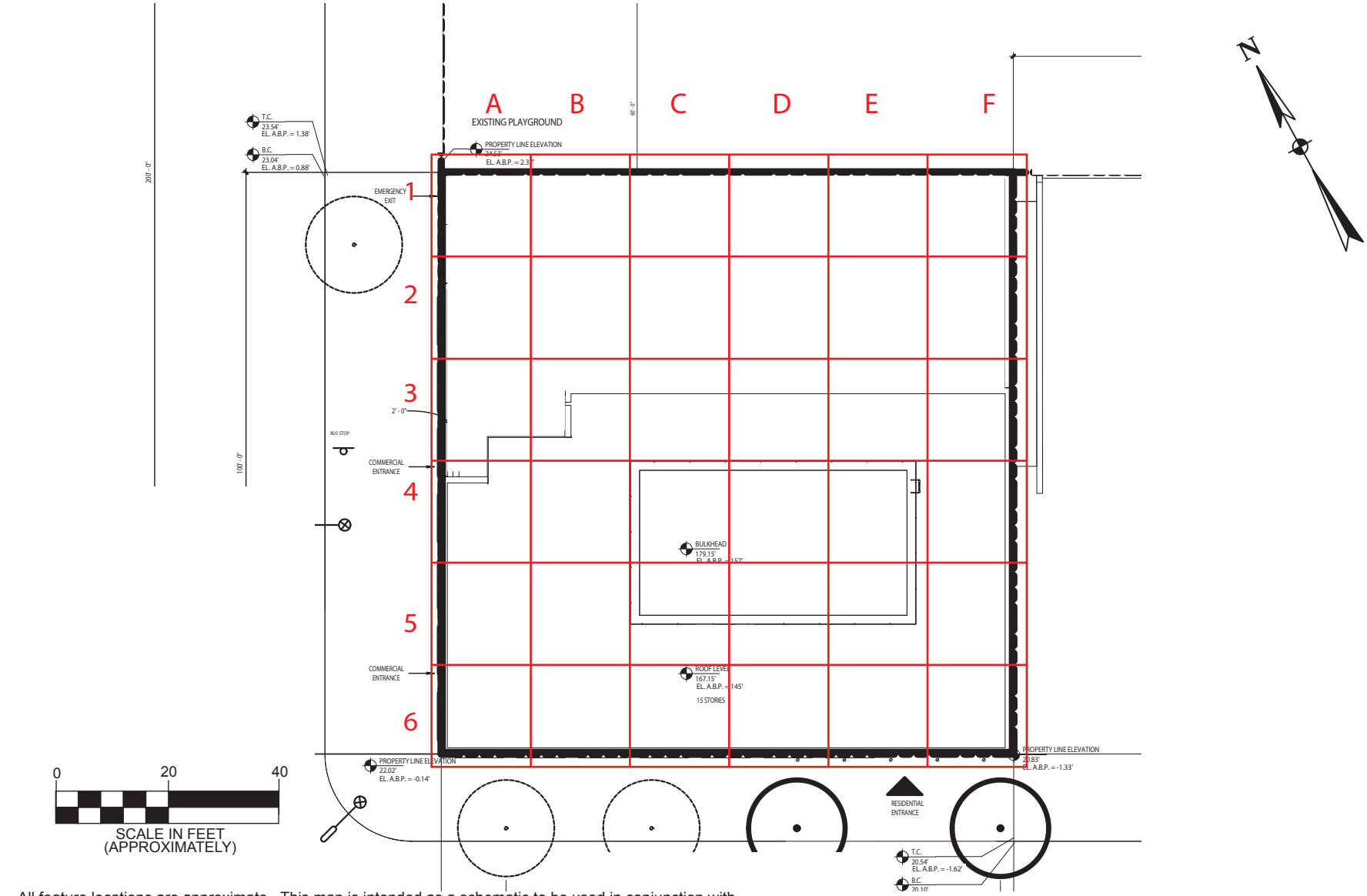
Legend:
- subject property border
- monitoring well location
- American Environmental boring location - 2017
- boring location
- soil vapor location
- NYCHA garage area

File: BB17076.50

August 2020

Scale as shown

Appendix A



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

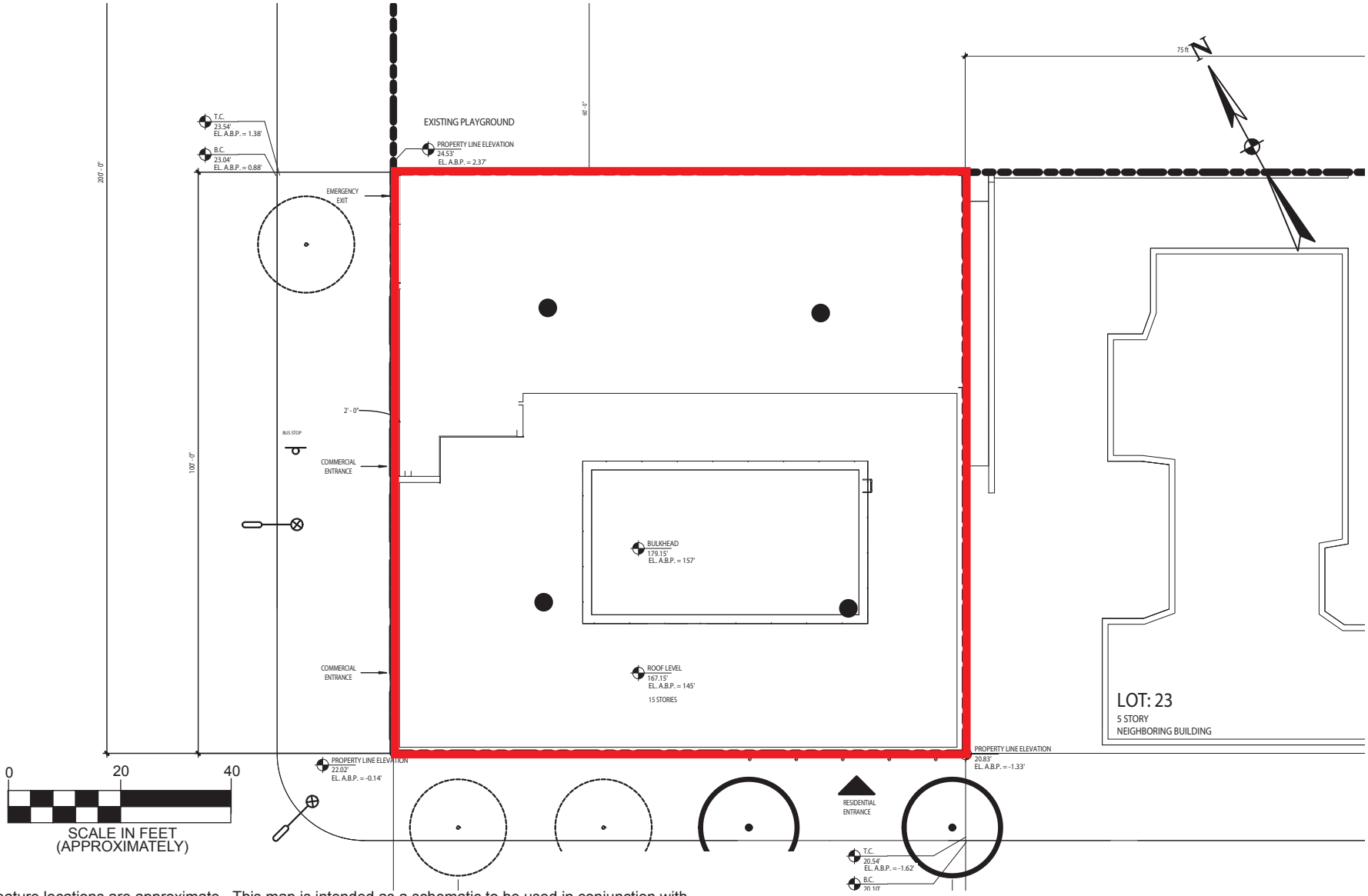
Figure 8: Alpha Numeric Grid Map

472-474 Willis Avenue
Borough of Bronx, New York

Legend:

subject property border

File: BB17076.50
August 2020
Scale as shown
Appendix A



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

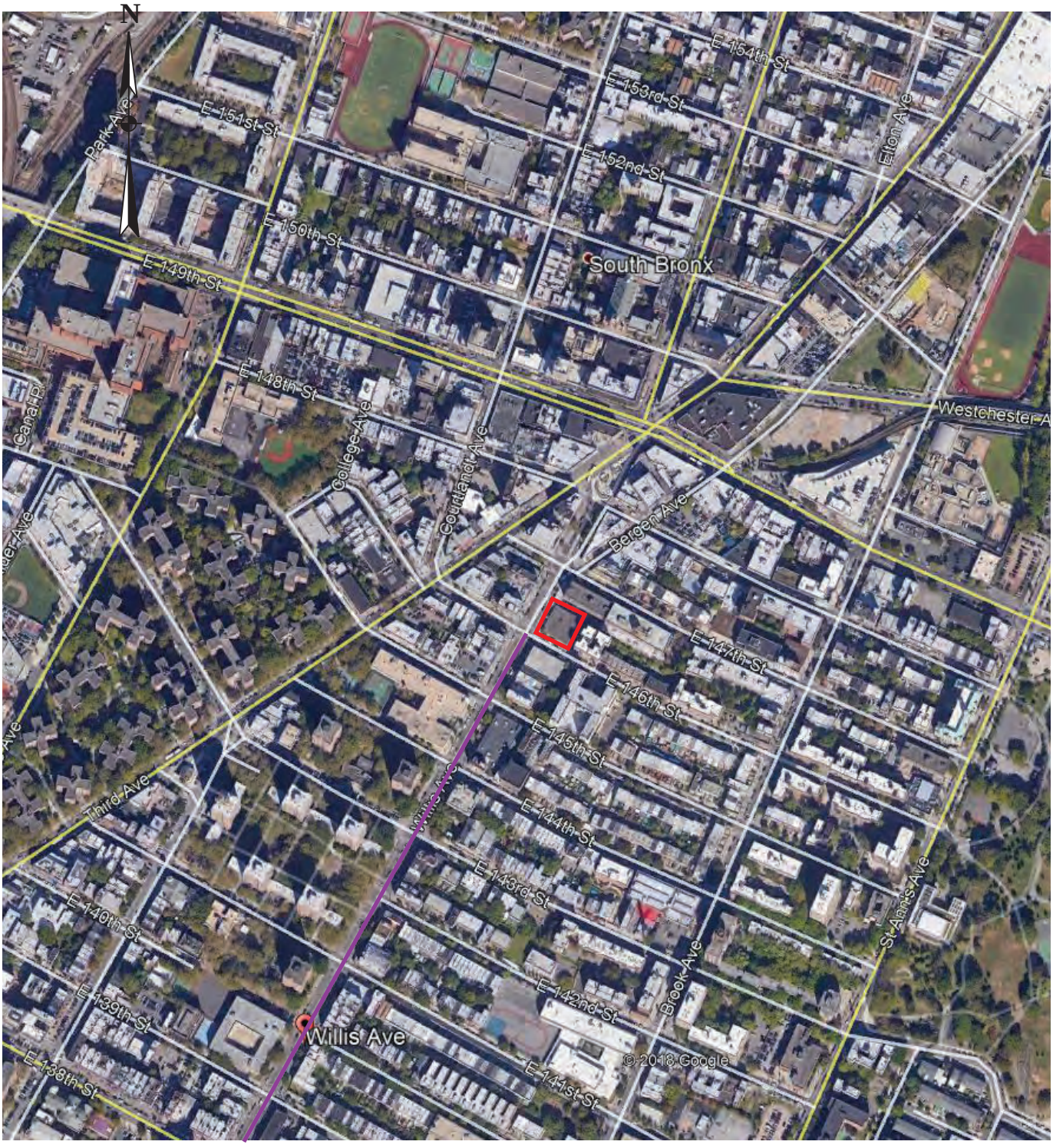
Figure 9: Proposed Endpoint Sample Location

472-474 Willis Avenue
Borough of Bronx, New York

Legend:

- subject property border
- proposed endpoint sample location

File: BB17076.50
August 2020
Scale as shown
Appendix A



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 10: Truck Route Map

472-474 Willis Avenue
Borough of Bronx, New York

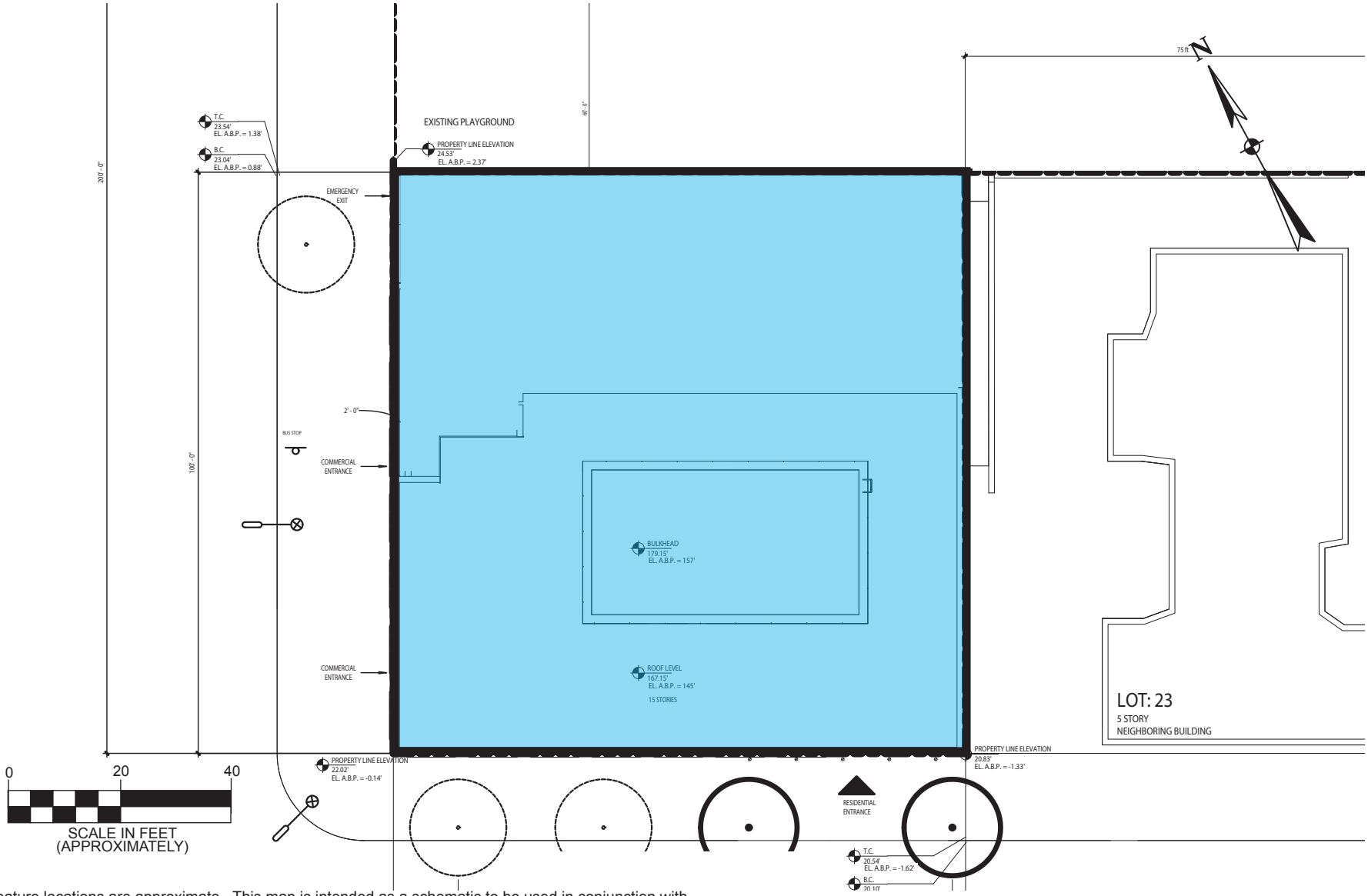
Legend:
- subject property border
- incoming and outgoing truck route to/from I-87

0 250 500
SCALE IN FEET (APPROXIMATELY)

File: BB17076.50

August 2020

Appendix A



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 11: Proposed Engineering Controls

472-474 Willis Avenue
Borough of Bronx, New York

Legend:

- subject property border
- vapor barrier beneath concrete slab

File: BB17076.50

August 2020

Scale as shown

Appendix A

APPENDIX B

Data Tables

Table 1: VOCs in Soil Vapor
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

Sample ID	SV-01		SV-02		SV-03	
All data in µg/m³ Sample Date	(2018-02-16)		(2018-02-16)		(2018-02-16)	
U= Not Detected ≥ value Dilution Factor	1.446		1.406		1.5	
VOCs, TO-15	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
1,1,1,2-Tetrachloroethane	0.96	*U*	0.96	*U*	1.03	*U*
1,1,1-Trichloroethane	0.76	*U*	0.76	*U*	0.82	*U*
1,1,2,2-Tetrachloroethane	0.96	*U*	0.96	*U*	1.03	*U*
1,1,2-Trichloro-1,2,2-trifluoroethane	1.07	*U*	1.07	*U*	1.15	*U*
1,1,2-Trichloroethane	0.76	*U*	0.76	*U*	0.82	*U*
1,1-Dichloroethane	0.57	*U*	0.57	*U*	0.61	*U*
1,1-Dichloroethene	0.55	*U*	0.55	*U*	0.59	*U*
1,2,4-Trichlorobenzene	1.04	*U*	1.04	*U*	1.11	*U*
1,2,4-Trimethylbenzene	1.92	*D*	7.86	*D*	3.14	*D*
1,2-Dibromoethane	1.08	*U*	1.08	*U*	1.15	*U*
1,2-Dichlorobenzene	0.84	*U*	0.84	*U*	0.90	*U*
1,2-Dichloroethane	0.57	*U*	0.57	*U*	0.61	*U*
1,2-Dichloropropane	0.65	*U*	0.65	*U*	0.69	*U*
1,2-Dichlorotetrafluoroethane	0.98	*U*	0.98	*U*	1.05	*U*
1,3,5-Trimethylbenzene	0.69	*D*	4.82	*D*	1.18	*D*
1,3-Butadiene	0.95	*U*	0.93	*U*	1.00	*U*
1,3-Dichlorobenzene	0.84	*U*	0.84	*U*	0.90	*U*
1,3-Dichloropropane	0.65	*U*	0.65	*U*	0.69	*U*
1,4-Dichlorobenzene	0.84	*U*	0.84	*U*	0.90	*U*
1,4-Dioxane	1.04	*U*	1.01	*U*	1.08	*U*
2-Butanone	6.78	*D*	11.79	*D*	6.19	*D*
2-Hexanone	1.19	*U*	1.15	*U*	1.23	*U*
3-Chloropropene	2.25	*U*	2.19	*U*	2.35	*U*
4-Methyl-2-pentanone	0.57	*U*	0.57	*U*	0.61	*U*
Acetone	19.95	*D*	17.10	*D*	13.77	*D*
Acrylonitrile	0.30	*U*	0.30	*U*	0.33	*U*
Benzene	2.62	*D*	0.86	*D*	2.62	*D*
Benzyl chloride	0.72	*U*	0.72	*U*	0.78	*U*
Bromodichloromethane	0.94	*U*	0.94	*U*	1.00	*U*
Bromoform	1.45	*U*	1.45	*U*	1.55	*U*
Bromomethane	0.54	*U*	0.54	*U*	0.58	*U*
Carbon disulfide	3.42	*D*	2.15	*D*	0.47	*U*
Carbon tetrachloride	0.23	*U*	0.22	*U*	0.24	*U*
Chlorobenzene	0.64	*U*	0.64	*U*	0.69	*U*
Chloroethane	0.37	*U*	0.37	*U*	0.40	*U*
Chloroform	1.42	*D*	0.68	*D*	0.73	*D*
Chloromethane	0.39	*D*	0.29	*U*	0.31	*D*
cis-1,2-Dichloroethene	0.55	*U*	0.55	*U*	0.59	*U*
cis-1,3-Dichloropropene	0.64	*U*	0.64	*U*	0.68	*U*
Cyclohexane	0.93	*D*	0.52	*D*	1.17	*D*
Dibromochloromethane	1.19	*U*	1.19	*U*	1.28	*U*
Dichlorodifluoromethane	3.41	*D*	2.97	*D*	18.29	*D*
Ethyl Acetate	1.04	*U*	1.01	*U*	1.40	*D*
Ethylbenzene	0.61	*D*	2.08	*D*	2.34	*D*
Hexachlorobutadiene	1.49	*U*	1.49	*U*	1.60	*U*
Isopropanol	6.63	*D*	1.52	*D*	6.88	*D*
Methyl Methacrylate	0.57	*U*	0.57	*U*	0.61	*U*
Methyl tert butyl ether	0.50	*U*	0.50	*U*	0.54	*U*
Methylene chloride	1.35	*D*	0.97	*U*	1.39	*D*
Naphthalene	7.34	*U*	7.34	*U*	10.48	*D*
n-Heptane	2.38	*D*	2.83	*D*	4.06	*D*
n-Hexane	5.28	*D*	1.94	*D*	7.75	*D*
o-Xylene	1.00	*D*	4.25	*D*	3.21	*D*
p/m-Xylene	2.34	*D*	8.68	*D*	8.68	*D*
p-Ethyltoluene	1.72	*D*	9.34	*D*	3.24	*D*
Propylene	7.74	*D*	2.24	*D*	4.13	*D*
Styrene	0.60	*U*	0.60	*U*	0.64	*U*
Tetrachloroethene	1.08	*D*	3.46	*D*	1.76	*D*
Tetrahydrofuran	0.85	*U*	4.13	*D*	0.88	*U*
Toluene	2.94	*D*	2.83	*D*	10.17	*D*
trans-1,2-Dichloroethene	0.55	*U*	0.55	*U*	0.59	*U*
trans-1,3-Dichloropropene	0.64	*U*	0.64	*U*	0.68	*U*
Trichloroethene	0.19	*U*	0.19	*U*	0.20	*U*
Trichlorofluoromethane	1.29	*D*	1.91	*D*	4.61	*D*
Vinyl acetate	0.49	*U*	0.49	*U*	0.53	*U*
Vinyl bromide	0.61	*U*	0.61	*U*	0.66	*U*
Vinyl chloride	0.36	*U*	0.36	*U*	0.38	*U*

Detected concentrations

Notes: NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank

Table 2: VOCs in Soils
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in mg/Kg (ppm)			**Sample ID**	**B-01 0-2**		**B-01 5-7**		**B-02 0-2**		**B-02 12-14**	
U= Not Detected ≥ indicated value			Sample Date	(2018-02-16)		(2018-02-16)		(2018-02-16)		(2018-02-16)	
Data above SCOs shown in **Bold**			Dilution Factor	1		1		1		1	
VOCs, 8260	**UUSCO**	**RRUSCO**	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
1,1,1,2-Tetrachloroethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,1,1-Trichloroethane	0.68	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,1,2,2-Tetrachloroethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,1,2-Trichloroethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,1-Dichloroethane	0.27	26	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,1-Dichloroethylene (1,1-DCE)	0.33	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,2,3-Trichlorobenzene	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,2,3-Trichloropropane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,2,4-Trichlorobenzene	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,2,4-Trimethylbenzene	3.6	52	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,2-Dibromo-3-chloropropane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,2-Dibromoethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,2-Dichlorobenzene	1.1	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,2-Dichloroethane	0.02	3.1	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,2-Dichloropropane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,3,5-Trimethylbenzene	8.4	52	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,3-Dichlorobenzene	2.4	49	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,4-Dichlorobenzene	1.8	13	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
1,4-Dioxane	0.1	13	0.047	*U*	0.053	*U*	0.044	*U*	0.047	*U*
2-Butanone (MEK)	0.12	100	0.0023	*U*	0.0027	*U*	0.0039	*J*	0.0023	*U*
2-Hexanone	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
4-Methyl-2-pentanone	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Acetone	0.05	100	0.012	*B*	0.0075	*J*	0.027	*B*	0.0047	*U*
Acrolein	NA	NA	0.0047	*U*	0.0053	*U*	0.0044	*U*	0.0047	*U*
Acrylonitrile	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Benzene	0.06	4.8	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Bromochloromethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Bromodichloromethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Bromoform	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Bromomethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Carbon disulfide	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Carbon tetrachloride	0.76	2.4	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Chlorobenzene	1.1	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Chloroethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Chloroform	0.37	49	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Chloromethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
cis-1,2-Dichloroethylene (cis-DCE)	0.25	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
cis-1,3-Dichloropropylene	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Cyclohexane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Dibromochloromethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Dibromomethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Dichlorodifluoromethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Ethyl Benzene	1	41	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Hexachlorobutadiene	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Isopropylbenzene	2.3	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Methyl acetate	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Methyl tert-butyl ether (MTBE)	0.93	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Methylcyclohexane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Methylene chloride	0.05	100	0.0079	*J*	0.0094	*J*	0.0044	*U*	0.0047	*U*
n-Butylbenzene	12	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
n-Propylbenzene	3.9	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
o-Xylene	0.26	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
p- & m- Xylenes	0.26	100	0.0047	*U*	0.0053	*U*	0.0044	*U*	0.0047	*U*
p-Isopropyltoluene	10	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
sec-Butylbenzene	11	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Styrene	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
tert-Butyl alcohol (TBA)	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
tert-Butylbenzene	5.9	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Tetrachloroethylene (PCE)	1.3	19	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Toluene	0.7	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
trans-1,2-Dichloroethylene (trans-DCE)	0.19	100	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
trans-1,3-Dichloropropylene	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Trichloroethylene (TCE)	0.47	21	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Trichlorofluoromethane	NA	NA	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Vinyl chloride (VC)	0.02	0.9	0.0023	*U*	0.0027	*U*	0.0022	*U*	0.0023	*U*
Xylenes, Total	0.26	100	0.007	*U*	0.008	*U*	0.0067	*U*	0.007	*U*

Analyte Detected
Analyte Above UUSCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 2: VOCs in Soils
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in mg/Kg (ppm)			**Sample ID**	**B-03 0-2**		**B-03 4-6**		**B-04 0-2**		**B-04 4-6**	
U= Not Detected ≥ indicated value			Sample Date	(2018-02-16)		(2018-02-16)		(2018-02-16)		(2018-02-16)	
Data above SCOs shown in **Bold**			Dilution Factor	1		1		1		1	
VOCs, 8260	**UUSCO**	**RRUSCO**	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
1,1,1,2-Tetrachloroethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,1,1-Trichloroethane	0.68	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,1,2,2-Tetrachloroethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,1,2-Trichloroethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,1-Dichloroethane	0.27	26	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,1-Dichloroethylene (1,1-DCE)	0.33	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,2,3-Trichlorobenzene	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,2,3-Trichloropropane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,2,4-Trichlorobenzene	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,2,4-Trimethylbenzene	3.6	52	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,2-Dibromo-3-chloropropane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,2-Dibromoethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,2-Dichlorobenzene	1.1	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,2-Dichloroethane	0.02	3.1	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,2-Dichloropropane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,3,5-Trimethylbenzene	8.4	52	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,3-Dichlorobenzene	2.4	49	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,4-Dichlorobenzene	1.8	13	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
1,4-Dioxane	0.1	13	0.054	*U*	0.044	*U*	0.042	*U*	0.051	*U*
2-Butanone (MEK)	0.12	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.012	
2-Hexanone	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
4-Methyl-2-pentanone	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Acetone	0.05	100	0.0079	*JB*	0.0044	*U*	0.031		0.053	
Acrolein	NA	NA	0.0054	*U*	0.0044	*U*	0.0042	*U*	0.0051	*U*
Acrylonitrile	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Benzene	0.06	4.8	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Bromochloromethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Bromodichloromethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Bromoform	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Bromomethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Carbon disulfide	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Carbon tetrachloride	0.76	2.4	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Chlorobenzene	1.1	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Chloroethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Chloroform	0.37	49	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Chloromethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
cis-1,2-Dichloroethylene (cis-DCE)	0.25	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
cis-1,3-Dichloropropylene	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Cyclohexane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Dibromochloromethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Dibromomethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Dichlorodifluoromethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Ethyl Benzene	1	41	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Hexachlorobutadiene	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Isopropylbenzene	2.3	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Methyl acetate	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Methyl tert-butyl ether (MTBE)	0.93	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Methylcyclohexane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Methylene chloride	0.05	100	0.0083	*J*	0.0073	*J*	0.0057	*J*	0.01	
n-Butylbenzene	12	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.006	
n-Propylbenzene	3.9	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
o-Xylene	0.26	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
p- & m- Xylenes	0.26	100	0.0054	*U*	0.0044	*U*	0.0042	*U*	0.0051	*U*
p-Isopropyltoluene	10	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
sec-Butylbenzene	11	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0087	
Styrene	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
tert-Butyl alcohol (TBA)	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
tert-Butylbenzene	5.9	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Tetrachloroethylene (PCE)	1.3	19	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Toluene	0.7	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
trans-1,2-Dichloroethylene (trans-DCE)	0.19	100	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
trans-1,3-Dichloropropylene	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Trichloroethylene (TCE)	0.47	21	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Trichlorofluoromethane	NA	NA	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Vinyl chloride (VC)	0.02	0.9	0.0027	*U*	0.0022	*U*	0.0021	*U*	0.0025	*U*
Xylenes, Total	0.26	100	0.0081	*U*	0.0066	*U*	0.0063	*U*	0.0076	*U*

Analyte Detected
Analyte Above UUSCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 2: VOCs in Soils
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in mg/Kg (ppm)			**Sample ID**	**B-05 0-2**		**B-05 4-6**	
U= Not Detected ≥ indicated value			Sample Date	(2018-02-16)		(2018-02-16)	
Data above SCOs shown in **Bold**			Dilution Factor	1		1	
VOCs, 8260	**UUSCO**	**RRUSCO**	*Result*	*Qualifier*	*Result*	*Qualifier*
1,1,1,2-Tetrachloroethane	NA	NA	0.0023	*U*	0.0021	*U*
1,1,1-Trichloroethane	0.68	100	0.0023	*U*	0.0021	*U*
1,1,2,2-Tetrachloroethane	NA	NA	0.0023	*U*	0.0021	*U*
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	0.0023	*U*	0.0021	*U*
1,1,2-Trichloroethane	NA	NA	0.0023	*U*	0.0021	*U*
1,1-Dichloroethane	0.27	26	0.0023	*U*	0.0021	*U*
1,1-Dichloroethylene (1,1-DCE)	0.33	100	0.0023	*U*	0.0021	*U*
1,2,3-Trichlorobenzene	NA	NA	0.0023	*U*	0.0021	*U*
1,2,3-Trichloropropane	NA	NA	0.0023	*U*	0.0021	*U*
1,2,4-Trichlorobenzene	NA	NA	0.0023	*U*	0.0021	*U*
1,2,4-Trimethylbenzene	3.6	52	0.0023	*U*	0.0021	*U*
1,2-Dibromo-3-chloropropane	NA	NA	0.0023	*U*	0.0021	*U*
1,2-Dibromoethane	NA	NA	0.0023	*U*	0.0021	*U*
1,2-Dichlorobenzene	1.1	100	0.0023	*U*	0.0021	*U*
1,2-Dichloroethane	0.02	3.1	0.0023	*U*	0.0021	*U*
1,2-Dichloropropane	NA	NA	0.0023	*U*	0.0021	*U*
1,3,5-Trimethylbenzene	8.4	52	0.0023	*U*	0.0021	*U*
1,3-Dichlorobenzene	2.4	49	0.0023	*U*	0.0021	*U*
1,4-Dichlorobenzene	1.8	13	0.0023	*U*	0.0021	*U*
1,4-Dioxane	0.1	13	0.045	*U*	0.043	*U*
2-Butanone (MEK)	0.12	100	0.0023	*U*	0.0021	*U*
2-Hexanone	NA	NA	0.0023	*U*	0.0021	*U*
4-Methyl-2-pentanone	NA	NA	0.0023	*U*	0.0021	*U*
Acetone	0.05	100	0.017	*B*	0.06	*B*
Acrolein	NA	NA	0.0045	*U*	0.0043	*U*
Acrylonitrile	NA	NA	0.0023	*U*	0.0021	*U*
Benzene	0.06	4.8	0.0023	*U*	0.0021	*U*
Bromochloromethane	NA	NA	0.0023	*U*	0.0021	*U*
Bromodichloromethane	NA	NA	0.0023	*U*	0.0021	*U*
Bromoform	NA	NA	0.0023	*U*	0.0021	*U*
Bromomethane	NA	NA	0.0023	*U*	0.0021	*U*
Carbon disulfide	NA	NA	0.0023	*U*	0.0021	*U*
Carbon tetrachloride	0.76	2.4	0.0023	*U*	0.0021	*U*
Chlorobenzene	1.1	100	0.0023	*U*	0.0021	*U*
Chloroethane	NA	NA	0.0023	*U*	0.0021	*U*
Chloroform	0.37	49	0.0023	*U*	0.0021	*U*
Chloromethane	NA	NA	0.0023	*U*	0.0021	*U*
cis-1,2-Dichloroethylene (cis-DCE)	0.25	100	0.0023	*U*	0.0021	*U*
cis-1,3-Dichloropropylene	NA	NA	0.0023	*U*	0.0021	*U*
Cyclohexane	NA	NA	0.0023	*U*	0.0021	*U*
Dibromochloromethane	NA	NA	0.0023	*U*	0.0021	*U*
Dibromomethane	NA	NA	0.0023	*U*	0.0021	*U*
Dichlorodifluoromethane	NA	NA	0.0023	*U*	0.0021	*U*
Ethyl Benzene	1	41	0.0023	*U*	0.0021	*U*
Hexachlorobutadiene	NA	NA	0.0023	*U*	0.0021	*U*
Isopropylbenzene	2.3	100	0.0023	*U*	0.0021	*U*
Methyl acetate	NA	NA	0.0023	*U*	0.0021	*U*
Methyl tert-butyl ether (MTBE)	0.93	100	0.0023	*U*	0.0021	*U*
Methylcyclohexane	NA	NA	0.0023	*U*	0.0021	*U*
Methylene chloride	0.05	100	0.0045	*U*	0.0043	*U*
n-Butylbenzene	12	100	0.0023	*U*	0.0021	*U*
n-Propylbenzene	3.9	100	0.0023	*U*	0.0021	*U*
o-Xylene	0.26	100	0.0023	*U*	0.0021	*U*
p- & m- Xylenes	0.26	100	0.0045	*U*	0.0043	*U*
p-Isopropyltoluene	10	NA	0.0023	*U*	0.0021	*U*
sec-Butylbenzene	11	100	0.0023	*U*	0.0021	*U*
Styrene	NA	NA	0.0023	*U*	0.0021	*U*
tert-Butyl alcohol (TBA)	NA	NA	0.0023	*U*	0.0021	*U*
tert-Butylbenzene	5.9	100	0.0023	*U*	0.0021	*U*
Tetrachloroethylene (PCE)	1.3	19	0.0023	*U*	0.0021	*U*
Toluene	0.7	100	0.0023	*U*	0.0021	*U*
trans-1,2-Dichloroethylene (trans-DCE)	0.19	100	0.0023	*U*	0.0021	*U*
trans-1,3-Dichloropropylene	NA	NA	0.0023	*U*	0.0021	*U*
Trichloroethylene (TCE)	0.47	21	0.0023	*U*	0.0021	*U*
Trichlorofluoromethane	NA	NA	0.0023	*U*	0.0021	*U*
Vinyl chloride (VC)	0.02	0.9	0.0023	*U*	0.0021	*U*
Xylenes, Total	0.26	100	0.0068	*U*	0.0064	*U*

Analyte Detected
Analyte Above UUSCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soils
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in mg/Kg (ppm)		**Sample ID**	**B-01 0-2**		**B-01 5-7**		**B-02 0-2**		**B-02 12-14**	
U= Not Detected ≥ indicated value		Sample Date	(2018-02-16)		(2018-02-16)		(2018-02-16)		(2018-02-16)	
Data above SCOs shown in **Bold**		Dilution Factor	2		2		2		2	
SVOCs, 8270	**UUSCO**	**RRUSCO**	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
1,1'-Biphenyl	NA	NA	0.0467	*U*	0.053	*U*	0.129	*D*	0.0504	*U*
1,2,4,5-Tetrachlorobenzene	NA	NA	0.0931	*U*	0.106	*U*	0.0947	*U*	0.101	*U*
1,2,4-Trichlorobenzene	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
1,2-Dichlorobenzene	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
1,2-Diphenylhydrazine (Azobenzene	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
1,3-Dichlorobenzene	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
1,4-Dichlorobenzene	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
2,3,4,6-Tetrachlorophenol	NA	NA	0.0931	*U*	0.106	*U*	0.0947	*U*	0.101	*U*
2,4,5-Trichlorophenol	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
2,4,6-Trichlorophenol	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
2,4-Dichlorophenol	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
2,4-Dimethylphenol	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
2,4-Dinitrophenol	NA	NA	0.0931	*U*	0.106	*U*	0.0947	*U*	0.101	*U*
2,4-Dinitrotoluene	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
2,6-Dinitrotoluene	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
2-Chloronaphthalene	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
2-Chlorophenol	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
2-Methylnaphthalene	NA	NA	0.0467	*U*	0.053	*U*	0.443	*D*	0.0504	*U*
2-Methylphenol	0.33	100	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
2-Nitroaniline	NA	NA	0.0931	*U*	0.106	*U*	0.0947	*U*	0.101	*U*
2-Nitrophenol	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
3- & 4-Methylphenols	0.33	100	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
3,3'-Dichlorobenzidine	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
3-Nitroaniline	NA	NA	0.0931	*U*	0.106	*U*	0.0947	*U*	0.101	*U*
4,6-Dinitro-2-methylphenol	NA	NA	0.0931	*U*	0.106	*U*	0.0947	*U*	0.101	*U*
4-Bromophenyl phenyl ether	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
4-Chloro-3-methylphenol	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
4-Chloroaniline	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
4-Chlorophenyl phenyl ether	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
4-Nitroaniline	NA	NA	0.0931	*U*	0.106	*U*	0.0947	*U*	0.101	*U*
4-Nitrophenol	NA	NA	0.0931	*U*	0.106	*U*	0.0947	*U*	0.101	*U*
Acenaphthene	20	100	0.0467	*U*	0.053	*U*	0.566	*D*	0.0504	*U*
Acenaphthylene	100	100	0.0885	*JD*	0.053	*U*	1.18	*D*	0.0504	*U*
Acetophenone	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Aniline	NA	NA	0.186	*U*	0.212	*U*	0.19	*U*	0.201	*U*
Anthracene	100	100	0.0833	*JD*	0.053	*U*	1.64	*D*	0.0504	*U*
Atrazine	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Benzaldehyde	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Benzidine	NA	NA	0.186	*U*	0.212	*U*	0.19	*U*	0.201	*U*
Benzo(a)anthracene	1	1	0.327	*D*	0.053	*U*	**3.8**	*D*	0.0504	*U*
Benzo(a)pyrene	1	1	0.416	*D*	0.053	*U*	**3.68**	*D*	0.0504	*U*
Benzo(b)fluoranthene	1	1	0.375	*D*	0.053	*U*	**3.49**	*D*	0.0504	*U*
Benzo(g,h,i)perylene	100	100	0.252	*D*	0.053	*U*	2.97	*D*	0.0504	*U*
Benzo(k)fluoranthene	0.8	3.9	0.373	*D*	0.053	*U*	2.61	*D*	0.0504	*U*
Benzoic acid	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Benzyl alcohol	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Benzyl butyl phthalate	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Bis(2-chloroethoxy)methane	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Bis(2-chloroethyl)ether	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Bis(2-chloroisopropyl)ether	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Bis(2-ethylhexyl)phthalate	NA	NA	0.0467	*U*	0.053	*U*	0.192	*JD*	0.0504	*U*
Caprolactam	NA	NA	0.0931	*U*	0.106	*U*	0.0947	*U*	0.101	*U*
Carbazole	NA	NA	0.0467	*U*	0.053	*U*	0.699	*D*	0.0504	*U*
Chrysene	1	3.9	0.331	*D*	0.053	*U*	3.83	*D*	0.0504	*U*
Dibenzo(a,h)anthracene	0.33	0.33	0.101	*D*	0.053	*U*	**1.14**	*D*	0.0504	*U*
Dibenzofuran	7	59	0.0467	*U*	0.053	*U*	0.878	*D*	0.0504	*U*
Diethyl phthalate	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Dimethyl phthalate	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Di-n-butyl phthalate	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Di-n-octyl phthalate	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Fluoranthene	100	100	0.481	*D*	0.053	*U*	7.47	*D*	0.0504	*U*
Fluorene	30	100	0.0467	*U*	0.053	*U*	1.08	*D*	0.0504	*U*
Hexachlorobenzene	0.33	1.2	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Hexachlorobutadiene	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Hexachlorocyclopentadiene	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Hexachloroethane	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.205	*D*	0.053	*U*	**2.61**	*D*	0.0504	*U*
Isophorone	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Naphthalene	12	100	0.0467	*U*	0.053	*U*	0.849	*D*	0.0504	*U*
Nitrobenzene	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
N-Nitrosodimethylamine	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
N-nitroso-di-n-propylamine	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
N-Nitrosodiphenylamine	NA	NA	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Pentachlorophenol	0.8	6.7	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Phenanthrene	100	100	0.275	*D*	0.053	*U*	8.71	*D*	0.0504	*U*
Phenol	0.33	100	0.0467	*U*	0.053	*U*	0.0475	*U*	0.0504	*U*
Pyrene	100	100	0.567	*D*	0.053	*U*	8.97	*D*	0.0504	*U*

Analyte Detected
Analyte Above UUSCO
Analyte Above RRUSCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soils
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in mg/Kg (ppm)		**Sample ID**	**B-03 0-2**		**B-03 4-6**		**B-04 0-2**		**B-04 4-6**	
U= Not Detected ≥ indicated value		Sample Date	(2018-02-16)		(2018-02-16)		(2018-02-16)		(2018-02-16)	
Data above SCOs shown in **Bold**		Dilution Factor	2		2		2		2	
SVOCs, 8270	**UUSCO**	**RRUSCO**	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
1,1'-Biphenyl	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
1,2,4,5-Tetrachlorobenzene	NA	NA	0.0961	*U*	0.0962	*U*	0.0946	*U*	0.0937	*U*
1,2,4-Trichlorobenzene	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
1,2-Dichlorobenzene	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
1,2-Diphenylhydrazine (Azobenzene	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
1,3-Dichlorobenzene	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
1,4-Dichlorobenzene	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
2,3,4,6-Tetrachlorophenol	NA	NA	0.0961	*U*	0.0962	*U*	0.0946	*U*	0.0937	*U*
2,4,5-Trichlorophenol	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
2,4,6-Trichlorophenol	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
2,4-Dichlorophenol	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
2,4-Dimethylphenol	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
2,4-Dinitrophenol	NA	NA	0.0961	*U*	0.0962	*U*	0.0946	*U*	0.0937	*U*
2,4-Dinitrotoluene	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
2,6-Dinitrotoluene	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
2-Chloronaphthalene	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
2-Chlorophenol	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
2-Methylnaphthalene	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
2-Methylphenol	0.33	100	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
2-Nitroaniline	NA	NA	0.0961	*U*	0.0962	*U*	0.0946	*U*	0.0937	*U*
2-Nitrophenol	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
3- & 4-Methylphenols	0.33	100	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
3,3'-Dichlorobenzidine	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
3-Nitroaniline	NA	NA	0.0961	*U*	0.0962	*U*	0.0946	*U*	0.0937	*U*
4,6-Dinitro-2-methylphenol	NA	NA	0.0961	*U*	0.0962	*U*	0.0946	*U*	0.0937	*U*
4-Bromophenyl phenyl ether	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
4-Chloro-3-methylphenol	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
4-Chloroaniline	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
4-Chlorophenyl phenyl ether	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
4-Nitroaniline	NA	NA	0.0961	*U*	0.0962	*U*	0.0946	*U*	0.0937	*U*
4-Nitrophenol	NA	NA	0.0961	*U*	0.0962	*U*	0.0946	*U*	0.0937	*U*
Acenaphthene	20	100	0.0482	*U*	0.0482	*U*	0.0658	*JD*	0.487	*D*
Acenaphthylene	100	100	0.0482	*U*	0.0482	*U*	0.0741	*JD*	0.0682	*JD*
Acetophenone	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Aniline	NA	NA	0.192	*U*	0.193	*U*	0.189	*U*	0.188	*U*
Anthracene	100	100	0.0515	*JD*	0.0482	*U*	0.162	*D*	0.152	*D*
Atrazine	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Benzaldehyde	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Benzidine	NA	NA	0.192	*U*	0.193	*U*	0.189	*U*	0.188	*U*
Benzo(a)anthracene	1	1	0.308	*D*	0.0482	*U*	0.559	*D*	0.286	*D*
Benzo(a)pyrene	1	1	0.268	*D*	0.0482	*U*	0.68	*D*	0.261	*D*
Benzo(b)fluoranthene	1	1	0.252	*D*	0.0482	*U*	0.559	*D*	0.252	*D*
Benzo(g,h,i)perylene	100	100	0.169	*D*	0.0482	*U*	0.361	*D*	0.174	*D*
Benzo(k)fluoranthene	0.8	3.9	0.245	*D*	0.0482	*U*	0.488	*D*	0.222	*D*
Benzoic acid	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Benzyl alcohol	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Benzyl butyl phthalate	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.0479	*JD*
Bis(2-chloroethoxy)methane	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Bis(2-chloroethyl)ether	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Bis(2-chloroisopropyl)ether	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Bis(2-ethylhexyl)phthalate	NA	NA	0.0753	*JD*	0.0482	*U*	0.0922	*JD*	0.473	*D*
Caprolactam	NA	NA	0.0961	*U*	0.0962	*U*	0.0946	*U*	0.0937	*U*
Carbazole	NA	NA	0.0482	*U*	0.0482	*U*	0.0597	*JD*	0.047	*U*
Chrysene	1	3.9	0.32	*D*	0.0482	*U*	0.583	*D*	0.288	*D*
Dibenzo(a,h)anthracene	0.33	0.33	0.0638	*JD*	0.0482	*U*	0.14	*D*	0.0592	*JD*
Dibenzofuran	7	59	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.223	*D*
Diethyl phthalate	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Dimethyl phthalate	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Di-n-butyl phthalate	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.829	*D*
Di-n-octyl phthalate	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Fluoranthene	100	100	0.518	*D*	0.0482	*U*	0.968	*D*	0.656	*D*
Fluorene	30	100	0.0482	*U*	0.0482	*U*	0.0794	*JD*	0.366	*D*
Hexachlorobenzene	0.33	1.2	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Hexachlorobutadiene	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Hexachlorocyclopentadiene	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Hexachloroethane	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.164	*D*	0.0482	*U*	0.327	*D*	0.14	*D*
Isophorone	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Naphthalene	12	100	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.0712	*JD*
Nitrobenzene	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
N-Nitrosodimethylamine	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
N-nitroso-di-n-propylamine	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
N-Nitrosodiphenylamine	NA	NA	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Pentachlorophenol	0.8	6.7	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Phenanthrene	100	100	0.171	*D*	0.0482	*U*	0.729	*D*	0.433	*D*
Phenol	0.33	100	0.0482	*U*	0.0482	*U*	0.0474	*U*	0.047	*U*
Pyrene	100	100	0.539	*D*	0.0482	*U*	1.03	*D*	0.648	*D*

Analyte Detected
Analyte Above UUSCO
Analyte Above RRUSCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 3: SVOCs in Soils
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in mg/Kg (ppm)			**Sample ID**	**B-05 0-2**		**B-05 4-6**	
U= Not Detected ≥ indicated value			Sample Date	(2018-02-16)		(2018-02-16)	
Data above SCOs shown in **Bold**			Dilution Factor	2		2	
SVOCs, 8270	**UUSCO**	**RRUSCO**	*Result*	*Qualifier*	*Result*	*Qualifier*
1,1'-Biphenyl	NA	NA	0.0468	*U*	0.0479	*U*
1,2,4,5-Tetrachlorobenzene	NA	NA	0.0934	*U*	0.0956	*U*
1,2,4-Trichlorobenzene	NA	NA	0.0468	*U*	0.0479	*U*
1,2-Dichlorobenzene	NA	NA	0.0468	*U*	0.0479	*U*
1,2-Diphenylhydrazine (Azobenzene	NA	NA	0.0468	*U*	0.0479	*U*
1,3-Dichlorobenzene	NA	NA	0.0468	*U*	0.0479	*U*
1,4-Dichlorobenzene	NA	NA	0.0468	*U*	0.0479	*U*
2,3,4,6-Tetrachlorophenol	NA	NA	0.0934	*U*	0.0956	*U*
2,4,5-Trichlorophenol	NA	NA	0.0468	*U*	0.0479	*U*
2,4,6-Trichlorophenol	NA	NA	0.0468	*U*	0.0479	*U*
2,4-Dichlorophenol	NA	NA	0.0468	*U*	0.0479	*U*
2,4-Dimethylphenol	NA	NA	0.0468	*U*	0.0479	*U*
2,4-Dinitrophenol	NA	NA	0.0934	*U*	0.0956	*U*
2,4-Dinitrotoluene	NA	NA	0.0468	*U*	0.0479	*U*
2,6-Dinitrotoluene	NA	NA	0.0468	*U*	0.0479	*U*
2-Chloronaphthalene	NA	NA	0.0468	*U*	0.0479	*U*
2-Chlorophenol	NA	NA	0.0468	*U*	0.0479	*U*
2-Methylnaphthalene	NA	NA	0.0468	*U*	0.0479	*U*
2-Methylphenol	0.33	100	0.0468	*U*	0.0479	*U*
2-Nitroaniline	NA	NA	0.0934	*U*	0.0956	*U*
2-Nitrophenol	NA	NA	0.0468	*U*	0.0479	*U*
3- & 4-Methylphenols	0.33	100	0.0468	*U*	0.0479	*U*
3,3'-Dichlorobenzidine	NA	NA	0.0468	*U*	0.0479	*U*
3-Nitroaniline	NA	NA	0.0934	*U*	0.0956	*U*
4,6-Dinitro-2-methylphenol	NA	NA	0.0934	*U*	0.0956	*U*
4-Bromophenyl phenyl ether	NA	NA	0.0468	*U*	0.0479	*U*
4-Chloro-3-methylphenol	NA	NA	0.0468	*U*	0.0479	*U*
4-Chloroaniline	NA	NA	0.0468	*U*	0.0479	*U*
4-Chlorophenyl phenyl ether	NA	NA	0.0468	*U*	0.0479	*U*
4-Nitroaniline	NA	NA	0.0934	*U*	0.0956	*U*
4-Nitrophenol	NA	NA	0.0934	*U*	0.0956	*U*
Acenaphthene	20	100	0.0468	*U*	0.0479	*U*
Acenaphthylene	100	100	0.0575	*JD*	0.0479	*U*
Acetophenone	NA	NA	0.0468	*U*	0.0479	*U*
Aniline	NA	NA	0.187	*U*	0.191	*U*
Anthracene	100	100	0.0508	*JD*	0.0479	*U*
Atrazine	NA	NA	0.0468	*U*	0.0479	*U*
Benzaldehyde	NA	NA	0.0468	*U*	0.0479	*U*
Benzidine	NA	NA	0.187	*U*	0.191	*U*
Benzo(a)anthracene	1	1	0.219	*D*	0.0479	*U*
Benzo(a)pyrene	1	1	0.213	*D*	0.0479	*U*
Benzo(b)fluoranthene	1	1	0.186	*D*	0.0479	*U*
Benzo(g,h,i)perylene	100	100	0.173	*D*	0.0479	*U*
Benzo(k)fluoranthene	0.8	3.9	0.181	*D*	0.0479	*U*
Benzoic acid	NA	NA	0.0468	*U*	0.0479	*U*
Benzyl alcohol	NA	NA	0.0468	*U*	0.0479	*U*
Benzyl butyl phthalate	NA	NA	0.0468	*U*	0.0479	*U*
Bis(2-chloroethoxy)methane	NA	NA	0.0468	*U*	0.0479	*U*
Bis(2-chloroethyl)ether	NA	NA	0.0468	*U*	0.0479	*U*
Bis(2-chloroisopropyl)ether	NA	NA	0.0468	*U*	0.0479	*U*
Bis(2-ethylhexyl)phthalate	NA	NA	0.0597	*JD*	0.0479	*U*
Caprolactam	NA	NA	0.0934	*U*	0.0956	*U*
Carbazole	NA	NA	0.0468	*U*	0.0479	*U*
Chrysene	1	3.9	0.218	*D*	0.0479	*U*
Dibenzo(a,h)anthracene	0.33	0.33	0.0468	*U*	0.0479	*U*
Dibenzofuran	7	59	0.0468	*U*	0.0479	*U*
Diethyl phthalate	NA	NA	0.0468	*U*	0.0479	*U*
Dimethyl phthalate	NA	NA	0.0468	*U*	0.0479	*U*
Di-n-butyl phthalate	NA	NA	0.0468	*U*	0.0479	*U*
Di-n-octyl phthalate	NA	NA	0.0468	*U*	0.0479	*U*
Fluoranthene	100	100	0.367	*D*	0.0479	*U*
Fluorene	30	100	0.0468	*U*	0.0479	*U*
Hexachlorobenzene	0.33	1.2	0.0468	*U*	0.0479	*U*
Hexachlorobutadiene	NA	NA	0.0468	*U*	0.0479	*U*
Hexachlorocyclopentadiene	NA	NA	0.0468	*U*	0.0479	*U*
Hexachloroethane	NA	NA	0.0468	*U*	0.0479	*U*
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.16	*D*	0.0479	*U*
Isophorone	NA	NA	0.0468	*U*	0.0479	*U*
Naphthalene	12	100	0.0468	*U*	0.0479	*U*
Nitrobenzene	NA	NA	0.0468	*U*	0.0479	*U*
N-Nitrosodimethylamine	NA	NA	0.0468	*U*	0.0479	*U*
N-nitroso-di-n-propylamine	NA	NA	0.0468	*U*	0.0479	*U*
N-Nitrosodiphenylamine	NA	NA	0.0468	*U*	0.0479	*U*
Pentachlorophenol	0.8	6.7	0.0468	*U*	0.0479	*U*
Phenanthrene	100	100	0.204	*D*	0.0479	*U*
Phenol	0.33	100	0.0468	*U*	0.0479	*U*
Pyrene	100	100	0.379	*D*	0.0479	*U*

Analyte Detected
Analyte Above UUSCO
Analyte Above RRUSCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 4: TAL Metals in Soils
NYSDEC Spill No.9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in mg/Kg (ppm)			**Sample ID**	**B-01 0-2**		**B-01 5-7**		**B-02 0-2**		**B-02 12-14**	
U= Not Detected ≥ indicated value			Sample Date	(2018-02-16)		(2018-02-16)		(2018-02-16)		(2018-02-16)	
Data above SCOs shown in **Bold**			Dilution Factor	1		1		1		1	
Metals, 6010 and 7473	**UUSCO**	**RRUSCO**		*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
Aluminum	NA	NA		7,610		15,900		8,210		5,450	
Antimony	NA	NA		0.558	*U*	0.634	*U*	0.568	*U*	0.605	*U*
Arsenic	13	16		5.14		1.78		6.02		1.21	*U*
Barium	350	400		208		74.8		379		47	
Beryllium	7.2	72		0.112	*U*	0.127	*U*	0.114	*U*	0.215	
Cadmium	2.5	4.3		0.692		0.419		0.356		0.363	*U*
Calcium	NA	NA		46,600		5,230		25,900		1,510	
Chromium	30	180		17.2		33.6		20.2		14.9	
Cobalt	NA	NA		6.58		21.7		7.18		10.1	
Copper	50	270		24.6		28.4		20.2		15.5	
Iron	NA	NA		11,700		23,900		14,300		13,200	
Lead	63	400		**501**		7.62		302		6.64	
Magnesium	NA	NA		7,980		17,200		5,400		5,240	
Manganese	1,600	2,000		278		361		410		742	
Mercury	0.18	0.81		0.293		0.038	*U*	0.161		0.0363	*U*
Nickel	30	310		22		30.5		12.6		12.9	
Potassium	NA	NA		1,340		5,000		1,070		924	
Selenium	3.9	180		1.77		1.27	*U*	1.14	*U*	1.21	*U*
Silver	2	180		0.558	*U*	0.634	*U*	0.568	*U*	0.605	*U*
Sodium	NA	NA		576		437		835		163	
Thallium	NA	NA		1.12	*U*	1.27	*U*	1.14	*U*	1.21	*U*
Vanadium	NA	NA		28.2		42.3		22		16.4	
Zinc	109	10,000		222	*B*	124	*B*	279	*B*	42.1	*B*

Analyte Detected
Analyte Above UUSCO
Analyte Above RRUSCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 4: TAL Metals in Soils
NYSDEC Spill No.9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in mg/Kg (ppm)			**Sample ID**	**B-03 0-2**		**B-03 4-6**		**B-04 0-2**		**B-04 4-6**	
U= Not Detected ≥ indicated value			Sample Date	(2018-02-16)		(2018-02-16)		(2018-02-16)		(2018-02-16)	
Data above SCOs shown in **Bold**			Dilution Factor	1		1		1		1	
Metals, 6010 and 7473	**UUSCO**	**RRUSCO**		*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
Aluminum	NA	NA		11,000		18,000		10,600		10,900	
Antimony	NA	NA		0.576	*U*	0.577	*U*	0.569	*U*	0.562	*U*
Arsenic	13	16		3.85		2.26		4.58		6.12	
Barium	350	400		250		83.7		330		**909**	
Beryllium	7.2	72		0.115	*U*	0.115	*U*	0.114	*U*	0.112	*U*
Cadmium	2.5	4.3		0.346	*U*	0.436		0.431		0.812	
Calcium	NA	NA		15,700		3,770		24,900		30,700	
Chromium	30	180		25.3		36.2		24.4		24.6	
Cobalt	NA	NA		11		20.6		9.37		8.46	
Copper	50	270		26.8		31.3		23		31.7	
Iron	NA	NA		20,700		27,400		16,800		13,700	
Lead	63	400		153		16		203		**534**	
Magnesium	NA	NA		7,630		10,800		9,060		7,870	
Manganese	1,600	2,000		721		945		434		433	
Mercury	0.18	0.81		0.157		0.0346	*U*	0.173		0.164	
Nickel	30	310		21.1		29.1		18.2		16.6	
Potassium	NA	NA		1,390		1,510		1,360		1,180	
Selenium	3.9	180		1.15	*U*	1.15	*U*	1.14	*U*	1.12	*U*
Silver	2	180		0.576	*U*	0.577	*U*	0.569	*U*	0.562	*U*
Sodium	NA	NA		253		296		246		917	
Thallium	NA	NA		1.15	*U*	1.15	*U*	1.14	*U*	1.12	*U*
Vanadium	NA	NA		40.3		49		31.3		26	
Zinc	109	10,000		203	*B*	106	*B*	215	*B*	555	*B*

Analyte Detected
Analyte Above UUSCO
Analyte Above RRUSCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 4: TAL Metals in Soils
NYSDEC Spill No.9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in mg/Kg (ppm)			**Sample ID**	**B-05 0-2**		**B-05 4-6**	
U= Not Detected ≥ indicated value			Sample Date	(2018-02-16)		(2018-02-16)	
Data above SCOs shown in **Bold**			Dilution Factor	1		1	
Metals, 6010 and 7473	**UUSCO**	**RRUSCO**	*Result*	*Qualifier*	*Result*	*Qualifier*
Aluminum	NA	NA	9,070		21,300	
Antimony	NA	NA	0.562	*U*	0.573	*U*
Arsenic	13	16	4.95		2	
Barium	350	400	275		64.6	
Beryllium	7.2	72	0.112	*U*	0.115	*U*
Cadmium	2.5	4.3	0.576		0.77	
Calcium	NA	NA	22,800		1,220	
Chromium	30	180	22.5		43.5	
Cobalt	NA	NA	10.8		25.6	
Copper	50	270	26.7		41.3	
Iron	NA	NA	18,100		33,100	
Lead	63	400	176		8.99	
Magnesium	NA	NA	8,850		13,000	
Manganese	1,600	2,000	591		1,060	
Mercury	0.18	0.81	0.183		0.0344	*U*
Nickel	30	310	17.7		38.4	
Potassium	NA	NA	1,570		2,050	
Selenium	3.9	180	1.12	*U*	1.15	*U*
Silver	2	180	0.562	*U*	0.573	*U*
Sodium	NA	NA	225		159	
Thallium	NA	NA	1.12	*U*	1.15	*U*
Vanadium	NA	NA	31.9		57.5	
Zinc	109	10,000	195	*B*	100	*B*

Analyte Detected
Analyte Above UUSCO
Analyte Above RRUSCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 5: Pesticides and PCBs in Soils
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in mg/Kg (ppm)		**Sample ID**	**B-01 0-2**		**B-01 5-7**		**B-02 0-2**		**B-02 12-14**		**B-03**
U= Not Detected ≥ indicated value		Sample Date	(2018-02-16)		(2018-02-16)		(2018-02-16)		(2018-02-16)		(2018-
Data above SCOs shown in **Bold**		Dilution Factor	5		5		5		5		5
Pesticides, 8081	**UUSCO**	**RRUSCO**	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*
4,4'-DDD	0.0033	13	0.00373	*D*	0.00209	*U*	0.0196	*D*	0.002	*U*	0.0237
4,4'-DDE	0.0033	8.9	0.0239	*D*	0.00209	*U*	0.0116	*DP*	0.002	*U*	0.00354
4,4'-DDT	0.0033	7.9	0.0206	*D*	0.00499	*D*	0.0296	*D*	0.002	*U*	0.00297
Aldrin	0.005	0.097	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
alpha-BHC	0.02	0.48	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
alpha-Chlordane	0.094	4.2	0.00435	*D*	0.00209	*U*	0.0272	*D*	0.002	*U*	0.0019
beta-BHC	0.036	0.36	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
Chlordane (total)	NA	NA	0.0368	*U*	0.0418	*U*	0.123	*D*	0.0399	*U*	0.038
delta-BHC	0.04	100	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
Dieldrin	0.005	0.2	0.0028	*DP*	0.00209	*U*	0.0166	*D*	0.002	*U*	0.00217
Endosulfan I	2.4	24	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
Endosulfan II	2.4	24	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
Endosulfan sulfate	2.4	24	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
Endrin	0.014	11	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
Endrin aldehyde	NA	NA	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
Endrin ketone	NA	NA	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
gamma-BHC (Lindane)	0.1	1.3	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
gamma-Chlordane	NA	NA	0.00506	*DP*	0.00209	*U*	0.0232	*DP*	0.002	*U*	0.0019
Heptachlor	0.042	2.1	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
Heptachlor Epoxide	NA	NA	0.00184	*U*	0.00209	*U*	0.00187	*U*	0.002	*U*	0.0019
Methoxychlor	NA	NA	0.00921	*U*	0.0105	*U*	0.00933	*U*	0.00998	*U*	0.00951
Toxaphene	NA	NA	0.0932	*U*	0.106	*U*	0.0945	*U*	0.101	*U*	0.0962

		Sample ID	**B-01 0-2**		**B-01 5-7**		**B-02 0-2**		**B-02 12-14**		**B-03**
		Sample Date	(2018-02-16)		(2018-02-16)		(2018-02-16)		(2018-02-16)		(2018-
		Dilution Factor	1		1		1		1		1
PCBs, 8082	**UUSCO**	**RRUSCO**	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*
Aroclor 1016	0.1	1.00	0.0186	*U*	0.0211	*U*	0.0189	*U*	0.0202	*U*	0.0192
Aroclor 1221	0.1	1.00	0.0186	*U*	0.0211	*U*	0.0189	*U*	0.0202	*U*	0.0192
Aroclor 1232	0.1	1.00	0.0186	*U*	0.0211	*U*	0.0189	*U*	0.0202	*U*	0.0192
Aroclor 1242	0.1	1.00	0.0186	*U*	0.0211	*U*	0.0189	*U*	0.0202	*U*	0.0192
Aroclor 1248	0.1	1.00	0.0186	*U*	0.0211	*U*	0.0189	*U*	0.0202	*U*	0.0192
Aroclor 1254	0.1	1.00	0.0186	*U*	0.0211	*U*	0.0189	*U*	0.0202	*U*	0.0192
Aroclor 1260	0.1	1.00	0.0186	*U*	0.0211	*U*	0.0189	*U*	0.0202	*U*	0.0192
Aroclor, Total	0.1	1.00	0.0186	*U*	0.0211	*U*	0.0189	*U*	0.0202	*U*	0.0192

Analyte Detected
Analyte Above UUSCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 5: Pesticides and PCBs in Soils
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in mg/Kg (ppm)			Sample ID	0-2		B-03 4-6		B-04 0-2		B-04 4-6		B-05 0-2	
U= Not Detected ≥ indicated value			Sample Date	02-16)		(2018-02-16)		(2018-02-16)		(2018-02-16)		(2018-02-16)	
Data above SCOs shown in **Bold**			Dilution Factor			5		5		5		5	
Pesticides, 8081	**UUSCO**	**RRUSCO**	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
4,4'-DDD	0.0033	13	*D*	0.00189	*U*	0.0522	*D*	0.104	*D*	0.0168	*D*		
4,4'-DDE	0.0033	8.9	*DP*	0.00189	*U*	0.0082	*DP*	0.0203	*D*	0.00366	*D*		
4,4'-DDT	0.0033	7.9	*D*	0.00189	*U*	0.00188	*U*	0.0109	*D*	0.00185	*U*		
Aldrin	0.005	0.097	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
alpha-BHC	0.02	0.48	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
alpha-Chlordane	0.094	4.2	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
beta-BHC	0.036	0.36	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
Chlordane (total)	NA	NA	*U*	0.0378	*U*	0.0375	*U*	0.0371	*U*	0.0371	*U*		
delta-BHC	0.04	100	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
Dieldrin	0.005	0.2	*DP*	0.00189	*U*	0.00585	*DP*	0.00185	*U*	0.00185	*U*		
Endosulfan I	2.4	24	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
Endosulfan II	2.4	24	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
Endosulfan sulfate	2.4	24	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
Endrin	0.014	11	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
Endrin aldehyde	NA	NA	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
Endrin ketone	NA	NA	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
gamma-BHC (Lindane)	0.1	1.3	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
gamma-Chlordane	NA	NA	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
Heptachlor	0.042	2.1	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
Heptachlor Epoxide	NA	NA	*U*	0.00189	*U*	0.00188	*U*	0.00185	*U*	0.00185	*U*		
Methoxychlor	NA	NA	*U*	0.00946	*U*	0.00939	*U*	0.00927	*U*	0.00927	*U*		
Toxaphene	NA	NA	*U*	0.0957	*U*	0.095	*U*	0.0938	*U*	0.0938	*U*		

			Sample ID	0-2		B-03 4-6		B-04 0-2		B-04 4-6		B-05 0-2	
			Sample Date	02-16)		(2018-02-16)		(2018-02-16)		(2018-02-16)		(2018-02-16)	
			Dilution Factor			1		1		1		1	
PCBs, 8082	**UUSCO**	**RRUSCO**	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
Aroclor 1016	0.1	1.00	*U*	0.0191	*U*	0.019	*U*	0.0187	*U*	0.0187	*U*		
Aroclor 1221	0.1	1.00	*U*	0.0191	*U*	0.019	*U*	0.0187	*U*	0.0187	*U*		
Aroclor 1232	0.1	1.00	*U*	0.0191	*U*	0.019	*U*	0.0187	*U*	0.0187	*U*		
Aroclor 1242	0.1	1.00	*U*	0.0191	*U*	0.019	*U*	0.0187	*U*	0.0187	*U*		
Aroclor 1248	0.1	1.00	*U*	0.0191	*U*	0.019	*U*	0.0187	*U*	0.0187	*U*		
Aroclor 1254	0.1	1.00	*U*	0.0191	*U*	0.019	*U*	0.0187	*U*	0.0187	*U*		
Aroclor 1260	0.1	1.00	*U*	0.0191	*U*	0.0669	*P*	0.0187	*U*	0.0187	*U*		
Aroclor, Total	0.1	1.00	*U*	0.0191	*U*	0.0669		0.0187	*U*	0.0187	*U*		

Analyte Detected
Analyte Above UUSCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 5: Pesticides and PCBs in Soils
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in mg/Kg (ppm)		**Sample ID**	**B-05 4-6**	
U= Not Detected ≥ indicated value		Sample Date	(2018-02-16)	
Data above SCOs shown in **Bold**		Dilution Factor	5	
Pesticides, 8081	**UUSCO**	**RRUSCO**	*Result*	*Qualifier*
4,4'-DDD	0.0033	13	0.00188	*U*
4,4'-DDE	0.0033	8.9	0.00188	*U*
4,4'-DDT	0.0033	7.9	0.00188	*U*
Aldrin	0.005	0.097	0.00188	*U*
alpha-BHC	0.02	0.48	0.00188	*U*
alpha-Chlordane	0.094	4.2	0.00188	*U*
beta-BHC	0.036	0.36	0.00188	*U*
Chlordane (total)	NA	NA	0.0377	*U*
delta-BHC	0.04	100	0.00188	*U*
Dieldrin	0.005	0.2	0.00188	*U*
Endosulfan I	2.4	24	0.00188	*U*
Endosulfan II	2.4	24	0.00188	*U*
Endosulfan sulfate	2.4	24	0.00188	*U*
Endrin	0.014	11	0.00188	*U*
Endrin aldehyde	NA	NA	0.00188	*U*
Endrin ketone	NA	NA	0.00188	*U*
gamma-BHC (Lindane)	0.1	1.3	0.00188	*U*
gamma-Chlordane	NA	NA	0.00188	*U*
Heptachlor	0.042	2.1	0.00188	*U*
Heptachlor Epoxide	NA	NA	0.00188	*U*
Methoxychlor	NA	NA	0.00942	*U*
Toxaphene	NA	NA	0.0954	*U*

		Sample ID	**B-05 4-6**	
		Sample Date	(2018-02-16)	
		Dilution Factor	1	
PCBs, 8082	**UUSCO**	**RRUSCO**	*Result*	*Qualifier*
Aroclor 1016	0.1	1.00	0.019	*U*
Aroclor 1221	0.1	1.00	0.019	*U*
Aroclor 1232	0.1	1.00	0.019	*U*
Aroclor 1242	0.1	1.00	0.019	*U*
Aroclor 1248	0.1	1.00	0.019	*U*
Aroclor 1254	0.1	1.00	0.019	*U*
Aroclor 1260	0.1	1.00	0.019	*U*
Aroclor, Total	0.1	1.00	0.019	*U*

Analyte Detected
Analyte Above UUSCO

Notes: SCOs based on NYSDEC Part 375-6.8 and CP-51 NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 6: VOCs in Groundwater
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in µg/L (parts per billion, ppb)	**Sample ID**	**MW-02 20180227**		**MW-03 20180227**		**MW-04 20180227**		**MW-09 20180227**	
U = Not Detected (ND) above value	Sample Date	(2018-02-27)		(2018-02-27)		(2018-02-27)		(2018-02-27)	
Data above AWQS shown in **Bold**	Dilution Factor	1		1		1		1	
VOCs, 8260	**AWQS**	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
1,1,1,2-tetrachloroethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,1,1-trichloroethane (1,1,1-TCA)	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,1,2,2-tetrachloroethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,1,2-trichloro-1,2,2-trifluoroethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,1,2-trichloroethane	1	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,1-dichloroethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,1-dichloroethylene (1,1-DCE)	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,2,3-trichlorobenzene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,2,3-trichloropropane	0.04	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,2,4-trichlorobenzene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,2,4-trimethylbenzene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,2-dibromo-3-chloropropane	0.04	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,2-dibromoethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,2-dichlorobenzene	3	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,2-dichloroethane	0.6	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,2-dichloropropane	1	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,3,5-trimethylbenzene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,3-dichlorobenzene	3	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,4-dichlorobenzene	3	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
1,4-dioxane	NA	40	*U*	40	*U*	40	*U*	40	*U*
2-butanone (MEK)	50	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
2-hexanone	50	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
4-methyl-2-pentanone	NA	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
acetone	50	1	*U*	1	*U*	1	*U*	1	*U*
acrolein	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
acrylonitrile	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
benzene	1	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
bromochloromethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
bromodichloromethane	50	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
bromoform	50	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
bromomethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
carbon disulfide	NA	0.2	*U*	0.28	*J*	0.2	*U*	0.2	*U*
carbon tetrachloride	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
chlorobenzene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
chloroethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
chloroform	7	0.54		1		0.62		0.35	*J*
chloromethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
cis-1,2-dichloroethylene (cis-DCE)	5	0.2	*U*	0.42	*J*	0.2	*U*	0.2	*U*
cis-1,3-dichloropropylene	0.4	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
cyclohexane	NA	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
dibromochloromethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
dibromomethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
dichlorodifluoromethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
ethyl benzene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
hexachlorobutadiene	0.5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
isopropylbenzene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
methyl acetate	NA	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
methyl tert-butyl ether (MTBE)	10	0.4	*J*	0.2	*U*	0.2	*U*	0.2	*U*
methylcyclohexane	NA	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
methylene chloride	5	1	*U*	1	*U*	1	*U*	1	*U*
n-butylbenzene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
n-propylbenzene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
o-xylene (included in total xylenes)	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
p- & m- xylenes (included in total xylenes)	5	0.5	*U*	0.5	*U*	0.5	*U*	0.5	*U*
p-isopropyltoluene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
sec-butylbenzene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
styrene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
tert-butyl alcohol (TBA)	NA	0.5	*U*	3.2	*J*	0.5	*U*	0.5	*U*
tert-butylbenzene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
tetrachloroethylene (PCE)	5	2.1		3.6		2.4		0.2	*U*
toluene	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
trans-1,2-dichloroethylene (trans-DCE)	5	0.2	*U*	0.3	*J*	0.2	*U*	0.2	*U*
trans-1,3-dichloropropylene	0.4	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
trichloroethylene (TCE)	5	0.88		0.93		0.48	*J*	0.2	*U*
trichlorofluoromethane	5	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
vinyl chloride (VC)	2	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
xylenes, total	5	0.6	*U*	0.6	*U*	0.6	*U*	0.6	*U*
	TOTAL VOCs	3.92		9.73		3.5		0.35	

Detected concentrations
Concentrations above AWQS

Notes: AWQS based on NYSDEC TOGS 1.1.1 (Class GA) NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 7: SVOCs in Groundwater
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in µg/L (parts per billion, ppb)	**Sample ID**	**MW-02 20180227**		**MW-03 20180227**		**MW-04 20180227**		**MW-09 20180227**	
U = Not Detected (ND) above value	Sample Date	(2018-02-27)		(2018-02-27)		(2018-02-27)		(2018-02-27)	
Data above AWQS shown in **Bold**	Dilution Factor	1		1		1		1	
SVOCs, 8270	**AWQS**	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
1,1'-biphenyl	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
1,2,4,5-tetrachlorobenzene	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
1,2,4-trichlorobenzene	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
1,2-dichlorobenzene	3	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
1,2-diphenylhydrazine (azobenzene)	ND	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
1,3-dichlorobenzene	3	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
1,4-dichlorobenzene	3	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2,3,4,6-tetrachlorophenol	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2,4,5-trichlorophenol	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2,4,6-trichlorophenol	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2,4-dichlorophenol	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2,4-dimethylphenol	50	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2,4-dinitrophenol	10	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2,4-dinitrotoluene	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2,6-dinitrotoluene	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2-chloronaphthalene	10	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2-chlorophenol	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2-methylnaphthalene	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2-methylphenol	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2-nitroaniline	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
2-nitrophenol	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
3- & 4-methylphenols	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
3,3'-dichlorobenzidine	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
3-nitroaniline	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
4,6-dinitro-2-methylphenol	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
4-bromophenyl phenyl ether	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
4-chloro-3-methylphenol	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
4-chloroaniline	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
4-chlorophenyl phenyl ether	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
4-nitroaniline	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
4-nitrophenol	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
acenaphthene	20	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
acenaphthylene	NA	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
acetophenone	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
aniline	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
anthracene	50	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
atrazine	7.5	0.571	*U*	0.541	*U*	0.5	*U*	0.513	*U*
benzaldehyde	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
benzidine	5	11.4	*U*	10.8	*U*	10	*U*	10.3	*U*
benzo(a)anthracene	0.002	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
benzo(a)pyrene	ND	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
benzo(b)fluoranthene	0.002	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
benzo(g,h,i)perylene	NA	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
benzo(k)fluoranthene	0.002	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
benzoic acid	NA	28.6	*U*	27	*U*	25	*U*	25.6	*U*
benzyl alcohol	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
benzyl butyl phthalate	50	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
bis(2-chloroethoxy)methane	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
bis(2-chloroethyl)ether	1	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
bis(2-chloroisopropyl)ether	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
bis(2-ethylhexyl)phthalate	5	0.571		0.541	*U*	1.21		0.8	
caprolactam	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
carbazole	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
chrysene	0.002	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
dibenzo(a,h)anthracene	NA	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
dibenzofuran	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
diethyl phthalate	50	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
dimethyl phthalate	50	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
di-n-butyl phthalate	50	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
di-n-octyl phthalate	50	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
fluoranthene	50	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
fluorene	50	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
hexachlorobenzene	0.04	0.0229	*U*	0.0216	*U*	0.02	*U*	0.0205	*U*
hexachlorobutadiene	0.5	0.571	*U*	0.541	*U*	0.5	*U*	0.513	*U*
hexachlorocyclopentadiene	5	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
hexachloroethane	5	0.571	*U*	0.541	*U*	0.5	*U*	0.513	*U*
indeno(1,2,3-cd)pyrene	0.002	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
isophorone	50	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
naphthalene	10	0.0686		0.108		0.05	*U*	0.0513	*U*
nitrobenzene	0.4	0.286	*U*	0.27	*U*	0.25	*U*	0.256	*U*
n-nitrosodimethylamine	50	0.571	*U*	0.541	*U*	0.5	*U*	0.513	*U*
n-nitroso-di-n-propylamine	NA	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
n-nitrosodiphenylamine	50	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
pentachlorophenol	1	0.537		0.27	*U*	0.25	*U*	0.256	*U*
phenanthrene	50	0.0571	*U*	0.0541	*U*	0.05	*U*	0.0513	*U*
phenol	1	2.86	*U*	2.7	*U*	2.5	*U*	2.56	*U*
pyrene	50	0.126		0.0865		0.05	*U*	0.0513	*U*
	TOTAL SVOCs	1.3		0.2		1.2		0.8	

Detected concentrations
Concentrations above AWQS

Notes: AWQS based on NYSDEC TOGS 1.1.1 (Class GA) NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 8: Pesticides and PCBs in Groundwater
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in µg/L (parts per billion, ppb)	**Sample ID**	**MW-02 20180227**		**MW-03 20180227**		**MW-04 20180227**		**MW-09 20180227**	
U = Not Detected (ND) above value	Sample Date	(2018-02-27)		(2018-02-27)		(2018-02-27)		(2018-02-27)	
Data above AWQS shown in **Bold**	Dilution Factor	1		1		1		1	
Pesticides, 8081	**AWQS**	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
4,4'-DDD	0.3	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
4,4'-DDE	0.2	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
4,4'-DDT	0.2	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
aldrin	NE	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
alpha-BHC	0.01	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
alpha-chlordane	0.05	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
beta-BHC	0.04	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
chlordane, total	0.05	0.0222	*U*	0.0229	*U*	0.0205	*U*	0.0205	*U*
delta-BHC	0.04	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
dieldrin	0.004	0.00222	*U*	0.00229	*U*	0.00205	*U*	0.00205	*U*
endosulfan I	NA	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
endosulfan II	NA	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
endosulfan sulfate	NA	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
endrin	NA	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
endrin aldehyde	5	0.0111	*U*	0.0114	*U*	0.0103	*U*	0.0103	*U*
endrin ketone	5	0.0111	*U*	0.0114	*U*	0.0103	*U*	0.0103	*U*
gamma-BHC (lindane)	0.05	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
gamma-chlordane	0.05	0.0111	*U*	0.0114	*U*	0.0103	*U*	0.0103	*U*
heptachlor	0.04	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
heptachlor epoxide	0.03	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
methoxychlor	35	0.00444	*U*	0.00457	*U*	0.0041	*U*	0.0041	*U*
toxaphene	0.06	0.111	*U*	0.114	*U*	0.103	*U*	0.103	*U*

	Sample ID	**MW-02 20180227**		**MW-03 20180227**		**MW-04 20180227**		**MW-09 20180227**	
	Sample Date	(2018-02-27)		(2018-02-27)		(2018-02-27)		(2018-02-27)	
	Dilution Factor	1		1		1		1	
PCBs, 8082	**AWQS**	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
Aroclor 1016	0.09	0.0556	*U*	0.0571	*U*	0.0513	*U*	0.0513	*U*
Aroclor 1221	0.09	0.0556	*U*	0.0571	*U*	0.0513	*U*	0.0513	*U*
Aroclor 1232	0.09	0.0556	*U*	0.0571	*U*	0.0513	*U*	0.0513	*U*
Aroclor 1242	0.09	0.0556	*U*	0.0571	*U*	0.0513	*U*	0.0513	*U*
Aroclor 1248	0.09	0.0556	*U*	0.0571	*U*	0.0513	*U*	0.0513	*U*
Aroclor 1254	0.09	0.0556	*U*	0.0571	*U*	0.0513	*U*	0.0513	*U*
Aroclor 1260	0.09	0.0556	*U*	0.0571	*U*	0.0513	*U*	0.0513	*U*
Aroclor, Total	0.09	0.0556	*U*	0.0571	*U*	0.0513	*U*	0.0513	*U*

Detected concentrations

Notes: AWQS based on NYSDEC TOGS 1.1.1 (Class GA) NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 9: TAL Metals (Total) in Groundwater
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in µg/L (parts per billion, ppb)	**Sample ID**	**MW-02 20180227**		**MW-03 20180227**		**MW-04 20180227**		**MW-09 20180227**	
U = Not Detected (ND) above value	Sample Date	(2018-02-27)		(2018-02-27)		(2018-02-27)		(2018-02-27)	
Data above AWQS shown in **Bold**	Dilution Factor	1		1		1		10	
Metals, 6010 and 7473	**AWQS**	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
aluminum	NA	78		50	*U*	50	*U*	50	*U*
antimony	3	5	*U*	**7**		5	*U*	5	*U*
arsenic	25	4	*U*	4	*U*	4	*U*	5	
barium	1,000	138		164		97		371	
beryllium	3	1	*U*	1	*U*	1	*U*	1	*U*
cadmium	5	3	*U*	3	*U*	3	*U*	3	*U*
calcium	NA	154,000		159,000		121,000		206,000	
chromium	50	5	*U*	5	*U*	5	*U*	5	*U*
cobalt	5	5	*U*	**6**		5	*U*	5	*U*
copper	200	10		10		8		10	
iron**	300	151	*B*	120	*B*	232	*B*	138	*B*
lead	25	5		5	*U*	5	*U*	5	*U*
magnesium	35,000	**64,100**		**66,500**		**52,000**		**79,200**	
manganese**	300	**703**		**1,180**		243		**1,390**	
mercury	0.7	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
nickel	100	5	*U*	5	*U*	5	*U*	5	*U*
potassium	NA	8,290		6,450		5,310		8,060	
selenium	10	**88**		**87**		**77**		**107**	
silver	50	5	*U*	5	*U*	5	*U*	5	*U*
sodium	20,000	**168,000**		**233,000**		**185,000**		**443,000**	*D*
thallium	0.5	5	*U*	5	*U*	5	*U*	5	*U*
vanadium	14	10	*U*	10	*U*	10	*U*	10	*U*
zinc	2,000	15	*U*	15	*U*	15	*U*	15	*U*

** combined iron and manganese = 500

Detected concentrations
Concentrations above AWQS

Notes: AWQS based on NYSDEC TOGS 1.1.1 (Class GA) NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 10: TAL Metals (Dissolved) in Groundwater
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

All data in µg/L (parts per billion, ppb)	**Sample ID**	**MW-02 20180227**		**MW-03 20180227**		**MW-04 20180227**		**MW-09 20180227**	
U = Not Detected (ND) above value	Sample Date	(2018-02-27)		(2018-02-27)		(2018-02-27)		(2018-02-27)	
Data above AWQS shown in **Bold**	Dilution Factor	1		1		1		10	
Metals, 6010 and 7473	**AWQS**	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
aluminum	NA	64		50	*U*	87		50	*U*
antimony	3	**8**		**6**		5	*U*	5	*U*
arsenic	25	4	*U*	4	*U*	4	*U*	4	*U*
barium	1,000	139		164		95		371	
beryllium	3	1	*U*	1	*U*	1	*U*	1	*U*
cadmium	5	3	*U*	3	*U*	3	*U*	3	*U*
calcium	NA	155,000		162,000		119,000		212,000	
chromium	50	5	*U*	5	*U*	5	*U*	5	*U*
cobalt	5	5	*U*	5		5	*U*	5	*U*
copper	200	10		10		7		11	
iron**	300	163		151		104		58	
lead	25	5	*U*	5	*U*	5	*U*	5	
magnesium	35,000	**64,400**		**67,800**		**50,600**		**79,100**	
manganese**	300	**707**		**1,160**		240		**1,410**	
mercury	0.7	0.2	*U*	0.2	*U*	0.2	*U*	0.2	*U*
nickel	100	5	*U*	5	*U*	5	*U*	5	*U*
potassium	NA	8,320	*B*	6,860	*B*	5,120	*B*	8,040	*B*
selenium	10	**92**		**88**		**75**		**103**	
silver	50	5	*U*	5	*U*	5	*U*	5	*U*
sodium	20,000	**168,000**	*B*	**229,000**	*B*	**172,000**	*B*	**426,000**	*BD*
thallium	0.5	5	*U*	5	*U*	5	*U*	5	*U*
vanadium	14	10	*U*	10	*U*	10	*U*	10	*U*
zinc	2,000	22		24		15	*U*	15	*U*

** combined iron and manganese = 500

Detected concentrations
Concentrations above AWQS

Notes: AWQS based on NYSDEC TOGS 1.1.1 (Class GA) NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

Table 11: 1,4-Dioxane and PFAS in Groundwater
NYSDEC Spill No. 9813188

Betances Houses VI
472-474 Willis Avenue, Bronx, NY

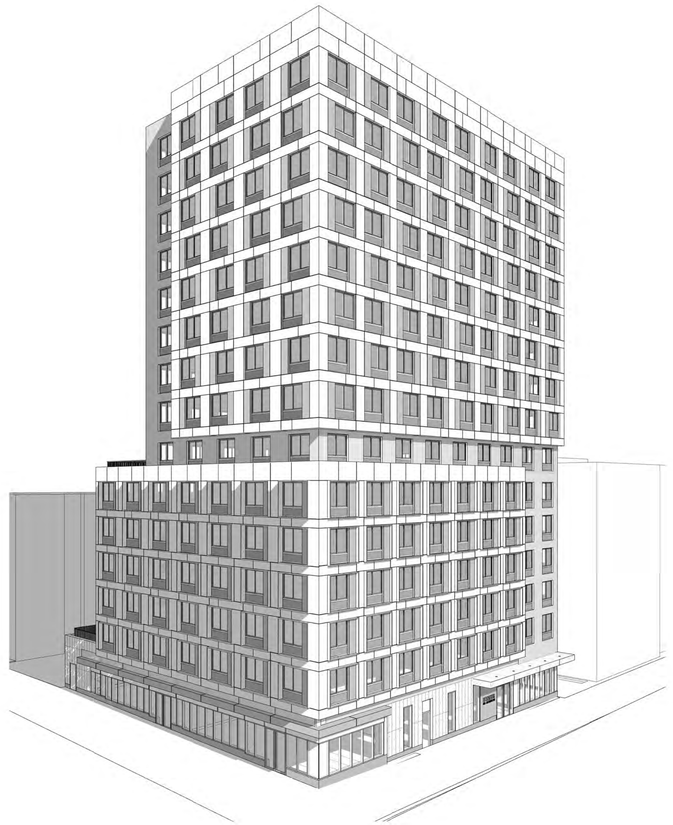
Sample ID	MW-02 20191205		MW-03 20191205		MW-04 20191205		MW-09 20191205		FB 20191205	
U= Not Detected ≥ value — Sample Date	(2019-12-05)		(2019-12-05)		(2019-12-05)		(2019-12-05)		(2019-12-05)	
Dilution Factor	1		1		1		1		1	
1,4-Dioxane (µg/L)	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
1,4-Dioxane	0.2	*U*	0.34		0.2	*U*	0.2	*U*	0.2	*U*
PFAS (ng/L)	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*	*Result*	*Qualifier*
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	2	*U*	2	*U*	2	*U*	2	*U*	2	*U*
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	5	*U*	5	*U*	5	*U*	5	*U*	5	*U*
N-EtFOSAA	2	*U*	2	*U*	2	*U*	2	*U*	2	*U*
N-MeFOSAA	2	*U*	2	*U*	2	*U*	2	*U*	2	*U*
Perfluoro-1-decanesulfonic acid (PFDS)	2	*U*	2	*U*	2	*U*	2	*U*	2	*U*
Perfluoro-1-heptanesulfonic acid (PFHpS)	2	*U*	2	*U*	2	*U*	2	*U*	2	*U*
Perfluoro-1-octanesulfonamide (FOSA)	2	*U*	2	*U*	2	*U*	2	*U*	2	*U*
Perfluorobutanesulfonic acid (PFBS)	8.68		5.83		8.19		6.02		2	*U*
Perfluorodecanoic acid (PFDA)	2	*U*	8.57		2	*U*	2	*U*	2	*U*
Perfluorododecanoic acid (PFDoA)	2	*U*	2	*U*	2	*U*	2	*U*	2	*U*
Perfluoroheptanoic acid (PFHpA)	12.8		10.1		12.8		11		2	*U*
Perfluorohexanesulfonic acid (PFHxS)	7.85		5.74		5.5		5.42		2	*U*
Perfluorohexanoic acid (PFHxA)	16.6		20.5		19.8		33.9		2	*U*
Perfluoro-n-butanoic acid (PFBA)	13.7		9.3		11.2		16.8		2	*U*
Perfluorononanoic acid (PFNA)	4.57		10.3		3.46		14.2		2	*U*
Perfluorooctanesulfonic acid (PFOS)	47.5		144		55		13.6		2	*U*
Perfluorooctanoic acid (PFOA)	37.9		30.4		27.2		36.7		2	*U*
Perfluoropentanoic acid (PFPeA)	19.2		28		24		35.5		2	*U*
Perfluorotetradecanoic acid (PFTA)	2	*U*	2	*U*	2	*U*	2	*U*	2	*U*
Perfluorotridecanoic acid (PFTrDA)	2	*U*	2	*U*	2	*U*	2	*U*	2	*U*
Perfluoroundecanoic acid (PFUnA)	2	*U*	2	*U*	2	*U*	2	*U*	2	*U*
Total PFOS and PFOA	85.4		174.4		82.2		50.3		ND	

Analyte Detected

Notes: AWQS based on NYSDEC TOGS 1.1.1 (Class GA) NA = not available
Result Qualifiers: J = approximate E = estimated B = detected in blank D = diluted

APPENDIX C

Proposed Development Plans



BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY 10455

100% DD SUBMISSION SET

2018.04.06

SHEET LIST

ARCHITECTURAL

SHEET NUMBER	SHEET NAME
T-001	COVER SHEET
T-002	TITLE SHEET
T-003	BUILDING PERSPECTIVES
G-001	BUILDING DESCRIPTION & GENERAL NOTES / BUILDING CODE ANALYSIS
G-002	ACCESSIBILITY REQUIREMENTS
G-003	SURVEY - FOR REFERENCE ONLY
G-004	FEMA FLOOD MAP
G-005	PROXIMITY PLAN
G-006	SITE PHOTOGRAPHS
G-007	BORINGS
G-008	TRANSIT ZONE MAP
EN-001	MECHANICAL COMCHECK
EN-002	MECHANICAL COMCHECK
EN-003	ENERGY ANALYSIS
EN-004	ENERGY ANALYSIS
EN-005	ENERGY ANALYSIS
EN-006	ENERGY ANALYSIS
Z-001	ZONING ANALYSIS & UNIT COUNT
Z-002	ZONING DIAGRAMS
Z-003	ZONING AREA PLANS
LS-001	LIFE SAFETY PLAN-CELLAR & LEVEL 1
LS-002	LIFE SAFETY PLAN-LEVEL 2 & LEVEL 3-6
LS-003	LIFE SAFETY PLAN-LEVEL 7 & LEVEL 8,10,12,14
LS-004	LIFE SAFETY PLAN-LEVEL 9,11,13,15 & ROOF LEVEL
A-001	SITE PLAN
A-100	FLOOR PLAN - CELLAR & GROUND LEVEL
A-101	FLOOR PLAN - LEVEL 2 & TYPICAL LEVEL 3-6
A-102	FLOOR PLAN - LEVEL 7 & TYPICAL LEVEL 8,10,12,14
A-103	FLOOR PLAN - TYPICAL LEVEL 9,11,13,15 & ROOF LEVEL & BULKHEAD LEVEL
A-110	UNIT PLANS - STUDIO & TYPE 1.7
A-111	UNIT PLANS - 1 BEDROOM
A-112	UNIT PLANS - 2 BEDROOM
A-113	UNIT PLANS - 3 BEDROOM
A-114	UNIT PLANS - UFAS
A-150	RELECTED CEILING PLAN-CELLAR & GROUND LEVEL
A-151	RELECTED CEILING PLAN-LEVEL 2 & LEVEL 3-6
A-152	RELECTED CEILING PLAN-LEVEL 7 & LEVEL 8,10,12,14
A-153	RELECTED CEILING PLAN-LEVEL 9,11,13,15 & ROOF LEVEL
A-200	EXTERIOR ELEVATION - SOUTH & WEST
A-201	EXTERIOR ELEVATION - NORTH & EAST
A-202	PARTIAL EAST ELEVATION & BULKHEAD ELEVATIONS
A-210	ENLARGED ELEVATIONS AND DETAILS
A-211	ENLARGED ELEVATIONS AND DETAILS
A-300	BUILDING SECTION
A-310	WALL SECTION DETAILS
A-311	WALL SECTION DETAILS
A-312	WALL SECTION DETAILS
A-313	WALL SECTION DETAILS
A-330	EXTERIOR CLADDING DETAILS
A-350	PARTITION TYPES
A-401	STAIR A & B SECTION
A-402	STAIR PLANS AND SECTIONS
A-403	STAIR PLANS AND SECTIONS
A-410	ELEVATOR PLANS AND SECTIONS
A-411	ELEVATOR DETAILS
A-500	BATHROOM TYPES
A-501	BATHROOM TYPES - PUBLIC
A-510	KITCHEN TYPES
A-511	KITCHEN TYPES
A-512	KITCHEN TYPES
A-600	DOOR TYPES AND SCHEDULE
A-605	DOOR DETAILS
A-610	WINDOW TYPES AND DETAILS
A-700	FINISH SCHEDULE AND DETAILS
A-750	INTERIOR ELEVATIONS
A-751	INTERIOR ELEVATIONS
A-752	INTERIOR ELEVATIONS
A-753	INTERIOR ELEVATIONS

STRUCTURAL

SHEET NUMBER	SHEET NAME
S-001	GENERAL NOTES
FO-100	FOUNDATION PLAN
FO-200	TYP. FOUNDATION DETAILS
FO-300	TYP. FOUNDATION DETAILS
S-100	1ST FLOOR FRAMING PLAN
S-101	2ND FLOOR FRAMING PLAN
S-102	3RD - 6TH FLOOR FRAMING PLAN
S-103	7TH FLOOR FRAMING PLAN
S-104	8TH - 15TH FLOOR FRAMING PLAN
S-105	ROOF FRAMING PLAN
S-106	BULKHEAD FRAMING PLAN
S-200	TYP. CONCRETE DETAILS
S-201	TYP. CONCRETE DETAILS CONT.
S-202	CONCRETE COLUMN SCHEDULE
S-203	CONCRETE SHEAR WALL DETAILS
S-204	CONCRETE SHEAR WALL DETAILS
S-205	CONCRETE SHEAR WALL DETAILS
S-300	CONCRETE SHEAR WALL DETAILS
S-301	CONCRETE SHEAR WALL DETAILS

MECHANICAL

SHEET NUMBER	SHEET NAME
M-001	MECHANICAL COVER SHEET
M-100	MECHANICAL CELLAR PLAN
M-101	MECHANICAL 1ST FLOOR PLAN
M-102	MECHANICAL 2ND FLOOR PLAN
M-103	MECHANICAL 3RD - 5TH FLOOR PLAN
M-104	MECHANICAL 6TH FLOOR PLAN
M-105	MECHANICAL 7TH FLOOR PLAN
M-106	MECHANICAL TYPICAL 8TH-14TH EVEN FLOOR PLAN
M-107	MECHANICAL TYPICAL 9TH-13TH ODD FLOOR PLAN
M-108	MECHANICAL 15TH FLOOR PLAN
M-109	MECHANICAL ROOF FLOOR PLAN
M-200	MECHANICAL SCHEDULES
M-300	MECHANICAL AIR RISER
M-400	MECHANICAL DETAILS
M-401	MECHANICAL DETAILS
M-402	MECHANICAL DETAILS

PLUMBING

SHEET NUMBER	SHEET NAME
P-001	PLUMBING SITE PLAN
P-099	PLUMBING UNDERGROUND PLAN
P-100	PLUMBING CELLAR PLAN
P-101	PLUMBING 1ST FLOOR PLAN
P-102	PLUMBING 2ND FLOOR PLAN
P-103	PLUMBING 3RD - 6TH FLOOR PLAN
P-104	PLUMBING 7TH FLOOR PLAN
P-105	PLUMBING 8TH, 10TH, 12TH, 14TH FLOOR PLAN
P-106	PLUMBING 9TH, 11TH, 13TH, 15TH FLOOR PLAN
P-107	PLUMBING ROOF PLAN
P-200	PLUMBING SANITARY RISER DIAGRAM I
P-201	PLUMBING SANITARY RISER DIAGRAM II
P-202	PLUMBING DOMESTIC WATER RISER DIAGRAM
P-203	PLUMBING STORM DRAINAGE RISER DIAGRAM
P-204	PLUMBING GAS RISER DIAGRAM
P-300	PLUMBING DETAILS I
P-301	PLUMBING DETAILS II

SPRINKLER

SHEET NUMBER	SHEET NAME
SPSD-001	SPRINKLER / STANDPIPE SITE PLAN
SPSD-100	SPRINKLER / STANDPIPE CELLAR PLAN
SPSD-101	SPRINKLER / STANDPIPE 1ST FLOOR PLAN
SPSD-102	SPRINKLER / STANDPIPE 2ND FLOOR PLAN
SPSD-103	SPRINKLER / STANDPIPE 3RD-6TH FLOOR PLAN
SPSD-104	SPRINKLER / STANDPIPE 7TH FLOOR PLAN
SPSD-105	SPRINKLER / STANDPIPE 8TH, 10TH, 12TH, 14TH FLOOR PLAN
SPSD-106	SPRINKLER / STANDPIPE 9TH, 11TH, 13TH, 15TH FLOOR PLAN
SPSD-107	SPRINKLER / STANDPIPE ROOF PLAN
SPSD-200	SPRINKLER / STANDPIPE RISER DIAGRAM
SPSD-300	SPRINKLER / STANDPIPE DETAILS

ELECTRICAL

SHEET NUMBER	SHEET NAME
E-001	ELECTRICAL SURVEY PLAN
E-010	ELECTRICAL GENERAL NOTES
E-011	ELECTRICAL ABBREVIATIONS & SYMBOL LIST
E-100	ELECTRICAL CELLAR PLAN
E-101	ELECTRICAL 1ST FLOOR PLAN
E-102	ELECTRICAL 2ND FLOOR PLAN
E-103	ELECTRICAL 3RD - 6TH FLOOR PLAN
E-104	ELECTRICAL 7TH FLOOR PLAN
E-105	ELECTRICAL TYPICAL 8TH - 14TH EVEN FLOOR PLAN
E-106	ELECTRICAL TYPICAL 9TH - 13TH ODD FLOOR PLAN
E-107	ELECTRICAL ROOF PLAN
E-200	ELECTRICAL POWER RISER DIAGRAM
E-201	ELECTRICAL POWER RISER DIAGRAM
E-202	ELECTRICAL CCTV, CARD ACCESS & AUDIO INTERCOM RISER DIAGRAM
E-203	ELECTRICAL TELECOM / CATV RISER DIAGRAM
E-300	ELECTRICAL PANEL SCHEDULES
E-301	ELECTRICAL PANEL SCHEDULES
E-400	ELECTRICAL DETAILS

AUX RADIO COMMUNICATION

SHEET NUMBER	SHEET NAME
ARCS-010	AUXILIARY RADIO COMMUNICATION SYSTEM SPECIFICIATIONS
ARCS-011	AUXILIARY RADIO COMMUNICATION SYSTEM SYMBOL LIST & RISER LINE DIAGRAM
ARCS-012	AUXILIARY RADIO COMMUNICATION SYSTEM DETAILS
ARCS-100	AUXILIARY RADIO COMMUNICATION SYSTEM CELLAR PLAN
ARCS-101	AUXILIARY RADIO COMMUNICATION SYSTEM 1ST FLOOR PLAN
ARCS-102	AUXILIARY RADIO COMMUNICATION SYSTEM 3RD FLOOR PLAN
ARCS-103	AUXILIARY RADIO COMMUNICATION SYSTEM 6TH FLOOR PLAN
ARCS-104	AUXILIARY RADIO COMMUNICATION SYSTEM 9TH FLOOR PLAN
ARCS-105	AUXILIARY RADIO COMMUNICATION SYSTEM 12TH FLOOR PLAN
ARCS-106	AUXILIARY RADIO COMMUNICATION SYSTEM 15TH FLOOR PLAN

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2017
1	DD SUBMISSION	04.06.2017

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

COVER SHEET

SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	As indicated
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	T-001.00
NYC DOB NUMBER:	

4/10/2018 3:22:50 PM

CONSTRUCTION MATERIALS

	CONCRETE		WOOD BLOCKING (CONTINUOUS)
	BRICK		WOOD, FINISHED
	EARTH		FIREPROOFING
	POUROUS FILL/GRAVEL		BATT INSULATION
	CONCRETE MASONRY UNITS (CMU)		RIGID INSULATION
	STEEL		ELASTOMER
	ALUMINUM		PLASTER / GYP. BD.
	PLYWOOD		STONE

CONSTRUCTION SYMBOLS



ABBREVIATIONS

ABV	ABOVE
AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
ACOUST	ACOUSTIC(AL)
AT	ACOUSTICAL TILE
AWP	ACOUSTICAL WALL PANELS
ADJ	ADJACENT
A/C	AIR-CONDITIONING
ALT	ALTERNATE
ALUM	ALUMINUM
ANOD	ANODIZED
APPROX	APRROXIMATELY
ARCH	ARCHITECT(URAL)
BEL	BELOW
BET	BETWEEN
BLK	BLOCK
BLKG	BLOCKING
BD(S)	BOARD(S)
BS	BOTH SIDES
BOT	BOTTOM
BO	BOTTOM OF
BR	BRONZE
BLDG	BUILDING
B/O	BY OWNER, BY OTHERS
CAB	CABINET(RY)
CEM	CEMENT
CEM. PL.	CEMENT PLASTER
CMT	CERAMIC MOSAIC TILE
CT	CERAMIC TILE
CHAM	CHAMFER
CLR	CLEARANCE
COL	COLUMN
CONC	CONCRETE
CMU	CONCRETE MASONRY UNIT
CONST	CONSTRUCTION
CONT	CONTINUOUS
CLL	CONTRACT LINE LIMIT
CONTR	CONTRACT(OR)
CJ	CONTROL JOINT
CTR	COUNTER
DL	DEAD LOAD
DEM	DEMOLISH
DET	DETAIL
DIAG	DIAGONAL
DIAM	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DBL	DOUBLE
DWR	DRAWER
DWG(S)	DRAWING(S)
DF	DRINKING FOUNTAIN
EA	EACH
E	EAST
EWC	ELECTRIC WATER COOLER
ELEC	ELECTRICAL
EL	ELEVATION
ELEV	ELEVATOR
EMERG	EMERGENCY
ENCL	ENCLOSE, ENCLOSURE
EQ	EQUAL
EQP	EQUIPMENT
EST	ESTIMATE(D)
EXIST	EXISTING
EXP	EXPOSED
EXT	EXTERIOR
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
F	FEMALE
FRP	FIBERGLASS REINFORCED PLASTIC
FIN	FINISH
FF	FINISH FLOOR
FA	FIRE ALARM
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FP	FIRE PROOF
FPSC	FIRE PROTECTED SELF CLOSING
FD	FLOOR DRAIN
FLR	FLOOR(ING)
FL	FLOURESCENT
FRMG	FRAMING
FUT	FUTURE
GA	GAGE, GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACT(OR)
GL	GLASS, GLAZING
GYP. BD.	GYPSUM BOARD
HCF	HARDENED CONCRETE FINISH
HDW	HARDWARE
HTG	HEATING
HVAC	HEATING, VENTILATION, AIR-CONDITIONING, COOLING
HD	HEAVY DUTY
HT	HEIGHT
HP	HIGH POINT
HC	HOLLOW CORE
HM	HOLLOW METAL
HOR	HORIZONTAL
INCL	INCLUDE
ID	INSIDE DIAMETER
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
IPS	IRON PIPE SIZE
JC	JANITOR'S CLOSET
JT	JOINT
LAM	LAMINATE(D)
LAV	LAVATORY
LH	LEFT HANDED
L	LENGTH
LTWT	LIGHTWEIGHT
LTL	LINTEL
LL	LIVE LOAD
LP	LOW POINT
M	MALE
MFR	MANUFACTURER
MO	MASONRY OPENING
MAT	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MET	METAL
MM	METAL MESH
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MTD	MOUNTED
NOM	NOMINAL
N	NORTH
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OPG	OPENING
OPP	OPPOSITE
OPH	OPPOSITE HAND
OD	OUTSIDE DIAMETER
OH	OVERHEAD
PNT	PAINT(ED)
PNL	PANEL
PTN	PARTITION
PLAS	PLASTER
PL	PLATE
PLUM	PLUMBING
PT	POINT
PVC	POLYVINYL CHLORIDE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PREFAB	PREFABRICATED
QT	QUARRY TILE
REFRIG	REFRIGERATION
REINF	REINFORCING(MENT)
REM	REMOVE
RVT	RESILIENT VINYL TILE
REV	REVISION
R	RIGHT
RH	RIGHT HAND
RM	ROOM
RO	ROUGH OPENING
RT	RUBBER TILE
SEC	SECTION
SVC	SERVICE
SHT	SHEET
SIM	SIMILAR
SC	SOLID CORE
S	SOUTH
SPEC	SPECIFICATION
SPRINK	SPRINKLER
SQ	SQUARE
S/S	STAINLESS STEEL
STD	STANDARD
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SYN	SYNTHETIC
TEL	TELEPHONE
THK	THICK
TOL	TOLERANCE
T&G	TONGUE AND GROOVE
TO	TOP OF
TOS	TOP OF SLAB
TST	TOP OF STEEL
T	TREAD
TYP	TYPICAL
UNF	UNFINISHED
V/B	VAPOR BARRIER
VNR	VENEER
VERT	VERTICAL
V	VINYL
VB	VINYL BASE
VT	VINYL TILE
VWC	VINYL WALL COVERING
WTW	WALL TO WALL
WC	WATER CLOSET
WR	WATER RESISTANT(REPELLENT)
WP	WATERPROOF(ING)
W	WEST
WI	WIDE, WIDTH
WIN	WINDOW
W/	WITH
W/O	WITHOUT
WD	WOOD

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KEY PLAN

x		xx.xx.2018
NO.	**DESIGN & CONSTRUCTION SUBMISSIONS**	**DATE**

2	**DOB SUBMISSION**	04.06.2018
1	**DD SUBMISSION**	04.06.2018
NO.	**REGULATORY SUBMISSIONS**	**DATE**

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

TITLE SHEET

SEAL & SIGNATURE

DATE:	04/10/18
PROJECT NO:	17110
SCALE:	As indicated
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	T-002.00
NYC DOB NUMBER:	

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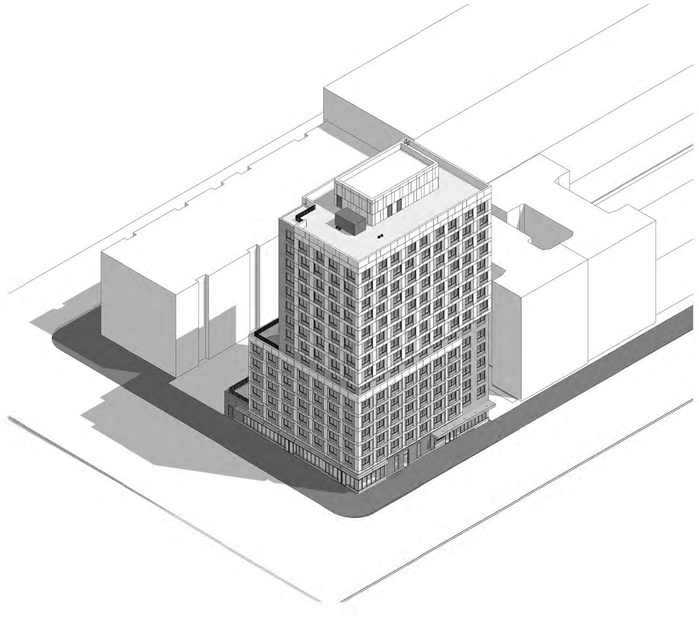
4 EXTERIOR PERSPECTIVE - LOOKING NE Copy 1



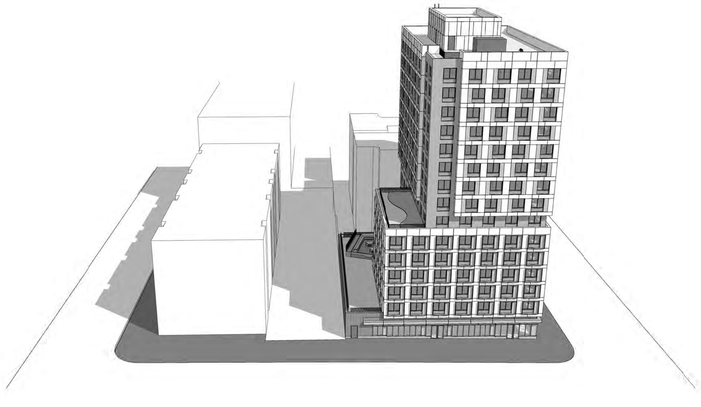
6 EXTERIOR PERSPECTIVE - LOOKING SE Copy 1



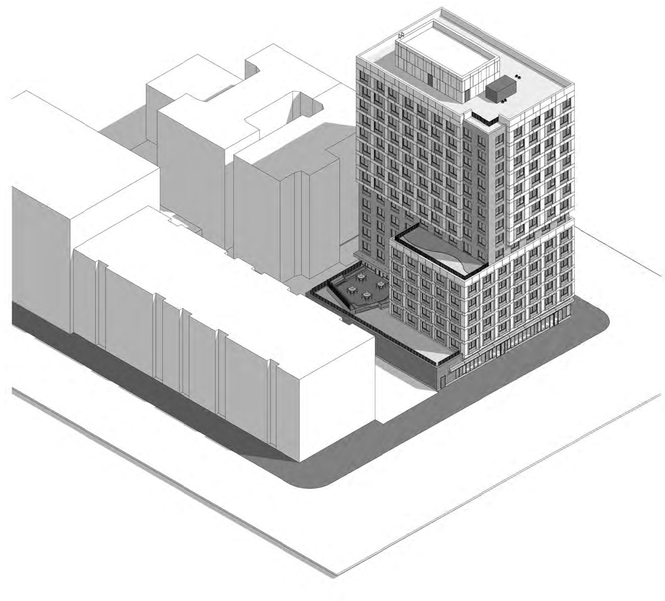
5 EXTERIOR PERSPECTIVE - LOOKING NW Copy 1



3 AERIAL - NE Copy 1



1 AERIAL - EAST Copy 1



2 AERIAL - SE Copy 1

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NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

BUILDING PERSPECTIVES

SEAL & SIGNATURE

DATE: 04/06/2018
PROJECT NO: 17110
SCALE:
DRAWING BY: Author
CHECKED BY: Checker
DWG NO:

T-003.00

NYC DOB NUMBER:

BUILDING CODE SUMMARY (2014 NYC BUILDING CODE)

A. Use and Occupancy Classifications:

1. Cellar: Accessory mechanical/laundry room/superintendent"s office/ Janitor closet
   Storage/ bicycle storage /residential storage [per 508.2]
   Group M Commercial space [per 309.1]

2. First Floor: Group R-2 _ Residential [per 10.1.2]
   Group R-2 _ Residential amenity spaces [per 303.1.2]
   Group B_ Program Offices [per 304.1]
   Group M _Commercial space [per 309.1]

3. Second Floor : Group R-2_ Residential [per 10.1.2]
   Group R-2_ Residential amenity spaces [per 303.1.2]

4. Third floor thru Fifteenth Floors: Group R-2 Residential [per 310.1.2]

5. Separation of Occupancies:
   Between Group R-2 and Group B 2-hour separation required [per Table 508.4]
   Between group M and R-2 2 –hour separation required [per Table 508.4]
   Permitted to be reduced to 1-hour separation for building equipped throughout with automatic sprinkler system; [per Table 508.4]
   2-hour floor separation provided per Type 1-B Construction [Table 601]
   Mechanical/Electrical Rooms 1-hour separation required
   Storage rooms 1-hour separation required
   Laundry Room 1-hour required or sprinklered [Table 509]

B. Allowable Building Height and Areas: [per Table 503]

1. Occupancy Group R-2, Type 1-B Construction:
   unlimited height and area

C. Type of Construction:

1. Proposed Building: Type 1-B, non-combustible, fully sprinklered [Table 601]

   a. Fire-Resistance Rating of Building Elements:

1.	Structural Frame:	2 hours	
2.	Exterior Bearing Walls:	2 hours	
3.	Interior Bearing Walls:	2 hours	
4.	Non-bearing Exterior Walls/Partitions: (separation between 10 feet and 30 feet)	1 hour	[Table 602]
5.	Non-bearing Exterior Walls/Partitions (greater than 30 feet)	0 hours	[Table 602]
6.	Non-bearing Interior Walls/Partitions	0 hours	
7.	Floor Construction	2 hours	
8.	Roof Construction	1 hour	
9.	Shaft Enclosures	2 hours	[per 708.4]
10.	Vertical Exit Enclosures	2 hours	[1022.1]

D. Interior Finish Requirements by Occupancy Classification: [Table 803.1]

1. Group R-2 Residential

a.	Vertical Exits / Passageways	Class B
b.	Exit Corridors	Class B
c.	Rooms / Enclosed Spaces	Class C

2. Group B Business (Program Offices)

a.	Vertical Exits / Passageways	Class B
b.	Exit Corridors	Class B
c.	Rooms / Enclosed Spaces	Class B

3. Group M Commercial space)

a.	Vertical Exits / Passageways	Class B
b.	Exit Corridors	Class B
c.	Rooms / Enclosed Spaces	Class B

E. Egress Requirements:

1. Maximum Travel Distance

Group R-2 Residential (w/ sprinkler system)	200 feet	[Table 1016.1]
Group B Business (Program Offices) (w/ sprinkler system)	300 feet	[Table 1016.1]
Group M Mercantile (w/ sprinkler system)	200 feet	[Table 1016.1]

2. Dead-End Corridor

Group R-2 – Residential	40 feet	[1018.4.3]
Group R-2 Residential (w/ sprinkler system)	80 feet	[1018.4.3]

3. Minimum Stairs Width – 0.3 inches per occupant [1005.1]
   Minimum Stair Width = 44 inches; 48 inches provided [1009.1]
4. Minimum Door/Corridor Width – 0.2 inches per occupant [1005.1
   Minimum Corridor Width = 44 inches; 60 inches provided [1018.2]
   Minimum Corridor Width within DU in R-2 = 30 inches [1018.2.4]

F. Design Live Loads by Occupancy or Use of Space: [Table 1607.1]

1.	Lobbies and First Floor Corridors	100 psf
2.	Residential Amenity Spaces	100 psf
	40 psf	
3.	Stairs and Exits	100 psf
4.	Private Residential Rooms and Corridors	40 psf
5.	Public Residential rooms and Corridors	100 psf

G. Occupant Load by Use of Space: [Table 1004.1.1]

1.	Residential	200 sf per occupant
2.	Residential amenity areas	15 sf per occupant
3.	Business areas (program offices)	100 sf per occupant
4.	Accessory storage areas	300 sf per occupant
5.	Accessory mechanical, electrical equipment rooms	300 sf per occupant
6.	Toilets, Restrooms, Meeting Rooms:	non-simultaneous occupancy
7.	Mercantile	30 sf per occupant

H. Occupancy Count: [actual design occupancies indicated where greater than ratios established per Table 1004.1.1]

TOTAL OCCUPANCY

Cellar level Residential	**24**
Cellar level Commercial	**101**
1st Level Residential	**42**
1st Level Commercial	**182**
2nd Level	**113**
3rd to 6th level	**96**
7th Level	**19**
8th to 15th level	**176**
Roof Level	**2**
Total Occupancy	**755**

GENERAL NOTES

1. PERMITS AND COMPLIANCE: ALL WORK SHALL CONFORM TO AND BE PERFORMED IN STRICT ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE 2014 NYC CONSTRUCTION CODES: BUILDING CODE (BC), PLUMBING CODE (PC), MECHANICAL CODES (MC), FUEL GAS CODE (FGC) AND ELECTRICAL CODE (EC) OF THE CITY OF NEW YORK; THE NEW YORK CITY HOUSING MAINTENANCE CODE (HMC); THE NEW YORK STATE MULTIPLE DWELLING LAW(MDL); THE NEW YORK CITY ENERGY CONSERVATION CONSTRUCTION CODE; AND ALL OTHER REGULATIONS HAVING JURISDICTION. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO COMMENCEMENT OF THE WORK

2. CONDITIONS AFFECTING THE WORK: BEFORE PROCEEDING WITH THE WORK, THE CONTRACTOR AND SUB-CONTRACTORS SHALL THOROUGHLY EXAMINE CONDITIONS AT THE PROJECT SITE TO ASSURE THAT THE WORK CAN PROCEED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. CONDITIONS FOUND WHICH WILL ADVERSELY AFFECT THE WORK SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE AND THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK.

3. NOTIFICATION OF ADJACENT PROPERTY OWNERS: FIVE DAYS PRIOR NOTICE SHALL BE GIVEN BY THE CONTRACTOR TO THE OWNER OF EACH ADJOINING LOT AFFECTED BY FOUNDATION, EARTHWORK OR DEMOLITION WORK AS PER BC SEC. 3304.3.2

4. COMMENCEMENT OF OPERATIONS: AT LEAST 24 HOURS WRITTEN NOTICE SHALL BE GIVEN BY THE CONTRACTOR TO THE COMMISSIONER OF BUILDINGS BEFORE COMMENCING OF WORK PER BC105.5.1. SPECIAL INSPECTION ITEMS REQUIRE 72 HOURS PRIOR WRITTEN NOTICE TO PERSONS RESPONSIBLE FOR INSPECTION (BC CHAP.1, ADMINISTRATIVE CODE, SEC. 28-116.2.3.)

5. REFERENCE DATUM: ALL ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

6. SURVEY AND BORINGS: SURVEY AND SUB-SURFACE TEST BORINGS ARE PROVIDED FOR INFORMATION ONLY. THINK! ARCHITECTURE AND DESIGN PLLC IS NOT RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF INFORMATION CONTAINED IN THE SURVEY OR TEST BORINGS PREPARED BY OTHERS.

7. DIMENSIONS: UNLESS OTHERWISE SHOWN OR INDICATED, DIMENSIONS SHOWN ON ARCHITECTURAL PLAN DRAWINGS ARE INDICATED TO FACE OF MASONRY OR FINISH FACE OF INTERIOR WALLS

8. DIMENSIONS VERIFICATION: BEFORE PROCEEDING WITH THE WORK, THE CONTRACTOR AND SUB-CONTRACTORS SHALL VERIFY ELEVATION DATUM AND ALL DIMENSIONS, ANY DIMENSIONAL VARIATIONS BETWEEN FIELD CONDITIONS AND PROPOSED NEW WORK WHICH WILL ADVERSELY AFFECT THE WORK SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE AND THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK. DO NOT SCALE DRAWINGS; WRITTEN DIMENSIONS TAKE PRECEDENCE.

9. SEPARATION OF OCCUPANCIES: PROVIDE FIRE SEPARATIONS OR DIVISIONS BETWEEN VARIOUS OCCUPANCIES AS PER BC CHAP. 5, AND TABLES 508.4 AND 509.

10. RATED ASSEMBLIES: ALL MATERIALS OR ASSEMBLIES REQUIRED TO HAVE A FIRE RESISTANCE RATING SHALL COMPLY WITH THE APPROPRIATE NYC BLDG. DEPT. REFERENCE STANDARD.

11. MATERIALS, ASSEMBLIES, EQUIPMENT AND METHODS OF CONSTRUCTION AND SERVICE EQUIPMENT SHALL MEET THE FOLLOWING REQUIREMENTS:

A. THEY SHALL HAVE BEEN ACCEPTABLE PRIOR TO THE EFFECTIVE DATE OF THE CODE BY THE BOARD OF STANDARDS AND APPEALS (BSA), OR, NYC DOB MATERIALS & EQUIPMENT ACCEPTANCE (MEA), OR,

B. THEY SHALL HAVE BEEN ACCEPTED FOR USE UNDER THE PRESCRIBED TEST METHODS AS PER NYC BUILDING CODE.

12. MASONRY UNITS SHALL CONFORM TO THE CODE AND MASONRY WALLS AND CONSTRUCTION SHALL CONFORM TO BC CHAPTER 21. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

13. FIRESTOPPING - GENERAL: CONCEALED SPACES WITH PARTITIONS, WALLS, FLOORS, ROOFS, STAIRS, FURRING, PIPE SPACES, COLUMN ENCLOSURES, ETC., SHALL BE FIRESTOPPED (EXCEPT WHERE CONCEALED SPACE IS SPRINKLERED) WITH NON-COMBUSTIBLE MATERIAL THAT CAN BE SHAPED, FITTED AND PERMANENTLY SECURED IN POSITION AS PER BC 713 AND BC 714.

14. FIRESTOPPING, DUCTS, PIPES, CONDUITS: DUCT, PIPES AND CONDUITS PASSING THROUGH FIRE RATED CONSTRUCTION SHALL HAVE SURROUNDING SPACES NOT EXCEEDING 1/2" IN WIDTH PACKED WITH FIRESTOPPING MATERIAL APPROVED BY THE CODE AND CLOSED OFF WITH CLOSE-FITTING METAL CLOSURES. DUCTWORK PENETRATIONS SHALL BE PROTECTED BY RATED SELF-CLOSING DEVICES, PER BC SECTION 713 and 714.

15. WORK BEYOND STREET LINE: NO WORK SHALL BE PERFORMED BEYOND THE STREET LINE PRIOR TO OBTAINING APPROVAL FROM NYC DEPT. OF TRANSPORTATION (DOT). PERMITS FOR ALL WORK OUTSIDE OF THE NYC STREET LINE SHALL BE OBTAINED BY THE CONTRACTOR. SIDEWALKS AND STREET CURBING SHALL BE REBUILT IN ACCORDANCE WITH THE REQUIREMENTS OF NYC DOT.

16. FLAME-SPREAD AND SMOKE DENSITY
16.1. FLAME SPREAD RATINGS SHALL COMPLY WITH TABLE 803.5.
16.2. INTERIOR FINISH: RESIDENTIAL AND COMMUNITY AREAS SHALL BE CLASS A, 0-25 FLAME SPREAD RATINGS FOR EXITS, SHAFTS, AND CORRIDORS, ALL COMMUNITY USE ROOMS ON GROUND FLOOR.
16.3. CLASS B OR BETTER, 26-75 FLAME SPREAD RATING WITHIN APARTMENTS.
16.4. SMOKE DENSITY: NO MATERIAL SHALL BE USED FOR INTERIOR FINISH OF EXITS OR CORRIDORS THAT HAS A SMOKE DEVELOPED RATING GREATER THAN 25, PER BC 803.1.1

17. STRUCTURAL: FOR NOTES REFERRING TO LIVE AND DEAD LOADS, STRUCTURAL WORK,FOUNDATIONS, CONCRETE AND MASONRY REQUIREMENTS, REFER TO STRUCTURAL DRAWINGS.

18. ACCESSIBILITY: BUILDING AND ALL UNITS SHALL COMPLY WITH ALL REQUIREMENTS FOR ADAPTABILITY FOR PEOPLE HAVING PHYSICAL DISABILITIES AS PER CODE AND BC APPENDIX P.

19. MINIMUM CLEAR STORY HEIGHT: FINISHED FLOOR TO FINISHED CEILING IN HABITABLE ROOMS SHALL BE 8'-0" MINIMUM.

20. EXCAVATION: COMPLY WITH OPPN #26/ 92. IF ANY OFF-SITE FILL OR ON-SITE FILL IN EXCESS OF 300 CUBIC YARDS IS ANTICIPATED, THE REGISTERED ARCHITECT SHALL PLACE THE FOLLOWING NOTE ON THE NOTE SHEET, " THIS PROJECT REQUIRES FILL" WHICH SHALL COMPLY WITH FILL MATERIAL SECTION 16-130A(4) ADMINISTRATIVE CODE AND RULES AND REGULATIONS FOR OPERATIONS, SECTION 16-131 AC FOR FILL MATERIAL OPERATION.

21. SPECIAL & PROGRESS INSPECTION ITEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE NEW YORK CITY BUILDING CODE. INSPECTIONS INCLUDE BUT ARE NOT LIMITED TO THOSE LISTED ON THIS DRAWING SHEET. THE CONTRACTOR SHALL COOPERATE WITH AND FACILITATE THE WORK OF SPECIAL INSPECTION AGENCY AND INSPECTORS RETAINED BY THE OWNER. COMPLY WITH REQUIREMENTS OF CHAPTER 33 OF BUILDING CODE FOR SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION.

22. A FIRE ALARM SYSTEM SHALL BE PROVIDED PER SECTION 907.2.9.13. THE AUTOMATIC SPRINKLER PROTECTION SHALL BE CONNECTED TO THE FIRE ALARM SYSTEM PER SECTION 907.2. SMOKE DETECTORS SHALL BE PROVIDED IN ACCORDANCE WITH NYC BUILDING CODE SECTION 907.12.1. SMOKE DETECTORS SHALL BE CONNECTED TO AN AUTOMATIC FIRE ALARM SYSTEM. PER 907.2.12.1

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DOB APPROVAL

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PROJECT

BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

BUILDING DESCRIPTION & GENERAL NOTES / BUILDING CODE ANALYSIS

SEAL & SIGNATURE

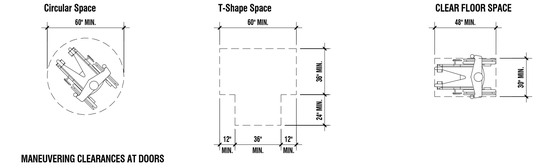
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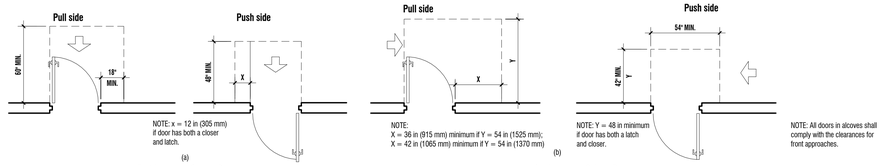
ACCESSIBILITY REQUIREMENTS

2010 ADA STANDARDS

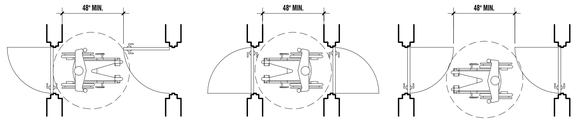
TURNING SPACE



MANEUVERING CLEARANCES AT DOORS

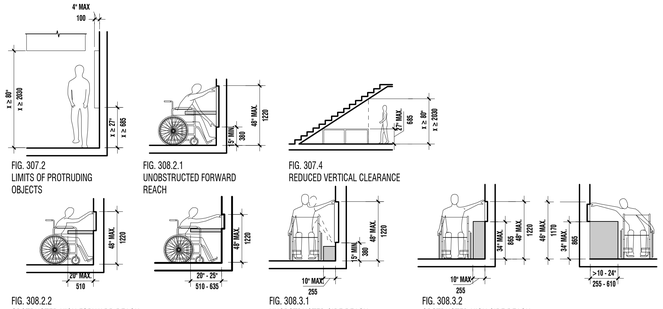


TWO HINGED DOORS IN SERIES



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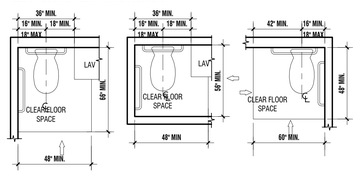
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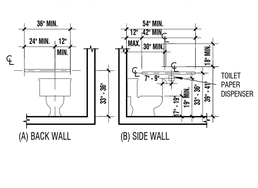
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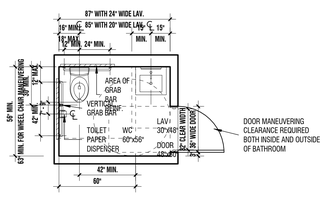
CLEAR FLOOR SPACE AT WATER CLOSETS



BACK & SIDE WALL GRAB BAR AT WATER CLOSETS

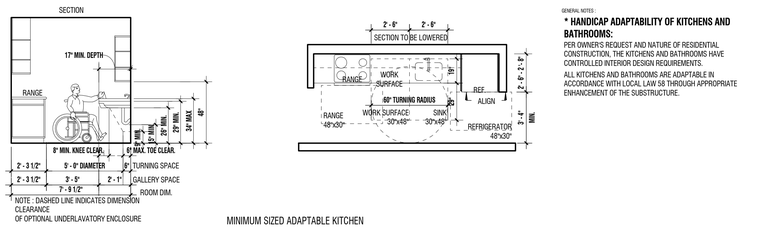


MINIMUM SIZED SIDE ENTRY ACCESSIBLE RESTROOM

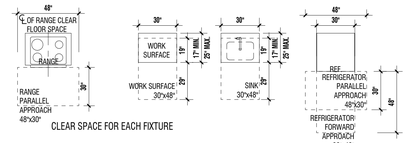


3 ACCESSIBILITY - UNIVERSAL ACCESSIBILITY REQUIREMENTS FOR WATER CLOSETS & URINALSCE

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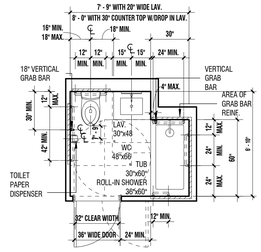
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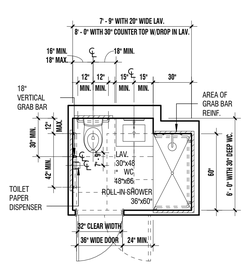
CLEAR SPACE FOR EACH FIXTURE

4 ACCESSIBILITY - ADAPTABILITY REQUIREMENTS FOR RESIDENTIAL KITCHENS

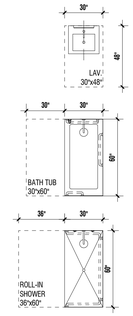
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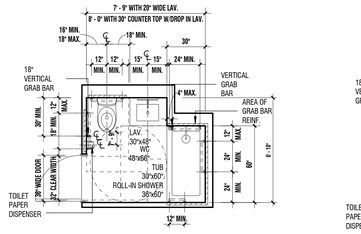


MINIMUM SIZED FRONT ENTRY FULL ACCESSIBLE BATHROOM UFAS & BC-APPENDIX "P"

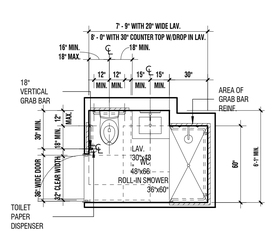


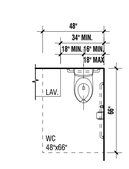
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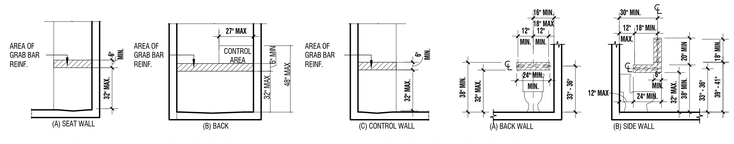


MINIMUM SIZED SIDE ENTRY ADAPTABLE BATHROOM UFAS & BC-APPENDIX "P"





CLEAR SPACE FOR EACH FIXTURE

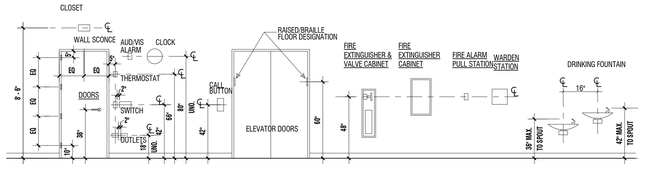


ADAPTABLE SHOWER 30"X60" STALL REINFORCEMENT

ADAPTABLE TOILET REINFORCEMENT FOR ADAPTABLE BATHROOM

5 ACCESSIBILITY - ADAPTABILITY REQUIREMENTS FOR RESIDENTIAL BATHROOMS

1/4" = 1'-0"



6 ACCESSIBILITY - TYPICAL MOUNTING HEIGHT REQUIREMENTS

1/4" = 1'-0"

GENERAL NOTES

*** HANDICAP ADAPTABILITY OF KITCHENS AND BATHROOMS:**

PER OWNER'S REQUEST AND NATURE OF RESIDENTIAL CONSTRUCTION, THE KITCHENS AND BATHROOMS HAVE CONTROLLED INTERIOR DESIGN REQUIREMENTS.

ALL KITCHENS AND BATHROOMS ARE ADAPTABLE IN ACCORDANCE WITH LOCAL LAW 58 THROUGH APPROPRIATE ENHANCEMENT OF THE SUBSTRUCTURE.

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DOB APPROVAL

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BETANCES VI DEVELOPMENT

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ACCESSIBILITY REQUIREMENTS

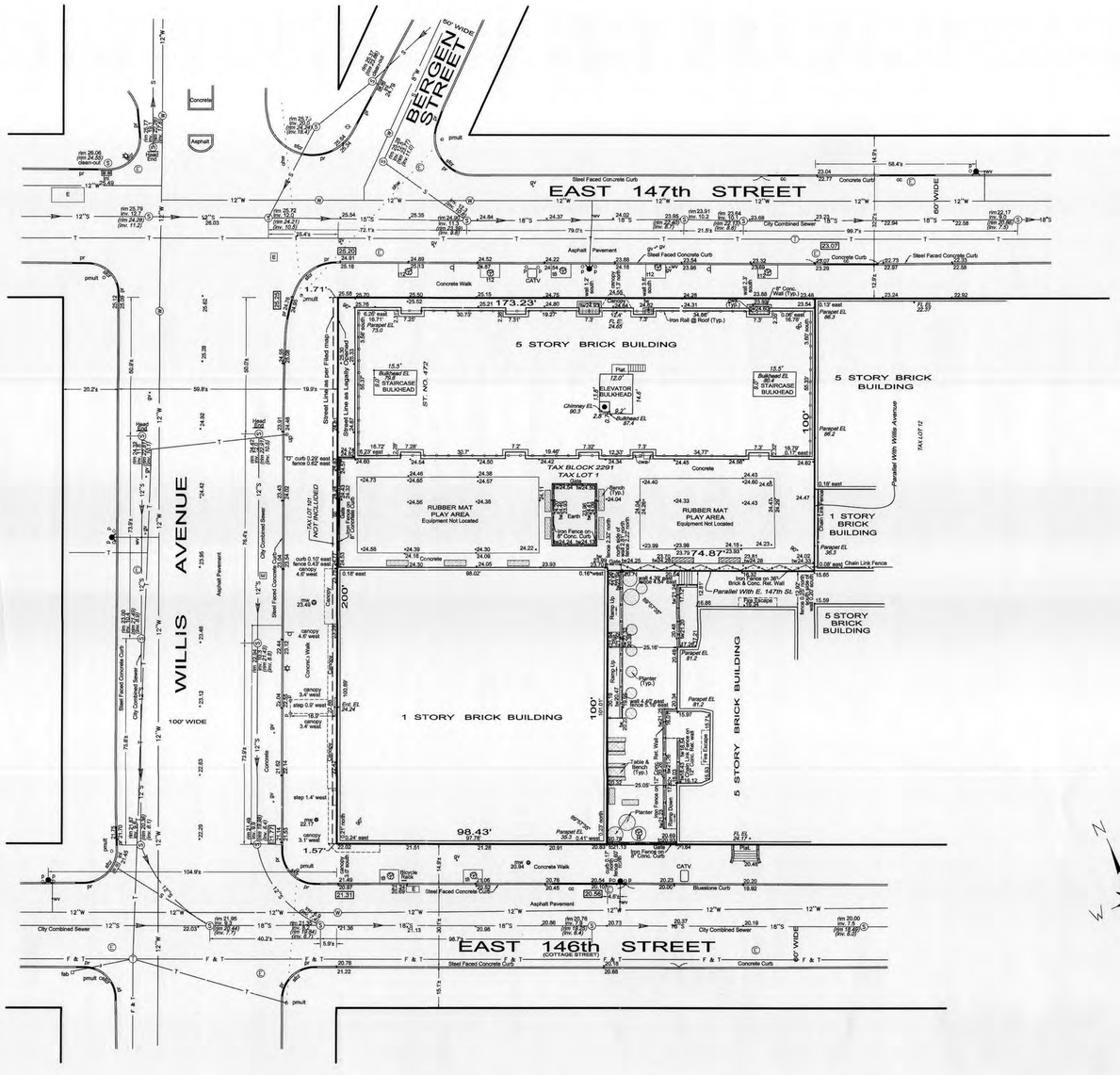
SEAL & SIGNATURE

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NYC DOB NUMBER:	

4/10/2018 1:37:54 PM

SURVEY NO. 66203

66203001.DWG
66203001.CRD


BERGEN STREET
EAST 147th STREET
WILLIS AVENUE
EAST 146th STREET (COTTAGE STREET)
5 STORY BRICK BUILDING
1 STORY BRICK BUILDING
TAX BLOCK 2291
TAX LOT 1
TAX LOT 101 NOT INCLUDED
RUBBER MAT PLAY AREA Equipment Not Located
173.23'
74.87'
98.43'
1.71'
1.57'
200'
100' WIDE
60' WIDE
Parallel With E. 147th St.
Parallel With Willis Avenue
Street Line as per Filed map
Steel Faced Concrete Curb
Concrete Curb
Concrete Walk
Asphalt Pavement
City Combined Sewer
Chain Link Fence
Iron Fence on 8" Conc. Curb
Iron Rail @ Roof (Typ.)
Brick & Conc. Ret. Wall
Bluestone Curb
CATV
Bicycle Rack
Planter (Typ.)
Table & Bench (Typ.)
Ramp Up
Ramp Down
Fire Escape
Bulkhead EL 87.4
STAIRCASE BULKHEAD
ELEVATOR BULKHEAD
Parapet EL 86.2
Parapet EL 87.2
Parapet EL 86.3
Flat 72.9'
Chimney EL 90.3
Earth
Bench (Typ.)
Gate
Concrete
Asphalt
Pavement
Sign
Hand Hole
Manhole
Catch Basin
Inlet
Gas Valve
Water Valve
Light Pole
Fire Hydrant
Parking Meter
Sprinkler
Siamese
Monitoring Well
Tree
Canopy
Step
Curb
Fence
Pmult
Pr
Rwv
Wv
Gv
Iw
Ew
Cw
Gas
Ug Tel
Ug Elec
Ug Cable
Ug Vault
Ug Fiber Optic
Ug Gas
Ug Water
Ug Sewer
Ug Drain
Ug Steam
Ug Oil
Ug Unknown
Oh Wire
Fl. El. 24.65
Fl. El. 22.57
Fl. El. 24.77
Fl. El. 24.17
Fl. El. 21.31
Fl. El. 20.56
Fl. El. 20.66
Fl. El. 20.68
Fl. El. 20.64
Fl. El. 20.63
Fl. El. 20.73
Fl. El. 20.78
Fl. El. 20.76
Fl. El. 20.77
Fl. El. 20.79
Fl. El. 20.80
Fl. El. 20.81
Fl. El. 20.82
Fl. El. 20.83
Fl. El. 20.84
Fl. El. 20.85
Fl. El. 20.86
Fl. El. 20.87
Fl. El. 20.88
Fl. El. 20.89
Fl. El. 20.90
Fl. El. 20.91
Fl. El.

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was New York State Plane FIPSZONE 3104. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3182
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the Department of Information Technology and Telecommunication, City of New York. This information was derived from digital orthophotos produced at a scale of 1:1,200 with 2-foot pixel resolution from photography dated 2004.

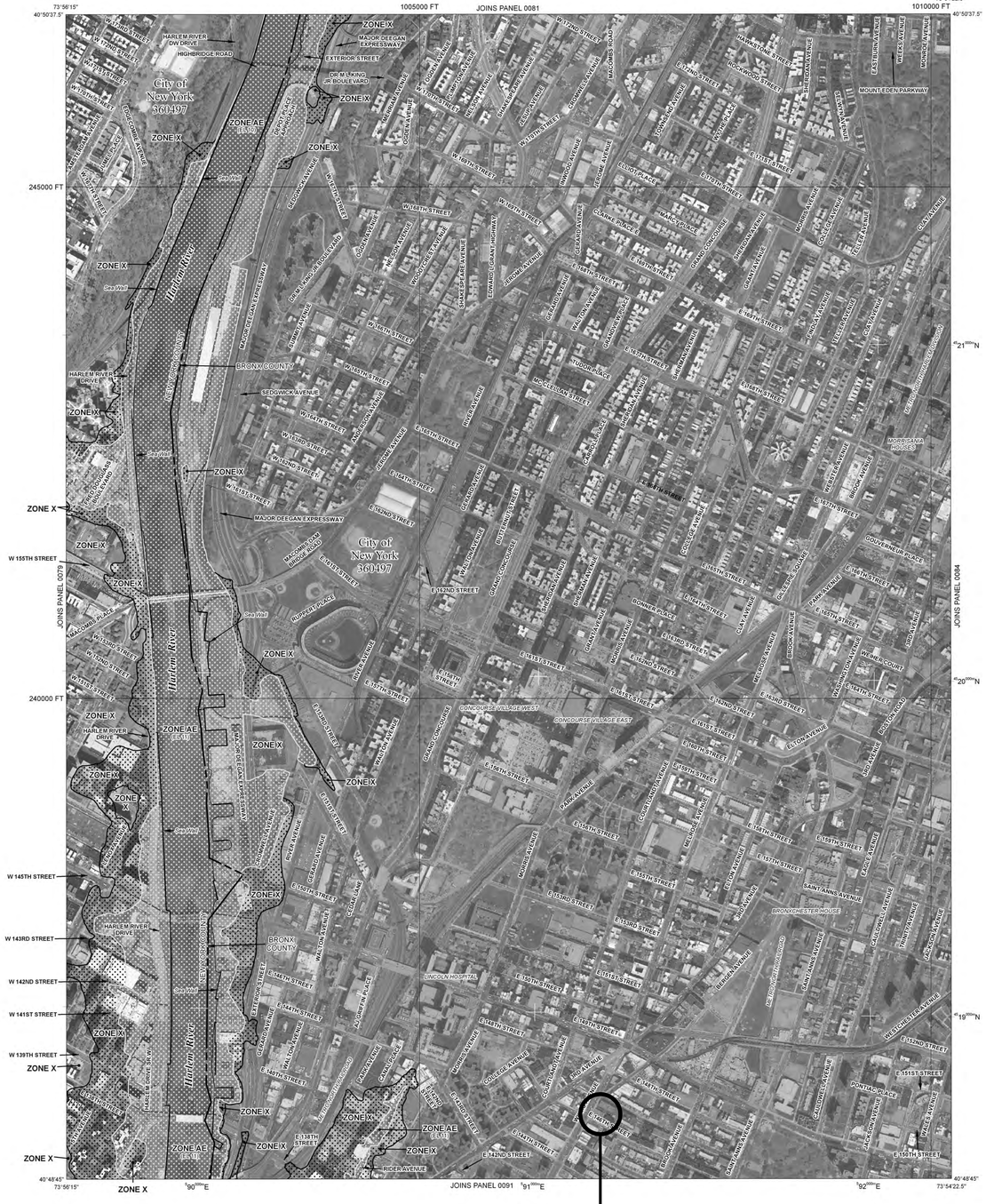
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map showing the layout of map panels for this jurisdiction.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



AREA MAP
BETANCES VI DEVELOPMENT
472-474 WILLIS AVE, BRONX, NY, 10455
BLOCK: 2291, LOT: 1

Project

- Project Area
- Development Site
- 600-Foot Radius

Zoning

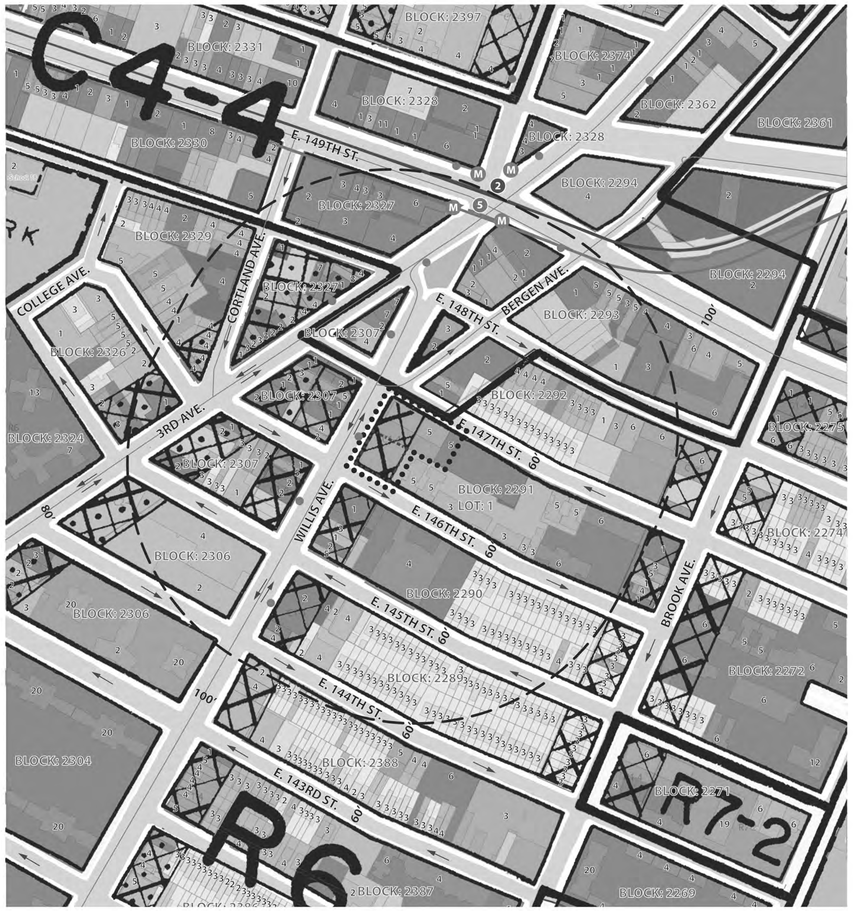
- Zoning District
- C1-1
- C1-2
- C1-3
- C1-4
- C1-5
- C2-1
- C2-2
- C2-3
- C2-4
- C2-5

Land Use

- 1 - 2 Family Residential
- Multifamily Walkup
- Multifamily Elevator
- Mixed Commercial/Residential
- Commercial & Office
- Industrial & Mfg
- Transportation & Utility
- Public Facilities & Institutions
- Open Space
- Parking
- Vacant/No Data

- M Subway Entrance
- 2 No. 2 Train
- 5 No. 5 Train
- Bus Stop
- Bus Route

SCALE:
0′ 100′ 200′ 300′



1 **PROXIMITY PLAN**
1" = 160'-0"

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1 METROTECH CENTER NORTH, 6TH FLOOR
BROOKLYN, NY 11201
P 646.688.5898

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LEMLE & WOLFF COMPANIES
5925 BROADWAY
BRONX, NY 10463
P 718.884.7676

STRUCTURAL
CUONO ENGINEERING PLLC
42 NORTH MAIN STREET
PORT CHESTER, NY 10573
P 914.305.5679

MEP
RODKIN CARDINALE P.C.
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT
472-474 WILLIS AVE. BRONX, NY, 10455

PROXIMITY PLAN

SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	1" = 160'-0"
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	G-005.00
NYC DOB NUMBER:	

4/10/2018 1:38:46 PM



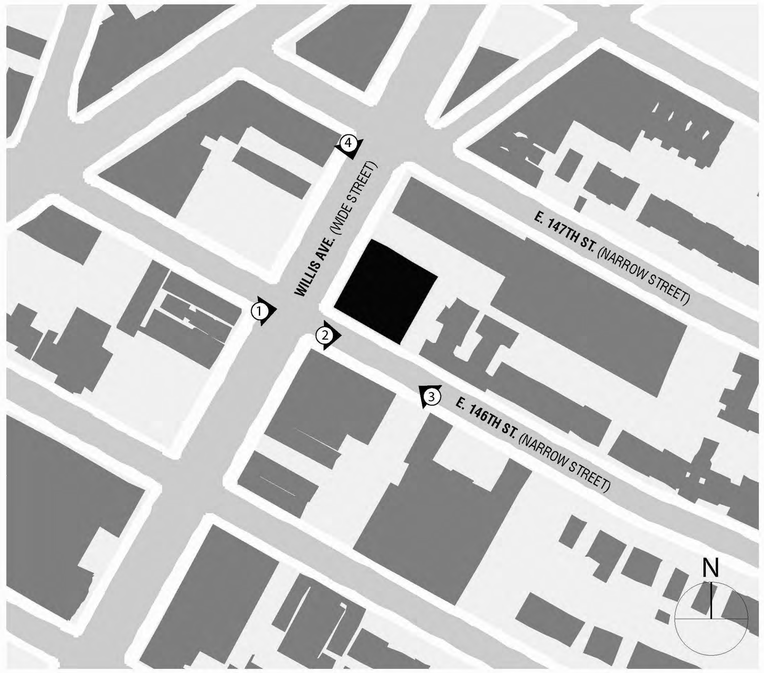
1 VIEW OF SITE FROM WILLIS AVE & 146TH ST.
1 1/2" = 1'-0"



2 VIEW OF SITE LOOKING EAST ON 146TH STREET
1 1/2" = 1'-0"



3 VIEW OF SITE FROM 146TH ST. LOOKING WEST
1 1/2" = 1'-0"



** KEY PLAN NOT TO SCALE



4 VIEW OF SITE FROM WILLIS AVE. LOOKING SOUTH
1 1/2" = 1'-0"

4/10/2018 1:38:55 PM

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ARCHITECT
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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

SITE PHOTOGRAPHS

SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	1 1/2" = 1'-0"
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	G-006.00
NYC DOB NUMBER:	

NOTES FOR EXPLORATION LOGS

KEY TO USCS TERMINOLOGY AND GRAPHIC SYMBOLS

MAJOR DIVISIONS			SYMBOLS GRAPHIC	SYMBOLS LETTER
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON NO. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	CLEAN GRAVELS (LESS THAN 5% PASSING NO. 200 SIEVE)		GW
				GP
		GRAVELS WITH FINES (MORE THAN 12% PASSING NO. 200 SIEVE)		GM
				GC
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE)	CLEAN SANDS (LESS THAN 5% PASSING NO. 200 SIEVE)		SW
				SP
		SANDS WITH FINES (MORE THAN 12% PASSING NO. 200 SIEVE)		SM
				SC
FINE-GRAINED SOILS (50% OR MORE PASSES NO. 200 SIEVE)	SILTS AND CLAYS (LIQUID LIMIT LESS THAN 50)	SILT OR CLAY (PI=4% OR LESS OR PLOTS BELOW "A" LINE ON PLASTICITY CHART)		ML
		CLAY OR GRAVELLY CLAY (PI=7% TO 25% AND PLOTS ON OR ABOVE "A" LINE ON PLASTICITY CHART)		CL
		SILT OR CLAY WITH SAND OR GRAVEL (PI=4% OR LESS OR PLOTS BELOW "A" LINE ON PLASTICITY CHART)		OL
	SILTS AND CLAYS (LIQUID LIMIT 50 OR MORE)	SANDY OR GRAVELLY SILT OR CLAY (PI=4% OR LESS OR PLOTS BELOW "A" LINE ON PLASTICITY CHART)		MH
		PLASTIC SILTS (PI=7% TO 25% AND PLOTS ON OR ABOVE "A" LINE ON PLASTICITY CHART)		CH
		FAT CLAYS (PI=26% OR MORE AND PLOTS ON OR ABOVE "A" LINE ON PLASTICITY CHART)		OH
HIGHLY ORGANIC SOILS				PT

NOTE: ALL STANDARD GRAIN SIZE TERMINOLOGY AND GRADATION LIMITS USED ON THIS LOG ARE IN ACCORDANCE WITH ASTM D-2488 "STANDARD PRACTICE FOR DESCRIPTION AND IDENTIFICATION OF SOILS (VISUAL-MANUAL PROCEDURE)". THE SOIL CLASSIFICATIONS PRESENTED ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM AS DESCRIBED IN ASTM D-2487 "STANDARD CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES". THE DESCRIPTIONS ARE ALSO IN ACCORDANCE WITH ASTM D-2488 "STANDARD PRACTICE FOR DESCRIPTION AND IDENTIFICATION OF SOILS (VISUAL-MANUAL PROCEDURE)".

COARSE-GRAINED SOILS (GRAVEL AND SAND)

DESIGNATION	BLOWS/FOOT "N" OR RQD
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	+50

NOTE: "N" VALUE DETERMINED AS PER ASTM D 1586

FINE-GRAINED SOILS (SILT AND CLAY)

CONSISTENCY	BPF "N"
VERY SOFT	<2
SOFT	2 - 4
MEDIUM STIFF	5 - 8
STIFF	9 - 15
VERY STIFF	16 - 30
HARD	+30

NOTE: ADDITIONAL DESIGNATIONS FOR SOIL CONSISTENCY INCLUDES: FI (LOW DRY STRENGTH) = WEIGHT OF HAMMER WOH = WEIGHT OF ROD(S)

SAMPLE TYPE

DESIGNATION	SYMBOL
SOIL SAMPLE	S-
SHELBY TUBE	U-
ROCK CORE	R-

ADDITIONAL TERMINOLOGY AND GRAPHIC SYMBOLS

	DESCRIPTION	GRAPHIC SYMBOL
ADDITIONAL DESIGNATIONS	TOPSOIL	
	B.F. 53-33-13 (57-13-13)	
	BANK RUN/SE FILL	
	GLACIAL TILL	
	COBBLES AND BOULDERS	

RESIDUAL SOIL DESIGNATIONS	DESCRIPTION	"N" VALUE
	HIGHLY WEATHERED ROCK	30 TO 50/0"
	PARTIALLY WEATHERED ROCK	MORE THAN 50 BLOWS FOR ANY DRIVE OF SPOON OR SAMPLING EQUIPMENT

WATER DESIGNATION

DESCRIPTION	SYMBOL
ENCOUNTERED DURING DRILLING	WD
UPON COMPLETION OF DRILLING	WC
24 HOURS AFTER COMPLETION	WF

NOTE: WATER OBSERVATIONS WERE MADE AT THE TIME INDICATED. AMOUNTS OF SOIL AND ROCK MOISTURE, LOCATION OF WATER TYPOGRAPHIC, ETC. MAY CAUSE WATER LEVEL CHANGES.

NOTES FOR ROCK DESCRIPTION

WEATHERING TERM	DESCRIPTION
FRESH	HYDA CRYSTALS BRIGHT, COLOR OF ORIGINAL CONSISTENT. (UNTIL KNOWN OTHER WISE)
SLIGHTLY WEATHERED	HYDA CRYSTALS DULL / FADED, AND CRYSTALS BEGIN TO DISCOLOR FROM ROCK'S ORIGINAL COLOR. (UNTIL KNOWN OTHER WISE)
MODERATELY WEATHERED	SOME HYDA CRYSTALS DISCOLORED OR DISINTEGRATED. MAY HAVE SPHERICAL CORE STONES. ROCK'S ORIGINAL COLOR MAY BE CHANGED.
HIGHLY WEATHERED	ALL HYDA CRYSTALS DISCOLORED OR DISINTEGRATED. MAY HAVE SPHERICAL CORE STONES. ROCK'S ORIGINAL COLOR MAY BE CHANGED.

HARDNESS DESCRIPTION	STRENGTH RANGE (PSI)	FIELD HARDNESS TEST
VERY HARD	+50000	CANNOT BE SCRATCHED WITH KNIFE. CORE SHARP EDGES AND BOUNDS IF A HAMMER
HARD	12000 to 50000	DIFFICULT TO SCRATCH WITH KNIFE. HARD BLOW OF HAMMER REQUIRED TO BREAK
MODERATELY HARD	7000 to 12000	CAN BE SCRATCHED WITH KNIFE. MODERATE BLOW OF HAMMER BREAKS CORE.
SOFT	2000 TO 7000	CAN BE SCRATCHED BY FINGERNAIL. SMALL PIECES BREAK OFF EASILY WITH HAMMER

FRACTURING CLASSIFICATION	DESCRIPTION
NUMEROUS FRACTURES	LESS THAN 6 INCHES
MODERATELY FRACTURED	6 INCHES TO 1 FOOT APART
SLIGHTLY FRACTURED	1 FOOT TO 3 FEET APART
MASSIVE	GREATER THAN 3 FEET APART

BEDDING DESCRIPTION	SEPARATION
VERY THIN	LESS THAN 2 INCHES
THIN	2 INCHES TO 1 FOOT
MEDIUM	1 FOOT TO 3 FEET
THICK	3 FEET TO 10 FEET
VERY THICK	MORE THAN 10 FEET

GRAPHIC SYMBOL	ROCK DESCRIPTION
	IGNEOUS ROCK (GRANITE, BASALT, DIABASE ETC.)
	SEDIMENTARY ROCK (FINE-GRAINED SEDIMENTARY ROCKS)
	LIMESTONE
	SILTSTONE/CLAYSTONE (FINE-GRAINED METAMORPHIC ROCKS)
	METAMORPHIC ROCK (COARSE-GRAINED METAMORPHIC ROCKS)
	BRECCIA/CONGLOMERATE (SEDIMENTARY)
	COAL/LIGNITE
	GYPSUM

DESCRIPTION SYSTEM: COLOR, WEATHERING, HARDNESS, FRACTURING, ROCK TYPE, "WITH" MODIFIER (IF SEDIMENTARY)

ROCK QUALITY DESIGNATION (RQD) = (TOTAL LENGTH OF CORE PIECES 4 INCHES AND LONGER ON CONSIDERED) / (TOTAL LENGTH OF CORE RUN (ft)) x 100%

LOG OF BORING NO. B-1W

Sheet 1 of 2

PROJECT: Betances VI - Mott Haven
PROJECT NO: 34172321
PROJECT LOCATION: Bronx, NY

WATER LEVEL (ft): ▼ NA ▼ 14 ft. ▼ 23 ft. ▼ 15 ft.
DATE: 11-16-17 11-16-17 11-16-17 12-1-17
CAVED (ft): 16 Cuttings 16 Cuttings 16 Cuttings WELL

DATE STARTED: 11-16-17
DATE COMPLETED: 11-17-17
DRILLING CONTRACTOR: Allied Drilling
DRILLER: Veraszto
DRILLING METHOD: Mud
SAMPLING METHOD: SPT

HAMMER TYPE: Manual
GROUND SURFACE ELEVATION: 9
DATUM: Sidewalk
EQUIPMENT: 6610 Track
LOGGED BY: SH
CHECKED BY: RD

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 in.	N-VALUE/RQD	ELEVATION (ft.)	DEPTH (ft.)	WELL DIAGRAM	DESCRIPTION	REMARKS
S-1	SS	1.0	1-2-5-7	7	9.0	0		Concrete	
					8.5	0.5		FILL: Brown, moist, loose, silty sand with debris (Class 7)	
S-2	SS	9.0	2-4-4-5	8		5			
					-8.5	17.5		Brown, moist, loose, Silty SAND (Class 3b)	
S-3	SS	10.0	5-8-3-3	12		10			
					-13.0	22.0		Brown/Grey, wet, stiff, Sandy SILT with Mica (Class 5b)	
S-4	SS	10.0	10	4-9-11-10	20	15			
S-5	SS	20.0	20	11-12-14-20	26	20			
S-6	SS	20.0	15	21-21-49-50	98	25		Brown, wet, dense, Poorly-graded SAND (Class 3a)	
					-25.0	34.0			

NOTES: Well installed upon Completion

GTA GEO-TECHNOLOGY ASSOCIATES, INC.
211-K Gates Road
Little Ferry, NJ 07643

LOG OF BORING NO. B-1W

Sheet 1 of 2

LOG OF BORING NO. B-2W

Sheet 1 of 2

PROJECT: Betances VI - Mott Haven
PROJECT NO: 34172321
PROJECT LOCATION: Bronx, NY

WATER LEVEL (ft): ▼ NA ▼ 11.5 ft. ▼ 8 ft. ▼ 8.5 ft.
DATE: 11-16-17 11-16-17 11-16-17 12-1-17
CAVED (ft): 16 Cuttings 16 Cuttings 16 Cuttings WELL

DATE STARTED: 11-16-17
DATE COMPLETED: 11-17-17
DRILLING CONTRACTOR: Allied Drilling
DRILLER: Veraszto
DRILLING METHOD: Mud
SAMPLING METHOD: SPT

HAMMER TYPE: Manual
GROUND SURFACE ELEVATION: 7.5
DATUM: Sidewalk
EQUIPMENT: Bombardier
LOGGED BY: SH
CHECKED BY: RD

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 in.	N-VALUE/RQD	ELEVATION (ft.)	DEPTH (ft.)	WELL DIAGRAM	DESCRIPTION	REMARKS
S-1	SS	1.0	17-27-17-11	44	7.5	0		Concrete	
					7.0	0.5		FILL: Brown, moist, medium dense, silty sand with debris (Class 7)	
S-2	SS	5.0	5-7-9-8	16		5			
					-7.5	15.0		Brown, wet, medium dense, Poorly-graded SAND (Class 3a)	
S-3	SS	10.0	10	6-6-7-8	13	10			
S-4	SS	10.0	12	15-9-8-8	17	15			
S-5	SS	20.0	4	11-11-9-10	20	20		Brown, wet, stiff, Silty SAND with Mica (Class 3b)	
					-17.5	25.0			
S-6	SS	20.0	11	7-9-12-14	25	25		- Very dense (Class 3a)	
					-30.0	37.5			

NOTES: Well installed upon Completion

GTA GEO-TECHNOLOGY ASSOCIATES, INC.
211-K Gates Road
Little Ferry, NJ 07643

LOG OF BORING NO. B-2W

Sheet 1 of 2

LOG OF BORING NO. B-2W

Sheet 2 of 2

PROJECT: Betances VI - Mott Haven
PROJECT NO: 34172321
PROJECT LOCATION: Bronx, NY

WATER LEVEL (ft): ▼ NA ▼ 11.5 ft. ▼ 8 ft. ▼ 8.5 ft.
DATE: 11-16-17 11-16-17 11-16-17 12-1-17
CAVED (ft): 16 Cuttings 16 Cuttings 16 Cuttings WELL

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 in.	N-VALUE/RQD	ELEVATION (ft.)	DEPTH (ft.)	WELL DIAGRAM	DESCRIPTION	REMARKS
S-7	SS	20.0	19	9-13-13-17	26	30		Brown, wet, medium dense, Silty SAND (Class 3b)	
S-8	SS	20.0	24	7-8-13-17	21	35			
S-9	SS	40.0	22	16-26-21-21	47	40		Brown, wet, dense, Poorly-graded SAND (Class 3a)	
S-10	SS	40.0	20	17-12-8-13	21	45			
S-11	SS	50.0	50	50-100/7"	100+	50		Boring complete at 50 ft ft	

NOTES: BOC = Backfilled On Completion

GTA GEO-TECHNOLOGY ASSOCIATES, INC.
211-K Gates Road
Little Ferry, NJ 07643

LOG OF BORING NO. B-2W

Sheet 2 of 2

LOG OF BORING NO. B-3W

Sheet 1 of 2

PROJECT: Betances VI - Mott Haven
PROJECT NO: 34172321
PROJECT LOCATION: Bronx, NY

WATER LEVEL (ft): ▼ NA ▼ 23 ft. ▼ 14 ft.
DATE: 11-16-17 11-16-17 12-1-17
CAVED (ft): 16 Cuttings 16 Cuttings WELL

DATE STARTED: 11-16-17
DATE COMPLETED: 11-17-17
DRILLING CONTRACTOR: Allied Drilling
DRILLER: Veraszto
DRILLING METHOD: Mud
SAMPLING METHOD: SPT

HAMMER TYPE: Manual
GROUND SURFACE ELEVATION: 9
DATUM: Sidewalk
EQUIPMENT: 6610 Track
LOGGED BY: SH
CHECKED BY: RD

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 in.	N-VALUE/RQD	ELEVATION (ft.)	DEPTH (ft.)	WELL DIAGRAM	DESCRIPTION	REMARKS
S-1	SS	6.4	15	23-11-9-5	18	0		5" Sidewalk Concrete	
					-0.4	0.5		FILL: Red-brown, moist, medium dense, silty sand with gravel (Class 7)	
S-2	SS	9.0	18	7-8-8-10	16	5			
					-5.0	10		- very dense	- refusal due to possible boulder
S-3	SS	10.0	6	11-50-100/0"	150	10			
					-13.0	15		Brown, wet, stiff, Sandy SILT with Mica (Class 5b)	
S-4	SS	18.0	13	17-7-9-14	15	15			
					-18.5	20		Brown, wet, very dense, Silty SAND with gravel (Class 3a)	
S-5	SS	20.0	10	33-42-31-25	73	20			
					-25.0	27		Brown, wet, dense, Poorly-graded SAND (Class 3a)	
S-6	SS	25.0	25	19-13-11-19	90	25			

NOTES: Well installed upon Completion

GTA GEO-TECHNOLOGY ASSOCIATES, INC.
211-K Gates Road
Little Ferry, NJ 07643

LOG OF BORING NO. B-3W

Sheet 1 of 2

LOG OF BORING NO. B-3W

Sheet 2 of 2

PROJECT: Betances VI - Mott Haven
PROJECT NO: 34172321
PROJECT LOCATION: Bronx, NY

WATER LEVEL (ft): ▼ NA ▼ 23 ft. ▼ 14 ft.
DATE: 11-16-17 11-16-17 12-1-17
CAVED (ft): 16 Cuttings 16 Cuttings WELL

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 in.	N-VALUE/RQD	ELEVATION (ft.)	DEPTH (ft.)	WELL DIAGRAM	DESCRIPTION	REMARKS
S-7	SS	30.0	11	28-23-16-20	39	30		Brown, wet, dense, Poorly-graded SAND (Class 3a)	
S-8	SS	30.0	19	14-26-31-21	57	35		Brown, wet, very dense, Poorly-graded SAND with silt (Class 3a)	
S-9	SS	45.0	35	18-22-34-21	56	40			
S-10	SS	46.0	24	21-34-51-50	85	45			
S-11	SS	19.0	16	32-62-85-80	132	50		Highly Weathered Rock, Presents as: Brown, wet, very dense, Silty SAND with weathered rock fragments (Class 1d)	- rock in tip of spoon
S-12	SS	18.0	5	100/5"	50+	55			- spoon refusal
S-13	SS	35.0				60		Tan, moderately hard, moderately fractured, highly weathered, RHODOD MARBLE (Class 1c)	
					-52.5	65		Boring complete at 65 ft	

NOTES: Well installed upon Completion

GTA GEO-TECHNOLOGY ASSOCIATES, INC.
211-K Gates Road
Little Ferry, NJ 07643

LOG OF BORING NO. B-3W

Sheet 2 of 2

LOG OF BORING NO. B-4W

Sheet 1 of 2

PROJECT: Betances VI - Mott Haven
PROJECT NO: 34172321
PROJECT LOCATION: Bronx, NY

WATER LEVEL (ft): ▼ NA ▼ 14 ft. ▼ 11 ft.
DATE: 11-16-17 11-16-17 12-1-17
CAVED (ft): 16 Cuttings 16 Cuttings WELL

DATE STARTED: 11-14-17
DATE COMPLETED: 11-15-17
DRILLING CONTRACTOR: Allied Drilling
DRILLER: Veraszto
DRILLING METHOD: Mud
SAMPLING METHOD: SPT

HAMMER TYPE: Manual
GROUND SURFACE ELEVATION: 9
DATUM: Sidewalk
EQUIPMENT: 6610 Track
LOGGED BY: SH
CHECKED BY: RD

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 in.	N-VALUE/RQD	ELEVATION (ft.)	DEPTH (ft.)	WELL DIAGRAM	DESCRIPTION	REMARKS
S-1	SS	1.0	13	7-7-8-8	15	0		Concrete	
					8.5	0.5		FILL: Brown, moist, loose to medium dense, poorly-graded sand with debris (Class 7)	
S-2	SS	9.0	11	4-4-10-15	14	5			
					-1.0	10.0		Brown, moist, medium dense, Silty SAND (Class 3b)	
S-3	SS	10.0	15	15-11-9-10	20	10			
S-4	SS	19.0	18	10-12-14-20	26	15			
S-5	SS	20.0	17	13-9-10-17	19	20		Grey-Brown, wet, stiff, Sandy SILT (Class 5b)	
S-6	SS	25.0	17	9-8-15-16	21	25			
					-30.0	39.0			

NOTES: Well installed upon Completion

GTA GEO-TECHNOLOGY ASSOCIATES, INC.
211-K Gates Road
Little Ferry, NJ 07643

LOG OF BORING NO. B-4W

Sheet 1 of 2

LOG OF BORING NO. B-4W

Sheet 2 of 2

PROJECT: Betances VI - Mott Haven
PROJECT NO: 34172321
PROJECT LOCATION: Bronx, NY

WATER LEVEL (ft): ▼ NA ▼ 14 ft. ▼ 11 ft.
DATE: 11-16-17 11-16-17 12-1-17
CAVED (ft): 16 Cuttings 16 Cuttings WELL

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 in.	N-VALUE/RQD	ELEVATION (ft.)	DEPTH (ft.)	WELL DIAGRAM	DESCRIPTION	REMARKS
S-7	SS	30.0	18	21-20-18-19	38	30		Brown, wet, medium dense, Silty SAND (Class 3b)	
S-8	SS	35.0	24	15-19-27-30	46	35			
S-9	SS	40.0	23	7-9-19-26	27	40			
S-10	SS	46.0	19	11-13-24-23	36	45			
S-11	SS	30.0	18	13-14-21-15	35	50			
S-12	SS	6.0	7	62-100/7"	150+	55		Highly weathered rock, Presents as: Brown, wet, very dense, Silty SAND with rock fragments (Class 1d)	
S-13	SS	6.0	3	100/1"	150+	60		No Recovery due to bedrock	
					-60.5	69.5		Boring complete at 60.5 ft	

NOTES: Well installed upon Completion

GTA GEO-TECHNOLOGY ASSOCIATES, INC.
211-K Gates Road
Little Ferry, NJ 07643

LOG OF BORING NO. B-4W

Sheet 2 of 2

LOG OF BORING NO. B-5

Sheet 1 of 2

PROJECT: Betances VI - Mott Haven
PROJECT NO: 34172321
PROJECT LOCATION: Bronx, NY

WATER LEVEL (ft): ▼ 15 ft. ▼ NA ▼ BOC ▼ BOC
DATE: 11-20-17 11-20-17 11-20-17 12-1-17
CAVED (ft): 16 Cuttings NA BOC

DATE STARTED: 11-20-17
DATE COMPLETED: 11-21-17
DRILLING CONTRACTOR: Allied Drilling
DRILLER: Veraszto
DRILLING METHOD: Mud
SAMPLING METHOD: SPT

HAMMER TYPE: Manual/A
GROUND SURFACE ELEVATION: 7.5
DATUM: Sidewalk
EQUIPMENT: Bombardier
LOGGED BY: SH
CHECKED BY: RD

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 in.	N-VALUE/RQD	ELEVATION (ft.)	DEPTH (ft.)	WELL DIAGRAM	DESCRIPTION	REMARKS
S-1	SS	1.0	17	17-27-17-11	44	7.5		Concrete	
					7.0	0.5		FILL: Brown, moist, medium dense, poorly-graded sand with debris (Class 7)	
S-2	SS	5.0	0	24-18-14-9	32	5			
					-1.0	8.5		No Recovery	
S-3	SS	10.0	8	4-5-4-5	7	10		Brown, moist, loose, Silty SAND (Class 6)	
S-4	SS	19.0	12	5-4-5-5	9	15		- wet	
S-5	SS	20.0	18	7-9-8-8	17	20		- medium dense, (Class 3b)	
					-13.0	23.5			
S-6	SS	25.0	11	7-8-12-14	20	25		Grey, wet stiff, Sandy SILT with Mica (Class 5b)	
					-30.0	40.5			

NOTES: BOC = Backfilled On Completion

GTA GEO-TECHNOLOGY ASSOCIATES, INC.
211-K Gates Road
Little Ferry, NJ 07643

LOG OF BORING NO. B-5

Sheet 1 of 2

LOG OF BORING NO. B-5

Sheet 2 of 2

PROJECT: Betances VI - Mott Haven
PROJECT NO: 34172321
PROJECT LOCATION: Bronx, NY

WATER LEVEL (ft): ▼ 15 ft. ▼ NA ▼ BOC ▼ BOC
DATE: 11-20-17 11-20-17 11-20-17 12-1-17
CAVED (ft): 16 Cuttings NA BOC

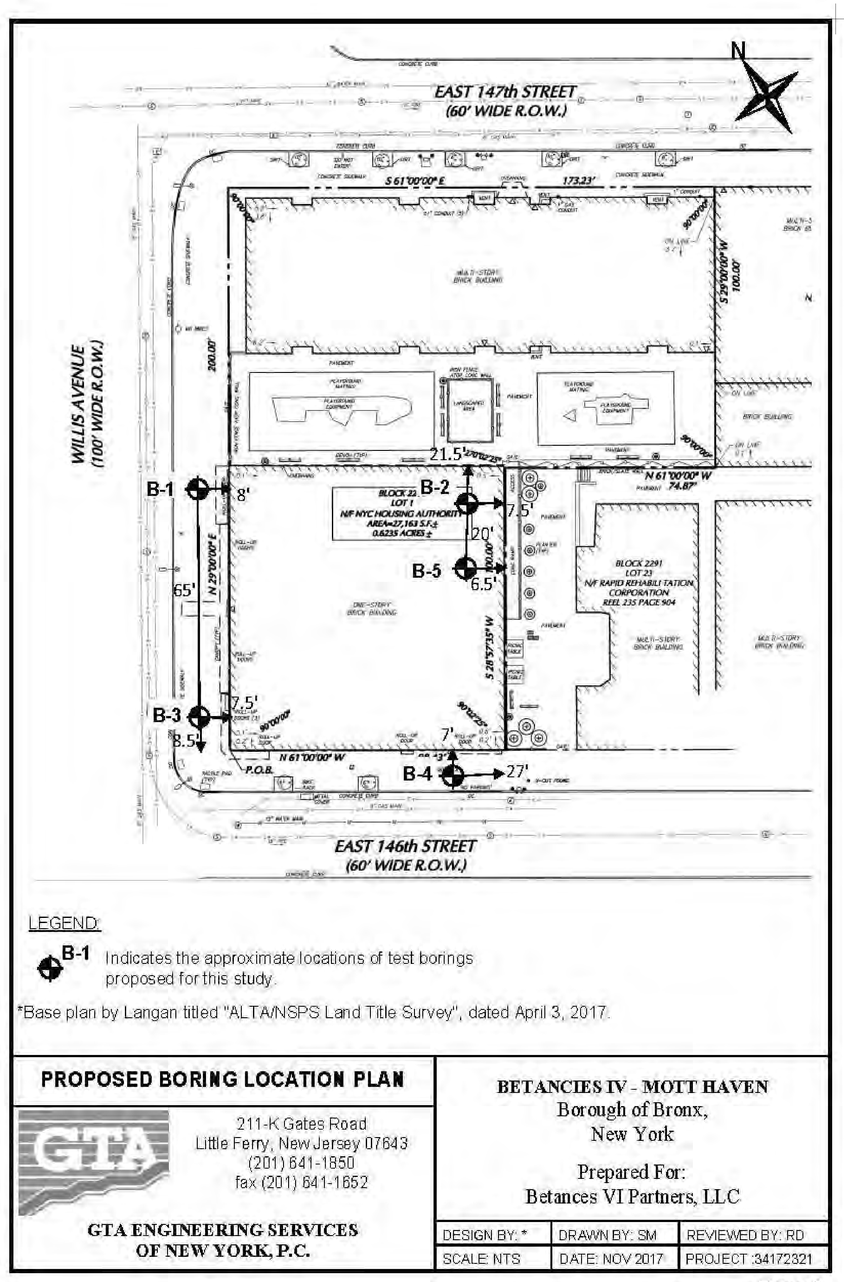
SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 in.	N-VALUE/RQD	ELEVATION (ft.)	DEPTH (ft.)	WELL DIAGRAM	DESCRIPTION	REMARKS
S-7	SS	30.0	22	7-14-10-18	24	30		Grey, wet stiff, Sandy SILT with Mica (Class 5b)	
S-8	SS	35.0	20	3-6-8-8	14	35			
S-9	SS	40.0	21	8-9-9-13	18	40		Brown, wet, medium dense, Poorly-graded SAND (Class 3a)	
					-47.5	55.0		Boring complete at 42.5 ft	

NOTES: BOC = Backfilled On Completion

GTA GEO-TECHNOLOGY ASSOCIATES, INC.
211-K Gates Road
Little Ferry, NJ 07643

LOG OF BORING NO. B-5

Sheet 2 of 2



LEGEND:

B-1 Indicates the approximate locations of test borings proposed for this study.

*Base plan by Langan titled "ALTA/NSPS Land Title Survey", dated April 3, 2017.

PROPOSED BORING LOCATION PLAN

GTA
211-K Gates Road
Little Ferry, New Jersey 07643
(201) 641-1850
fax (201) 641-1652

GTA ENGINEERING SERVICES OF NEW YORK, P.C.

BETANCIES IV - MOTT HAVEN
Borough of Bronx,
New York

Prepared For:
Betances VI Partners, LLC

DESIGN BY: *	DRAWN BY: SM	REVIEWED BY: RD
SCALE: NTS	DATE: NOV 2017	PROJECT :34172321

Figure 2

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1 METROTECH CENTER NORTH, 6TH FLOOR
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P 914.305.5679

MEP
RODKIN CARDINALE P.C.
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

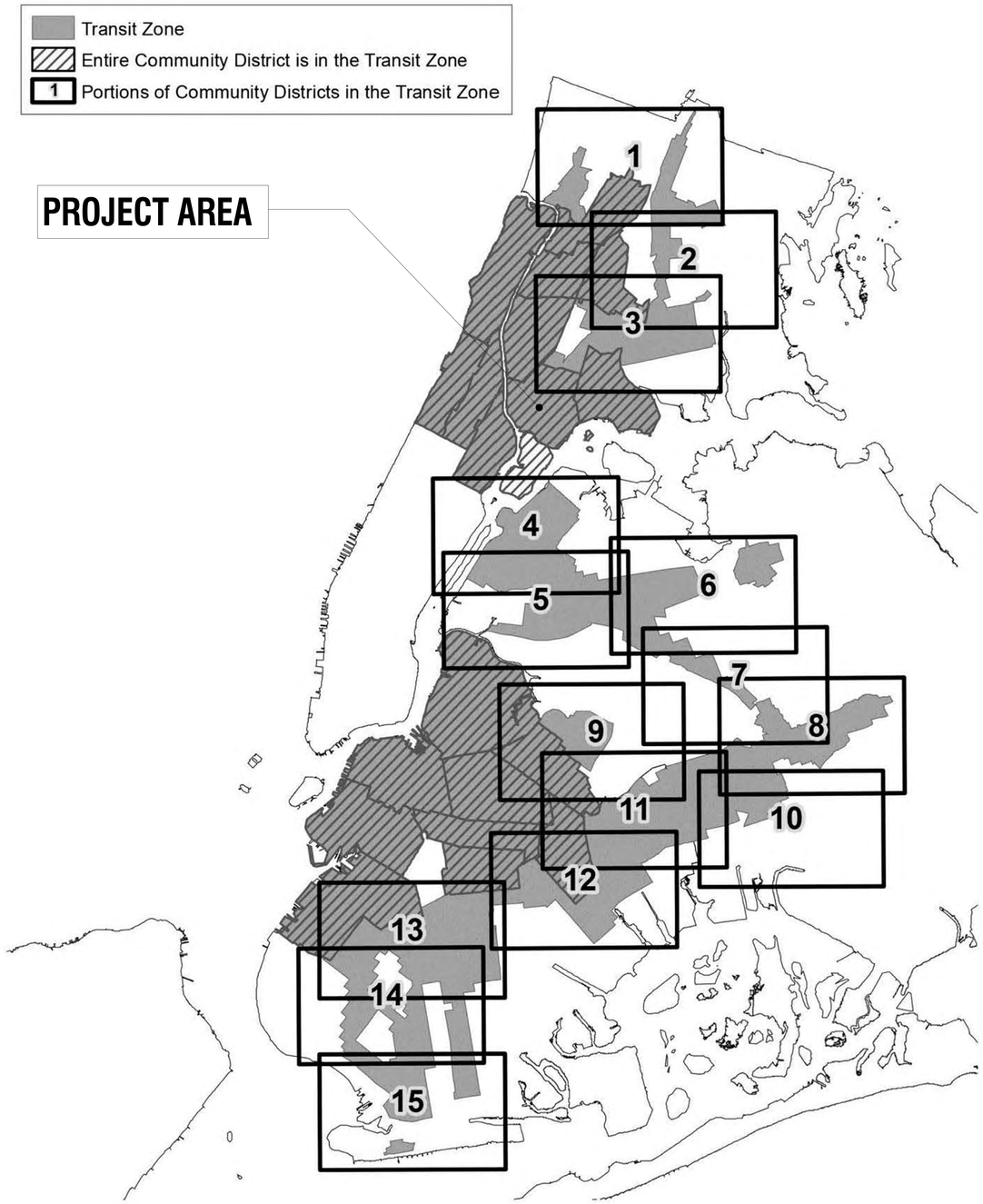
472-474 WILLIS AVE. BRONX, NY, 10455

BORINGS

SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	1" = 1'-0"
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	G-007.00
NYC DOB NUMBER:	

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

TRANSIT ZONE MAP

SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	1/2" = 1'-0"
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	G-008.00
NYC DOB NUMBER:	

4/10/2018 1:39:16 PM

COMcheck Software Version 4.0.8.0

Mechanical Compliance Certificate

Project Information

Energy Code:	2016 New York City Energy Conservation Code
Project Title:	Betances VI
Location:	New York, New York
Climate Zone:	4a
Project Type:	New Construction

Construction Site:	Owner/Agent:	Designer/Contractor:
472-474 Willis Ave Bronx, NY	Lemle & Wolff	Rodkin Cardinale 224 W 29th St New York, NY

Additional Efficiency Package(s)

Reduced interior lighting power. Requirements are implicitly enforced within interior lighting allowance calculations.

Mechanical Systems List

Quantity — System Type & Description

98 — PTAC-A (Single Zone):
Heating: 98 each - Hydronic or Steam Coil, Hot Water, Capacity = 8 kBtu/h
No minimum efficiency requirement applies
Cooling: 98 each - Packaged Terminal Unit, Capacity = 12 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None
Proposed Efficiency = 10.92 EER, Required Efficiency: 10.46 EER
Fan System: None

159 — PTAC-B (Single Zone):
Heating: 159 each - Hydronic or Steam Coil, Hot Water, Capacity = 8 kBtu/h
No minimum efficiency requirement applies
Cooling: 159 each - Packaged Terminal Unit, Capacity = 7 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None
Proposed Efficiency = 11.99 EER, Required Efficiency: 11.84 EER
Fan System: None

1 — ACCU-R-1 (Single Zone):
VRF, Air Cooled Heat Pump
Heating Mode: Capacity = 135 kBtu/h,
Proposed Efficiency = 3.50 COP, Required Efficiency = 3.30 COP
Cooling Mode: Capacity = 120 kBtu/h,
Proposed Efficiency = 12.50 EER, Required Efficiency: 11.00 EER + 14.6 IEER
Fan System: None

2 — ACCU-2-1 & ACCU-R-2 (Single Zone):
VRF, Air Cooled Heat Pump
Heating Mode: Capacity = 27 kBtu/h,
Proposed Efficiency = 11.00 HSPF, Required Efficiency = 7.70 HSPF
Cooling Mode: Capacity = 22 kBtu/h,
Proposed Efficiency = 21.00 SEER, Required Efficiency: 13.00 SEER
Fan System: None

2 — Boilers B-1 & B-2:
Heating: Hot Water Boiler, Capacity 3500 kBtu/h, Gas
Proposed Efficiency: 95.00 % Ec, Required Efficiency: 82.00 % Ec

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2016 New York City Energy Conservation Code requirements in COMcheck Version 4.0.8.0 and to comply with any applicable mancatory requirements listed in the Inspection Checklist.

Mattew M. Wavro — Name - Title

Signature

04.04.18 — Date

COMcheck Software Version 4.0.8.0

Inspection Checklist

Energy Code: 2016 New York City Energy Conservation Code

Requirements: 96.0% were addressed directly in the COMcheck software

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

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2]¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C406 [PR9]¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

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

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C403.2.4.5, C403.2.4.6 (FO9)¹	Snow/ice melting system sensors for future connection to controls. Freeze protection systems have automatic controls installed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

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

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6]¹	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6]¹	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6]¹	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6]¹	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.6.3 [PL7]¹	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.6.3 [PL7]¹	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.6.3 [PL7]¹	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.6.3 [PL7]¹	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.6.3 [PL7]¹	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

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

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.7 [PL8]¹	Water distribution system that pumps water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe is a demand recirculation water system. Pumps within this system have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.7 [PL8]¹	Water distribution system that pumps water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe is a demand recirculation water system. Pumps within this system have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.7 [PL8]¹	Water distribution system that pumps water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe is a demand recirculation water system. Pumps within this system have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.7 [PL8]¹	Water distribution system that pumps water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe is a demand recirculation water system. Pumps within this system have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.7 [PL8]¹	Water distribution system that pumps water from a heated-water supply pipe back to the heated-water source through a cold-water supply pipe is a demand recirculation water system. Pumps within this system have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

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

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

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MEP
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224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

MECHANICAL
COMCHECK SHEET #1

SEAL & SIGNATURE

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.F.
CHECKED BY:	S.R./D.C.
DWG NO:	EN-001.00
NYC DOB NUMBER:	

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41][1]	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.2.12.1 [ME65][1]	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system bhp.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
C403.2.12.1 [ME65][1]	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system bhp.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
C403.2.12.1 [ME65][1]	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system bhp.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
C403.2.12.1 [ME65][1]	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system bhp.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
C403.2.12.3 [ME117][1]	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Fans integral to equipment listed under Section C403.2.3.
C403.2.12.3 [ME117][1]	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Fans integral to equipment listed under Section C403.2.3.
C403.2.12.3 [ME117][1]	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Fans integral to equipment listed under Section C403.2.3.
C403.2.13 [ME71][1]	Unenclosed spaces that are heated use only radiant heat.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.2.3 [ME55][1]	HVAC equipment efficiency verified.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Mechanical Systems list for values.*
C403.2.5.1 [ME114][1]	Hot water boilers supplying heat via one- or two-pipe systems include outdoor setback control.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

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

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.2.6.1 [ME59][1]	Demand control ventilation provided for spaces >500 ft2 and >25 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Systems with design outdoor air of less than 1200 cfm.
C403.2.6.2 [ME115][1]	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.2.7 [ME57][1]	Exhaust air energy recovery on systems meeting Table C403.2.7(1) and C403.2.7(2).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.8 [ME116][1]	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.2.9 [ME60][1]	HVAC ducts and plenums insulated. Where ducts or plenums are installed in or under a slab, verification may need to occur during Foundation Inspection.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.9 [ME10][1]	Ducts and plenums sealed based on static pressure and location.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.9.1.3 [ME111][1]	Ductwork operating >3 in. water column requires air leakage testing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.2.9.1.3 [ME111][1]	Ductwork operating >3 in. water column requires air leakage testing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.2.9.1.3 [ME111][1]	Ductwork operating >3 in. water column requires air leakage testing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.2.9.1.3 [ME111][1]	Ductwork operating >3 in. water column requires air leakage testing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.4.2 [ME69][1]	Temperature reset by representative building loads in pumping systems for chiller and boiler systems >500,000 Btu/h.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.2.1 [ME50][1]	Three-pipe hydronic systems using a common return for hot and chilled water are not used.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

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

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.4.2.1 [ME50][1]	Three-pipe hydronic systems using a common return for hot and chilled water are not used.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.2.2 [ME64][1]	Two-pipe hydronic systems using a common distribution system have controls to allow a deadband >=15 ºF, allow operation in one mode for at least 4 hrs before changeover, and have rest controls to limit heating and cooling supply temperature to <=30 ºF.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.2.3.2.1 [ME121][1]	Closed-circuit cooling tower within heat pump loop have either automatic bypass valve or lower leakage positive closure dampers. Open-circuit tower within heat pump loop have automatic valve to bypass all heat pump water flow around the tower. Open- or closed-circuit cooling towers used in conjunction with a separate heat exchanger have heat loss by shutting down the circulation pump on the cooling tower loop.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.4.2.3.2.1 [ME121][1]	Closed-circuit cooling tower within heat pump loop have either automatic bypass valve or lower leakage positive closure dampers. Open-circuit tower within heat pump loop have automatic valve to bypass all heat pump water flow around the tower. Open- or closed-circuit cooling towers used in conjunction with a separate heat exchanger have heat loss by shutting down the circulation pump on the cooling tower loop.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.4.2.4 [ME68][1]	Hydronic systems greater than 500,000 Btu/h designed for variable fluid flow.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.2.5 [ME107][1]	System turndown requirement met through multiple single-input boilers, one or more modulating boilers, or a combination of single-input and modulating boilers. Boiler input between 1.0 MBtu/h and 5 MBtu/h has 3:1 turndown ratio, boiler input between 5.0 MBtu/h and 10 MBtu/h has 4:1 turndown ratio, boiler input > 10.0 MBtu/h has 5:1 turndown ratio.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. *See the Mechanical Systems list for values.*
C403.4.2.6 [ME26][1]	Chilled water plants with multiple chillers have capability to reduce flow automatically through the chiller plant when a chiller is shut down. Boiler plants with multiple boilers have the capability to reduce flow automatically through the boiler plant when a boiler is shut down.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

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

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.4.2.6 [ME26][1]	Chilled water plants with multiple chillers have capability to reduce flow automatically through the chiller plant when a chiller is shut down. Boiler plants with multiple boilers have the capability to reduce flow automatically through the boiler plant when a boiler is shut down.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.4.6 [ME110][1]	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
C403.4.4.6 [ME110][1]	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
C403.4.4.6 [ME110][1]	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
C403.4.4.6 [ME110][1]	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
C403.4.5 [ME31][1]	Condenser heat recovery system that can heat water to 85 ºF or provide 60% of peak heat rejection is installed for preheating of service hot water.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Total installed heat capacity of water cooled systems = 6 MMBtu/h of heat rejection.
C403.4.5 [ME31][1]	Condenser heat recovery system that can heat water to 85 ºF or provide 60% of peak heat rejection is installed for preheating of service hot water.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Total installed heat capacity of water cooled systems = 6 MMBtu/h of heat rejection.
C408.2.2.1 [ME53][1]	Air outlets and zone terminal devices have means for air balancing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.2.2 [ME54][1]	HVAC hydronic heating and cooling coils have means to balance and have pressure test connections.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.2.2 [ME54][1]	HVAC hydronic heating and cooling coils have means to balance and have pressure test connections.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

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

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.3 [FI8][1]	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.2 [FI27][1]	HVAC systems and equipment capacity does not exceed calculated loads.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1 [FI47][1]	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1 [FI47][1]	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1 [FI47][1]	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1 [FI47][1]	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1.1 [FI42][1]	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.2.4.1.1 [FI42][1]	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C403.2.4.1.2 [FI38][1]	Thermostatic controls have a 5 °F deadband.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1.3 [FI20][1]	Temperature controls have setpoint overlap restrictions.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.2 [FI39][1]	Each zone equipped with setback controls using automatic time clock or programmable control system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

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

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C403.2.4.2.1, C403.2.4.2.2 [FI40][1]	Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.1 [FI28][1]	Commissioning plan developed by approved agency. Lighting controls shall be commissioned in accordance with C408.3.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.3.1 [FI31][1]	HVAC equipment has been tested to ensure proper operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.3.2 [FI10][1]	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.1 [FI7][1]	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.3 [FI43][1]	An air and/or hydronic system balancing report is provided for HVAC systems.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.4 [FI30][1]	Final commissioning report due to building owner within 30 months (for new buildings > 500,000 ft2) or 18 months (for R-2 and all other buildings) of receipt of certificate of occupancy.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

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

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KEY PLAN

x		xx.xx.2017
NO.	**DESIGN & CONSTRUCTION SUBMISSIONS**	**DATE**

2.	**DOB SUBMISSION**	**04.06.18**
1.	**DD SUBMISSION**	**04.06.18**
NO.	**REGULATORY SUBMISSIONS**	**DATE**

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

MECHANICAL
COMCHECK SHEET #2

SEAL & SIGNATURE



DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.F.
CHECKED BY:	S.R./D.C.
DWG NO:	EN-002.00
NYC DOB NUMBER:	

TABLE II – PROGRESS INSPECTIONS FOR ENERGY CODE COMPLIANCE – COMMERCIAL BUILDINGS AS PER 1 RCNY §5000-01

	INSPECTION / TEST	FREQUENCY (MIN)	REFERENCE STANDARD (SEE ECC CH 6) OR OTHER CRITERIA	ECC OR OTHER CITATION	INSPECTION REQUIREMENT	
					REQ'D	NOT REQ'D
IIA	**ENVELOPE INSPECTIONS**					
IIA1	PROTECTION OF EXPOSED FOUNDATION INSULATION: INSULATION SHALL BE VISUALLY INSPECTED TO VERIFY PROPER PROTECTION WHERE APPLIED TO THE EXTERIOR OF BASEMENT OR CELLAR WALLS, CRAWL-SPACE WALLS AND/OR THE PERIMETER OF SLAB-ON-GRADE FLOORS.	AS REQUIRED DURING FOUNDATION WORK AND PRIOR TO BACKFILL	APPROVED CONSTRUCTION DOCUMENTS	303.2.1; ASHRAE 90.1 - 5.8.1.7	●	○
IIA2	INSULATION PLACEMENT AND R-VALUES: INSTALLED INSULATION FOR EACH COMPONENT OF THE CONDITIONED SPACE ENVELOPE AND AT JUNCTIONS BETWEEN COMPONENTS SHALL BE VISUALLY INSPECTED TO ENSURE THAT THE R-VALUES ARE MARKED, THAT SUCH R-VALUES CONFORM TO THE R-VALUES IDENTIFIED IN THE CONSTRUCTION DOCUMENTS AND THAT THE INSULATION IS PROPERLY INSTALLED. CERTIFICATIONS FOR UNMARKED INSULATION SHALL BE SIMILARLY VISUALLY INSPECTED.	AS REQUIRED TO VERIFY CONTINUOUS ENCLOSURE WHILE WALLS, CEILINGS AND FLOORS ARE OPEN	APPROVED CONSTRUCTION DOCUMENTS	303.1, 303.1.1, 303.1.2, 502.1, 502.2; ASHRAE 90.1–5.5, 5.6 or 11; 5.8.1	●	○
IIA3	FENESTRATION THERMAL VALUES AND PRODUCT RATINGS: U-FACTORS AND SHGC VALUES OF INSTALLED FENESTRATION SHALL BE VISUALLY INSPECTED FOR CONFORMANCE WITH THE U-FACTORS AND SHGC VALUES IDENTIFIED IN THE CONSTRUCTION DRAWINGS BY VERIFYING THE MANUFACTURER'S NFRC LABELS OR, WHERE NOT LABELED, USING THE RATINGS IN ECC TABLES 303.1.3(1), (2) AND (3). WHERE ASHRAE 90.1 IS USED, VISIBLE LIGHT TRANSMITTANCE VALUES SHALL ALSO BE VERIFIED.	AS REQUIRED DURING INSTALLATION	APPROVED CONSTRUCTION DOCUMENTS; NFRC 100, NFRC 200	303.1, 303.1.3, 502.3; ASHRAE 90.1–5.5; 5.6 or 11; 5.8.2	●	○
IIA4	FENESTRATION AND DOOR ASSEMBLY PRODUCT RATINGS FOR AIR LEAKAGE: WINDOWS AND SLIDING OR SWINGING DOOR ASSEMBLIES, EXCEPT SITE-BUILT WINDOWS AND/OR DOORS, SHALL BE VISUALLY INSPECTED TO VERIFY THAT INSTALLED ASSEMBLIES ARE LISTED AND LABELED BY THE MANUFACTURER TO THE REFERENCED STANDARD. FOR CURTAIN WALL, STOREFRONT GLAZING, COMMERCIAL ENTRANCE DOORS AND REVOLVING DOORS, THE TESTING REPORTS SHALL BE REVIEWED TO VERIFY THAT THE INSTALLED ASSEMBLY COMPLIES WITH THE STANDARD CITED IN THE APPROVED PLANS.	AS REQUIRED DURING INSTALLATION; PRIOR TO FINAL CONSTRUCTION INSPECTION	NFRC 400, AAMA/WDMA/CSA 101/I.S.2/A440 ASTM E283; ANSI/DASMA 105	502.4; ASHRAE 90.1–5.4.3.2	●	○
IIA5	FENESTRATION AREAS: DIMENSIONS OF WINDOWS, DOORS AND SKYLIGHTS SHALL BE VERIFIED BY VISUAL INSPECTION.	PRIOR TO FINAL CONSTRUCTION INSPECTION	APPROVED CONSTRUCTION DOCUMENTS	502.3; ASHRAE 90.1–5.5.4, 5.6 or 11	●	○
IIA6	SEALING: OPENINGS AND PENETRATIONS IN THE BUILDING ENVELOPE, INCLUDING SITE-BUILT FENESTRATION AND DOORS, SHALL BE VISUALLY INSPECTED TO VERIFY THAT A CONTINUOUS AIR BARRIER AROUND THE ENVELOPE FORMS AN AIR-TIGHT ENCLOSURE. THE PROGRESS INSPECTOR SHALL VISUALLY INSPECT TO VERIFY THAT MATERIALS AND/OR ASSEMBLIES HAVE BEEN TESTED AND MEET THE REQUIREMENTS OF THE RESPECTIVE STANDARDS, OR THAT THE BUILDING IS TESTED AND MEETS THE REQUIREMENTS OF THE STANDARD, IN ACCORDANCE WITH THE STANDARD(S) CITED IN THE APPROVED PLANS.	AS REQUIRED DURING CONSTRUCTION	APPROVED CONSTRUCTION DOCUMENTS; ASTM E2178, ASTM E2357, ASTM E1677, ASTM E779, ASTM E283.	502.4.3, 502.4.7; ASHRAE 90.1– 5.4.3.1	●	○
IIA7	PROJECTION FACTORS: WHERE THE ENERGY ANALYSIS UTILIZED A PROJECTION FACTOR >0, THE PROJECTION DIMENSIONS OF OVERHANGS, EAVES OR PERMANENTLY ATTACHED SHADING DEVICES SHALL BE VERIFIED FOR CONFORMANCE WITH APPROVED PLANS BY VISUAL INSPECTION.	PRIOR TO FINAL CONSTRUCITON INSPECTION	APPROVED CONSTRUCTION DOCUMENTS; INCLUDING ENERGY ANALYSIS	502.3; ASHRAE 90.1 – 5.5.4, 5.6 or 11	○	●
IIA8	LOADING DOCK WEATHERSEALS: WEATHERSEALS AT LOADING DOCKS SHALL BE VISUALLY VERIFIED.	PRIOR TO FINAL CONSTRUCITON INSPECTION	APPROVED CONSTRUCTION DOCUMENTS	502.4.5; ASHRAE 90.1 – 5.4.3.3	○	●
IIA9	BUILDING ENTRANCE VESTIBULES: REQUIRED ENTRANCE VESTIBULES SHALL BE VISUALLY INSPECTED FOR PROPER OPERATION.	PRIOR TO FINAL CONSTRUCITON INSPECTION	APPROVED CONSTRUCTION DOCUMENTS	502.4.6; ASHRAE 90.1 – 5.4.3.4	●	○
IIB	**MECHANICAL AND SERVICE WATER HEATING INSPECTIONS**					
IIB1	FIREPLACES: PROVISION OF COMBUSTION AIR AND TIGHT-FITTING FIREPLACE DOORS SHALL BE VERIFIED BY VISUAL INSPECTION.	PRIOR TO FINAL CONSTRUCITON INSPECTION	APPROVED CONSTRUCTION DOCUMENTS; ANSI Z21.60 (see also MC 904), ANSI Z21.50	303.1.5; BC 2111; MC Chapters 7, 9; FGC Chapter 6	○	●
IIB2	OUTDOOR AIR INTAKES AND EXHAUST OPENINGS: DAMPERS FOR STAIR AND ELEVATOR SHAFT VENTS AND OTHER OUTDOOR AIR INTAKES AND EXHAUST OPENINGS INTEGRAL TO THE BUILDING ENVELOPE SHALL BE VISUALLY INSPECTED TO VERIFY THAT SUCH DAMPERS, EXCEPT WHERE PERMITTED TO BE GRAVITY DAMPERS, COMPLY WITH APPROVED CONSTRUCTION DRAWINGS. MANUFACTURER'S LITERATURE SHALL BE REVIEWED TO VERIFY THAT THE PRODUCT HAS BEEN TESTED AND FOUND TO MEET THE STANDARD.	AS REQUIRED DURING INSTALLATION	APPROVED CONSTRUCTION DOCUMENTS; AMCA 500D	403.2.4.3	●	○
IIB3	HVAC, SERVICE WATER HEATING AND POOL EQUIPMENT SIZING AND PERFORMANCE: EQUIPMENT SIZING, EFFICIENCIES AND OTHER PERFORMANCE FACTORS OF ALL MAJOR EQUIPMENT UNITS, AS DETERMINED BY THE APPLICANT OF RECORD AND NO LESS THAN 15% OF MINOR EQUIPMENT UNITS, SHALL BE VERIFIED BY VISUAL INSPECTION AND, WHERE NECESSARY, REVIEW OF MANUFACTURER'S DATA. POOL HEATERS AND COVERS SHALL BE VERIFIED BY VISUAL INSPECTION.	PRIOR TO FINAL PLUMBING AND CONSTRUCTION INSPECTION	APPROVED CONSTRUCTION DOCUMENTS	403.2, 406.2, 404.2	●	○
IIB4	HVAC SYSTEM CONTROLS AND ECONOMIZERS AND SERVICE HOT WATER SYSTEM CONTROLS: NO LESS THAN 20% OF EACH TYPE OF REQUIRED CONTROLS AND ECONOMIZERS SHALL BE VERIFIED BY VISUAL INSPECTION AND TESTED FOR FUNCTIONALITY AND PROPER OPERATION. SUCH CONTROLS SHALL INCLUDE, BUT ARE NOT LIMITED TO: • THERMOSTATIC • SET POINT OVERLAP RESTRICTION • OFF-HOUR • SHUTOFF DAMPER • SNOW-MELT SYSTEM • DEMAND CONTROL SYSTEMS • OUTDOOR HEATING SYSTEMS • ZONES • ECONOMIZERS • AIR SYSTEMS • VARIABLE AIR VOLUME FAN • HYDRONIC SYSTEMS • HEAT REJECTION EQUIPMENT FAN SPEED • COMPLEX MECHANICAL SYSTEMS SERVING MULTIPLE ZONES • VENTILATION • ENERGY RECOVERY SYSTEMS • HOT GAS BYPASS LIMITATION • TEMPERATURE • SERVICE WATER HEATING • HOT WATER SYSTEM • POOL HEATER AND TIME SWITCHES • EXHAUST HOODS • RADIANT HEATING SYSTEMS. CONTROLS WITH SEASONALLY DEPENDENT FUNCTIONALITY: CONTROLS WHOSE COMPLETE OPERATION CANNOT BE DEMONSTRATED DUE TO PREVAILING WEATHER CONDITIONS TYPICAL OF THE SEASON DURING WHICH PROGRESS INSPECTIONS WILL BE PERFORMED SHALL BE PERMITTED TO BE SIGNED OFF FOR THE PURPOSE OF A TEMPORARY CERTIFICATE OF OCCUPANCY WITH ONLY A VISUAL INSPECTION, PROVIDED, HOWEVER, THAT THE PROGRESS INSPECTOR SHALL PERFORM A SUPPLEMENTAL INSPECTION WHERE THE CONTROLS ARE VISUALLY INSPECTED AND TESTED FOR FUNCTIONALITY AND PROPER OPERATION DURING THE NEXT IMMEDIATE SEASON THEREAFTER. THE OWNER SHALL PROVIDE FULL ACCESS TO THE PROGRESS INSPECTOR WITHIN TWO WEEKS OF THE PROGRESS INSPECTOR'S REQUEST FOR SUCH ACCESS TO PERFORM THE PROGRESS INSPECTION. FOR SUCH SUPPLEMENTAL INSPECTIONS, THE DEPARTMENT SHALL BE NOTIFIED BY THE APPROVED PROGRESS INSPECTION AGENCY OF ANY UNRESOLVED DEFICIENCIES IN THE INSTALLED WORK WITHIN 180 DAYS OF SUCH SUPPLEMENTAL INSPECTION.	AFTER INSTALLATION AND PRIOR TO FINAL ELECTRICAL AND CONSTRUCTION INSPECTION, EXCEPT THAT FOR CONTROLS WITH SEASONALLY DEPENDENT FUNCTIONALITY, SUCH TESTING SHALL BE PERFORMED BEFORE SIGN-OFF FOR INSSUANCE OF A FINAL CERTIFICATE OF OCCUPANCY	APPROVED CONSTRUCTION DOCUMENTS, INCLUDING CONTROL SYSTEM NARRATIVES; ASHRAE GUIDELINE 1: THE HVAC COMMISSIONING PROCESS WHERE APPLICABLE	403.2.4, 403.2.6.1, 403.3, 404.6, 404.7	●	○
IIB5	DUCT, PLENUM AND PIPING INSULATION AND SEALING: INSTALLED DUCT AND PIPING INSULATION SHALL BE VISUALLY INSPECTED TO VERIFY PROPER INSULATION PLACEMENT AND VALUES. JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS AND CONNECTIONS IN DUCTWORK SHALL BE VISUALLY INSPECTED FOR PROPER SEALING.	AFTER INSTALLATION AND PRIOR TO CLOSING SHAFTS, CEILINGS AND WALLS	APPROVED CONSTRUCTION DOCUMENTS; SMACNA DUCT CONSTRUCITON STANDARDS, METAL AND FLEXIBLE	403.2.9, 403.2.10, NYC MC 603.9	●	○
IIB6	AIR LEAKAGE TESTING FOR HIGHPRESSURE DUCT SYSTEMS: FOR DUCT SYSTEMS DESIGNED TO OPERATE AT STATIC PRESSURES IN EXCESS OF 3 INCHES W.G. (746 PA), REPRESENTATIVE SECTIONS, AS DETERMINED BY THE PROGRESS INSPECTOR, TOTALING AT LEAST 25% OF THE DUCT AREA, PER ECC 503.2.7.1.3, SHALL BE TESTED TO VERIFY THAT ACTUAL AIR LEAKAGE IS BELOW ALLOWABLE AMOUNTS.	AFTER INSTALLATION AND SEALING AND PRIOR TO CLOSING SHAFTS, CEILINGS AND WALLS	APPROVED CONSTRUCTION DOCUMENTS; SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL	503.2.7.1.3; ASHRAE 90.1 – 6.4.4.2	○	●

IIC	**ELECTRICAL POWER AND LIGHTING SYSTEMS**					
IIC1	ELECTRICAL METERING: THE PRESENCE AND OPERATION OF INDIVIDUAL METERS OR OTHER MEANS OF MONITORING INDIVIDUAL APARTMENTS SHALL BE VERIFIED BY VISUAL INSPECTION FOR ALL APARTMENTS.	PRIOR TO FINAL ELECTRICAL AND CONSTRUCTION INSPECTION	APPROVED CONSTRUCTION DOCUMENTS	505.7	●	○
IIC2	LIGHTING IN DWELLING UNITS: LAMPS IN PERMANENTLY INSTALLED LIGHTING FIXTURES SHALL BE VISUALLY INSPECTED TO VERIFY COMPLIANCE WITH HIGH-EFFICACY REQUIREMENTS.	PRIOR TO FINAL ELECTRICAL AND CONSTRUCTION INSPECTION	APPROVED CONSTRUCTION DOCUMENTS	505.5.3	●	○
IIC3	INTERIOR LIGHTING POWER: INSTALLED LIGHTING SHALL BE VERIFIED FOR COMPLIANCE WITH THE LIGHTING POWER ALLOWANCE BY VISUAL INSPECTION OF FIXTURES, LAMPS, BALLASTS AND TRANSFORMERS.	PRIOR TO FINAL ELECTRICAL AND CONSTRUCTION INSPECTION	APPROVED CONSTRUCTION DOCUMENTS	505.5; ASHRAE 90.1 – 9.1, 9.2, 9.5, 9.6; 1RCNY §101- 07(c)(3)(iv)(C)4	●	○
IIC4	EXTERIOR LIGHTING: INSTALLED LIGHTING SHALL BE VERIFIED FOR COMPLIANCE WITH SOURCE EFFICACY AND/OR THE LIGHTING POWER ALLOWANCE BY VISUAL INSPECTION OF FIXTURES, LAMPS, BALLASTS AND RELEVANT TRANSFORMERS.	PRIOR TO FINAL ELECTRICAL AND CONSTRUCTION INSPECTION	APPROVED CONSTRUCTION DOCUMENTS	505.5; ASHRAE 90.1 – 9.1, 9.2, 9.5, 9.6; 1RCNY §101- 07(c)(3)(iv)(C)4	●	○
IIC5	LIGHTING CONTROLS: EACH TYPE OF REQUIRED LIGHTING CONTROLS, INCLUDING: • OCCUPANT SENSORS • MANUAL INTERIOR LIGHTING CONTROLS • LIGHT-REDUCTION CONTROLS • AUTOMATIC LIGHTING SHUT-OFF • DAYLIGHT ZONE CONTROLS • SLEEPING UNIT CONTROLS • EXTERIOR LIGHTING CONTROLS SHALL BE VERIFIED BY VISUAL INSPECTION AND TESTED FOR FUNCTIONALITY AND PROPER OPERATION.	PRIOR TO FINAL ELECTRICAL AND CONSTRUCTION INSPECTION	APPROVED CONSTRUCTION DOCUMENTS, INCLUDING CONTROL SYSTEM NARRATIVES	505.2, 505.2.2.2; ASHRAE 90.1 – 9.4.1, 9.4.1.2 (AS MODIFIED BY SECTION ECC A102)	●	○
IIC6	EXIT SIGNS: INSTALLED EXIT SIGNS SHALL BE VISUALLY INSPECTED TO VERIFY THAT THE LABEL INDICATES THAT THEY DO NOT EXCEED MAXIMUM PERMITTED WATTAGE	PRIOR TO FINAL ELECTRICAL AND CONSTRUCTION INSPECTION	APPROVED CONSTRUCTION DOCUMENTS	505.4; ASHRAE 90.1 – 9.4.3	●	○
IIC7	TANDEM WIRING: TANDEM WIRING SHALL BE TESTED FOR FUNCTIONALITY.	PRIOR TO FINAL ELECTRICAL AND CONSTRUCTION INSPECTION	APPROVED CONSTRUCTION DOCUMENTS	505.3; ASHRAE 90.1 – 9.4.2	○	●
IIC8	ELECTRIC MOTORS (INCLUDING BUT NOT LIMITED TO FAN MOTORS): WHERE REQUIRED BY THE CONSTRUCTION DOCUMENTS FOR ENERGY CODE COMPLIANCE, MOTOR LISTING OR LABELS SHALL BE VISUALLY INSPECTED TO VERIFY THAT THEY COMPLY WITH THE RESPECTIVE ENERGY REQUIREMENTS IN THE CONSTRUCTION DOCUMENTS.	PRIOR TO FINAL ELECTRICAL AND CONSTRUCTION INSPECTION	APPROVED CONSTRUCTION DOCUMENTS	503.2.10; ASHRAE 90.1 – 10.4	●	○
IID	**OTHER**					
IID1	MAINTENANCE INFORMATION: MAINTENANCE MANUALS FOR MECHANICAL, SERVICE HOT WATER AND ELECTRICAL EQUIPMENT AND SYSTEMS REQUIRING PREVENTIVE MAINTENANCE SHALL BE REVIEWED FOR APPLICABILITY TO INSTALLED EQUIPMENT AND SYSTEMS BEFORE SUCH MANUALS ARE PROVIDED TO THE OWNER. LABELS REQUIRED FOR SUCH EQUIPMENT OR SYSTEMS SHALL BE INSPECTED FOR ACCURACY AND COMPLETENESS.	PRIOR TO SIGN-OFF OR ISSUANCE OF FINAL CERTIFICATE OF OCCUPANCY	APPROVED CONSTRUCTION DOCUMENTS, INCLUDING ELECTRICAL DRAWINGS WHERE APPLICABLE; ASHRAE GUIDELINE 4: PREPARATION OF OPERATING AND MAINTENANCE DOCUMENTATION FOR BUILDING SYSTEMS	303.3, 408.2.5.2	●	○

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COM*check* Software Version 4.0.8.1

Envelope Compliance Certificate

Section 1: Project Information

Energy Code: **2009 IECC**
Project Title: Betances VI Development
Project Type: New Construction

Construction Site:
472-474 Willis Avenue
Bronx, NY 10455

Owner/Agent:
Michael Sturmer
Betances VI Partners
5925 Broadway
Bronx, NY 10463

Designer/Contractor:
Ernesto Vela
Think! Architecture and Design
One MetroTech North
6th Floor
Brooklyn, NY 11201
646 688-5898
ernestob@think-arc.com

Building Location (for weather data): New York, New York
Climate Zone: 4a
Vertical Glazing / Wall Area Pct.: **37%**

Building Use: Activity Type(s)	Floor Area
1-Multifamily : Residential	100458
2-Retail : Nonresidential	8560

Section 2: Envelope Assemblies and Requirements Checklist

Envelope PASSES: Design 4% better than code.

Envelope Assemblies:

Component Name/Description	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
Roof: Insulation Entirely Above Deck, [Bldg. Use 1 - Multifamily]	7125	---	35.5	0.028	0.048
Roof Green: Insulation Entirely Above Deck, [Bldg. Use 1 - Multifamily]	2675	---	35.5	0.028	0.048
Exterior Wall EWT-1: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	20235	19.0	21.9	0.032	0.064
Window Slider: Metal Frame with Thermal Break, Perf. Specs.: Product ID Wintech 6000CW Slider, SHGC 0.31, [Bldg. Use 1 - Multifamily] (b)	9449	---	---	0.500	0.550
Window Fixed: Metal Frame with Thermal Break, Perf. Specs.: Product ID Wintech 6500CW Fixed, SHGC 0.35, [Bldg. Use 1 - Multifamily] (b)	252	---	---	0.390	0.550
Exterior Wall EWT-2: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	6741	19.0	21.9	0.032	0.064
Window Slider: Metal Frame with Thermal Break, Perf. Specs.: Product ID Wintech 6000CW Slider, SHGC 0.31, [Bldg. Use 1 - Multifamily] (b)	2692	---	---	0.500	0.550
Window Fixed: Metal Frame with Thermal Break, Perf. Specs.: Product ID Wintech 6500CW Fixed, SHGC 0.35, [Bldg. Use 1 - Multifamily] (b)	155	---	---	0.390	0.550
Exterior Wall EWT-3: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	798	19.0	21.9	0.032	0.064
Storefront ES-1: Metal Frame Curtain Wall/Storefront, Perf. Specs.: Product ID kawneer Trifab 601UT, SHGC 0.58, [Bldg. Use 1 - Multifamily] (b)	708	---	---	0.370	0.500
Door 3: Glass (> 50% glazing);Metal Frame, Entrance Door, Perf. Specs.: Product ID Kawneer 360 Insulclad, SHGC 0.40, [Bldg. Use 1 - Multifamily] (b)	48	---	---	0.650	0.850
Exterior Wall EWT-4: Concrete Block:8", Solid Grouted,Medium Density , Furring: Metal, [Bldg. Use 1 - Multifamily]	2282	0.0	21.3	0.041	0.090
Door 1: Insulated Metal, Swinging, [Bldg. Use 1 - Multifamily]	34	---	---	0.380	0.700
Exterior Wall EWT-5: Concrete Block:8", Solid Grouted,Medium Density , Furring: Metal, [Bldg. Use 1 - Multifamily]	242	0.0	21.1	0.042	0.090
Exterior Wall EWT-6: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	938	19.0	2.6	0.085	0.064
Exterior Wall ES-2: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	450	19.0	2.6	0.085	0.064
Exterior Wall EWT-3: Steel-Framed, 16" o.c., [Bldg. Use 2 - Retail]	1647	19.0	21.6	0.033	0.064
Storefront ES-1: Metal Frame with Thermal Break, Perf. Specs.: Product ID Kawneer Trifab 601UT, SHGC 0.58, [Bldg. Use 2 - Retail] (b)	544	---	---	0.370	0.550
Door 4: Glass (> 50% glazing);Metal Frame, Entrance Door, Perf. Specs.: Product ID Kawneer 360 Insulclad, SHGC 0.40, [Bldg. Use 2 - Retail] (b)	96	---	---	0.640	0.850
Door 5: Insulated Metal, Swinging, [Bldg. Use 2 - Retail]	34	---	---	0.380	0.700
Exterior Wall EWT-4: Concrete Block:8", Solid Grouted,Medium Density , Furring: Metal, [Bldg. Use 2 - Retail]	1159	0.0	21.3	0.041	0.104
Door 2: Insulated Metal, Swinging, [Bldg. Use 2 - Retail]	102	---	---	0.380	0.700
Exterior Wall EWT-5: Concrete Block:8", Solid Grouted,Medium Density , Furring: Metal, [Bldg. Use 2 - Retail]	637	0.0	21.1	0.042	0.104
Exterior Wall ES-2: Steel-Framed, 16" o.c., [Bldg. Use 2 - Retail]	101	19.0	2.6	0.085	0.064
Cellar Wall 2: Solid Concrete:12" Thickness,Normal Density , Furring: None, [Bldg. Use 2 - Retail]	2168	---	12.4	0.069	0.104
Cellar Wall 1: Solid Concrete:12" Thickness, Normal Density, Furring: None, Wall Ht 10.0, Depth B.G. 10.0, [Bldg. Use 1 - Multifamily]	1792	---	12.4	0.071	0.108

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

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

Air Leakage, Component Certification, and Vapor Retarder Requirements:

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

Section 3: Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed envelope systems have been designed to meet the 2009 IECC requirements in COM*check* Version 4.0.8.1 and to comply with the mandatory requirements in the Requirements Checklist.

ERNESTO VELA - PRINCIPAL
Name - Title

Signature

04.10.2018
Date

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

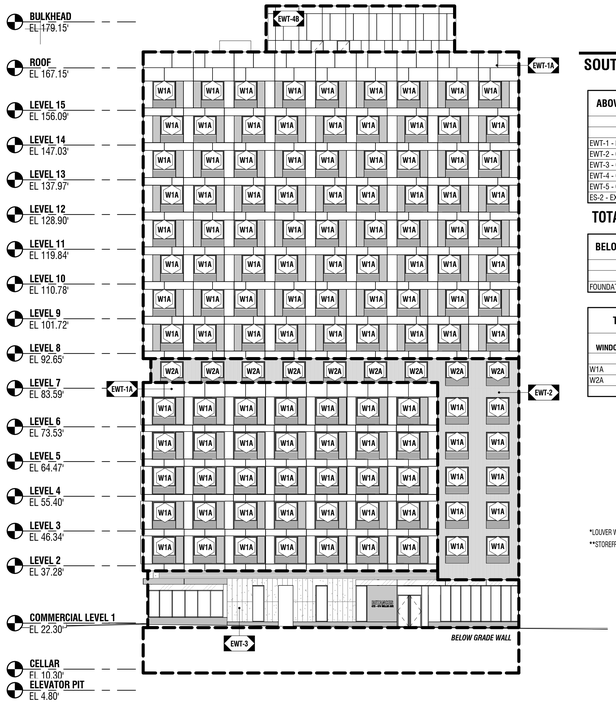
BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

ENERGY ANALYSIS

SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	As indicated
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	EN-003.00
NYC DOB NUMBER:	



3 THERMAL ELEVATION DIAGRAM - SOUTH ELEVATION
1/16" = 1'-0"

SOUTH ELEVATION LEGEND

ABOVE GRADE WALL SCHEDULE - SOUTH ELEVATION

WALL TYPE	GROSS AREA (SF)
EWT-1 - FIBER CEMENT PANEL	5933 SF
EWT-2 - CORRUGATED FIBER CEMENT PANEL	1032 SF
EWT-3 - CONCRETE PANEL	697 SF
EWT-4 - CONCRETE PANEL (ON CMU)	745 SF
EWT-5 - GRANITE	183 SF
ES-2 - EXTERIOR STOREFRONT (SPANDREL)	78 SF

TOTAL ABOVE GRADE WALL AREA = 8,656 SF

BELOW GRADE WALL SCHEDULE - SOUTH ELEVATION

WALL TYPE	GROSS AREA (SF)
FOUNDATION WALL	1020 SF

THERMAL WINDOW SCHEDULE - SOUTH ELEVATION

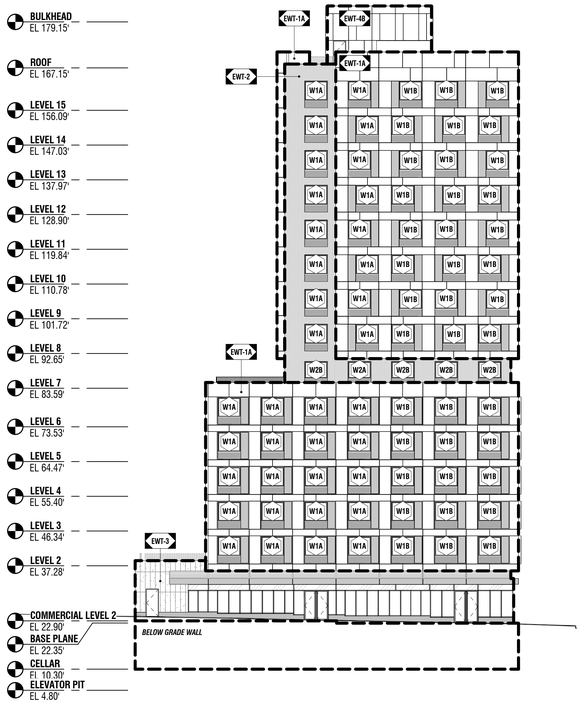
WINDOW TYPE	WINDOW GROSS AREA (SF)	PTAC LOUVER AREA (SF)	WINDOW AREA
W1A	4914 SF	980 SF	3934 SF
W2A	342 SF	75 SF	267 SF
	5256 SF	1055 SF	4201 SF

STOREFRONT SCHEDULE (ES-1)

STOREFRONT AREA GROSS (SF)	SPANDREL AREA GROSS (SF)	STOREFRONT AREA ACTUAL (SF)
539 SF	78 SF **	461 SF

TOTAL FENESTRATION AREA = 4,662 SF

*LOUVER WITH BACKUP WALL INCLUDED IN WALL AREA.
**STOREFRONT SPANDREL AREA INCLUDED IN WALL AREA.



4 THERMAL ELEVATION DIAGRAM - WEST ELEVATION
1/16" = 1'-0"

WEST ELEVATION LEGEND

ABOVE GRADE WALL SCHEDULE - WEST ELEVATION

WALL TYPE	GROSS AREA (SF)
EWT-1 - FIBER CEMENT PANEL	4571 SF
EWT-2 - CORRUGATED FIBER CEMENT PANEL	1024 SF
EWT-3 - CONCRETE PANEL	656 SF
EWT-4 - CONCRETE PANEL (ON CMU)	379 SF
EWT-5 - GRANITE	242 SF
ES-2 - EXTERIOR STOREFRONT (SPANDREL)	82 SF
EWT-6 - LOUVER WITH INSULATED BACK UP WALL	360 SF

TOTAL ABOVE GRADE WALL AREA = 7,355 SF

BELOW GRADE WALL SCHEDULE - WEST ELEVATION

WALL TYPE	GROSS AREA (SF)
FOUNDATION WALL	1016 SF

THERMAL WINDOW SCHEDULE - WEST ELEVATION

WINDOW TYPE	WINDOW GROSS AREA (SF)		PTAC LOUVER GROSS AREA (SF)	Window Area Actual
WINDOW TYPES W/ PTAC UNITS				
W1A	1512 SF		302 SF	1211 SF
W2A	38 SF		8 SF	30 SF
	1550 SF		310 SF	1240 SF

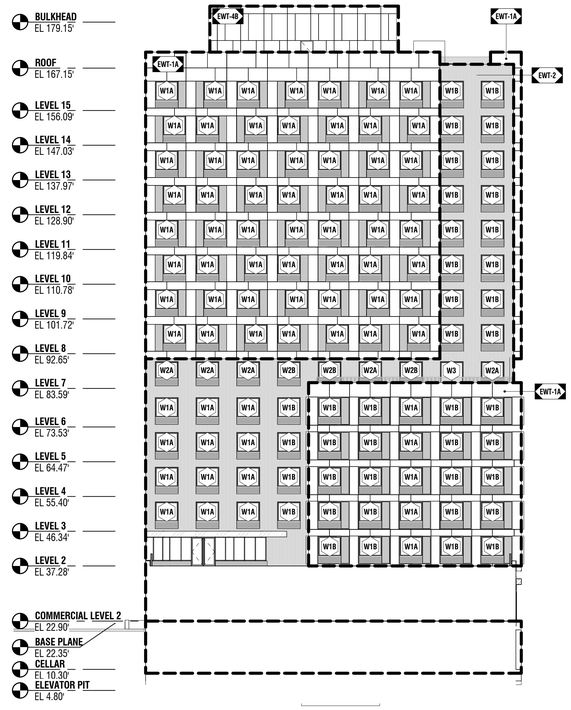
WINDOW TYPE	WINDOW GROSS AREA (SF)	LOUVER W/ WALL AREA (SF)		Window Area
WINDOW TYPES W/ LOUVER & BACK UP WALL				
W1B	1638 SF	327 SF		1311 SF
W2B	152 SF	34 SF		119 SF
	1790 SF	360 SF *		1430 SF

STOREFRONT SCHEDULE (ES-1)

STOREFRONT AREA GROSS (SF)	SPANDREL AREA (SF)	STOREFRONT AREA (SF)
577 SF	81 SF **	496 SF

TOTAL FENESTRATION AREA = 3,166 SF

*LOUVER WITH BACKUP WALL INCLUDED IN WALL AREA.
**STOREFRONT SPANDREL AREA INCLUDED IN WALL AREA.



1 THERMAL ELEVATION DIAGRAM - NORTH ELEVATION
1/16" = 1'-0"

NORTH ELEVATION LEGEND

ABOVE GRADE WALL SCHEDULE - NORTH ELEVATION

WALL TYPE	GROSS AREA (SF)
EWT-1 - FIBER CEMENT PANEL	5061 SF
EWT-2 - CORRUGATED FIBER CEMENT PANEL	2138 SF
EWT-3 - CONCRETE PANEL	126 SF
EWT-4 - CONCRETE PANEL (ON CMU)	1159 SF
EWT-4 - CONCRETE PANEL (ON CMU)	769 SF
EWT-5 - GRANITE	301 SF
ES-2 - EXTERIOR STOREFRONT (SPANDREL)	38 SF
EWT-6 - LOUVER WITH INSULATED BACK UP WALL	360 SF

TOTAL ABOVE GRADE WALL AREA = 9,995 SF

BELOW GRADE WALL SCHEDULE - NORTH ELEVATION

WALL TYPE	GROSS AREA (SF)
FOUNDATION WALL	1142 SF

THERMAL WINDOW SCHEDULE - NORTH ELEVATION

WINDOW TYPE	WINDOW GROSS AREA (SF)		PTAC LOUVER AREA (SF)	WINDOW AREA
WINDOW TYPES W/ PTAC UNITS				
W1A	3066 SF		611 SF	2455 SF
W2A	190 SF		42 SF	148 SF
W3	38 SF		8 SF	30 SF
	3294 SF		662 SF	2632 SF

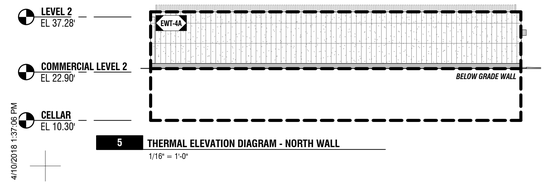
WINDOW TYPE	WINDOW GROSS AREA (SF)	LOUVER W/ WALL AREA (SF)		WINDOW AREA
WINDOW TYPES W/ LOUVER & BACK UP WALL				
W1B	1680 SF	335 SF		1345 SF
W2B	114 SF	25 SF		89 SF
W3	38 SF	8 SF		30 SF
	1832 SF	369 SF *		1464 SF

STOREFRONT SCHEDULE (ES-1)

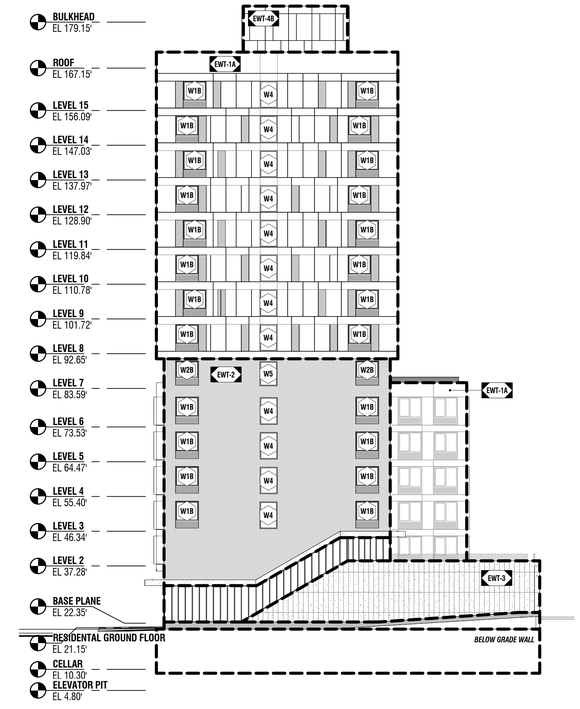
STOREFRONT AREA GROSS (SF)	SPANDREL AREA (SF)	STOREFRONT AREA (SF)
201 SF	38 SF **	163 SF

TOTAL FENESTRATION AREA = 4,249 SF

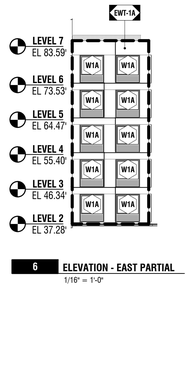
*LOUVER WITH BACKUP WALL INCLUDED IN WALL AREA.
**STOREFRONT SPANDREL AREA INCLUDED IN WALL AREA.



5 THERMAL ELEVATION DIAGRAM - NORTH WALL
1/16" = 1'-0"



2 THERMAL ELEVATION DIAGRAM - EAST ELEVATION
1/16" = 1'-0"



6 ELEVATION - EAST PARTIAL
1/16" = 1'-0"

EAST ELEVATION LEGEND

ABOVE GRADE WALL SCHEDULE - EAST ELEVATION

WALL TYPE	GROSS AREA (SF)
EWT-1 - FIBER CEMENT PANEL	4676 SF
EWT-2 - CORRUGATED FIBER CEMENT PANEL	2491 SF
EWT-3 - CONCRETE PANEL	964 SF
EWT-4 - CONCRETE PANEL (ON CMU)	403 SF
EWT-5 - GRANITE	158 SF
ES-2 - EXTERIOR STOREFRONT (SPANDREL)	353 SF
	9045 SF
EWT-6 - LOUVER WITH INSULATED BACK UP WALL	218 SF

TOTAL ABOVE GRADE WALL AREA = 9,252 SF

BELOW GRADE WALL SCHEDULE - EAST ELEVATION

WALL TYPE	GROSS AREA (SF)
FOUNDATION WALL	1117 SF
	1117 SF

THERMAL WINDOW SCHEDULE - EAST ELEVATION

WINDOW TYPE	WINDOW GROSS AREA (SF)		PTAC LOUVER AREA (SF)	WINDOW AREA
WINDOW TYPES W/ PTAC UNITS				
W1A	420 SF		84 SF	336 SF
W4	378 SF		0 SF	378 SF
W5	29 SF		0 SF	29 SF
	827 SF		84 SF	743 SF

WINDOW TYPE	WINDOW GROSS AREA (SF)	LOUVER W/ WALL AREA (SF)		WINDOW AREA
WINDOW TYPES W/ LOUVER & BACK UP WALL				
W1B	1008 SF	201 SF		807 SF
W2B	76 SF	17 SF		59 SF
	1084 SF	218 SF *		866 SF

STOREFRONT SCHEDULE (ES-1)

STOREFRONT AREA GROSS (SF)	SPANDREL AREA (SF)	STOREFRONT AREA (SF)
465 SF	353 SF **	112 SF

TOTAL FENESTRATION AREA = 1,721SF

*LOUVER WITH BACKUP WALL INCLUDED IN WALL AREA.
**STOREFRONT SPANDREL AREA INCLUDED IN WALL AREA.

FENESTRATION PERCENTAGE LEGEND PER C402.4.1

TOTAL FENESTRATION AREA:
4,662 SF + 3,166 SF + 4,249 SF + 1,721 SF = **13,798 SF**
TOTAL ABOVE GRADE WALL AREA:
8,656 SF + 9,995 SF + 9,252 SF + 7,355 SF = **35,258 SF**
TOTAL BELOW GRADE WALL AREA:
1,020 SF + 1,142 SF + 1,116 SF + 1,117 SF = **4,395 SF**

TOTAL PERCENT FENESTRATION: 13,798 SF / 35,258 SF = 39.1%

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P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

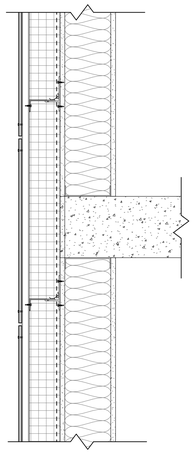
BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

ENERGY ANALYSIS

SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	1/16" = 1'-0"
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	EN-004.00
NYC DOB NUMBER:	

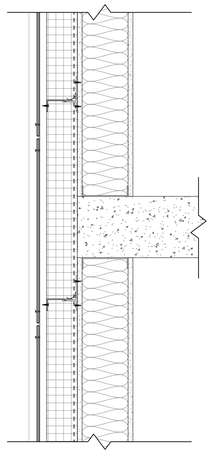


EXTERIOR WALL TYPE 1A, 1B, 1C

FIBER CEMENT PANEL ON 6" METAL STUD (SEE MATERIAL LEGEND FOR FIBER CEMENT TYPES)

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 3" RIGID POLYISOCYANURATE INSULATION **[R-18.6]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE
PROVIDED: 21.85
CAVITY R VALUE: 19.0
U: 0.032

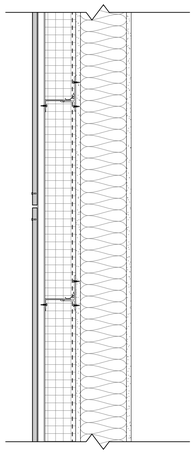


EXTERIOR WALL TYPE 2

CORRUGATED FIBER CEMENT PANEL ON 6" METAL STUD

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 3" RIGID POLYISOCYANURATE INSULATION **[R-18.6]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE
PROVIDED: 21.85
CAVITY R VALUE: 19.0
U: 0.032

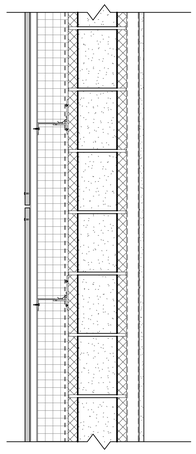


EXTERIOR WALL TYPE 3

CONCRETE PANEL ON 6" METAL STUD

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 3" RIGID POLYISOCYANURATE INSULATION **[R-18.6]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE
PROVIDED: 21.85
CAVITY R VALUE: 19.0
U: 0.032

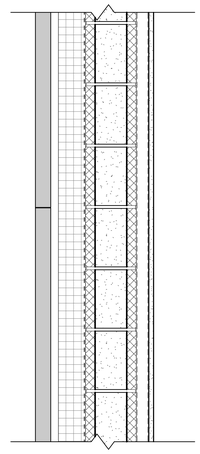


EXTERIOR WALL TYPE 4

[A] CONCRETE PANEL ON 8" CMU (GREY)
[B] FIBER CEMENT PANEL ON 8" CMU

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 3" RIGID POLYISOCYANURATE INSULATION **[R-18.6]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 7 5/8" CMU **[R-1.11]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE
PROVIDED: 21.3
U: 0.041

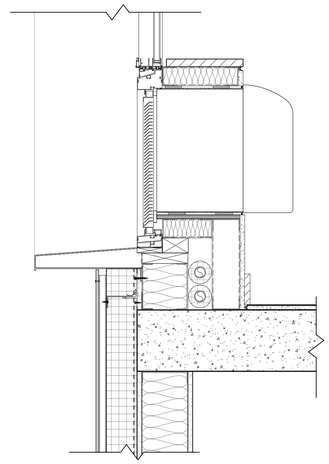


EXTERIOR WALL TYPE 5

GRANITE ON 6" CMU

- 2" GRANITE **[R-.10]**
- 1" AIR GAP **[R-1.0]**
- 3" RIGID POLYISOCYANURATE INSULATION **[R-18.6]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5 5/8" CMU **[R-0.8]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE
PROVIDED: 21.1
U: 0.042



EXTERIOR LOUVER @ PTAC

AVERAGE CONT. R-VALUE
PROVIDED: 2.0
U: 0.5

EXTERIOR WINDOWS

AVERAGE CONT. R-VALUE
PROVIDED: 1.67
AVERAGE U=0.60
AVERAGE SHGC=0.64

TOTAL AREA OF WINDOWS = 12,576

EXTERIOR STOREFRONT 1

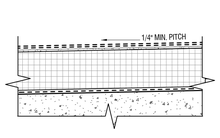
AVERAGE CONT. R-VALUE
PROVIDED: 3.70
AVERAGE U=0.27
AVERAGE SHGC=0.64

TOTAL AREA OF EXTERIOR STOREFRONT = 1,252 SF

SOLID DOORS

AVERAGE CONT. R-VALUE
PROVIDED: 1.67
AVERAGE U=0.38
AVERAGE SHGC=0.64

TOTAL AREA OF SOLID EXTERIOR DOORS = 68 SF

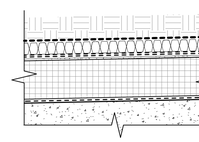


ROOF ASSEMBLY

- ROOF BASE & FINISH PLY **[R-1.10]**
- WATERPROOFING **[R-0.0]**
- 1/2" DRAINAGE MAT **[R-0.0]**
- 5" POLY ISO INSULATION **[R-28]**
- 8" CONCRETE SLAB **[R-0.8]**

AVERAGE CONT. R- VALUE
PROVIDED: 35.5
U: 0.028

TOTAL AREA OF ROOF TYPE A = 7,125 SF

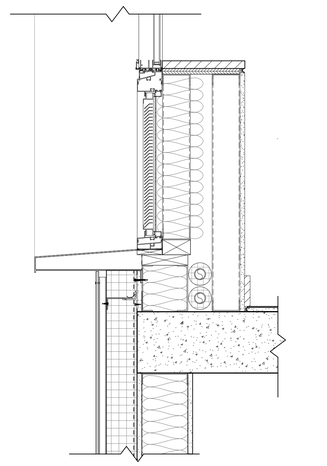


GREEN ROOF ASSEMBLY

- ROOF BASE & FINISH PLY **[R-1.10]**
- WATERPROOFING **[R-0.0]**
- 1/2" DRAINAGE MAT **[R-0.0]**
- 5" POLY ISO INSULATION **[R-28]**
- 8" CONCRETE SLAB **[R-0.8]**

AVERAGE CONT. R- VALUE
PROVIDED: 35.5
U: 0.028

TOTAL GREEN ROOF AREA=2,675 SF



EXTERIOR GLASS DOORS

AVERAGE CONT. R-VALUE
PROVIDED: 1.54
AVERAGE U=0.65
AVERAGE SHGC=0.40

TOTAL AREA OF GLASS EXTERIOR DOORS = 96 SF

EXTERIOR STOREFRONT 2

SPANDREL GLASS WITH INSULATED BACK UP WALL

- METAL PANEL BEHIND GLAZING **[R-0.00]**
- 6" METAL STUD **[R-1.02]**
- 6" BATT INSULATION **[R-19.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE
PROVIDED: 20.58
AVERAGE U=0.049

TOTAL AREA OF EXTERIOR STOREFRONT = 551 SF

VERTICAL FOUNDATION ASSEMBLY

- 12" CONCRETE FOUNDATION WALL **[R-1.2]**
- WATERPROOFING **[R-0.0]**
- 2" POLY ISO RIGID INSULATION **[R-11.2]**

AVERAGE CONT. R- VALUE PROVIDED: 12.4
U: 0.081

HORIZONTAL FOUNDATION ASSEMBLY

- 36" - 48" MAT FOUNDATION SLAB **[R-3.6]**
- WATERPROOFING **[R-0.0]**
- GRAVEL **[R-1.11]**

AVERAGE CONT. R- VALUE PROVIDED: 4.71
U: 0.21

HORIZONTAL FOUNDATION ASSEMBLY

- 36" - 48" MAT FOUNDATION SLAB **[R-3.6]**
- WATERPROOFING **[R-0.0]**
- 2" POLY ISO RIGID INSULATION **[R-11.2]**
- GRAVEL **[R-1.11]**

AVERAGE CONT. R- VALUE PROVIDED: 15.91
U: 0.063

EXTERIOR WALL TYPE 6

EXTERIOR LOUVER W/ INSULATED BACK UP PANEL

- EXTERIOR LOUVER **[R-2.0]**
- 6" BATT INSULATION **[R-19]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 2.56
U: 0.39

C402.5 MANDATORY AIR LEAKAGE REQUIREMENTS

- **C402.5 AIR LEAKAGE—THERMAL ENVELOPE (MANDATORY).**THE THERMAL ENVELOPE OF BUILDINGS SHALL COMPLY WITH SECTIONS C402.5.1 THROUGH C402.5.8, OR THE BUILDING THERMAL ENVELOPESHALL BE TESTED IN ACCORDANCE WITH ASTM E 779 AT A PRESSURE DIFFERENTIAL OF 0.3 INCH WATER GAUGE (75 PA) OR AN EQUIVALENT METHOD APPROVED BY THE CODE OFFICIAL AND DEEMED TO COMPLY WITH THE PROVISIONS OF THIS SECTION WHEN THE TESTED AIRLEAKAGE RATE OF THE BUILDING THERMAL ENVELOPE IS NOT GREATER THAN 0.40 CFM/FT2(0.2 L/S ×M2). WHERE COMPLIANCE IS BASED ON SUCH TESTING, THE BUILDING SHALL ALSO COMPLY WITH SECTIONS C402.5.5, C402.5.6 AND C402.5.7.
- **C402.5.1 AIR BARRIERS.** A CONTINUOUS AIRBARRIER SHALL BE PROVIDED THROUGHOUT THE BUILDING THERMAL ENVELOPE. THE AIR BARRIERS SHALL BE PERMITTED TO BE LOCATED ON THE INSIDE OR OUTSIDE OF THE BUILDING ENVELOPE, LOCATED WITHIN THE ASSEMBLIES COMPOSING THE ENVELOPE, OR ANY COMBINATION THEREOF. THE AIR BARRIER SHALL COMPLY WITH SECTIONS C402.5.1.1 AND C402.5.1.2.
- **C402.5.2 AIR LEAKAGE OF FENESTRATION.**THE AIR LEAKAGE OF FENESTRATION ASSEMBLIES SHALL MEET THEPROVISIONS OF TABLE C402.5.2. TESTING SHALL BE IN ACCORDANCE WITH THE APPLICABLE REFERENCE TEST STANDARD IN TABLE C402.5.2 BY AN ACCREDITED, INDEPENDENT TESTING LABORATORY AND LABELEDBY THE MANUFACTURER.
- **C402.5.3 ROOMS CONTAINING FUEL-BURNING APPLIANCES.** IN CLIMATE ZONES3 THROUGH 8, WHERE OPEN COMBUSTION AIR DUCTS PROVIDE COMBUSTION AIR TO OPEN COMBUSTION SPACE CONDITIONING FUEL-BURNING APPLIANCES, THE APPLIANCES AND COMBUSTION AIR OPENINGS SHALL BE LOCATED OUTSIDE OF THE BUILDING THERMAL ENVELOPEOR ENCLOSED IN A ROOM ISOLATED FROM INSIDE THE THERMAL ENVELOPE. SUCH ROOMS SHALL BE SEALED AND INSULATED IN ACCORDANCE WITH THE ENVELOPE REQUIREMENTS OF TABLE C402.1.3 OR C402.1.4, WHERE THE WALLS, FLOORS AND CEILINGS SHALL MEET THE MINIMUM OF THE BELOW-GRADE WALL R-VALUE REQUIREMENT. THE DOOR INTO THE ROOM SHALL BE FULLY GASKETED, AND ANY WATER LINES AND DUCTS IN THE ROOM INSULATED IN ACCORDANCE WITH SECTION C403. THE COMBUSTION AIR DUCT SHALL BE INSULATED, WHERE IT PASSES THROUGH CONDITIONED SPACE, TO A MINIMUM OF R-8.
- **C402.5.4 DOORS AND ACCESS OPENINGS TO SHAFTS, CHUTES, STAIRWAYS AND ELEVATOR LOBBIES.** DOORS AND ACCESS OPENINGS FROM CONDITIONED SPACE TO SHAFTS, CHUTES STAIRWAYS AND ELEVATOR LOBBIES NOT WITHIN THE SCOPE OF THE FENESTRATION ASSEMBLIES COVERED BY SECTION C402.5.2 SHALLBE GASKETED, WEATHERSTRIPPED OR SEALED.
- **C402.5.5 AIR INTAKES, EXHAUST OPENINGS, STAIRWAYS AND SHAFTS.** STAIRWAY ENCLOSURES, ELEVATOR SHAFT VENTS AND OTHER OUTDOOR AIR INTAKES AND EXHAUST OPENINGS INTEGRAL TO THE BUILDING ENVELOPE SHALL BE PROVIDED WITH DAMPERS IN ACCORDANCE WITH SECTION C403.2.4.3.
- **C402.5.7 VESTIBULES.** BUILDING ENTRANCESSHALL BE PROTECTED WITH AN ENCLOSED VESTIBULE, WITH ALL DOORS OPENING INTO AND OUT OF THE VESTIBULE EQUIPPED WITH SELF-CLOSING DEVICES. VESTIBULES SHALL BE DESIGNED SO THAT IN PASSING THROUGH THE VESTIBULE IT IS NOT NECESSARY FOR THE INTERIOR AND EXTERIOR DOORS TO OPEN AT THE SAME TIME. THE INSTALLATION OF ONE OR MORE REVOLVING DOORS IN THE BUILDING ENTRANCE SHALL NOT ELIMINATE THE REQUIREMENT THAT A VESTIBULE BE PROVIDED ON ANY DOORS ADJACENT TO REVOLVING DOORS.
- **C402.5.8 RECESSED LIGHTING.** RECESSED LUMINAIRES INSTALLED IN THE BUILDING THERMAL ENVELOPESHALL BE ALL OF THE FOLLOWING:1.IC-RATED.2.LABELED AS HAVING AN AIR LEAKAGE RATE OF NOT MORE 2.0 CFM (0.944 L/S) WHEN TESTED IN ACCORDANCE WITH ASTM E 283 AT A 1.57 PSF (75 PA) PRESSURE DIFFERENTIAL.3.SEALED WITH A GASKET OR CAULK BETWEEN THE HOUSING AND INTERIOR WALL OR CEILING COVERING.

C408 COMMISSIONING REQUIREMENTS

COMMISSIONING OF HEATING, COOLING, AIR HANDLING AND DISTRIBUTION, VENTILATION AND EXHAUST SYSTEMS INCLUDING RELATED AIR QUALITY MONITORING SYSTEMS, ENERGY RECOVERY SYSTEMS, MANUAL AND AUTOMATIC TEMPERATURE CONTROLS, PLUMBING SYSTEMS, INCLUDED INSULATION OF PIPING, ASSOCIATED VALVES, DOMESTIC WATER PUMPING AND MIXING SYSTEMS, REFRIGERATION SYSTEMS, AND ALL OTHER SYSTEMS, EQUIPMENT AND COMPONENTS THAT EFFECT ENERGY USE ARE REQUIRED TO BE COMMISSIONED, AND SHALL BE SO COMMISSIONED IN COMPLIANCE WITH ARTICLE C408 OF THE 2014 NEW YORK CITY ENERGY CONSERVATION CODE.

101.5.3.1 PROFESSIONAL COMPLIANCE STATEMENT

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE DRAWINGS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2016 NEW YORK CITY ENERGY CONSERVATION CODE AND THE ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE.

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PORT CHESTER, NY 10573
P 914.305.5679

MEP
RODKIN CARDINALE P.C.
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

x		xx.xx.2018
NO.	**DESIGN & CONSTRUCTION SUBMISSIONS**	**DATE**

2	**DOB SUBMISSION**	04.06.2018
1	**DD SUBMISSION**	04.06.2018
NO.	**REGULATORY SUBMISSIONS**	**DATE**

DOB APPROVAL

TRUE

PROJECT

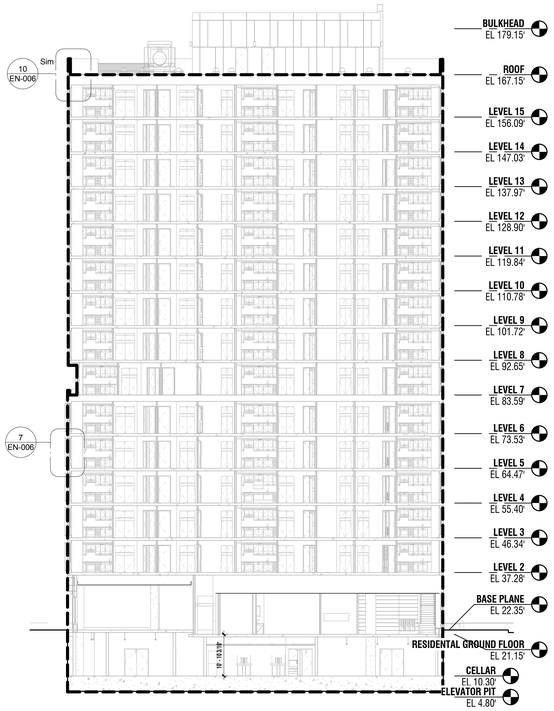
BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

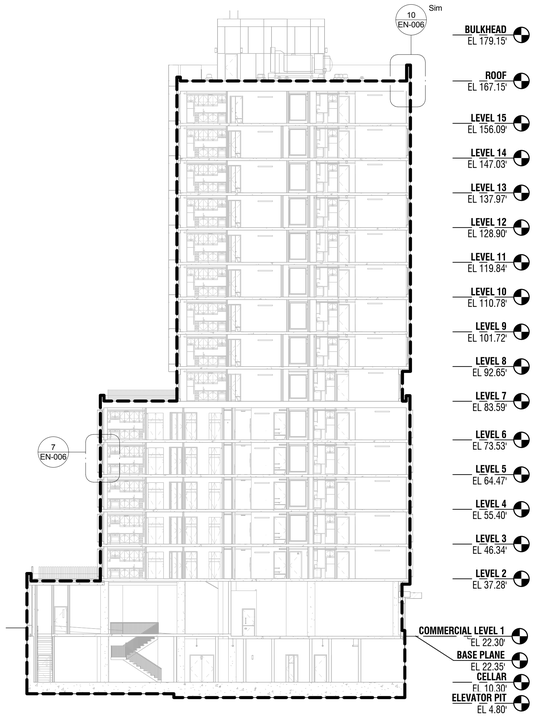
ENERGY ANALYSIS

SEAL & SIGNATURE

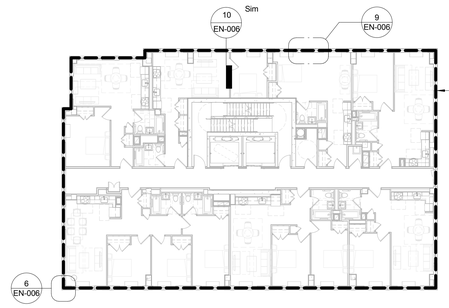
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PROJECT NO:	17110
SCALE:	As indicated
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	EN-005.00
NYC DOB NUMBER:	



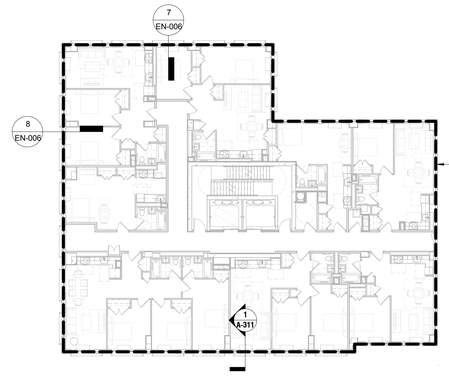
3 THERMAL BOUNDARY SECTION - LOOKING NORTH
1/16" = 1'-0"



2 THERMAL BOUNDARY SECTION - LOOKING EAST
1/16" = 1'-0"

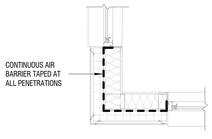


5 AIR BARRIER CONTINUITY PLAN - TYPICAL UPPER LEVEL
1/16" = 1'-0"

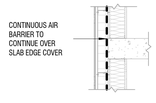


4 AIR BARRIER CONTINUITY PLAN - TYPICAL LOWER LEVEL
1/16" = 1'-0"

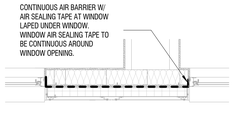
AIR BARRIER CONTINUITY PLAN & DETAILS



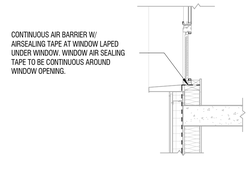
6 AIR BARRIER PLAN DETAIL - TYP. CORNER
1/2" = 1'-0"



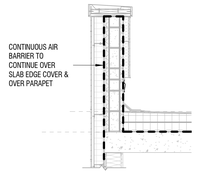
8 AIR BARRIER DETAIL @ TYP. SLAB EDGE
1/2" = 1'-0"



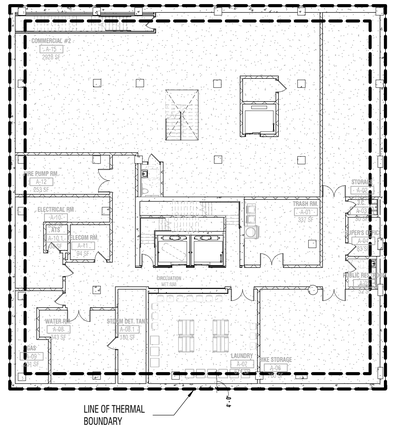
9 AIR BARRIER PLAN DETAIL - TYPICAL UPPER LEVEL
1/2" = 1'-0"



7 AIR BARRIER DETAIL @ TYP WINDOW OPENING
1/2" = 1'-0"



10 THERMAL BOUNDARY DETAIL - @ TYPICAL PARAPET
1/2" = 1'-0"



THERMAL BOUNDARY AREA AT CELLAR PERIMETER=1,520 SF

THERMAL BOUNDARY AREA AT CELLAR PERIMETER=8,280 SF

1 THERMAL BOUNDARY PLAN - CELLAR LEVEL
1/16" = 1'-0"

C402.5 MANDATORY AIR LEAKAGE REQUIREMENTS

- **C402.5 AIR LEAKAGE—THERMAL ENVELOPE (MANDATORY).** THE THERMAL ENVELOPE OF BUILDINGS SHALL COMPLY WITH SECTIONS C402.5.1 THROUGH C402.5.8, OR THE BUILDING THERMAL ENVELOPESHALL BE TESTED IN ACCORDANCE WITH ASTM E 779 AT A PRESSURE DIFFERENTIAL OF 0.3 INCH WATER GAUGE (75 PA) OR AN EQUIVALENT METHOD APPROVED BY THE CODE OFFICIAL AND DEEMED TO COMPLY WITH THE PROVISIONS OF THIS SECTION WHEN THE TESTED AIRLEAKAGE RATE OF THE BUILDING THERMAL ENVELOPE IS NOT GREATER THAN 0.40 CFM/FT2((0.2 L/S •M2). WHERE COMPLIANCE IS BASED ON SUCH TESTING, THE BUILDING SHALL ALSO COMPLY WITH SECTIONS C402.5.5, C402.5.6 AND C402.5.7.
- **C402.5.1 AIR BARRIERS.** A CONTINUOUS AIRBARRIER SHALL BE PROVIDED THROUGHOUT THE BUILDING THERMAL ENVELOPE. THE AIR BARRIERS SHALL BE PERMITTED TO BE LOCATED ON THE INSIDE OR OUTSIDE OF THE BUILDING ENVELOPE, LOCATED WITHIN THE ASSEMBLIES COMPOSING THE ENVELOPE, OR ANY COMBINATION THEREOF. THE AIR BARRIER SHALL COMPLY WITH SECTIONS C402.5.1.1 AND C402.5.1.2.
- **C402.5.2 AIR LEAKAGE OF FENESTRATION.** THE AIR LEAKAGE OF FENESTRATION ASSEMBLIES SHALL MEET THEPROVISIONS OF TABLE C402.5.2. TESTING SHALL BE IN ACCORDANCE WITH THE APPLICABLE REFERENCE TEST STANDARD IN TABLE C402.5.2 BY AN ACCREDITED, INDEPENDENT TESTING LABORATORY AND LABELEDBY THE MANUFACTURER.
- **C402.5.3 ROOMS CONTAINING FUEL-BURNING APPLIANCES.** IN CLIMATE ZONES3 THROUGH 8, WHERE OPEN COMBUSTION AIR DUCTS PROVIDE COMBUSTION AIR TO OPEN COMBUSTION SPACE CONDITIONING FUEL-BURNING APPLIANCES, THE APPLIANCES AND COMBUSTION AIR OPENINGS SHALL BE LOCATED OUTSIDE OF THE BUILDING THERMAL ENVELOPEOR ENCLOSED IN A ROOM ISOLATED FROM INSIDE THE THERMAL ENVELOPE. SUCH ROOMS SHALL BE SEALED AND INSULATED IN ACCORDANCE WITH THE ENVELOPE REQUIREMENTS OF TABLE C402.1.3 OR C402.1.4, WHERE THE WALLS, FLOORS AND CEILINGS SHALL MEET THE MINIMUM OF THE BELOW-GRADE WALL R-VALUE REQUIREMENT. THE DOOR INTO THE ROOM SHALL BE FULLY GASKETED, AND ANY WATER LINES AND DUCTS IN THE ROOM INSULATED IN ACCORDANCE WITH SECTION C403. THE COMBUSTION AIR DUCT SHALL BE INSULATED, WHERE IT PASSES THROUGH CONDITIONED SPACE, TO A MINIMUM OF R-8.
- **C402.5.4 DOORS AND ACCESS OPENINGS TO SHAFTS, CHUTES, STAIRWAYS AND ELEVATOR LOBBIES.** DOORS AND ACCESS OPENINGS FROM CONDITIONED SPACE TO SHAFTS, CHUTES STAIRWAYS AND ELEVATOR LOBBIES NOT WITHIN THE SCOPE OF THE FENESTRATION ASSEMBLIES COVERED BY SECTION C402.5.2 SHALLBE GASKETED, WEATHERSTRIPPED OR SEALED.
- **C402.5.5 AIR INTAKES, EXHAUST OPENINGS, STAIRWAYS AND SHAFTS.** STAIRWAY ENCLOSURES, ELEVATOR SHAFT VENTS AND OTHER OUTDOOR AIR INTAKES AND EXHAUST OPENINGS INTEGRAL TO THE BUILDING ENVELOPE SHALL BE PROVIDED WITH DAMPERS IN ACCORDANCE WITH SECTION C403.2.4.3.
- **C402.5.7 VESTIBULES.** BUILDING ENTRANCESSHALL BE PROTECTED WITH AN ENCLOSED VESTIBULE, WITH ALL DOORS OPENING INTO AND OUT OF THE VESTIBULE EQUIPPED WITH SELF-CLOSING DEVICES. VESTIBULES SHALL BE DESIGNED SO THAT IN PASSING THROUGH THE VESTIBULE IT IS NOT NECESSARY FOR THE INTERIOR AND EXTERIOR DOORS TO OPEN AT THE SAME TIME. THE INSTALLATION OF ONE OR MORE REVOLVING DOORS IN THE BUILDING ENTRANCE SHALL NOT ELIMINATE THE REQUIREMENT THAT A VESTIBULE BE PROVIDED ON ANY DOORS ADJACENT TO REVOLVING DOORS.
- **C402.5.8 RECESSED LIGHTING.** RECESSED LUMINAIRES INSTALLED IN THE BUILDING THERMAL ENVELOPESHALL BE ALL OF THE FOLLOWING:1.IC-RATED.2.LABELED AS HAVING AN AIR LEAKAGE RATE OF NOT MORE 2.0 CFM (0.944 L/S) WHEN TESTED IN ACCORDANCE WITH ASTM E 283 AT A 1.57 PSF (75 PA) PRESSURE DIFFERENTIAL.3.SEALED WITH A GASKET OR CAULK BETWEEN THE HOUSING AND INTERIOR WALL OR CEILING COVERING.

C408 COMMISSIONING REQUIREMENTS

COMMISSIONING OF HEATING, COOLING, AIR HANDLING AND DISTRIBUTION, VENTILATION AND EXHAUST SYSTEMS INCLUDING RELATED AIR QUALITY MONITORING SYSTEMS, ENERGY RECOVERY SYSTEMS, MANUAL AND AUTOMATIC TEMPERATURE CONTROLS, PLUMBING SYSTEMS, INCLUDED INSULATION OF PIPING, ASSOCIATED VALVES, DOMESTIC WATER PUMPING AND MIXING SYSTEMS, REFRIGERATION SYSTEMS, AND ALL OTHER SYSTEMS, EQUIPMENT AND COMPONENTS THAT EFFECT ENERGY USE ARE REQUIRED TO BE COMMISSIONED, AND SHALL BE SO COMMISSIONED IN COMPLIANCE WITH ARTICLE C408 OF THE 2014 NEW YORK CITY ENERGY CONSERVATION CODE.

101.5.3.1 PROFESSIONAL COMPLIANCE STATEMENT

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE DRAWINGS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2016 NEW YORK CITY ENERGY CONSERVATION CODE AND THE ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE.

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

ENERGY ANALYSIS

SEAL & SIGNATURE

DATE: 04/06/2018
PROJECT NO: 17110
SCALE: As indicated
DRAWING BY: Author
CHECKED BY: Checker
DWG NO:
EN-006.00
NYC DOB NUMBER:

UNIT COUNT SUMMARY

LEVEL	STUDIO	1 BR	2 BR	3 BR	TOTAL
2	1	1	3	1	**6**
3	2	2	3	1	**8**
4	2	2	3	1	**8**
5	2	2	3	1	**8**
6	2	2	3	1	**8**
7	2	3	1	1	**7**
8	1	4	1	1	**7**
9	1	4	1	1	**7**
10	1	4	1	1	**7**
11	1	4	1	1	**7**
12	1	4	1	1	**7**
13	1	4	1	1	**7**
14	1	4	1	1	**7**
15	1	4	1	1	**7**
TOTAL UNITS	19	44	24	14	**101**
PERCENTAGE	**19%**	**43%**	**24%**	**14%**	**100%**

SECTION 504 UFAS

	MI		TOTAL	HVI		TOTAL
	UNIT #	UNIT TYPE		UNIT #	UNIT TYPE	
				3D	2.1	**1**
	8B	1.5	**1**			
				11B	1.5	**1**
	10A	0.4	**1**			
				13A	0.4	**1**
	12B	1.5	**1**			
	14A	0.4	**1**			
			5			**3**
			5%			**3%**

SUPERINTENDENT UNIT: *LEVEL 1 UNIT V*

ZR Sec. No.	ITEM				NOTES
	Site Information				
	Location: 472-474 Wills Ave Bronx, NY, 10455 **Block:** 2291 - Lot 1 **Block bound by:** South: 146th Street North: 147th Street East: Lots 23, 12 West: Willis Avenue				
ZR 34-112	**Lot Area**	27,163 SF		27,163 SF	0.62 acres
	Zoning District Current: R6 (C1-4 Commercial Overlay)				
	Zoning District Proposed: R7X (C1-4 Commercial Overlay)				
	Zoning Map: 6A				
	Community Board: Bronx 1				
	Transit Zone: Inside Zone				

		EXISTING ZONING: R6 (C1-4 Commercial Overlay)			PROPOSED Zoning: R7X (C2-4 Commercial Overlay)				
	Uses Permitted	**Permitted**	**Existing**		**Permitted**	**Existing Building**	**Additional Proposed**	**Proposed Total**	
ZR 22-10	As-of-Right	Use Groups 1 through 4	Use Group 2 Residential Use Group 6 Commercial		Use Groups 1 through 4 Use Group 6	Use Group 2 Residential Use Group 6 Commercial	Use Group 2 Residential Use Group 3 & 4 CF Use Group 6 Commercial	Use Group 2 Residential Use Group 3 & 4 Community Facility	Complies
	Use Regulations								Complies
	FAR and Floor Area Permitted	**Permitted**	**Existing**	**Available**	**Permitted**	**Existing**	**Additional Proposed**	**Proposed Total**	
ZR 23-153	Quality Housing Program								
	FAR for Residential Buildings	3.00	1.68	1.32	5.00	1.68	3.04	4.71	
	Maximum Residential Area per Zoning Lot	**81,489** SF	**45,550** SF	**35,939** SF	**135,815** SF	**45,550** SF	**82,500** SF	**128,050** SF	Complies
	FAR for Community Facility	4.80	0.00	4.80	5.00	0.00	0.00	0.00	
	Community Facility Floor Area	**130,382** SF	**0**	**130,382**	**135,815** SF	0 SF	0 SF	**0** SF	
	FAR for Commercial	2.00	0.36	1.64	2.00	0.00	0.28	0.28	
	Commercial Floor Area	**54,326** SF	**9,843**	**44,483**	**54,326** SF	**0** SF	**7,500** SF	**7,500** SF	
	Maximum FAR per Zoning Lot	**4.80**	2.04	2.76	**5.00**	1.68	3.31	**4.99**	
	Maximum Floor Area per Zoning Lot	**130,382** SF	**55,393** SF	**210,804** SF	**135,815**	**45,550**	**90,000**	**135,550** SF	
	Dwelling Units (DUs)	**Permitted**	**Existing**	**Available**	**Permitted**	**Existing**	**Additional Proposed**	**Proposed Total**	
ZR 23-22	Dwelling Unit Factor	680			680				
	Max. Residential Floor Area Permitted	81,489 SF			128,050 SF				
	Max. No. of DUs Permitted	81,489 / 680 = **120** DUs	**49**	**71**	128,050 / 680 = **188** DUs	**49**	**101**	**150** DUs	Complies
	Lot Coverage Permitted for Residents	**Permitted**	**Existing**	**Available**	**Permitted**	**Existing**	**Additional Proposed**	**Proposed Total**	
ZR 23-153	Corner Lots	100%			100%				Complies
	Interior and Through Lots	65%			70%				
		Lot Area / Coverage SF			Lot Area / Coverage SF			% / Coverage SF	
	Corner Lot A	10,000 / 10,000	5001.42	4,999	10,000 / 10,000	5001.42		50.0% / 5,001	
	Corner Lot B	10,000 / 10,000	9843 SF	157 SF	10,000 / 10,000	0 SF	9843 SF	9,843	
	Interior Lot	7,163 / 4,656	4076.16	580	7,163 / 5,014	4076.16		4,076	
	Total Lot Coverage Permitted	**24,656**	**18,921**	**5,735**	**25,014**	**9,078**	**9,843**	**18,921** SF	
	Lot Coverage Permitted for Community Facility	**Permitted**	**Existing**	**Available**	**Permitted**	**Existing**	**Additional Proposed**	**Proposed Total**	
ZR 24-10	Corner Lots	70%			80%				
	Interior and Through Lots	65%			70%				
		Lot Area / Coverage SF			Lot Area / Coverage SF				
	Corner Lot A	10,000 / 7,000			10,000 / 8,000				
	Corner Lot B	10,000 / 7,000			10,000 / 8,000				
	Interior Lot	7,163 / 4,656			7,163 / 5,014				
	Total Lot Coverage Permitted	**18,656**	**0**	**18,656**	**21,014**	**0**	**0**	**0**	Complies
	Yard Regulations					**Existing**	**Proposed**		
ZR 23-462 (c)	No side yards required					None Existing	None Provided		Complies
ZR 23-471 (a)	Rear yard of minimum depth of 30' required beyond 100' of street line								
	Height, Setback & Streetwall Regulations	**Permitted**	**Existing**		**Permitted**	**Existing Building**	**New Building**	**Proposed Total**	
ZR 23-664 Table 1	Minimum Base Height	40 FT	55 FT		60 FT	55 FT	65	55 / 65 FT	**Mayoral Override required for Setback and Number of Stories**
	Maximum Base Height	55 FT			105 FT		145	55 / 145 FT	
	Maximum Building Height (Qualifying Ground Floor)	70 (75) FT			145 FT		145	56 / 145 FT	
	Maximum Number of Stories	14			14		15	15	
ZR 23-662	Setback Wide Street (Narrow Street)	10 (15) FT			10 (15) FT				
	Streetwall	**Required**	**Existing**		**Required**	**Existing**	**Additional Proposed**	**Proposed Total**	
ZR 23-633(a)(2)	The street wall shall be located no closer to the street line than the street wall, or portion thereof, of an existing adjacent building on an adjoining zoning lot located on the same street frontage, that is both within 10 feet of the street line and within 25 feet of the shared side lot line between the zoning lots. Where such existing adjacent building, or portion thereof, has street walls located at varying depths, the street wall shall not be located closer to the street line than the furthest portion of such existing adjacent street wall that is at least 5 feet in width.								Complies
	Dormer	**Permitted**	**Existing**		**Permitted**	**Existing**	**Additional Proposed**	**Proposed Total**	
ZR 23-621(c)(1)	Maximum Dormer aggregate width per street frontage	**50%**			**50%**				Complies
	Height of dormer above maximum base height (10 ft)	**10%**			**10%**				
	Dormer aggregate width permitted per street frontage	**50%**			**50%**				
	Wills Avenue= 200 FT 146th Street = 88 FT	**100** LF **49** LF			**100** LF **49** LF			LF LF	
	Required Parking	**Required**	**Existing**	**Available**	**Required**	**Existing**	**Additional Proposed**	**Proposed Total**	
ZR 25-23 ZR 25-62	Parking required for Residential Use for Quality Housing Regulation	0 %	0	0	0 %	0	0	**0**	No parking required within transit zone
					189 x 0% =				
ZR 25-261	Residential parking required	0	0		189 Dus x 0.00 = 0				No parking required for income restricted housing units *Within the #Transit Zone# no #accessory# off-street parking spaces shall be required for #income-restricted housing units# developed after March 22, 2016
ZR 25-333	Parking required for Community Facility Uses	Requirements depend on use	0	0	Requirements depend on use	0	0	**0**	Waiver for less than 40 spaces
ZR 36-232	Parking required for Commercial Uses:	Requirements depend on use	0	0	Requirements depend on use	0	0	**0**	Waiver for less than 40 spaces
	Bicycle Parking Required	**Required**	**Existing**		**Required**	**Existing**	**Additional Proposed**	**Proposed Total**	
ZR 25-80	Required Bicycle Parking for Residential Use- 1 per 2 Dwelling Units Minimum 15 sf / Bicycle Parking Space				101 units/2 = 51 spaces required 51 x 15 sf = 765 sf required		101 units/2 = 51 spaces required 51 x 15 sf = 765 sf required	**756** SF	Complies
	Street Trees Required	**Required**	**Existing**	**Available**	**Required**	**Existing**	**Additional Proposed**	**Proposed Total**	
ZR 26-41	Zoning lot frontage	471.66			471.66				**Mayorial Override Required for Street Tree Deficit**
	Trees Required 1 tree per 25' of zoning lot street frontage	471.66 / 25 = **19**			471.66 / 25 = **19**			# of Existing Trees to be Preserved: **7** # of New Trees to be Planted at Location: **3** Street Tree Deficit: **9**	
	Street Trees Required per Zoning Lot							**19**	
	Quality Housing Program	**Required**			**Required**			**Proposed**	
ZR 28-21	Dwelling Unit Size Minimum	400 SF			400 SF			400 SF	Complies
ZR 28-22	Windows All residential windows to be double glazed						All windows provided are double-glazed		Complies
ZR 28-23	Accessible Refuse Storage and Disposal Storage required at 2.9 cf per unit and 5 cf or recycling storage Minimum area to be provided on each residential floor level 12 sf of each disposal room can be excluded from FAR calculation Minimum area of 5 sf. provided for temporary holding of recyclables	2.9 cf x 165 Dwelling Units = 489 cf 5 sf x 5 Refuse Rooms = 25 sf 12 sf			2.9 cf x 165 Dwelling Units = 489 cf 5 sf x 5 Refuse Rooms = 25 sf 12 sf			Accessible Refuse Storage Provided: Provided **1,880** CF Provided **38** SF All disposal rooms exceeds minimum 12 SF requirement. Only 12 SF excluded from Floor Area	Complies Complies
ZR 28-14	Daylight in corridors 50% of corridor may be deducted if a window of a min. of 20 sf is directly visible from the vertical circulation core						Window 20 SF minimum provided at all residential floors: Proposed windows are visible from 50% of the corridor or circulation core		Complies
ZR 28-22	Recreation Space Percentage Required Area required Outdoor Recreation Space	3.3% X 45,550 SF = **2,689** SF			3.3% X 128,050 SF = **4,226** SF			Recreation space provided= Indoors 5,340 SF Outdoors 900 SF Total **6,240** SF	Complies
ZR 28-32	Standard of Recreation Space Accessible to all tenants and ADA compliar Minimum dimension to be 15' Minimum interior area to be 300 sf and have 9.5% windows							Provided: > 15'-0" = 28.5 SF	Complies Complies Complies
ZR 28-24	Laundry Facilities 1 Washing machine per 20 DUs 1 dryer per 40 DUs 3 SF of unobstructed floor space for each machine Window at exterior wall greater than 9.5% of room area	165/20 = 5.99163835 165/40= 2.995919118 14 x 3 sf = 42 SF 564 x 9.5% = 54 SF			101/20 = 7.5 165/40= 3.75 14 x 3 sf = 42 SF 564 x 9.5% = 54 SF			**9** Washers provided **5** Dryers provided **84 SF** provided **87 SF** provided	Complies Complies Complies Complies
ZR 24-60	Exterior windows minimum distance to lot lined/other windows	Min. distance= 20 SF			Min. distance= 20 SF			**148 sf** Provided	Complies
ZR 28-53	Accessory Parking not permitted between streetwall and streetline	No parking between streetwall and streetline.							Complies
ZR 28-33	Area between streetwall and streetline to be planted				Area between streetwall planted				Complies

****SITE CURRENTLY GOING THROUGH ULURP FROM THE EXISTING R6 WITH C1-4 OVERLAY TO AN R7X WITH C2-4 OVERLAY**

MAYORAL OVERRIDES REQUIRED FOR:
- **-MAXIMUM BASE HEIGHT**
- **-NUMBER OF STORIES**
- **-STREET TREE REQUIREMENTS**

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	**DOB SUBMISSION**	04.06.2018
1	**DD SUBMISSION**	04.06.2018

DOB APPROVAL

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PROJECT

BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

ZONING ANALYSIS & UNIT COUNT

SEAL & SIGNATURE

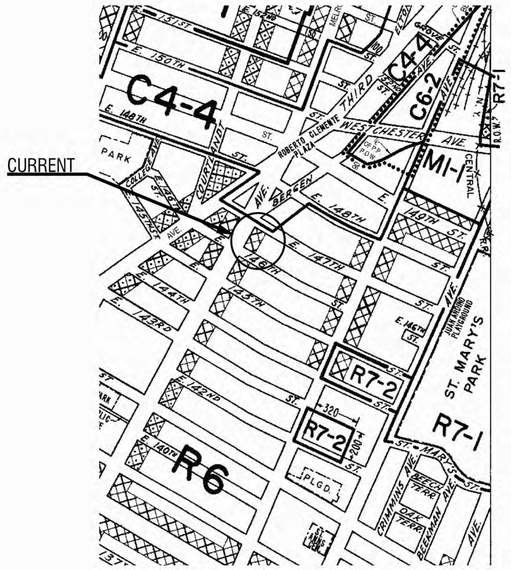
DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	As indicated
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	Z-001.00
NYC DOB NUMBER:	

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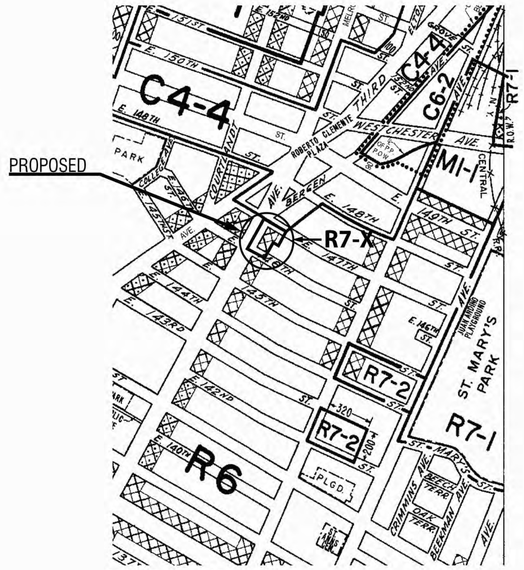
BASE PLANE CALCULATION

ZR 12-10 (24.53+22.02) / 2 = 23.275
(22.02+20.83) / 2 = 21.425
(23.28+21.43) / 2 = **22.35**

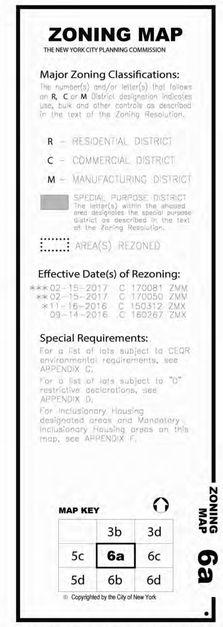
AVERAGE BASE PLANE = EL: 22.35



CURRENT ZONING DESIGNATION



PROPOSED ZONING DESIGNATION

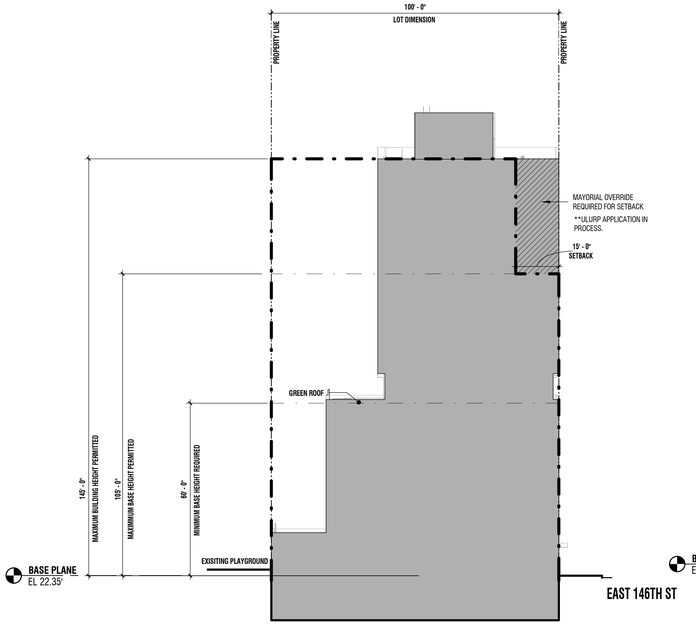


C1-1 C1-2 C1-3 C1-4 C1-5 C2-1 C2-2 C2-3 C2-4 C2-5

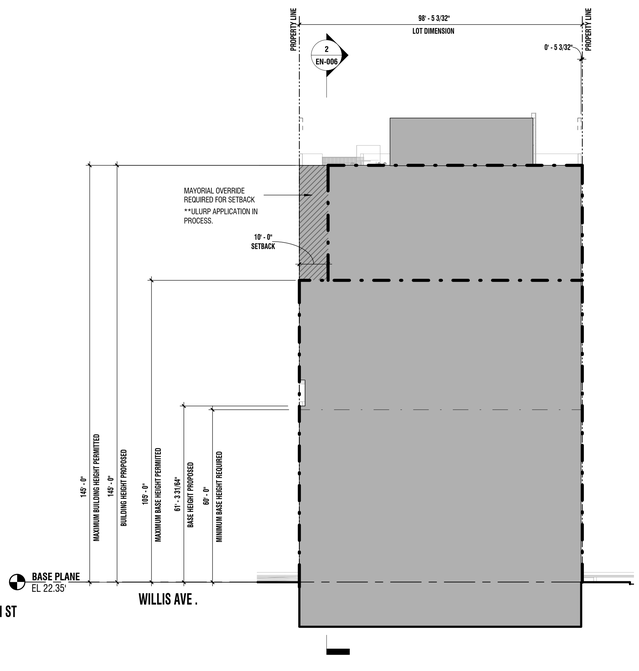
NOTE: Where no dimensions for zoning district boundaries appear on the zoning maps, such dimensions are determined in Article VII, Chapter 6 (Location of District Boundaries) of the Zoning Resolution.

NOTE: Zoning information as shown on this map is subject to change. For the most up-to-date zoning information for this map, visit the Zoning section of the Department of City Planning website: **www.nyc.gov/planning** or contact the Zoning Information Desk at (212) 720-3291.

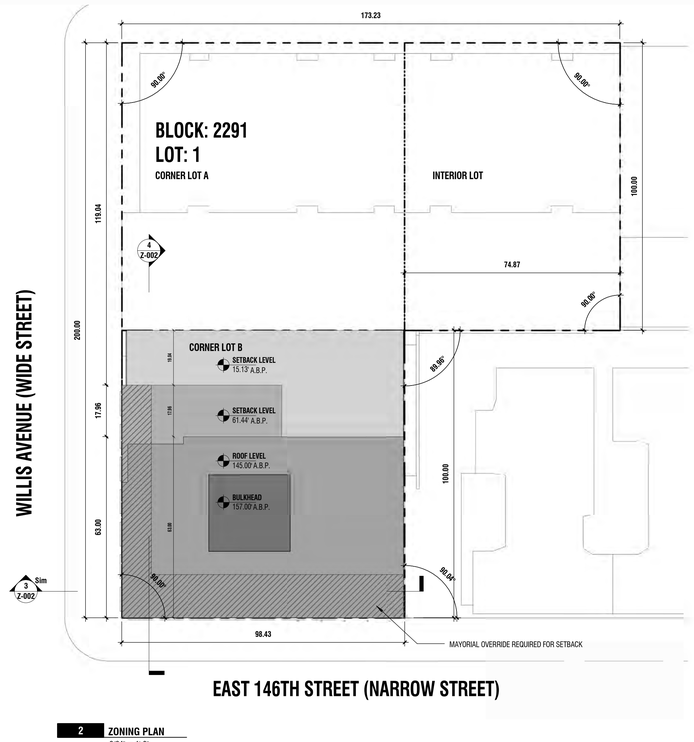
1 ZONING CHANGE MAP 6a - EXCERPT
1 1/2" = 1'-0"



4 ZONING SECTION - LOOKING EAST
3/64" = 1'-0"



3 ZONING SECTION - LOOKING NORTH
3/64" = 1'-0"



2 ZONING PLAN
3/64" = 1'-0"

**SITE CURRENTLY GOING THROUGH ULURP FROM THE EXISTING R6 WITH C1-4 OVERLAY TO AN R7X WITH C2-4 OVERLAY

MAYORAL OVERRIDES REQUIRED FOR:
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DOB APPROVAL

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PROJECT

BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

ZONING DIAGRAMS

SEAL & SIGNATURE

DATE:	04/06/2018
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SCALE:	As indicated
DRAWING BY:	Author
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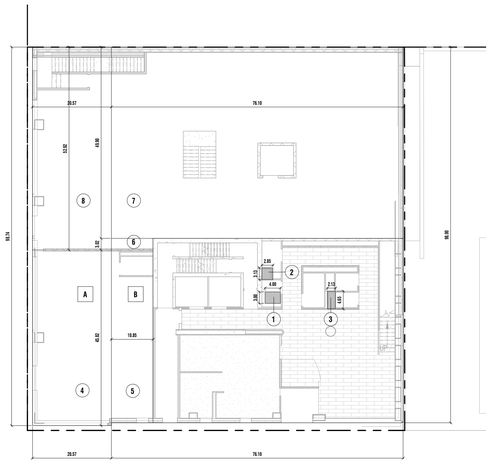
1 CELLAR
1/16" = 1'-0"

Zoning Floor Area - Cellar Level - Total

Region	Dim 1	Dim 2	Gross Area	Deductions	# of Levels	Zoning Floor Area
A	100.00	98.03	9803 SF	9803 SF	1	0 SF
			9803 SF	9803 SF		0 SF

Zoning Floor Area - Cellar Level - Deduction

#	Deduction Type	Dim 1	Dim 2	Deduction
1	Cellar	100.00	98.03	9803 SF
				9803 SF



2 LEVEL 1
1/16" = 1'-0"

Zoning Floor Area - Level 1 - Total

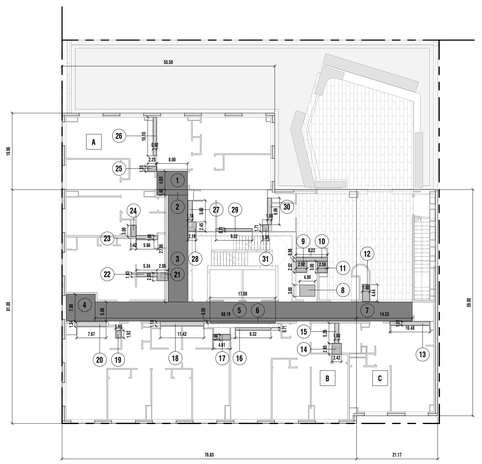
Region	Dim 1	Dim 2	Gross Area	Deductions	# of Levels	Zoning Floor Area
A	98.74	20.57	2031 SF	0 SF	1	2031 SF
B	98.00	76.10	7457 SF	31 SF	1	7427 SF
			9489 SF	31 SF		9458 SF

Zoning Floor Area - Level 1 - Deduction

#	Deduction Type	Dim 1	Dim 2	Deduction
1	Refuse Room	3.00	4.00	12 SF
2	Mechanical Equipment	3.13	2.85	9 SF
3	Mechanical Equipment	4.65	2.13	10 SF
4	Commercial 1	45.82	20.57	0 SF
5	Commercial 1	45.82	76.10	0 SF
6	Commercial 2	3.02	10.85	0 SF
7	Commercial 2	49.90	76.10	0 SF
8	Commercial 2	52.92	20.57	0 SF
				31 SF

Zoning Floor Area - Level 1 - Commercial

Deduction Type	Area	Deduction
Commercial 1	1432 SF	0 SF
Commercial 2	4918 SF	0 SF
Grand total	6350 SF	0 SF



3 LEVEL 2
1/16" = 1'-0"

Zoning Floor Area - Level 2 - Total

Region	Dim 1	Dim 2	Gross Area	Deductions	# of Levels	Zoning Floor Area
A	19.96	55.50	1108 SF	51 SF	1	1057 SF
B	61.00	76.83	4686 SF	693 SF	1	3993 SF
C	59.00	21.17	1249 SF	92 SF	1	1158 SF
			7044 SF	835 SF		6209 SF

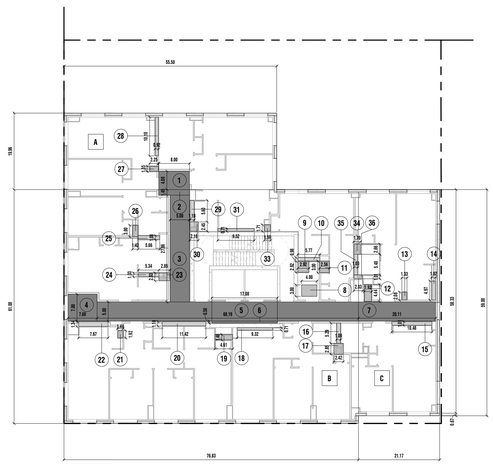
Zoning Floor Area - Level 2 - Deduction

#	Deduction Type	Dim 1	Dim 2	Deduction
1	Corridor	4.80	8.00	38 SF
2	Corridor	1.45	8.00	12 SF
3	Corridor	27.86	5.00	139 SF
4	Corridor	7.00	7.60	53 SF
5	Corridor	5.00	68.19	341 SF
6	Corridor	0.50	17.08	9 SF
7	Corridor	5.00	14.53	73 SF
8	Refuse Room	3.00	4.00	12 SF
9	Mechanical Equipment	2.92	2.92	9 SF
10	Plumbing	0.98	8.22	8 SF
11	Mechanical Equipment	3.00	2.56	8 SF
12	Mechanical Equipment	4.44	1.92	9 SF
13	Plumbing	1.01	10.48	11 SF
14	Mechanical Equipment	2.85	2.42	7 SF
15	Plumbing	5.29	1.08	6 SF
16	Plumbing	0.71	9.32	7 SF

NOTE:
QH / DAYLIGHTING & CORRIDOR UNIT MINIMUM (100% DEDUCTION)
QH / REFUSE ROOM (12 SF)

Zoning Floor Area - Level 2 - Deduction

#	Deduction Type	Dim 1	Dim 2	Deduction
17	Mechanical Equipment	1.46	4.61	7 SF
18	Plumbing	1.18	11.42	13 SF
19	Mechanical Equipment	1.92	1.44	3 SF
20	Plumbing	1.34	7.67	10 SF
21	Mechanical Equipment	2.03	2.85	6 SF
22	Plumbing	1.03	5.34	6 SF
23	Plumbing	1.03	5.66	6 SF
24	Mechanical Equipment	3.00	1.42	4 SF
25	Mechanical Equipment	1.35	2.25	3 SF
26	Plumbing	0.92	10.10	9 SF
27	Plumbing	5.60	1.18	7 SF
28	Mechanical Equipment	2.45	2.18	5 SF
29	Plumbing	0.71	9.52	7 SF
30	Plumbing	6.96	1.19	8 SF
31	Mechanical Equipment	1.71	1.59	3 SF
				835 SF



4 LEVEL 3-6
1/16" = 1'-0"

Zoning Floor Area - Level 3-6 - Total

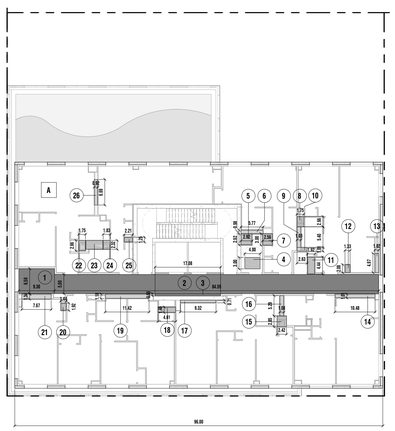
Region	Dim 1	Dim 2	Gross Area	Deductions	# of Levels	Zoning Floor Area
A	19.96	55.50	1108 SF	51 SF	4	4229 SF
B	61.00	76.83	4689 SF	695 SF	4	15974 SF
C	59.00	21.17	1236 SF	128 SF	4	4432 SF
			7033 SF	874 SF		24636 SF

Zoning Floor Area - Level 3 - Deduction

#	Deduction Type	Dim 1	Dim 2	Deduction
1	Corridor	4.80	8.00	38 SF
2	Corridor	1.45	8.00	12 SF
3	Corridor	27.86	5.00	139 SF
4	Corridor	7.00	7.60	53 SF
5	Corridor	5.00	68.19	341 SF
6	Corridor	0.50	17.08	9 SF
7	Corridor	5.00	20.11	101 SF
8	Refuse Room	3.00	4.00	12 SF
9	Mechanical Equipment	2.92	2.92	9 SF
10	Mechanical Equipment	0.98	5.77	6 SF
11	Mechanical Equipment	3.00	2.56	8 SF
12	Mechanical Equipment	4.44	1.92	9 SF
13	Mechanical Equipment	2.08	1.33	3 SF
14	Plumbing	4.97	1.02	5 SF
15	Plumbing	1.01	10.48	11 SF
16	Plumbing	5.29	1.38	6 SF
17	Mechanical Equipment	2.85	2.42	7 SF
18	Plumbing	0.71	9.32	7 SF

Zoning Floor Area - Level 3 - Deduction

#	Deduction Type	Dim 1	Dim 2	Deduction
19	Mechanical Equipment	1.46	4.61	7 SF
20	Plumbing	1.18	11.42	13 SF
21	Mechanical Equipment	1.92	1.44	3 SF
22	Plumbing	1.34	7.67	10 SF
23	Mechanical Equipment	2.03	2.85	6 SF
24	Plumbing	1.03	5.34	6 SF
25	Plumbing	1.03	5.66	6 SF
26	Mechanical Equipment	3.00	1.42	4 SF
27	Mechanical Equipment	1.35	2.25	3 SF
28	Plumbing	10.10	0.92	9 SF
29	Plumbing	5.60	1.18	7 SF
30	Mechanical Equipment	2.45	2.18	5 SF
31	Plumbing	0.71	9.52	7 SF
33	Mechanical Equipment	1.71	1.59	3 SF
34	Mechanical Equipment	2.04	1.85	5 SF
35	Plumbing	5.29	1.19	6 SF
36	Plumbing	1.17	2.44	2 SF
				874 SF



5 LEVEL 7
1/16" = 1'-0"

Zoning Floor Area - Level 7 - Total

Region	Dim 1	Dim 2	Gross Area	Deductions	# of Levels	Zoning Floor Area
A	59.00	96.00	5664 SF	646 SF	1	5018 SF
			5664 SF	646 SF		5018 SF

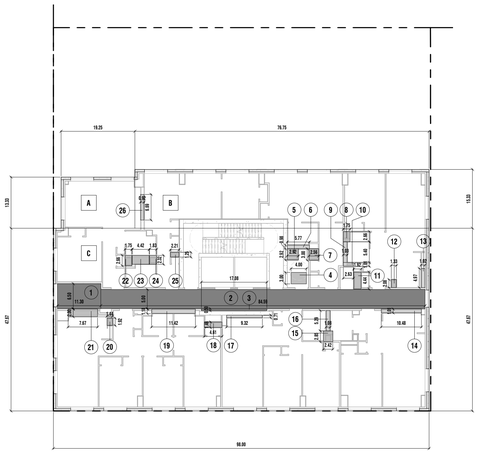
Zoning Floor Area - Level 7 - Deduction

#	Deduction Type	Dim 1	Dim 2	Deduction
1	Corridor	6.50	9.30	60 SF
2	Corridor	5.00	84.59	423 SF
3	Corridor	0.50	17.08	9 SF
4	Refuse Room	3.00	4.00	12 SF
5	Mechanical Equipment	2.81	3.02	9 SF
6	Mechanical Equipment	1.24	5.77	6 SF
7	Mechanical Equipment	2.85	2.77	8 SF
8	Mechanical Equipment	2.04	1.85	5 SF
9	Plumbing	5.29	1.19	6 SF
10	Plumbing	1.17	2.44	3 SF
11	Mechanical Equipment	4.65	2.13	9 SF
12	Mechanical Equipment	2.19	1.54	3 SF
13	Plumbing	4.97	1.07	5 SF

Zoning Floor Area - Level 7 - Deduction

#	Deduction Type	Dim 1	Dim 2	Deduction
14	Plumbing	1.17	10.35	11 SF
15	Mechanical Equipment	2.04	2.52	7 SF
16	Plumbing	5.29	1.19	6 SF
17	Plumbing	0.76	9.38	7 SF
18	Mechanical Equipment	1.67	4.77	7 SF
19	Plumbing	1.33	11.42	13 SF
20	Mechanical Equipment	2.13	1.65	3 SF
21	Plumbing	1.50	7.31	10 SF
22	Mechanical Equipment	2.81	1.96	5 SF
23	Plumbing	2.43	4.42	10 SF
24	Mechanical Equipment	2.43	2.04	4 SF
25	Mechanical Equipment	1.46	2.31	3 SF
26	Plumbing	6.69	1.02	6 SF
				646 SF

NOTE:
QH / DAYLIGHTING & CORRIDOR UNIT MINIMUM (100% DEDUCTION)
QH / REFUSE ROOM (12 SF)



7 LEVEL 8, 10, 12, 14
1/16" = 1'-0"

Zoning Floor Area - Level 8,10,12,14 - Total

Region	Dim 1	Dim 2	Gross Area	Deductions	# of Levels	Zoning Floor Area
A	13.33	19.25	257 SF	0 SF	4	1026 SF
B	15.33	76.75	1177 SF	6 SF	4	4683 SF
C	47.67	98.00	4671 SF	658 SF	4	16052 SF
			6105 SF	664 SF		21762 SF

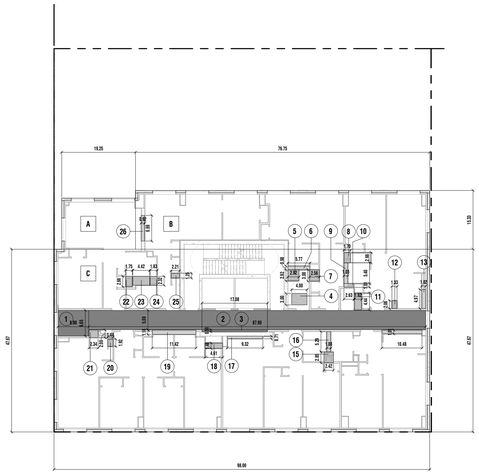
Zoning Floor Area - Level 8,10,12,14 - Deduction

#	Deduction Type	Dim 1	Dim 2	Deduction
1	Corridor	6.50	11.30	73 SF
2	Corridor	5.00	84.59	423 SF
3	Corridor	0.50	17.08	9 SF
4	Refuse Room	3.00	4.00	12 SF
5	Mechanical Equipment	2.92	2.92	9 SF
6	Mechanical Equipment	0.98	5.77	6 SF
7	Mechanical Equipment	3.00	2.56	8 SF
8	Mechanical Equipment	2.66	1.75	5 SF
9	Plumbing	5.40	1.03	6 SF
10	Plumbing	1.01	2.63	3 SF
11	Mechanical Equipment	4.44	1.92	9 SF
12	Mechanical Equipment	2.08	1.33	3 SF
13	Plumbing	4.97	1.02	5 SF

Zoning Floor Area - Level 8,10,12,14 - Deduction

#	Deduction Type	Dim 1	Dim 2	Deduction
14	Plumbing	1.01	10.48	11 SF
15	Mechanical Equipment	2.85	2.42	7 SF
16	Plumbing	1.08	5.29	6 SF
17	Plumbing	0.71	9.32	7 SF
18	Mechanical Equipment	1.46	4.61	7 SF
19	Plumbing	1.18	11.42	13 SF
20	Mechanical Equipment	1.92	1.44	3 SF
21	Plumbing	2.00	7.67	15 SF
22	Mechanical Equipment	2.66	1.75	5 SF
23	Plumbing	2.32	4.42	10 SF
24	Mechanical Equipment	2.32	1.83	4 SF
25	Mechanical Equipment	1.25	2.21	3 SF
26	Plumbing	6.69	0.92	6 SF
				664 SF

NOTE:
QH / DAYLIGHTING & CORRIDOR UNIT MINIMUM (100% DEDUCTION)
QH / REFUSE ROOM (12 SF)



6 LEVEL 9, 11, 13, 15
1/16" = 1'-0"

Zoning Floor Area - Level 9,11,13,15 - Total

Region	Dim 1	Dim 2	Gross Area	Deductions	# of Levels	Zoning Floor Area
A	13.33	19.25	257 SF	0 SF	4	1026 SF
B	15.33	76.75	1177 SF	6 SF	4	4683 SF
C	46.67	98.00	4671 SF	643 SF	4	16110 SF
			6105 SF	650 SF		21820 SF

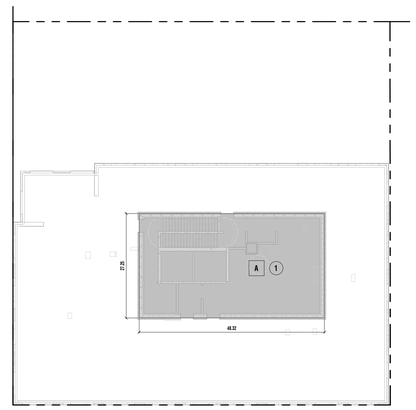
Zoning Floor Area - Level 9,11,13,15 - Deduction

#	Deduction Type	Dim 1	Dim 2	Deduction
1	Corridor	6.50	8.00	53 SF
2	Corridor	5.00	87.90	439 SF
3	Corridor	0.50	17.08	9 SF
4	Refuse Room	3.00	4.00	12 SF
5	Mechanical Equipment	2.92	2.92	9 SF
6	Mechanical Equipment	0.98	5.77	6 SF
7	Mechanical Equipment	3.00	2.56	8 SF
8	Mechanical Equipment	2.66	1.70	5 SF
9	Plumbing	5.40	1.03	6 SF
10	Plumbing	1.01	2.63	3 SF
11	Mechanical Equipment	4.44	1.92	9 SF
12	Mechanical Equipment	2.08	1.33	3 SF
13	Plumbing	4.97	1.02	5 SF

Zoning Floor Area - Level 9,11,13,15 - Deduction

#	Deduction Type	Dim 1	Dim 2	Deduction
14	Plumbing	1.01	10.48	11 SF
15	Mechanical Equipment	2.85	2.42	7 SF
16	Plumbing	1.03	5.29	6 SF
17	Plumbing	0.71	9.32	7 SF
18	Mechanical Equipment	1.46	4.61	7 SF
19	Plumbing	1.18	11.42	13 SF
20	Mechanical Equipment	1.92	1.44	3 SF
21	Plumbing	2.00	2.34	5 SF
22	Mechanical Equipment	2.66	1.75	5 SF
23	Plumbing	2.32	4.42	10 SF
24	Mechanical Equipment	2.32	1.83	4 SF
25	Mechanical Equipment	1.25	2.21	3 SF
26	Plumbing	0.92	6.69	6 SF
				650 SF

NOTE:
QH / DAYLIGHTING & CORRIDOR UNIT MINIMUM (100% DEDUCTION)
QH / REFUSE ROOM (12 SF)



8 ROOF
1/16" = 1'-0"

Zoning Floor Area - Roof Level - Total

Region	Dim 1	Dim 2	Gross Area	Deductions	# of Levels	Zoning Floor Area
A	27.25	48.32	1317 SF	1317 SF	1	0 SF
			1317 SF	1317 SF		0 SF

Zoning Floor Area - Roof Level - Deduction

#	Deduction Type	Dim 1	Dim 2	Area	Deduction
1	Bulkheads	27.25	48.32	1317 SF	1317 SF
					1317 SF

Zoning Floor Area - TOTAL

Typical Floor	# of Levels	GROSS AREA BY LEVELS	DEDUCTION BY LEVELS	Zoning Floor Area
GROUND LEVEL	1	0 SF	0 SF	0 SF
CELLAR	1	9803 SF	9803 SF	0 SF
GROUND LEVEL	1	9489 SF	31 SF	9458 SF
LEVEL 2	1	7044 SF	835 SF	6209 SF
LEVEL 3-6	4	28130 SF	3494 SF	24636 SF
LEVEL 7	1	5664 SF	646 SF	5018 SF
LEVEL 8,10,12,14	4	24418 SF	2657 SF	21762 SF
LEVEL 9,11,13,15	4	24418 SF	2598 SF	21820 SF
ROOF	1	1317 SF	1317 SF	0 SF
		110282 SF	21381 SF	88902 SF

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KEY PLAN

x		xx.xx.2018
NO.	**DESIGN & CONSTRUCTION SUBMISSIONS**	**DATE**

2	**DOB SUBMISSION**	04.06.2018
1	**DD SUBMISSION**	04.06.2018
NO.	**REGULATORY SUBMISSIONS**	**DATE**

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

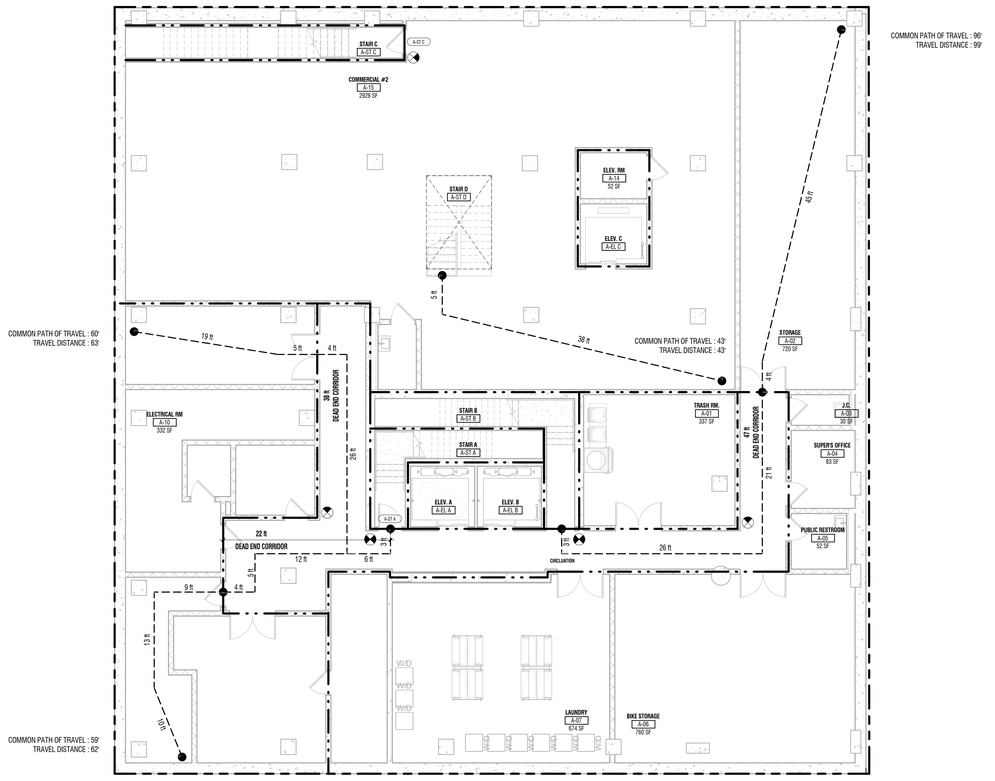
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ZONING AREA PLANS

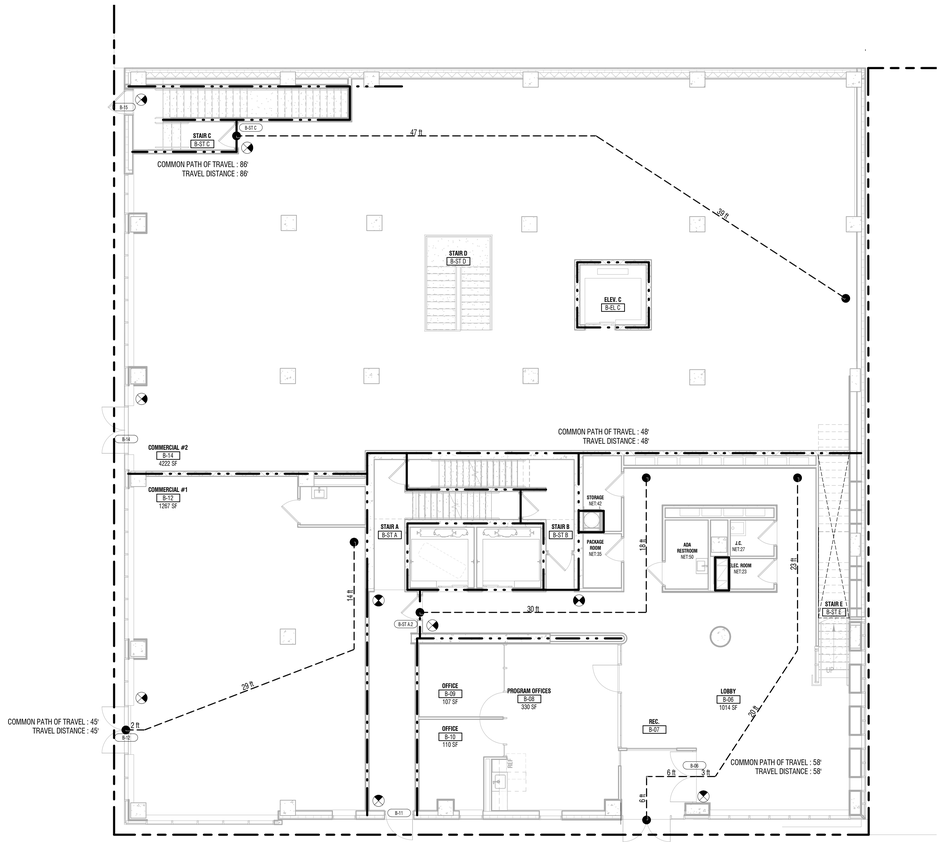
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CHECKED BY:	Checker
DWG NO:	Z-003.00
NYC DOB NUMBER:	

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1 **LIFE SAFETY PLAN - CELLAR LEVEL**
1/8" = 1'-0"



2 **LIFE SAFETY PLAN - LEVEL 1**
1/8" = 1'-0"

CELLAR LEVEL/RESIDENTAL LIFE SAFETY ANALYSIS

OCCUPANCY LOAD ANALYSIS:				
USE	**OCCUPANCY**	**AREA**	**SF/PERSON**	**OCCUPANTS**
SUPER'S OFFICE	R-2	87 SF	50 SF/OCC.	1
LAUNDRY	R-2	704 SF	50 SF/OCC.	14
RESIDENTIAL STORAGE	R-2	728 SF	300 SF/OCC.	2
BIKE STORAGE	R-2	759 SF	300 SF/OCC.	2
MECHANICAL, ELECTRIAL EQUIPMENT AREAS	R-2	1,783 SF	300 SF/OCC.	5
OCCUPANCY TOTAL:				**24**

EGRESS SUMMARY			
	MIN REQ. EGRESS WIDTH	PROVIDED	
CORRIDOR CAPACITY:	FOR OCCUPANT LOAD : 24 X 0.2 = 4.8" [1005.1] 44" MIN [1009.1]	72" (CAPACITY FOR 360 OCCUPANTS)	
DOOR CAPACITY:	FOR OCCUPANT LOAD : 24 X 0.2 = 4.8" [1005.1] 32" MIN [1008.1]	DOOR 0A-ST A = DOOR 0A-ST B =	36" (CAPACITY FOR 180 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS)
STAIR CAPACITY:	FOR OCCUPANT LOAD : 24 X 0.3 = 7.2" [1005.1] 44" MIN [1009.1]	STAIR A @ STAIR B @	44" (CAPACITY FOR 146 OCCUPANTS) 44" (CAPACITY FOR 146 OCCUPANTS)

CELLAR LEVEL/COMMERICAL LIFE SAFETY ANALYSIS

OCCUPANCY LOAD ANALYSIS:				
COMMERCIAL	M	3,033 SF	30 SF/OCC.	101

EGRESS SUMMARY			
DOOR CAPACITY:	FOR OCCUPANT LOAD : 101 X 0.2 = 20.2" [1005.1] 32" MIN [1008.1]	DOOR 0A-ST C =	36" (CAPACITY FOR 180 OCCUPANTS)
STAIR CAPACITY:	FOR OCCUPANT LOAD : 101 X 0.3 = 30.3" [1005.1] 44" MIN [1009.1]	STAIR C @	48" (CAPACITY FOR 160 OCCUPANTS)

LEVEL 1/RESIDENTAL LIFE SAFETY ANALYSIS

OCCUPANCY LOAD ANALYSIS:				
USE	**OCCUPANCY**	**AREA**	**SF/PERSON**	**OCCUPANTS**
RESIDENTIAL LOBBY	R-2	1201 SF	200 SF/OCC.	6
PROGRAM OFFICES	R-2	550 SF	15 SF/OCC.	36
OCCUPANCY TOTAL:				**42**

EGRESS SUMMARY			
	MIN REQ. EGRESS WIDTH	PROVIDED	
CORRIDOR CAPACITY:	FOR OCCUPANT LOAD : 42 X 0.2 = 8.4" [1005.1] 44" MIN [1009.1]	72" (CAPACITY FOR 360 OCCUPANTS)	
DOOR CAPACITY:	FOR OCCUPANT LOAD : 42 X 0.2 = 8.4" [1005.1] 32" MIN [1008.1]	DOOR 0B-ST A.1 = DOOR 0B-ST A.2 = DOOR 0B-ST B.1 = DOOR 0B-ST B.2 = DOOR 0B-06 = DOOR 0B-11 =	36" (CAPACITY FOR 180 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS) 72" (CAPACITY FOR 360 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS)
STAIR CAPACITY:	FOR OCCUPANT LOAD : 42 X 0.3 = 12.6" [1005.1] 44" MIN [1009.1]	STAIR A @ STAIR B @	44" (CAPACITY FOR 146 OCCUPANTS) 44" (CAPACITY FOR 146 OCCUPANTS)

	MAX. TRAVEL DISTANCE	MAX. COMMON PATH	MAX. DEAD END CORRIDOR	
GROUP R-2 W. SPRINKER SYSTEM	200'	125'	80' 40'	(W. 2 HR FIRE RATED CORRIDOR)
GROUP M W. SPRINKLER SYSTEM	200'	75'	50'	
	[1016.1]	[1014.3]	[1018.4]	

LEVEL 1/COMMERICAL 1 LIFE SAFETY ANALYSIS

OCCUPANCY LOAD ANALYSIS:				
COMMERCIAL	M	4,200 SF	30 SF/OCC.	140
OCCUPANCY TOTAL:				**140**

EGRESS SUMMARY			
DOOR CAPACITY:	FOR OCCUPANT LOAD : 140 X 0.2 = 28" [1005.1] 32" MIN [1008.1]	DOOR 0B-14 = DOOR 0B-ST C = DOOR 0B-15 =	72" (CAPACITY FOR 360 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS)
STAIR CAPACITY:	FOR OCCUPANT LOAD : 140 X 0.3 = 54.6" [1005.1] 44" MIN [1009.1]	STAIR C @	48" (CAPACITY FOR 160 OCCUPANTS)

LEVEL 1/COMMERICLAL 2 LIFE SAFETY ANALYSIS

OCCUPANCY LOAD ANALYSIS:				
COMMERCIAL	M	1,263 SF	30 SF/OCC.	42

EGRESS SUMMARY			
DOOR CAPACITY:	FOR OCCUPANT LOAD : 42 X 0.2 = 8.4" [1005.1] 32" MIN [1008.1]	DOOR 0B-12 =	72" (CAPACITY FOR 360 OCCUPANTS)

LIFE SAFETY LEGEND

- 1 HR FIRE RATED PARTITION
- 2 HR FIRE RATED PARTITION
- 3 HR FIRE RATED PARTITION
- TRAVEL DISTANCE
- EXIT SIGN
- 6' FIRE ACCESS
- 6' FIRE ACCESS DOOR

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	**DOB SUBMISSION**	04.06.2018
1	**DD SUBMISSION**	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

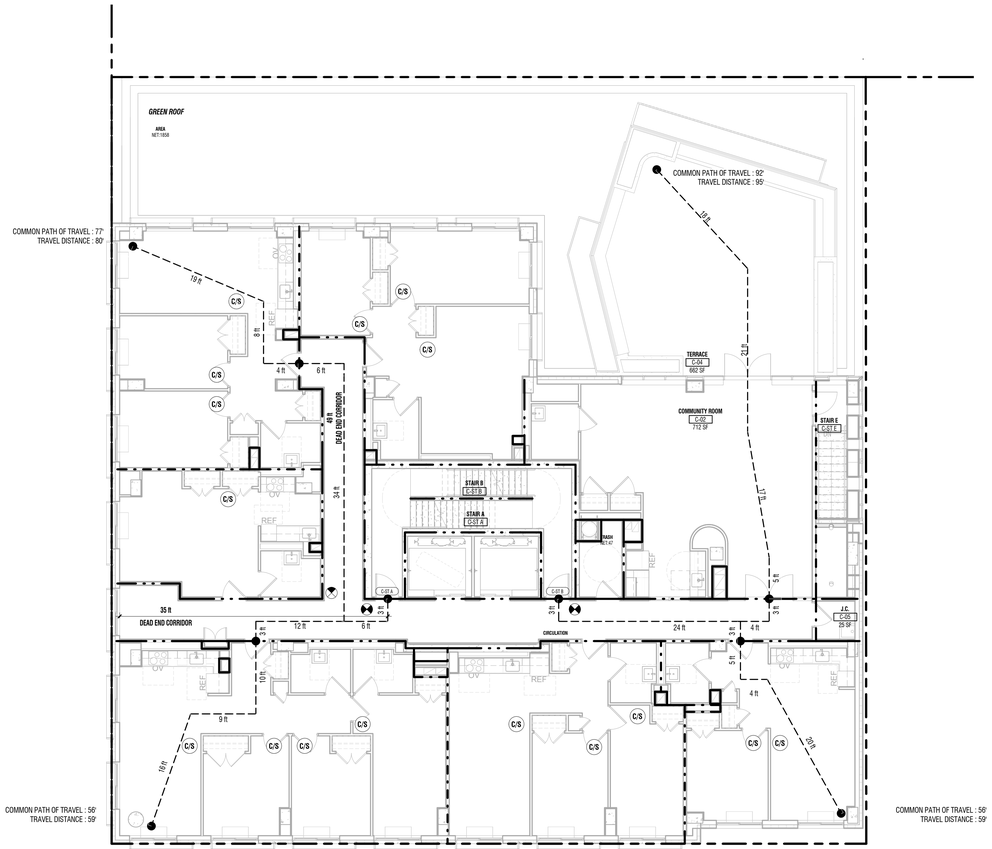
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LIFE SAFETY PLAN-CELLAR & LEVEL 1

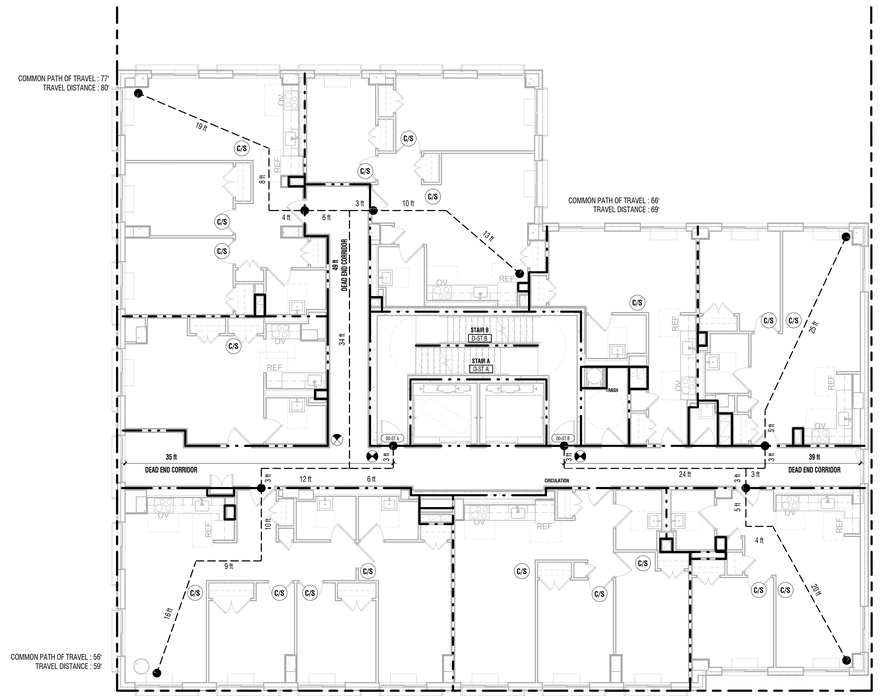
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DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	LS-001.00
NYC DOB NUMBER:	

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1 **LIFE SAFETY PLAN - LEVEL 2**
1/8" = 1'-0"



2 **LIFE SAFETY PLAN - LEVEL 3-6**
1/8" = 1'-0"

LEVEL 3-6 LIFE SAFETY ANALYSIS

OCCUPANCY LOAD ANALYSIS:				
USE	**OCCUPANCY**	**AREA**	**SF/PERSON**	**OCCUPANTS**
RESIDENTIAL UNITS	R-2	4276 SF	200 SF/OCC.	21
ASSEMBLY (UNCONCENTRATED)	R-2	1381 SF	15 SF/OCC.	92
OCCUPANCY TOTAL:				**113**

EGRESS SUMMARY			
	MIN REQ. EGRESS WIDTH	PROVIDED	
CORRIDOR CAPACITY:	FOR OCCUPANT LOAD : 113 X 0.2 = 22.6" [1005.1] 44" MIN [1009.1]	60" (CAPACITY FOR 300 OCCUPANTS)	
DOOR CAPACITY:	FOR OCCUPANT LOAD : 113 X 0.2 = 22.6" [1005.1] 32" MIN [1008.1]	DOOR 00-ST A = DOOR 00-ST B =	36" (CAPACITY FOR 180 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS)
STAIR CAPACITY:	FOR OCCUPANT LOAD : 113 X 0.3 = 33.9" [1005.1] 44" MIN [1009.1]	STAIR A @ STAIR B @	44" (CAPACITY FOR 146 OCCUPANTS) 44" (CAPACITY FOR 146 OCCUPANTS)

LEVEL 3-6 LIFE SAFETY ANALYSIS

OCCUPANCY LOAD ANALYSIS:				
USE	**OCCUPANCY**	**AREA**	**SF/PERSON**	**OCCUPANTS**
RESIDENTIAL UNITS	R-2	4885 SF	200 SF/OCC.	24
OCCUPANCY TOTAL:				**24**

EGRESS SUMMARY			
	MIN REQ. EGRESS WIDTH	PROVIDED	
CORRIDOR CAPACITY:	FOR OCCUPANT LOAD : 24 X 0.2 = 4.8" [1005.1] 44" MIN [1009.1]	60" (CAPACITY FOR 300 OCCUPANTS)	
DOOR CAPACITY:	FOR OCCUPANT LOAD : 24 X 0.2 = 4.8" [1005.1] 32" MIN [1008.1]	DOOR 00-ST A = DOOR 00-ST B =	36" (CAPACITY FOR 180 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS)
STAIR CAPACITY:	FOR OCCUPANT LOAD : 24 X 0.3 = 7.2" [1005.1] 44" MIN [1009.1]	STAIR A @ STAIR B @	44" (CAPACITY FOR 146 OCCUPANTS) 44" (CAPACITY FOR 146 OCCUPANTS)

	MAX. TRAVEL DISTANCE	MAX. COMMON PATH	MAX. DEAD END CORRIDOR	
GROUP R-2 W. SPRINKLER SYSTEM	200'	125'	80' 40'	(W. 2 HR FIRE RATED CORRIDR)
GROUP M W. SPRINKLER SYSTEM	200'	75'	50'	
	[1016.1]	[1014.3]	[1018.4]	

LIFE SAFETY LEGEND

- 1 HR FIRE RATED PARTITION
- 2 HR FIRE RATED PARTITION
- 3 HR FIRE RATED PARTITION
- TRAVEL DISTANCE
- EXIT SIGN
- 6' FIRE ACCESS
- 6' FIRE ACCESS DOOR

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1	**DD SUBMISSION**	04.06.2018

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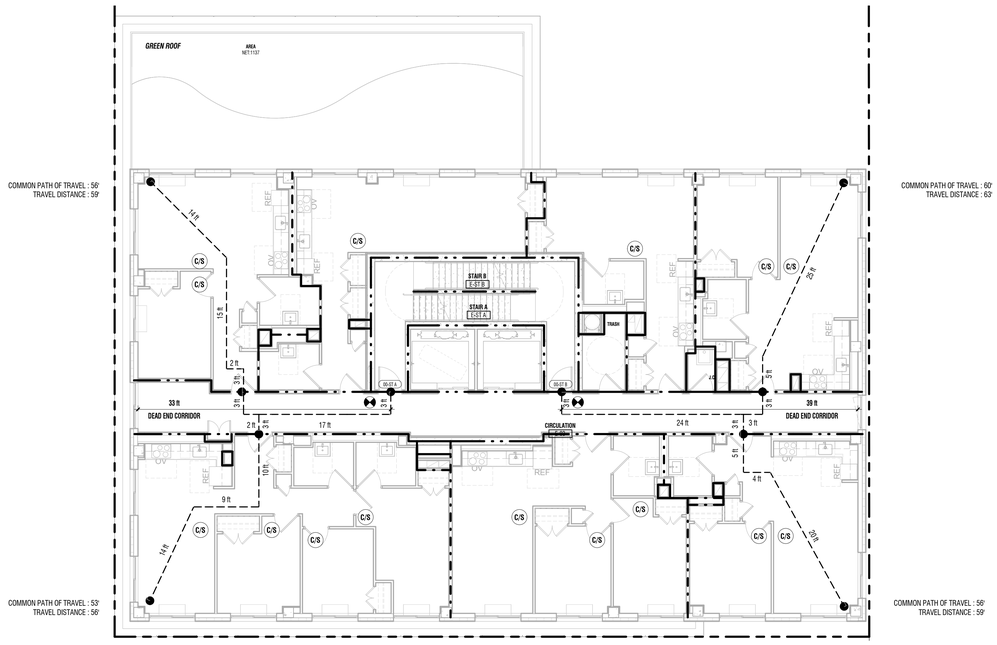
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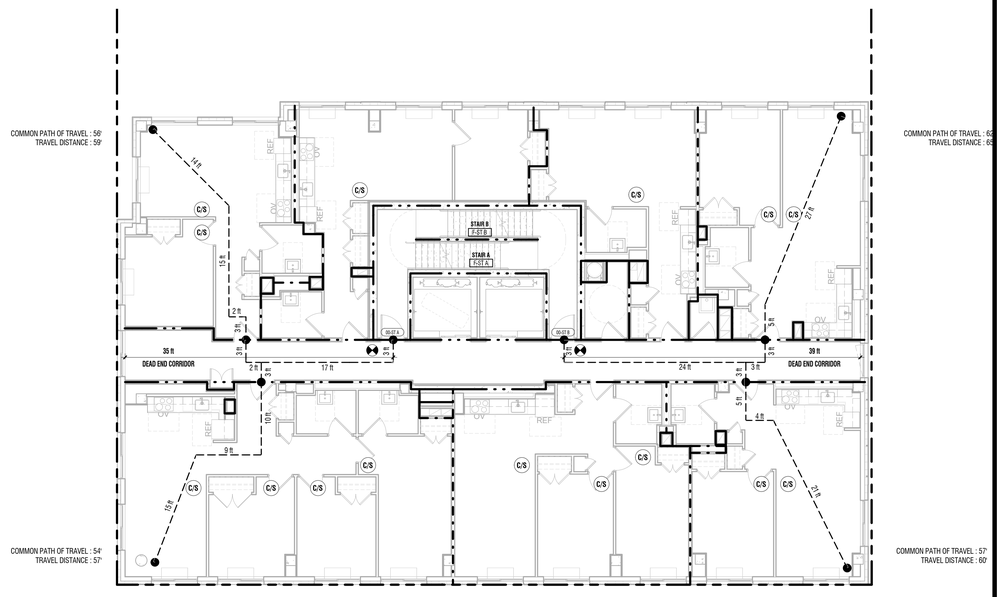
LIFE SAFETY PLAN-LEVEL 2 & LEVEL 3-6

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1 **LIFE SAFETY PLAN - LEVEL 7**
1/8" = 1'-0"



2 **LIFE SAFETY PLAN - LEVEL 8,10,12,14**
1/8" = 1'-0"

LEVEL 7 LIFE SAFETY ANALYSIS

OCCUPANCY LOAD ANALYSIS:

USE	OCCUPANCY	AREA	SF/PERSON	OCCUPANTS
RESIDENTIAL UNITS	R-2	3886 SF	200 SF/OCC.	19
OCCUPANCY TOTAL:				**19**

EGRESS SUMMARY

	MIN REQ. EGRESS WIDTH	PROVIDED	
CORRIDOR CAPACITY:	FOR OCCUPANT LOAD : 19 X 0.2 = 3.8" [1005.1] 44" MIN [1009.1]	60" (CAPACITY FOR 300 OCCUPANTS)	
DOOR CAPACITY:	FOR OCCUPANT LOAD : 19 X 0.2 = 3.8" [1005.1] 32" MIN [1008.1]	DOOR 00-ST A = DOOR 00-ST B =	36" (CAPACITY FOR 180 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS)
STAIR CAPACITY:	FOR OCCUPANT LOAD : 19 X 0.3 = 5.7" [1005.1] 44" MIN [1009.1]	STAIR A @ STAIR B @	44" (CAPACITY FOR 146 OCCUPANTS) 44" (CAPACITY FOR 146 OCCUPANTS)

LEVEL 8, 10, 12, 14 LIFE SAFETY ANALYSIS

OCCUPANCY LOAD ANALYSIS:

USE	OCCUPANCY	AREA	SF/PERSON	OCCUPANTS
RESIDENTIAL UNITS	R-2	4277 SF	200 SF/OCC.	22
OCCUPANCY TOTAL:				**22**

EGRESS SUMMARY

	MIN REQ. EGRESS WIDTH	PROVIDED	
CORRIDOR CAPACITY:	FOR OCCUPANT LOAD : 22 X 0.2 = 4.4" [1005.1] 44" MIN [1009.1]	60" (CAPACITY FOR 300 OCCUPANTS)	
DOOR CAPACITY:	FOR OCCUPANT LOAD : 22 X 0.2 = 4.4" [1005.1] 32" MIN [1008.1]	DOOR 00-ST A = DOOR 00-ST B =	36" (CAPACITY FOR 180 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS)
STAIR CAPACITY:	FOR OCCUPANT LOAD : 22 X 0.3 = 6.6" [1005.1] 44" MIN [1009.1]	STAIR A @ STAIR B @	44" (CAPACITY FOR 146 OCCUPANTS) 44" (CAPACITY FOR 146 OCCUPANTS)

	MAX. TRAVEL DISTANCE	MAX. COMMON PATH	MAX. DEAD END CORRIDOR	
GROUP R-2 W. SPRINKLER SYSTEM	200'	125'	80' 40'	(W. 2 HR FIRE RATED CORRIDOR)
GROUP M W. SPRINKLER SYSTEM	200'	75'	50'	
	[1016.1]	[1014.3]	[1018.4]	

LIFE SAFETY LEGEND

- 1 HR FIRE RATED PARTITION
- 2 HR FIRE RATED PARTITION
- 3 HR FIRE RATED PARTITION
- TRAVEL DISTANCE
- EXIT SIGN
- 6' FIRE ACCESS
- 6' FIRE ACCESS DOOR

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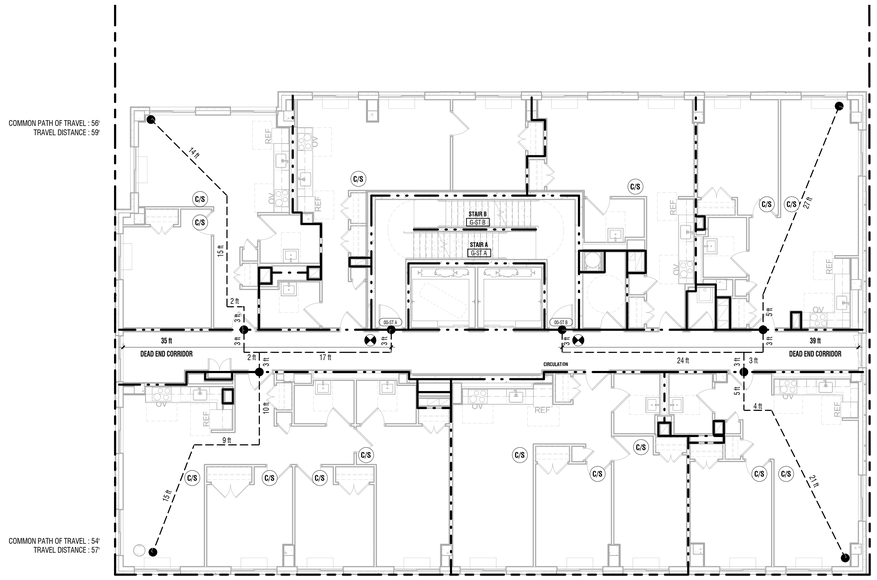
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LIFE SAFETY PLAN-LEVEL 7 & LEVEL 8,10,12,14

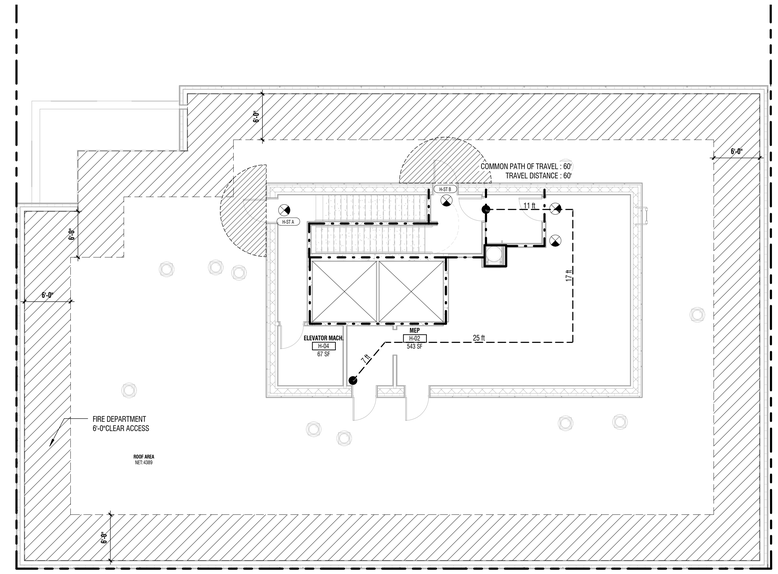
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2 LIFE SAFETY PLAN - LEVEL 9,11,13,15

1/8" = 1'-0"



1 LIFE SAFETY PLAN - ROOF LEVEL

1/8" = 1'-0"

LEVEL 9, 11, 13, 15 LIFE SAFETY ANALYSIS

OCCUPANCY LOAD ANALYSIS:				
USE	**OCCUPANCY**	**AREA**	**SF/PERSON**	**OCCUPANTS**
RESIDENTIAL UNITS	R-2	4275 SF	200 SF/OCC.	22
OCCUPANCY TOTAL:				**22**

EGRESS SUMMARY			
	MIN REQ. EGRESS WIDTH	PROVIDED	
CORRIDOR CAPACITY:	FOR OCCUPANT LOAD : 22 X 0.2 = 4.4" [1005.1] 44" MIN [1009.1]	60" (CAPACITY FOR 300 OCCUPANTS)	
DOOR CAPACITY:	FOR OCCUPANT LOAD : 22 X 0.2 = 4.4" [1005.1] 32" MIN [1008.1]	DOOR 00-ST A = DOOR 00-ST B =	36" (CAPACITY FOR 180 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS)
STAIR CAPACITY:	FOR OCCUPANT LOAD : 22 X 0.3 = 6.6" [1005.1] 44" MIN [1009.1]	STAIR A @ STAIR B @	44" (CAPACITY FOR 146 OCCUPANTS) 44" (CAPACITY FOR 146 OCCUPANTS)

LEVEL 9, 11, 13, 15 LIFE SAFETY ANALYSIS

OCCUPANCY LOAD ANALYSIS:				
USE	**OCCUPANCY**	**AREA**	**SF/PERSON**	**OCCUPANTS**
MECHANICAL EQUIPMENT AREAS	R-2	668 SF	300 SF/OCC.	2
OCCUPANCY TOTAL:				**2**

EGRESS SUMMARY			
	MIN REQ. EGRESS WIDTH	PROVIDED	
DOOR CAPACITY:	FOR OCCUPANT LOAD : 2 X 0.2 = 0.4" [1005.1] 32" MIN [1008.1]	DOOR 0D-ST A = DOOR 0D-ST B =	36" (CAPACITY FOR 180 OCCUPANTS) 36" (CAPACITY FOR 180 OCCUPANTS)
STAIR CAPACITY:	FOR OCCUPANT LOAD : 2 X 0.3 = .6" [1005.1] 44" MIN [1009.1]	STAIR A @ STAIR B @	44" (CAPACITY FOR 146 OCCUPANTS) 44" (CAPACITY FOR 146 OCCUPANTS)

	MAX. TRAVEL DISTANCE	MAX. COMMON PATH	MAX. DEAD END CORRIDOR	
GROUP R-2 W. SPRINKLER SYSTEM	200'	125'	80' 40'	(W. 2 HR FIRE RATED CORRIDOR)
GROUP M W. SPRINKLER SYSTEM	200'	75'	50'	
	[1016.1]	[1014.3]	[1018.4]	

LIFE SAFETY LEGEND

- 1 HR FIRE RATED PARTITION
- 2 HR FIRE RATED PARTITION
- 3 HR FIRE RATED PARTITION
- TRAVEL DISTANCE
- EXIT SIGN
- 6' FIRE ACCESS
- 6' FIRE ACCESS DOOR

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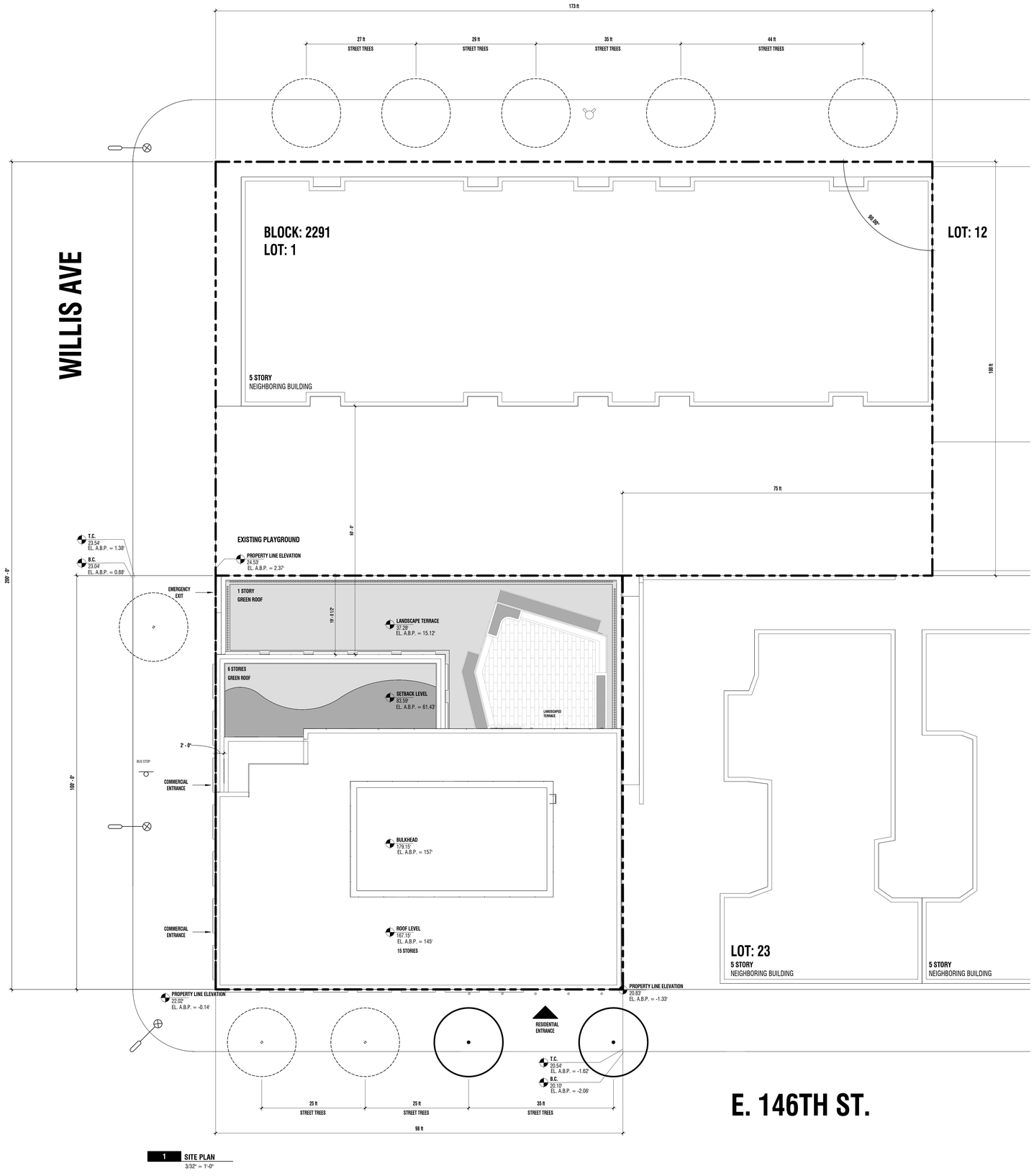
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LIFE SAFETY PLAN-LEVEL 9,11,13,15 & ROOF LEVEL

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1 SITE PLAN
3/32" = 1'-0"

LEGEND

- EXISTING TREE
- PROPOSED TREE
- HYDRANT
- STREET LIGHT

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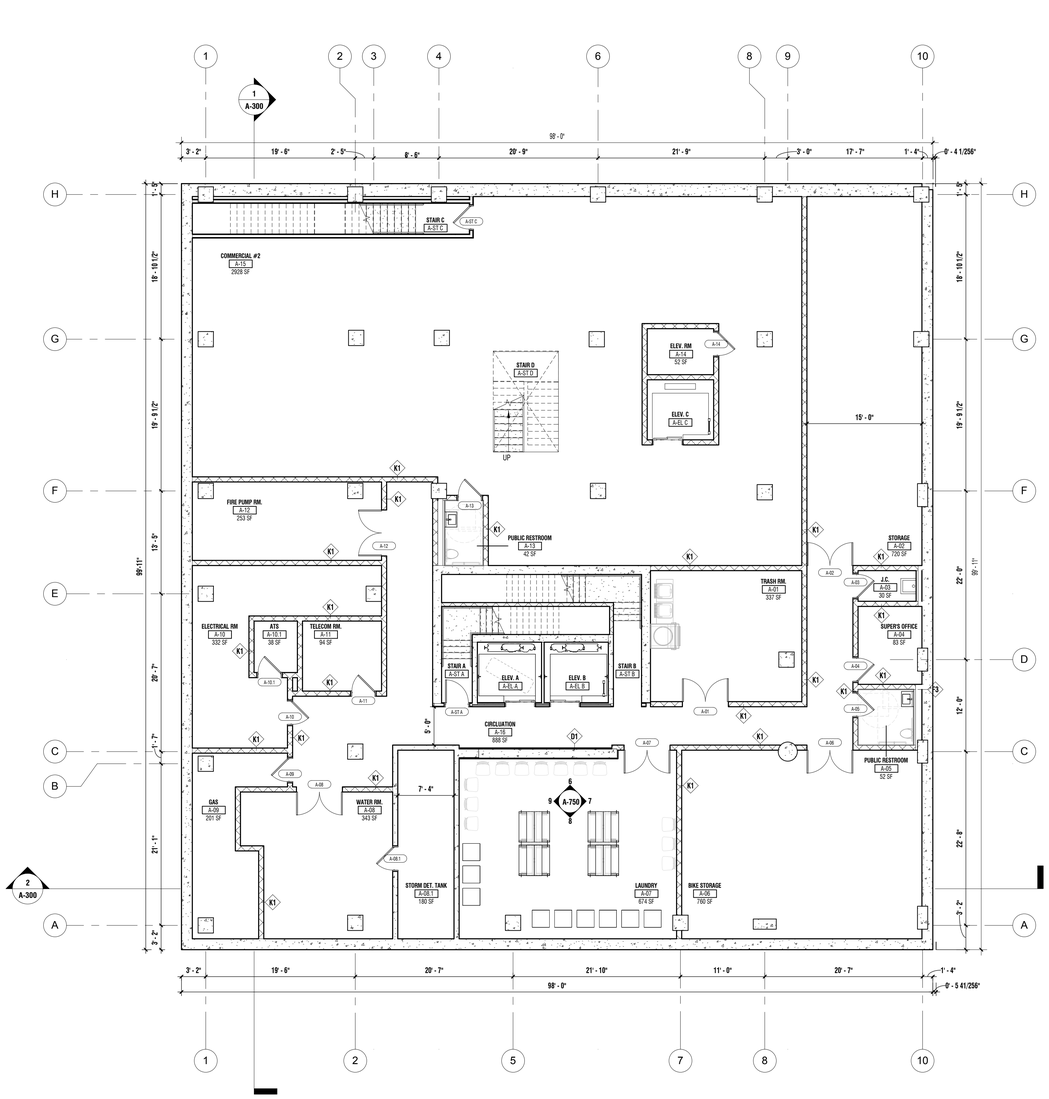
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SITE PLAN

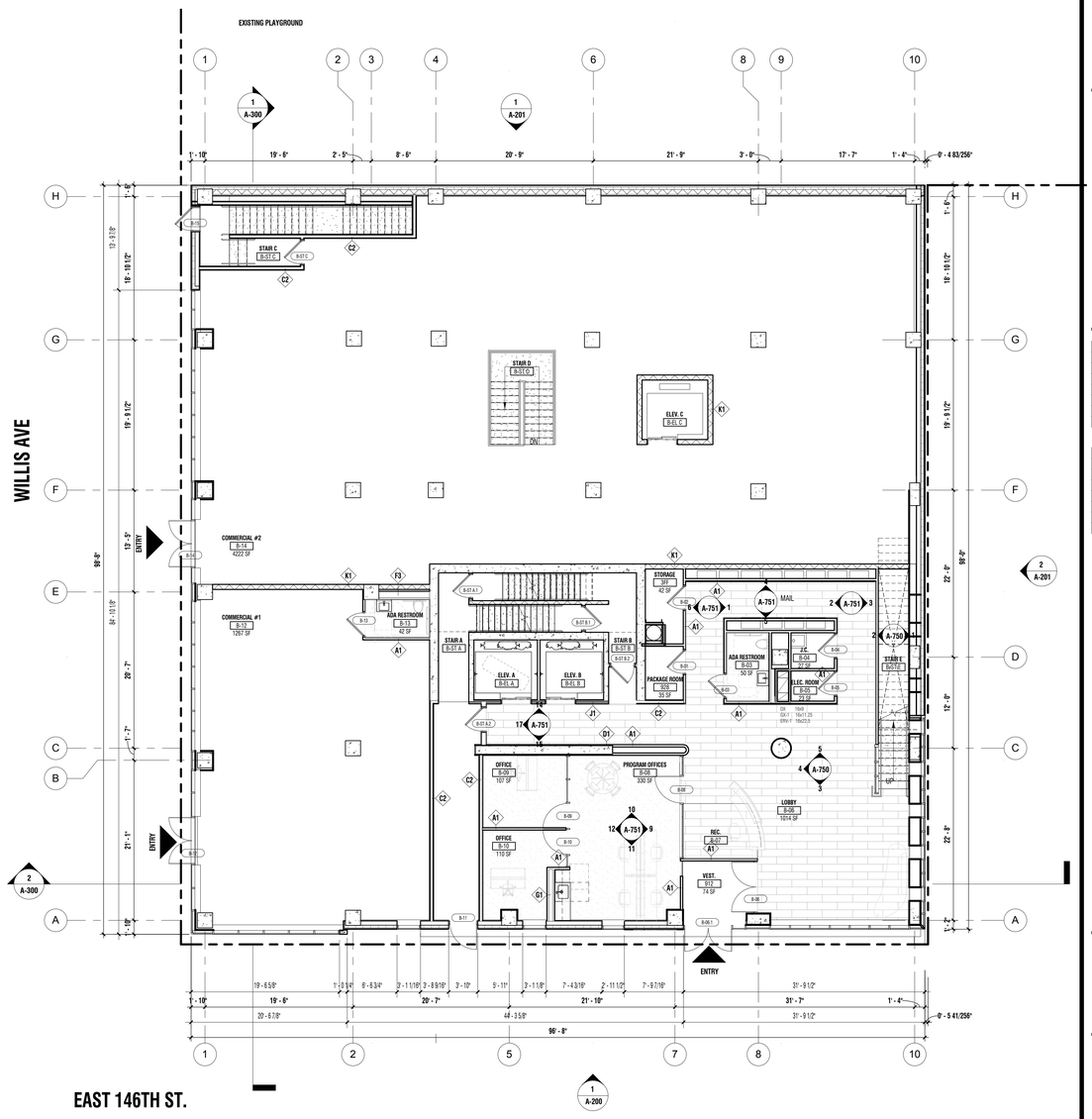
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1 FLOOR PLAN - CELLAR LEVEL
1/8" = 1'-0"



2 FLOOR PLAN - LEVEL 1
1/8" = 1'-0"

EAST 146TH ST.

CELLAR LEVEL DESCRIPTION

A.DESCRIPTION OF USE :	SUPER'S OFFICE	LAUNDRY	RESIDENTIAL STORAGE	BIKE STORAGE	MECH., ELECT. EQUIP.	COMERCIAL
C. OCCUPANCY CLASS. :	R-2	R-2	R-2	R-2	R-2	M
D. SQUARE FEET :	93 SF	728 SF	692 SF	680 SF	2,351 SF	2,848 SF
E. OCCUPANTS :	1	14	2	2	7	94

GROUND LEVEL DESCRIPTION

A.DESCRIPTION OF USE :	RESIDENTIAL LOBBY	PROGRAM OFFICE	COMERCIAL
C. OCCUPANCY CLASS. :	R-2	B	M
D. SQUARE FEET :	1,066 SF	616 SF	5,680 SF
E. OCCUPANTS :	5	41	189

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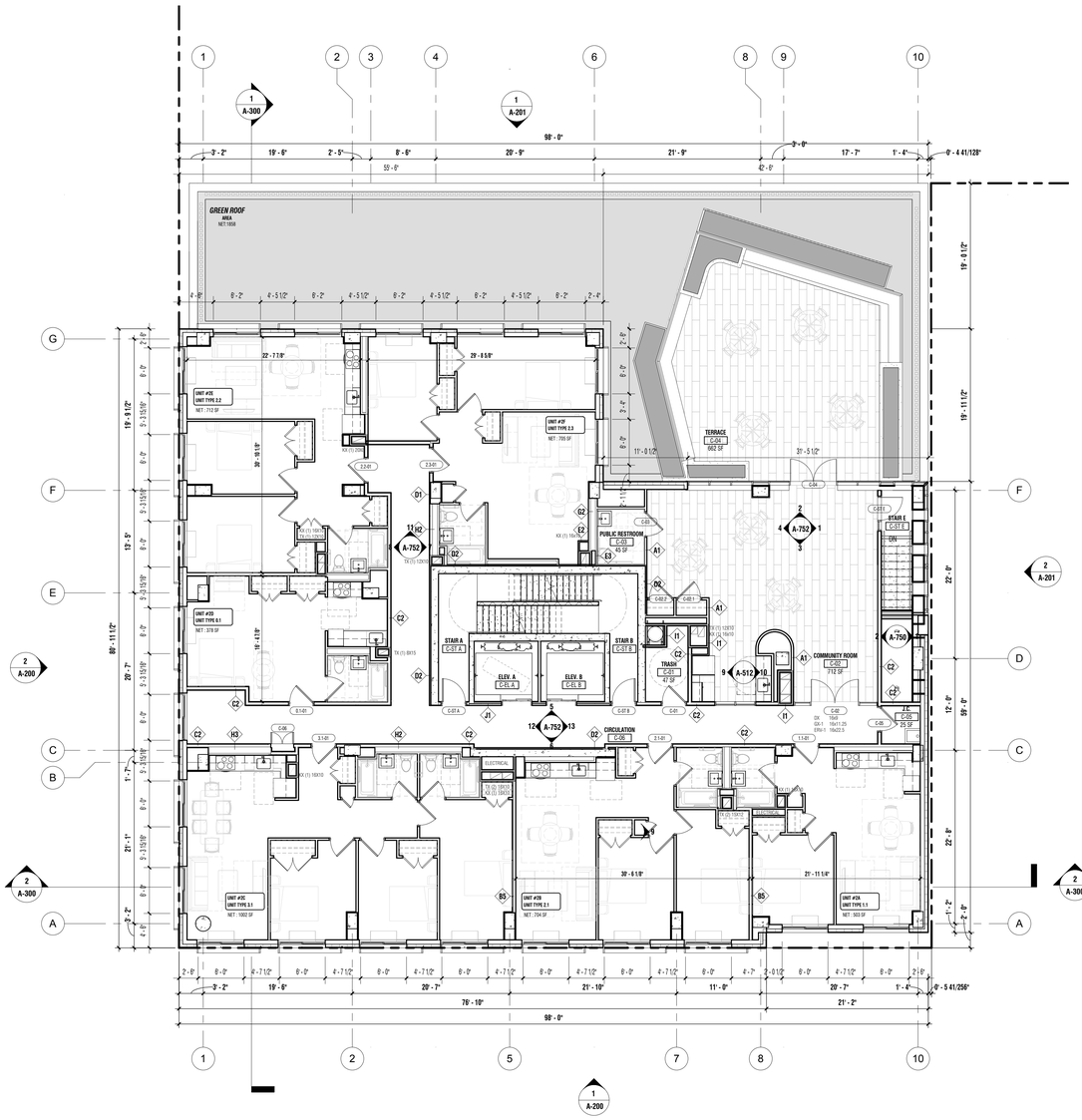
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FLOOR PLAN - CELLAR & GROUND LEVEL

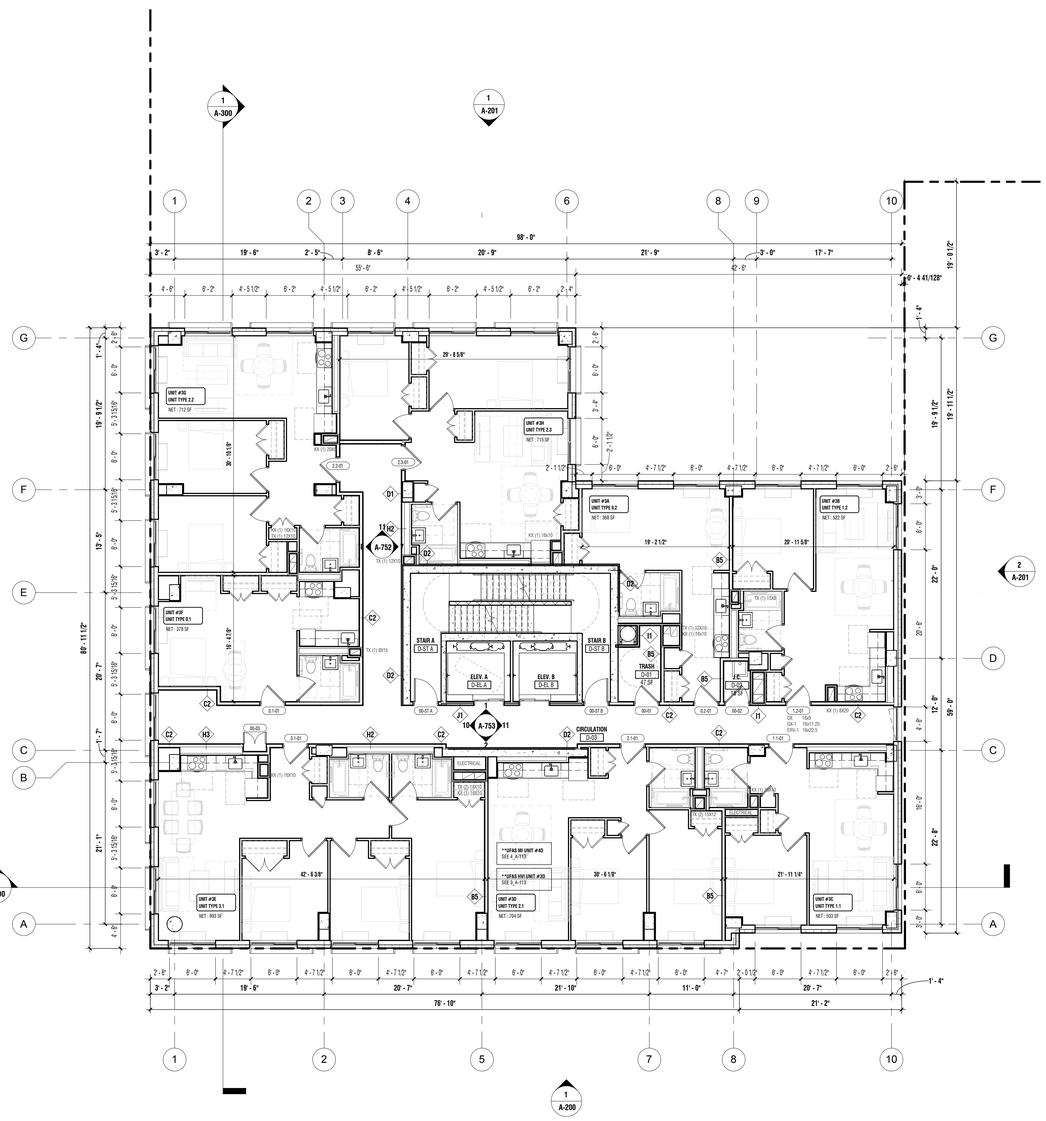
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1 FLOOR PLAN - LEVEL 2
1/8" = 1'-0"



2 FLOOR PLAN - LEVEL 3-6
1/8" = 1'-0"

LEVEL 2 DESCRIPTION

A. DESCRIPTION OF USE :	RESIDENTIAL UNITS	RESIDENTIAL AMMENITY SPACE COMMUNAL
C. OCCUPANCY CLASS. :	R-2	R-2
D. SQUARE FEET :	4,258 SF	752 SF
E. OCCUPANTS :	21	50

LEVELS 3-6 DESCRIPTION

A. DESCRIPTION OF USE :	RESIDENTIAL UNITS
C. OCCUPANCY CLASS. :	R-2
D. SQUARE FEET :	5,234 SF
E. OCCUPANTS :	21

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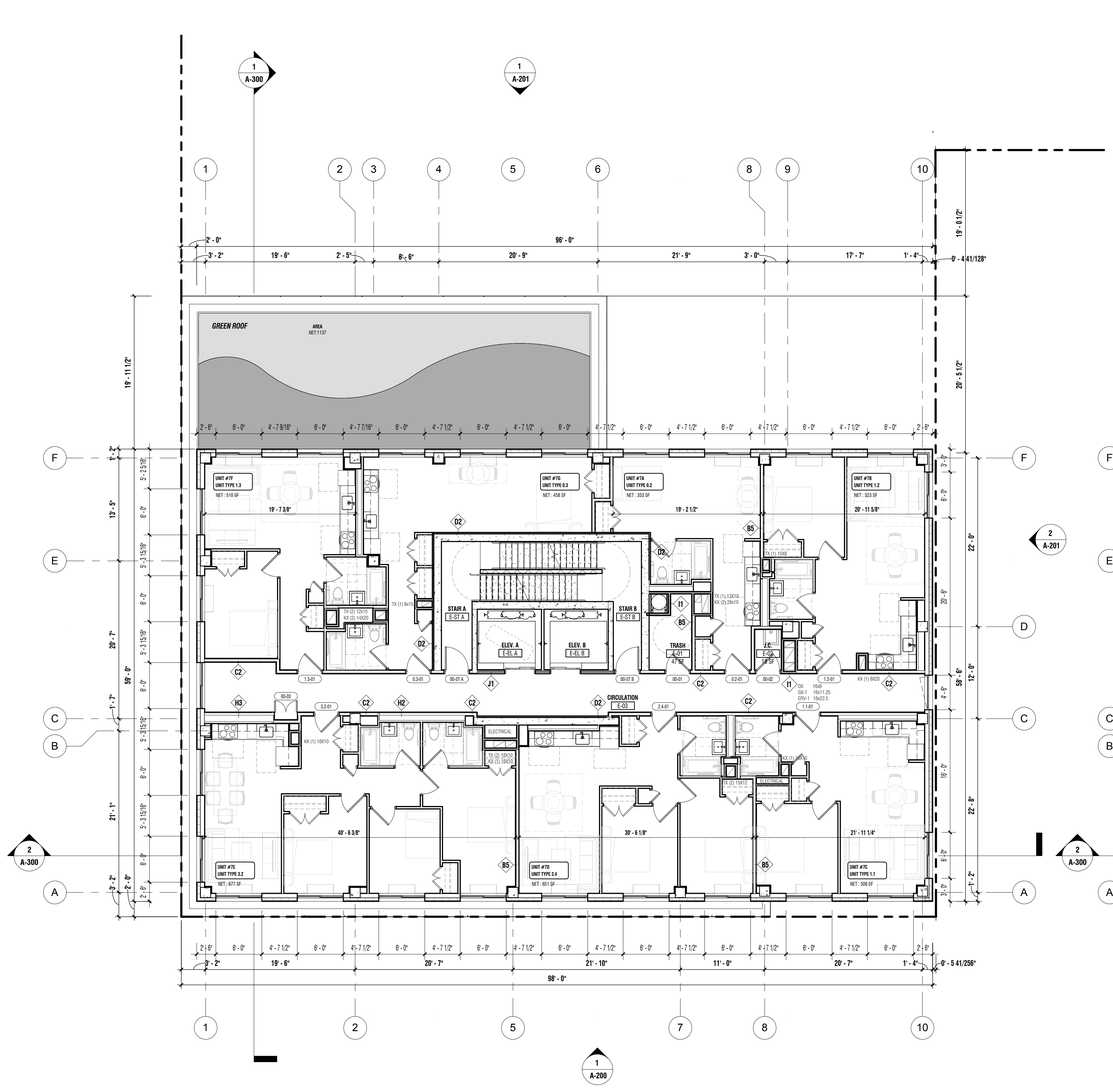
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FLOOR PLAN - LEVEL 2 & TYPICAL LEVEL 3-6

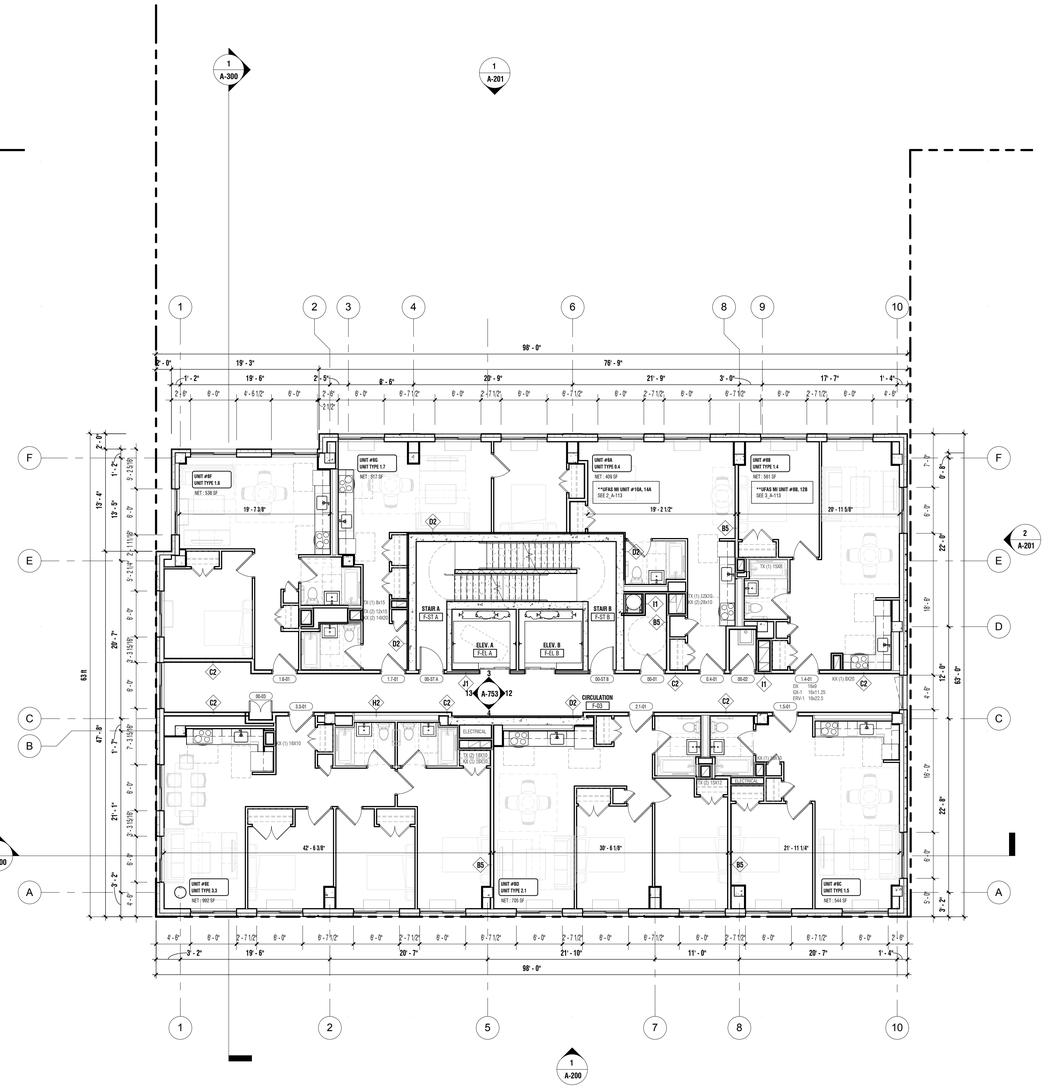
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2 **FLOOR PLAN - LEVEL 7**
1/8" = 1'-0"



1 **FLOOR PLAN - LEVEL 8,10,12,14**
1/8" = 1'-0"

LEVEL 7 DESCRIPTION

A. DESCRIPTION OF USE : **RESIDENTIAL UNITS**

C. OCCUPANCY CLASS. : **R-2**

D. SQUARE FEET : **4,115 SF**

E. OCCUPANTS : **21**

LEVELS 8,10,12,14 DESCRIPTION

A. DESCRIPTION OF USE : **RESIDENTIAL UNITS**

C. OCCUPANCY CLASS. : **R-2**

D. SQUARE FEET : **4,490 SF**

E. OCCUPANTS : **22**

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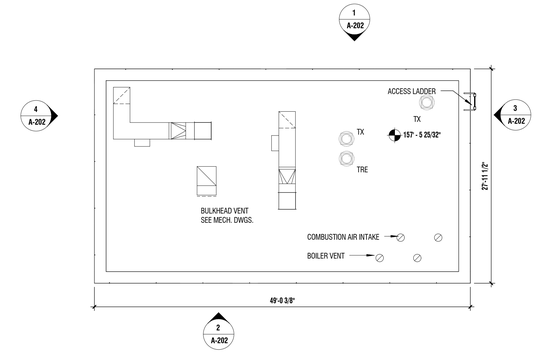
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FLOOR PLAN - LEVEL 7 & TYPICAL LEVEL 8,10,12,14

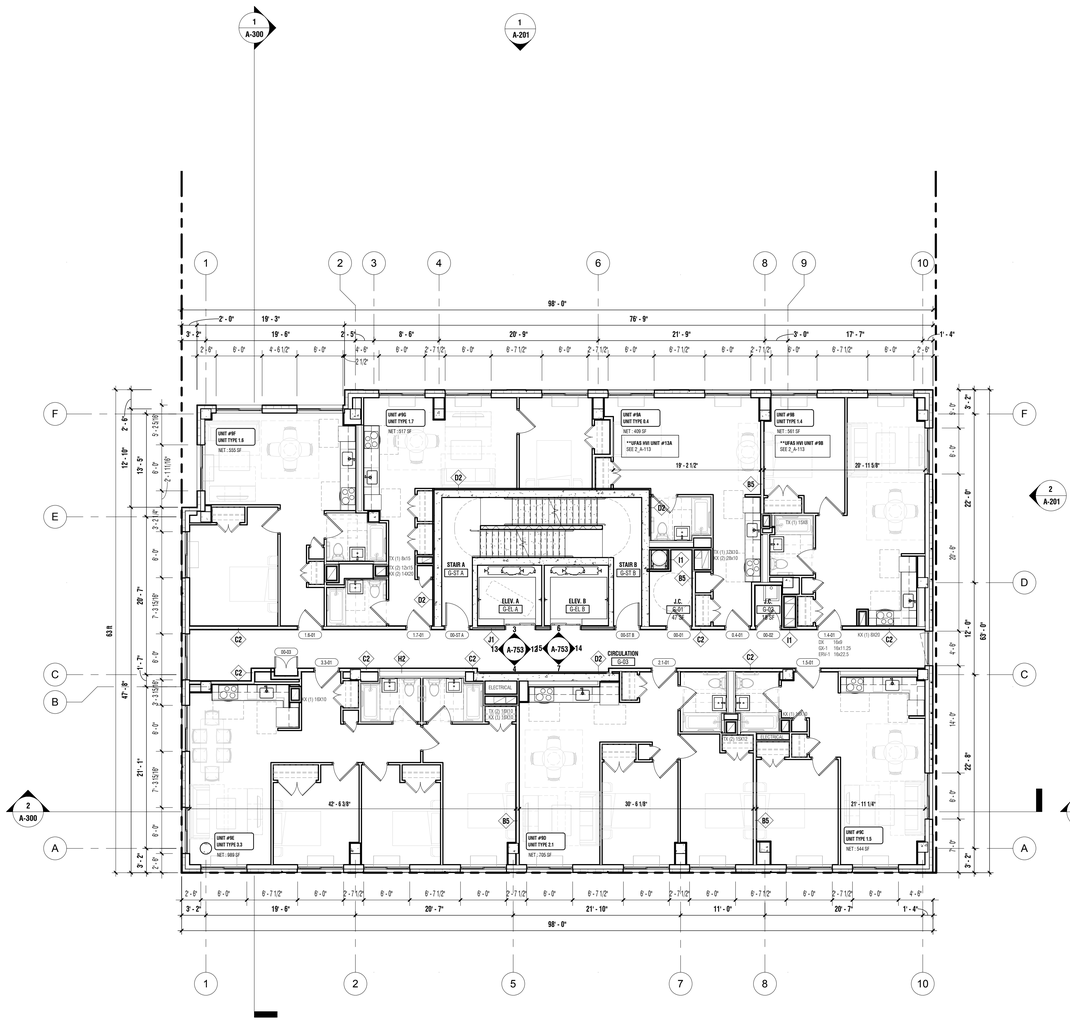
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NYC DOB NUMBER:	

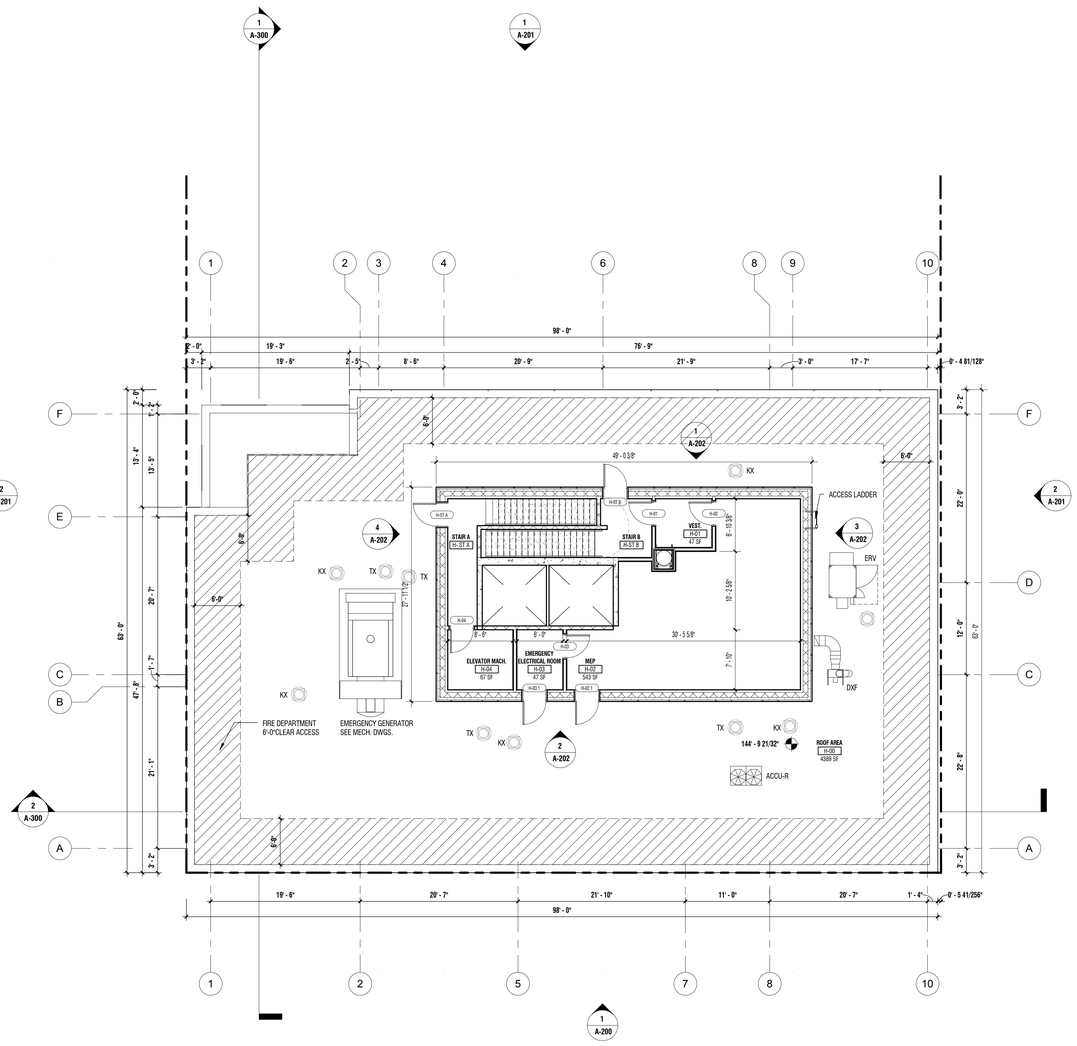
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3 FLOOR PLAN - BULKHEAD
1/8" = 1'-0"



1 FLOOR PLAN - LEVEL 9,11,13,15
1/8" = 1'-0"



2 FLOOR PLAN - ROOF LEVEL
1/8" = 1'-0"

LEVELS 9,11,13,15 DESCRIPTION

A. DESCRIPTION OF USE : **RESIDENTIAL UNITS**

C. OCCUPANCY CLASS. : **R-2**

D. SQUARE FEET : **4,490 SF**

E. OCCUPANTS : **22**

4/10/2018 1:23:08 PM

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	**DOB SUBMISSION**	04.06.2018
1	**DD SUBMISSION**	04.06.2018

DOB APPROVAL

TRUE

PROJECT

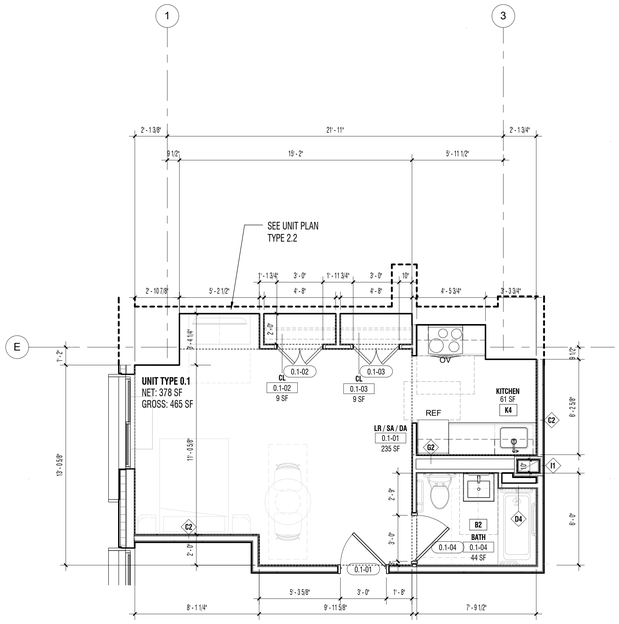
BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

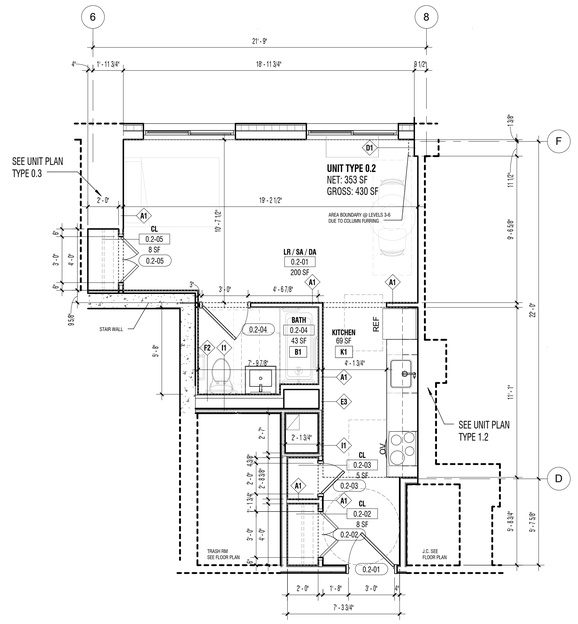
FLOOR PLAN - TYPICAL
LEVEL 9,11,13,15 & ROOF
LEVEL & BULKHEAD LEVEL

SEAL & SIGNATURE

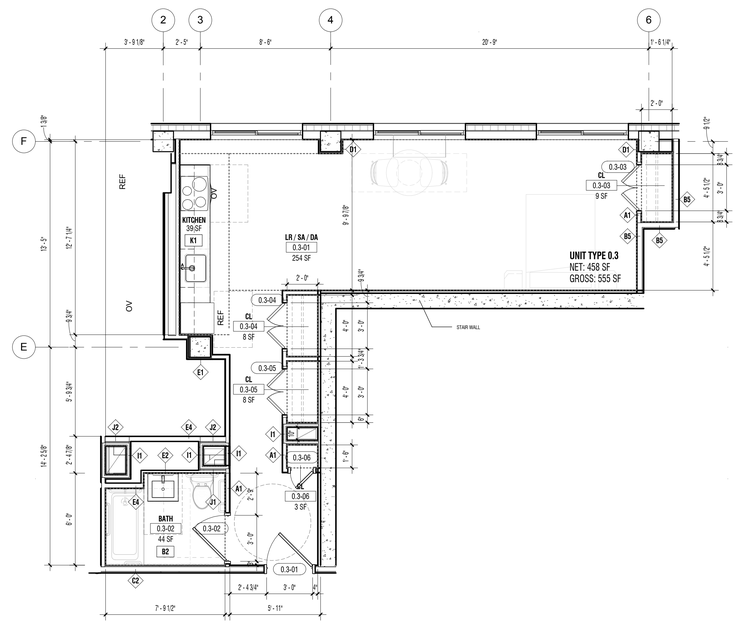
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DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-103.00
NYC DOB NUMBER:	



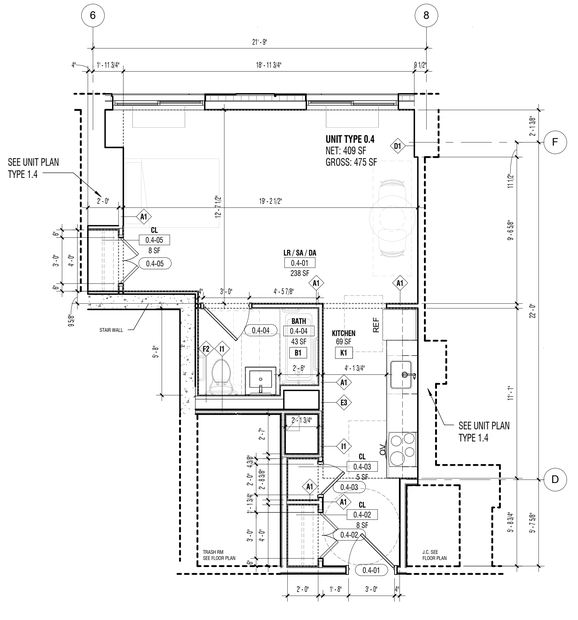
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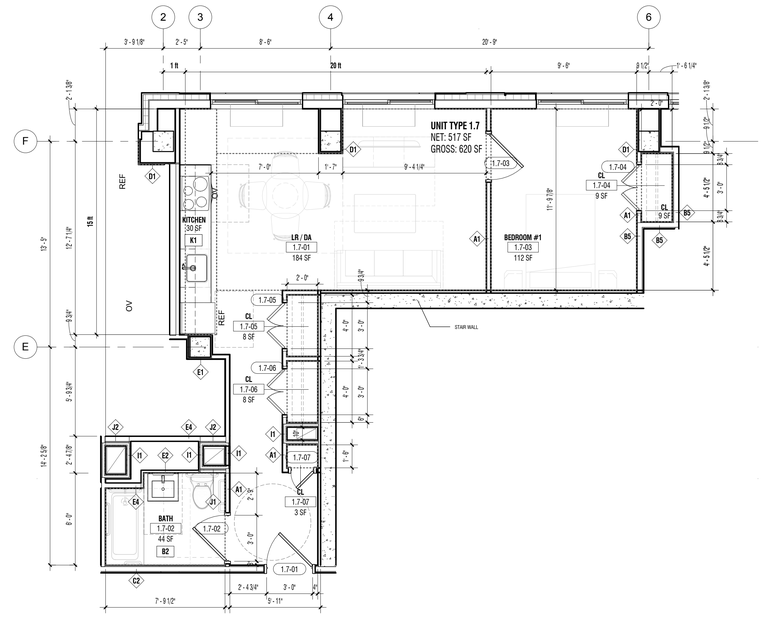
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1/4" = 1'-0"



3 UNIT TYPE 0.3
1/4" = 1'-0"



4 UNIT TYPE 0.4
1/4" = 1'-0"



5 UNIT TYPE 1.7
1/4" = 1'-0"

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1	DD SUBMISSION	04.06.2018

DOB APPROVAL

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PROJECT

BETANCES VI DEVELOPMENT

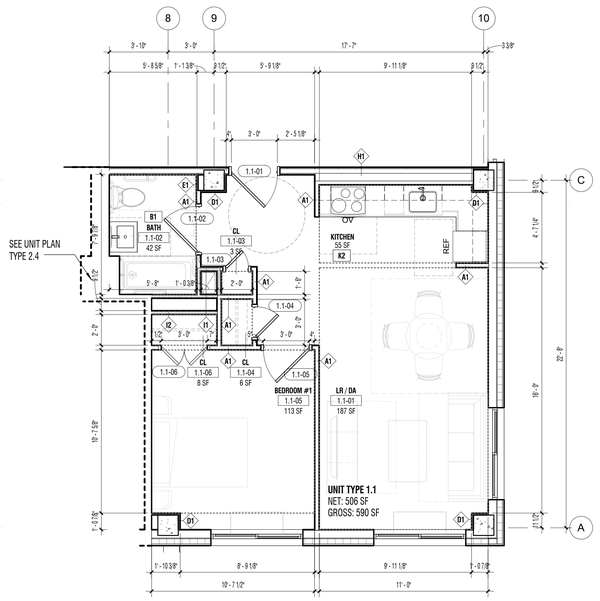
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UNIT PLANS - STUDIO & TYPE 1.7

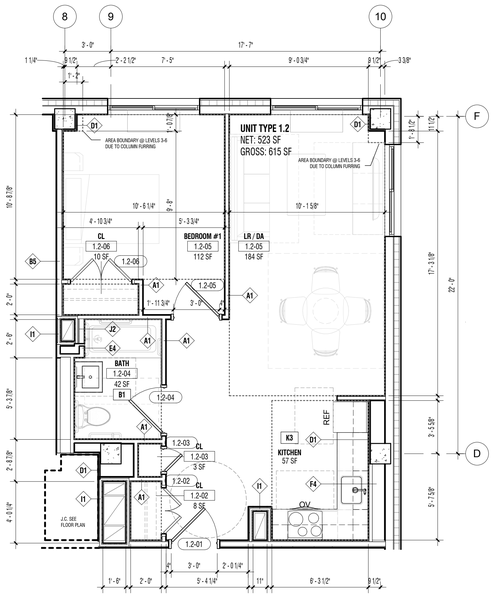
SEAL & SIGNATURE

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PROJECT NO:	17110
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DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-110.00
NYC DOB NUMBER:	

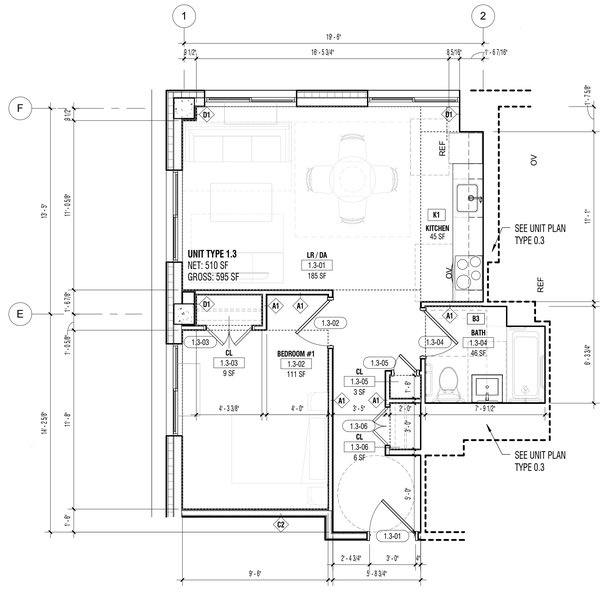
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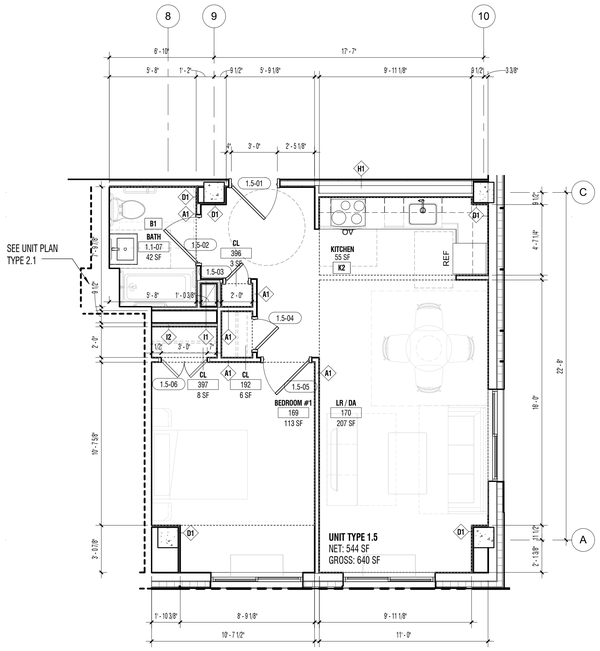
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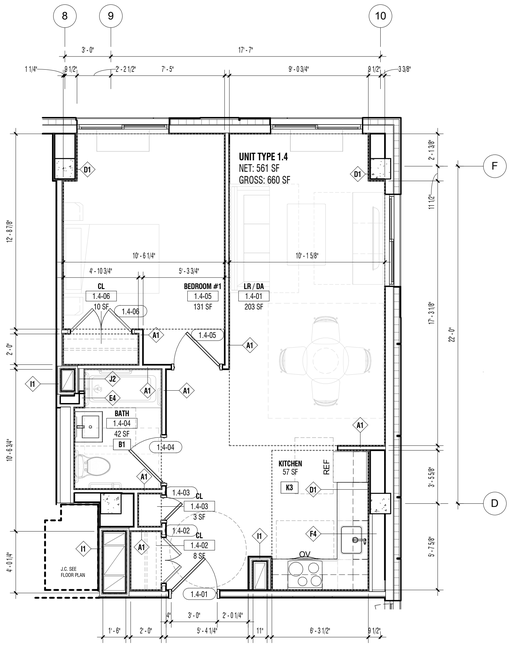
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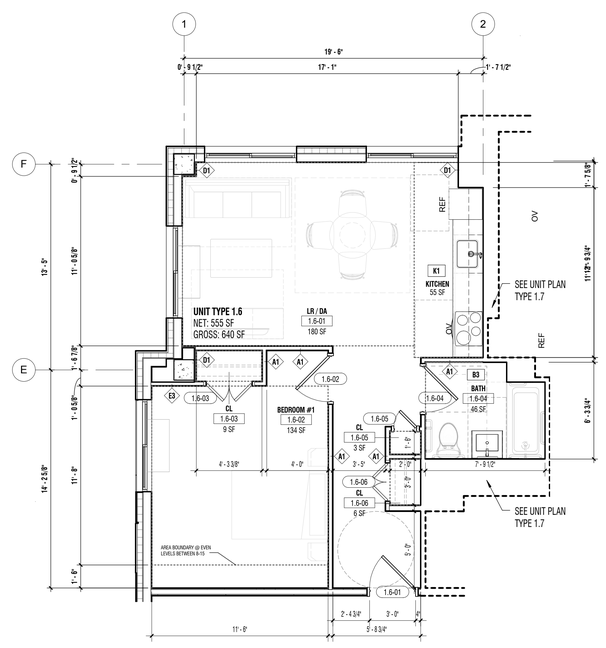
3 UNIT TYPE 1.3
1/4" = 1'-0"



5 UNIT TYPE 1.5
1/4" = 1'-0"



4 UNIT TYPE 1.4
1/4" = 1'-0"



6 UNIT TYPE 1.6
1/4" = 1'-0"

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1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

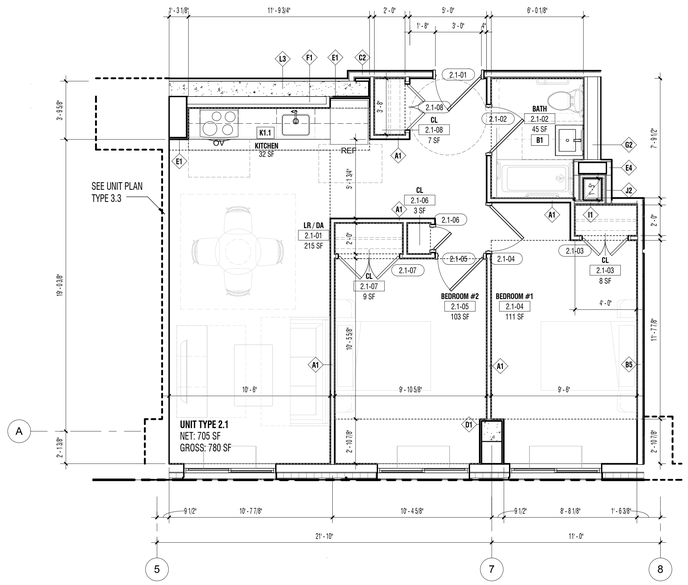
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UNIT PLANS - 1 BEDROOM

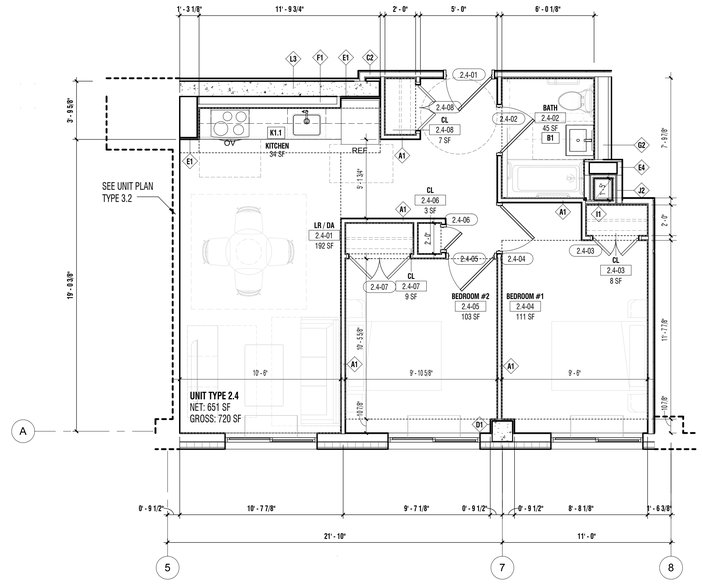
SEAL & SIGNATURE

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CHECKED BY:	Checker
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NYC DOB NUMBER:	

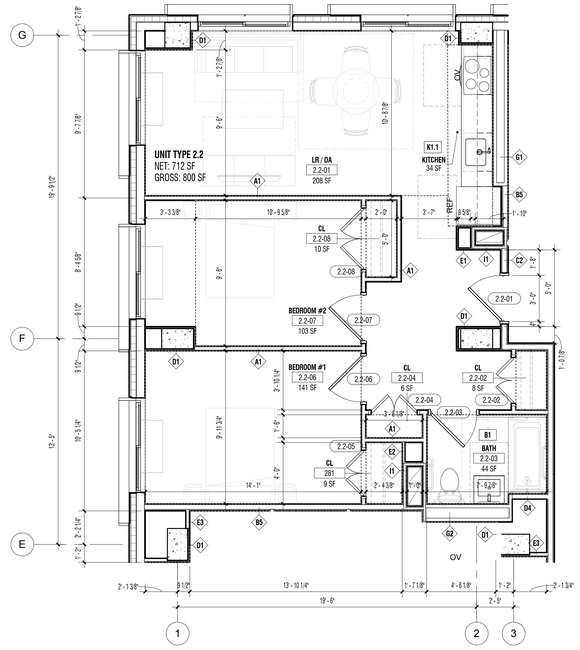
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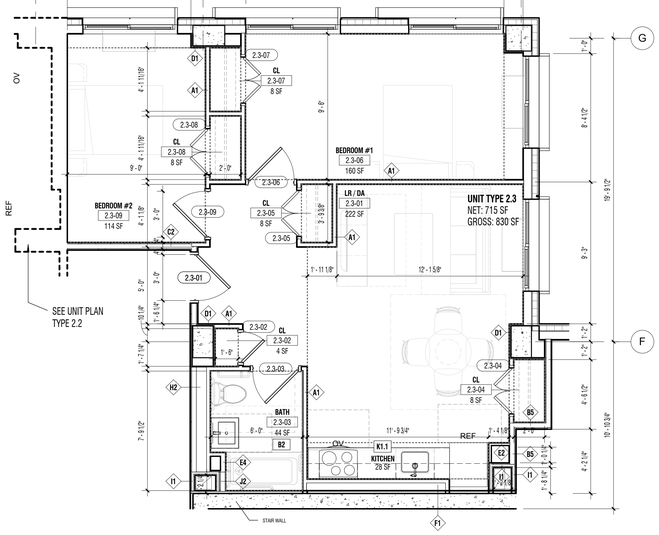
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1/4" = 1'-0"



4 UNIT TYPE 2.4
1/4" = 1'-0"



2 UNIT TYPE 2.2
1/4" = 1'-0"



3 UNIT TYPE 2.3
1/4" = 1'-0"

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1	**DD SUBMISSION**	04.06.2018

DOB APPROVAL

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PROJECT

BETANCES VI DEVELOPMENT

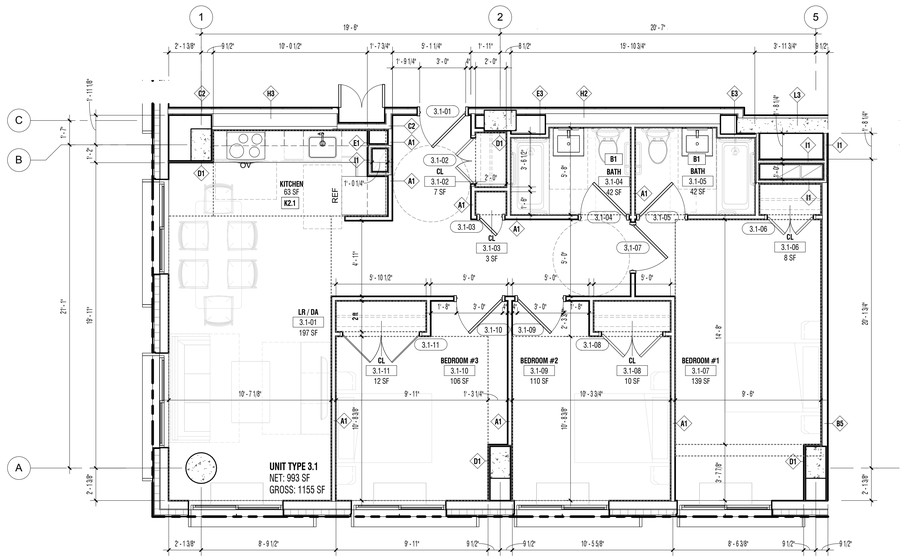
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UNIT PLANS - 2 BEDROOM

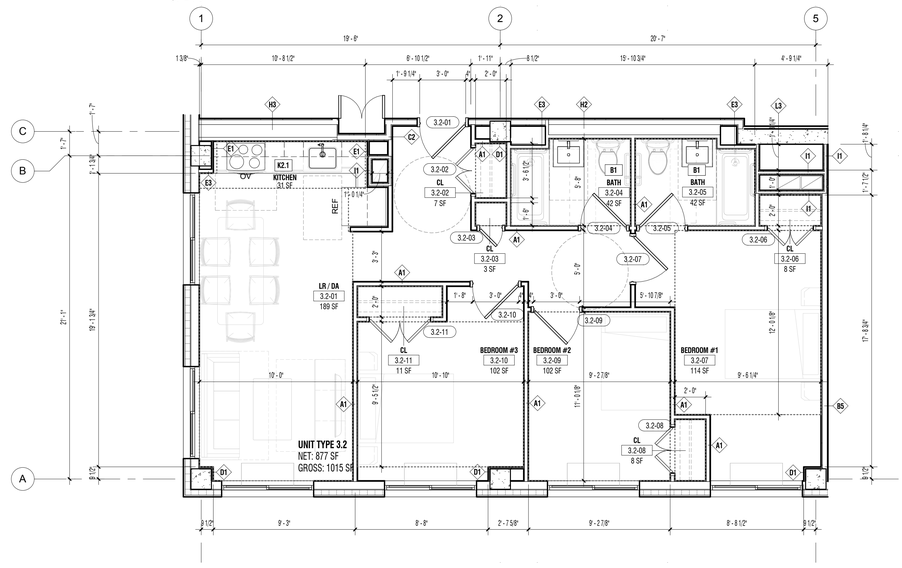
SEAL & SIGNATURE

DATE: 04/06/2018
PROJECT NO: 17110
SCALE: 1/4" = 1'-0"
DRAWING BY: Author
CHECKED BY: Checker
DWG NO: A-112.00
NYC DOB NUMBER:

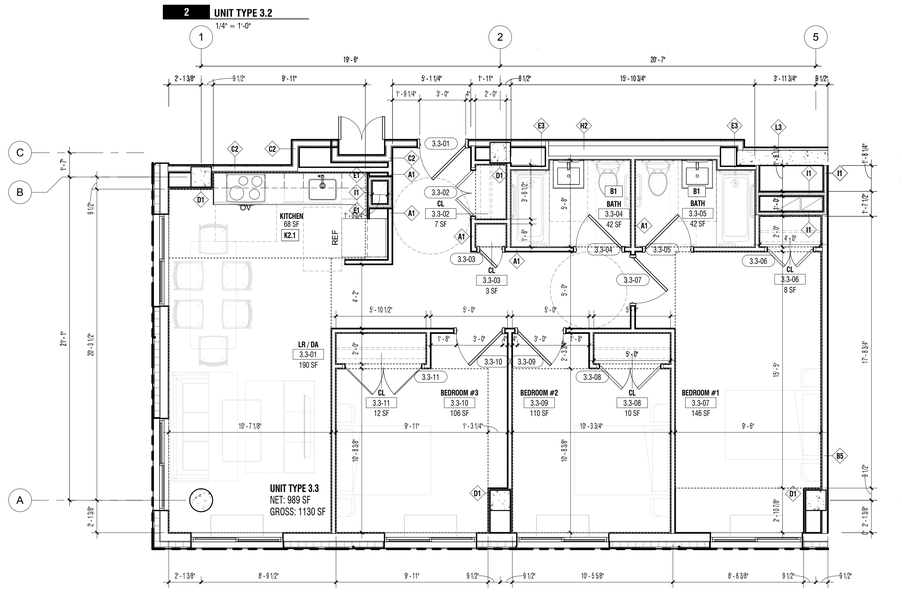
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1 UNIT TYPE 3.1
1/4" = 1'-0"



2 UNIT TYPE 3.2
1/4" = 1'-0"



3 UNIT TYPE 3.3
1/4" = 1'-0"

4/10/2018 1:23:56 PM

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DOB APPROVAL

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PROJECT

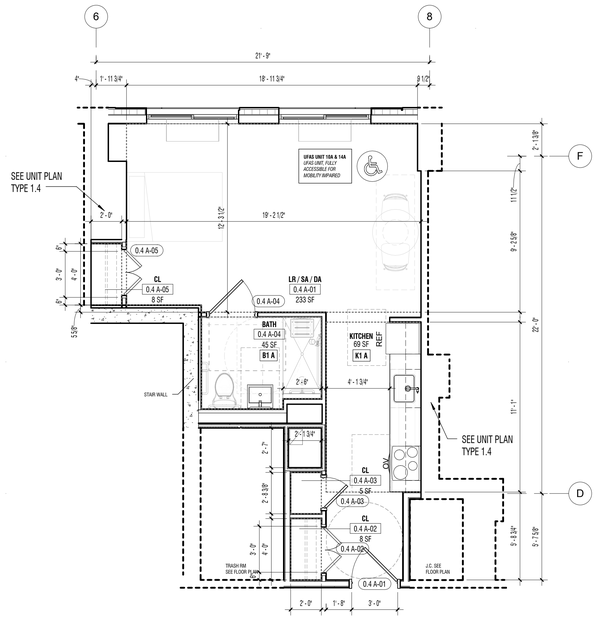
BETANCES VI DEVELOPMENT

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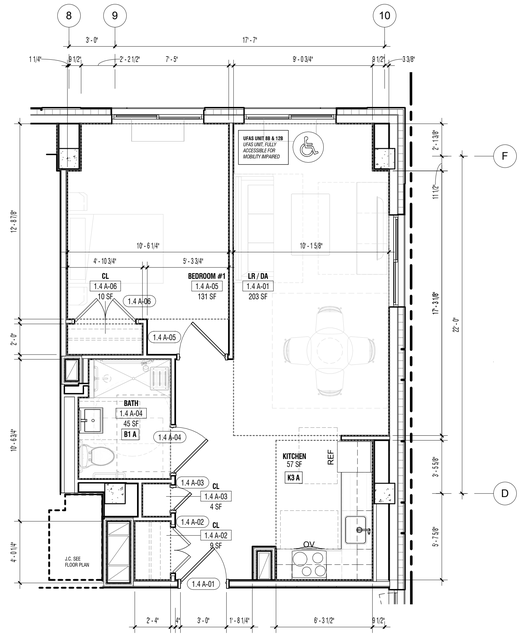
UNIT PLANS - 3 BEDROOM

SEAL & SIGNATURE

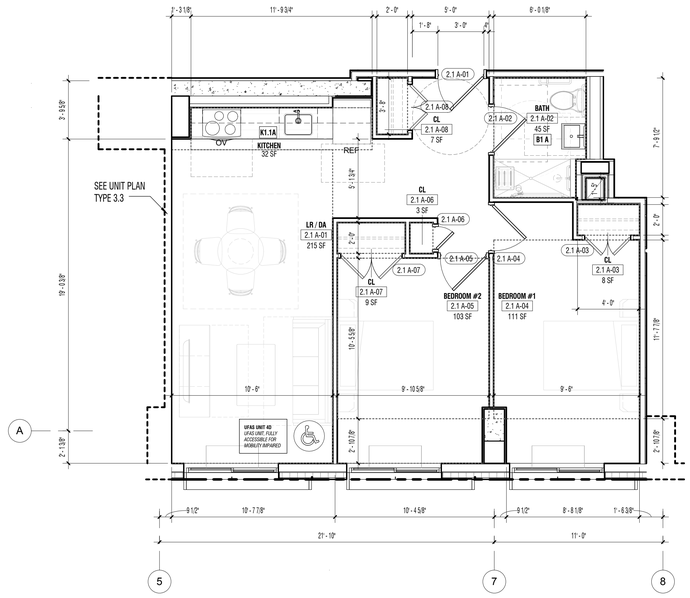
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NYC DOB NUMBER:	



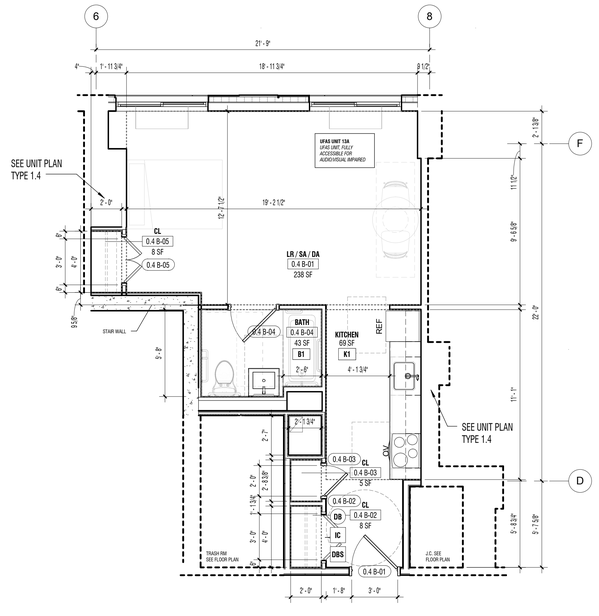
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1/4" = 1'-0"



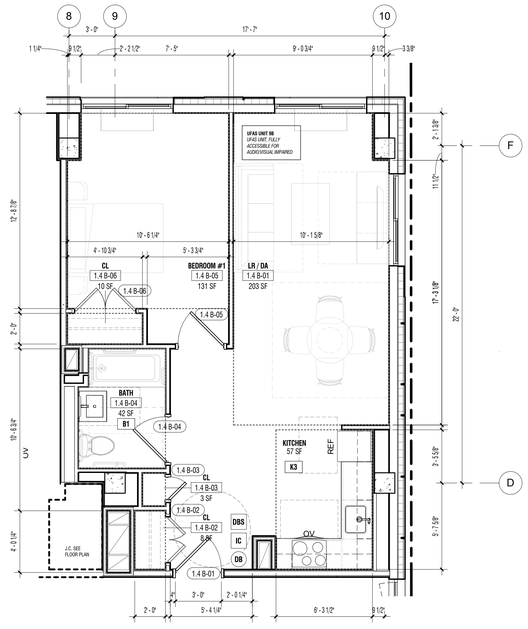
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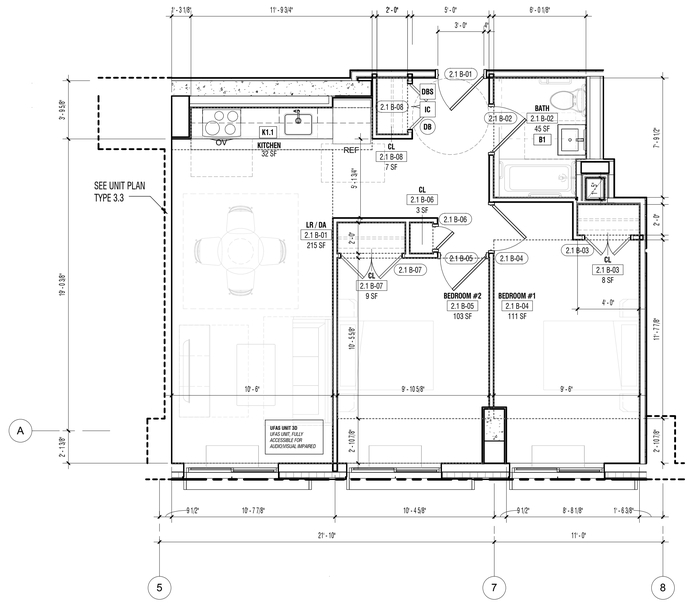
3 UFAS MI UNIT - 2.1 A
1/4" = 1'-0"



4 UFAS HVI UNIT - 0.4 B
1/4" = 1'-0"



5 UFAS HVI UNIT - 1.4 B
1/4" = 1'-0"



6 UFAS HVI UNIT - 2.1 B
1/4" = 1'-0"

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PROJECT

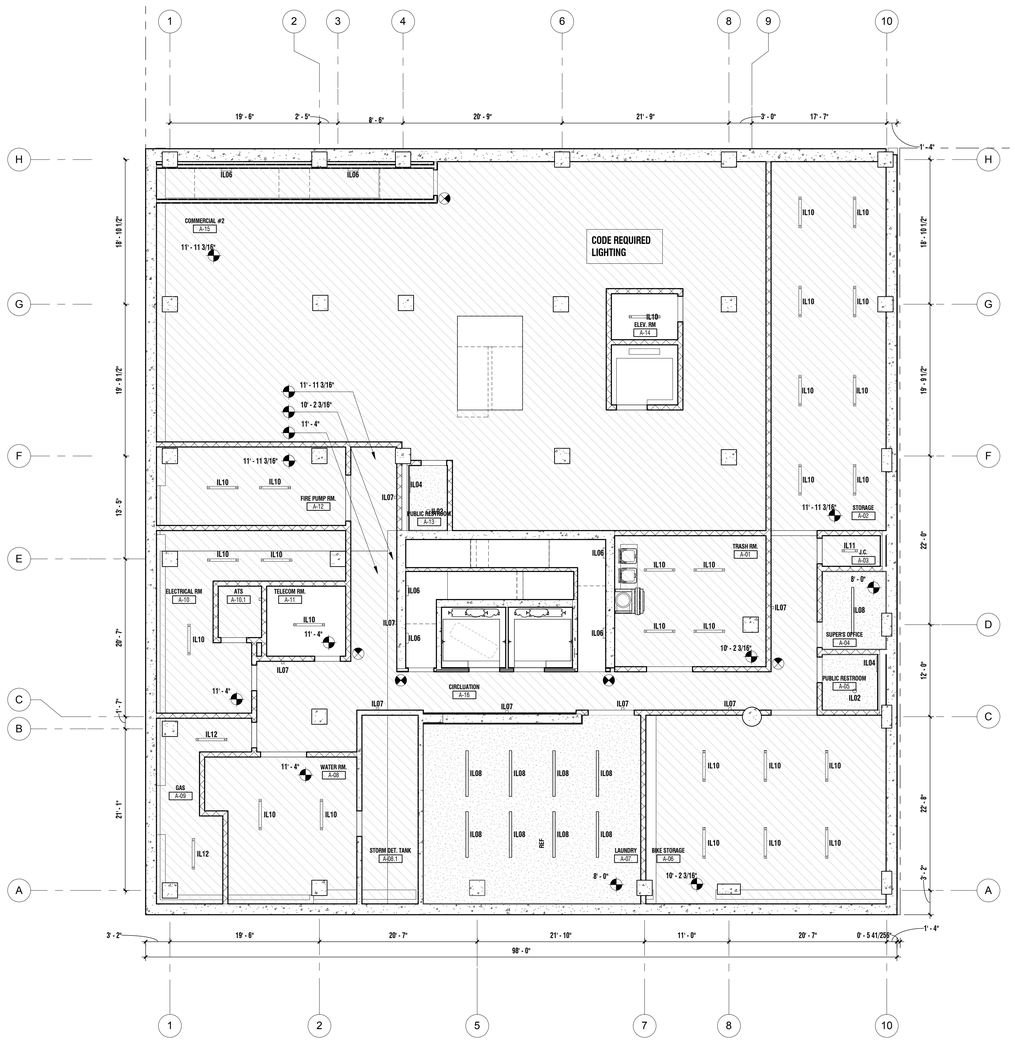
BETANCES VI DEVELOPMENT

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UNIT PLANS - UFAS

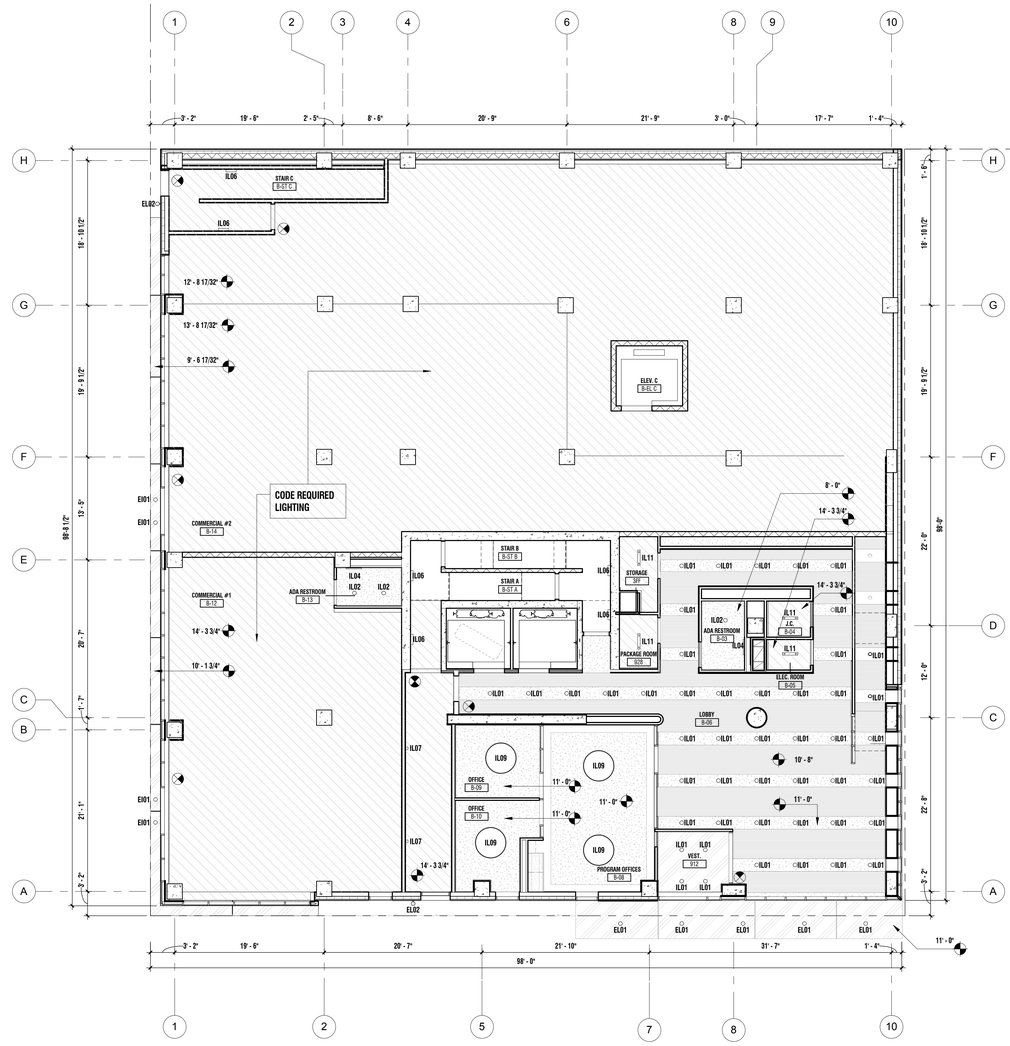
SEAL & SIGNATURE

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PROJECT NO:	17110
SCALE:	1/4" = 1'-0"
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-114.00
NYC DOB NUMBER:	



1 REFLECTED CEILING PLAN - CELLAR

1/8" = 1'-0"



2 REFLECTED CEILING PLAN - LEVEL 1

1/8" = 1'-0"

CEILING SYMBOL & MATERIAL LEGEND

SYMBOL	DESCRIPTION	MATERIAL	DESCRIPTION
TAG	KEYNOTE TAG		EXPOSED CONCRETE PLANK
0.00	SPOT ELEVATION		SKIM COATED CONCRETE PLANK
C/S	CARBON / SMOKE DETECTOR		GYPSUM DROP CEILING
	EXIT SIGN		EXTERIOR METAL PANEL (ACM) SYSTEM

LIGHTING FIXTURE SCHEDULE

MARK	SYMBOL	TYPE	LOCATION	MANUFACTURER	MODEL / CATALOG #	FINISH	WATTAGE	NOTES
IL01	⌀	INTERIOR RECESSED DOWNLIGHT	RES. UNITS/LOBBY	WAC LIGHTING	WACP160279	WHITE	11	
IL02	⌀	INTERIOR RECESSED DOWNLIGHT	RES. BATHROOMS	WAC LIGHTING		WHITE	11	WATER PROOF
IL03		INTERIOR WALL SCONCE HOR.	RES. LIVING RMS	OXYGEN LIGHTING	3-590-24	SATIN NICKEL	(2X)11.9	
IL04		INTERIOR WALL SCONCE HOR.	RES. BATHROOMS	OXYGEN LIGHTING	-	-	-	
IL05	◯	INTERIOR RECESSED FIXTURE ROUND	KITCHENS	OXYGEN LIGHTING	32-601-20	SATIN NICKEL	18.2	
IL06		INTERIOR WALL MOUNT ROUND	EGRESS STAIR	WAC LIGHTING	FM-214-27-WT	WHITE	24	
IL07		INTERIOR WALL SCONCE VER.	CORRIDOR	OXYGEN LIGHTING	3-518-24	WHITE	11.9	
IL08		INTERIOR BOX PENDANT	COMMUNITY ROOM / LAUNDRY	FINELITE	HP-4-24-5-L4-30-MS-120V-K4-SC-CX			
IL09	◯	INTERIOR RECESSED DOWNLIGHT ROUND	PROGRAM OFFICES	SKYDOME	FGXL-44-FLXP-70000L-35K-1C-120-LD1-U-WH	-	70.4	
IL10		INTERIOR LINEAR PENDANT 6'	UTILITIES	UL LIGHTING	LTSC104-1-T8-4-S-DLT2	-	32	
IL11		INTERIOR LINEAR PENDANT 3'	UTILITIES	UL LIGHTING	LTSC104-1-T8-4-S-DLT2	-	17	
IL12		INTERIOR LINEAR PENDANT 6'	HAZARDOUS AREA	UL LIGHTING		-	32	EXPLOSION PROOF
IL13		INTERIOR LED STRIP LIGHT	COMMUNITY ROOM	DELTA LIGHT	FEMTOLINE 25			
EL01	⌀	EXTERIOR RECESSED DOWNLIGHT	CANOPY	WAC LIGHTING	WACP160279	WHITE	11	
EL02		EXTERIOR WALL SCONCE	EXIT DOOR	WAC LIGHTING	DS-WD05-F30S-BK	WHITE	(2X) 27	

RCP GENERAL NOTES

- REFER TO GENERAL NOTES (SHEET G-002) FOR ADDITIONAL NOTES.
- REFER TO THE ENGINEERING DRAWINGS FOR ALL LIGHT FIXTURE CIRCUITING, EMERGENCY AND EXIT LIGHTING, SMOKE DETECTORS, STROBE LIGHTING, ALARM SPEAKERS, SWITCHING AND RELATED WORK, AND INSTALL PER BUILDING STANDARDS AND ALL APPLICABLE CODES AND LOCAL LAWS.
- SEE ENGINEER'S DRAWINGS FOR ALL CEILING DIFFUSERS, DUCTWORK LAYOUTS, TRANSFER DUCTS, FUSIBLE LINK DAMPERS, ETC. ARCHITECTS DRAWINGS INDICATE DIFFUSERS FOR LOCATION ONLY. WHERE DISCREPANCIES OCCUR BETWEEN ENGINEERING AND ARCHITECTURAL DRAWINGS REGARDING LOCATIONS, NOTIFY ARCHITECT.
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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
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1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

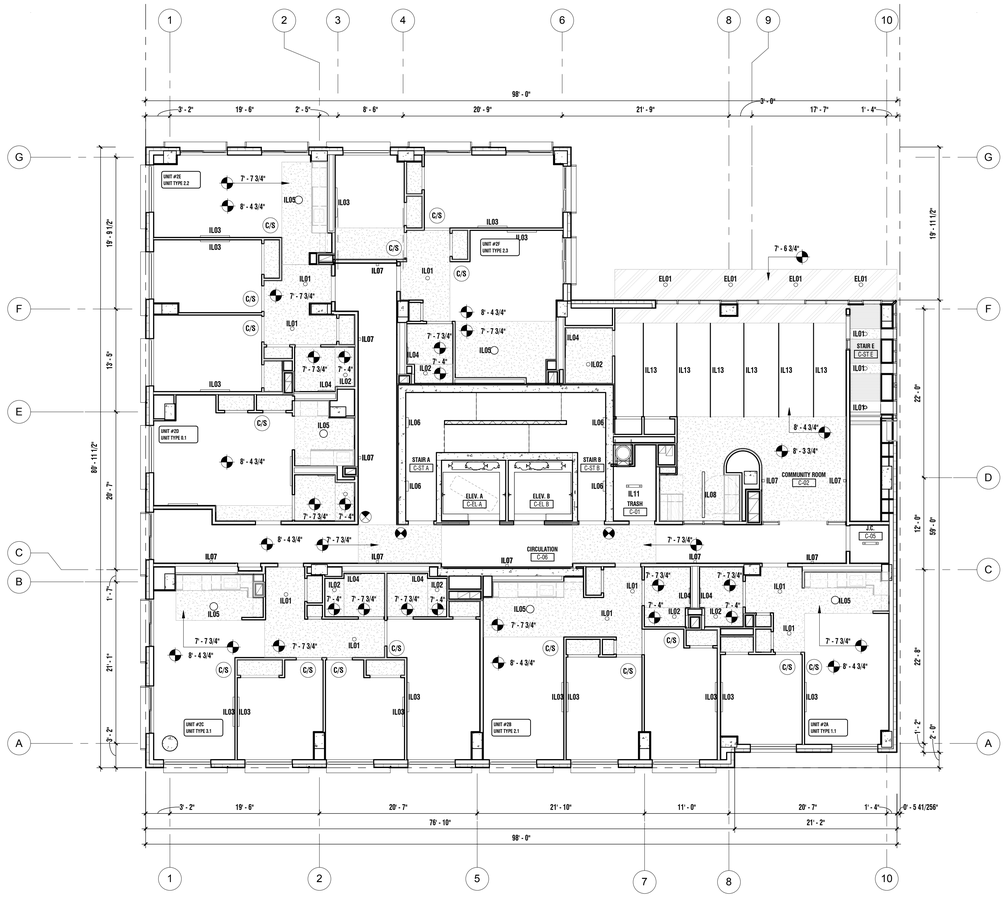
BETANCES VI DEVELOPMENT

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RELECTED CEILING PLAN-CELLAR & GROUND LEVEL

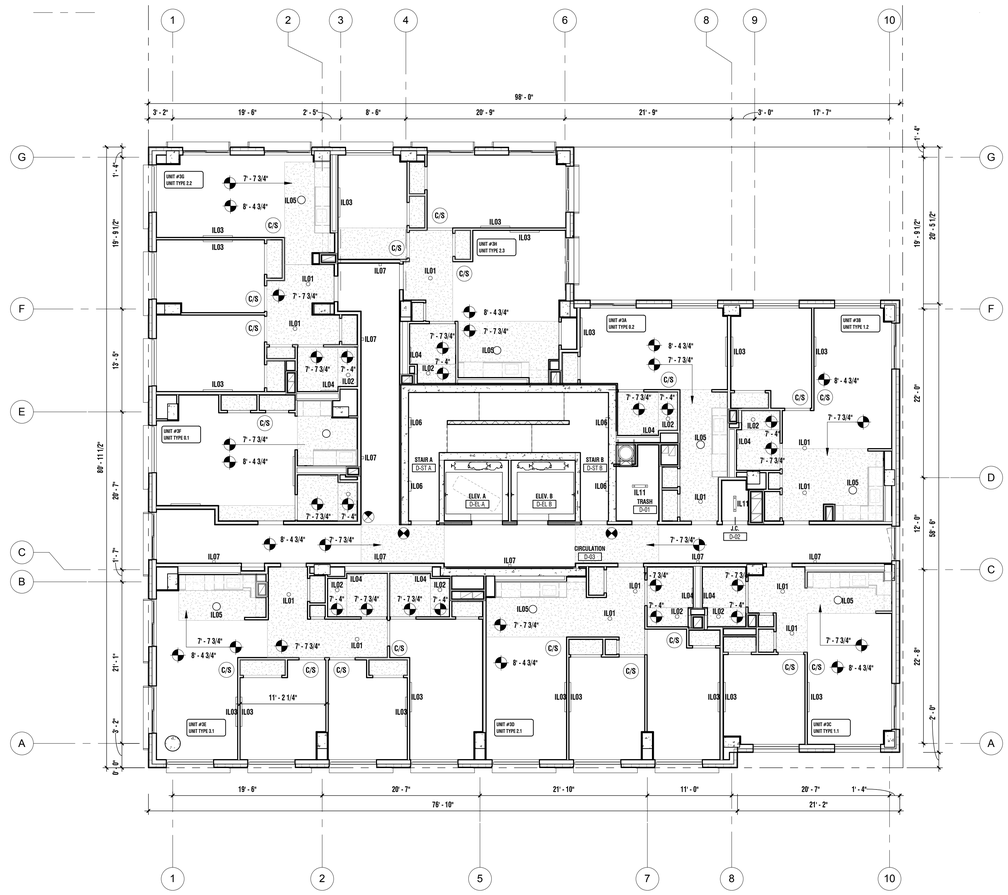
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DWG NO:	A-150.00
NYC DOB NUMBER:	



1 REFLECTED CEILING PLAN - LEVEL 2

1/8" = 1'-0"



2 REFLECTED CEILING PLAN - LEVEL 3-6

1/8" = 1'-0"

CEILING SYMBOL & MATERIAL LEGEND

SYMBOL	DESCRIPTION	MATERIAL	DESCRIPTION
TAG	KEYNOTE TAG		EXPOSED CONCRETE PLANK
0.00	SPOT ELEVATION		SKIM COATED CONCRETE PLANK
C/S	CARBON / SMOKE DETECTOR		GYPSUM DROP CEILING
	EXIT SIGN		EXTERIOR METAL PANEL (ACM) SYSTEM

LIGHTING FIXTURE SCHEDULE

MARK	SYMBOL	TYPE	LOCATION	MANUFACTURER	MODEL / CATALOG #	FINISH	WATTAGE	NOTES
IL01		INTERIOR RECESSED DOWNLIGHT	RES. UNITS/LOBBY	WAC LIGHTING	WACP160279	WHITE	11	
IL02		INTERIOR RECESSED DOWNLIGHT	RES. BATHROOMS	WAC LIGHTING		WHITE	11	WATER PROOF
IL03		INTERIOR WALL SCONCE HOR.	RES. LIVING RMS	OXYGEN LIGHTING	3-590-24	SATIN NICKEL	(2X)11.9	
IL04		INTERIOR WALL SCONCE HOR.	RES. BATHROOMS	OXYGEN LIGHTING	-	-	-	
IL05		INTERIOR RECESSED FIXTURE ROUND	KITCHENS	OXYGEN LIGHTING	32-601-20	SATIN NICKEL	18.2	
IL06		INTERIOR WALL MOUNT ROUND	EGRESS STAIR	WAC LIGHTING	FM-214-27-WT	WHITE	24	
IL07		INTERIOR WALL SCONCE VER.	CORRIDOR	OXYGEN LIGHTING	3-518-24	WHITE	11.9	
IL08		INTERIOR BOX PENDANT	COMMUNITY ROOM / LAUNDRY	FINELITE	HP-4 D-R-S-A-30-BG-1370-FA-SC-DX			
IL09		INTERIOR RECESSED DOWNLIGHT ROUND	PROGRAM OFFICES	SKYDOME	FSDL-44-FLXP-7000L-35K-1C-120-LD1-U-WH	-	70.4	
IL10		INTERIOR LINEAR PENDANT 6'	UTILITIES	UL LIGHTING	LTSC104-1-T8-4-S-DLT2	-	32	
IL11		INTERIOR LINEAR PENDANT 3'	UTILITIES	UL LIGHTING	LTSC104-1-T8-4-S-DLT2	-	17	
IL12		INTERIOR LINEAR PENDANT 6'	HAZARDOUS AREA	UL LIGHTING		-	32	EXPLOSION PROOF
IL13		INTERIOR LED STRIP LIGHT	COMMUNITY ROOM	DELTA LIGHT	FEMTOLINE 25			
EL01		EXTERIOR RECESSED DOWNLIGHT	CANOPY	WAC LIGHTING	WACP160279	WHITE	11	
EL02		EXTERIOR WALL SCONCE	EXIT DOOR	WAC LIGHTING	DS-WD05-F30S-BK	WHITE	(2X) 27	

RCP GENERAL NOTES

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DOB APPROVAL

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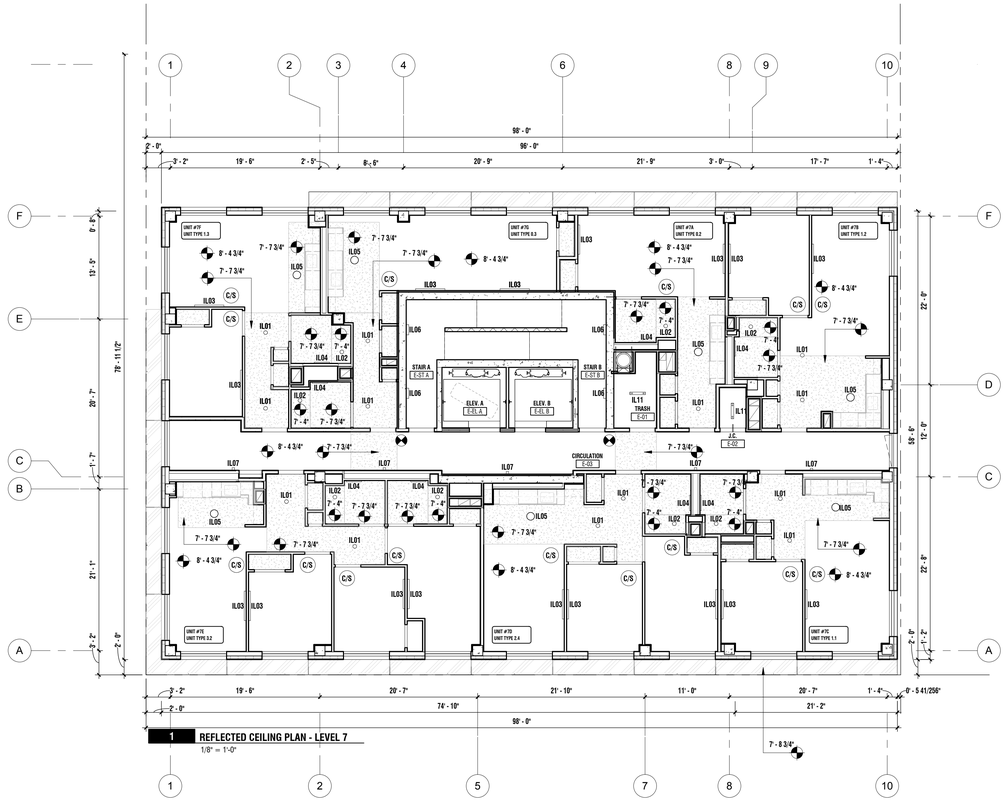
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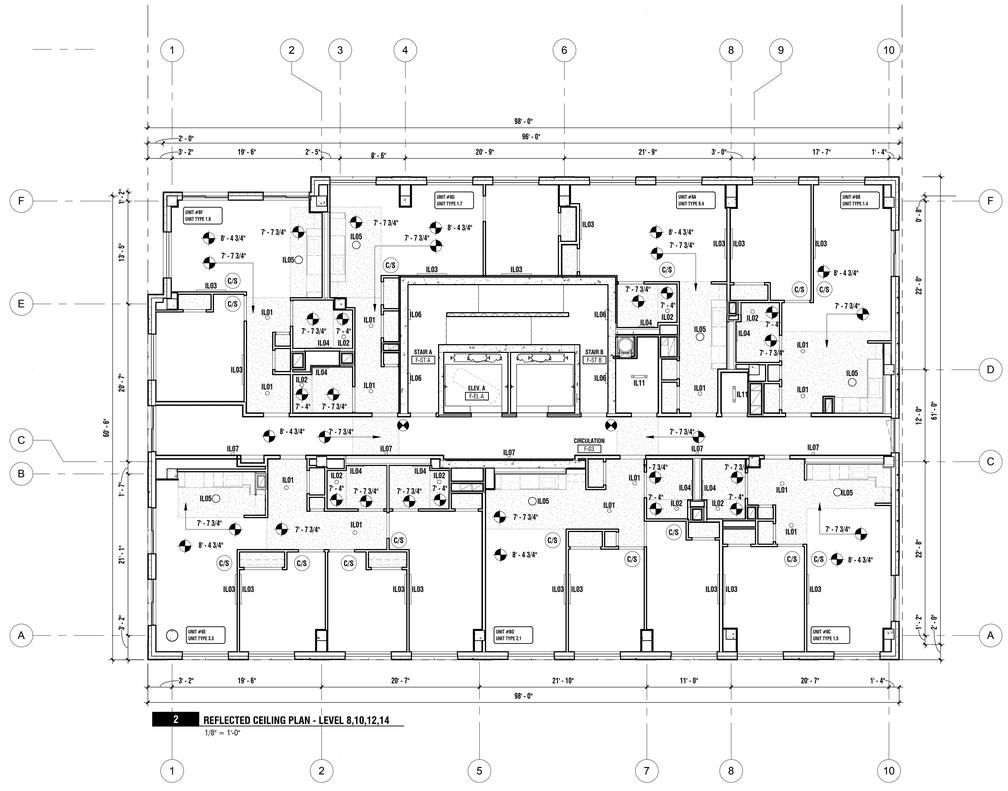
RELECTED CEILING PLAN-LEVEL 2 & LEVEL 3-6

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CHECKED BY:	Checker
DWG NO:	A-151.00
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1 REFLECTED CEILING PLAN - LEVEL 7
1/8" = 1'-0"



2 REFLECTED CEILING PLAN - LEVEL 8,10,12,14
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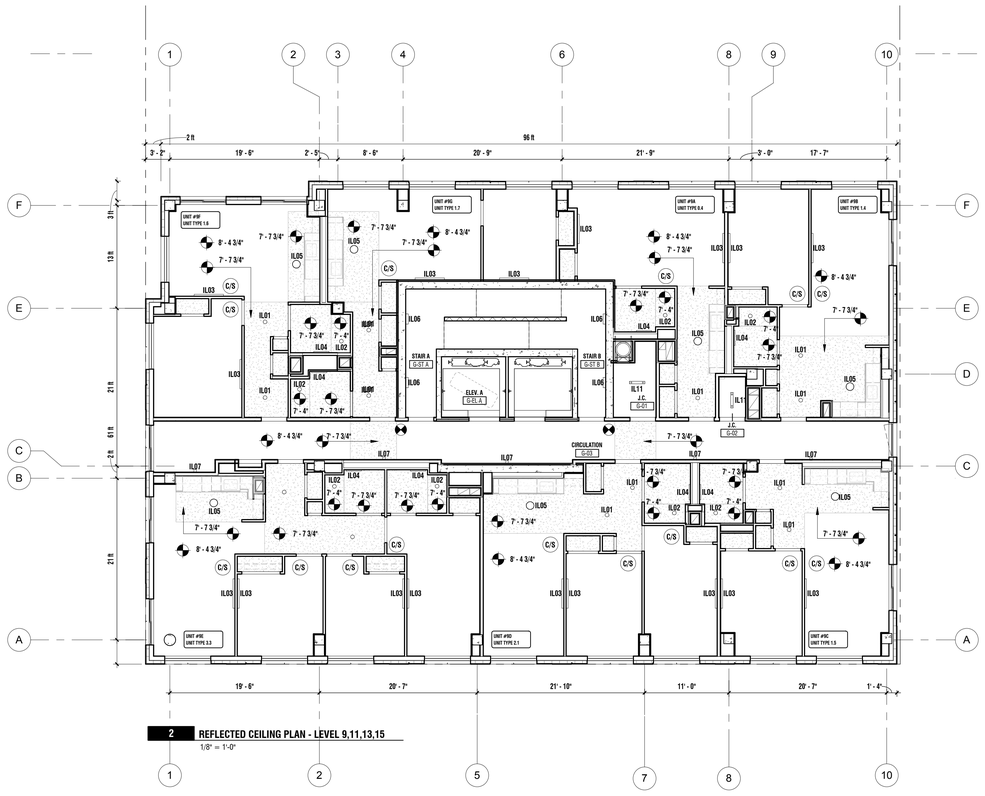
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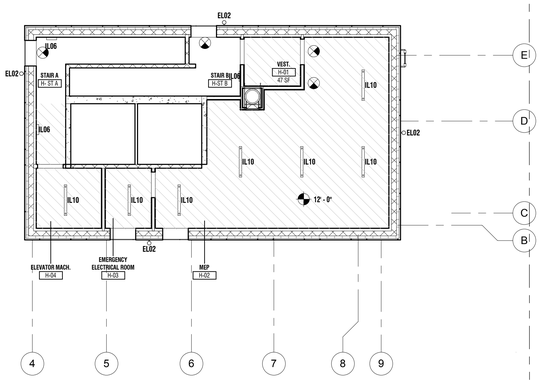
RELECTED CEILING PLAN-LEVEL 7 & LEVEL 8,10,12,14

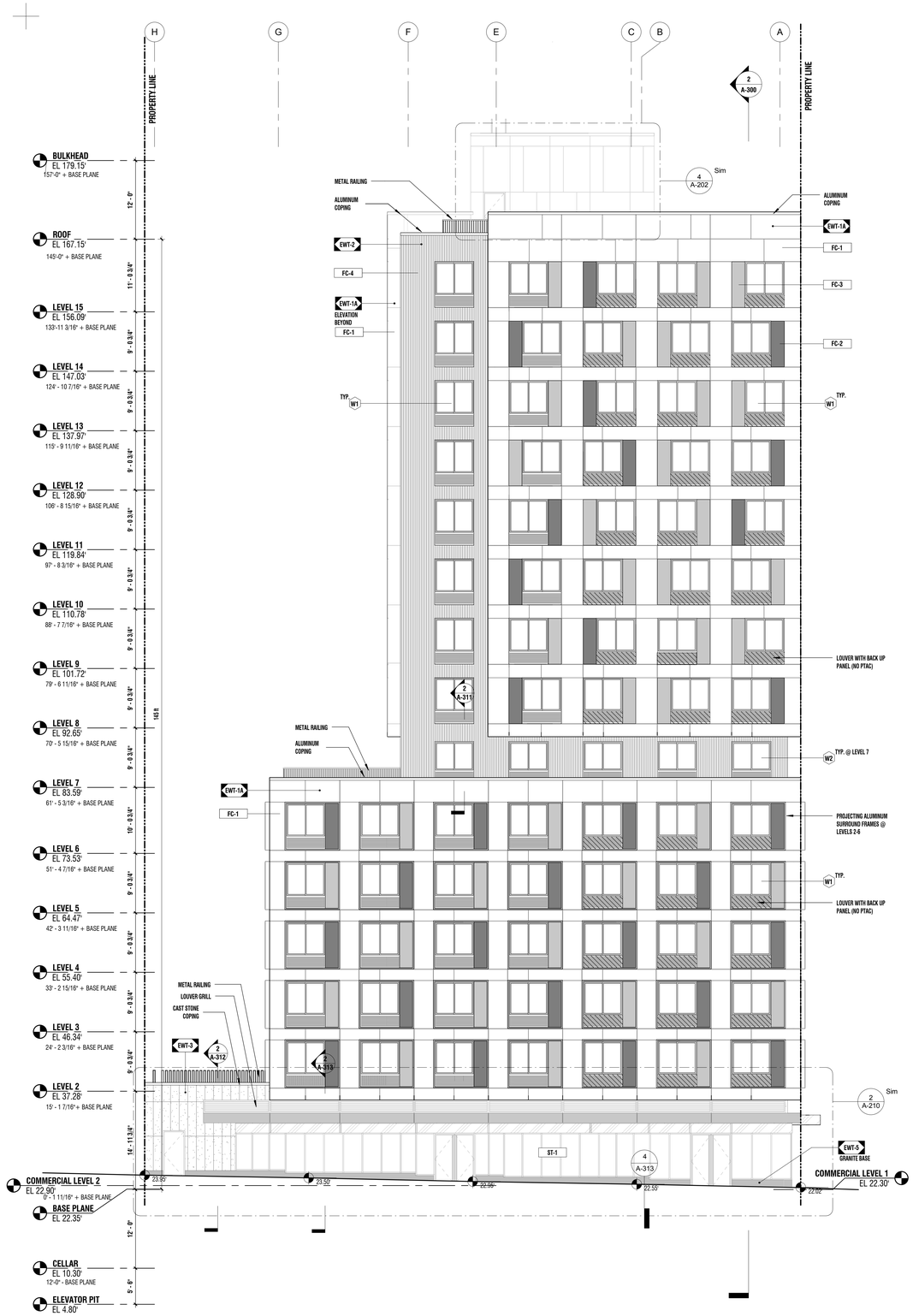
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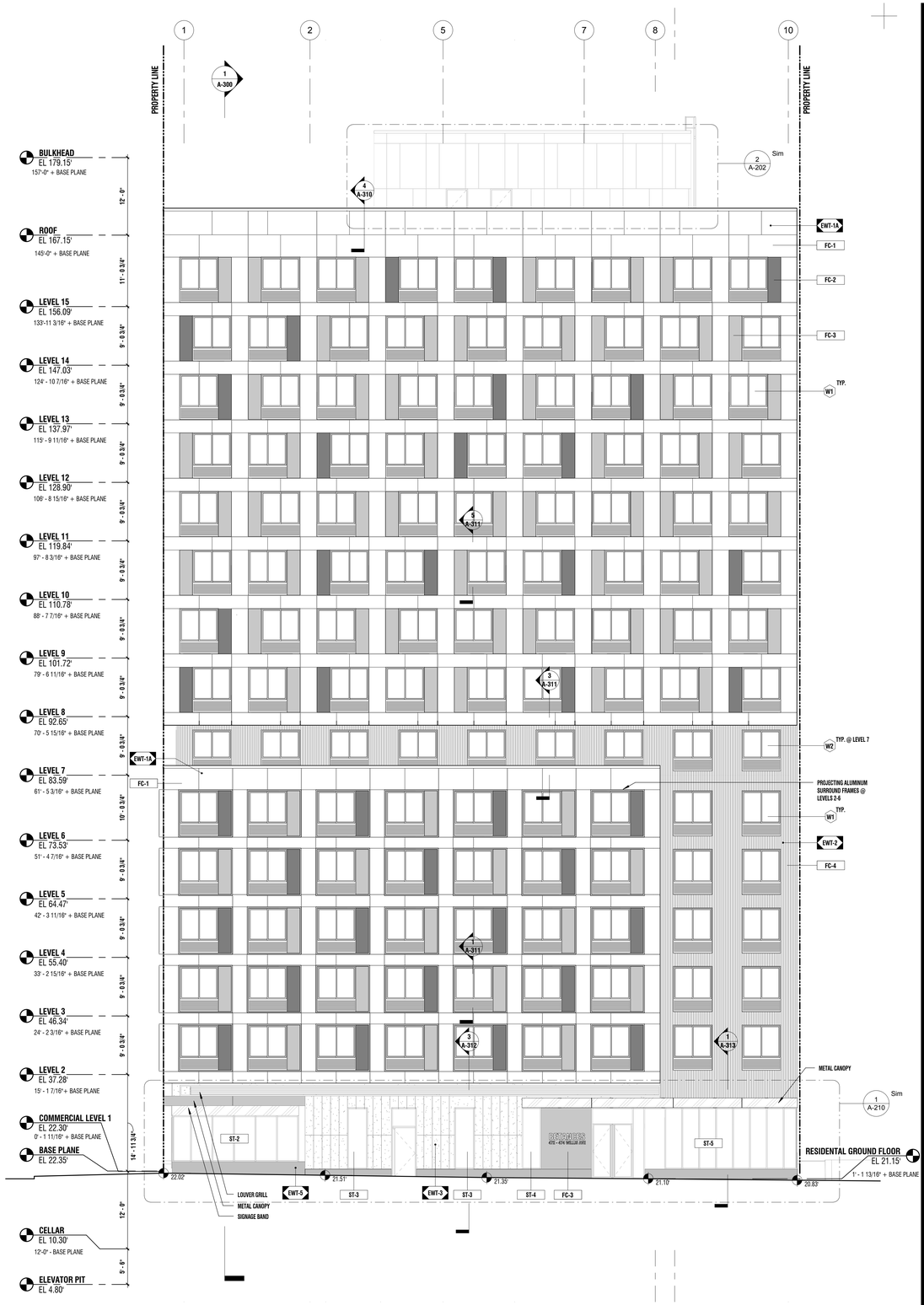


2 REFLECTED CEILING PLAN - LEVEL 9,11,13,15
1/8" = 1'-0"


EL02
EL02
EL02



2 ELEVATION - West
1/8" = 1'-0"



1 ELEVATION - South
1/8" = 1'-0"

EXTERIOR WALL TYPE 1A, 1B, 1C

FIBER CEMENT PANEL ON 6" METAL STUD (SEE MATERIAL LEGEND FOR FIBER CEMENT TYPES)

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 2

CORRUGATED FIBER CEMENT PANEL ON 6" METAL STUD

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 3

CONCRETE PANEL ON 6" METAL STUD

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 4

(A) CONCRETE PANEL ON 8" CMU (GREY)
(B) FIBER CEMENT PANEL ON 8" CMU (WHITE)

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 7 5/8" CMU **[R-1.11]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 18.67

EXTERIOR WALL TYPE 5

GRANITE ON 6" CMU (BLACK)

- 2" GRANITE **[R-.10]**
- 1" AIR GAP **[R-1.0]**
- 3" RIGID INSULATION **[R-12]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5 5/8" CMU **[R-0.8]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 14.46

EXTERIOR MATERIAL LEGEND

COLOR / PATTERN	TAG	TYPE
	FC-1	SWISSPEARL CEMS, FIBER CEMENT PANEL, CARAT ONYX 7099-11
	FC-2	SWISSPEARL CEMS, FIBER CEMENT PANEL, NOBILIS ORANGE N711
	FC-3	SWISSPEARL CEMS, FIBER CEMENT PANEL, CARAT SAHARA 7000
	FC-4	ETERNIT, CORRUGATED FIBER CEMENT PANEL, VULCANIT N6512

COLOR / PATTERN	TAG	TYPE
	CP-1	IVANKA, CEMENT PANEL, COLOR: MIDNIGHT BLACK, TEXTURE: SLICK
	---	LOUVER WITH BACKUP PANEL

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P 914.305.5679

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RODKIN CARDINALE P.C.
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

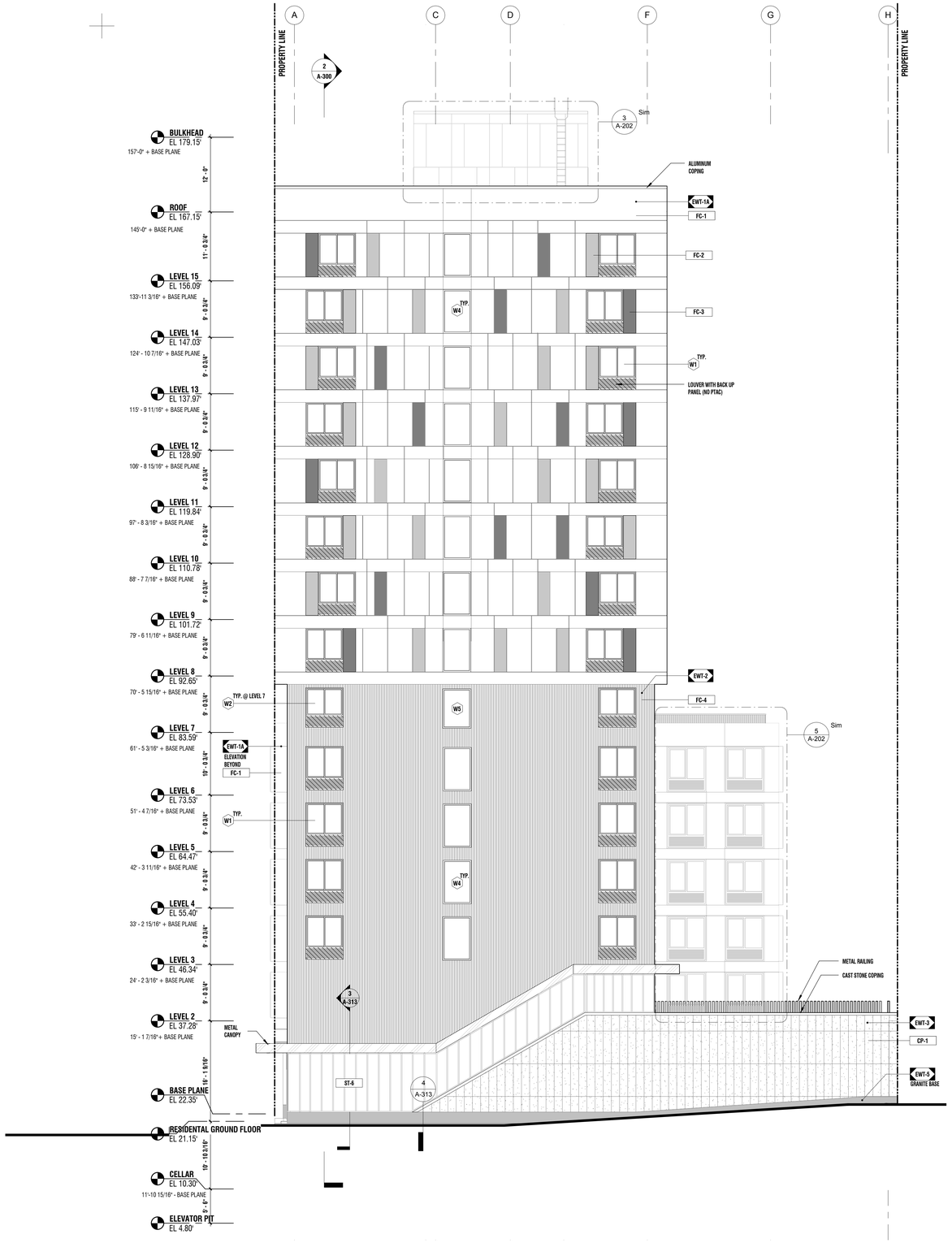
472-474 WILLIS AVE. BRONX, NY, 10455

EXTERIOR ELEVATION - SOUTH & WEST

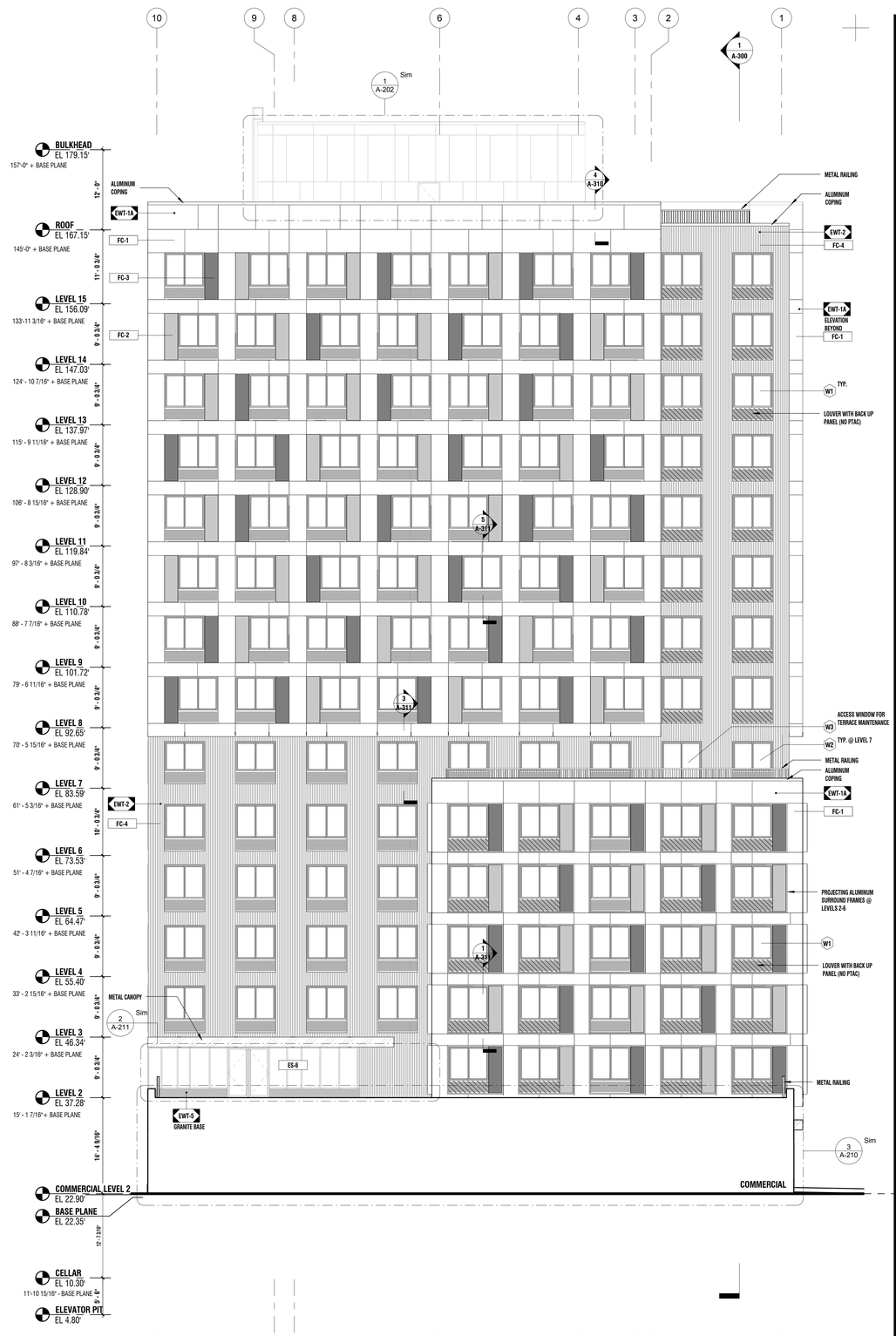
SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	As indicated
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-200.00
NYC DOB NUMBER:	

4/10/2018 1:25:31 PM



2 **ELEVATION - East**
1/8" = 1'-0"



1 **ELEVATION - North**
1/8" = 1'-0"

EXTERIOR WALL TYPE 1A, 1B, 1C

FIBER CEMENT PANEL ON 6" METAL STUD (SEE MATERIAL LEGEND FOR FIBER CEMENT TYPES)

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 2

CORRUGATED FIBER CEMENT PANEL ON 6" METAL STUD

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 3

CONCRETE PANEL ON 6" METAL STUD

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 4

[A] CONCRETE PANEL ON 8" CMU (GREY)
[B] FIBER CEMENT PANEL ON 8" CMU (WHITE)

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 7 5/8" CMU **[R-1.11]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 18.67

EXTERIOR WALL TYPE 5

GRANITE ON 6" CMU (BLACK)

- 2" GRANITE **[R-.10]**
- 1" AIR GAP **[R-1.0]**
- 3" RIGID INSULATION **[R-12]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5 5/8" CMU **[R-0.8]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 14.46

EXTERIOR MATERIAL LEGEND

COLOR / PATTERN	TAG	TYPE
	FC-1	SWISSPEARL CEMS, FIBER CEMENT PANEL, CARAT ONYX 7099-11
	FC-2	SWISSPEARL CEMS, FIBER CEMENT PANEL, NOBILIS ORANGE N711
	FC-3	SWISSPEARL CEMS, FIBER CEMENT PANEL, CARAT SAHARA 7000
	FC-4	ETERNIT, CORRUGATED FIBER CEMENT PANEL, VULCANIT N6512

COLOR / PATTERN	TAG	TYPE
	CP-1	IVANKA, CEMENT PANEL, COLOR: MIDNIGHT BLACK, TEXTURE: SLICK
	---	LOUVER WITH BACKUP PANEL

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2	DOB SUBMISSION	04.06.2018
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DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

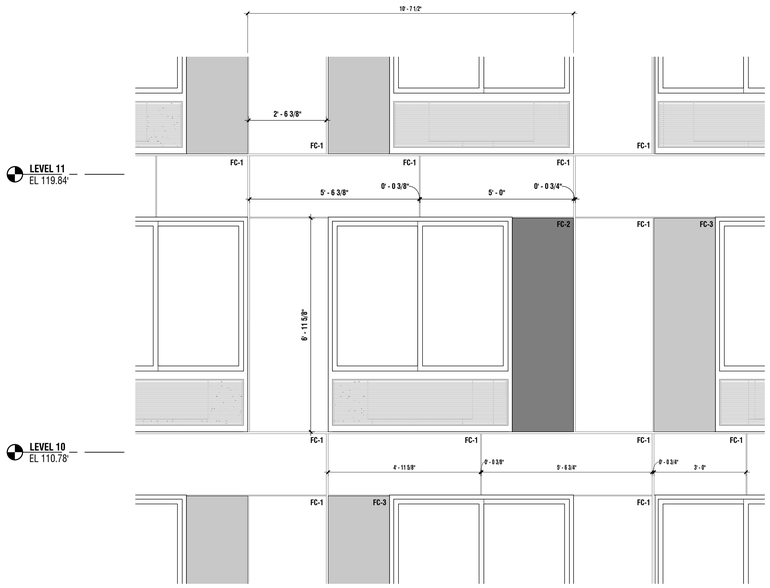
472-474 WILLIS AVE. BRONX, NY, 10455

EXTERIOR ELEVATION - NORTH & EAST

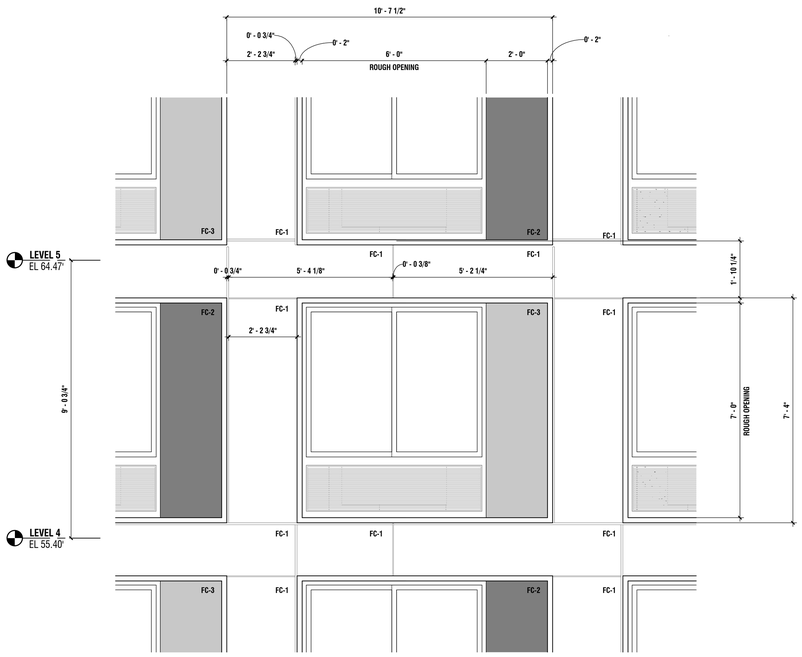
SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	As indicated
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-201.00
NYC DOB NUMBER:	

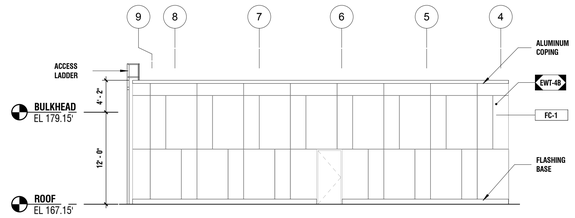
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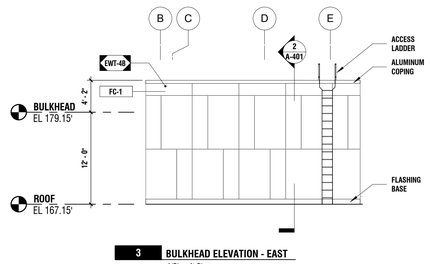
7 ELEVATION - FIBER CEMENT PANEL BLOW UP - UPPER LEVELS
1/2" = 1'-0"



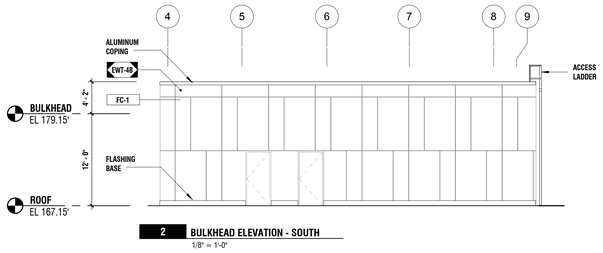
6 ELEVATION - FIBER CEMENT PANEL BLOW UP - LOWER LEVELS
1/2" = 1'-0"



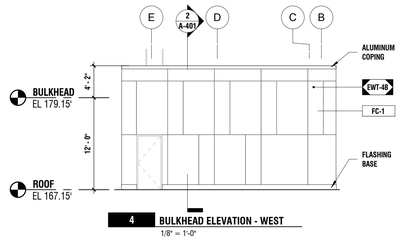
1 BULKHEAD ELEVATION - NORTH
1/8" = 1'-0"



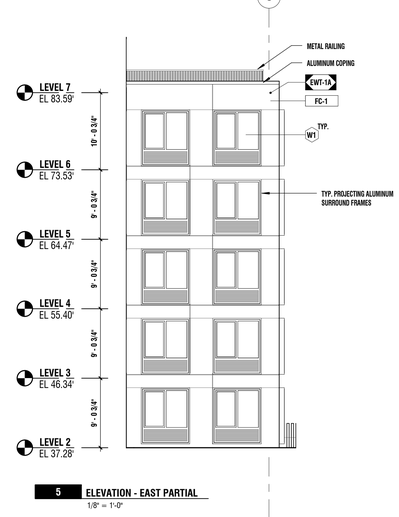
3 BULKHEAD ELEVATION - EAST
1/8" = 1'-0"



2 BULKHEAD ELEVATION - SOUTH
1/8" = 1'-0"



4 BULKHEAD ELEVATION - WEST
1/8" = 1'-0"



5 ELEVATION - EAST PARTIAL
1/8" = 1'-0"

EXTERIOR WALL TYPE 1A, 1B, 1C

FIBER CEMENT PANEL ON 6" METAL STUD (SEE MATERIAL LEGEND FOR FIBER CEMENT TYPES)

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 2

CORRUGATED FIBER CEMENT PANEL ON 6" METAL STUD

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 3

CONCRETE PANEL ON 6" METAL STUD

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 4

[A] CONCRETE PANEL ON 8" CMU (GREY)
[B] FIBER CEMENT PANEL ON 8" CMU (WHITE)

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 7 5/8" CMU **[R-1.11]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 18.67

EXTERIOR WALL TYPE 5

GRANITE ON 6" CMU (BLACK)

- 2" GRANITE **[R-.10]**
- 1" AIR GAP **[R-1.0]**
- 3" RIGID INSULATION **[R-12]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5 5/8" CMU **[R-0.8]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 14.46

EXTERIOR MATERIAL LEGEND

COLOR / PATTERN	TAG	TYPE
	FC-1	SWISSPEARL CEM5, FIBER CEMENT PANEL, CARAT ONYX 7099-11
	FC-2	SWISSPEARL CEM5, FIBER CEMENT PANEL, NOBILIS ORANGE N711
	FC-3	SWISSPEARL CEM5, FIBER CEMENT PANEL, CARAT SAHARA 7000
	FC-4	ETERNIT, CORRUGATED FIBER CEMENT PANEL, VULCANIT NB512

COLOR / PATTERN	TAG	TYPE
	CP-1	IVANKA, CEMENT PANEL, COLOR: MIDNIGHT BLACK, TEXTURE: SLICK
	---	LOUVER WITH BACKUP PANEL

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DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

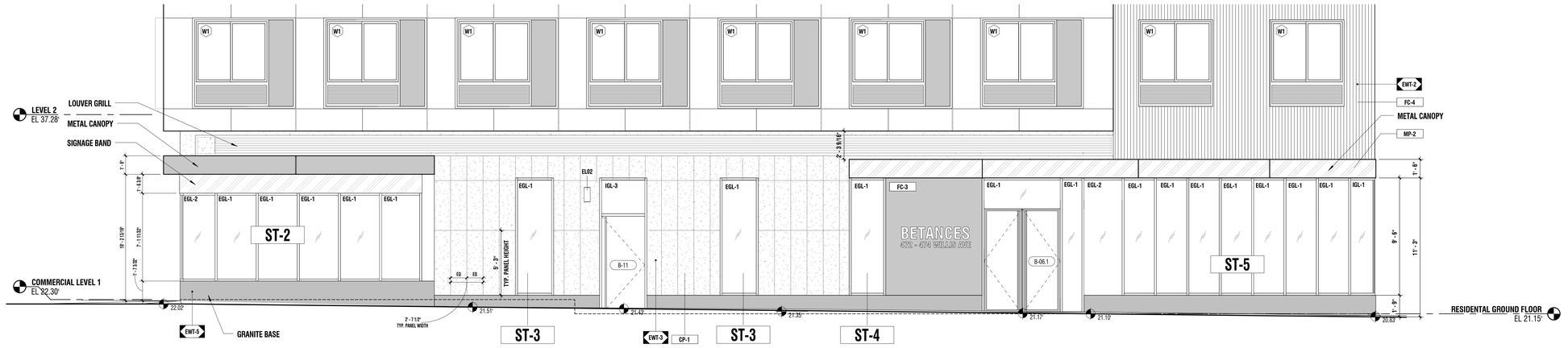
472-474 WILLIS AVE. BRONX, NY, 10455

PARTIAL EAST ELEVATION & BULKHEAD ELEVATIONS

SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	As indicated
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-202.00
NYC DOB NUMBER:	

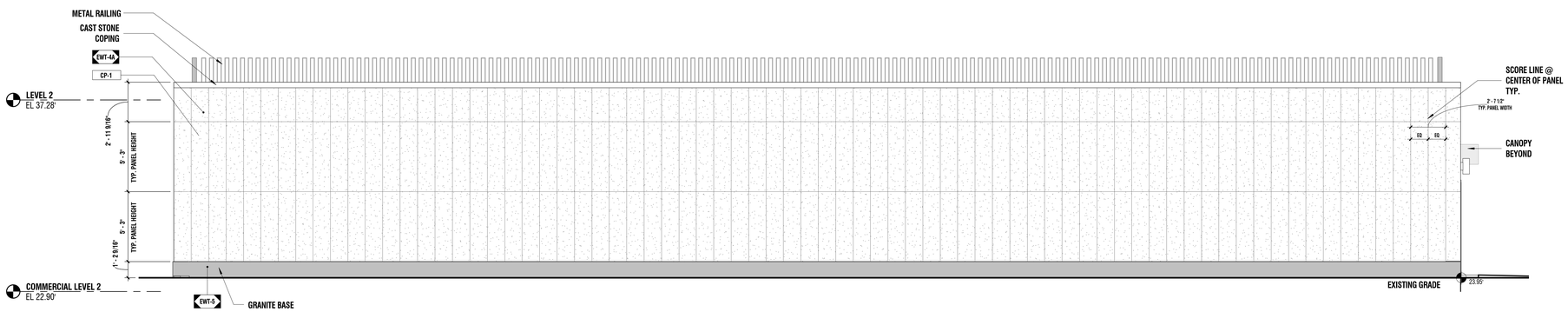
4/10/2018 1:26:12 PM



1 ENLARGED ELEVATION - GROUND LEVEL - SOUTH
1/4" = 1'-0"



2 ENLARGED ELEVATION - GROUND LEVEL - WEST
1/4" = 1'-0"



3 ENLARGED ELEVATION - GROUND LEVEL - NORTH
1/4" = 1'-0"

EXTERIOR WALL TYPE 1A, 1B, 1C

FIBER CEMENT PANEL ON 6" METAL STUD (SEE MATERIAL LEGEND FOR FIBER CEMENT TYPES)

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 2

CORRUGATED FIBER CEMENT PANEL ON 6" METAL STUD

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 3

CONCRETE PANEL ON 6" METAL STUD

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 4

[A] CONCRETE PANEL ON 8" CMU (GREY)
[B] FIBER CEMENT PANEL ON 8" CMU (WHITE)

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 7 5/8" CMU **[R-1.11]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 18.57

EXTERIOR WALL TYPE 5

GRANITE ON 6" CMU (BLACK)

- 2" GRANITE **[R-.10]**
- 1" AIR GAP **[R-1.0]**
- 3" RIGID INSULATION **[R-12]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5 5/8" CMU **[R-0.8]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 14.46

EXTERIOR MATERIAL LEGEND

COLOR / PATTERN	TAG	TYPE
	FC-1	SWISSPEARL CEMS. FIBER CEMENT PANEL, CARAT ONYX 7099-11
	FC-2	SWISSPEARL CEMS. FIBER CEMENT PANEL, NOBILIS ORANGE N711
	FC-3	SWISSPEARL CEMS. FIBER CEMENT PANEL, CARAT SAHARA 7000
	FC-4	ETERNIT, CORRUGATED FIBER CEMENT PANEL, VULCANIT N6512

COLOR / PATTERN	TAG	TYPE
	CP-1	IVANKA, CEMENT PANEL, COLOR: MIDNIGHT BLACK, TEXTURE: SLICK
	---	LOUVER WITH BACKUP PANEL

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DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

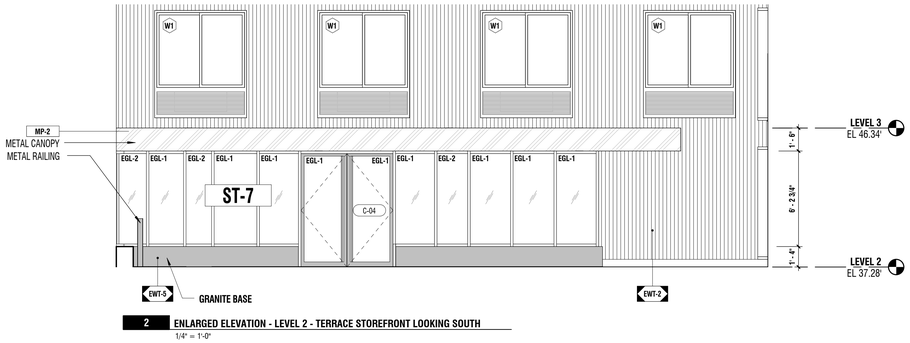
472-474 WILLIS AVE. BRONX, NY, 10455

ENLARGED ELEVATIONS AND DETAILS

SEAL & SIGNATURE

DATE: 04/06/2018
PROJECT NO: 17110
SCALE: As indicated
DRAWING BY: Author
CHECKED BY: Checker
DWG NO: A-210.00
NYC DOB NUMBER:

4/10/2018 1:26:23 PM



2 ENLARGED ELEVATION - LEVEL 2 - TERRACE STOREFRONT LOOKING SOUTH

1/4" = 1'-0"



1 ENLARGED ELEVATION - GROUND LEVEL - EAST

1/4" = 1'-0"

EXTERIOR WALL TYPE 1A, 1B, 1C

FIBER CEMENT PANEL ON 6" METAL STUD (SEE MATERIAL LEGEND FOR FIBER CEMENT TYPES)

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 2

CORRUGATED FIBER CEMENT PANEL ON 6" METAL STUD

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 3

CONCRETE PANEL ON 6" METAL STUD

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 4

[A] CONCRETE PANEL ON 8" CMU (GREY)
[B] FIBER CEMENT PANEL ON 8" CMU (WHITE)

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 7 5/8" CMU **[R-1.11]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 18.67

EXTERIOR WALL TYPE 5

GRANITE ON 6" CMU (BLACK)

- 2" GRANITE **[R-.10]**
- 1" AIR GAP **[R-1.0]**
- 3" RIGID INSULATION **[R-12]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5 5/8" CMU **[R-0.8]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 14.46

EXTERIOR MATERIAL LEGEND

COLOR / PATTERN	TAG	TYPE
	FC-1	SWISSPEARL CEM5. FIBER CEMENT PANEL, CARAT ONYX 7099-11
	FC-2	SWISSPEARL CEM5. FIBER CEMENT PANEL, NOBILIS ORANGE N711
	FC-3	SWISSPEARL CEM5. FIBER CEMENT PANEL, CARAT SAHARA 7000
	FC-4	ETERNIT, CORRUGATED FIBER CEMENT PANEL, VULCANIT NB512

COLOR / PATTERN	TAG	TYPE
	CP-1	IVANKA, CEMENT PANEL, COLOR: MIDNIGHT BLACK, TEXTURE: SLICK
	---	LOUVER WITH BACKUP PANEL

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

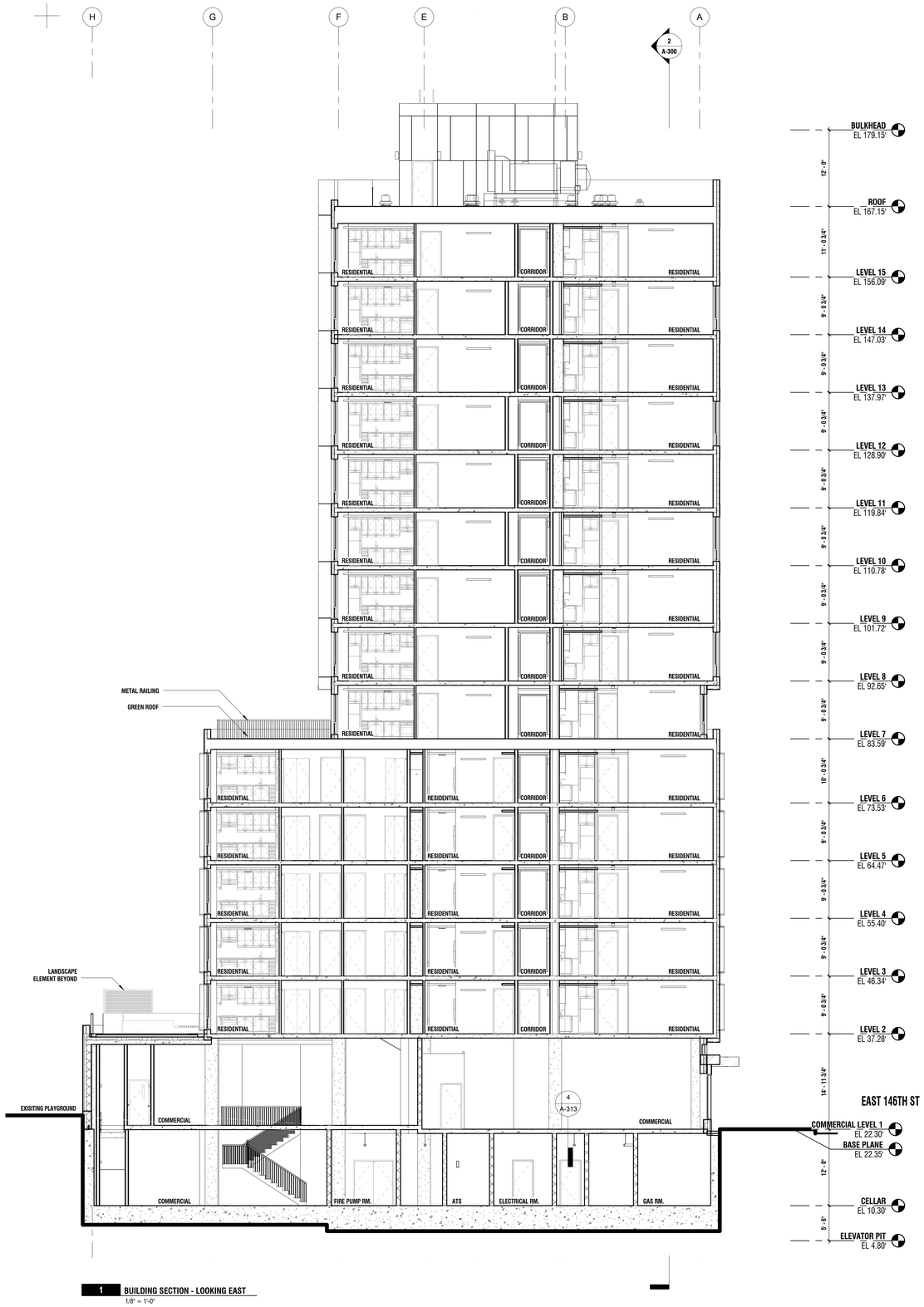
472-474 WILLIS AVE. BRONX, NY, 10455

ENLARGED ELEVATIONS AND DETAILS

SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	As indicated
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-211.00
NYC DOB NUMBER:	

4/10/2018 1:26:31 PM



1 BUILDING SECTION - LOOKING EAST

1/8" = 1'-0"



2 BUILDING SECTION - LOOKING NORTH

1/8" = 1'-0"

EXTERIOR WALL TYPE 1A, 1B, 1C

FIBER CEMENT PANEL ON 6" METAL STUD (SEE MATERIAL LEGEND FOR FIBER CEMENT TYPES)

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 2

CORRUGATED FIBER CEMENT PANEL ON 6" METAL STUD

- 3/8" FIBER CEMENT PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[R-1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 3

CONCRETE PANEL ON 6" METAL STUD

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5/8" DENSGLASS EXT. SHEATHING **[R-0.67]**
- 6" BATT INSULATION **[R-19.00]**
- 6" METAL STUD **[1.02]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 38.25

EXTERIOR WALL TYPE 4

[A] CONCRETE PANEL ON 8" CMU (GREY)
[B] FIBER CEMENT PANEL ON 8" CMU (WHITE)

- 3/8" CONCRETE PANEL **[R-.000]**
- 1" AIR GAP **[R-1.0]**
- 4" RIGID INSULATION **[R-16]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 7 5/8" CMU **[R-1.11]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 18.67

EXTERIOR WALL TYPE 5

GRANITE ON 6" CMU (BLACK)

- 2" GRANITE **[R-.10]**
- 1" AIR GAP **[R-1.0]**
- 3" RIGID INSULATION **[R-12]**
- WATER RESISTIVE BARRIER **[R-0.0]**
- 5 5/8" CMU **[R-0.8]**
- 1 5/8" MTL. STUD **[R-0.0]**
- (1) 5/8" GYP. BOARD **[R-0.56]**

AVERAGE CONT. R-VALUE PROVIDED: 14.46

EXTERIOR MATERIAL LEGEND

COLOR / PATTERN	TAG	TYPE
	FC-1	SWISSPEARL CEM5, FIBER CEMENT PANEL, CARAT ONYX.7099-11
	FC-2	SWISSPEARL CEM5, FIBER CEMENT PANEL, NOBILIS ORANGE N711
	FC-3	SWISSPEARL CEM5, FIBER CEMENT PANEL, CARAT SAHARA 7000
	FC-4	ETERNIT, CORRUGATED FIBER CEMENT PANEL, VULCAINT M5512

COLOR / PATTERN	TAG	TYPE
	CP-1	IVANKA, CEMENT PANEL, COLOR: MIDNIGHT BLACK, TEXTURE: SLICK
	---	LOUVER WITH BACKUP PANEL

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DOB APPROVAL

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PROJECT

BETANCES VI DEVELOPMENT

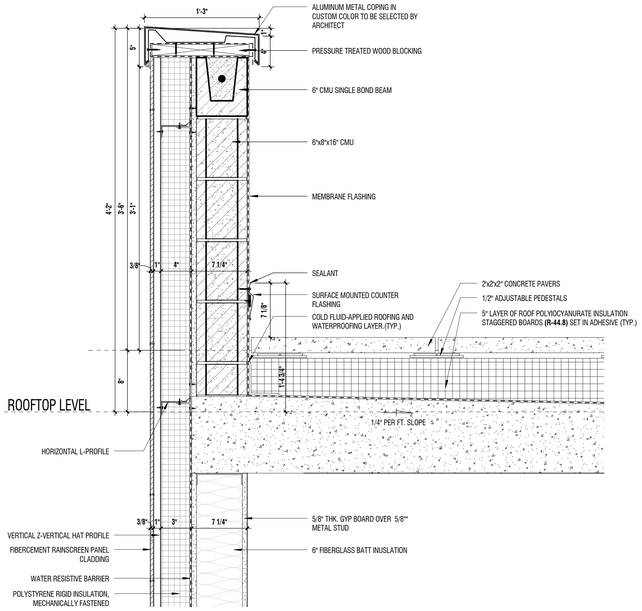
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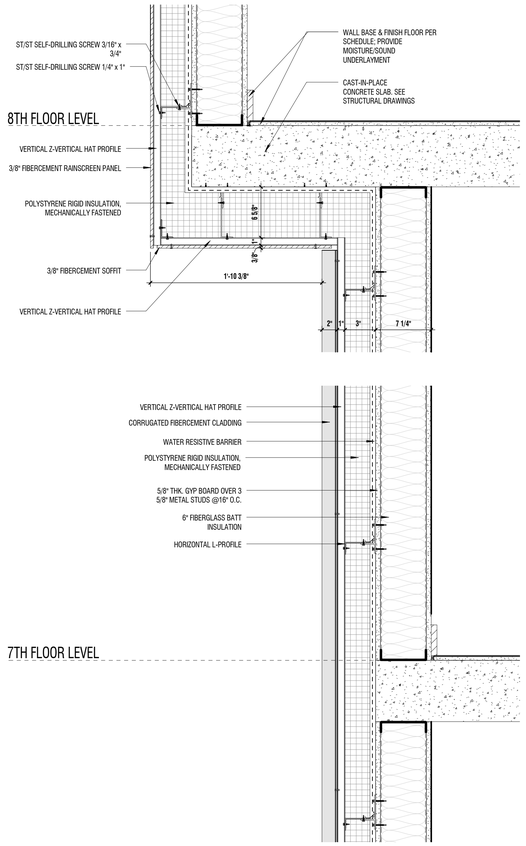
BUILDING SECTION

SEAL & SIGNATURE

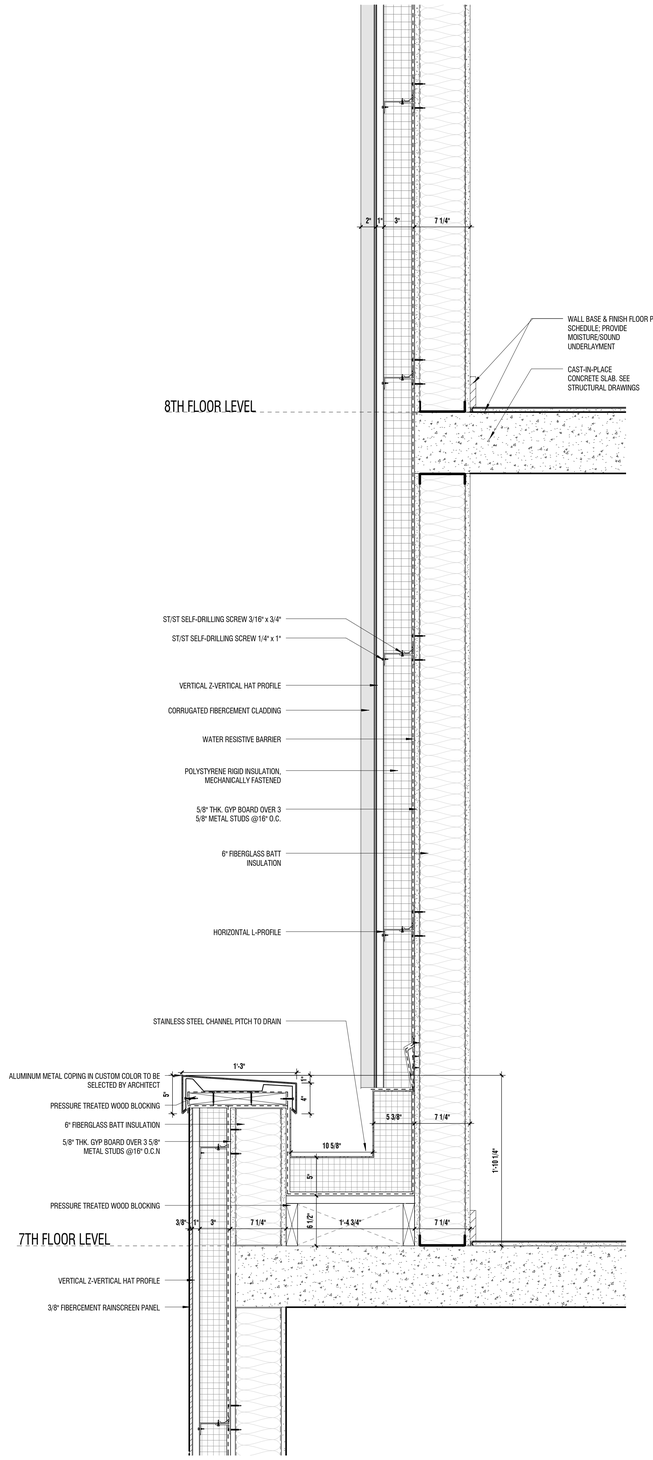
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PROJECT NO:	17110
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CHECKED BY:	Checker
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NYC DOB NUMBER:	

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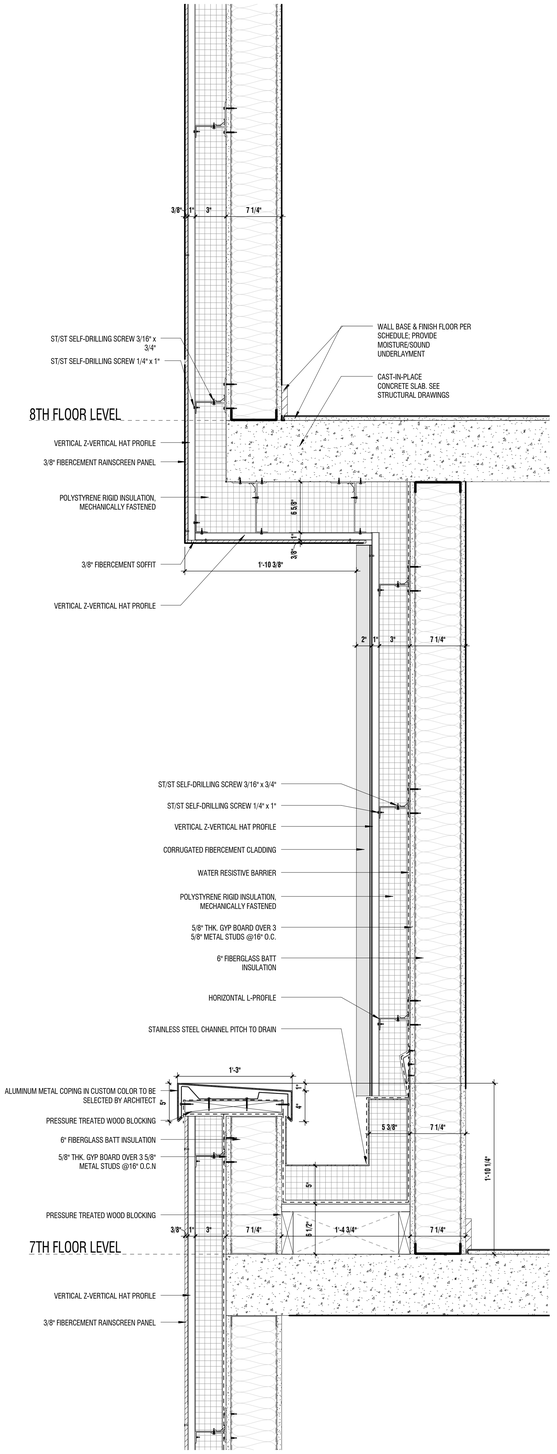




1 **WALL SECTION DETAIL 8**
1 1/2" = 1'-0"



3 **WALL SECTION DETAIL 12**
1 1/2" = 1'-0"



2 **WALL SECTION DETAIL 10**
1 1/2" = 1'-0"

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BETANCES VI DEVELOPMENT

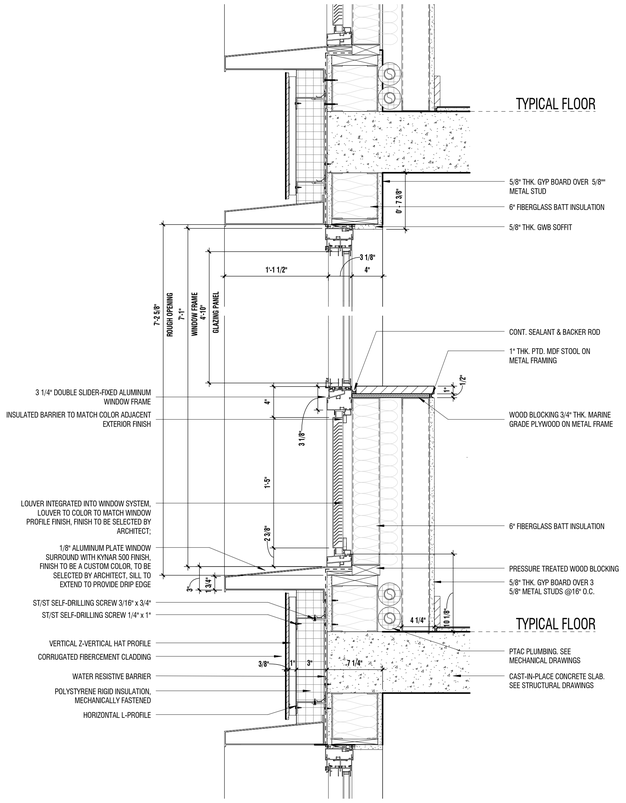
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WALL SECTION DETAILS

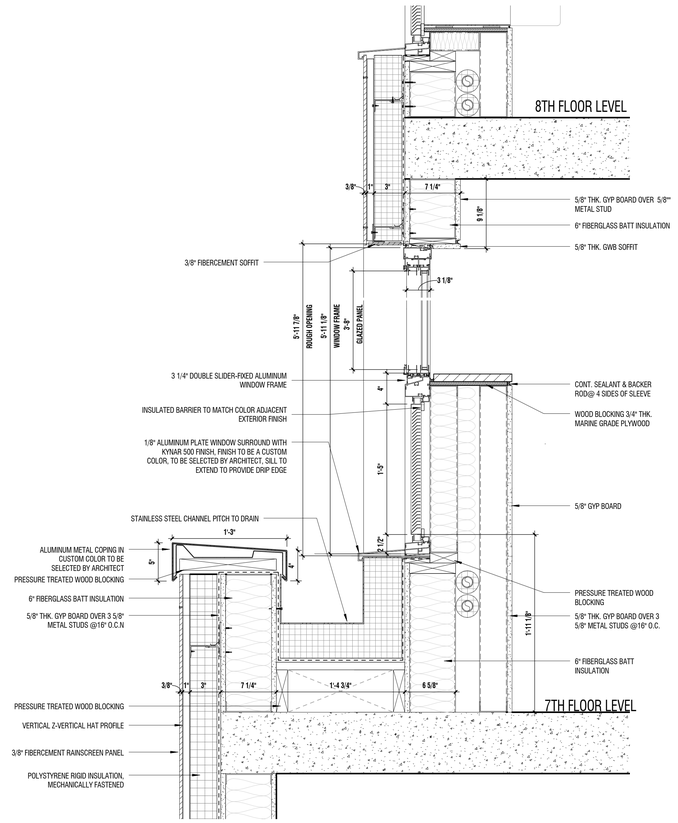
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DRAWING BY:	Author
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DWG NO:	A-310.00
NYC DOB NUMBER:	

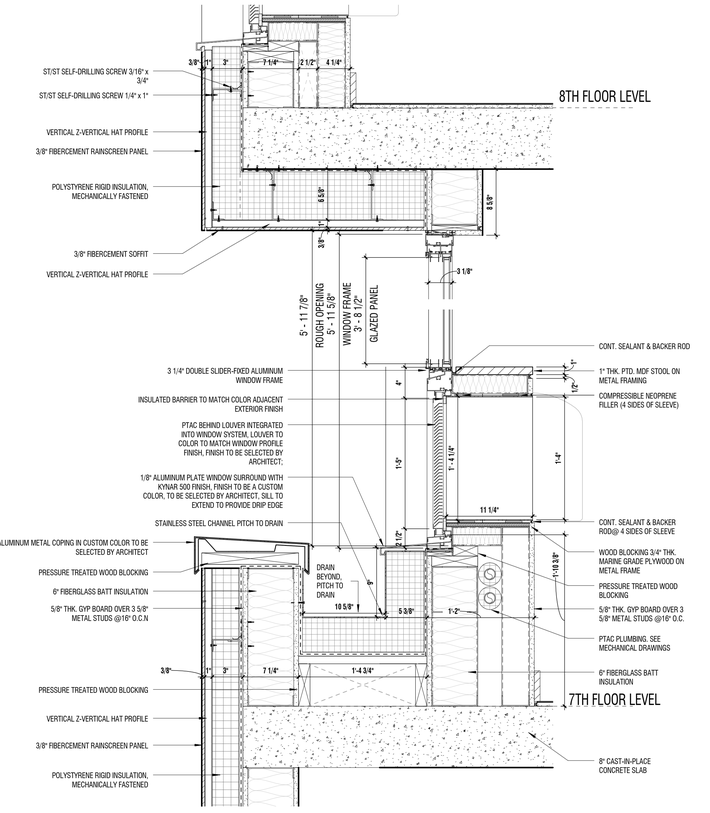
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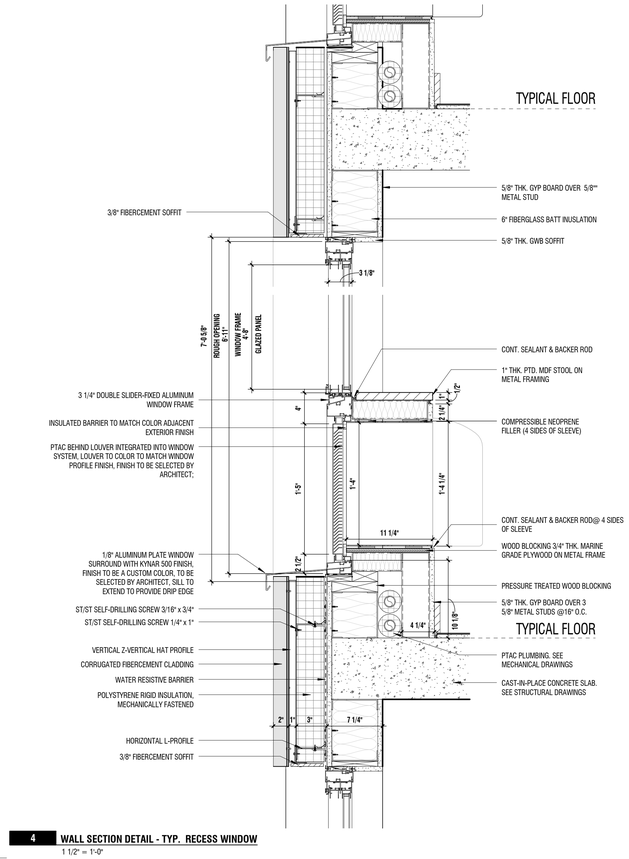
1 WALL SECTION DETAIL - TYP. LOWER WINDOW W/ INSULATED BACKUP PANEL
1 1/2" = 1'-0"



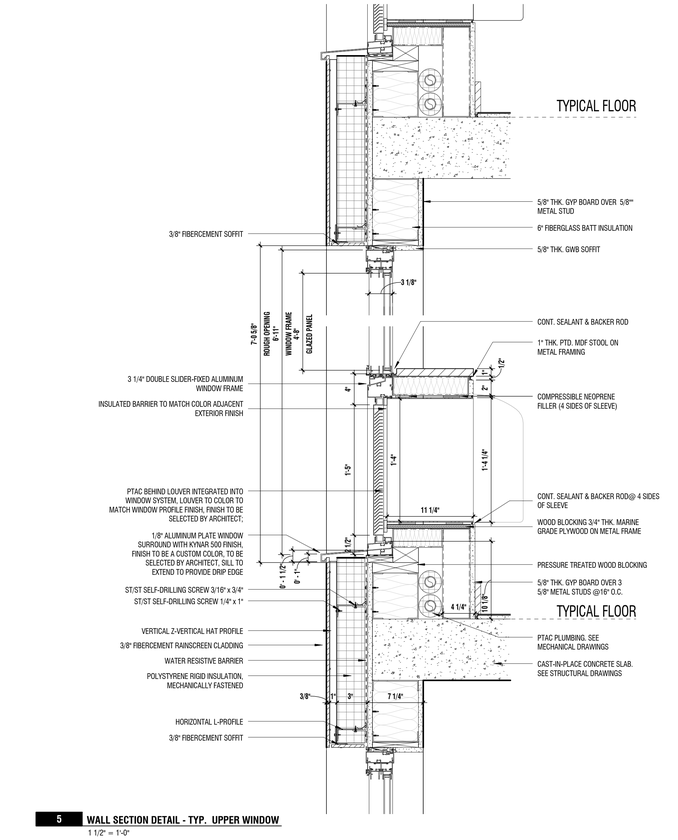
2 WALL SECTION DETAIL 11
1 1/2" = 1'-0"



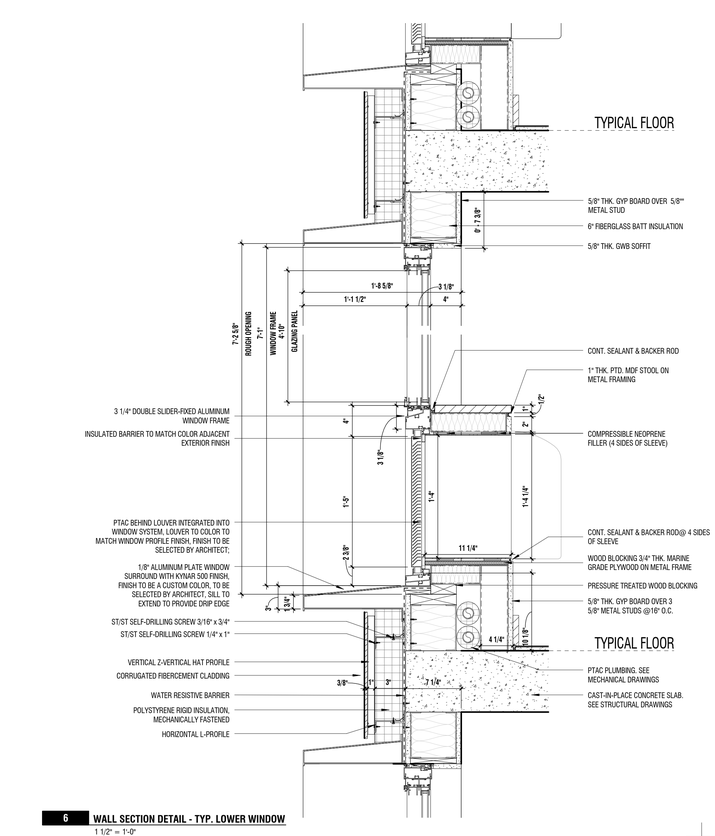
3 WALL SECTION DETAIL 9
1 1/2" = 1'-0"



4 WALL SECTION DETAIL - TYP. RECESS WINDOW
1 1/2" = 1'-0"



5 WALL SECTION DETAIL - TYP. UPPER WINDOW
1 1/2" = 1'-0"



6 WALL SECTION DETAIL - TYP. LOWER WINDOW
1 1/2" = 1'-0"

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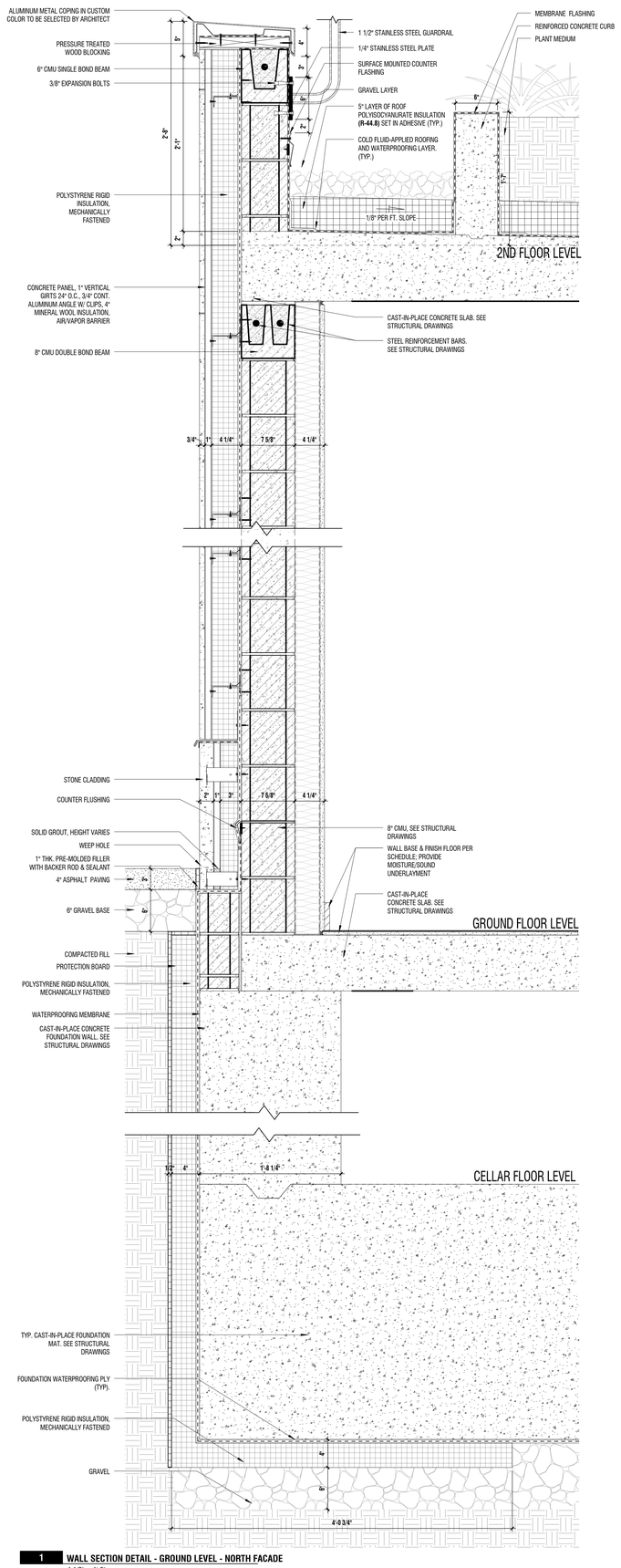
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WALL SECTION DETAILS

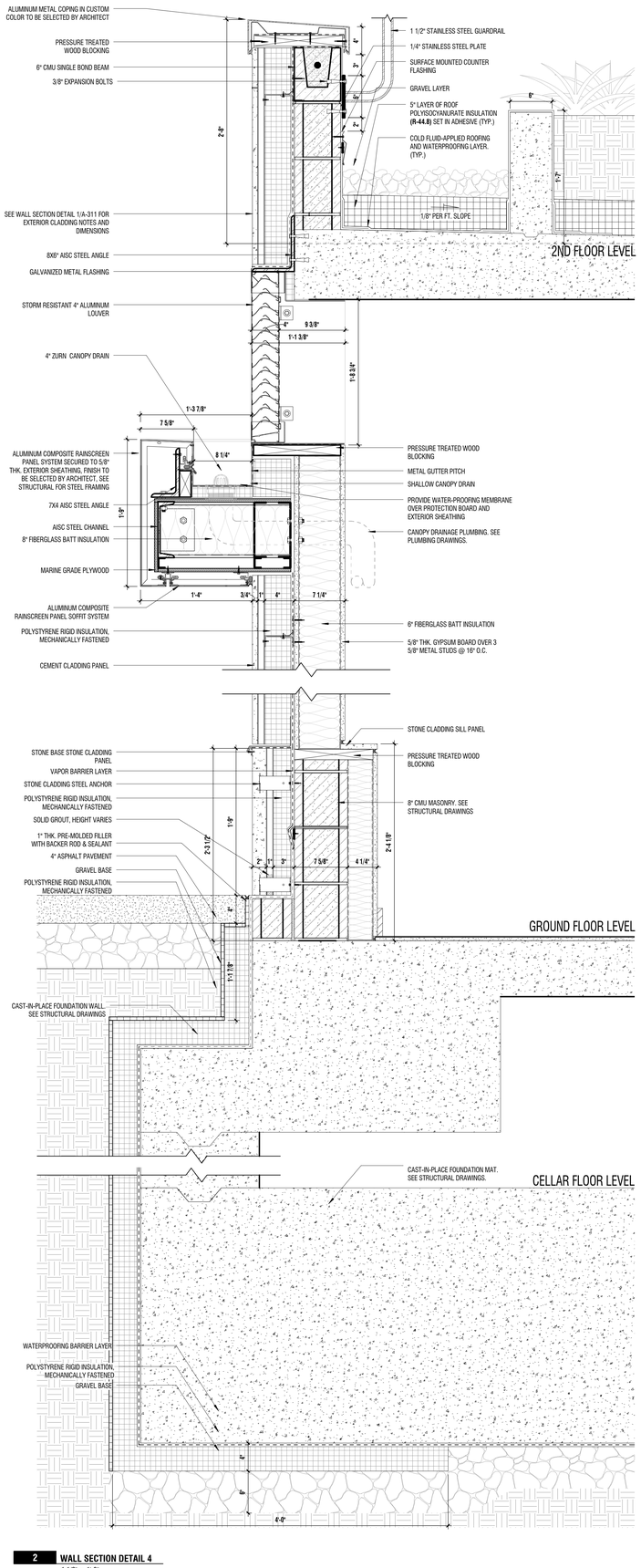
SEAL & SIGNATURE

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PROJECT NO:	17110
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DRAWING BY:	Author
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DWG NO:	A-311.00
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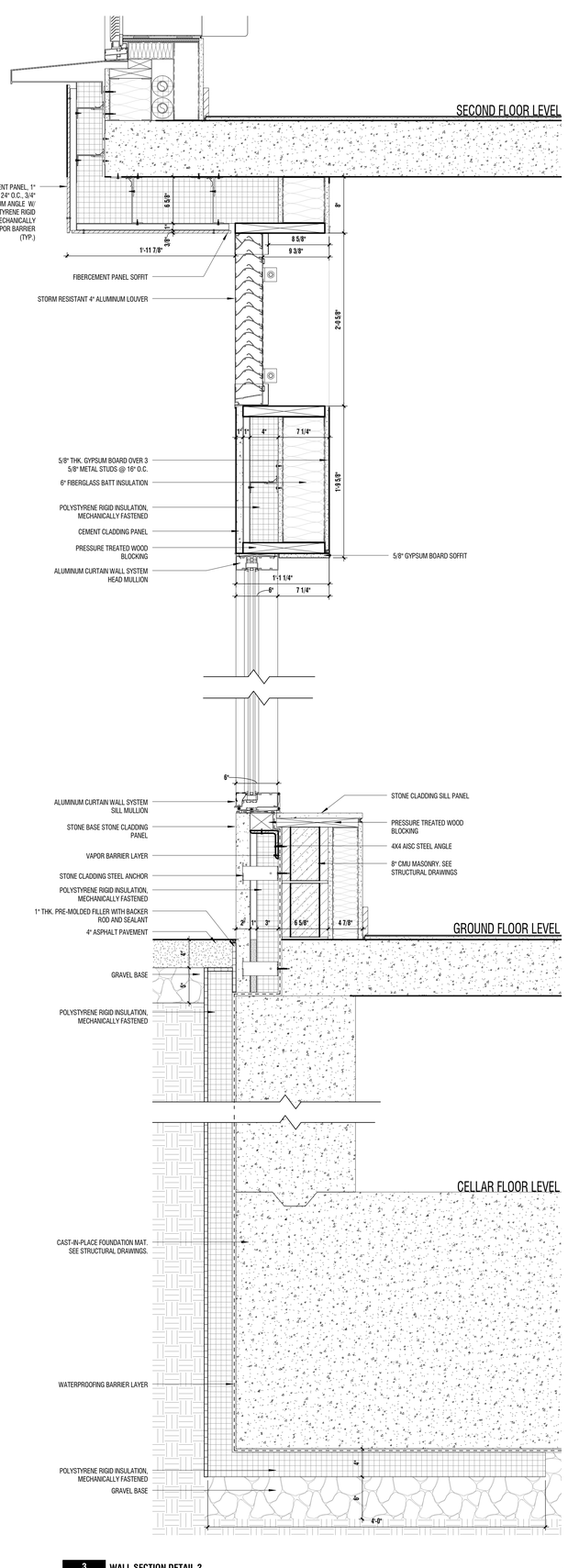
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1 WALL SECTION DETAIL - GROUND LEVEL - NORTH FACADE
1 1/2" = 1'-0"



2 WALL SECTION DETAIL 4
1 1/2" = 1'-0"



3 WALL SECTION DETAIL 2
1 1/2" = 1'-0"

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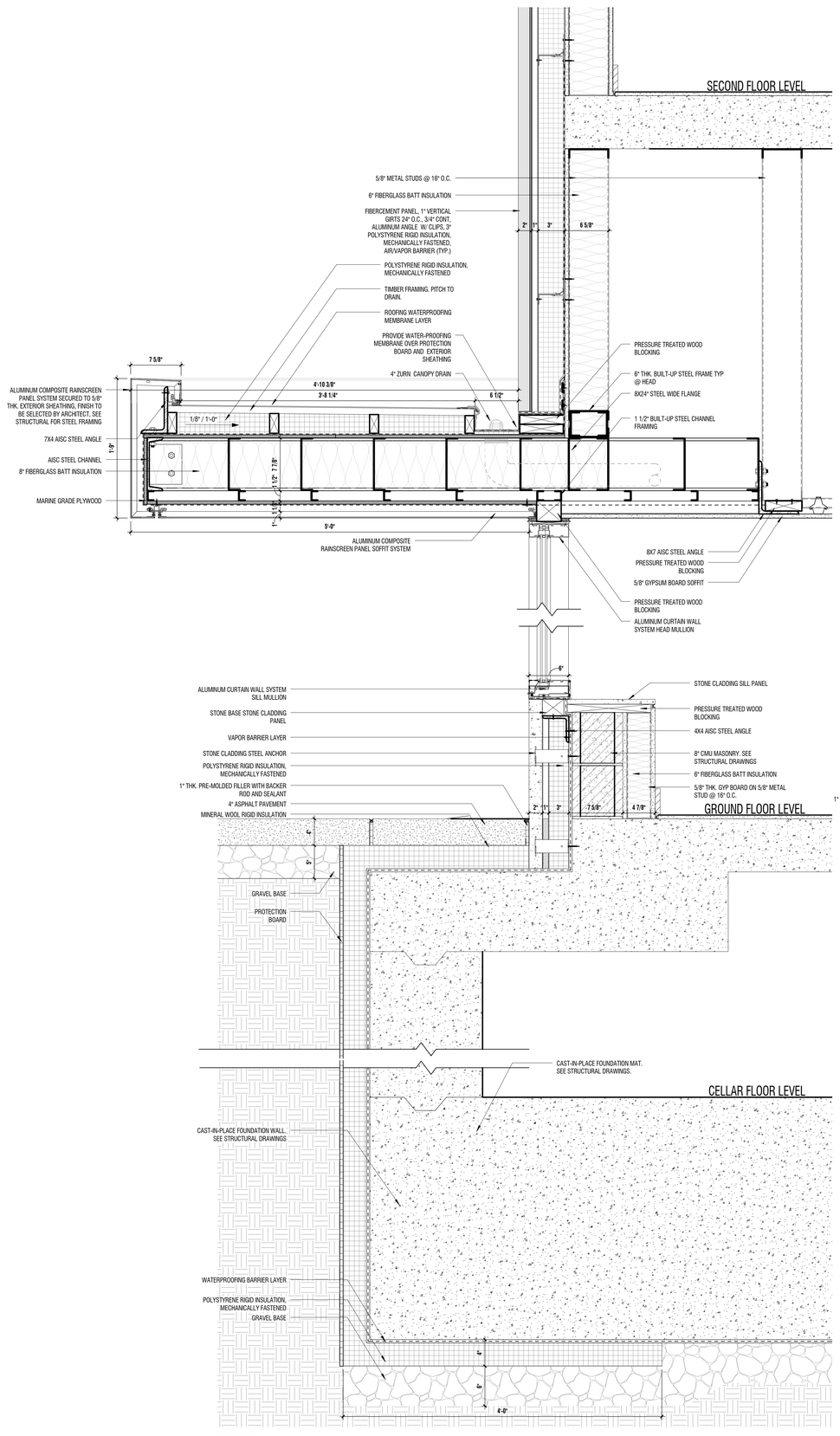
BETANCES VI DEVELOPMENT

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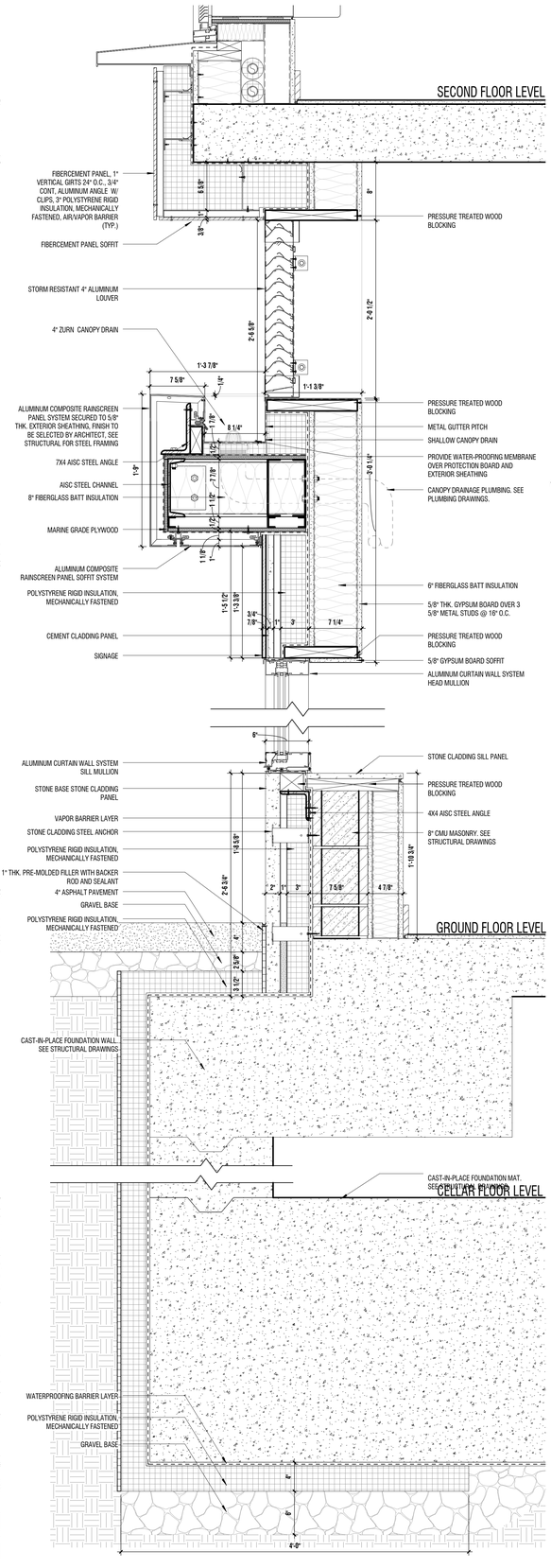
WALL SECTION DETAILS

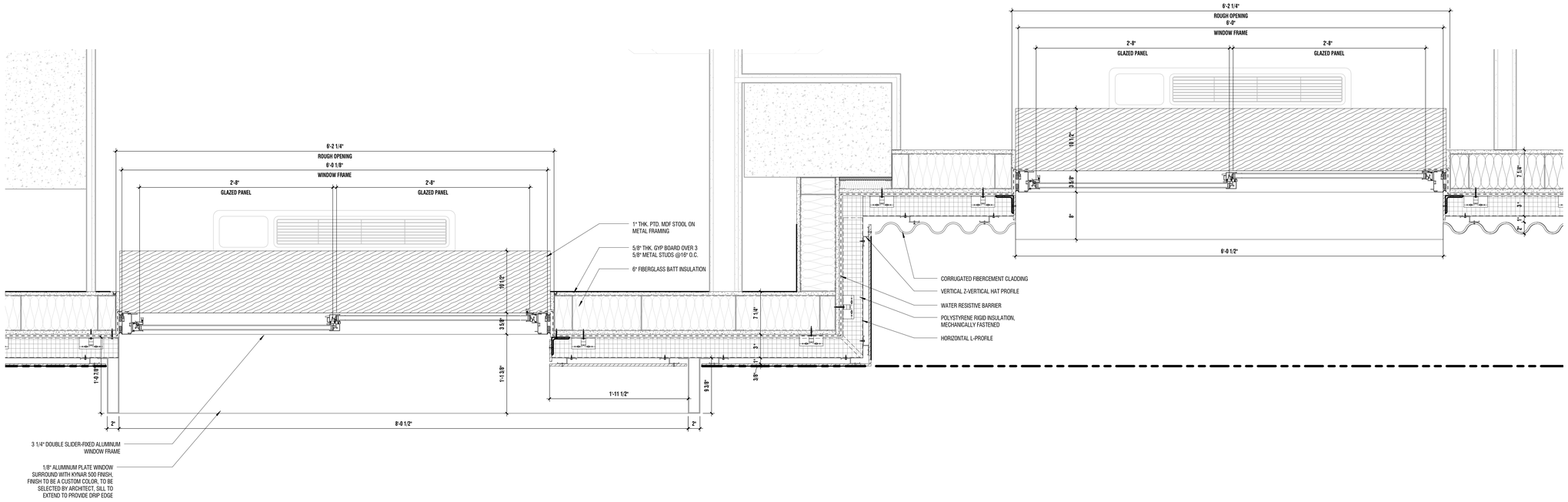
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DRAWING BY:	Author
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NYC DOB NUMBER:	

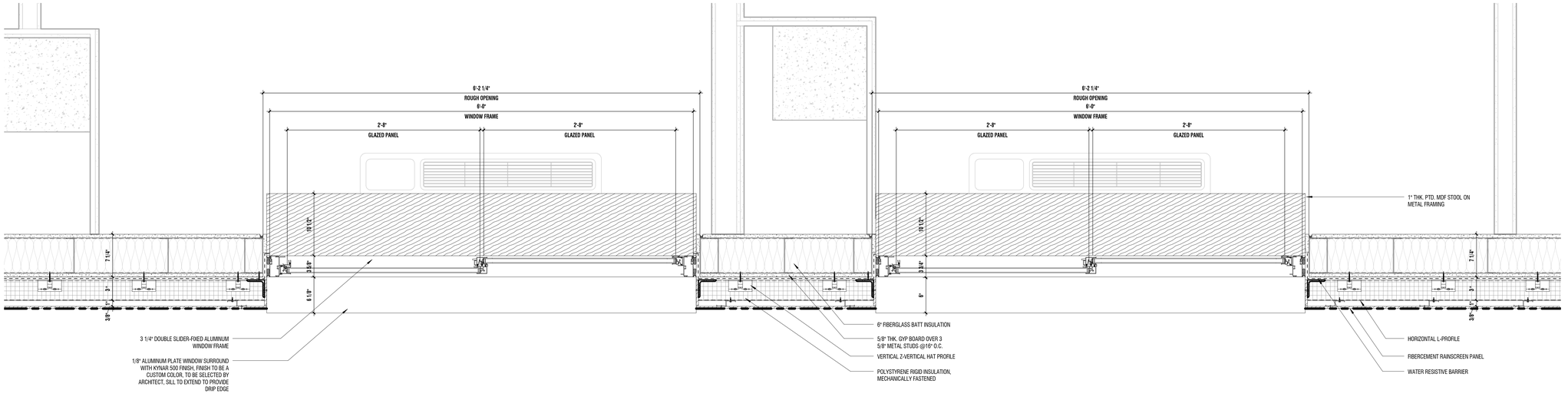


1 **WALL SECTION DETAIL - GROUND LEVEL - RESIDENTIAL ENTRY**
1 1/2" = 1'-0"


SECOND FLOOR LEVEL
FIBERCEMENT PANEL, 1" VERTICAL GIRTS 24" O.C., 3/4" CONT, ALUMINUM ANGLE W/ CLIPS, 3" POLYSTYRENE RIGID INSULATION, MECHANICALLY FASTENED, AIR/VAPOR BARRIER (TYP.)
FIBERCEMENT PANEL SOFFIT
STORM RESISTANT 4" ALUMINUM LOUVER
4" ZURN CANOPY DRAIN
ALUMINUM COMPOSITE RAINSCREEN PANEL SYSTEM SECURED TO 5/8" THK. EXTERIOR SHEATHING, FINISH TO BE SELECTED BY ARCHITECT, SEE STRUCTURAL FOR STEEL FRAMING
7X4 AISC STEEL ANGLE
AISC STEEL CHANNEL
8" FIBERGLASS BATT INSULATION
MARINE GRADE PLYWOOD
ALUMINUM COMPOSITE RAINSCREEN PANEL SOFFIT SYSTEM
POLYSTYRENE RIGID INSULATION, MECHANICALLY FASTENED
CEMENT CLADDING PANEL
SIGNAGE
PRESSURE TREATED WOOD BLOCKING
METAL GUTTER PITCH
SHALLOW CANOPY DRAIN
PROVIDE WATER-PROOFING MEMBRANE OVER PROTECTION BOARD AND EXTERIOR SHEATHING
CANOPY DRAINAGE PLUMBING. SEE PLUMBING DRAWINGS.
6" FIBERGLASS BATT INSULATION
5/8" THK. GYPSUM BOARD OVER 3 5/8" METAL STUDS @ 16" O.C.
PRESSURE TREATED WOOD BLOCKING
5/8" GYPSUM BOARD SOFFIT
ALUMINUM CURTAIN WALL SYSTEM HEAD MULLION
8"
5 5/8"
3/8"
2'-5 5/8"
2'-9 1/2"
1'-3 7/8"
7 5/8"
1/4"
1'-1 3/8"
7 7/8"
8 1/4"
1/2"
1'-3 1/4"
1/2"
1'-1 1/2"
7 7/8"
1/2"
1'-1 1/2"
7 7/8"
1/2"
1'-1 1/2"
1/2"
1'-1 1/2"
1/2"
1'-1 1/2



1 PLAN DETAIL - TYPICAL LOWER LEVEL WINDOW DETAIL
1 1/2" = 1'-0"



2 PLAN DETAIL - TYPICAL UPPER LEVELS WINDOW DETAIL
1 1/2" = 1'-0"

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DOB APPROVAL

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BETANCES VI DEVELOPMENT

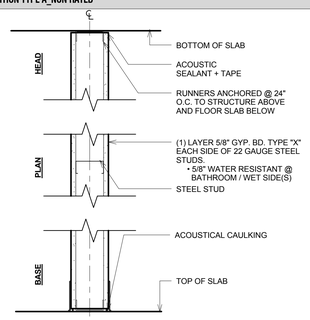
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PLAN DETAILS

SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	1 1/2" = 1'-0"
DRAWING BY:	Author
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DWG NO:	A-335.00
NYC DOB NUMBER:	

PARTITION TYPE A_NON RATED

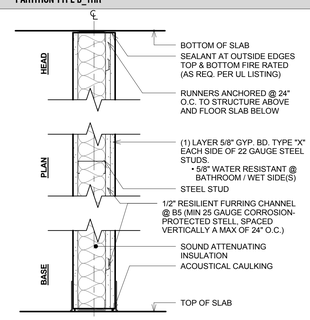


A

NOTES:
• ALL NOTES REFER TO BOTH SIDES OF PARTITION U.O.N.
• INTERIOR PARTITIONS WITHIN APARTMENTS TO STOP 3" ABOVE FINISHED CEILING FOR PLENUM.

TYPE	ACTUAL PTN WIDTH	STUD SIZE	Fire Rating	INSUL	MAX. CLR HT @ 16" O.C.	MAX. CLR HT @ 24" O.C.	GA FILE NO.	UL	STC	Comments
A1	0' - 3 3/4"	MTL STUD_2 1/2"	N/A	-	-	-	-	-	-	
A2	0' - 4 7/8"	MTL STUD_3 5/8"	N/A	-	-	-	-	-	-	

PARTITION TYPE B_1HR

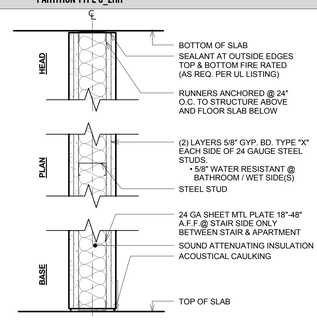


B

NOTES:
• ALL NOTES REFER TO BOTH SIDES OF PARTITION U.O.N.
• INTERIOR PARTITIONS WITHIN APARTMENTS TO STOP 3" ABOVE FINISHED CEILING FOR PLENUM.

TYPE	ACTUAL PTN WIDTH	STUD SIZE	Fire Rating	INSUL	MAX. CLR HT @ 16" O.C.	MAX. CLR HT @ 24" O.C.	GA FILE NO.	UL	STC	Comments
B5	0' - 5 1/2"	MTL STUD_3 5/8"	1HR	3 1/2"	-	-	WP1072	U419	51	

PARTITION TYPE C_2HR

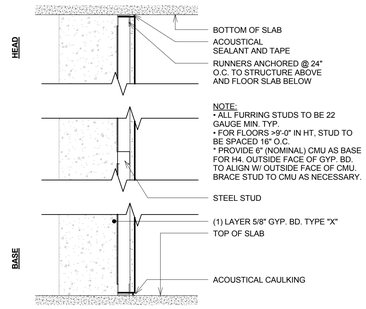


C

NOTES:
• ALL NOTES REFER TO BOTH SIDES OF PARTITION U.O.N.
• PROVIDE FULL HT. 20 GA. STEEL PLATE WITHIN ENTIRE PARTITION BETWEEN STAIRS AND APARTMENTS.

TYPE	ACTUAL PTN WIDTH	STUD SIZE	Fire Rating	INSUL	MAX. CLR HT @ 16" O.C.	MAX. CLR HT @ 24" O.C.	GA FILE NO.	UL	STC	Comments
C2	0' - 6 1/8"	MTL STUD_3 5/8"	2HR	3 1/2"	-	-	WP1072	U419	54	

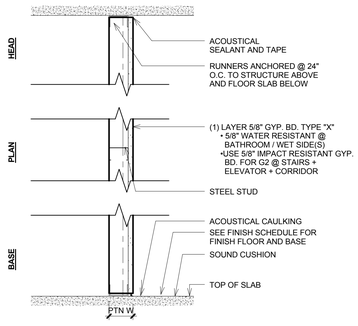
PARTITION TYPE D_FURRING



D

TYPE	ACTUAL PTN WIDTH	STUD SIZE	Fire Rating	INSUL	MAX. CLR HT @ 16" O.C.	MAX. CLR HT @ 24" O.C.	GA FILE NO.	UL	STC	Comments
D1	0' - 1 1/2"	Metal – Stud Layer	N/A	2"	-	-				
D2	0' - 2 1/4"	MTL STUD_1 5/8"	N/A	2"	-	-				
D3	0' - 3 1/8"	MTL STUD_2 1/2"	N/A	2"	-	-				
D4	0' - 4 1/4"	MTL STUD_3 5/8"	N/A	2"	-	-				

PARTITION TYPE E_FREE STANDING FURRING

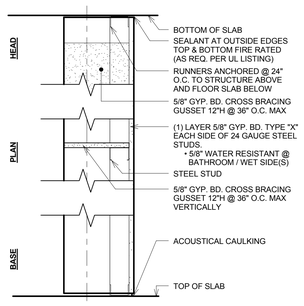


E

NOTE:
• ALL FURRING STUDS TO BE 22 GAUGE MIN. TYP.

TYPE	ACTUAL PTN WIDTH	STUD SIZE	Fire Rating	INSUL	MAX. CLR HT @ 16" O.C.	MAX. CLR HT @ 24" O.C.	GA FILE NO.	UL	STC	Comments
E5-1										
E1	0' - 1 1/2"	MTL FURRING CHANNEL_7/8"	N/A	2"						
E2	0' - 2 1/4"	MTL STUD_1 5/8"	N/A	N/A		-				
E3	0' - 3 1/8"	MTL STUD_2 1/2"	N/A	N/A		-				
E4	0' - 4 1/4"	MTL STUD_2 1/2"	N/A	N/A		-				

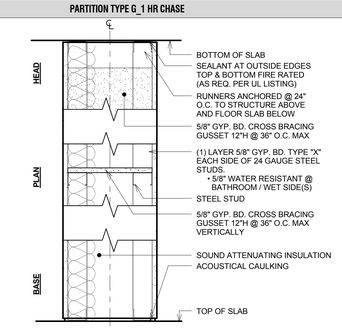
PARTITION TYPE F_ONE SIDED CHASE



F

TYPE	ACTUAL PTN WIDTH	STUD SIZE	Fire Rating	INSUL	MAX. CLR HT @ 16" O.C.	MAX. CLR HT @ 24" O.C.	GA FILE NO.	UL	STC	Comments
F1	0' - 9 1/8"	MTL STUD_2 1/2"	-							
F2	0' - 11 1/8"	MTL STUD_2 1/2"	-							
F3	1' - 1 1/8"	MTL STUD_2 1/2"	-							
F4	1' - 0 7/8"	MTL STUD_2 1/2"	-							

PARTITION TYPE G_1 HR CHASE

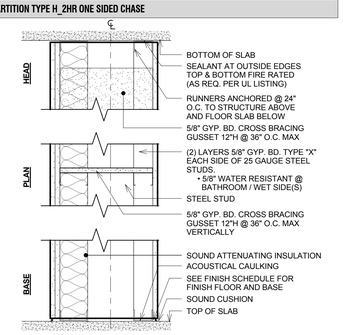


G

NOTES:
• ALL NOTES REFER TO BOTH SIDES OF PARTITION U.O.N.

TYPE	ACTUAL PTN WIDTH	STUD SIZE	Fire Rating	INSUL	MAX. CLR HT @ 16" O.C.	MAX. CLR HT @ 24" O.C.	GA FILE NO.	UL	STC	Comments
G1	1' - 0 1/4"	MTL STUD_2 1/2"	1HR	3 1/2"	-	-	WP5015	U420	50-5	
G2	1' - 2 1/4"	MTL STUD_2 1/2"	1HR	3 1/2"	-	-	WP5015	U420	50-5	

PARTITION TYPE H_2HR ONE SIDED CHASE

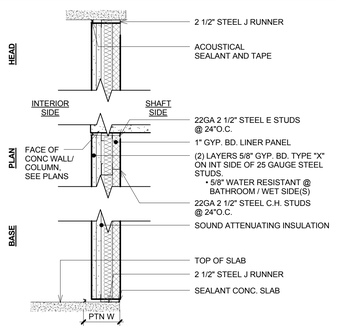


H

NOTES:
• ALL NOTES REFER TO BOTH SIDES OF PARTITION U.O.N.
• FOR PLUMBING CHASE WL BTW APARTMENTS, REPLACE THE BRACING W RESILIENT PLUMBING MOUNTS.

H	ACTUAL PTN WIDTH	STUD SIZE	Fire Rating	INSUL	MAX. CLR HT @ 16" O.C.	MAX. CLR HT @ 24" O.C.	GA FILE NO.	UL	STC	Comments
H1	1' - 2"	MTL STUD_2 1/2"	-							
H2	1' - 4"	MTL STUD_2 1/2"	-							
H3	1' - 8"	MTL STUD_2 1/2"	-							

PARTITION TYPE I_2 HR SHAFT

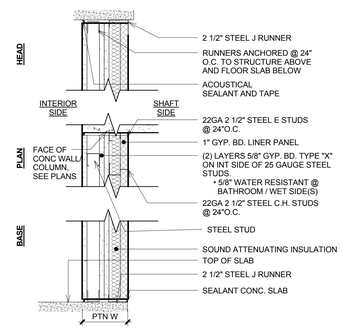


I

NOTE:
• 2 1/2" STEEL C-H STUD 22GA MAX HEIGHT = 11'-10"
• SEE SHEET G 002 GENERAL NOTES FOR MASONRY EQUIVALENT NOTES

H	ACTUAL PTN WIDTH	CMU (NOMINAL)	Fire Rating	INSUL	MAX. CLR HT @ 16" O.C.	MAX. CLR HT @ 24" O.C.	GA FILE NO.	UL	STC	Comments
I1	0' - 3 3/4"	MTL STUD_2 1/2" C-H	2HR	1"			WP7076	-	45-4	
I2	0' - 3 1/8"	MTL STUD_2 1/2" C-H	2HR	1"			WP7076	-	45-4	

PARTITION TYPE J_FURRED SHAFT

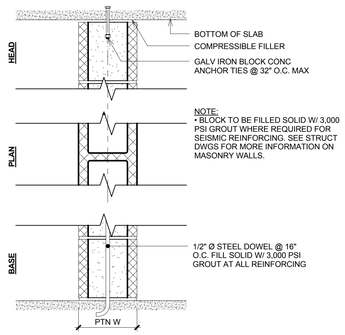


J

NOTE:
• 2 1/2" STEEL C-H STUD 22GA MAX HEIGHT = 11'-10"
• SEE SHEET G 002 GENERAL NOTES FOR MASONRY EQUIVALENT NOTES

H	ACTUAL PTN WIDTH	STUD SIZE	Fire Rating	INSUL	MAX. CLR HT @ 16" O.C.	MAX. CLR HT @ 24" O.C.	GA FILE NO.	UL	STC	Comments
J1	0' - 9"	MTL STUD_2 1/2" C-H	2HR	1"			WP7076	-	45-4	
J2	0' - 9"	MTL STUD_2 1/2" C-H	2HR	1"			WP7076	-	45-4	

PARTITION TYPE K_CMU



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KEY PLAN

NO.	DESCRIPTION	DATE
x		xx.xx.2018
NO.	**DESIGN & CONSTRUCTION SUBMISSIONS**	**DATE**

NO.	DESCRIPTION	DATE
2	**DOB SUBMISSION**	04.06.2018
1	**DD SUBMISSION**	04.06.2018
NO.	**REGULATORY SUBMISSIONS**	**DATE**

DOB APPROVAL

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PROJECT

BETANCES VI DEVELOPMENT

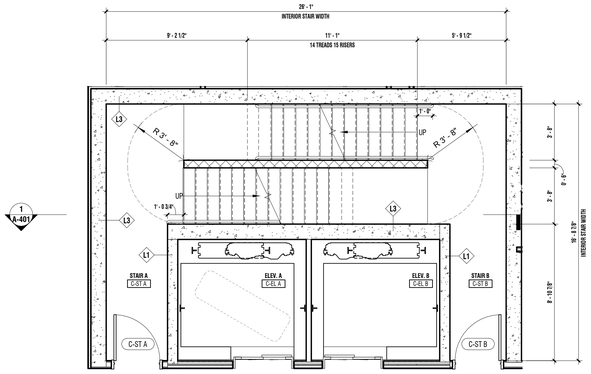
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PARTITION TYPES

SEAL & SIGNATURE

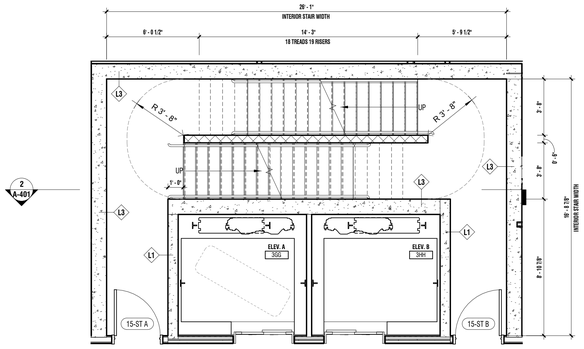
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CHECKED BY:	Checker
DWG NO:	A-350.00
NYC DOB NUMBER:	

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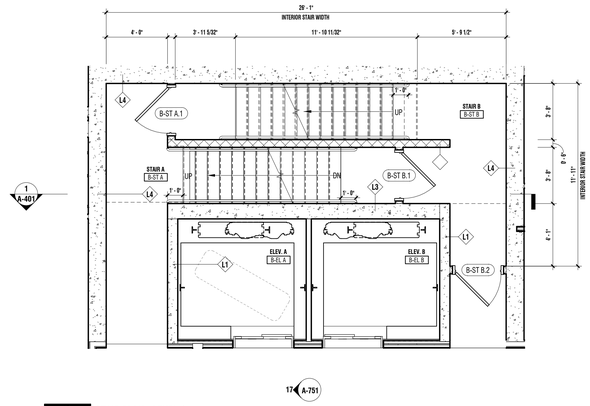
1 A-401

7 STAIR PLAN - LEVELS 2-5
1/4" = 1'-0"

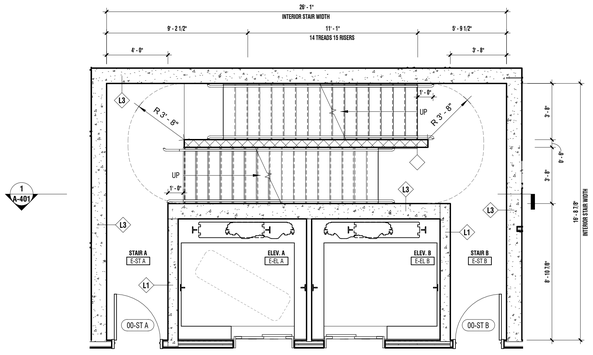


2 A-401

4 STAIR PLAN - LEVEL 15
1/4" = 1'-0"

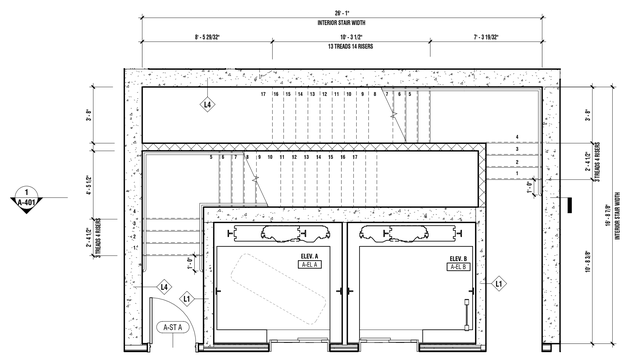


2 STAIR PLAN - LEVEL 1
1/4" = 1'-0"



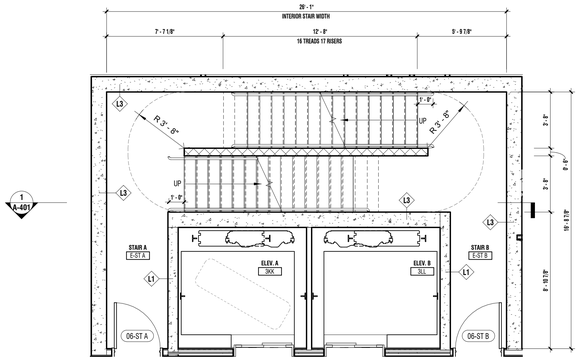
1 A-401

3 STAIR PLAN - LEVELS 7-14
1/4" = 1'-0"



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1 STAIR PLAN - CELLAR LEVEL
1/4" = 1'-0"



1 A-401

10 STAIR PLAN - LEVEL 6
1/4" = 1'-0"

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2	**DOB SUBMISSION**	04.06.2018
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DOB APPROVAL

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PROJECT

BETANCES VI DEVELOPMENT

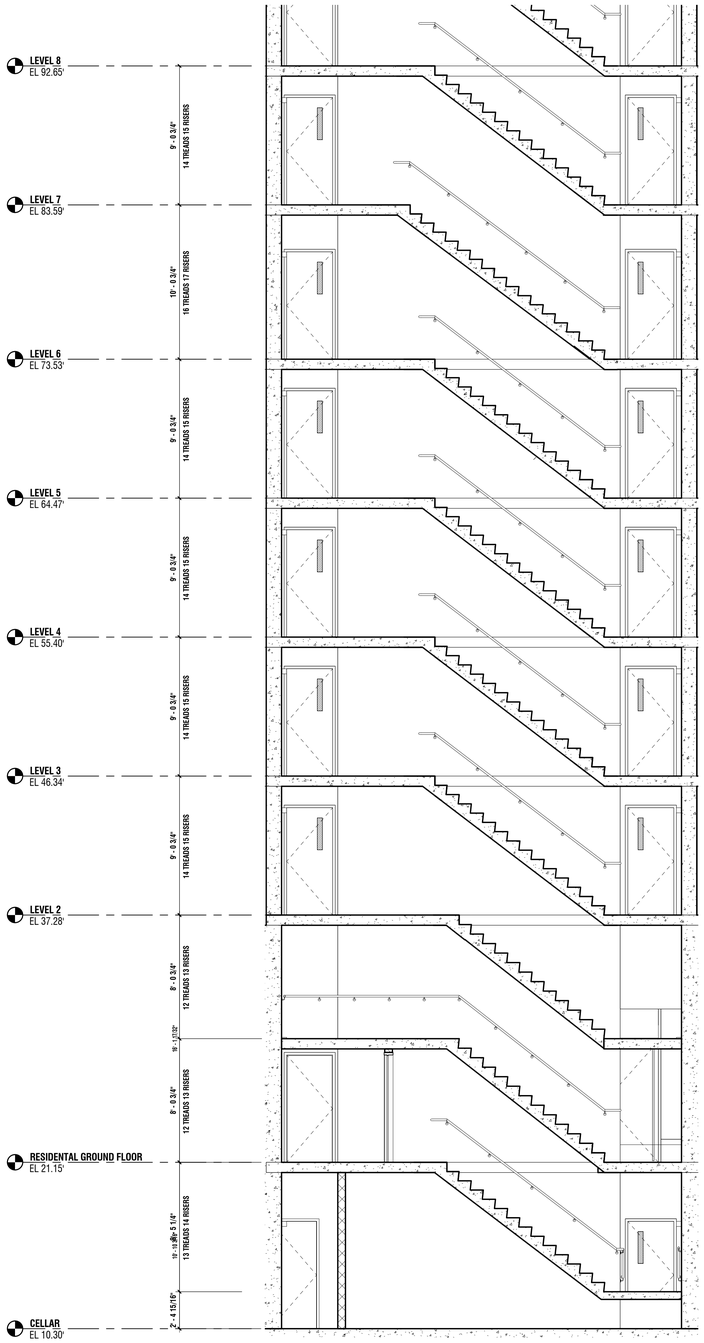
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STAIR A & B PLANS

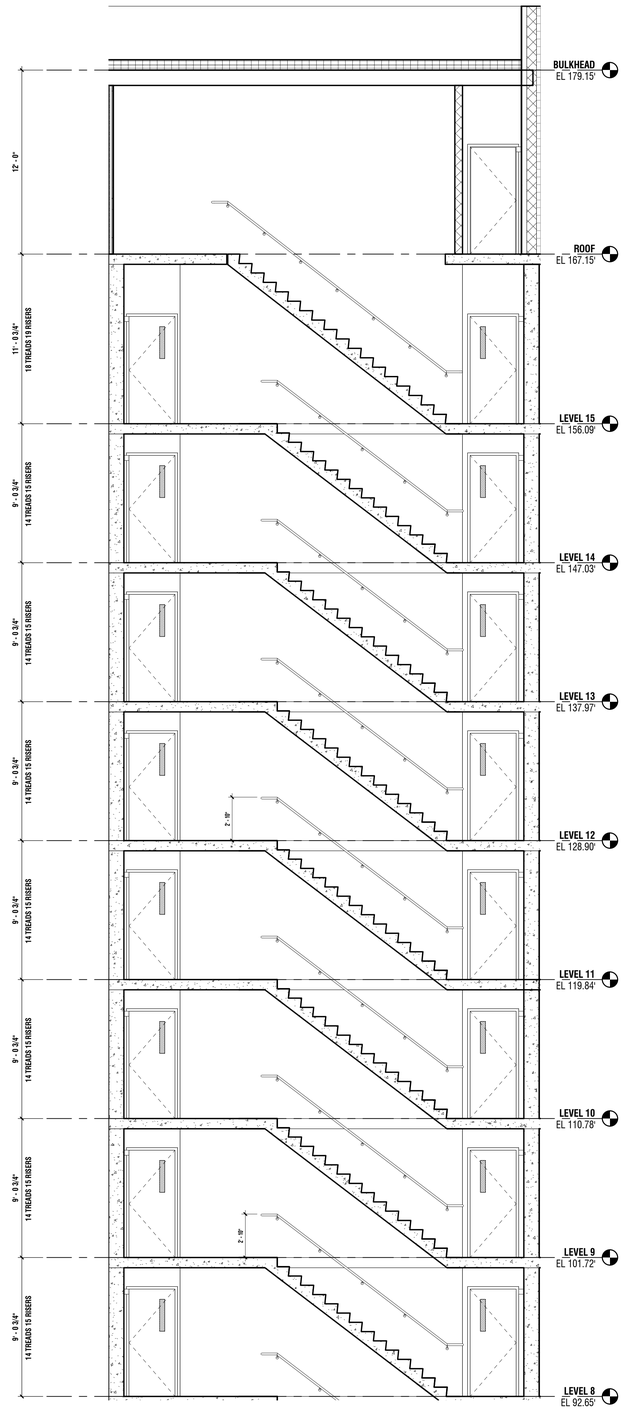
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CHECKED BY:	Checker
DWG NO:	A-400.00
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1 STAIR SECTION 1 - CELLAR LEVEL TO LEVEL 7
1/4" = 1'-0"



2 STAIR SECTION 1 - LEVEL 8 TO ROOF LEVEL
1/4" = 1'-0"

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NO.	**REGULATORY SUBMISSIONS**	**DATE**

DOB APPROVAL

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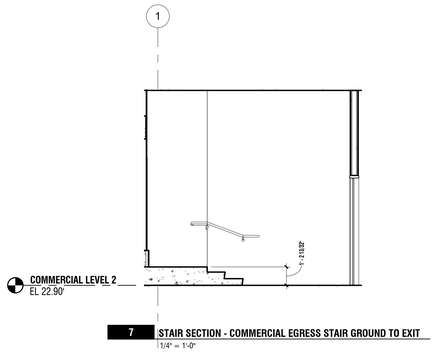
BETANCES VI DEVELOPMENT

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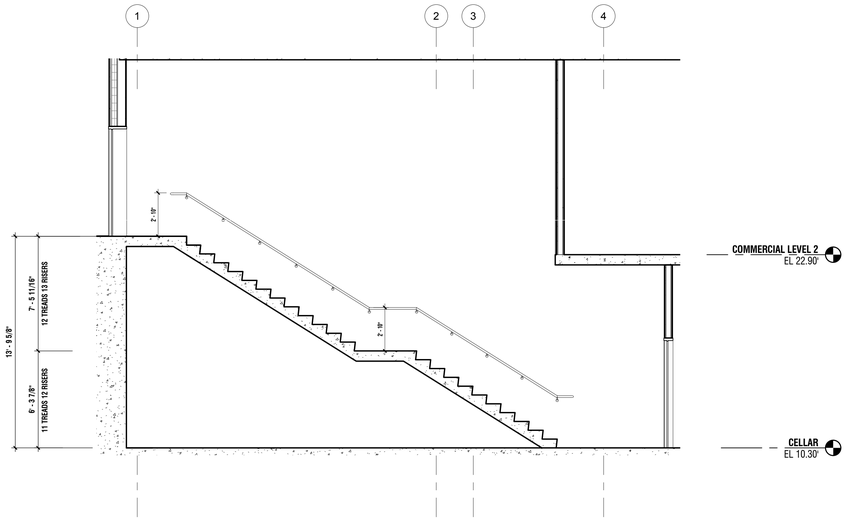
STAIR A & B SECTION

SEAL & SIGNATURE

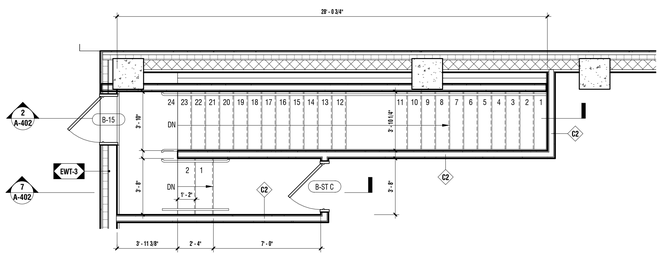
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NYC DOB NUMBER:	



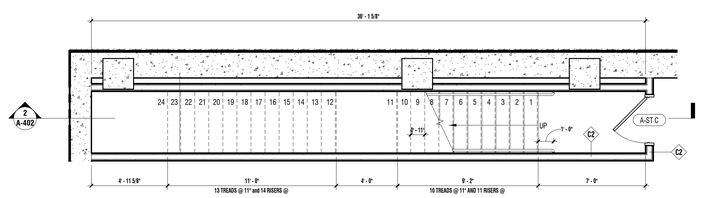
7 STAIR SECTION - COMMERCIAL EGRESS STAIR GROUND TO EXIT
1/4" = 1'-0"



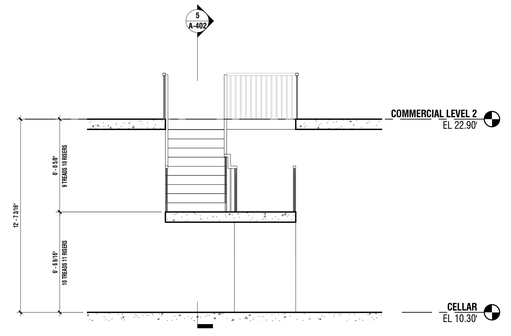
2 STAIR SECTION - COMMERCIAL EGRESS STAIR
1/4" = 1'-0"



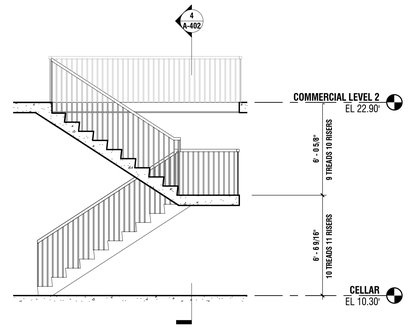
6 STAIR PLAN - COMMERCIAL EGRESS STAIR - GROUND LEVEL
1/4" = 1'-0"



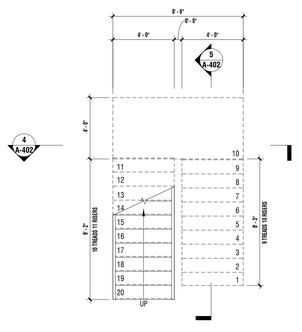
1 STAIR PLAN - COMMERCIAL EGRESS STAIR
1/4" = 1'-0"



4 STAIR SECTION - COMMERCIAL COMMUNICATING STAIR LOOKING SOUTH
1/4" = 1'-0"



5 STAIR SECTION - COMMERCIAL COMMUNICATING STAIR LOOKING WEST
1/4" = 1'-0"



3 STAIR PLAN - COMMERCIAL CONNECTING STAIR
1/4" = 1'-0"

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2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

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PROJECT

BETANCES VI DEVELOPMENT

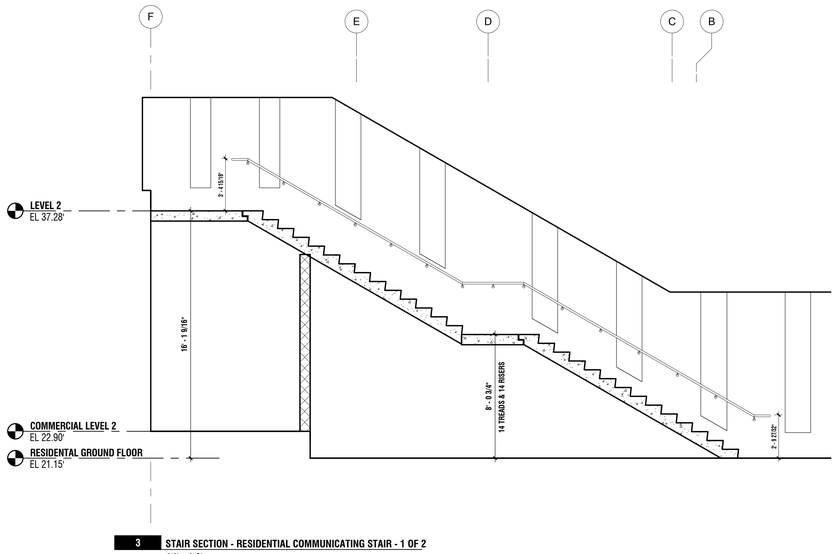
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STAIR PLANS AND SECTIONS

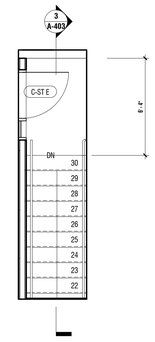
SEAL & SIGNATURE

DATE:	04/06/2018
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DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-402.00
NYC DOB NUMBER:	

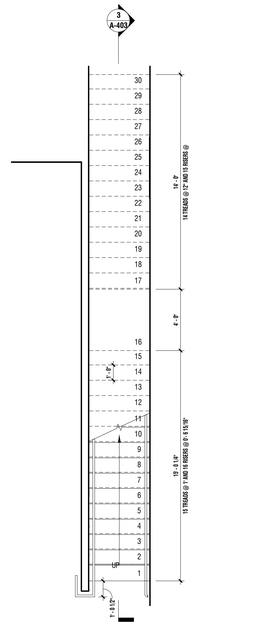
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3 STAIR SECTION - RESIDENTIAL COMMUNICATING STAIR - 1 OF 2
1/4" = 1'-0"



2 STAIR PLAN - RESIDENTIAL COMMUNICATING STAIR - LEVEL 2
1/4" = 1'-0"



1 STAIR PLAN - RESIDENTIAL COMMUNICATING STAIR
1/4" = 1'-0"

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PROJECT

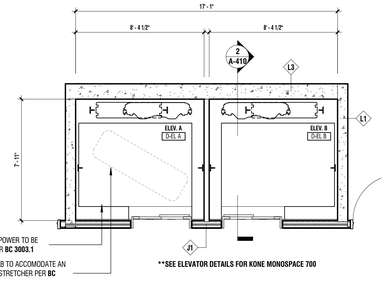
BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

STAIR PLANS AND SECTIONS

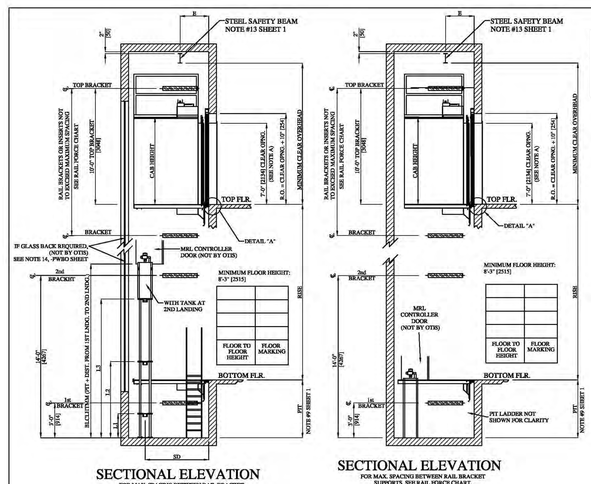
SEAL & SIGNATURE

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PROJECT NO:	17110
SCALE:	1/4" = 1'-0"
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-403.00
NYC DOB NUMBER:	



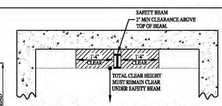
1 RESIDENTIAL ELEVATOR PLAN - TYPICAL LEVEL

1/4" = 1'-0"



* TANK AT 2ND LANDING NOT FOR GLASS BACK ARRANGEMENTS

INSERT / SUPPORT ELEVATION DIMENSIONS FOR TANK AT SECOND LANDING				
PIT/OPH	BL CL/HTMM	L1	L2	L3
4'-0" [1219]	12" [304] < BL CL/HTMM ≤ 19'-1 3/4" [3992]	BL CL/HTMM - 2-3/4" [69.2]	-	-
	19'-1 3/4" [3992] < BL CL/HTMM ≤ 29'-3" [8172]	(BL CL/HTMM / 2) - 2-1/2" [62.5]	BL CL/HTMM - 2-3/4" [69.2]	-
	29'-3" [8172] < BL CL/HTMM ≤ 39'-4 1/4" [9152]	(BL CL/HTMM / 3) - 2-3/8" [60.7]	(3/3*(BL CL/HTMM) - 2-9/16" [65]	BL CL/HTMM - 2-3/4" [69.2]
4'-3" [1524]	12" [304] < BL CL/HTMM ≤ 19'-1 3/4" [3992]	BL CL/HTMM - 2-3/4" [69.2]	-	-
	19'-1 3/4" [3992] < BL CL/HTMM ≤ 29'-3" [8172]	(BL CL/HTMM / 2) - 2-1/2" [62.5]	BL CL/HTMM - 2-3/4" [69.2]	-
	29'-3" [8172] < BL CL/HTMM ≤ 39'-4 1/4" [9152]	(BL CL/HTMM / 3) - 2-3/8" [60.7]	(3/3*(BL CL/HTMM) - 2-9/16" [65]	BL CL/HTMM - 2-3/4" [69.2]
6'-3" [1673]	12" [304] < BL CL/HTMM ≤ 19'-1 3/4" [3992]	BL CL/HTMM + 8-1/4" [236.5]	-	-
	19'-1 3/4" [3992] < BL CL/HTMM ≤ 29'-3" [8172]	(BL CL/HTMM / 3) + 3-1/2" [88.6]	BL CL/HTMM + 8-1/4" [236.5]	-
	29'-3" [8172] < BL CL/HTMM ≤ 39'-4 1/4" [9152]	(BL CL/HTMM / 3) + 1-5/8" [48.9]	(2/3*(BL CL/HTMM) + 5-7/16" [138.2]	BL CL/HTMM + 8-1/4" [236.4]



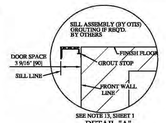
OVERHEAD BEAM CLEARANCE

SEE NOTE 13 ON PWBO SHEET

SUPPORT FORCES	
F1	F2
TANK STAND SUPPORT FOR 2ND FLOOR CONTROLLER LOCATION	
SEISMIC ZONES 0 & 1	
F1	50 # [222 N
F2	50 # [222 N
SEISMIC ZONES 2 , 3 & 4	
F1	850 # [3781 N
F2	700 # [3114 N

SUPPORT DISTANCE FROM FRONT HOISTWAY WALL	
CAPACITY	"SD"
2100	4'-6 7/16" [1383]
2500	4'-9" [1448]
3000	4'-9 7/16" [1434]
3500	[1434]

NOTE: SUPPORTS TO BE PROVIDED ON THE CONTROLLER SIDE OF THE THE HOISTWAY AND ALL DIMENSIONS ARE TO BE REFERENCED FROM THE CENTERLINE OF THE SUPPORTS



DETAIL "A"

SILL SUPPORT

ADEQUATE SUPPORT AT ALL FASTENING POINTS OF ENTRANCE ASSEMBLY REQUIRED. MUST WITHSTAND A HORIZONTAL PULL-OUT FORCE OF 1445 LBS.(65.5 kg) @ EA. FASTENING POINT (8 @ DA. ENTRANCE) INCLUDING SUPPORT FOR CENTER SILL SUPPORT BRACKET (NOT BY OTIS).

NOTES:
VALUES SHOWN IN [ ] ARE IN MM

PIT AND OVERHEAD REQUIREMENTS									
PIT	MINIMUM RISE FOR PIT DEPTHS								
	1-STAGE			2-STAGE					
	100 F.P.M. 0.51 m/s		125 F.P.M. 0.64 m/s		100 F.P.M. 0.51 m/s		125 F.P.M. 0.64 m/s		
	2'-0" CAB [610]	3'-0" CAB [777]	2'-6" CAB [762]	3'-0" CAB [772]	2'-6" CAB [762]	3'-0" CAB [921]	2'-6" CAB [762]	3'-0" CAB [922]	
4'-0" [1219]	13'-6" [4099]		13'-2" [4013]		27'-6" [8382]		27'-6" [8382]		
5'-0" [1524]	14'-6" [4394]		14'-2" [4310]		28'-6" [8153]		28'-6" [8077]		
6'-0" [1828]	15'-6" [4699]		15'-2" [4623]		NA		NA		
MRL CLEAR OVERHEAD	12'-6" [3745]	14'-6" [4394]	12'-6" [3795]	14'-6" [4394]	12'-6" [3801]	14'-6" [4470]	13'-0" [3962]	15'-0" [4572]	

MAXIMUM RISE MAY BE REDUCED BASED ON WEIGHT OF CAR, MAXIMUM CLEAR OVERHEAD = MIN. CLEAR OVERHEAD + 2'-0" [610], ONTARIO, CANADA MINIMUM PIT DEPTH = 5'-0" [1524].

REVISIONS	
3/01/2013	Created dwg. nb
5/28/2013	NOTE 13 IN ELEV. VIEW WAS NOTE 14. SA
01/04/2016	Changed the Standard Hoistway Definition. AJM
04/05/2016	Changed Clear Overhead. AJM

THIS SHEET COVERS THE FOLLOWING CONDITIONS:

PASSENGER CARS;
2100 - 3500 lbs. @ 100 / 125 F.P.M.
953 - 1588 KG @ 0.50 / 0.64 M/S.
FRONT OPENING ONLY.
SEISMIC ZONE 0, 1, 2, 3, & 4.

NOTE A:
8'-0" [2438] ENTRANCE AVAILABLE WITH 9'-9" [2819] CAB.

APPROVAL
THIS ARRANGEMENT AND SUPPLEMENTARY NOTES APPROVED

SIGNED: _____ DATE: _____

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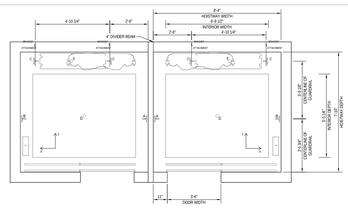
HydroFit

Otis
A United Technologies Company

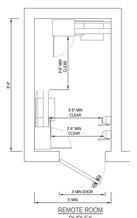
DATE:	SHEET 3 of 4
DWG. NO.:	HYD-MRL-P-EL
BUILDING	
LOCATION	
CONT. WITH	
OWNER	
ARCHT.	
CONTRACT NO.	

4 ELEVATOR REFERENCE - OTIS HYDROFIT - SECTION DETAILS

1/4" = 1'-0"



HOISTWAY PLAN VIEW



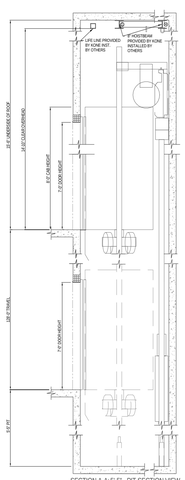
REMOTE ROOM DUPLEX

BKNTS ABOVE TOPMOST LANDING - IMPACT LOADING REACTIONS (lbf)			
REACTION LOCATION	A	B	C
X DIRECTION	1870	240	50
Y DIRECTION	520	1990	100
BKNTS BELOW TOPMOST LANDING - RUNNING REACTIONS (lbf)			
X DIRECTION		290	240	50
Y DIRECTION		210	110	100
MAY DEFLECTION NOT TO EXCEED 0.125" [3mm] DUE TO APPLIED LOADS				

VERTICAL FORCES ON PIT FLOOR (lbf)					
REACTION LOCATION	A	B	C	D	E
2 DIRECTION	2400	3000	1300	3000	3000

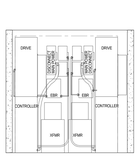
*VERTICAL REACTIONS A, B & C OCCUR SIMULTANEOUSLY. VERTICAL REACTIONS D & E OCCUR INDIVIDUALLY AND SEPARATELY FROM A, B & C.

HOISTBEAM & LIFE LINE VERTICAL FORCES (lbf)			
REACTION LOCATION	A	B	LIFE LINES
Z DIRECTION	9250	9080	5000

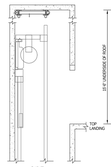


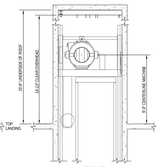
SECTION A-A: 5'-0" PIT SECTION VIEW

FLOOR BY FLOOR HEIGHTS CHART			
LANDING 9	10'-0" F	LANDING 18	NA
LANDING 8	10'-0" F	LANDING 17	NA
LANDING 7	10'-0" F	LANDING 16	NA
LANDING 6	10'-0" F	LANDING 15	NA
LANDING 5	10'-0" F	LANDING 14	NA
LANDING 4	10'-0" F	LANDING 13	NA
LANDING 3	10'-0" F	LANDING 12	9'-4" F
LANDING 2	10'-0" F	LANDING 11	9'-4" F
LANDING 1	10'-0" F	LANDING 10	9'-4" F

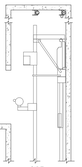


REMOTE ROOM DUPLEX





ELEVATION VIEW FROM TOP LANDING LOOKING INTO HOISTWAY



SCALE: NOT TO SCALE

DRAWING GENERATED USING PARAMETRIX TECHNOLOGY

PREPARATORY WORK BY OTHERS: THE CUSTOMER OR CUSTOMER'S CONTRACTOR, SHALL BE RESPONSIBLE FOR THE FOLLOWING CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK AT NO COST TO KONE, INC LOCAL CODES SHALL PREVAIL WHEN APPLICABLE

1. PROVIDE A CLEAR, PLUMB HOISTWAY OF THE SIZE SHOWN ON THE FINAL KONE LAYOUT. VARIATIONS MUST NOT EXCEED 2", (TOLERANCE = -0" + 2")
2. PROVIDE ADEQUATE SUPPORT FOR GUIDE RAIL BRACKETS (INCLUDING DIVIDER BEAMS) FOR MULTIPLE ELEVATORS IN A COMMON HOISTWAY FROM PIT FLOOR TO THE TOP OF THE HOISTWAY AND NOT SPANNING FURTHER THAN ALLOWED BY THE GOVERNING CODE AUTHORITY. FIREPROOFING SHALL BE AFTER INSTALLATION OF BRACKETS.
3. HOISTWAY VENTILATION SHALL BE PROVIDED PER CODE REQUIREMENTS.
4. PROJECTIONS REQUIRING BEVELING IN ACCORDANCE WITH CODE REQUIREMENTS SHALL BE BEVELED AT AN ANGEL NOT LESS THAN 75 DEGREES FROM THE HORIZONTAL.
5. PROVIDE REMOVABLE, OSHA COMPLIANT BARRICADES AROUND ALL HOISTWAY OPENINGS AND BETWEEN ELEVATORS INSIDE OF THE HOISTWAY AS REQUIRED. PROVIDE TWO LIFELINE ATTACHMENTS AT THE TOP, FRONT OF THE HOISTWAY.
6. ARRANGE FOR ALL BLOCK OUT / CUTOUT OF OPENINGS TO INSTALL HALL PUSHBUTTONS, SIGNAL FIXTURES, AND HATCH DUCT.
7. PROVIDE A DRY PIT REINFORCED TO SUSTAIN VERTICAL FORCE FROM RAILS AND BUFFERS. REFERENCE THE REACTION LOAD TABLES FOR VERTICAL FORCES. SUMPS AND / OR PUMPS PUMPS (WHERE PERMITTED) LOCATED WHITIN THE PIT MAY NOT INTRERE WITH THE ELEVATOR EQUIPMENT.
8. PROVIDE SUITABLE LIGHTING FOR THE MACHINE SPACE WITH A LIGHT SWITCH LOCATED IN THE HOISTWAY. PROVIDE A LIGHT FIXTURE WITH AND A SEPARATE GFCI PROTECTED DUPLEX CONVENIENCE OUTLET IN THE ELEVATOR PIT.
9. ENTRANCE WALLS ARE TO BE LEFT OPEN UNTIL THE ELEVATOR EQUIPMENT IS INSTALLED. ADEQUATE SUPPORT FOR ENTRANCE ATTACHMENT POINTS IS REQUIRED ALL LANDINGS. ALL FINISHED FLOORING AND GROUTING IS TO BE INSTALLED AFTER THE ENTRANCE FRAMES ARE INSTALLED.
10. HBEAMS, PROVIDED BY KONE, MUST BE INSTALLED IN THE ELEVATOR HOISTWAY OVERHEAD PER THE KONE FINAL LAYOUT DRAWINGS.
11. PROVIDE A PIT LADDER OF NON-COMBUSTIBLE MATERIAL EXTENDING FROM PIT FLOOR TO 48" ABOVE SILL OF ACCESS LANDING. LOCATE AND INSTALL PER KONE FINAL SLEEVES, OR PENETRATIONS, LOCATED PER MACHINE ROOM PLAN VIEW ON KONE FINAL LAYOUT DRAWINGS.
12. FOR PROPER EQUIPMENT OPERATION, THE MACHINE SPACE AT THE TOP OF THE HOISTWAY MUST BE PROPERLY VENTED PER CODE REQUIREMENTS. MAX ALLOWED HUMIDITY IS 95% NON-CONDENSING. HOISTWAY MUST MAINTAIN A TEMPERATURE BETWEEN 41 F AND 104 F.
13. THE ACCESS DOOR TO THE CONTROL SPACE OR THE CONTROL ROOM MUST BE SECURED AGAINST UNAUTHORIZED ACCESS. IT SHALL BE SELF LOCKING AND SELF CLOSING.
14. PROVIDE A 15-AMP 120V AC FUSED SERVICE WITH GROUND (VIA EMERGENCY LIGHT SUPPLY IF AVAILABLE) CONNECTED TO EACH CONTROL CABINET FOR LIGHTING AND FAN. PROVIDE DEDICATED PHONE LINE TERMINATING AT THE ELEVATOR CONTROL CABINET.
15. FOR CONTROL SPACES LOCATED REMOTELY FROM THE ELEVATOR HOISTWAY, PROVIDE A GOVERNOR ACCESS DOOR OF SIZE AND LOCATION PER KONE FINAL LAYOUT DRAWINGS. THE ACCESS DOOR SHALL BE SECURED AGAINST UNAUTHORIZED ACCESS.
16. PROVIDE A SUITABLE WORKING ENVIRONMENT INCLUDING ADEQUATE ACCESS TO THE BUILDING, PROPER LIGHTING IN ALL AREAS, CLEAN AND SAFE STORAGE ADJACENT TO THE HOISTWAY, AND SUFFICIENT ON-SITE REFUSE CONTAINERS FOR THE DISPOSAL OF ELEVATOR PACKING MATERIALS.
17. THIS DRAWING MUST BE REVIEWED AND APPROVED BY A LICENCED PROFESSIONAL TO ENSURE COMPLIANCE WITH LOCAL BUILDING CODES.
18. THESE DRAWINGS ARE FOR INFORMATION PURPOSES ONLY AND MUST NOT BE USED FOR CONSTRUCTION PURPOSES. FULLY DETAILED CONSTRUCTION DRAWINGS ARE AVAILABLE FROM THE PRODUCT MANUFACTURER.

KONE MonoSpace 700

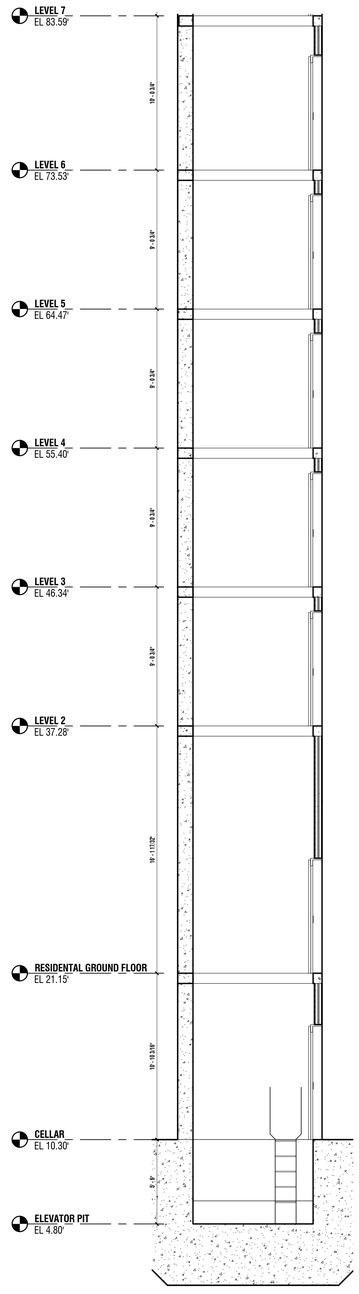
25 POST ROAD
ALBANY, NY
P: 518-464-0202
F: 518-464-0014
WWW.KONE.COM

SPECIFICATIONS

PRODUCT NAME:	KONE MONOSPACE 700 ELEVATOR NON-SEISMIC	BUILDING (PROJECT NAME)	LOCATION
CAPACITY SHAPE:	3500 LBS (1588 KG)	985 BRUCKNER BLVD	BRONX, NY
SPEED:	200 FPM	ARCHITECT	OWNER
DOOR:	RIGHT/LEFT OPENINGS	THINK! ARCHITECTURE AND DESIGN PLLC	BUILDING AUTHORITY ACCESS
TRAVEL:	128'-0"		
MACHINE LOCATION:	REAR		
CONTROL LOCATION:	REMOTE ROOM	ENGINEER	DATE
POWER SUPPLY:	208		6-18-18
REQUIRED FUSE AMPS:	60		
CONTROLLER HEAT OUTPUT:	3.6 KBTU/HR	DRAWING#	SHEET
MACHINE HEAT OUTPUT:	1.8 KBTU/HR		1/1

6 ELEVATOR REFERENCE - KONE MONOSPACE 700

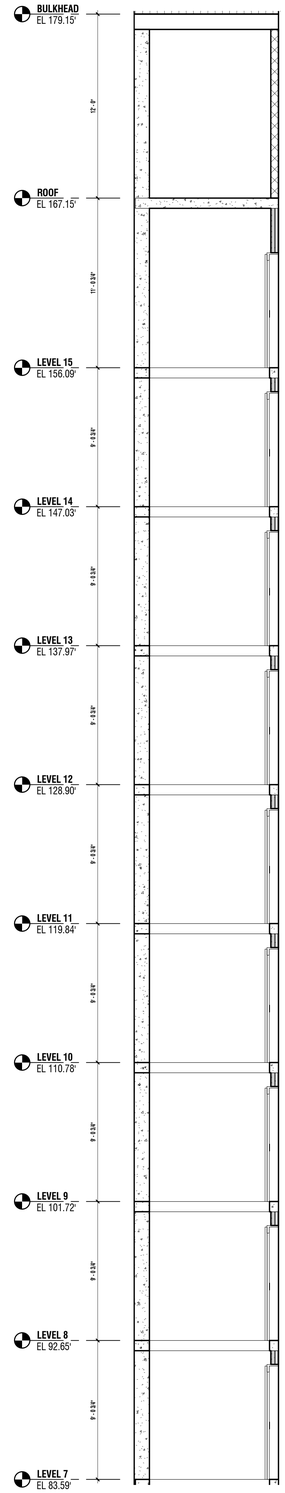
1/4" = 1'-0"



****SEE ELEVATOR DETAILS FOR KONE MONOSPACE 700**

2 RESIDENTIAL ELEVATOR SECTION - CELLAR LEVEL TO LEVEL 7

1/4" = 1'-0"



3 RESIDENTIAL ELEVATOR SECTION - LEVEL 7 TO LEVEL 15

1/4" = 1'-0"

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ARCHITECT
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P 646.688.5898

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LEMLE & WOLFF COMPANIES
5925 BROADWAY
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P 718.884.7676

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CUONO ENGINEERING PLLC
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PORT CHESTER, NY 10573
P 914.305.5679

MEP
RODKIN CARDINALE P.C.
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

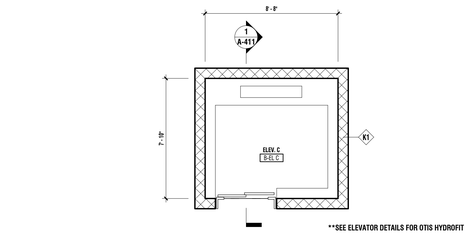
472-474 WILLIS AVE. BRONX, NY, 10455

ELEVATOR PLANS AND SECTIONS

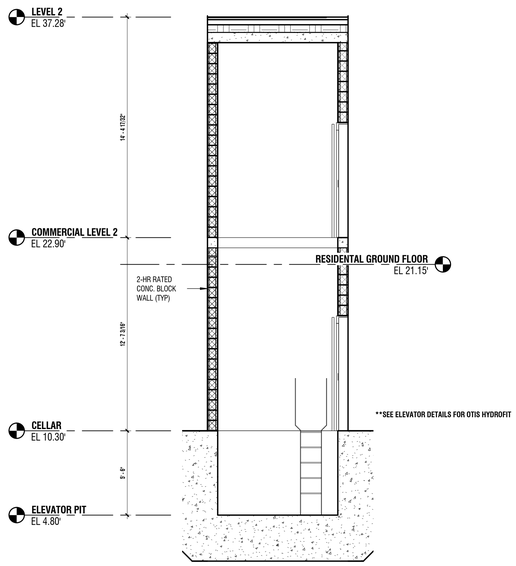
SEAL & SIGNATURE

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PROJECT NO:	17110
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DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-410.00
NYC DOB NUMBER:	

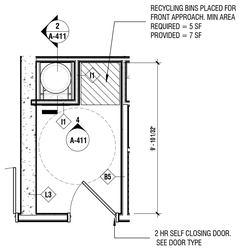
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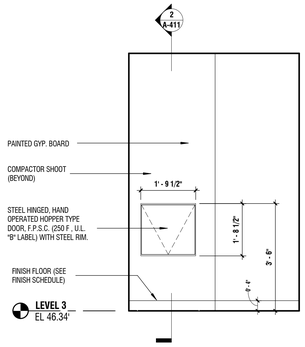
5 COMMERCIAL ELEVATOR PLAN - TYPICAL
1/4" = 1'-0"



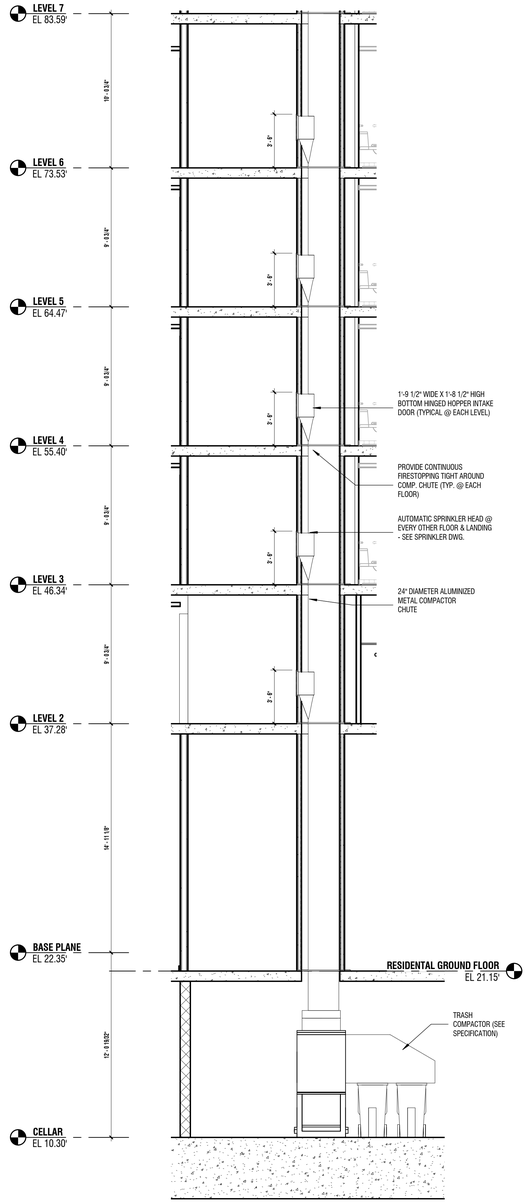
1 COMMERCIAL ELEVATOR SECTION
1/4" = 1'-0"



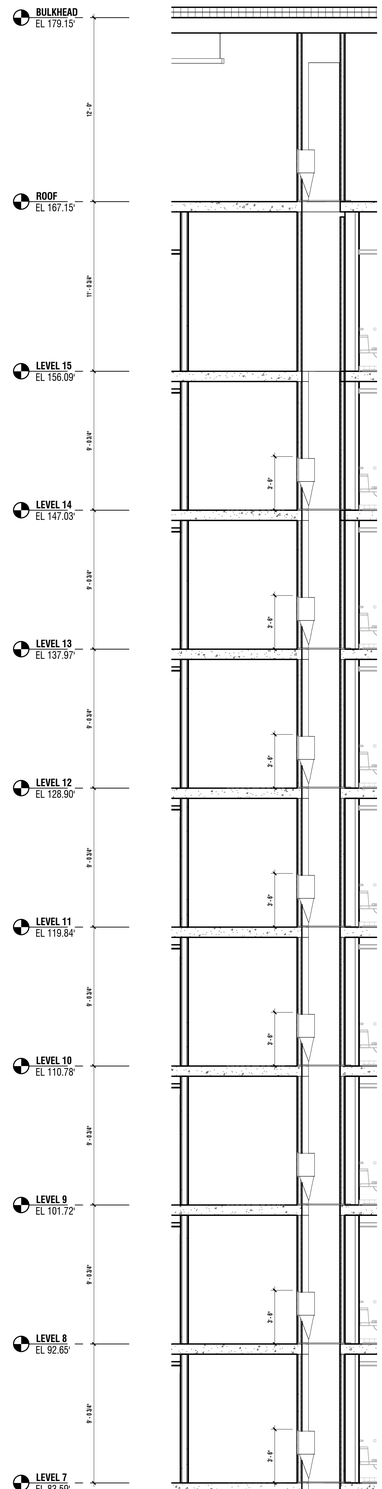
6 TRASH ROOM PLAN
1/4" = 1'-0"



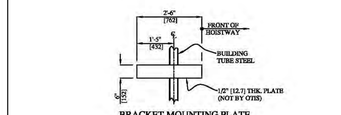
4 INTERIOR ELEVATION - TRASH ROOM DETAIL
1/2" = 1'-0"



2 SECTION THROUGH TRASH CHUTE - CELLAR LEVEL TO LEVEL 6
1/4" = 1'-0"

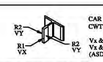


3 SECTION THROUGH TRASH CHUTE - LEVEL 7 TO ROOF LEVEL
1/4" = 1'-0"



BRACKET MOUNTING PLATE



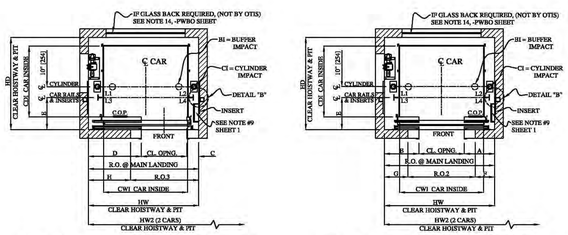


CAR R1 = SAFETY APPLICATION
CWT R1 = RUNNING
R2 = LOADING OR RUNNING
Vx & Vy DO NOT OCCUR SIMULTANEOUSLY
Vx & Vy = AT ALLOWABLE STRESS DESIGN (ASD) OR WORKING LEVEL

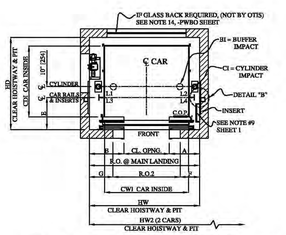
RAIL FORCE & BRACKET SPACING							MAXIMUM
SEISMIC	ZONE 0 & 1		ZONE 2		ZONE 3 & 4		BRACKET
CAPACITY	R1	R2	VX	VY	VX	VY	SPACING
2100	150 #	72 #	1583 #	791 #	3166 #	1583 #	14'-0" [4267]
	667 N	320 N	7040 N	3520 N	14081 N	7040 N	
2500	199 #	85 #	1535 #	767 #	3070 #	1535 #	
	885 N	378 N	6827 N	3413 N	13654 N	6827 N	
3000	242 #	115 #	1475 #	737 #	2950 #	1475 #	
	1076 N	512 N	6560 N	3280 N	13120 N	6560 N	
3500	283 #	144 #	1415 #	707 #	2830 #	1415 #	
	1259 N	641 N	6293 N	3147 N	12586 N	6293 N	

RAIL BRACKET SUPPORT, (NOT BY OTIS), DEFLECTION NOT TO EXCEED 1/8" [3] BASED ON HORIZONTAL RAIL FORCES.

PIT FLOOR FORCES	
CAPACITY	
BI = BUFFER IMPACT	22200 #
	98746 N
CI = CYLINDER IMPACT	10882 #
	48403 N



FRONT RIGHT HAND ENTRANCE AS SHOWN
(LEFT HAND OPPOSITE)
AVAILABLE FOR 2100, 2500, 3000, & 3500



CENTER OPENING ENTRANCE ARRANGEMENT
AVAILABLE FOR 3000, & 3500
(CAR OFFSET = LEFT)

* CAB WITH STANDARD 9'16", [15] WALL PANELS					CL. OPNG. = CLEAR OPENING						R.O. = ROUGH OPENING					
HYD-MRL-P					CL. OPNG.	CENTER OPENING		SINGLE SLIDE			R.O.	CENTER OPENING			SINGLE SLIDE	
CAPACITY	HD	HW	HW2	*CW	*CDI		A	B	C	D	E		R.O.2	F	G	R.O.3	H
2100 MRL	5'-11" [1804]	7'-9" [2362]	15'-10" [4826]	5'-8 5/16" [1735]	4'-3 9/16" [1309]	3'-0" [914]	NA	NA	11 1/4" [285]	3'-0 3/4" [1162]	2'-4 7/8" [733]	7'-9" [2362]	NA	NA	NA	4'-9 1/4" [1454]	2'-11 3/4" [908]
2500 MRL																	
3000 MRL	6'-6" [1981]	8'-6" [2591]	17'-4" [5283]	6'-5 9/16" [1970]	5'-0 3/16" [1528]	3'-6" [1067]	2'-4 1/16" [713]	2'-7 15/16" [810]	11" [279]	4'-1" [1244]		8'-6" [2591]	5'-2" [1575]	1'-6 1/16" [459]	1'-9 15/16" [556]	5'-3" [1601]	3'-3" [990]
3500 MRL	7'-1" [2159]				5'-5 9/16" [1665]												

DIRECTIONAL ARROW INDICATES NORTH FOR HOISTWAY AND MACHINE ROOM.

NOTE:
VALUES SHOWN IN [ ] ARE IN MM

REVISIONS		
03/01/2013	Revised Cylinder Impact Loads. Revised Vx & Vy Values and Stress Verbiage in Rail Force Detail. SA Removed Elevation View and related items. nb	
01/04/2016	Changed the Standard Hoistway Definition. AJM	

THIS SHEET COVERS THE FOLLOWING CONDITIONS:

PASSENGER CARS:
2100 - 3500 lbs. @ 100 / 125 F.P.M.
953 - 1588 KG @ 0.50 / 0.64 M/S,
FRONT OPENING ONLY,
SEISMIC ZONE 0, 1, 2, 3, & 4.

APPROVAL
THIS ARRANGEMENT AND
SUPPLEMENTARY NOTES APPROVED

SIGNED: _____ DATE: _____

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HydroFit

Otis
A United Technologies Company

DATE:	SHEET 2 of 4
DWG. NO.:	HYD-MRL-P-PN
BUILDING	
LOCATION	
CONT. WITH	
OWNER	
ARCHT.	
CONTRACT NO.	

7 ELEVATOR REFERENCE - OTIS HYDROFIT - PLAN DETAILS
1/4" = 1'-0"

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224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

x		xx.xx.2018
NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE

2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018
NO.	REGULATORY SUBMISSIONS	DATE

DOB APPROVAL

TRUE

PROJECT

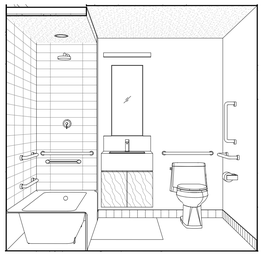
BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

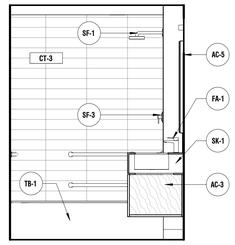
ELEVATOR DETAILS

SEAL & SIGNATURE

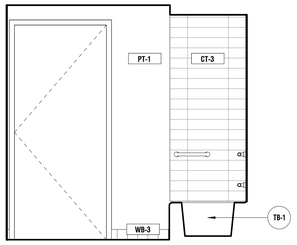
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DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-411.00
NYC DOB NUMBER:	



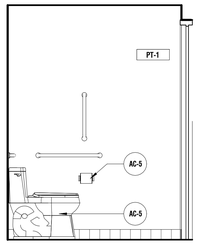
6 BATHROOM PERSPECTIVE - B1



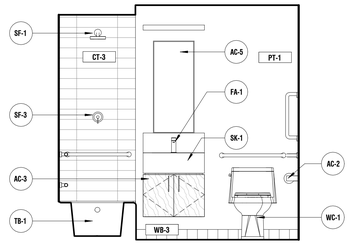
5 BATHROOM B1 - EAST ELEVATION
1/2" = 1'-0"



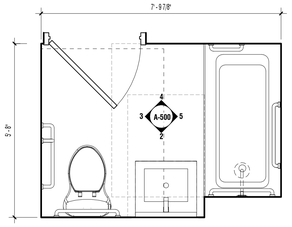
4 BATHROOM B1 - NORTH ELEVATION
1/2" = 1'-0"



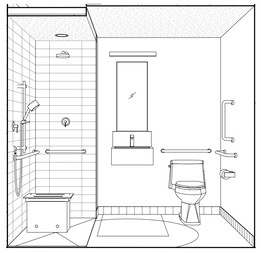
3 BATHROOM B1 - WEST ELEVATION
1/2" = 1'-0"



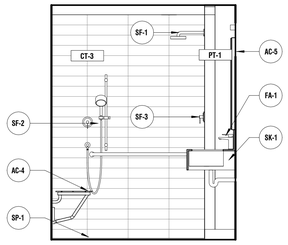
2 BATHROOM B1 - SOUTH ELEVATION
1/2" = 1'-0"



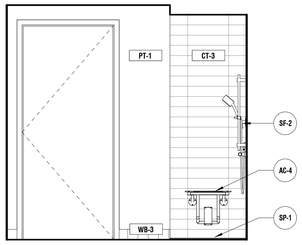
1 BATHROOM PLAN - B1
1/2" = 1'-0"



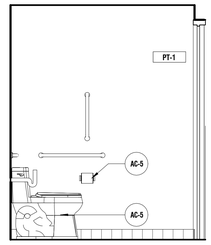
12 BATHROOM PERSPECTIVE - B1 A



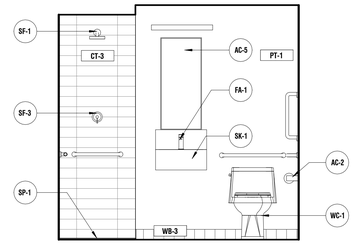
11 BATHROOM B1 A - EAST ELEVATION
1/2" = 1'-0"



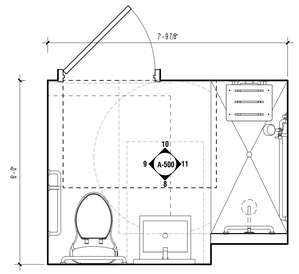
10 BATHROOM B1 A - NORTH ELEVATION
1/2" = 1'-0"



9 BATHROOM B1 A - WEST ELEVATION
1/2" = 1'-0"



8 BATHROOM B1 A - SOUTH ELEVATION
1/2" = 1'-0"



7 BATHROOM PLAN - B1 A
1/2" = 1'-0"

18 BATHROOM PERSPECTIVE - B2

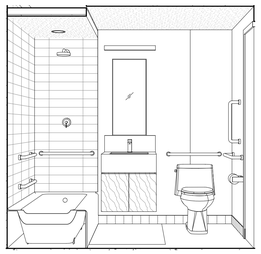
17 BATHROOM B2 - WEST ELEVATION
1/2" = 1'-0"

16 BATHROOM B2 - SOUTH ELEVATION
1/2" = 1'-0"

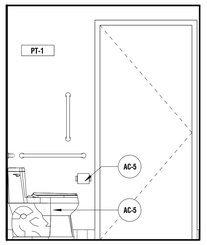
15 BATHROOM B2 - EAST ELEVATION
1/2" = 1'-0"

14 BATHROOM B2 - NORTH ELEVATION
1/2" = 1'-0"

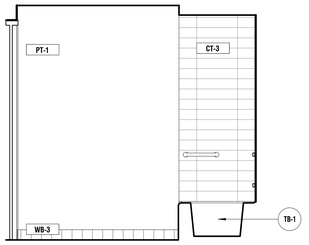
13 BATHROOM PLAN - B2
1/2" = 1'-0"



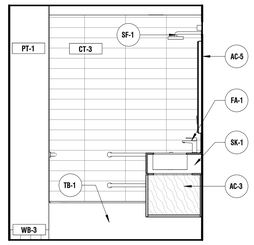
24 BATHROOM PERSPECTIVE - B3



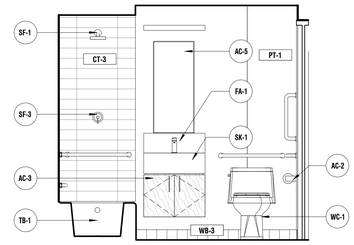
23 BATHROOM B3 - WEST ELEVATION
1/2" = 1'-0"



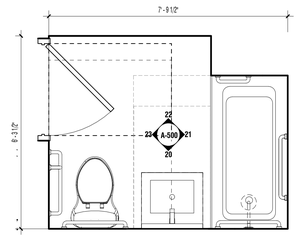
22 BATHROOM B3 - NORTH ELEVATION
1/2" = 1'-0"



21 BATHROOM B3 - EAST ELEVATION
1/2" = 1'-0"



20 BATHROOM B3 - SOUTH ELEVATION
1/2" = 1'-0"



19 BATHROOM PLAN - B3
1/2" = 1'-0"

BATHROOM FIXTURE LEGEND

MARK	ITEM	MFR.	MODEL	SIZE	DESCRIPTION
FA-1	FAUCET	KOHLER	K-99760-4	-	ADA FAUCET
SK-1	SINK	DURAVIT	-	20"	WALL MOUNTED SINK
SF-1	SHOWER HEAD	KOHLER	K-72419	-	SHOWER HEAD
SF-2	HAND SPRAY	KOHLER	K-99242	-	HANDSHOWER KIT
SF-3	VALVE TRIM	KOHLER	K-T950-4	-	
TB-1	TUB	KOHLER	K-838	60" X 30.25"	ADA BATHTUB
SP-1	SHOWER PAN	TBD	TBD	-	-
AC-1	MEDICINE CAB.	BASCO	SR329PE-W	16" X 26"	FRAMELESS
AC-2	T. P. HOLDER	DANZE	DH440977	-	CHROME FINISH
AC-3	VANITY CABINET	-	-	-	ADA ADAPTABLE CABINET
AC-4	SEAT	BOBRICK	B-5191	-	ADA SHOWER SEAT
AC-5	MIRROR	BRADLEY	780-2436	24" X 36"	-
WC-1	TOILET	KOHLER	K-3810	27-3/4"	ADA TOILET
WC-2	TOILET	KOHLER	K-6303	21"	ADA WALL HUNG TOILET

BATHROOM MATERIAL LEGEND

MARK	ITEM	MFR.	MODEL	FINISH
PT-1	PAINT	B.M.	SUPER WHITE	FLAT
CT-2	PORC. TILE	DALTILE	PF06 6" X 24"	IRON GREY
CT-3	CERAMIC TILE	NEMO	METRO 4" X 16"	WHITE GLOSSY
CT-5	CERAMIC TILE	NEMO	METRO 2" X 8"	WHITE GLOSSY

BATHROOM GENERAL NOTES

- ALL HORIZONTAL GRAB BAR HEIGHT SHALL BE SET AT 2'-10" (TOP OF BAR) FROM FINISH FLOOR. **SEE T-003 FOR MORE INFORMATION.**
- ALL BATHROOM FIXTURES AND HARDWARE ARE TO MEET ACCESSIBILITY REQUIREMENTS IN ACCORDANCE WITH LOCAL LAW 58. ***SEE T-003 FOR REQUIREMENTS***
- ALL RESIDENTIAL BATHROOMS TO COMPLY WITH APPENDIX-P TYPE B.
- BLOCKING IN WALLS TO BE PROVIDED FOR GRAB BARS IN ALL BATHROOMS. **SEE T-003 FOR BLOCKING REQUIREMENTS.**

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

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PROJECT

BETANCES VI DEVELOPMENT

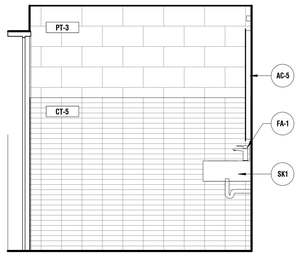
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BATHROOM TYPES

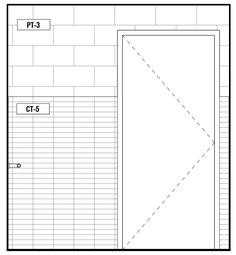
SEAL & SIGNATURE

DATE: 04/06/2018
PROJECT NO: 17110
SCALE: As indicated
DRAWING BY: Author
CHECKED BY: Checker
DWG NO: A-500.00
NYC DOB NUMBER:

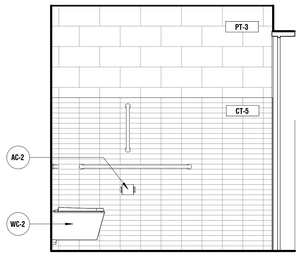
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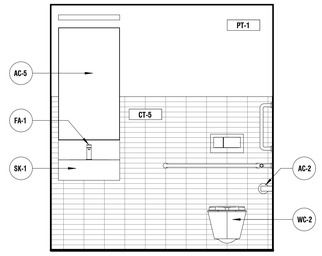
5 BATHROOM B4 - NORTH ELEVATION
1/2" = 1'-0"



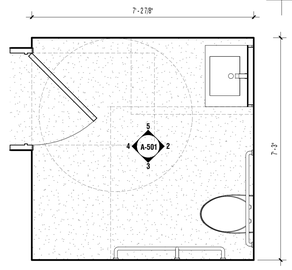
4 BATHROOM B4 - WEST ELEVATION
1/2" = 1'-0"



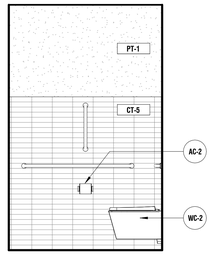
3 BATHROOM B4 - SOUTH ELEVATION
1/2" = 1'-0"



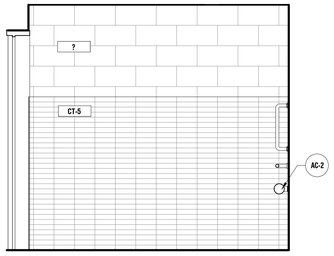
2 BATHROOM B4 - EAST ELEVATION
1/2" = 1'-0"



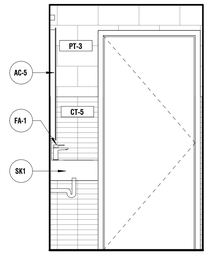
1 BATHROOM PLAN - B4
1/2" = 1'-0"



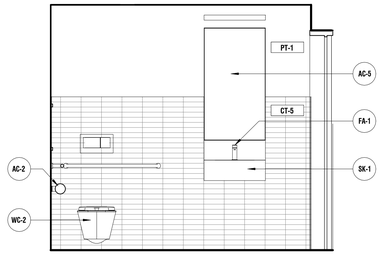
10 BATHROOM B5 - SOUTH ELEVATION
1/2" = 1'-0"



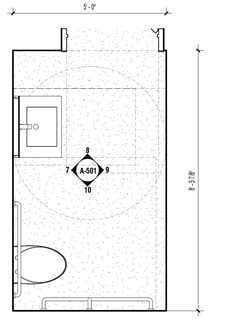
9 BATHROOM B5 - EAST ELEVATION
1/2" = 1'-0"



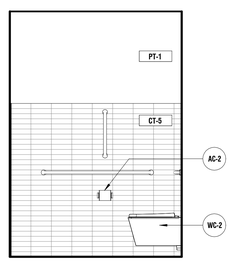
8 BATHROOM B5 - NORTH ELEVATION
1/2" = 1'-0"



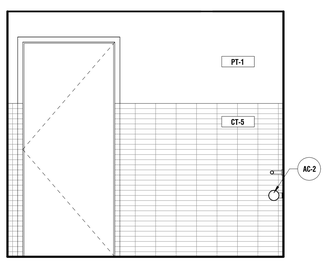
7 BATHROOM B5 - WEST ELEVATION
1/2" = 1'-0"



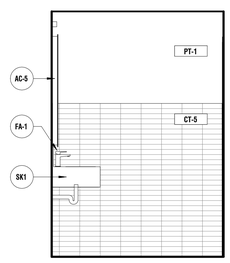
6 BATHROOM PLAN - B5
1/2" = 1'-0"



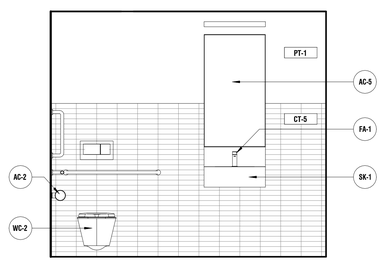
15 BATHROOM B6 - NORTH ELEVATION
1/2" = 1'-0"



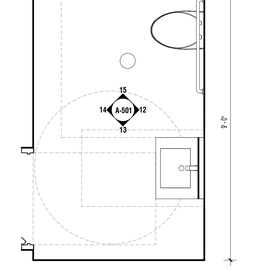
14 BATHROOM B6 - WEST ELEVATION
1/2" = 1'-0"



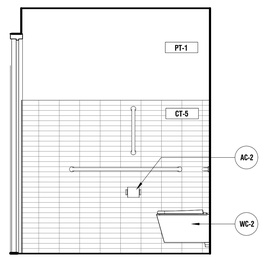
13 BATHROOM B6 - SOUTH ELEVATION
1/2" = 1'-0"



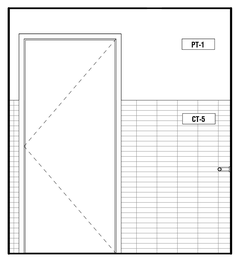
12 BATHROOM B6 - EAST ELEVATION
1/2" = 1'-0"



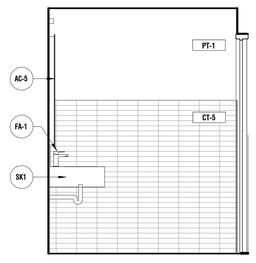
11 BATHROOM PLAN - B6
1/2" = 1'-0"



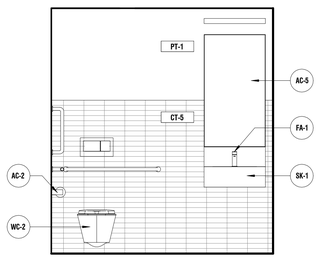
20 BATHROOM B7 - SOUTH ELEVATION
1/2" = 1'-0"



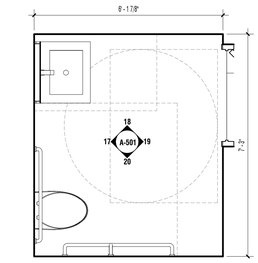
19 BATHROOM B7 - EAST ELEVATION
1/2" = 1'-0"



18 BATHROOM B7 - NORTH ELEVATION
1/2" = 1'-0"



17 BATHROOM B7 - WEST ELEVATION
1/2" = 1'-0"



16 BATHROOM PLAN - B7
1/2" = 1'-0"

BATHROOM FIXTURE LEGEND

MARK	ITEM	MFR.	MODEL	SIZE	DESCRIPTION
FA-1	FAUCET	KOHLER	K-99760-4	-	ADA FAUCET
SK-1	SINK	DURAVIT	-	20"	WALL MOUNTED SINK
SF-1	SHOWER HEAD	KOHLER	K-72419	-	SHOWER HEAD
SF-2	HAND SPRAY	KOHLER	K-99242	-	HANDSHOWER KIT
SF-3	VALVE TRIM	KOHLER	K-T950-4	-	
TB-1	TUB	KOHLER	K-838	60" X 30.25"	ADA BATHTUB
SP-1	SHOWER PAN	TBD	TBD	-	-
AC-1	MEDICINE CAB.	BASCO	SR329PE-W	16" X 36"	FRAMELESS
AC-2	T. P. HOLDER	DANZE	DH440977	-	CHROME FINISH
AC-3	VANITY CABINET	-	-	-	ADA ADAPTABLE CABINET
AC-4	SEAT	BOBRICK	B-5191	-	ADA SHOWER SEAT
AC-5	MIRROR	BRADLEY	780-2436	24" X 36"	-
WC-1	TOILET	KOHLER	K-3810	27-3/4"	ADA TOILET
WC-2	TOILET	KOHLER	K-6303	21"	ADA WALL HUNG TOILET

BATHROOM MATERIAL LEGEND

MARK	ITEM	MFR.	MODEL	FINISH
PT-1	PAINT	B.M.	SUPER WHITE	FLAT
CT-2	PORC. TILE	DALTILE	PF06 6" X 24"	IRON GREY
CT-3	CERAMIC TILE	NEMO	METRO 4" X 16"	WHITE GLOSSY
CT-5	CERAMIC TILE	NEMO	METRO 2" X 8"	WHITE GLOSSY

BATHROOM GENERAL NOTES

- ALL HORIZONTAL GRAB BAR HEIGHT SHALL BE SET AT 2' 10" (TOP OF BAR) FROM FINISH FLOOR. **SEE T-003 FOR MORE INFORMATION.**
- ALL BATHROOM FIXTURES AND HARDWARE ARE TO MEET ACCESSIBILITY REQUIREMENTS IN ACCORDANCE WITH LOCAL LAW 58. ***SEE T-003 FOR REQUIREMENTS***
- ALL RESIDENTIAL BATHROOMS TO COMPLY WITH APPENDIX-P TYPE B.
- BLOCKING IN WALLS TO BE PROVIDED FOR GRAB BARS IN ALL BATHROOMS. **SEE T-003 FOR BLOCKING REQUIREMENTS.**

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224 WEST 29TH STREET
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KEY PLAN

x		xx.xx.2018
NO.	**DESIGN & CONSTRUCTION SUBMISSIONS**	**DATE**

2	**DOB SUBMISSION**	04.06.2018
1	**DD SUBMISSION**	04.06.2018
NO.	**REGULATORY SUBMISSIONS**	**DATE**

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT
472-474 WILLIS AVE. BRONX, NY, 10455

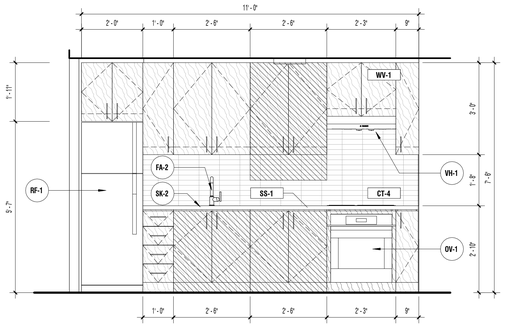
BATHROOM TYPES - PUBLIC

SEAL & SIGNATURE

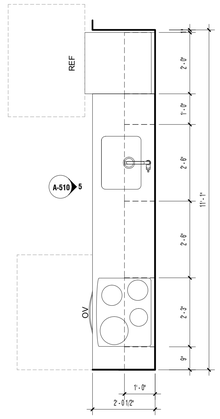
DATE: 04/06/2018
PROJECT NO: 17110
SCALE: As indicated
DRAWING BY: Author
CHECKED BY: Checker
DWG NO: A-501.00
NYC DOB NUMBER:



6 KITCHEN PERSPECTIVE - K1



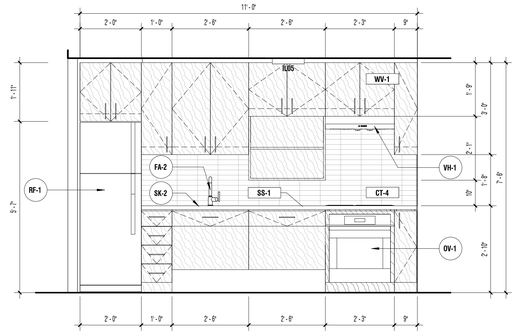
5 KITCHEN K1 - ELEVATION
1/2" = 1'-0"



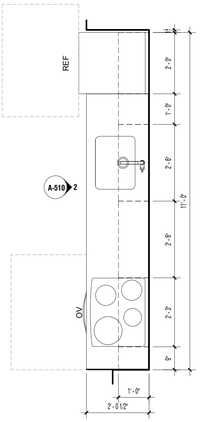
4 KITCHEN PLAN - K1 - STUDIO & 1 BEDROOM
1/2" = 1'-0"



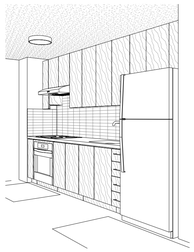
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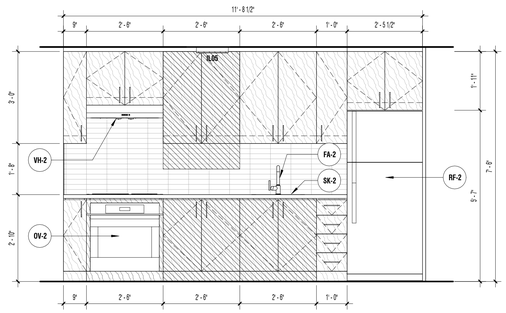
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1/2" = 1'-0"



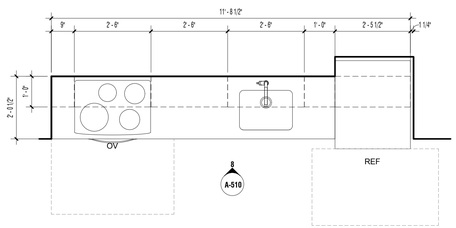
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1/2" = 1'-0"



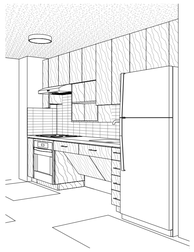
9 KITCHEN PERSPECTIVE - K1A



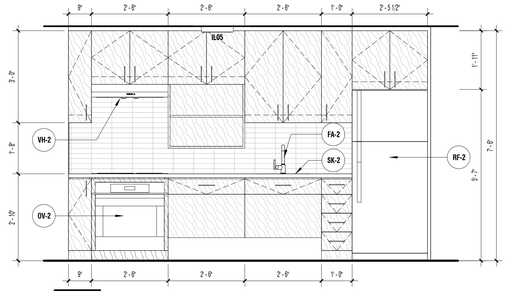
8 KITCHEN K1A - ELEVATION
1/2" = 1'-0"



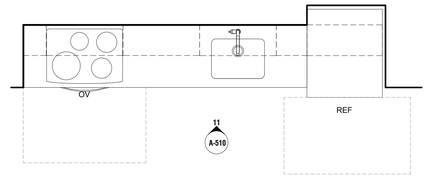
7 KITCHEN PLAN - K1A - 2 & 3 BEDROOM
1/2" = 1'-0"



12 KITCHEN PERSPECTIVE - K1A UFAS



11 KITCHEN K1A UFAS - ELEVATION
1/2" = 1'-0"



10 KITCHEN PLAN - 1A UFAS
1/2" = 1'-0"

KITCHEN APPLIANCE & FIXTURE LEGEND

MARK	ITEM	MFR.	MODEL	DESCRIPTION
CT-1	COOKTOP	SUMMIT	CR2110	TWO BURNER COOKTOP
OV-1	OVEN/COOK	FRIGIDAIRE	FPEC3085K	27" WIDE - ADA CMPT.
OV-2	OVEN/COOK	FRIGIDAIRE		30" WIDE - ADA CMPT.
MW-1	MICRO/CONV.	KITCHENAIDE	KCMC1575BSS	CONV. MW.
VH-1	RECIRC. HOOD	FRIGIDAIRE	FHWC3025MS	27" - RECIRCULATING HOOD
VH-2	RECIRC. HOOD	FRIGIDAIRE		30" - RECIRCULATING HOOD
RF-1	REFIGERATOR	FRIGIDAIRE	FFHT1831Q	24" WIDE
RF-2	REFIGERATOR	FRIGIDAIRE		30" WIDE
SK-2	SINK	ELKAY	ELUHAD	16-1/2" X 20-1/2" ADA UND.MNT
FA-2	FAUCET	KOHLER	K-7505	PULL-OUT KIT. SINK FAUCET

KITCHEN MATERIAL LEGEND

MARK	ITEM	MFR.	MODEL	FINISH
PT-1	PAINT	B.M.	DECORATORS WHITE	FLAT
CT-4	CERAMIC TILE	NEMO	METRO 2" X 8"	SMOKE GLOSS
WV-1	CABINETS	ARMSTRONG	SIENA	TOFFEE
SS-1	SOLID SURFACE	CORIAN	SERENE SAGE	-

ACCESSIBLE CLEAR AREA DIAGRAMS

SYMBOL	DESCRIPTION
	ACCESSIBLE / ADAPTABLE CABINET LOCATION (UFAS UNITS INSTALLED ACCESSIBLE)
	BLOCKING LOCATION FOR ACCESSIBLE SHELFS IN ALL UNITS
	ADA CLEARANCE LINES

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KEY PLAN

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DOB APPROVAL

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BETANCES VI DEVELOPMENT

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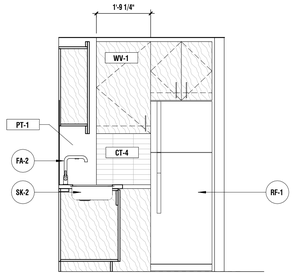
KITCHEN TYPES

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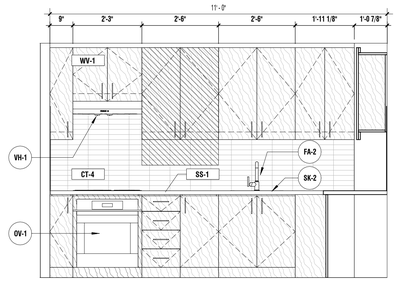
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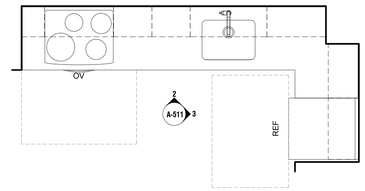
4 KITCHEN PERSPECTIVE - K2



3 KITCHEN K2 - EAST ELEVATION
1/2" = 1'-0"



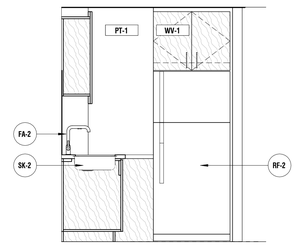
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1/2" = 1'-0"



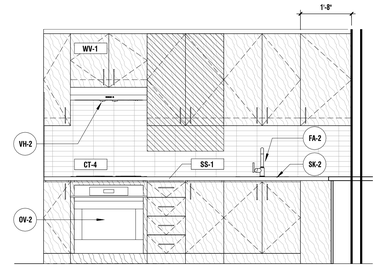
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1/2" = 1'-0"



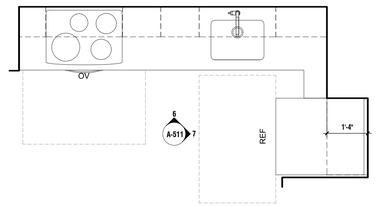
8 KITCHEN PERSEPCTIVE - K2A



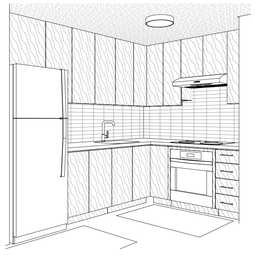
7 KITCHEN K2A - EAST ELEVATION
1/2" = 1'-0"



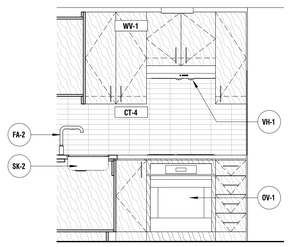
6 KITCHEN K2A - NORTH ELEVATION
1/2" = 1'-0"



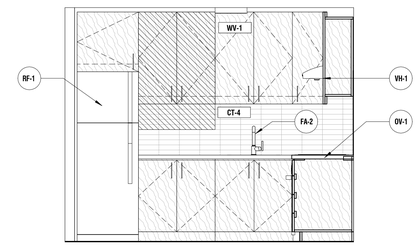
5 KITCHEN PLAN - K2A - 2 & 3 BEDROOM
1/2" = 1'-0"



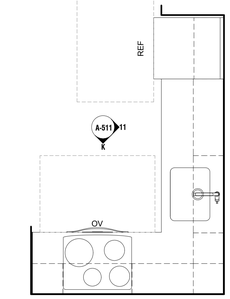
12 KITCHEN PERSPECTIVE - K3



K KITCHEN K3 - SOUTH ELEVATION
1/2" = 1'-0"



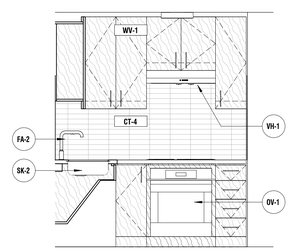
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1/2" = 1'-0"



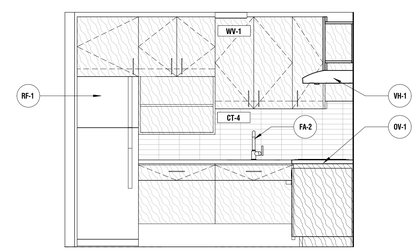
9 KITCHEN PLAN - K3
1/2" = 1'-0"



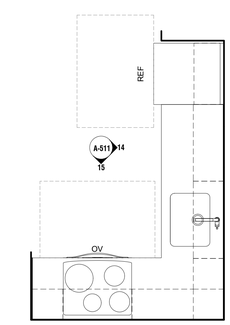
16 KITCHEN PERSPECTIVE - K3 UFAS



15 KITCHEN K3 UFAS - SOUTH ELEVATION
1/2" = 1'-0"



14 KITCHEN K3 UFAS - EAST ELEVATION
1/2" = 1'-0"



13 KITCHEN PLAN - K3 UFAS
1/2" = 1'-0"

KITCHEN APPLIANCE & FIXTURE LEGEND

MARK	ITEM	MFR.	MODEL	DESCRIPTION
CT-1	COOKTOP	SUMMIT	CR2110	TWO BURNER COOKTOP
OV-1	OVEN/COOK	FRIGIDAIRE	FPEC3085K	27" WIDE - ADA CMPT.
OV-2	OVEN/COOK	FRIGIDAIRE		30" WIDE - ADA CMPT.
MW-1	MICRO/CONV.	KITCHENAIDE	KCMC1575BSS	CONV. MW.
VH-1	RECIRC. HOOD	FRIGIDAIRE	FHWC3025MS	27" - RECIRCULATING HOOD
VH-2	RECIRC. HOOD	FRIGIDAIRE		30" - RECIRCULATING HOOD
RF-1	REFIGERATOR	FRIGIDAIRE	FFHT1831Q	24" WIDE
RF-2	REFIGERATOR	FRIGIDAIRE		30" WIDE
SK-2	SINK	ELKAY	ELUHAD	16-1/2" X 20-1/2" ADA UND.MNT
FA-2	FAUCET	KOHLER	K-7505	PULL-OUT KIT. SINK FAUCET

KITCHEN MATERIAL LEGEND

MARK	ITEM	MFR.	MODEL	FINISH
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WV-1	CABINETS	ARMSTRONG	SIENA	TOFFEE
SS-1	SOLID SURFACE	CORIAN	SERENE SAGE	-

ACCESSIBLE CLEAR AREA DIAGRAMS

SYMBOL	DESCRIPTION
	ACCESSIBLE / ADAPTABLE CABINET LOCATION (UFAS UNITS INSTALLED ACCESSIBLE)
	BLOCKING LOCATION FOR ACCESSIBLE SHELFS IN ALL UNITS
	ADA CLEARANCE LINES

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TRUE

PROJECT

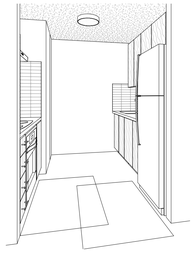
BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

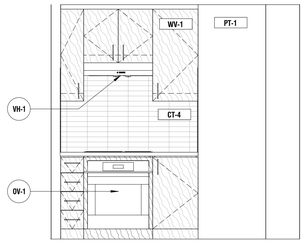
KITCHEN TYPES

SEAL & SIGNATURE

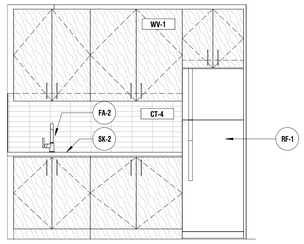
DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	As indicated
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-511.00
NYC DOB NUMBER:	



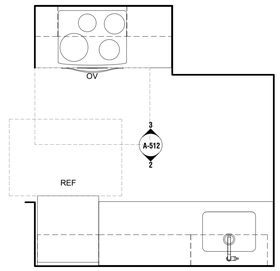
4 KITCHEN PERSPECTIVE - K4



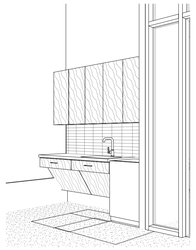
3 KITCHEN K4 - NORTH ELEVATION
1/2" = 1'-0"



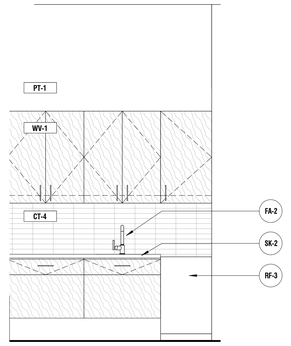
2 KITCHEN K4 - SOUTH ELEVATION
1/2" = 1'-0"



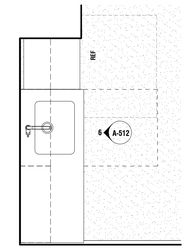
1 KITCHEN PLAN - K4
1/2" = 1'-0"



7 KITCHEN PERSPECTIVE - K5 - PANTRY



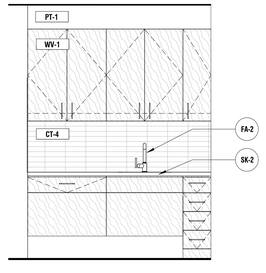
6 KITCHEN K5 - ELEVATION
1/2" = 1'-0"



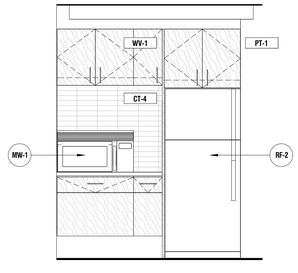
5 KITCHEN PLAN - K5 - PANTRY
1/2" = 1'-0"



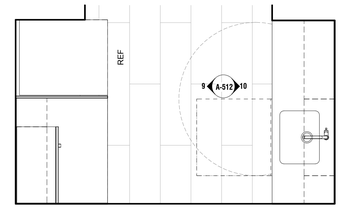
11 KITCHEN PERSPECTIVE - K6 - PANTRY



10 KITCHEN K6 - EAST ELEVATION
1/2" = 1'-0"



9 KITCHEN K6 - WEST ELEVATION
1/2" = 1'-0"



8 KITCHEN PLAN - K6 - PANTRY
1/2" = 1'-0"

KITCHEN APPLIANCE & FIXTURE LEGEND

MARK	ITEM	MFR.	MODEL	DESCRIPTION
CT-1	COOKTOP	SUMMIT	CR2110	TWO BURNER COOKTOP
OV-1	OVEN/COOK	FRIGIDAIRE	FPEC3085K	27" WIDE - ADA CMPT.
OV-2	OVEN/COOK	FRIGIDAIRE		30" WIDE - ADA CMPT.
MW-1	MICRO/CONV.	KITCHENAIDE	KCMC1575BSS	CONV. MW.
VH-1	RECIRC. HOOD	FRIGIDAIRE	FHWC3025MS	27" - RECIRCULATING HOOD
VH-2	RECIRC. HOOD	FRIGIDAIRE		30" - RECIRCULATING HOOD
RF-1	REFIGERATOR	FRIGIDAIRE	FFHT1831Q	24" WIDE
RF-2	REFIGERATOR	FRIGIDAIRE		30" WIDE
SK-2	SINK	ELKAY	ELUHAD	16-1/2" X 20-1/2" ADA UND.MNT
FA-2	FAUCET	KOHLER	K-7505	PULL-OUT KIT. SINK FAUCET

KITCHEN MATERIAL LEGEND

MARK	ITEM	MFR.	MODEL	FINISH
PT-1	PAINT	B.M.	DECORATORS WHITE	FLAT
CT-4	CERAMIC TILE	NEMO	METRO 2" X 8"	SMOKE GLOSS
WV-1	CABINETS	ARMSTRONG	SIENA	TOFFEE
SS-1	SOLID SURFACE	CORIAN	SERENE SAGE	-

ACCESSIBLE CLEAR AREA DIAGRAMS

SYMBOL	DESCRIPTION
	ACCESSIBLE / ADAPTABLE CABINET LOCATION (UFAS UNITS INSTALLED ACCESSIBLE)
	BLOCKING LOCATION FOR ACCESSIBLE SHELFS IN ALL UNITS
	ADA CLEARANCE LINES

think!
architecture and design pllc

ARCHITECT
think! architecture and design pllc
1 METROTECH CENTER NORTH, 6TH FLOOR
BROOKLYN, NY 11201
P 646.688.5898

CLIENT
LEMLE & WOLFF COMPANIES
5925 BROADWAY
BRONX, NY 10463
P 718.884.7676

STRUCTURAL
CUONO ENGINEERING PLLC
42 NORTH MAIN STREET
PORT CHESTER, NY 10573
P 914.305.5679

MEP
RODKIN CARDINALE P.C.
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

KITCHEN TYPES

SEAL & SIGNATURE

DATE: 04/06/2018
PROJECT NO: 17110
SCALE: As indicated
DRAWING BY: Author
CHECKED BY: Checker
DWG NO: A-512.00
NYC DOB NUMBER:

4/10/2018 1:33:29 PM

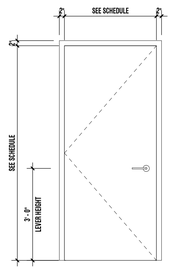
DOOR SCHEDULE

DOOR NO.	TYPE	DOOR MAT.	DOOR WIDTH	DOOR HEIGHT	DOOR THICK	FRAME MAT.	FRAME HEAD DETAIL	FRAME JAMB DETAIL	FRAME SILL DETAIL	FIRE RATING	HDWR SET	No. of Levels
CELLAR LEVEL - PLAN TYPE A												
A-01	D3.3	HM	6' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-02	D3.3	HM	6' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-03	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-04	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-05	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-06	D3.3	HM	6' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-07	D3.3	HM	6' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-08	D3.3	HM	6' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-08.1	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"					90 MIN		1
A-09	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-10	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-10.1	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-11	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-12	D3.3	HM	6' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
A-13	D1.1	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		NR		1
A-14	D2	HM/GL	3' - 0"	7' - 0"	0' - 1 3/4"					90 MIN		1
A-ST A	D2	HM/GL	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
A-ST C	D2	HM/GL	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
18												18
LEVEL 1 - PLAN TYPE B												
B-01	D1.1	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H2	J2		NR		1
B-02	D1.1	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H2	J2		NR		1
B-03	D1.1	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H2	J2		NR		1
B-04	D1.1	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H2	J2		NR		1
B-05	D1.1	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H2	J2		NR		1
B-06	D7	IGL	6' - 6 1/4"	8' - 5"	0' - 0 3/4"					NR		1
B-06.1	D9	EGL	6' - 2"	8' - 6"	0' - 0 3/4"					NR		1
B-08	D6	IGL	3' - 6"	8' - 5"	0' - 0 3/4"					NR		1
B-09	D6	IGL	3' - 3 1/4"	8' - 5"	0' - 0 3/4"					NR		1
B-10	D6	IGL	3' - 3 1/4"	8' - 5"	0' - 0 3/4"					NR		1
B-11	D8	EGL	3' - 6"	7' - 10 3/4"	0' - 0 3/4"					NR		1
B-12	D9	EGL	6' - 0 1/2"	8' - 3 11/32"	0' - 0 3/4"					NR		1
B-13	D1.1	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H2	J2		NR		1
B-14	D9	EGL	6' - 0 1/2"	7' - 8 5/32"	0' - 0 3/4"					NR		1
B-15	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H6	J6		90 MIN		1
B-ST A.1	D2	HM/GL	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
B-ST A.2	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
B-ST B.1	D2	HM/GL	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
B-ST B.2	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
B-ST C	D2	HM/GL	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H4	J4		90 MIN		1
20												20
LEVEL 2 - PLAN TYPE C												
C-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
C-02	D7	IGL	6' - 2"	8' - 3 3/4"	0' - 0 3/4"					NR		1
C-02.1	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H2	J2		NR		1
C-02.2	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H2	J2		NR		1
C-03	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H2	J2		NR		1
C-04	D9	EGL	6' - 0"	7' - 4 3/4"	0' - 0 3/4"					NR		1
C-05	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"					90 MIN		1
C-06	D3.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
C-ST A	D2	HM/GL	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
C-ST B	D2	HM/GL	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
C-ST E	D6	IGL	3' - 0"	6' - 8"	0' - 0 3/4"					NR		1
11												11
ROOF LEVEL - PLAN TYPE D												
H-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"					90 MIN		1
H-02	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"					90 MIN		1
H-02.1	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"					90 MIN		1
H-03	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"					90 MIN		1
H-03.1	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"					90 MIN		1
H-04	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"					90 MIN		1
H-ST A	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"					90 MIN		1
H-ST B	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"					90 MIN		1
8												8
TYPICAL CORRIDOR												
00-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		13
00-02	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		13
00-03	D3.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		13
00-ST A	D2	HM/GL	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		13
00-ST B	D2	HM/GL	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		13
06-ST A	D2	HM/GL	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		13
06-ST B	D2	HM/GL	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		13
7												91
UNIT TYPE 0.1												
0.1-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		5
0.1-02	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
0.1-03	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
0.1-04	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
4												20
UNIT TYPE 0.2												
0.2-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		5
0.2-02	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
0.2-03	D4	WD	2' - 0"	7' - 0"	0' - 1 3/4"					NR		5
0.2-04	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
0.2-05	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
5												25
UNIT TYPE 0.3												
0.3-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
0.3-02	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
0.3-03	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
0.3-04	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
0.3-05	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
0.3-06	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		1
6												6
UNIT TYPE 0.4												
0.4-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		8
0.4-02	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
0.4-03	D4	WD	2' - 0"	7' - 0"	0' - 1 3/4"					NR		8
0.4-04	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
0.4-05	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
5												40
UNIT TYPE 1.1												
1.1-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		6
1.1-02	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		6
1.1-03	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		6
1.1-04	D4	WD	2' - 0"	7' - 0"	0' - 1 3/4"					NR		6
1.1-05	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		6
1.1-06	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		6
6												36
UNIT TYPE 1.2												
1.2-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		5
1.2-02	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
1.2-03	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		5
1.2-04	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
1.2-05	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
1.2-06	D5	WD	4' - 0"	7' - 0"	0' - 1 3/4"					NR		5
6												30
UNIT TYPE 1.3												
1.3-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
1.3-02	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
1.3-03	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
1.3-04	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
1.3-05	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		1
1.3-06	D5	WD	2' - 6"	7' - 0"	0' - 1 3/4"					NR		1

DOOR SCHEDULE

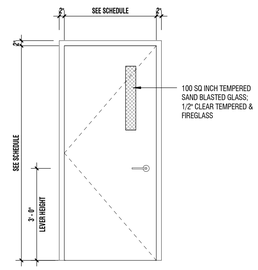
DOOR NO.	TYPE	DOOR MAT.	DOOR WIDTH	DOOR HEIGHT	DOOR THICK	FRAME MAT.	FRAME HEAD DETAIL	FRAME JAMB DETAIL	FRAME SILL DETAIL	FIRE RATING	HDWR SET	No. of Levels
6												6
UNIT TYPE 1.4												
1.4-02	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.4-03	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		8
1.4-04	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.4-05	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.4-06	D5	WD	4' - 0"	7' - 0"	0' - 1 3/4"					NR		8
5												40
UNIT TYPE 1.5												
1.5-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		8
1.5-02	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.5-03	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		8
1.5-04	D4	WD	2' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.5-05	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.5-06	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
6												48
UNIT TYPE 1.6												
1.6-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		8
1.6-02	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.6-03	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.6-04	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.6-05	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		8
1.6-06	D5	WD	2' - 6"	7' - 0"	0' - 1 3/4"					NR		8
6												48
UNIT TYPE 1.7												
1.7-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		8
1.7-02	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.7-03	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.7-04	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.7-05	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.7-06	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
1.7-07	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		8
7												56
UNIT TYPE 2.1												
2.1-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		13
2.1-02	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		13
2.1-03	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		13
2.1-04	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		13
2.1-05	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		13
2.1-06	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		13
2.1-07	D5	WD	4' - 0"	7' - 0"	0' - 1 3/4"					NR		13
2.1-08	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		13
8												104
UNIT TYPE 2.2												
2.2-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		5
2.2-02	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.2-03	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.2-04	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.2-05	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.2-06	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.2-07	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.2-08	D5	WD	4' - 0"	7' - 0"	0' - 1 3/4"					NR		5
8												40
UNIT TYPE 2.3												
2.3-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		5
2.3-02	D4	WD	2' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.3-03	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.3-04	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.3-05	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.3-06	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.3-07	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.3-08	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
2.3-09	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
9												45
UNIT TYPE 2.4												
2.4-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
2.4-02	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
2.4-03	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
2.4-04	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
2.4-05	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
2.4-06	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		1
2.4-07	D5	WD	4' - 0"	7' - 0"	0' - 1 3/4"					NR		1
2.4-08	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
8												8
UNIT TYPE 3.1												
3.1-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		5
3.1-02	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
3.1-03	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		5
3.1-04	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
3.1-05	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
3.1-06	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
3.1-07	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
3.1-08	D5	WD	4' - 0"	7' - 0"	0' - 1 3/4"					NR		5
3.1-09	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
3.1-10	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		5
3.1-11	D5	WD	5' - 0"	7' - 0"	0' - 0 3/4"					NR		5
11												55
UNIT TYPE 3.2												
3.2-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		1
3.2-02	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
3.2-03	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		1
3.2-04	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
3.2-05	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
3.2-06	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
3.2-07	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
3.2-08	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
3.2-09	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
3.2-10	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		1
3.2-11	D5	WD	4' - 0"	7' - 0"	0' - 1 3/4"					NR		1
11												11
UNIT TYPE 3.3												
3.3-01	D1.3	HM	3' - 0"	7' - 0"	0' - 1 3/4"	HM	H1	J1		90 MIN		8
3.3-02	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
3.3-03	D4	WD	1' - 6"	7' - 0"	0' - 1 3/4"					NR		8
3.3-04	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
3.3-05	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
3.3-06	D5	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
3.3-07	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
3.3-08	D5	WD	4' - 0"	7' - 0"	0' - 1 3/4"					NR		8
3.3-09	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
3.3-10	D4	WD	3' - 0"	7' - 0"	0' - 1 3/4"					NR		8
3.3-11	D5	WD	5' - 0"	7' - 0"	0' - 0 3/4"					NR		8
11												88

DOOR TYPE LEGEND

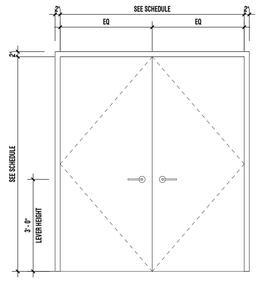


D1: HM_BUTT HINGE SINGLE DOOR_PROUD FRAME

D1.1 NR
D1.2 45 MIN
D1.3 90 MIN

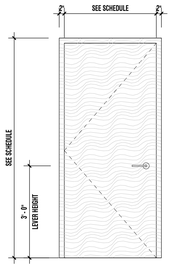


D2: HM_BUTT HINGE SINGLE DOOR W. VISION GLASS_PROUD FRAME

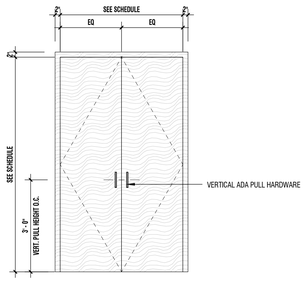


D3: HM_BUTT HINGE DOUBLE DOOR_PROUND FRAME

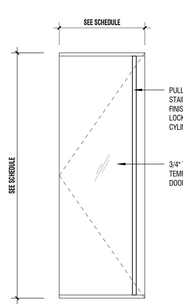
D1.1 NR
D1.2 45 MIN
D1.3 90 MIN



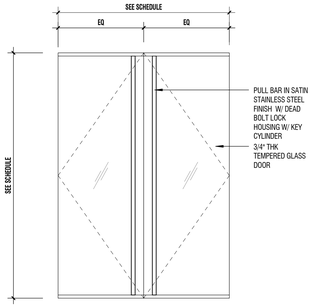
D4: WC_BUTT HINGE SINGLE DOOR_PROUD FRAME



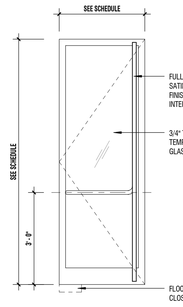
D5: WC_BUTT HINGE DOUBLE DOOR_PROUD FRAME



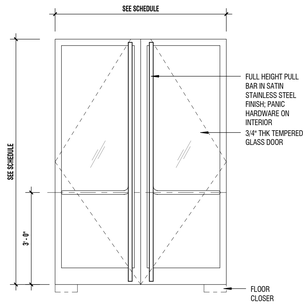
D6: GL_INTERIOR SINGLE DOOR_ALUM. FRAME



D7: GL_INTERIOR DOUBLE DOOR_ALUM. FRAME



D8: GL_EXTERIOR SINGLE DOOR_ALUM. FRAME



D9: GL_EXTERIOR DOUBLE DOOR_ALUM. FRAME

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KEY PLAN

x		xx.xx.2018
NO.	**DESIGN & CONSTRUCTION SUBMISSIONS**	**DATE**

2	**DOB SUBMISSION**	04.06.2018
1	**DD SUBMISSION**	04.06.2018
NO.	**REGULATORY SUBMISSIONS**	**DATE**

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

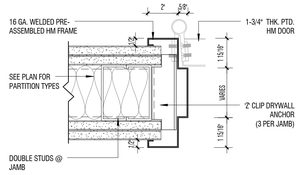
472-474 WILLIS AVE. BRONX, NY, 10455

DOOR TYPES AND SCHEDULE

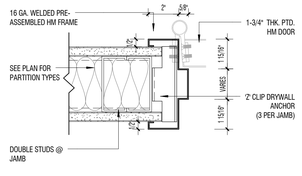
SEAL & SIGNATURE

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PROJECT NO:	17110
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DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-600.00
NYC DOB NUMBER:	

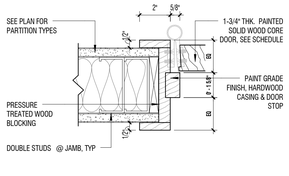
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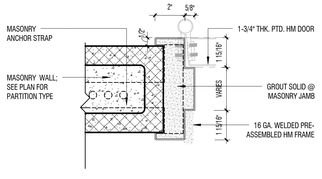
1 DOOR JAMB DETAIL - J1
3" = 1'-0"



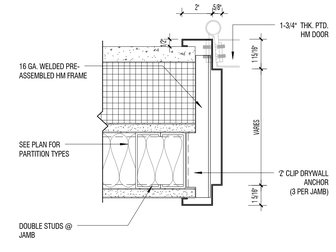
8 DOOR JAMB DETAIL - J2
3" = 1'-0"



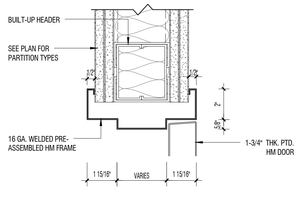
2 DOOR JAMB DETAIL - J3
3" = 1'-0"



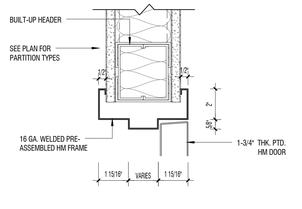
3 DOOR JAMB DETAIL - J4
3" = 1'-0"



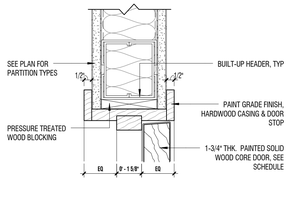
10 DOOR JAMB DETAIL - J6
3" = 1'-0"



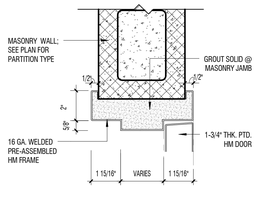
5 DOOR HEAD DETAIL - H1
3" = 1'-0"



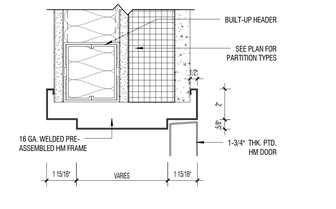
4 DOOR HEAD DETAIL - H2
3" = 1'-0"



6 DOOR HEAD DETAIL - H3
3" = 1'-0"



7 DOOR HEAD DETAIL - H4
3" = 1'-0"



9 DOOR HEAD DETAIL - H6
3" = 1'-0"

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

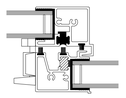
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DOOR DETAILS

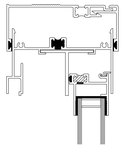
SEAL & SIGNATURE

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PROJECT NO:	17110
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DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-605.00
NYC DOB NUMBER:	

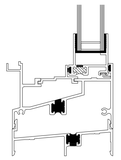
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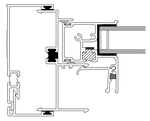
1 WINDOW PROFILE @ CENTER
6" = 1'-0"



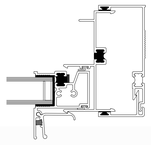
2 WINDOW PROFILE @ HEAD
6" = 1'-0"



3 WINDOW PROFILE @ SILL
6" = 1'-0"



4 WINDOW PROFILE @ JAMB (1 OF 2)
6" = 1'-0"



5 WINDOW PROFILE @ JAMB (2 OF 2)
6" = 1'-0"

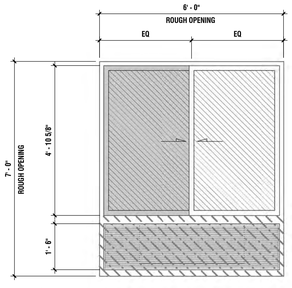
LIGHT AND AIR LEGEND

UNIT T	ROOM NAME	ROOM AREA	WINDOW TYPE (# OF WINDOWS)	COMPLIES
0.1	LR / SA / DA	235 SF	W1 (1)	Yes
0.2	LR / SA / DA	200 SF	W2 (2)	Yes
0.3	LR / SA / DA	254 SF	W2 (3)	Yes
0.4	LR / SA / DA	238 SF	W1 (2)	Yes
0.4	LR / SA / DA	238 SF	W1 (2)	Yes
0.4	LR / SA / DA	233 SF	W1 (2)	Yes
0.4	LR / SA / DA	238 SF	W1 (2)	Yes
1.1	LR / DA	187 SF	W2 (2)	Yes
1.1	BEDROOM #1	113 SF	W2 (1)	Yes
1.2	BEDROOM #1	112 SF	W2 (1)	Yes
1.2	LR / DA	184 SF	W2 (2)	Yes
1.3	LR / DA	185 SF	W2 (1), W3 (1)	Yes
1.3	BEDROOM #1	111 SF	W2 (1)	Yes
1.4 - UFAS HVI	LR / DA	203 SF	W1 (2)	Yes
1.4 - UFAS HVI	BEDROOM #1	131 SF	W1 (1)	Yes
1.4 - UFAS HVI	LR / DA	203 SF	W1 (2)	Yes
1.4 - UFAS HVI	BEDROOM #1	131 SF	W1 (1)	Yes
1.4 - UFAS HVI	LR / DA	203 SF	W1 (2)	Yes
1.4 - UFAS HVI	BEDROOM #1	131 SF	W1 (1)	Yes
1.5	BEDROOM #1	113 SF	W1 (1)	Yes
1.5	LR / DA	207 SF	W1 (2)	Yes
1.6	LR / DA	180 SF	W1 (3)	Yes
1.6	BEDROOM #1	134 SF	W1 (1)	Yes
1.7	LR / DA	184 SF	W1 (2)	Yes
1.7	BEDROOM #1	112 SF	W1 (1)	Yes
2.1	LR / DA	215 SF	W1 (1)	Yes
2.1	BEDROOM #1	111 SF	W1 (1)	Yes
2.1	BEDROOM #2	103 SF	W1 (1)	Yes
2.1	LR / DA	215 SF	W1 (1)	Yes
2.1	BEDROOM #1	111 SF	W1 (1)	Yes
2.1	BEDROOM #2	103 SF	W1 (1)	Yes
2.2	LR / DA	208 SF	W1 (3)	Yes
2.2	BEDROOM #2	103 SF	W1 (1)	Yes
2.2	BEDROOM #1	141 SF	W1 (1)	Yes
2.3	LR / DA	222 SF	W1 (1)	Yes
2.3	BEDROOM #1	160 SF	W1 (3)	Yes
2.3	BEDROOM #2	114 SF	W1 (1)	Yes
2.4	BEDROOM #2	103 SF	W1 (1)	Yes
2.4	BEDROOM #1	111 SF	W1 (1)	Yes
2.4	LR / DA	192 SF	W1 (1)	Yes
3.1	LR / DA	197 SF	W1 (3)	Yes
3.1	BEDROOM #3	106 SF	W1 (1)	Yes
3.1	BEDROOM #2	110 SF	W1 (1)	Yes
3.1	BEDROOM #1	139 SF	W1 (1)	Yes
3.2	LR / DA	189 SF	W1 (2)	Yes
3.2	BEDROOM #3	102 SF	W1 (1)	Yes
3.2	BEDROOM #2	102 SF	W1 (1)	Yes
3.2	BEDROOM #1	114 SF	W1 (1)	Yes
3.3	LR / DA	190 SF	W1 (2)	Yes
3.3	BEDROOM #3	106 SF	W1 (1)	Yes
3.3	BEDROOM #2	110 SF	W1 (1)	Yes
3.3	BEDROOM #1	146 SF	W1 (1)	Yes

WINDOW SCHEDULE

WINDOW TYPE	WIDTH (W)	HEIGHT (H)	U VALUE	SHGC	OITC
W1	6' - 0"	7' - 0"	0.38	0.64	34
W2	6' - 0"	6' - 4"	0.38	0.64	34
W3	6' - 0"	6' - 4"	0.38	0.64	34
W4	4' - 6"	7' - 0"	0.38	0.64	34
W5	4' - 6"	6' - 4"	0.38	0.64	34

WINDOW TYPE LEGEND



W1

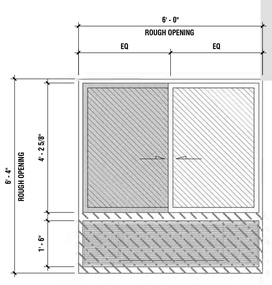
LIGHT PROVIDED: 24.00 SF
24.00/0.1 (MIN REQ. LIGHT/SF)= 240 SF
MAX ROOM AREA PERMITTED: 240 SF

AIR PROVIDED: 13.61 SF
13.61/.05(MIN REQ. AIR/SF)=272.2 SF
MAXIMUM ROOM AREA PERMITTED: 272.2 SF

NOTE : WINDOW OPERABLE LEVER
TO BE ADA COMPLIANT

W1A - WINDOW WITH PTAC

W1B - WINDOW WITH LOUVER AND INSULATED PANEL



W2

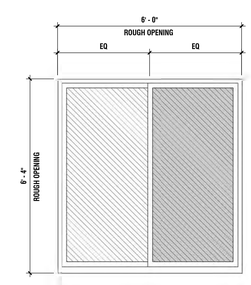
LIGHT PROVIDED: 20.49 SF
20.49/0.1 (MIN REQ. LIGHT/SF)= 204.9 SF
MAX ROOM AREA PERMITTED: 204.9 SF

AIR PROVIDED: 11.76 SF
11.76/.05(MIN REQ. AIR/SF)=235.2 SF
MAXIMUM ROOM AREA PERMITTED: 235.2 SF

NOTE : WINDOW OPERABLE LEVER
TO BE ADA COMPLIANT

W2A - WINDOW WITH PTAC

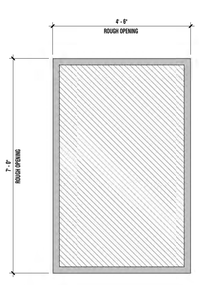
W2B - WINDOW WITH LOUVER AND INSULATED PANEL



W3

LIGHT PROVIDED: 29.81 SF
20.49/0.1 (MIN REQ. LIGHT/SF)= 298.1 SF
MAX ROOM AREA PERMITTED: 298.1 SF

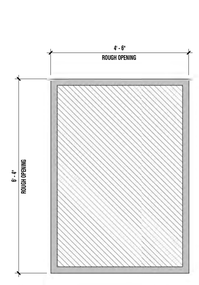
AIR PROVIDED: N/A



W4

LIGHT PROVIDED: 26.88 SF
**WINDOWS LOCATED IN CORRIDOR
NO LIGHT AREA REQUIREMENT

AIR PROVIDED: N/A



W5

LIGHT PROVIDED: 24.15 SF
**WINDOWS LOCATED IN CORRIDOR
NO LIGHT AREA REQUIREMENT

AIR PROVIDED: N/A

WINDOW LIGHT & AIR LEGEND

WINDOW AIR AREA

WINDOW LIGHT AREA

WINDOW FINISH LEGEND

MARK	ITEM	MODEL	DESCRIPTION
WGL-1	GLAZING	-	-
WPF-1	PROFILE FINISH	-	-
WSF-1	SURROUND FINISH	-	-
WSF-2	SURROUND FINISH	-	-

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P 914.305.5679

MEP
RODKIN CARDINALE P.C.
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

WINDOW TYPES AND DETAILS

SEAL & SIGNATURE

DATE: 04/06/2018
PROJECT NO: 17110
SCALE: As indicated
DRAWING BY: Author
CHECKED BY: Checker
DWG NO: A-610.00
NYC DOB NUMBER:

4/10/2018 1:34:07 PM

MATERIAL FINISH LEGEND

LOCATION		MARK	NOTES
APARTMENTS			
FLOORING	APARTMENT THRESHOLD	-	-
	BATHROOM THRESHOLD	-	-
	LR/BR FLOOR	**LVT-1**	-
CEILING	DROP CEILING	**PT-1**	FLAT
	EXPOSED STRUCTURE	**PT-2**	TEXTURED (ON CONCRETE)
WALLS	APARTMENT WALLS	**PT-1**	FLAT
	WINDOW SILLS	**PT-3**	SEMI GLOSS (ON WOOD)
	WALL BASE	**WB-1**	-
KITCHEN	FLOOR	**LVT-1**	-
	BLACKSPLASH	**CT-4**	-
	COUNTERTOPS	**SS-1**	-
	CABINETS	**WV-1**	-
	WALLS	**PT-3**	SEMI GLOSS
BAHTROOM	WALLS	**PT-3**	SEMI GLOSS
	WET WALL & TUB SURROUND	**CT-3**	CERAMIC TILE
	FLOORS	**CT-3**	CERAMIC / PORCELAIN TILE
	WALL BASE	**WB-3**	CERAMIC
	MEDICINE CABINET	**WV-1**	-
MISCELLANEOUS	WINDOW TREATMENT	-	VINYL SHADES
CORRIDOR	FLOOR	**LVT-1**	-
	WALLS	**PT-4**	EGGSHELL
	WALL BASE	**WB-1**	PAINTED WOOD
	CEILING	**PT-1**	FLAT
REFUSE ROOM	FLOOR	**CT-3**	CERAMIC TILE (WAINSCOT)
	WALLS	**CT-3**	CERAMIC TILE (WAINSCOT)
	WALL BASE	**WB-3**	CERAMIC
	CEILING	**PT-1**	FLAT (ON CONCRETE)
STAIR	TREAD, RISER, LANDING	**SC-1**	-
	FLOOR	**SC-1**	-
	WALLS	**PT-1**	(ON CMU)
	CEILING	**PT-1**	(ON CONCRETE)
	RAILING	-	PAINTED STEEL

LOCATION		MARK	NOTES
LOBBY	FLOOR	**CT-2**	LINEAR PORCELAIN TILE
	VESTIBULE FLOOR	-	STAINLESS STEEL MAT
	ELEVATOR WALL & COLUMN	**CT-7**	ACCENT TILE
	WALL BASE	**WB-1**	PAINTED WOOD
	RECEPTION DESK	**SS-2**	-
	CEILING	**PT-1**	FLAT
	ACCENT CEILING	**WP-1**	WOOD PANEL
	WALLS	**PT-1**	FLAT
	ACCENT WALL	**PT-5**	FLAT
	NORTH WALL	**WP-1**	WOOD PANEL
COMMUNITY ROOM	FLOOR	**CT-2**	LINEAR PORCELAIN TILE
	FLOOR BASE	**WB-1**	PORCELIAN TILE
	WALLS	**PT-3**	SEMI GLOSS
	DROP CEILING	**PT-3**	SEMI GLOSS
	EXPOSED STRUCTURE	**PT-2**	(ON CONCRETE)
	WINDOW TREATMENT	-	-
PANTRY	CABINETS	**WV-1**	-
	COUNTERTOP	**PL-1**	-
	BACKSPLASH	**CT-4**	CERAMIC TILE
SUPPORT OFFICES	FLOOR	**RF-1**	-
	WALLS	**PT-1**	-
	WALL BASE	**WB-3**	CERAMIC
	CEILING	-	SOUND ABSORBTION CLOUD
LAUNDRY ROOM	FLOOR	**CT-1**	VINYL TILE
	WALLS	**PT-3**	SEMI GLOSS
	WALL BASE	**WB-2**	RUBBER
	CEILING	**PT-2**	TEXTURED (ON CONCRETE)
UTILITY ROOMS	FLOOR	**SC-1**	-
	WALLS	**PT-1**	(ON CMU)
	WALL BASE	**WB-2**	RUBBER
	CEILING	**PT-1**	(ON CONCRETE)

MATERIAL FINISH SCHEDULE

MARK	ITEM	MANUFACTURER	MODEL	FINISH	DESCRIPTION	NOTES
LVT-1	LUXURY VINYL TILE	HF DESIGN	AQUASENSE	SAND HARBOR	-	INCLUDE CORK BACKING
PL-1	PLASTIC LAMINATE	TBD	-	TBD	-	
PT-1	PAINT	BENJAMIN MOORE	LINEN WHITE	FLAT	-	-
PT-2	PAINT	BENJAMIN MOORE	LINEN WHITE	TEXTURED	-	-
PT-3	PAINT	BENJAMIN MOORE	LINEN WHITE	SEMI GLOSS	-	-
PT-4	PAINT	BENJAMIN MOORE	LINEN WHITE	EGGSHELL	-	-
PT-5	PAINT	BENJAMIN MOORE	TBD	FLAT	-	LOBBY ACCENT
SS-1	SOLID SURFACE	CORIAN	-	-	-	-
SS-2	SOLID SURFACE	CORIAN	-	-	-	-
SC-1	SEALED CONCRETE	-	-	-	-	-
CT-1	VINYL TILE	TBD	-	-	-	-
CT-2	PORCELAIN TILE	TBD	-	-	-	LINEAR
CT-3	CERAMIC TILE	NEMO	METRO 4" X 16"	WHITE GLOSSY	STACK BOND	-
CT-4	CERAMIC TILE	NEMO	METRO 2" X 8"	SMOKE GLOSSY	STACK BOND	-
CT-5	CERAMIC TILE	NEMO	METRO 2" X 8"	WHITE GLOSSY	STACK BOND	-
CT-6	PORCELAIN TILE	TBD	-	-	-	MONO CROMATIC STONE
CT-7	PORCELAIN TILE	DALTILE	1" X 6"	TWILLIGHT BLUE	STRAIGHT JOINT MOSAIC	-
RF-1	RESILIENT FLOORING	AMTICO	-	-	-	-
WB-1	WALL BASE	JOHNSONITE	TRADITIONAL WALL BASE	PAINTED WOOD	-	-
WB-2	WALL BASE	-	-	RUBBER	-	-
WB-3	WALL BASE	DALTILE	*TO MATCH FLOOR TILE*	CERAMIC TILE	APPLIED TILE BASE	-
WV-1	WOOD VENEER	ARMSTRONG	SIENA	TOFFEE	-	-
WP-1	WOOD PANEL	ARMSTRONG	WOOD WORKS LINEAR NOMINAL 4.5"	TOFFEE	-	-

APPLIANCE SCHEDULE

MARK	ITEM	LOCATION	MANUFACTURER	MODEL	FINISH	DESCRIPTION	NOTES
OV-1	OVEN/COOK	KITCHEN / STUDIO & 1 BRS	FRIGIDAIRE	-	-	ADA CMPT. RANGE/OVEN	27"
OV-2	OVEN/COOK	KITCHEN / 2 & 3 BRS	FRIGIDAIRE	FFES3025P	-	ADA CMPT. RANGE/OVEN	30"
MW-1	MICRO/CONV.	PANTRY	FRIGIDAIRE	FPBM3077RF	-	CONV. MW. W/ RECIRC. HOOD	-
VH-1	RECIRC. HOOD	KITCHEN / STUDIO & 1 BRS	FRIGIDAIRE	FHWC3025MS	-	RECIRCULATING HOOD	27"
VH-2	RECIRC. HOOD	KITCHEN / 2 & 3 BRS	FRIGIDAIRE	TBD	-	RECIRCULATING HOOD	30"
RF-1	REFIGERATOR	KITCHEN / STUDIO & 1 BRS	FRIGIDAIRE	TBD	-	ADA COMPLIANT REF.	24"
RF-2	REFIGERATOR	KITCHEN / 2 & 3 BRS	FRIGIDAIRE	TBD	-	ADA COMPLIANT REF.	30"
WA-1	WASHER	LAUNDRY	MAYTAG	MHN33PR	-	-	-
WA-2	WASHER	LAUNDRY	WASCOMAT	W730	-	ADA COMPLIANT	-
DR-1	DRYER	LAUNDRY	AMERICAN	ADG24	-	ADA COMPLIANT	-
CD-1	CARD MACH.	LAUNDRY	ESD PAYFLEX	-	-	ADA COMPLIANT	-

PLUMBING FIXTURES

MARK	ITEM	LOCATION	MANUFACTURER	MODEL	FINISH	DESCRIPTION	NOTES
SK-1	SINK	RES. BATHROOM	DURAVIT	23106000002	-	WALL MOUNTED SINK	-
SK-2	SINK	KITCHEN	ELKAY	ELUHAD	-	16-1/2" X 20-1/2" ADA UND.MNT	-
SP-1	SHOWER PAN	RES. BATHROOM	TBD	TBD	-	-	-
WC-1	TOILET	RES. BATHROOM	KOHLER	K-3810	-	ADA TOILET	-
WC-2	TOILET	PUBLIC BATHROOM	KOHLER	K-6303	-	ADA WALL HUNG TOILET	-
TB-1	TUB	RES. BATHROOM	KOHLER	K-838	-	ADA BATHTUB	-
SF-1	SHOWER HEAD	RES. BATHROOM	KOHLER	K-72419	-	SHOWER HEAD	-
SF-2	HAND SPRAY	RES. BATHROOM	KOHLER	K-99242	-	HANDSHOWER KIT	-
SF-3	VALVE TRIM	RES. BATHROOM	KOHLER	K-T950-4	-	VALVE TRIM W/ LEVEL HANDLE	-
FA-1	FAUCET	RES. BATHROOM	KOHLER	K-99760-4	-	ADA FAUCET	-
FA-2	FAUCET	KITCHEN	KOHLER	K-7505	-	PULL-OUT KIT. SINK FAUCET	-

BATHROOM ACCESSORIES

MARK	ITEM	LOCATION	MANUFACTURER	MODEL	FINISH	DESCRIPTION	NOTES
AC-1	MEDICINE CAB.	RES. BATHROOMS	BASCO	SR329PE-W	-	FRAMELESS	-
AC-2	T. P. HOLDER	RES. BATHROOMS	DANZE	DH440977	CHROME FINISH	-	-
AC-3	VANITY CABINET	RES. BATHROOMS	-	-	-	ADA ADAPTABLE	-
AC-4	SEAT	RES. BATHROOMS	BOBRICK	B-5191	-	ADA SHOWER SEAT	-
AC-5	MIRROR	PUBLIC BATHROOMS	BRADLEY	780-2436	-	-	-

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MEP
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NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	**DOB SUBMISSION**	04.06.2018
1	**DD SUBMISSION**	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

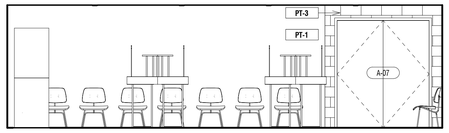
472-474 WILLIS AVE. BRONX, NY, 10455

FINISH SCHEDULE AND DETAILS

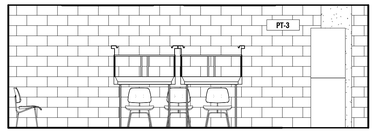
SEAL & SIGNATURE

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PROJECT NO:	17110
SCALE:	1/8" = 1'-0"
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-700.00
NYC DOB NUMBER:	

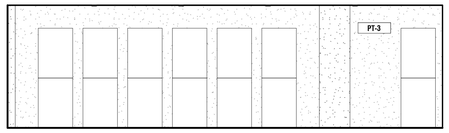
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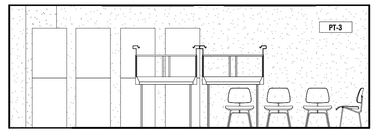
6 LAUNDRY ROOM - NORTH ELEVATION
1/4" = 1'-0"



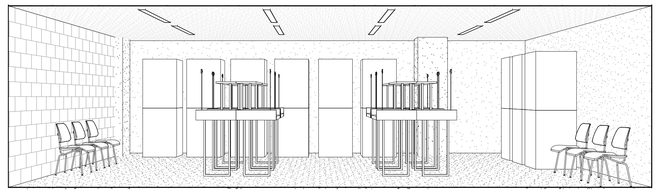
7 LAUNDRY ROOM - EAST ELEVATION
1/4" = 1'-0"



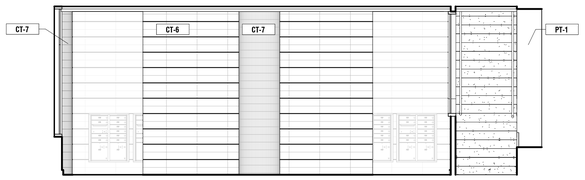
8 LAUNDRY ROOM - SOUTH ELEVATION
1/4" = 1'-0"



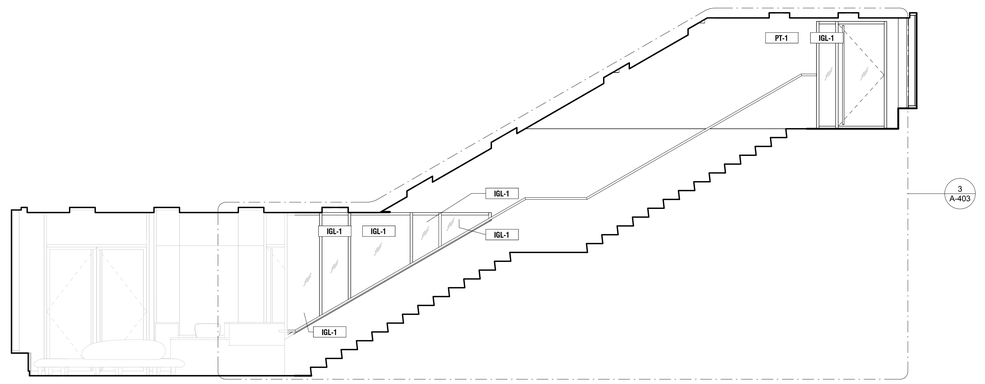
9 LAUNDRY ROOM - WEST ELEVATION
1/4" = 1'-0"



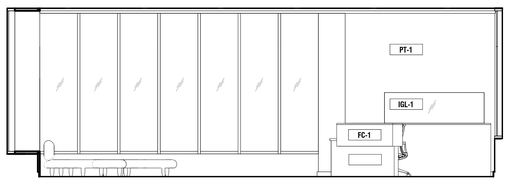
14 LAUNDRY PERSEPCTIVE - LOOKING SOUTH



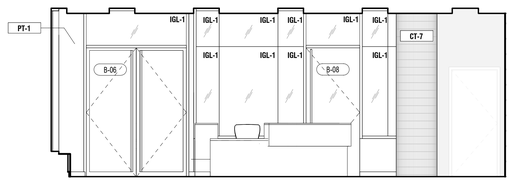
5 LEVEL 1 - LOBBY - NORTH ELEVATION
1/4" = 1'-0"



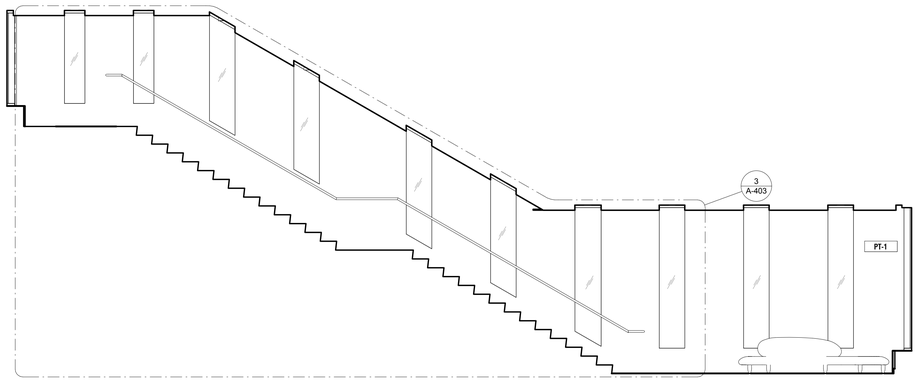
2 LEVEL 1 - COMMUNICATING STAIR - WEST ELEVATION
1/4" = 1'-0"



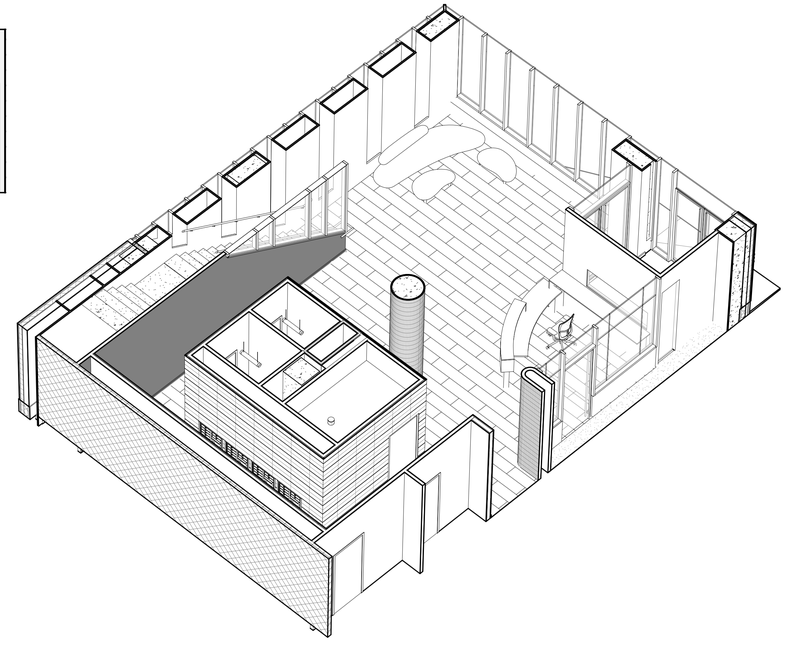
3 LEVEL 1 - LOBBY - SOUTH ELEVATION
1/4" = 1'-0"



4 LEVEL 1 - LOBBY - WEST ELEVATION
1/4" = 1'-0"



1 LEVEL 1 - COMMUNICATING STAIR - EAST ELEVATION
1/4" = 1'-0"



10 LOBBY PERSPECTIVE - AERIAL LOOKING SOUTH EAST

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

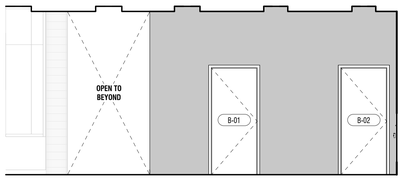
BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

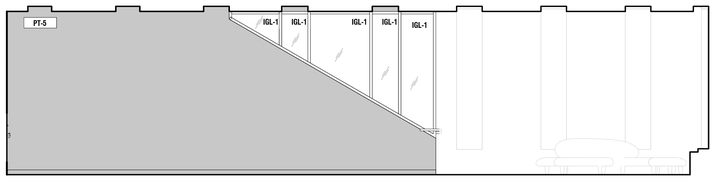
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SEAL & SIGNATURE

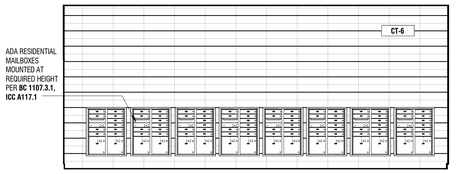
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NYC DOB NUMBER:	



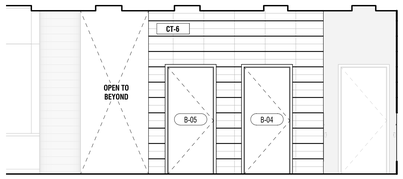
6 LEVEL 1 - MAILROOM - WEST ELEVATION
1/4" = 1'-0"



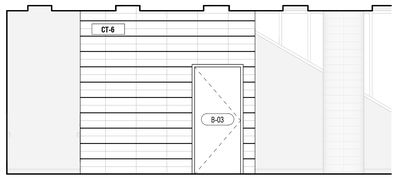
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1/4" = 1'-0"



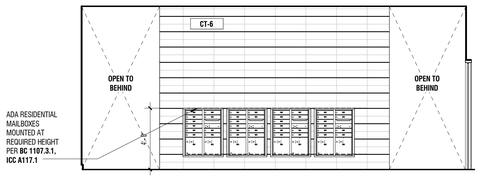
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1/4" = 1'-0"



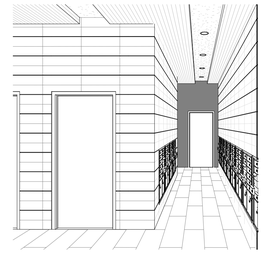
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1/4" = 1'-0"



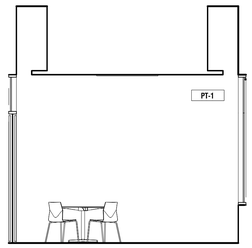
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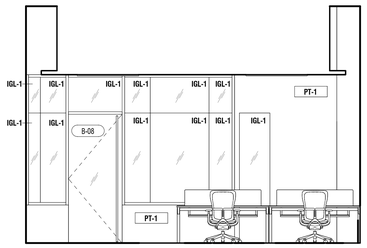
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1/4" = 1'-0"



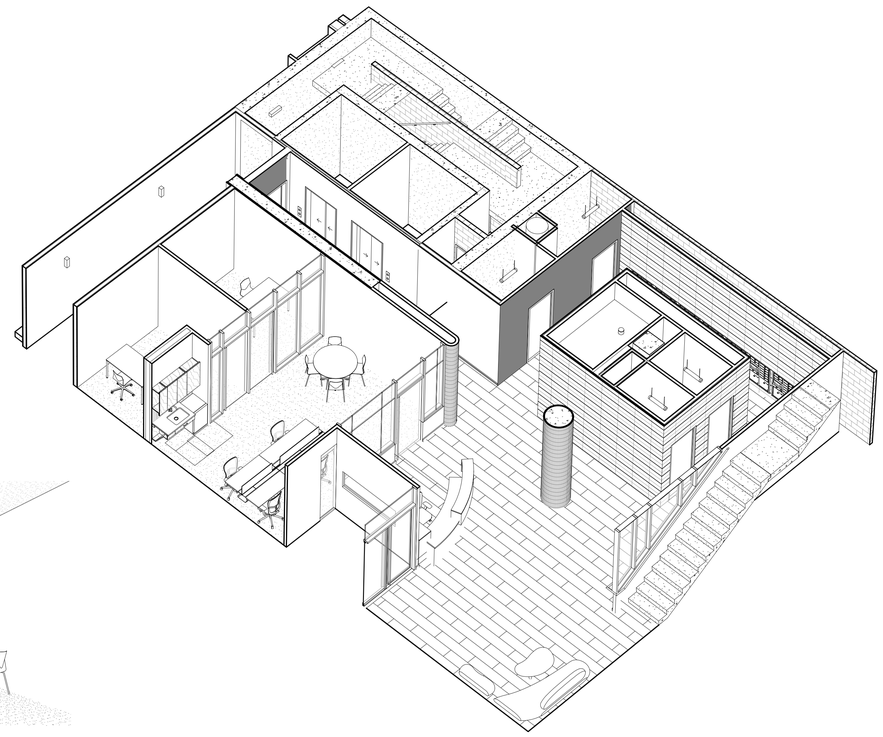
8 LOBBY PERSPECTIVE - MAILROOM



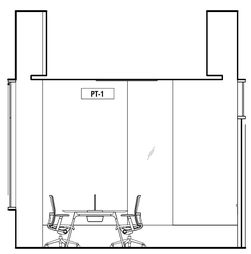
10 LEVEL 1 - PROGRAM OFFICE - NORTH ELEVATION
1/4" = 1'-0"



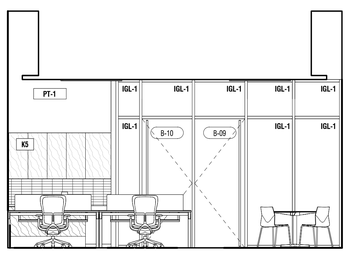
9 LEVEL 1 - PROGRAM OFFICE - EAST ELEVATION
1/4" = 1'-0"



7 LOBBY PERSPECTIVE - AERIAL LOOKING NORTH WEST



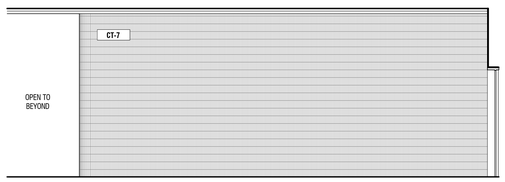
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1/4" = 1'-0"



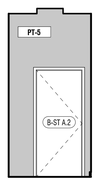
12 LEVEL 1 - PROGRAM OFFICE - WEST ELEVATION
1/4" = 1'-0"



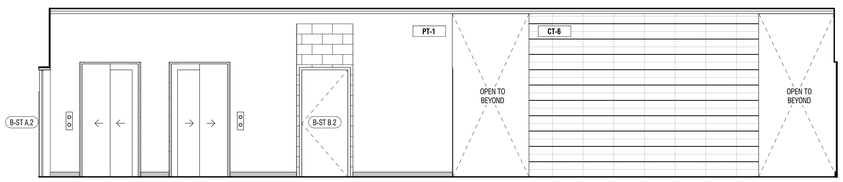
13 OFFICES PERSPECTIVE - LOOKING WEST



15 LEVEL 1 - CORRIDOR - SOUTH ELEVATION
1/4" = 1'-0"



17 LEVEL 1 - CORRIDOR - WEST ELEVATION
1/4" = 1'-0"



14 LEVEL 1 - CORRIDOR - NORTH ELEVATION
1/4" = 1'-0"



16 LEVEL 1 - CORRIDOR PERSEPCTIVE

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DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

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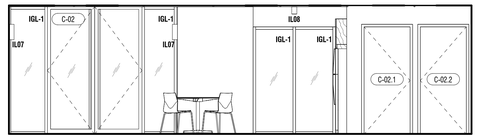
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SEAL & SIGNATURE

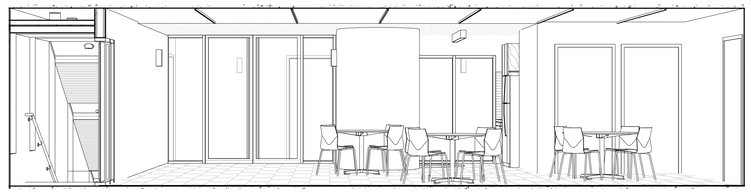
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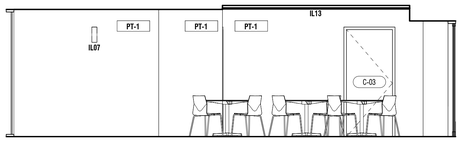
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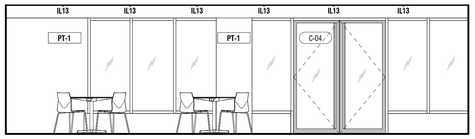
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1/4" = 1'-0"



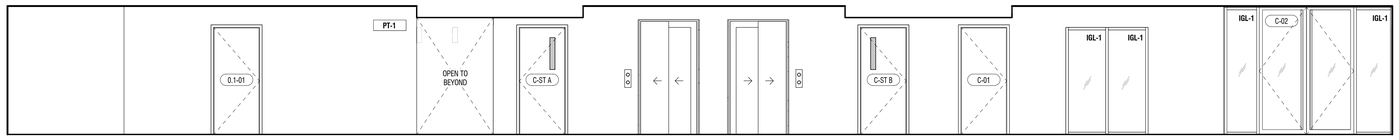
9 COMMUNITY ROOM PERSPECTIVE - LOOKING SOUTH



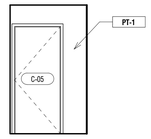
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1/4" = 1'-0"



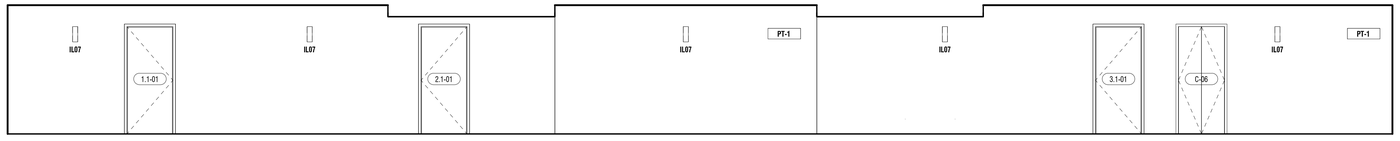
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1/4" = 1'-0"



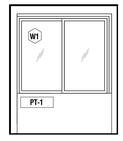
5 LEVEL 2 - CORRIDOR 1 - NORTH ELEVATION
1/4" = 1'-0"



13 LEVEL 2 - CORRIDOR 1 - EAST ELEVATION
1/4" = 1'-0"



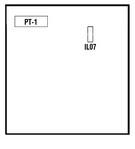
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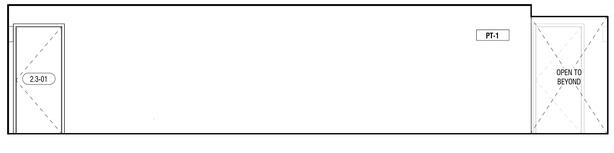
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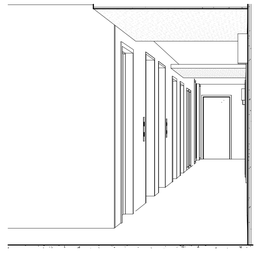
8 LEVEL 2-6 - TYP. CORRIDOR 2 -WEST ELEVATION
1/4" = 1'-0"



11 LEVEL 2-6 - TYP. CORRIDOR 2 - NORTH ELEVATION
1/4" = 1'-0"



7 LEVEL 2-6 - TYP. CORRIDOR 2 -EAST ELEVATION
1/4" = 1'-0"



10 LEVEL 2 - CORRIDOR PERSPECTIVE - LOOKING EAST

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KEY PLAN

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1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

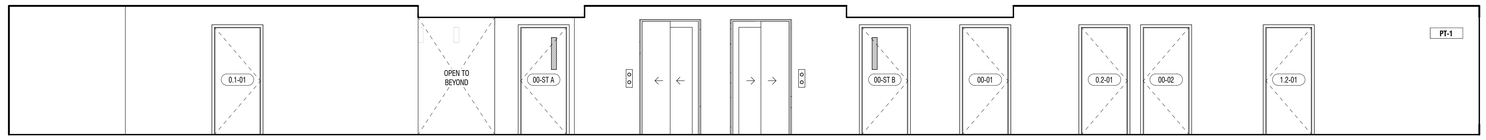
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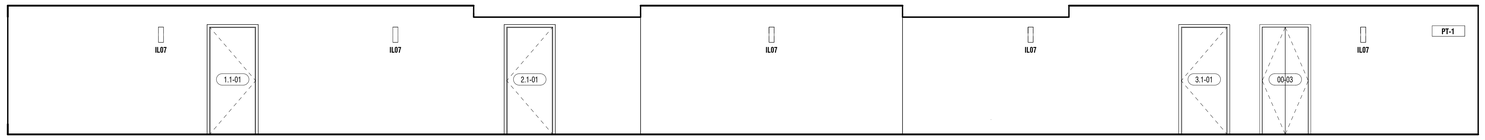
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SEAL & SIGNATURE

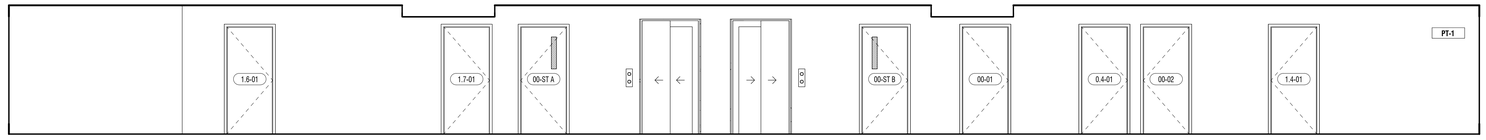
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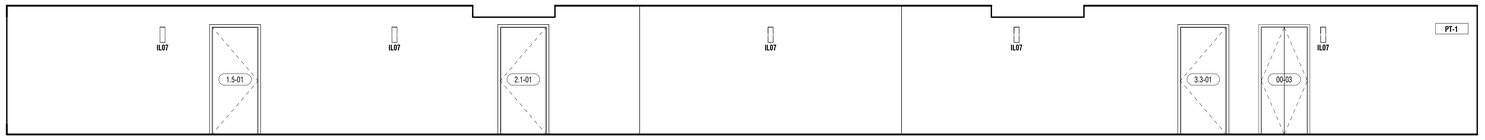
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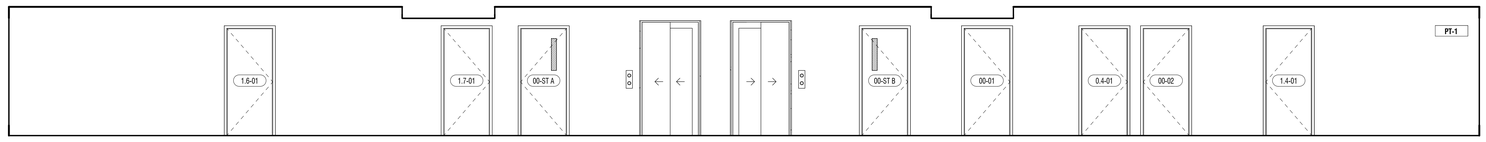
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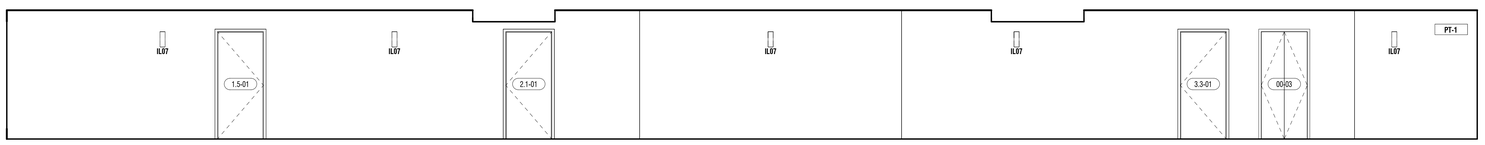
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1/4" = 1'-0"



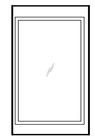
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1/4" = 1'-0"



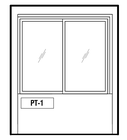
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1/4" = 1'-0"



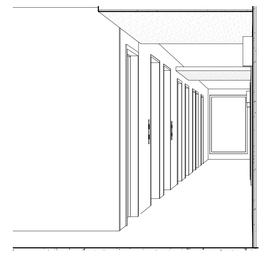
7 LEVEL 9,11,13,15 - TYP. CORRIDOR - SOUTH ELEVATION
1/4" = 1'-0"



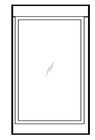
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1/4" = 1'-0"



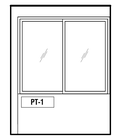
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1/4" = 1'-0"



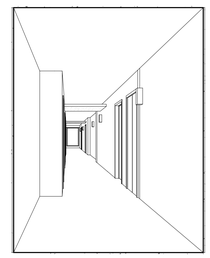
5 LEVEL 3 - CORRIDOR PERSPECTIVE - LOOKING EAST



12 LEVEL 7,8,10,12,14 - TYP CORRIDOR - EAST ELEVATION
1/4" = 1'-0"



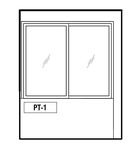
13 LEVEL 7,8,10,12,14 - TYP CORRIDOR - WEST ELEVATION
1/4" = 1'-0"



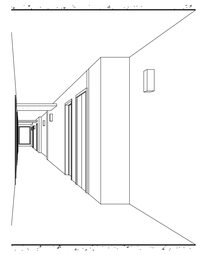
8 LEVEL 8 - CORRIDOR PERSPECTIVE - LOOKING EAST



14 LEVEL 9,11,13,15 - TYP. CORRIDOR - EAST ELEVATION
1/4" = 1'-0"



15 LEVEL 9,11,13,15 - TYP. CORRIDOR - WEST ELEVATION
1/4" = 1'-0"



9 LEVEL 9 - CORRIDOR PERSPECTIVE - LOOKING EAST

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NEW YORK, NY 10001
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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.2018
1	DD SUBMISSION	04.06.2018

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

472-474 WILLIS AVE. BRONX, NY, 10455

INTERIOR ELEVATIONS

SEAL & SIGNATURE

DATE:	04/06/2018
PROJECT NO:	17110
SCALE:	1/4" = 1'-0"
DRAWING BY:	Author
CHECKED BY:	Checker
DWG NO:	A-753.00
NYC DOB NUMBER:	

4/10/2018 1:36:10 PM

GENERAL NOTES:

1. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE BUILDING CODE OF THE CITY OF NEW YORK, AND OTHER APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
2. THE CONTRACTOR SHALL OBTAIN ALL PERMITS FROM THE BUILDING DEPARTMENT PRIOR TO THE START OF WORK.
3. IN CASE OF CONFLICT BETWEEN THE GENERAL NOTES, SPECIFICATIONS, AND DETAILS, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN.
4. COORDINATE THE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL AND M/E/P DRAWINGS.
5. COORDINATE ALL WALL LOCATIONS, OPENINGS, WINDOWS AND DOOR LOCATIONS, SLAB DEPRESSIONS, CURB LOCATIONS AND RADIANT HEAT LOCATIONS WITH ARCH. DRAWINGS.
6. EXISTING CONDITIONS, ELEVATIONS, DIMENSIONS AND SYSTEMS SHOWN ON PLANS ARE BASED ON LIMITED FIELD OBSERVATIONS. THE CONTRACTOR SHALL FIELD-VERIFY ALL DETAILS, DIMENSIONS AND ASSUMPTIONS PRIOR TO ANY WORK, AND COORDINATE WITH ARCHITECTURAL AND M/E/P DRAWINGS. FOR FINAL CONSTRUCTION WHERE EXISTING CONDITIONS DIFFER FROM OR PRECLUDE THE EXECUTION OF THE OUTLINED DETAILS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND PROVIDE A SKETCH OF THE CONDITION WITH HIS PROPOSED MODIFICATION OF THE DETAILS GIVEN ON THE CONTRACT DOCUMENTS. DO NOT COMMENCE WORK UNTIL CONDITION IS RESOLVED AND MODIFICATION IS APPROVED.
7. ALL DIMENSIONS AND ELEVATIONS FOR FINAL CONSTRUCTION SHALL BE FIELD VERIFIED BY THE CONTRACTOR AND COORDINATED WITH ARCHITECTURAL AND M/E/P DRAWINGS. SHOP DRAWINGS SHALL BE BASED ON EXISTING CONDITIONS AND DIMENSIONS.
8. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY SHORING AND BRACING REQUIRED FOR PLUMBNESS, STRUCTURAL STABILITY AND SAFETY WHENEVER REQUIRED TO SUPPORT LOADS AS MAY BE IMPOSED UPON THE STRUCTURE DURING CONSTRUCTION. BRACING AND SHORING AND SEQUENCES OF SUCH WORK SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND HIS/HER LICENSED ENGINEER REGISTERED IN THE STATE OF NEW YORK. ALL SUBMITTALS SHALL BEAR THIS ENGINEER'S SEAL AND SIGNATURE.
9. CONTRACTOR TO PROTECT AT ALL TIMES EQUIPMENT, PIPES AND OTHER EXPOSED OR EMBEDDED ITEMS ON THE SITE AGAINST DAMAGE. COORDINATE WITH ARCHITECTURAL AND M/E/P DWGS AND REROUTE AS REQUIRED.
10. SHORE ALL NEW / EXISTING SUSPENDED CONDUITS, PIPES, DUCTS, ETC. REFASTEN TO NEW CONSTRUCTION, DO NOT DAMAGE ANY EMBEDDED CONDUITS OR OTHER EMBEDDED ITEMS SCHEDULLED TO REMAIN DURING DEMOLITION. CONTRACTOR SHALL FIELD VERIFY THE EXISTENCE OF ANY ELECTRICAL CONDUITS PRIOR TO CUTTING OPENING. REROUTE AS REQUIRED, COORDINATE WITH ARCHITECT.
11. CONTRACTOR SHALL INCLUDE COST OF POSSIBLE MODIFICATIONS TO CONNECTIONS DUE TO EXISTING CONDITIONS.
12. SUBMIT SHOP DRAWINGS FOR ALL WORK. DO NOT PROCEED WITH ANY FABRICATION UNTIL THE SHOP DRAWINGS ARE FAVORABLY REVIEWED FOR ALL STRUCTURAL WORK, AND MECHANICAL/ARCHITECTURAL SHOP DRAWINGS RELATED TO THE STRUCTURAL WORK. SHOP DRAWINGS SHALL BE BASED ON FIELD VERIFIED CONDITIONS.
13. REVIEW OF SHOP DRAWINGS AND SUBMITTALS BY STRUCTURAL ENGINEER OF RECORD SHALL BE TO REVIEW AND TAKE APPROPRIATE ACTION ON SHOP DRAWINGS FOR CONFORMANCE WITH THE STRUCTURAL CONSTRUCTION DOCUMENTS BUT NOT FOR ACCURACY OF DIMENSIONS AND QUANTITIES REQUIRED FOR PROPER CONSTRUCTION, WHICH ARE THE CONTRACTOR'S RESPONSIBILITY.
14. REPRODUCTION OF ANY PORTION OF THE STRUCTURAL CONTRACT DRAWINGS FOR SUBMITTAL AS SHOP DRAWINGS IS PROHIBITED. SHOP DRAWINGS PRODUCED IN SUCH A MANNER WILL BE REJECTED AND RETURNED.
15. SUBMIT PERIODIC INSPECTION REPORTS WITHIN ONE BUSINESS DAY AFTER RECEIPT BY THE CONTRACTOR TO ARCHITECT/ENGINEER DURING CONSTRUCTION. SUBMIT FINAL INSPECTION REPORT SUMMARY FOR EACH DIVISION OF WORK, CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER, THAT INSPECTIONS WERE PERFORMED AND THAT WORK WAS PERFORMED IN ACCORDANCE WITH CONTRACT DOCUMENTS.
16. PROTECT ALL WORK SCHEDULED TO REMAIN AND IF DAMAGED REPAIR TO MATCH EXISTING, INSTALL ANY DUST PROOF PARTITIONS OR SCREENS REQUIRED TO PROTECT AREAS NOT BEING WORKED ON.
17. ANY ADDITIONAL WORK/FRAMING/FOUNDATIONS NOT SPECIFICALLY SHOWN OR CALLED FOR IN THE DRAWINGS AND SPECIFICATIONS, THAT ARE REQUIRED TO COMPLETE THE INTENT OF THE WORK, SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR AS IF INCLUDED IN THE DRAWINGS/SPECIFICATIONS. THE CONTRACTOR SHALL ADVISE THE ENGINEER OF SUCH OCCURRENCES.
18. FOR WATERPROOFING, FLASHING, DRAIN, PITCH POCKET, INSULATION AND FIREPROOFING DETAILS, SEE ARCHITECTURAL DRAWINGS.
19. AT ALL NON-LOAD BEARING PARTITIONS, PROVIDE SLIP CONNECTIONS THAT ALLOW VERTICAL MOVEMENT AT THE TOP OF ALL SUCH PARTITIONS. CONNECTIONS SHALL BE DESIGNED TO SUPPORT THE TOP OF THE WALLS LATERALLY FOR STABILITY AND THE CODE-REQUIRED LATERAL LOAD.
20. ANCHOR BOLTS INTO ALL SUBSTRATES (BRICK, CMU, RUBBLE, CONCRETE, TERRA COTTA, ETC.) SHALL BE TESTED PER MANUFACTURER'S RECOMMENDATIONS TO VERIFY SUITABILITY OF APPLICATION. IN THE EVENT THAT ANCHORS ARE NOT SUITABLE, THE CONTRACTOR SHALL PROVIDE SIMILAR ANCHORS ADEQUATE FOR THE SPECIFIED APPLICATIONS AND ACCEPTABLE TO THE ARCHITECT AND ENGINEER, WHEN BOLTING TO A REINFORCED SLAB, PROVIDE PILOT DRILLED HOLES PRIOR TO DRILLING FINAL BOLT HOLES TO ENSURE THAT EXISTING SLAB REINFORCEMENT AND OR SLAB ARE NOT DAMAGED.
21. CONTRACTOR IS TO DETERMINE PROPERTY LINES AND SECURE ADJACENT PROPERTY OWNER'S CONSENT IF WORK EXTENDS BEYOND BUILDING'S PROPERTY LINE.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF ALL AREAS. PROVIDE ANY PROTECTIVE MEASURES DEEMED NECESSARY TO PROTECT PROPERTY AND PREVENT INJURY.
23. CONSTRUCTION WORK SHALL BE CONFINED TO THAT SHOWN IN THE ARCHITECTURAL DRAWINGS AND SHALL NOT CREATE DUST, DIRT OR OTHER SUCH INCONVENIENCES TO OTHER TENANTS IN THE BUILDING.
24. CONSTRUCTION OPERATIONS SHALL NOT BLOCK HALLWAYS OR MEANS OF EGRESS OF OTHER TENANTS IN THE BUILDING.
25. CONSTRUCTION OPERATIONS SHALL NOT INVOLVE INTERRUPTION OF HEATING, WATER OR ELECTRICAL SERVICES TO OTHER TENANTS IN THE BUILDING WITHOUT PROPER CONSENT.
26. REMOVE ALL DEMOLITION MATERIALS FROM THE SITE PROMPTLY. TRANSPORT AND DISPOSE OF DEBRIS AS REQUIRED BY THE APPROPRIATE CODES.

LIGHT GAUGE STEEL NOTES:

1. ALL LIGHT GAUGE STEEL AND ACCESSORIES SHALL BE BY "MARINO-WARE INDUSTRIES" OR APPROVED EQUIVALENT.
2. CONTRACTOR SHALL REFER TO INSTALLATION INSTRUCTIONS PUBLISHED BY THE SCREW MANUFACTURER AND ASTM C954 FOR MINIMUM SPACING AND EDGE DISTANCES REQUIREMENTS AND TORQUE REQUIREMENTS.
3. ALL CONNECTIONS SHALL BE DESIGNED BY THE FABRICATOR TO SUSTAIN THE FULL ALLOWABLE UNIFORM LOAD OF THE JOIST. PROVIDE TOP FLANGE JOIST HANGERS SECURED TO FLANGE W/ P.A.F. AT C-JOIST TO STEEL CONNECTIONS. PROVIDE STABILIZING STRUTS AT BOTTOM OF EA. HANGING CONN. SCREWED TO HANGER AND SHOT TO STRUCTURAL STEEL. PROVIDE JOIST HANGERS TO STEEL OR CONCRETE AS REQUIRED. ALL WORK SHALL CONFORM TO THE LOCAL, AISI, AWS AND ASCE CODES.
4. ALL JOISTS AND ACCESSORIES SHALL HAVE THE FOLLOWING MINIMUM YIELD STRENGTH:

   16 GA. OR HEAVIER - 50 KSI
   18 GA. - 33 KSI
   20 GA. - 33 KSI
5. JOISTS SHALL HAVE BRIDGING AT 7'-0" O.C. MAX.
6. ALLOW FOR ADDITIONAL JOISTS AS REQUIRED TO FRAME MISCELLANEOUS OPENINGS NOT SHOWN ON PLAN BUT REQUIRED DUE TO EXISTING FIELD CONDITIONS AND OR BY ARCH./MECH. REQUIREMENTS. FOR SUCH OPENINGS, COORDINATE WITH ARCHITECTURAL, MECHANICAL AND PLUMBING DRAWINGS AND NOTIFY ENGINEER OF RECORD BEFORE PROCEEDING.
7. PROVIDE WEB STIFFENERS AND ALL ADDITIONAL CLIPS, STRAPS, STUDS, AND JOISTS REQUIRED TO CONFORM TO MARINO-WARE INDUSTRIES' TYPICAL DETAILS OUTLINED IN THEIR LATEST CATALOGUE.
8. SELF-TAPPING SCREWS SHALL BE 12-14 MINIMUM. PENETRATION THROUGH JOINED MATERIALS SHALL BE MINIMUM OF 3 EXPOSED THREADS. POWDER ACTUATED FASTENERS (P.A.F.) SHALL HAVE MIN. SHANK DIAM. OF 0.177". CONNECTIONS SHALL HAVE MIN. (2) SCREWS OR P.A.F.'s.
9. SUBMIT SHOP DRAWINGS OUTLINING ALL WORK WHEN REQUESTED.

EXCAVATION AND FOUNDATION NOTES:

1. ALL MATERIAL, FABRICATION, INSTALLATION, AND INSPECTION REQUIREMENTS RELATING TO THE FOUNDATIONS SHALL CONFORM TO THE NEW YORK CITY BUILDING CODE.
2. ALL STRUCTURAL WORK SHALL BE COORDINATED AND VERIFIED WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING REQUIREMENTS.
3. THE CONTRACTOR SHALL DEMOLISH AND REMOVE EXISTING ELEMENTS AS INDICATED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL REMOVE, TRANSPORT, AND DISPOSE OF ALL DEBRIS PROMPTLY.
4. DEMOLITION SHALL BE DONE CAREFULLY, TAKE SPECIAL CARE NOT TO DAMAGE ANY EXISTING UNDERSLAB UTILITIES OR OTHER ELEMENTS NOT DESIGNATED FOR REMOVAL.
5. EXCAVATION SHALL BE PERFORMED SO AS NOT TO DISTURB EXISTING ADJACENT BUILDINGS, STREETS, AND UTILITY LINES. VERIFY LOCATION OF ALL UTILITIES PRIOR TO COMMENCEMENT OF WORK. HAND EXCAVATE AROUND AND RESUPPORT UTILITIES AS REQUIRED.
6. THE CONTRACTOR SHALL PROTECT ALL EXCAVATIONS FROM FLOODING AND EXISTING WATER TABLE AND PROVIDE MEANS & METHODS, INCLUDING BUT NOT LIMITED TO CONTINUOUS PUMPING, NECESSARY TO MAINTAIN STABLE AND RELATIVE DRY EXCAVATIONS AT ALL TIMES DURING CONSTRUCTION. THE DEPTH OF EXCAVATION SHALL NOT BE CARRIED DEEPER THAN SPECIFIED IN THE CONTRACT DOCUMENTS WITHOUT THE ENGINEER OF RECORD'S CONSENT.
7. THE SUBGRADE FOR FOOTINGS AND SLABS SHALL BE INSPECTED AND APPROVED BY THE SPECIAL INSPECTOR OR SPECIAL INSPECTION AGENCY IMMEDIATELY PRIOR TO PLACING FOUNDATION CONCRETE. THE SPECIAL INSPECTOR OR SPECIAL AGENCY SHALL BE ACCEPTABLE TO THE ARCHITECT AND OWNER AND PRODUCE REPORTS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK WHICH SHALL BE SUBMITTED TO THE ARCHITECT OUTLINING WORK PERFORMED AND TEST RESULTS.
8. FOOTING SUBGRADES SHOULD BE THOROUGHLY CLEARED OF ALL MUD, DEBRIS AND LOOSE MATERIAL PRIOR TO THE PLACEMENT OF CONCRETE OR CRUSHED STONE.
9. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO CONTROL ICE, FROST, SURFACE AND SUBSURFACE WATER SO THAT THE FOUNDATION WORK IS PERFORMED ON DRY SUBGRADE.
10. THE CONCRETE FOR EACH FOOTING SHALL BE PLACED IN ONE (1) CONTINUOUS PLACEMENT.
11. ALL UNDERPINNING, SHEETING, SHORING OR OTHER SIMILAR CONSTRUCTION REQUIRED SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE SUBJECT TO INSPECTIONS AS REQUIRED BY THE NEW YORK CITY BUILDING CODE. THE CONTRACTOR SHALL RETAIN A LICENSED PROFESSIONAL ENGINEER TO PROVIDE ALL NECESSARY DESIGNS, REQUIRED INSPECTIONS AND SUBMITTALS CONFORMING TO THE BUILDING CODE OF THE CITY OF NEW YORK.
12. ALL UNDERPINNING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND HIS/HER PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK. CONTRACTOR TO SUBMIT ALL UNDERPINNING DESIGNS AND PROCEDURES, SIGNED AND SEALED BY HIS/HER LICENSED PROFESSIONAL ENGINEER TO THE CITY TECHNICAL ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETE UNDERPINNING DESIGN, INCLUDING A FULL SURVEY OF ALL EXISTING CONDITIONS INCLUDING THOSE AT NEIGHBORING WALLS AND ADJACENT AREAS. SEE GEOTECHNICAL REPORT BY GEOTECHNICAL ENGINEER.
13. DO NOT PLACE CONCRETE WITHOUT FAVORABLY REVIEWED STRUCTURAL SHOP DRAWINGS AND MECHANICAL/ARCHITECTURAL SHOP DRAWINGS RELATED TO THE CONCRETE WORK.
14. THE CONTRACTOR SHALL PROVIDE ALL MEASURES AND PRECAUTIONS NECESSARY TO PREVENT DAMAGE AND SETTLEMENT (HORIZONTAL AND VERTICAL) OF EXISTING OR NEW CONSTRUCTION, INSIDE OR OUTSIDE THE PROJECT LIMITS.
15. NEW EXCAVATION SHALL NOT UNDERMINE NOR DISTURB ANY EXISTING ADJACENT FOOTINGS. NEW FOOTINGS SHALL BE SUPPORTED IN A MANNER TO MAINTAIN AN EXCAVATION SLOPE OF ONE VERTICAL TO TWO HORIZONTAL BETWEEN THE BOTTOM OF FOOTINGS AND EXCAVATION. REROUTE ANY UNDERGROUND UTILITIES IF REQUIRED.
16. ALL FILL REQUIRED BELOW ANY PORTION OF THE STRUCTURE SHALL BE COMPACTED IN 8" LIFTS TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY PER ASTM D698 AND D-1557. REMOVE UNSUITABLE FILL AND REPLACE WITH CONTROLLED FILL AS REQUIRED FOR SOUND PLACEMENT OF FOUNDATIONS. NEW CONTROLLED FILL SHALL BE CRUSHED STONE, RECYCLED CONCRETE AGGREGATE OR GRANULAR SAND AND GRAVEL WITH LESS THAN 35% PASSING THE #200 SIEVE.
17. PROVIDE CONTINUOUS WATERSTOPS IN ALL EXTERIOR WALL CONSTRUCTION, CONTROL AND EXPANSION JOINTS; SEE ARCHITECTURAL DRAWINGS. INSTALLATION AND SPLICING OF WATERSTOP SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS OF MANUFACTURER. COORDINATE WITH ARCHITECT.
18. SEE ARCHITECTURAL DRAWINGS FOR ALL WATERPROOFING, DAMPPROOFING, PROTECTION BOARDS AND INSULATION DETAILS.
19. FOUNDATION DESIGN MAY REQUIRE MODIFICATION AFTER EXISTING SOIL BEARING CAPACITY AND SUBSURFACE CONDITIONS HAVE BEEN FIELD VERIFIED BY THE GEOTECHNICAL ENGINEER.
20. SOIL SUPPORTED FOOTINGS SHALL BE FOUNDED UPON UNDISTURBED NATURAL SUBGRADE (OR CONTROLLED COMPACTED FILL) WITH A MINIMUM BEARING CAPACITY OF 2 TONS PER SQUARE FOOT AND 3 TSF AT SHAFT WALLS AS FIELD VERIFIED AND APPROVED BY THE SPECIAL INSPECTOR OR SPECIAL INSPECTION AGENCY. THE BOTTOM OF THE FOOTING ELEVATIONS AND BEARING CAPACITIES AS SHOWN ON THE DRAWINGS ARE ESTIMATED AND WILL REQUIRE VERIFICATION. FINAL, EXACT ELEVATIONS AND BEARING CAPACITIES SHALL BE FIELD DETERMINED AND VERIFIED BY THE SPECIAL INSPECTOR OR SPECIAL INSPECTION AGENCY.
21. THE PERIMETER OF THE GENERAL EXCAVATION SHALL BE RETAINED BY A TEMPORARY SOIL/ROCK RETENTION SYSTEM. THE DESIGN, INSTALLATION, MAINTENANCE AND REMOVAL OF SUCH A SYSTEM (WHERE REQUIRED) SHALL BE THE COMPLETE AND SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE ALL MEASURES AND PRECAUTIONS NECESSARY TO PREVENT DAMAGE AND SETTLEMENT OF EXISTING OR NEW CONSTRUCTION INSIDE OR OUTSIDE THE PROJECT LIMITS, ANY DAMAGE TO NEW OR EXISTING CONSTRUCTION INSIDE OR OUTSIDE THE PROJECT LIMITS, CAUSED BY CONSTRUCTION TECHNIQUES OR MOVEMENTS OF THE SOIL/ROCK RETENTION SYSTEM, IS THE RESPONSIBILITY OF THE CONTRACTOR.
22. ALL PERIMETER CONCRETE WALLS SHALL REMAIN LATERALLY BRACED UNTIL ALL FRAMING IS INSTALLED, NO BACKFILLING SHALL BE PERFORMED AGAINST ANY UNBRACED WALLS OR WALLS WITHOUT FRAMING.
23. THE CONTRACTOR SHALL COORDINATE ALL ELEMENTS OF THE SOIL/ROCK RETENTION SYSTEM WITH ALL ELEMENTS OF THE PERMANENT BUILDING.
24. WRITTEN PERMISSION SHALL BE SECURED BY THE CONTRACTOR FROM OWNER OF ADJACENT PROPERTIES FOR ANY WORK AFFECTING THEIR PROPERTIES PRIOR TO COMMENCING WORK.
25. ALL EXCAVATION SHALL BE BASED ON ENGINEERING DRAWINGS PREPARED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK AND RETAINED BY THE CONTRACTOR, THE DRAWINGS SHALL INCLUDE PLANS AND SECTIONS OF EXCAVATION SEQUENCES. THE EXCAVATION SEQUENCES SHALL BE CONTROLLED TO MATCH THE REQUIREMENTS OF THE DESIGN OF THE SOIL RETENTION SYSTEM.
26. THE GENERAL EXCAVATION SHALL CONSIST OF EXCAVATING AND REMOVING THE EXISTING SURFICIAL FILL MATERIALS TO REACH THE DESIRED SUBGRADE LEVEL. THE EXPOSED SUBGRADE SHOULD BE PROOFROLLED AND COMPACTED TO A FIRM AND UNYIELDING CONSISTENCY. THE EXCAVATION FOR FOOTINGS, PITS, ETC. SHALL BE EXCAVATED ON AN INDIVIDUAL, LOCALIZED BASIS DOWN FROM THE SLAB-ON-GRADE SUBGRADE LEVEL. EACH EXCAVATION SHALL BE A TRIM, LEVEL SURFACE.
27. THE CONTRACTOR SHALL PROVIDE POSITIVE PROTECTION (MAT/SHEET COVERINGS) FOR ALL EXCAVATION SLOPES TO PROTECT SLOPES FROM INSTABILITY AND DETERIORATION DUE TO RAIN, WIND OR SNOWICE.
28. CONCRETE FOR FOUNDATIONS SHALL BE POURED ON THE SAME DAY THE SUBGRADE IS APPROVED BY THE SPECIAL INSPECTOR OR SPECIAL INSPECTION AGENCY.
29. UTILITY LINES SHALL NOT BE PLACED THROUGH OR BELOW FOUNDATIONS.
30. A GEOTECHNICAL INVESTIGATION REPORT HAS BEEN PREPARED BY "GTA ENGINEERING SERVICES OF NEW YORK, P.C. DATED DEC. 19th, 2017. THE CONTENTS OF THIS REPORT SHALL BE PART OF THE CONTRACT DOCUMENTS AND PART OF THE BID DOCUMENTS.

STRUCTURAL CONCRETE NOTES:

1. ALL WORK SHALL COMPLY TO THE ACI CODE, LATEST EDITION, AS AMENDED BY THE BUILDING CODE OF THE CITY OF NEW YORK.
2. STRUCTURAL CONCRETE SHALL CONTAIN A WATER REDUCING, PLASTICIZING ADMIXTURE. ALL CONCRETE EXPOSED TO WEATHER SHALL CONTAIN AN AIR-ENTRAINING ADMIXTURE.
3. ALL CONCRETE WORK: MIXES, INSPECTIONS, AND FORMWORK SHALL CONFORM TO THE REQUIREMENTS OF THE BUILDING CODE OF THE CITY OF NEW YORK AND ACI CODES.
4. CONFORM TO ACI HOT AND COLD WEATHER CONCRETING.
5. CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DESIGN OF CONCRETE MIXES AND FOR MAINTAINING STRENGTH AND PROPER SLUMP DURING CONSTRUCTION. CONCRETE MIXES SHALL BE DESIGNED IN ACCORDANCE WITH THE SECTION BC 1905 OF THE NEW YORK CITY BUILDING CODE BY A LICENSED CONCRETE TESTING LAB, THE MIX DESIGNS BEARING THE NAME OF THE PROJECT SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. NO CONCRETE SHALL BE PLACED UNTIL CONCRETE MIXES HAVE BEEN REVIEWED BY THE ENGINEER. SUBMIT THE PROPOSED CONCRETE MIX AND CYLINDER BREAKS FOR REVIEW BY ENGINEER OF RECORD.
6. SUBMIT TO THE ARCHITECT PROPOSALS FOR ALL PROCEDURES AND SEQUENCES FOR FORMWORK STRIPPING AND RESHORING SYSTEMS.
7. ALL FORMWORK SHALL BE CONSTRUCTED SO CONCRETE MEMBERS AND STRUCTURES ARE OF SIZE, SHAPE, ALIGNMENT, ELEVATION, AND POSITION INDICATED WITHIN TOLERANCE LIMITS OF ACI 117.
8. REINFORCING BARS SHALL BE DEFORMED STEEL BARS COMPLYING WITH ASTM A615, GRADE 60.
9. ALL REINFORCEMENT TO BE CONTINUOUS U.O.N.
10. WELDED WIRE FABRIC SHALL COMPLY WITH ASTM A185 AND SHALL HAVE A MINIMUM YIELD STRENGTH OF 70,000 PSI.
11. ALL REINFORCEMENT SHALL BE DETAILED AND PLACED IN ACCORDANCE WITH ACI MANUAL OF STANDARD PRACTICE, UNLESS OTHERWISE NOTED. PLACING OF CONCRETE SHALL NOT START UNTIL THE PLACEMENT OF REINFORCING HAS BEEN APPROVED BY THE SPECIAL INSPECTOR OR SPECIAL INSPECTION AGENCY.
12. CHECKED SHOP DRAWINGS SHOWING REINFORCING DETAILS, INCLUDING STEEL SIZES, SPACING AND PLACEMENT, SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW PRIOR TO FABRICATION.
13. REINFORCING BARS, WELDED WIRE FABRIC, TIE WIRES AND ACCESSORIES SHALL BE EPOXY COATED FOR CONCRETE WORKS THAT ARE EXPOSED TO WEATHER OR UNDER WATER IN ACCORDANCE WITH ASTM A-775. DAMAGED EPOXY COATING ON REINFORCING MATERIALS SHALL BE TOUCHED UP TO THE ORIGINAL COATING STANDARDS.
14. SUBMIT DETAIL DRAWINGS, AFTER COORDINATION WITH LATEST ARCHITECTURAL DRAWINGS, SHOWING THE LOCATIONS OF ALL CONSTRUCTION JOINTS, CURBS, SLAB DEPRESSION, SLEEVES, OPENINGS, ETC.
15. SEE ARCHITECTURAL, HVAC, ELECTRICAL AND PLUMBING DRAWINGS FOR ADDITIONAL WALL/SLAB OPENINGS.
16. IF SLAB OPENINGS NEED TO BE CUT IN FIELD SUBMIT LOCATIONS, DIMENSIONS AND SIZES TO ARCHITECT AND ENGINEER OF RECORD FOR REVIEW AND STEEL REINFORCEMENT MAY BE REQUIRED TO REINFORCE THE SLAB.
17. REINFORCING SPLICES SHALL COMPLY WITH ACI 318, BUT SHALL IN NO CASE BE LESS THAN 40 DIAMETERS, UNLESS OTHERWISE NOTED.
18. MECHANICAL SPLICING IF REQUIRED, SHALL HAVE THE BARS CONNECTED TO DEVELOP AT LEAST 125 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE BAR. IF MECHANICAL SPLICING IS USED, SUBMIT PRODUCT LITERATURE DESCRIBING METHOD OF INSTALLATION.
19. WELDED WIRE FABRIC SHALL BE LAPPED TWO (2) FULL MESH PANELS AND TIED SECURELY.
20. WHERE REQUIRED, DOWELS SHALL MATCH SIZE AND NUMBER OF MAIN REINFORCING AND LAP A MIN. OF 48ø (UNLESS OTHERWISE NOTED).
21. PROVIDE POCKETS AND DOWELS FOR ALL BEAMS FRAMING INTO FOUNDATION WALLS, PIERS AND BUTTRESSES AS REQUIRED FOR BEAMS TO HAVE A MINIMUM BEARING OF 4".
22. DO NOT PLACE CONCRETE WITHOUT FAVORABLY REVIEWED SHOP DRAWINGS.
23. PROVIDE (2) ADDITIONAL #5 BARS AROUND ALL FLOORS AND WALL OPENINGS, AS PER TYPICAL OPENING DETAIL.
24. AT INTERIOR SPACES CONSTRUCTION JOINTS IN ALL SLABS AND BEAMS SHALL NOT BE FURTHER APART THAN 20 FEET IN ANY DIRECTION. CONSTRUCTION JOINTS IN WALLS SHALL NOT BE FURTHER APART THAN 40 FEET.
25. AT EXTERIOR EXPOSURE PROVIDE EXPANSION JOINTS IN ALL SLABS AT 15'-0" O.C. MAX. WITH COMPRESSIBLE JOINT FILLER.
26. COORDINATE CONTROL AND EXPANSION JOINTS WITH ARCHITECT.
27. ALL CONSTRUCTION JOINTS SHALL BE CLEANED AND MOISTENED IMMEDIATELY PRIOR TO PLACING NEW CONCRETE.
28. BAR SUPPORTS IN CONTACT WITH EXPOSED SURFACES SHALL BE PLASTIC TIPPED.
29. NO CALCIUM CHLORIDE SHALL BE USED IN ANY CONCRETE.
30. SEE ARCHITECTURAL DRAWINGS FOR TYPE AND LOCATION OF ALL FLOOR FINISHES, FLOOR DEPRESSIONS AND CURBS.
31. CONCRETE SLABS SHALL HAVE A MONOLITHIC FINISH AND SHALL BE SCREEDED, COMPACTED BY ROLLING OR TAMPING, FLOATED OFF AND GRADED AS REQUIRED. AFTER SUFFICIENT HARDENING SLAB SHALL BE PROTECTED AND CURED. START CURING AS SOON AS POSSIBLE WITHOUT MARKING FINISH. COVER SLABS WITH REINFORCED PAPER AS REQUIRED. KEEP SURFACE CONTINUOUSLY MOIST FOR SEVEN DAYS OR USE A CURING COMPOUND.
32. CONDUITS AND PIPES EMBEDDED IN CONCRETE SHALL CONFORM TO ACI 318 REQUIREMENTS. CONDUITS AND PIPES SHALL NOT BE LARGER THAN 1/3 OF THE SLAB/WALL THICKNESS AND SHALL NOT BE SPACED CLOSER THAN 3 DIAMETERS ON CENTER. COORDINATE WITH ARCHITECTURAL, HVAC, ELECTRICAL AND PLUMBING DRAWINGS.
33. DRY PACK SHALL BE ONE PART SAND, ONE PART CEMENT WITH ENOUGH WATER FOR PLACEMENT.
34. ALL BEARING GROUT SHALL BE NON-SHRINK, NONMETALLIC WITH A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI.
35. CHAMFER ALL EXPOSED CONCRETE CORNERS UNLESS OTHERWISE NOTED ON ARCHITECTURAL DRAWINGS.
36. WHEN INSTALLING EXPANSION BOLTS OR ADHESIVE ANCHORS, THE CONTRACTOR SHALL TAKE MEASURES TO AVOID DRILLING OR CUTTING OF ANY EXISTING REINFORCING AND DESTRUCTION OF CONCRETE. HOLES SHALL BE BLOWN CLEAN PRIOR TO PLACING BOLTS OR ADHESIVE ANCHORS PER MANUFACTURE'S RECOMMENDATIONS.
37. PATCH CONCRETE WHERE REQUIRED. PATCHING CONCRETE SHALL BE SIKA TOP 122 OR 123 WITH EPOXIED PINS WHERE REQUIRED BY MANUFACTURER.
38. STANDARD COVERAGE OF REINFORCING, UNLESS OTHERWISE SHOWN, SHALL BE AS FOLLOWS:

CAST AGAINST EARTH, PERMANENTLY EXPOSED TO WEATHER	3"
EXPOSED TO EARTH & WEATHER (FORMED)	2"
NOT EXPOSED TO EARTH OR WEATHER: SLABS, WALLS	¾"
BEAMS AND COLUMNS	1½"

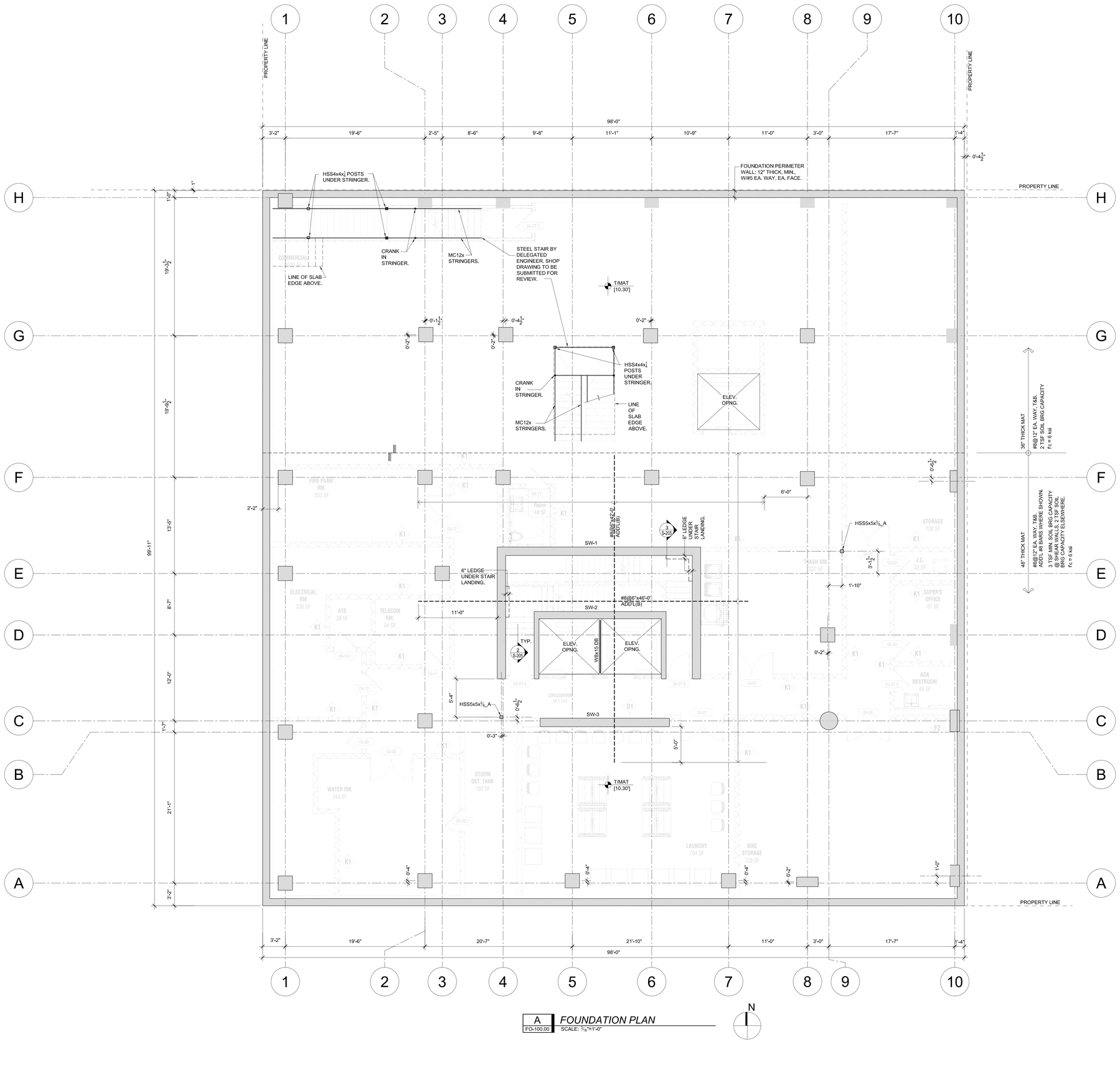
ADHESIVE ANCHORS NOTES:

1. THE ANCHOR HOLE SHALL BE MADE WITH CARBIDE THREADED RODS TIPPED BITS.
2. ALL BOLTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S INSTRUCTION TAKING CAREFUL NOTE OF DRILL BIT TYPE, CLEANING OF HOLE, TEMPERATURE OF ADHESIVE AND HEATING OF ANCHOR HOLE.
3. SUBMIT MANUFACTURER'S LOAD TABLE AND SPECIFICATIONS FOR APPROVAL.
4. BOLT HOLES SHALL BE ACCURATELY SET USING A TEMPLATE AND FIX DRILL GUIDE. USE SMALL PILOT HOLES AS REQUIRED TO ASSURE A PERFECT FIT AND TO ENSURE THAT NO EXISTING REINFORCING BARS ARE DAMAGED. LOCATION OF HOLES AND PLATE SIZES MAY HAVE TO BE ADJUSTED SO THAT REINFORCEMENT BARS ARE NOT DAMAGED.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE TESTING AGENCY PRIOR TO ANCHOR SYSTEM INSTALLATION FOR INSPECTION AND APPROVAL. IF FIELD TESTING IS REQUIRED BY TESTING AGENCY FOR APPROVAL.

STRUCTURAL STEEL NOTES:

1. DETAILING, FABRICATION AND ERECTION SHALL COMPLY WITH AISC SPECIFICATIONS AND CODES, LATEST EDITIONS AS AMENDED BY THE BUILDING CODE OF THE CITY OF NEW YORK.
2. STRUCTURAL STEEL W SHAPES SHALL COMPLY WITH ASTM A992 GR. 50.
3. STRUCTURAL STEEL ANGLES, PLATES SHALL BE ASTM A36.
4. STEEL PIPE AND STRUCTURAL (HSS SECTIONS) TUBING SHALL COMPLY WITH ASTM A500, GR B.
5. BOLTS, NUTS AND WASHERS SHALL COMPLY WITH ASTM A325. BOLTS SHALL BE A MINIMUM 3/4 INCH DIAMETER, UNLESS OTHERWISE NOTED.
6. ALL ANCHOR RODS SHALL BE ASTM F1554 (Fy=36 ksi). ALL NUTS AND BOLTS TO BE FULLY TIGHTENED.
7. AT BOLTED CONNECTIONS PROVIDE A MINIMUM OF TWO (2) BOLTS.
8. SUBMIT SHOP DRAWINGS FOR ALL WORK, DO NOT PROCEED WITH ANY FABRICATION UNTIL THE SHOP DRAWINGS ARE FAVORABLY REVIEWED. SHOP DRAWINGS SHALL BE BASED ON FIELD VERIFIED CONDITIONS.
9. ALLOW FOR A TWO-WEEK REVIEW PERIOD (MIN.) FOR SHOP DRAWINGS, AND TIME ALL SUBMISSIONS ACCORDINGLY.
10. PROVIDE ANY MEASURES REQUIRED FOR STABILITY OF STRUCTURE DURING ERECTION.
11. AFTER FABRICATION, CLEAN STEEL OF ALL RUST, LOOSE MILL, SCALE AND OTHER FOREIGN MATERIALS.
12. ALL WELDING SHALL BE DONE BY QUALIFIED WELDERS AND SHALL CONFORM TO "AWS STRUCTURAL WELDING CODE - STEEL", LATEST EDITION. WELDERS SHALL BE LICENSED IN ACCORDANCE WITH ALL REQUIREMENTS OF THE BUILDING CODE OF THE CITY OF NEW YORK.
13. WELDING ELECTRODES SHALL BE E70XX.
14. MINIMUM FILLET WELDS SHALL COMPLY WITH AISC, BUT SHALL NOT BE LESS THAN 1/4 INCH, UNLESS OTHERWISE NOTED.
15. PROVIDE FIREPROOF BLANKETS AND OTHER FIRE PROTECTION MEASURES AS REQUIRED FOR FIRE SAFETY DURING WELDING.

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A FO-100.00 *FOUNDATION PLAN*
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KEY PLAN

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1	DD SUBMISSION	04.06.18

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BETANCES VI DEVELOPMENT

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FOUNDATION PLAN

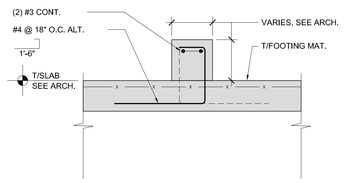
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1 NOT USED

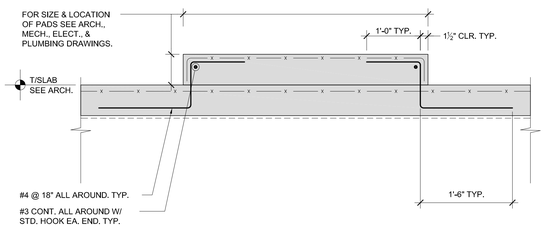
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2 TYP. CONC. CURB DETAIL

SCALE: NTS

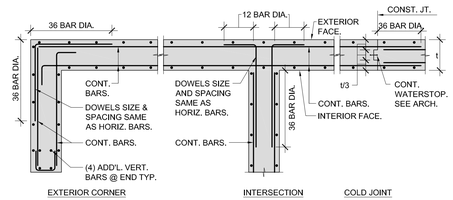
NOTES:
1. FOR ADDITIONAL INFO SEE SECTION 1.
2. SEE ARCH., MECH. AND ELECTRICAL DRAWINGS FOR CURB SIZE AND LOCATIONS.
3. PROVIDE EPOXY COATED BARS AT EXTERIOR CURBS.



3 TYP. CONC. PAD DETAIL

SCALE: NTS

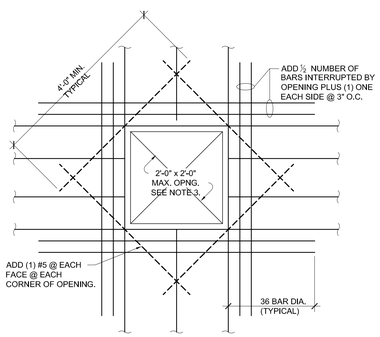
NOTES:
1. FOR ADDITIONAL INFO SEE SECTION 1.
2. SEE ARCH., MECH. AND ELECTRICAL DRAWINGS FOR PAD SIZE AND LOCATIONS.



4 TYP. CONC. WALL REINF. DETAIL (DOUBLE LAYER BARS)

SCALE: NTS

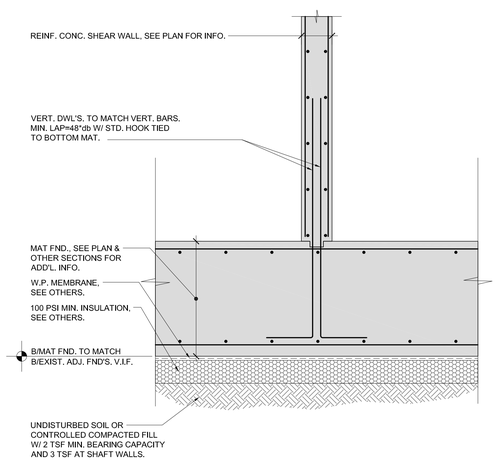
NOTES:
1. PROVIDE ADD'L (2) #5 VERT. AT ALL WALL CORNERS TYP.



5 TYP. CONC. WALL OPNG. DETAIL

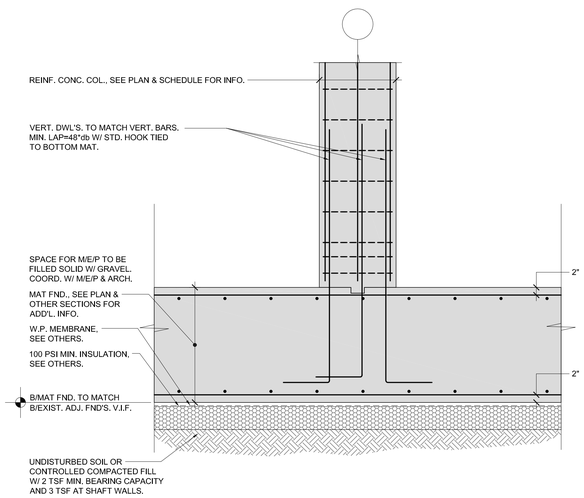
SCALE: NTS

NOTES:
1. SEE ARCH. FOR LOCATION OF OPENINGS.
2. COORDINATE OPENING SIZE WITH ARCH. & M/E/P DRAWINGS.
3. WHERE OPENING IS LESS THAN 6"x6", OMIT ADD'L. BARS AND DIAGONAL BARS.



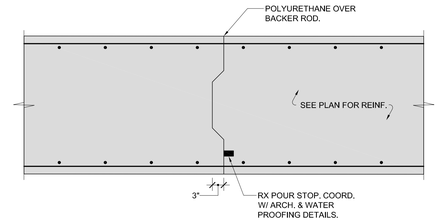
6 TYPICAL SECTION @ SHEAR WALL

SCALE: 1"=1'-0"



7 TYPICAL SECTION @ INTERIOR CONCRETE COL.

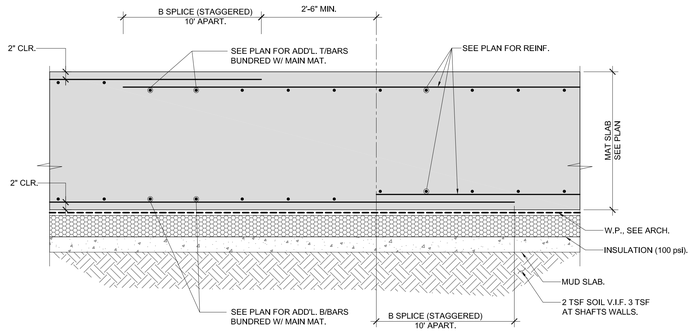
SCALE: ¾"=1'-0"



NOTES:
1. LOCATION OF CONSTRUCTION JOINT TO BE SUBMITTED TO THE S.E.R FOR REVIEW AND APPROVAL.

8 TYP. CONSTRUCTION JOINT AT MAT FND.

SCALE: NTS



9 TYP. MAT FND. REINF. DETAIL

SCALE: NTS

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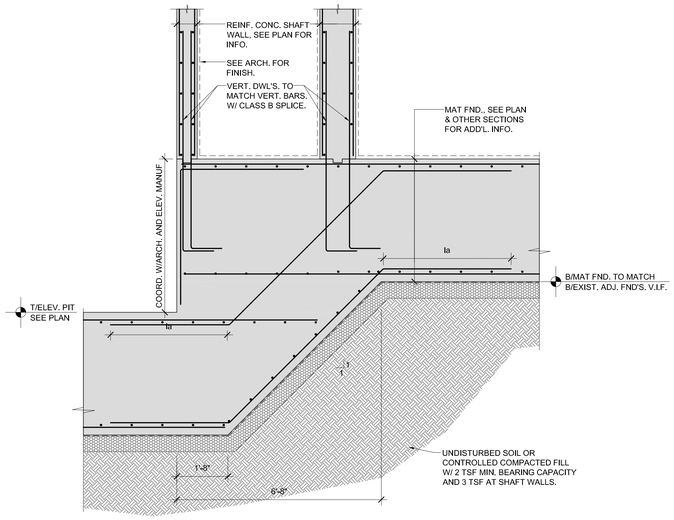
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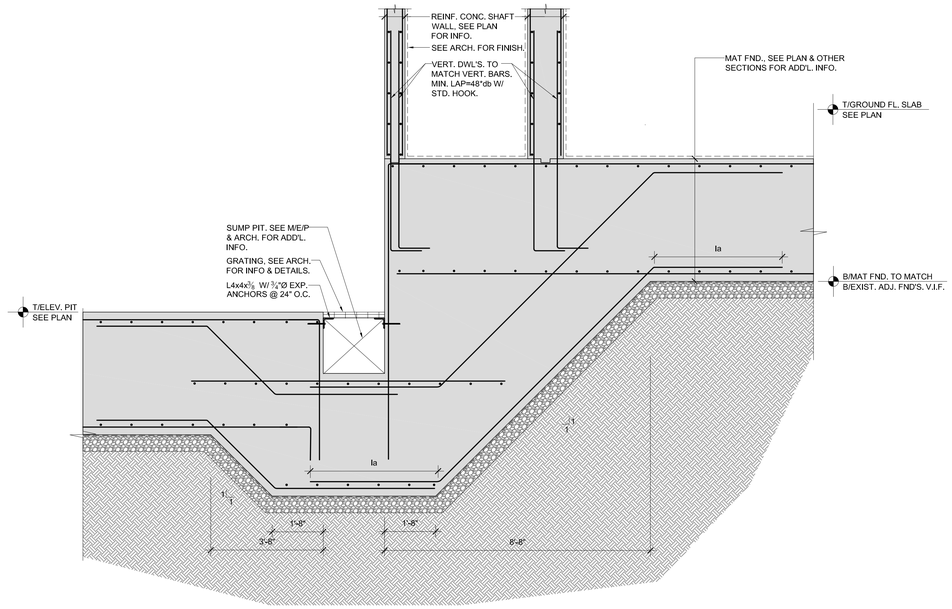
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1 SECTION @ ELEVATOR PIT

SCALE: ½"=1'-0"



2 TYP. CONC. ELEVATOR PIT SECTION DETAIL @ SUMP

SCALE: ½"=1'-0"

NOTES:
1. COORD. W/ ARCH. & M/E/P DWG. FOR SIZE AND LOCATION OF PIT.
2. COORD. W/ M/E/P DWG. FOR ALL EMBEDDED ITEMS REQ'D.

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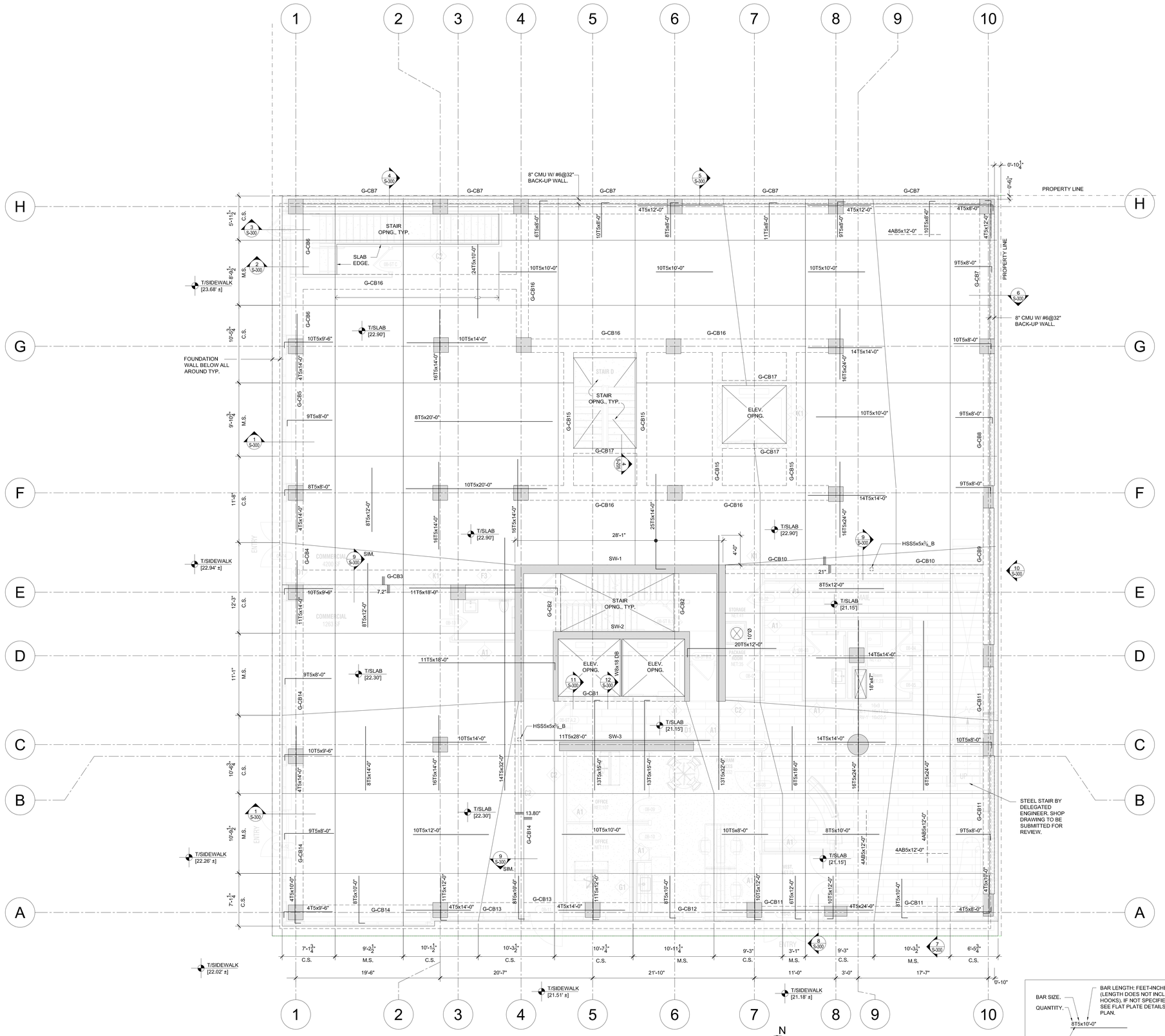
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A S-100.00 *GROUND FLOOR FRAMING PLAN*
SCALE: 1/16"=1'-0"

NOTES:
1. SLAB SHALL BE 8" THICK WITH CONTINUOUS BOTTOM MAT:
   a) #5@12" N-S & #5@14" E-W.
   b) N-S BARS TO BE BOTTOM-MOST BARS. E-W BARS TO REST ON N-S BARS.
   c) ADDITIONAL BOTT. BARS WHERE SHOWN IN PLAN.
2. TOP BARS AS INDICATED ON PLAN.
3. X-CB: X STANDS FOR THE FLOOR NUMBER.
4. PROVIDE (4)#4 SUPPORT BARS AT ALL MIDDLE STRIPS TOP BARS.

BAR SIZE. QUANTITY. 8T5x10'-0" TOP BAR
BAR LENGTH: FEET-INCHES (LENGTH DOES NOT INCLUDE HOOKS), IF NOT SPECIFIED, SEE FLAT PLATE DETAILS & PLAN.
QUANTITY. 4AB5x12'-0"
ADDITIONAL BOTT. BARS.

NOTE:
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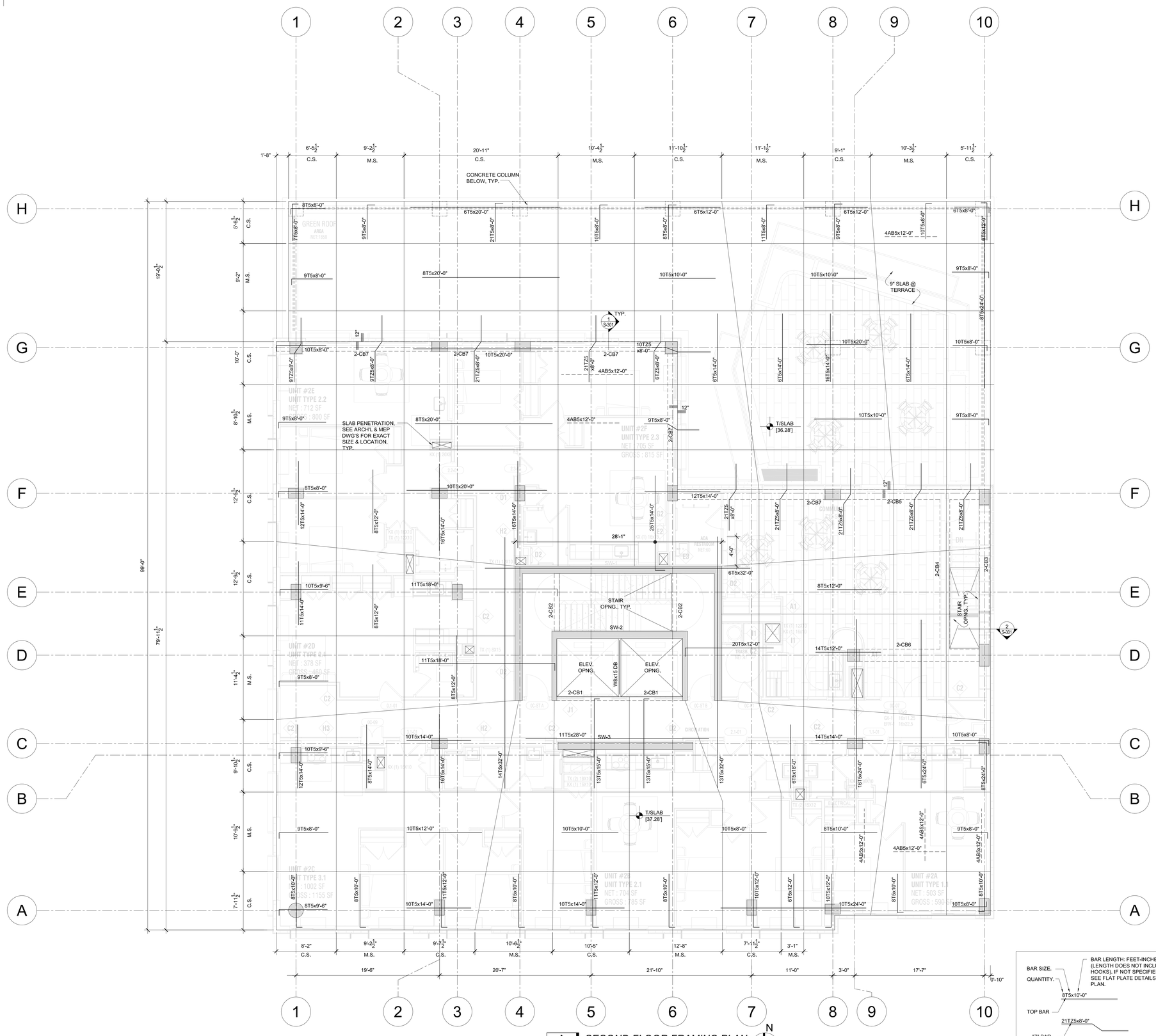
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1ST FLOOR FRAMING PLAN

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NYC DOB NUMBER:	

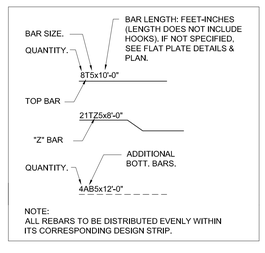


A S-101.00 *SECOND FLOOR FRAMING PLAN*
SCALE: 3/16"=1'-0"

N

NOTES:
1. SLAB SHALL BE 8" THICK WITH CONTINUOUS BOTTOM MAT:
   a) #5@12" N-S & #5@14" E-W,
   b) N-S BARS TO BE BOTTOM-MOST BARS, E-W BARS TO REST ON N-S BARS.
   c) ADDITIONAL BOTT. BARS WHERE SHOWN IN PLAN.
2. TOP BARS AS INDICATED ON PLAN.
3. X-CB: X STANDS FOR THE FLOOR NUMBER.
4. PROVIDE (4)#4 SUPPORT BARS AT ALL MIDDLE STRIPS TOP BARS.

TERRACE / GREEN ROOF NOTES:
1. SLAB SHALL BE 9" THICK WITH CONTINUOUS BOTTOM MAT:
   a) #5@8" N-S & #5@12" E-W.
   b) N-S BARS TO BE BOTTOM-MOST BARS, E-W BARS TO REST ON N-S BARS.
   c) ADDITIONAL BOTT. BARS WHERE SHOWN IN PLAN.
2. TOP BARS AS INDICATED ON PLAN.
3. X-CB: X STANDS FOR THE FLOOR NUMBER.
4. PROVIDE (4)#4 SUPPORT BARS AT ALL MIDDLE STRIPS TOP BARS.



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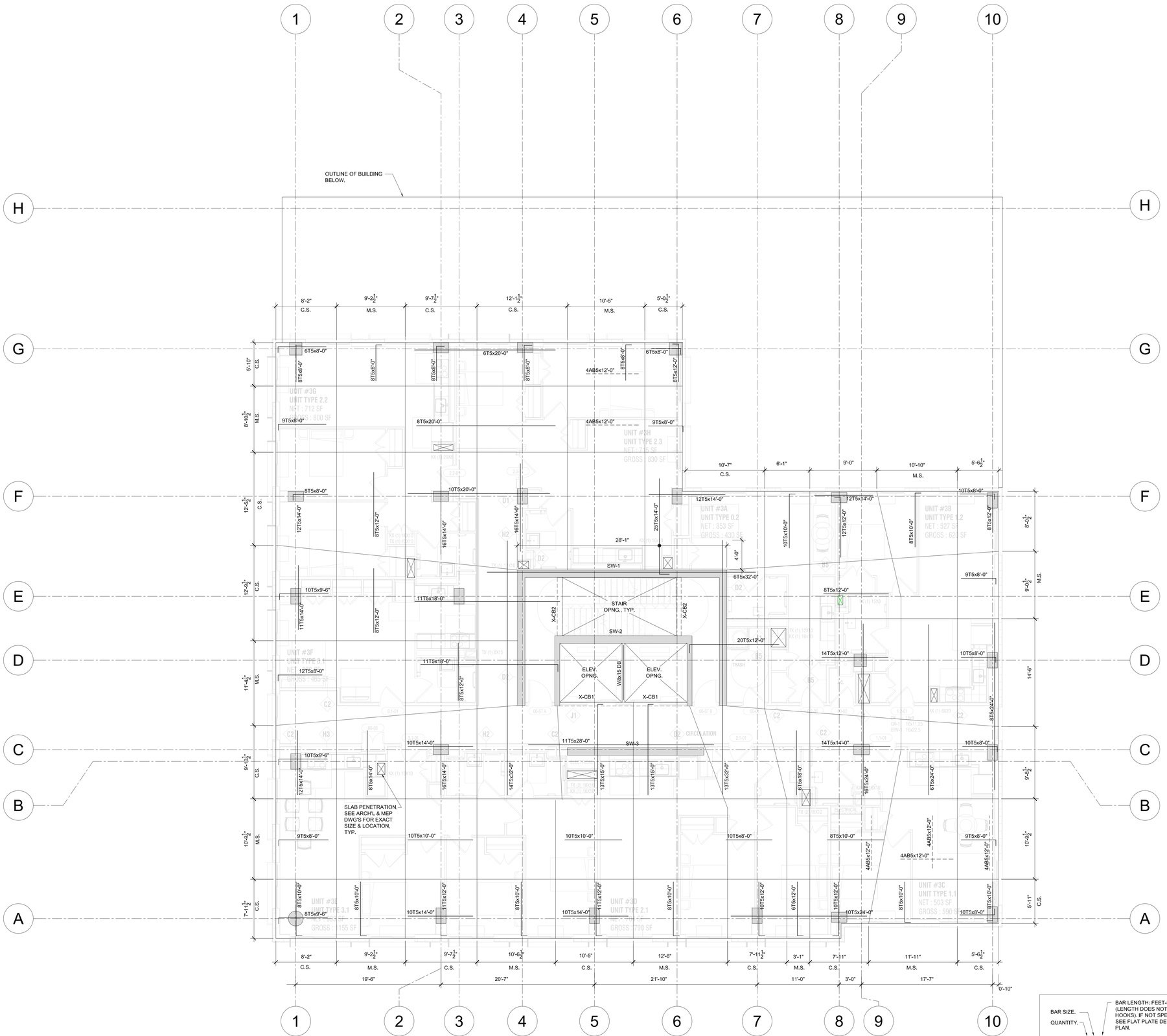
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2ND FLOOR FRAMING PLAN

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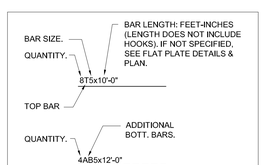


A S-102.00 *3RD - 6TH FLOOR FRAMING PLAN*

SCALE: $\frac{3}{16}$"=1'-0"

NOTES:
1. SLAB SHALL BE 8" THICK WITH CONTINUOUS BOTTOM MAT:
   a) #5@12" N-S & #5@14" E-W.
   b) N-S BARS TO BE BOTTOM-MOST BARS. E-W BARS TO REST ON N-S BARS.
   c) ADDITIONAL BOTT. BARS WHERE SHOWN IN PLAN.
2. TOP BARS AS INDICATED ON PLAN.
3. X-CB: X STANDS FOR THE FLOOR NUMBER.
4. PROVIDE (4)#4 SUPPORT BARS AT ALL MIDDLE STRIPS TOP BARS.

TOP OF SLAB ELEVATION	
FLOOR	ELEVATION
3RD FLOOR	46.34'
4TH FLOOR	55.40'
5TH FLOOR	64.47'
6TH FLOOR	73.53'



NOTE:
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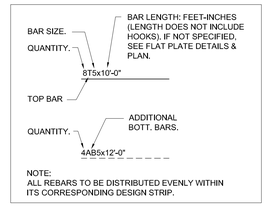


A S-103.00 *7TH FLOOR FRAMING PLAN*

SCALE: 3/16"=1'-0"

NOTES:
1. SLAB SHALL BE 8" THICK WITH CONTINUOUS BOTTOM MAT:
   a) #5@12" N-S & #5@14" E-W.
   b) N-S BARS TO BE BOTTOM-MOST BARS. E-W BARS TO REST ON N-S BARS.
   c) ADDITIONAL BOTT. BARS WHERE SHOWN IN PLAN.
2. TOP BARS AS INDICATED ON PLAN.
3. X-CB: X STANDS FOR THE FLOOR NUMBER.
4. PROVIDE (4)#4 SUPPORT BARS AT ALL MIDDLE STRIPS TOP BARS.

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NOTE:
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KEY PLAN

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x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
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1	DD SUBMISSION	04.06.18

DOB APPROVAL

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PROJECT

BETANCES VI DEVELOPMENT

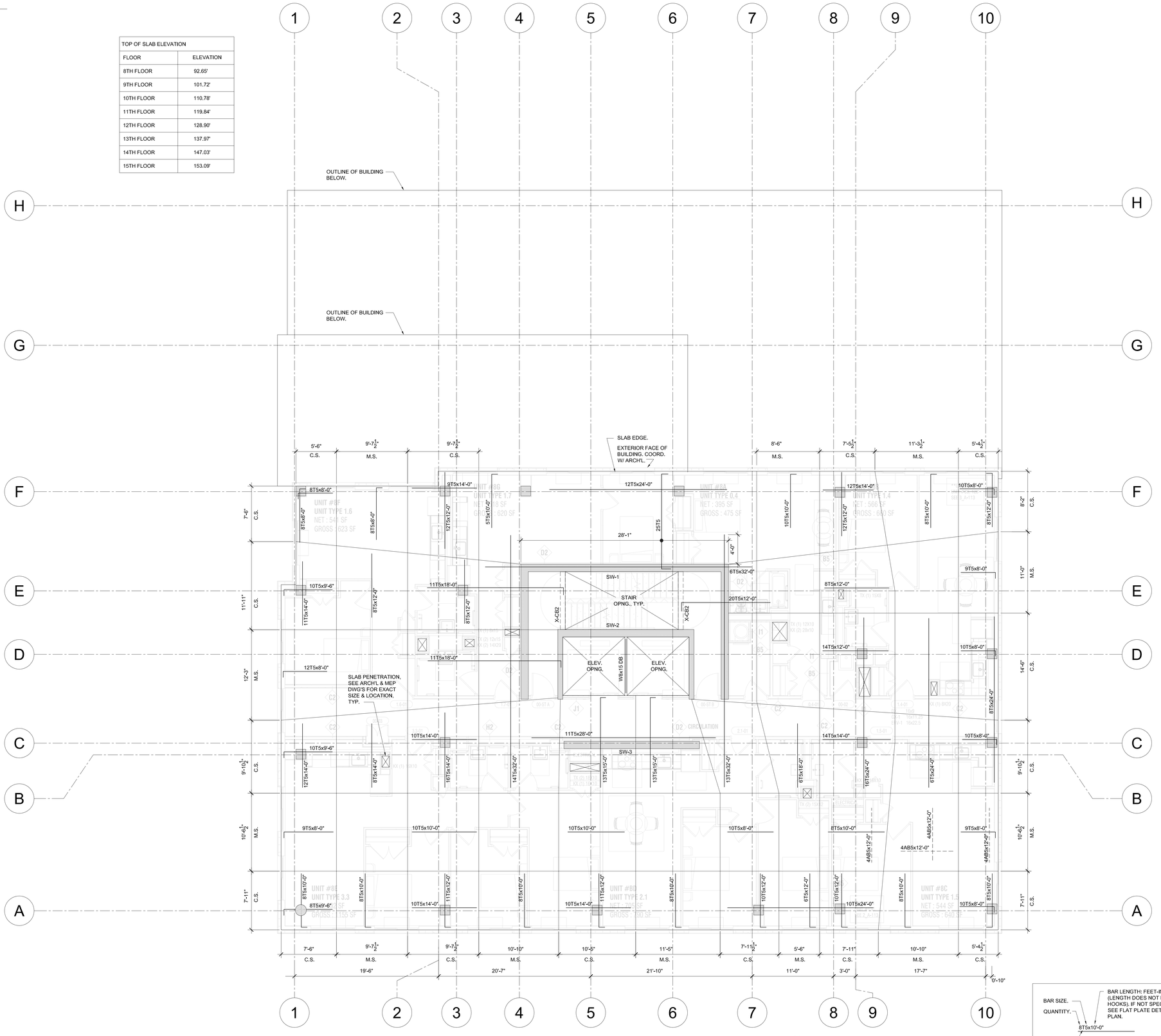
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7TH FLOOR FRAMING PLAN

SEAL & SIGNATURE

DATE:	4/6/2018
PROJECT NO:	17143
SCALE:	AS INDICATED
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CHECKED BY:	TT/CC
DWG NO:	S-103.00
NYC DOB NUMBER:	

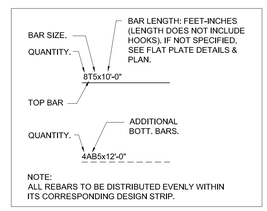
TOP OF SLAB ELEVATION	
FLOOR	ELEVATION
8TH FLOOR	92.65'
9TH FLOOR	101.72'
10TH FLOOR	110.78'
11TH FLOOR	119.84'
12TH FLOOR	128.90'
13TH FLOOR	137.97'
14TH FLOOR	147.03'
15TH FLOOR	153.09'



A S-104.00 8TH - 15TH FLOOR FRAMING PLAN

SCALE: 3/16"=1'-0"

NOTES:
1. SLAB SHALL BE 8" THICK WITH CONTINUOUS BOTTOM MAT:
   a) #5@12" N-S & #5@14" E-W.
   b) N-S BARS TO BE BOTTOM-MOST BARS. E-W BARS TO REST ON N-S BARS.
   c) ADDITIONAL BOTT. BARS WHERE SHOWN IN PLAN.
2. TOP BARS AS INDICATED ON PLAN.
3. X-CB: X STANDS FOR THE FLOOR NUMBER.
4. PROVIDE (4)#4 SUPPORT BARS AT ALL MIDDLE STRIPS TOP BARS.



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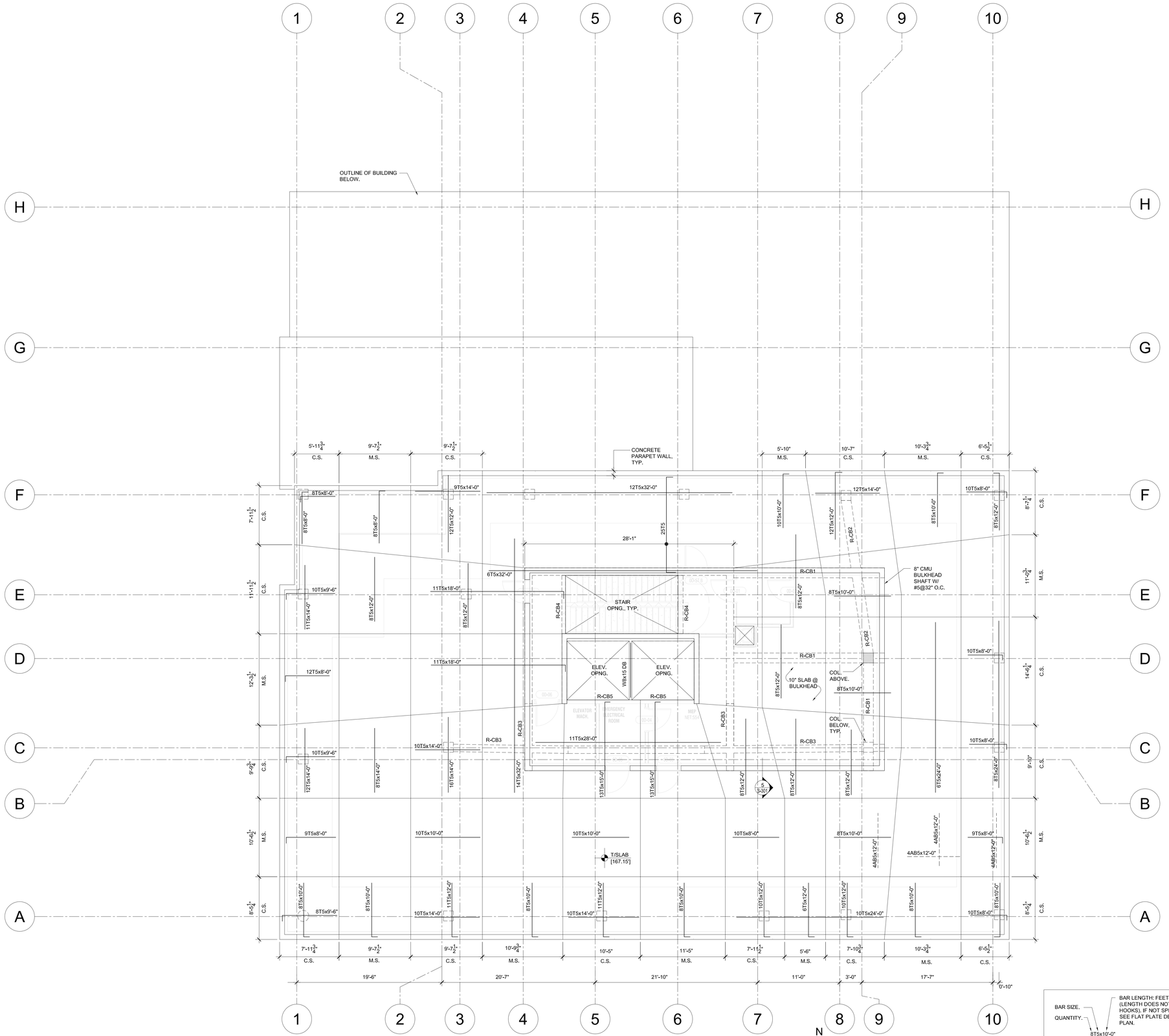
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8TH - 15TH FLOOR FRAMING PLAN

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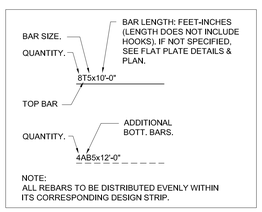
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A S-105.00 *ROOF FRAMING PLAN*

SCALE: 3/16"=1'-0"

NOTES:
1. SLAB SHALL BE 8" THICK WITH CONTINUOUS BOTTOM MAT:
   a) #5@12" N-S & #5@14" E-W.
   b) N-S BARS TO BE BOTTOM-MOST BARS, E-W BARS TO REST ON N-S BARS.
   c) ADDITIONAL BOTT. BARS WHERE SHOWN IN PLAN.
2. TOP BARS AS INDICATED ON PLAN.
3. X-CB: X STANDS FOR THE FLOOR NUMBER.
4. PROVIDE (4)#4 SUPPORT BARS AT ALL MIDDLE STRIPS TOP BARS.



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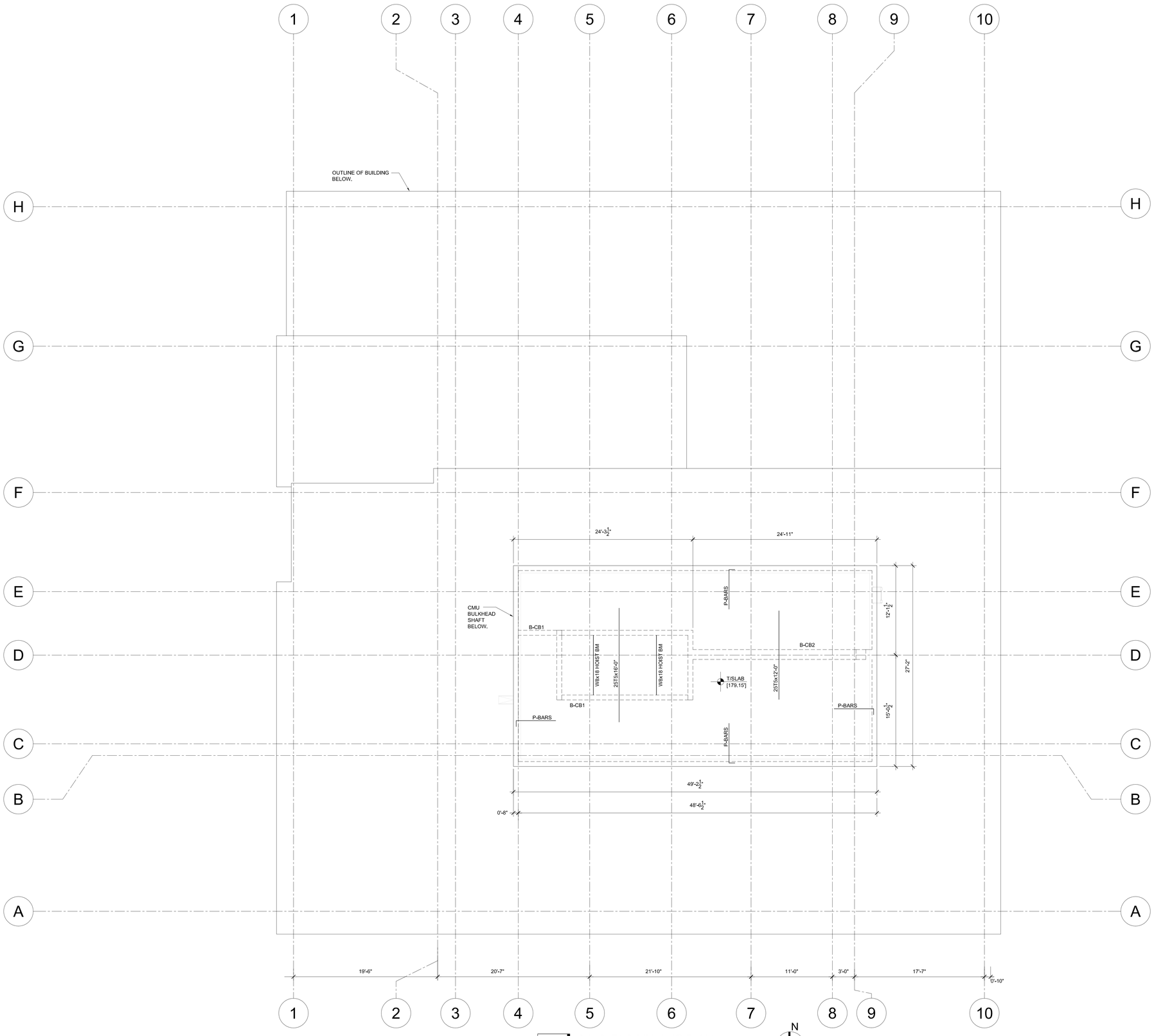
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ROOF FRAMING PLAN

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A S-106.00 *BULKHEAD FRAMING PLAN*

SCALE: 3/16"=1'-0"

NOTES:
1. SLAB SHALL BE 6" THICK WITH CONTINUOUS BOTTOM MAT;
   a) #5@12" N-S & #5@14" E-W,
   b) N-S BARS TO BE BOTTOM-MOST BARS. E-W BARS TO REST ON N-S BARS
   c) P-BARS DENOTES #4x3'-6" W/ STD ACI HOOK @ 16".
2. TOP BARS AS INDICATED ON PLAN.
3. X-CB: X STANDS FOR THE FLOOR NUMBER.

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PROJECT

BETANCES VI DEVELOPMENT

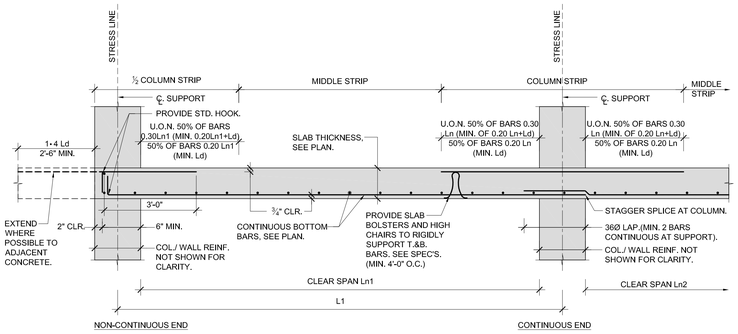
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BULKHEAD FRAMING PLAN

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DATE:	4/6/2018
PROJECT NO:	17143
SCALE:	AS INDICATED
DRAWING BY:	TT/JC
CHECKED BY:	TT/CC
DWG NO:	S-106.00
NYC DOB NUMBER:	

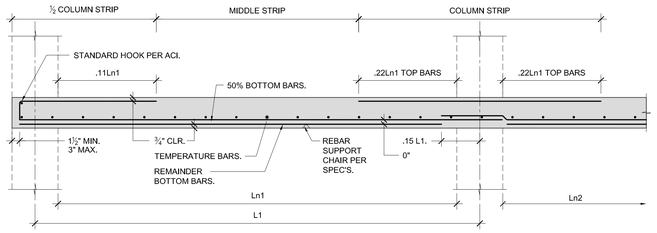
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1 TYP. TWO WAY FLAT PLATE REINF. DETAIL @ COL. STRIP

SCALE: NTS

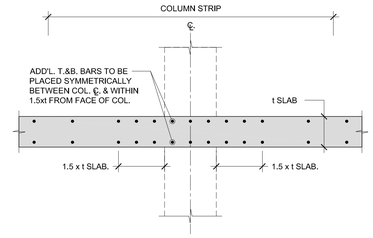
NOTES:
1. Ln IS GREATER OF Ln1 OR Ln2.
2. LAP SPLICE CONT. BOTT. BARS 36Ø AT CENTERLINE SUPPORT.
3. A MIN. OF 2 BOTTOM BARS TO BE CONTINUOUS OVER COLUMN IN EA. DIRECTION.
4. SEE TYP. SLAB OPNG. DETAIL FOR ADD'L. REINF. AT SLAB OPNG'S.



2 TYP. TWO WAY SLAB REINF. @ MIDDLE STRIP

SCALE: NTS

NOTES:
1. Ln IS GREATER OF Ln1 OR Ln2.
2. LAP SPLICE CONT. BOTT. BARS 36Ø AT CENTERLINE SUPPORT.
3. SEE TYP. SLAB OPNG. DETAIL FOR ADD'L. REINF. AT SLAB OPNGS.



3 DISTRIBUTION OF SLAB REINF. @ COL. STRIP

SCALE: NTS

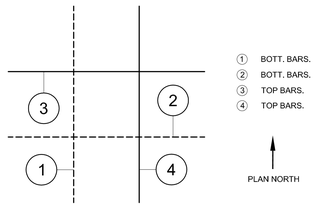
NOTE:
1. ALL ADD'L. BOTT. BARS TO EXTEND 1'-0" MIN. BEYOND COL. CENTER LINE.

CONCRETE BEAM SCHEDULE

FLOOR	BEAM MARK	T/BEAM ELEVATION, SEE NOTE 1.	DEPTH (in)	WIDTH (in)	TOP BARS	MIDDLE BARS	BOTTOM BARS	TIES	REMARKS
CELLAR									
GROUND FLOOR	G-CB1	21.15'	24"	8"	2#6	NONE	2#6	#4@12"	ELEVATOR DR. SEE NOTE #3.
	G-CB2	21.15'	SEE SECT. #5/S-205		2#5	(1)#5	2#5	#4@12"	STAIR BEAMS
	G-CB3	22.90'	24"	24"	4#8	NONE	4#8	#4@12"	-
	G-CB4	22.90'	24"	24"	4#7	NONE	4#7	#4@9"	PERIMETER BEAM
	G-CB5	22.90'	24"	24"	4#7	NONE	4#7	#4@12"	PERIMETER BEAM
	G-CB6	22.90'	24"	24"	4#7	NONE	4#7	#4@12"	PERIMETER BM @ NW STAIR
	G-CB7	22.90'	24"	24"	4#7	NONE	4#7	#4@12"	PERIMETER BEAM
	G-CB8	22.90'	24"	16"	3#7	NONE	3#7	#4@12"	PERIMETER BEAM
	G-CB9	22.90' & 21.15'	24" / 45"	16"	3#8	NONE	3#8	#4@9"	STEPPED BM. SEE DET.--
	G-CB10	22.90'	29"	16"	3#7	NONE	3#7	#4@12"	-
	G-CB11	21.15'	24"	16"	3#7	NONE	3#7	#4@12"	PERIMETER BEAM
	G-CB12	21.15'	24"	24"	4#7	NONE	4#7	#4@12"	PERIMETER BEAM
	G-CB13	22.30' & 21.15'	24" / 37.8"	16"	3#8	NONE	3#8	#4@9"	STEPPED BM. SEE DET.--
	G-CB14	22.30'	21.8"	16"	3#8	NONE	3#8	#4@12"	
	G-CB14	22.30'	24"	14"	4#7	NONE	4#7	#4@12"	
	G-CB15	22.90'	24"	16"	3#6	NONE	3#6	#4@12"	FLOOR OPENINGS
	G-CB16	22.90'	24"	24"	4#7	NONE	4#7	#4@12"	FLOOR OPENINGS
	G-CB17	22.90'	24"	8"	2#6	NONE	2#6	#4@12"	
2ND FLOOR	2-CB-1	37.28'	24"	8"	2#6	NONE	2#6	#4@12"	ELEVATOR DR. SEE NOTE #3.
	2-CB-2	37.28'	SEE SECT. #5/S-205		2#5	(1)#5	2#5	#4@12"	STAIR BEAMS
	2-CB-3	37.28'	24"	16"	3#8	NONE	3#8	#4@12"	
	2-CB-4	37.28'	24"	16"	3#8	NONE	3#9	#4@12"	
	2-CB-5	37.28'	24"	16"	3#8	NONE	3#9	#4@12"	
	2-CB-6	37.28'	24"	24"	3#8	NONE	3#9	#4@12"	
	2-CB-7	37.28'	20"	16"	3#8	NONE	3#8	#4@12"	
3RD FLOOR TO 6TH FLOOR	X-CB-1	NOTE 2	24"	8"	2#6	NONE	2#6	#4@12"	ELEVATOR DR. SEE NOTE #3.
	X-CB-1	NOTE 2	SEE SECT. #5/S-205		2#5	(1)#5	2#5	#4@12"	STAIR BEAMS
7TH FLOOR	7-CB-1	83.59'	24"	8"	2#6	NONE	2#6	#4@12"	ELEVATOR DR. SEE NOTE #3.
	7-CB-2	83.59'	SEE SECT. #5/S-205		2#5	(1)#5	2#5	#4@12"	STAIR BEAMS
8TH FLOOR TO 15TH FLOOR	X-CB-1	NOTE 2	24"	8"	2#6	NONE	2#6	#4@12"	ELEVATOR DR. SEE NOTE #3.
	X-CB-1	NOTE 2	SEE SECT. #5/S-205		2#5	(1)#5	2#5	#4@12"	STAIR BEAMS
ROOF	R-CB-1	167.15'	24"	16"	3#8	NONE	3#8	#4@12"	
	R-CB-2	167.15'	24"	16"	3#8	NONE	5#8	#4@9"	
	R-CB-3	167.15'	24"	12"	3#8	NONE	3#8	#4@12"	
	R-CB-4	167.15'	SEE SECT. #5/S-205		2#5	(1)#5	2#5	#4@12"	STAIR BEAMS
	R-CB-5	167.15'	24"	8"	2#6	NONE	2#6	#4@12"	ELEVATOR DR. SEE NOTE #3.

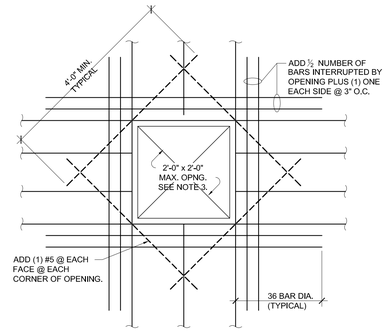
NOTES:
1. X-CB: X STANDS FOR THE FLOOR NUMBER.
2. BEAM ELEVATION IS THE SAME AS TOP OF SLAB ELEVATION AT EACH FLOOR.
3. FINAL DEPTH OF BEAM TO BE COORDINATED W/ ELEVATOR'S SHOP DRAWINGS & REQUIRED DOOR HEIGHT.

A S-200 *BEAM SCHEDULE*
SCALE: ¼"=1'-0"



4 TWO WAY SLAB BARS PLACING SEQUENCE

SCALE: NTS



5 TYP. CONC. SLAB OPNG. DETAIL

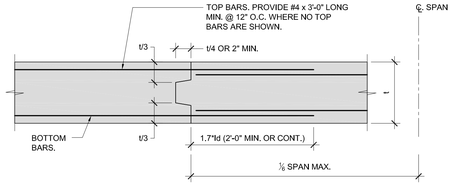
SCALE: NTS

NOTES:
1. SEE ARCH. FOR LOCATION OF OPENINGS.
2. COORDINATE OPENING SIZE WITH ARCH. & M/E/P DRAWINGS.
3. WHERE OPENING IS LESS THAN 6"x6", OMIT ADD'L. BARS AND DIAGONAL BARS.

STRUCTURAL ELEMENT	CONCRETE TYPE	CONCRETE STRENGTH	REMARKS
MAT FOUNDATION	150 PCF	6 KSI	
SUPER STRUCTURE FRAMED SLAB	150 PCF	6 KSI	
SUPER STRUCTURED FRAMED BEAMS	150 PCF	6 KSI	
COLUMNS/SHEAR WALLS	150 PCF	6 KSI	

6 CONC. MATERIAL SCHEDULE

SCALE: NTS



7 TYP. BEAM/SLAB CONST. JOINT

SCALE: NTS

NOTES:
1. LOCATION OF BEAM/SLAB CONSTRUCTION JOINTS TO BE SUBMITTED TO THE S.E.R. BY THE CONTRACTOR, FOR REVIEW & APPROVAL, PRIOR TO CONSTRUCTION.

LAP SPLICE SCHEDULE

BAR SIZE	DIMENSION ld (in): MAT SLAB	
	BOTTOM BARS	TOP BARS
#4	17	23
#5	22	28
#6	26	34
#7	38	49
#8	43	56
#9	48	63

LAP SPLICE SCHEDULE

BAR SIZE	DIMENSION ld (in): SLABS
#4	17
#5	22
#6	26
#7	38
#8	43
#9	48

LAP SPLICE SCHEDULE

BAR SIZE	DIMENSION ld (in): BEAMS	
	BOTTOM BARS	TOP BARS
#4	17	23
#5	22	28
#6	26	34
#7	38	49
#8	43	56
#9	48	63

LAP SPLICE SCHEDULE

BAR SIZE	DIMENSION ld (in): COLUMNS
#4	17
#5	22
#6	26
#7	38
#8	43
#9	48

LAP SPLICE SCHEDULE

BAR SIZE	DIMENSION ld (in): WALLS	
	VERTICAL BARS	HORIZONTAL BARS
#4	17	23
#5	22	28
#6	26	34
#7	38	49
#8	43	56
#9	48	63

8 CONCRETE LAP SCHEDULE

SCALE: NTS

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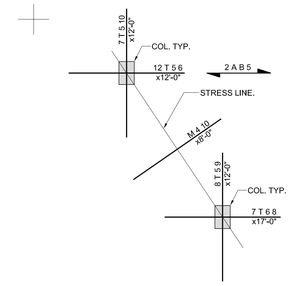
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TYP. CONCRETE DETAILS

SEAL & SIGNATURE

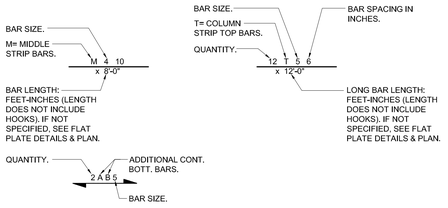
DATE: 4/6/2018
PROJECT NO: 17143
SCALE: AS INDICATED
DRAWING BY: TT,UC
CHECKED BY: TT/CC
DWG NO: S-200.00
NYC DOB NUMBER:

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EXAMPLES:	
8 T 5 12 =	8 #5 TOP BARS @ COLUMN STRIP SPACED @ 12" O.C.
11 T 6 8x15'-0"=	11 #6 TOP BARS @ COLUMN STRIP SPACED @ 8" O.C. x15'-0" LONG.
M4 12x9'-0"=	#4 TOP BARS @ MIDDLE STRIP SPACED @12" O.C. x9'-0" LONG.
4 ABS=	4 ADDITIONAL #5 BOTT. BARS FULL LENGTH.

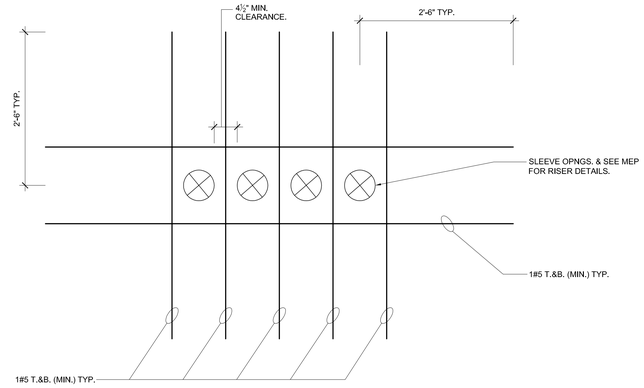
BOTT. BARS SHALL BE A CONT. MAT. SEE PLAN FOR SIZE AND SPACING IN BOTH DIRECTIONS.



1 FLAT PLATE BAR PLACEMENT

SCALE: NTS

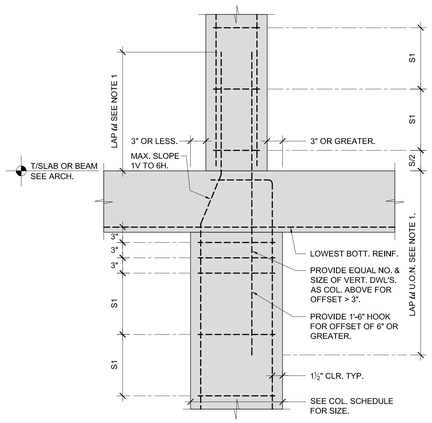
NOTES:
1. BAR LENGTHS SHOULD BE CENTERED ON STRESS LINES.
2. LENGTHS SHOWN FOR TOP BARS AT COLUMN STRIP ARE LONGER BARS, CUT OFF 50% U.O.N. PER TYP. DETAIL
3. BARS TO BE EVENLY DISTRIBUTED ABOUT CENTER OF STRESS LINES.



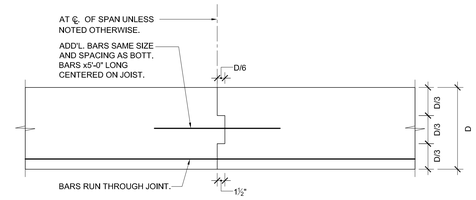
2 TYP. ADD'L. REINF. AROUND A SERIES (3 OR MORE) OF SLEEVE (M.E.P.) OPENINGS

SCALE: NTS

NOTES:
1. ONLY SOME OF THE M/E/P RISERS ARE SHOWN IN THE STRUCTURAL DWGS. SEE MEP DWGS. FOR ALL RISER DETAILS.
2. PROVIDE A STD. HOOK @ END OF ADD'L. BARS WHICH TERMINATE @ SHAFT OPENING WHERE IT OCCURS.
3. WHERE SLEEVES ARE LOCATED NEXT TO A COLUMN PROVIDE 6" MIN. CLEARANCE BETWEEN COLUMN & SLEEVE WHERE POSSIBLE ARCHITECTURALLY.



IN BEAM

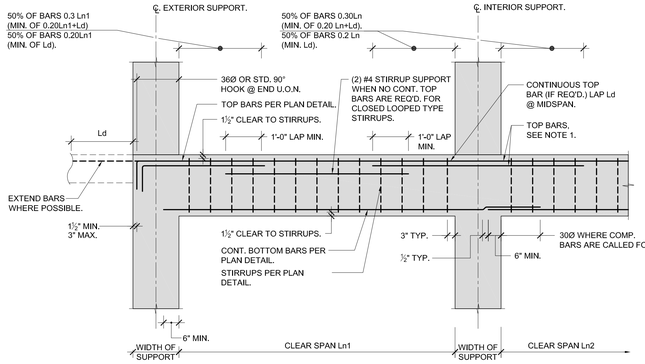


IN ONE WAY SLAB

3 TYP. CONSTRUCTION JOINT DETAILS

SCALE: NTS

NOTES:
1. ALLOW 7 DAYS MINIMUM BETWEEN PLACING ADJACENT CONCRETE. MIN. LENGTH OF CASTING = 75 FEET.
2. CONTRACTOR TO SUBMIT LOCATIONS OF ALL CONSTRUCTION JOINTS TO ENGINEER FOR REVIEW & APPROVAL PRIOR TO CONSTRUCTION.
3. STIRRUPS AT BEAM NOT SHOWN FOR CLARITY.



4 TYPICAL REINFORCED CONCRETE BEAM DETAIL

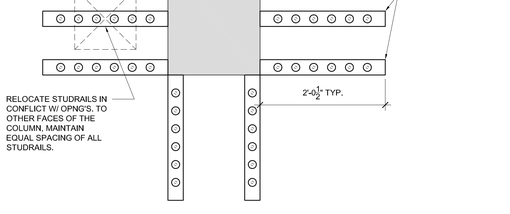
SCALE: NTS

NOTES:
1. PROVIDE LARGER ARE OF TOP STEEL NOTED FOR EITHER BEAM AT INTERIOR SUPPORT.
2. Ln IS THE GREATER OF Ln1 OR Ln2.
3. Ld= DEVELOPMENT LENGTH - SEE GENERAL NOTES.
4. IF STIRRUP SPACING IS LESS THAN 6", PLACE FIRST STIRRUP ½ SPACING FROM FACE OF SUPPORT. IF BEAM IS MORE THAN 6" WIDER THAN COLUMN ON EITHER SIDE, PROVIDE STIRRUPS OVER COLUMN.
5. PROVIDE MIN. (2) CONT. TOP BARS MUST BE CONTINUOUS.

5 TYPICAL CONC. COLUMN DETAIL

SCALE: NTS

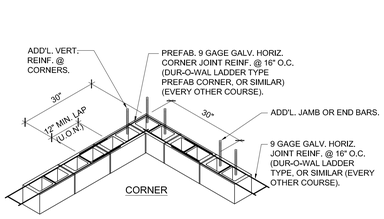
NOTES:
1. PROVIDE 1.7x*ld* FOR TENSION SPLICE WHEN INDICATES ON COL. SCHEDULE.



6 TYP. STUDRAIL DETAILS

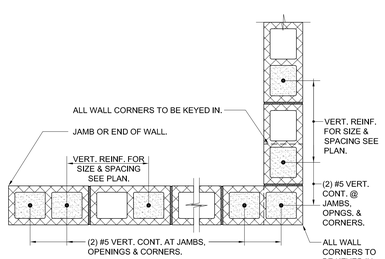
SCALE: NTS

RELOCATE
1. PROVIDE STUDRAIL DETAIL @ TOP OF COLUMN:
   SECOND FLOOR: COLUMN G-8, D-9
   FLOORS FROM 3RD FLOOR TO 15TH FLOOR: D-9



7 TYP. JOINT REINFORCEMENT DETAIL

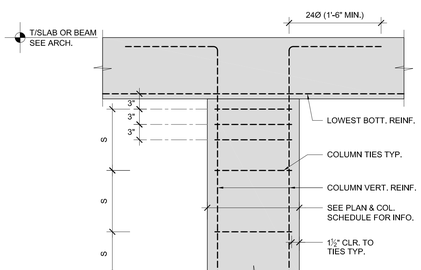
SCALE: NTS



8 TYP. REINF. CMU PLAN DETAIL

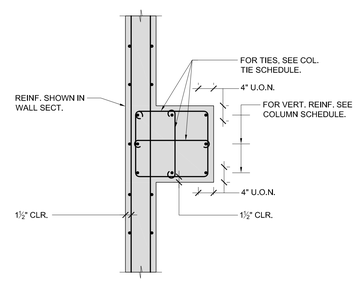
SCALE: NTS

NOTES:
1. ALL VERT. REINF. LAP SPLICES SHALL BE 48Ø.
2. PROVIDE GALV. CONT. PREFABRICATED HORIZ. TRUSS TYPE REINF. W/ 16" O.C. VERT. BY HOHMANN & BARNARD INC. OR EQ.
3. ALL MORTAR SHALL CONFORM TO TYPE S.
4. FILL ALL CELLS SOLID W/ GROUT @ PARAPETS & REINF. CELLS.



9 TYPICAL TOP OF CONC. COLUMN DETAIL

SCALE: NTS



10 TYP. PLAN @ BUTTRESS

SCALE: NTS

ANY ALTERATION OF PLANS, SPECIFICATIONS, PLATS AND REPORTS BEARING THE SEAL OF A LICENSED PROFESSIONAL ENGINEER OR LICENSED LAND SURVEYOR IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW, EXCEPT AS PROVIDED FOR BY SECTION 7209, SUBSECTION 2.

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NEW YORK, NY 10001
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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.18
1	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

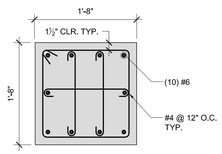
472 - 474 WILLIS AVE. BRONX, NY

TYP. CONCRETE DETAILS CONT.

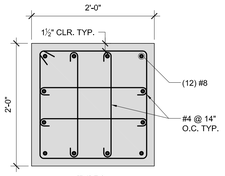
SEAL & SIGNATURE

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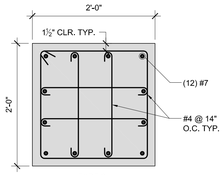
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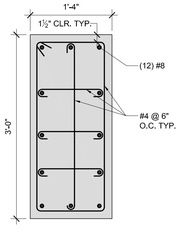
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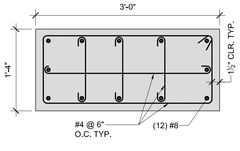
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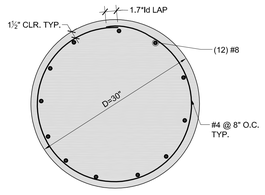
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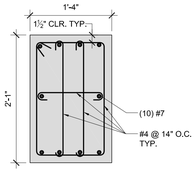
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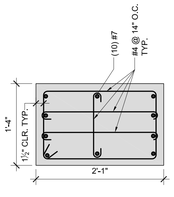
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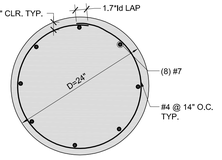
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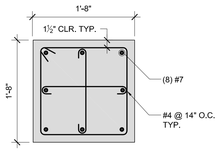
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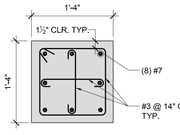
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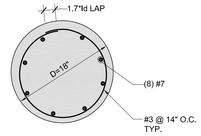
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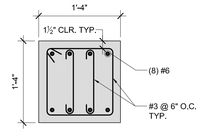
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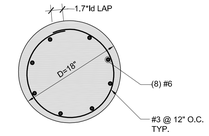
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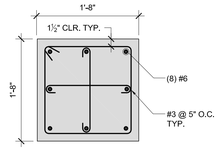
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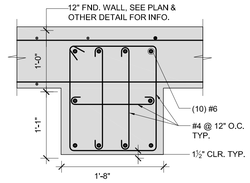
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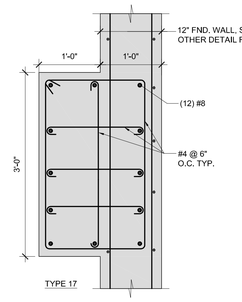
TYPE 14



TYPE 15



TYPE 16



TYPE 17

1 TYP. COLUMN TYPE DETAIL

SCALE: NTS

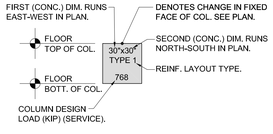
NOTES:
1. COLUMN TIE VERTICAL SPACING SHALL NOT EXCEED:
   a. LEAST COLUMN DIMENSION.
   b. 48 TIE BAR DIAMETER.
   c. 16 VERTICAL BAR DIAMETERS.
2. PROVIDE ADD'L. TIES AS SHOWN ON COLUMN DETAIL.
3. RECOMMENDED COLUMN TIE DETAILS ARE SHOWN ON THIS DRAWING; HOWEVER EVERY CORNER & ALTERNATE VERT. BAR SHALL HAVE LATERAL SUPPORT PROVIDED BY THE CORNER OF A TIE AND NO BAR SHALL BE FARTHER THAN 6" CLEAR ON EA. SIDE ALONG TIE FROM SUCH LATERAL SUPPORT.

COLUMN SCHEDULE

Fc'=6 ksi

FLOOR \ COL. NO's	A-1	A-2	A-5	A-7	A-8	A-10	B-1	C-2	C-9	C-10	D-9	D-10	E-1	E-3	F-1	F-2	F-4	F-6	F-8	F-10	G-1	G-2	G-4	G-6	G-8	G-10	H-1	H-2	H-4	H-6	H-8	H-10
BULKHEAD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROOF	18"Ø TYPE 14	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	16"x16" TYPE 15	-	-	-	-	-	-	-	-	-	-	-	-
15TH FLOOR	18"Ø TYPE 14	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	16"x16" TYPE 13	-	-	-	-	-	-	-	-	-	-	-	-
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8TH FLOOR	18"Ø TYPE 12	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	-	-	-	-	-	-	-	-	-	-	-	-
7TH FLOOR	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	16"x16" TYPE 11	-	-	-	-	-	-	-	-	-	-	-	-
6TH FLOOR	24"Ø TYPE 9	25"x16" TYPE 7	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	16"x25" TYPE 8	25"x16" TYPE 7	20"x20" TYPE 10	25"x16" TYPE 7	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	16"x25" TYPE 8	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	25"x16" TYPE 7	20"x20" TYPE 10	16"x25" TYPE 8	16"x25" TYPE 8	20"x20" TYPE 10	-	-	-	-	-	-	-	-
5TH FLOOR	24"Ø TYPE 9	25"x16" TYPE 7	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	16"x25" TYPE 8	25"x16" TYPE 7	20"x20" TYPE 10	25"x16" TYPE 7	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	16"x25" TYPE 8	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	25"x16" TYPE 7	20"x20" TYPE 10	16"x25" TYPE 8	16"x25" TYPE 8	20"x20" TYPE 10	-	-	-	-	-	-	-	-
4TH FLOOR	24"Ø TYPE 9	25"x16" TYPE 7	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	16"x25" TYPE 8	25"x16" TYPE 7	20"x20" TYPE 10	25"x16" TYPE 7	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	16"x25" TYPE 8	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	25"x16" TYPE 7	20"x20" TYPE 10	16"x25" TYPE 8	16"x25" TYPE 8	20"x20" TYPE 10	-	-	-	-	-	-	-	-
3RD FLOOR	24"Ø TYPE 9	25"x16" TYPE 7	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	16"x25" TYPE 8	25"x16" TYPE 7	20"x20" TYPE 10	25"x16" TYPE 7	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	16"x25" TYPE 8	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	25"x16" TYPE 7	20"x20" TYPE 10	16"x25" TYPE 8	16"x25" TYPE 8	20"x20" TYPE 10	-	-	-	-	-	-	-	-
2ND FLOOR	24"Ø TYPE 9	25"x16" TYPE 7	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	16"x25" TYPE 8	25"x16" TYPE 7	20"x20" TYPE 10	36"x16" TYPE 4	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	16"x25" TYPE 8	25"x16" TYPE 7	25"x16" TYPE 7	16"x25" TYPE 8	25"x16" TYPE 7	36"x16" TYPE 4B	24"x24" TYPE 3	24"x24" TYPE 3	24"x24" TYPE 3	-	-	-	-	-	-	-	-
GROUND FL	24"x24" TYPE 2	24"x24" TYPE 2	24"x24" TYPE 2	24"x24" TYPE 2	16"x36" TYPE 5	36"x16" TYPE 4 B	24"x24" TYPE 2	24"x24" TYPE 2	30"Ø TYPE 6	24"x24" TYPE 18 B	24"x24" TYPE 2	36"x16" TYPE 4	24"x24" TYPE 2	24"x24" TYPE 3	24"x24" TYPE 3	24"x24" TYPE 3	24"x24" TYPE 3	24"x24" TYPE 6	24"x24" TYPE 2	36"x16" TYPE 4B	24"x24" TYPE 3	24"x24" TYPE 3	24"x24" TYPE 3	24"x24" TYPE 3	20"x20" TYPE 1	20"x20" TYPE 1	20"x20" TYPE 1	20"x20" TYPE 1	20"x20" TYPE 1	20"x20" TYPE 1	20"x20" TYPE 1	20"x20" TYPE 1
CELLAR	24"x24" TYPE 2	24"x24" TYPE 2	24"x24" TYPE 2	24"x24" TYPE 2	16"x36" TYPE 5	36"x16" TYPE 17 B	24"x24" TYPE 2	24"x24" TYPE 2	30"Ø TYPE 6	24"x24" TYPE 17 B	24"x24" TYPE 2	36"x16" TYPE 17 B	24"x24" TYPE 2	24"x24" TYPE 3	24"x24" TYPE 3	24"x24" TYPE 3	24"x24" TYPE 3	24"x24" TYPE 6	24"x24" TYPE 2	36"x16" TYPE 17 B	24"x24" TYPE 3	24"x24" TYPE 3	24"x24" TYPE 3	24"x24" TYPE 3	20"x20" TYPE 1	20"x20" TYPE 16 B	20"x20" TYPE 16 B	20"x20" TYPE 16	20"x20" TYPE 16 B	20"x20" TYPE 16	20"x20" TYPE 16 B	20"x20" TYPE 1 B
	686	1104	1108	975	974	633	1129	1306	1507	816	1256	673	907	785	698	773	678	770	1157	620	325	451	493	529	303	322	65	101	120	112	105	74
COL. NO's.	A-1	A-2	A-5	A-7	A-8	A-10	B-1	C-2	C-9	C-10	D-9	D-10	E-1	E-3	F-1	F-2	F-4	F-6	F-8	F-10	G-1	G-2	G-4	G-6	G-8	G-10	H-1	H-2	H-4	H-6	H-8	H-10

T/SLAB EL 179.15' · T/SLAB EL 167.15' · T/SLAB EL 156.09' · T/SLAB EL 147.03' · T/SLAB EL 137.97' · T/SLAB EL 128.90' · T/SLAB EL 119.84' · T/SLAB EL 110.78' · T/SLAB EL 101.72 · T/SLAB EL 92.65' · T/SLAB EL 83.59' · T/SLAB EL 73.53' · T/SLAB EL 64.47' · T/SLAB EL 55.40' · T/SLAB EL 46.34' · T/SLAB EL 37.28' · T/SLAB EL 21.15' · T/SLAB EL 10.3'



2 COLUMN SCHEDULE

SCALE: ½"=1'-0"

NOTES:
1. "B" DENOTES: BUTTRESS, SEE PLAN AND DETAIL.
2. THE COLUMN LOADS GIVEN AT THE GROUND FLOOR LEVEL ARE IN KIPS (1000#).

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1	DD SUBMISSION	04.06.18

DOB APPROVAL

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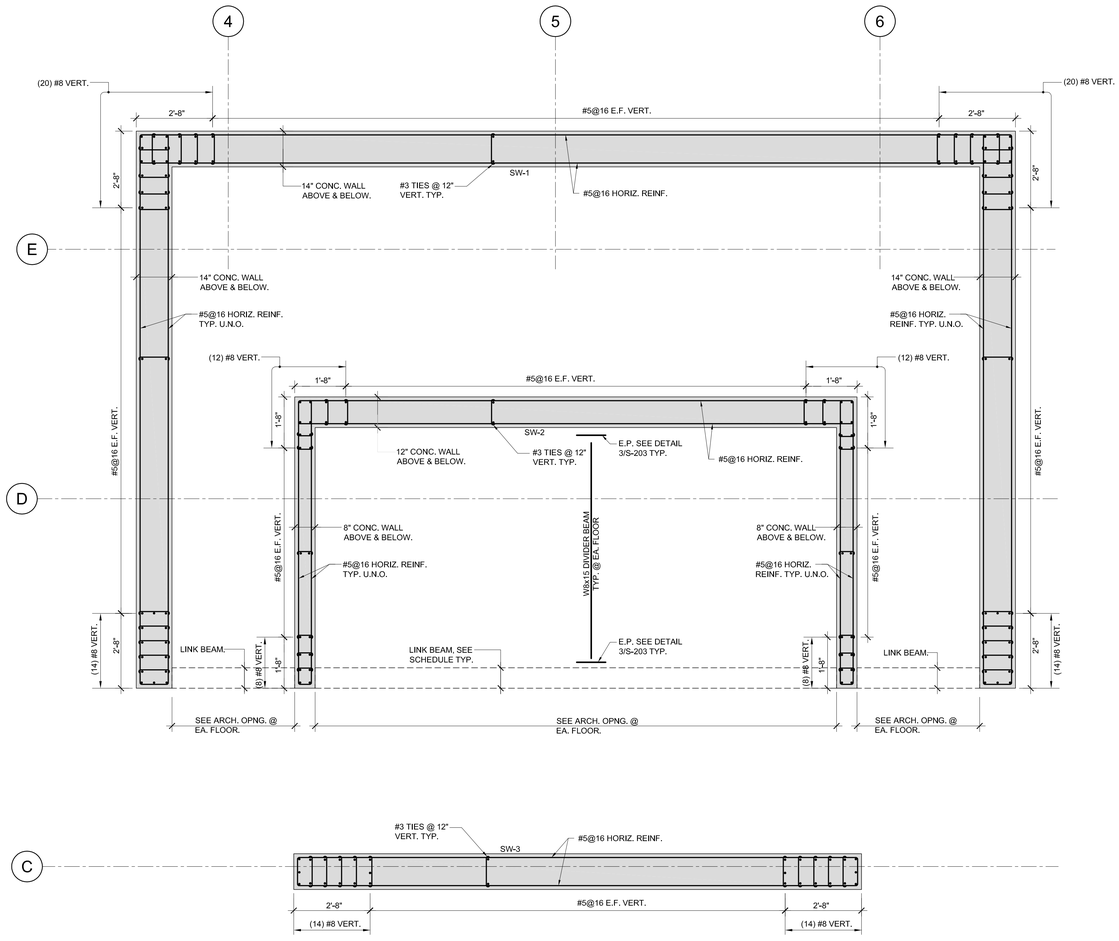
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CONCRETE COLUMN SCHEDULE

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A S-203 SHEAR WALL PLAN DETAIL

SCALE: ½"=1'-0" *(@ CELLAR & @ GROUND FLOOR)*

NOTES
1. SEE PLAN FOR WALL ORIENTATION.
2. PROVIDE MATCHING DOWELS FROM FOUNDATION WITH CLASS B TENSION LAP SPLICE INTO STAIR WALL ABOVE.
3. PROVIDE TENSION LAP AT ALL VERT. & HORIZ. REINF. BAR SPLICES.
4. COORD. DOOR OPENING LOCATION AND SIZE WITH ARCH. & ME/P.
5. PROVIDE DOWELS FROM WALLS BELOW TO SLAB TYP. ALL AROUND CONC. WALL DOWELS TO MATCH SLAB TOP BARS AND ADD'L. TOP BARS IN SIZE AND SPACING, LAP 480 W/ SLAB TOP BARS.
6. TENSION LAP TO BE 1.7 ld. MIN. (CLASS B).
7. PROVIDE ADD'L. COLUMN DOWELS TO MATCH COLUMN REINF. ABOVE.

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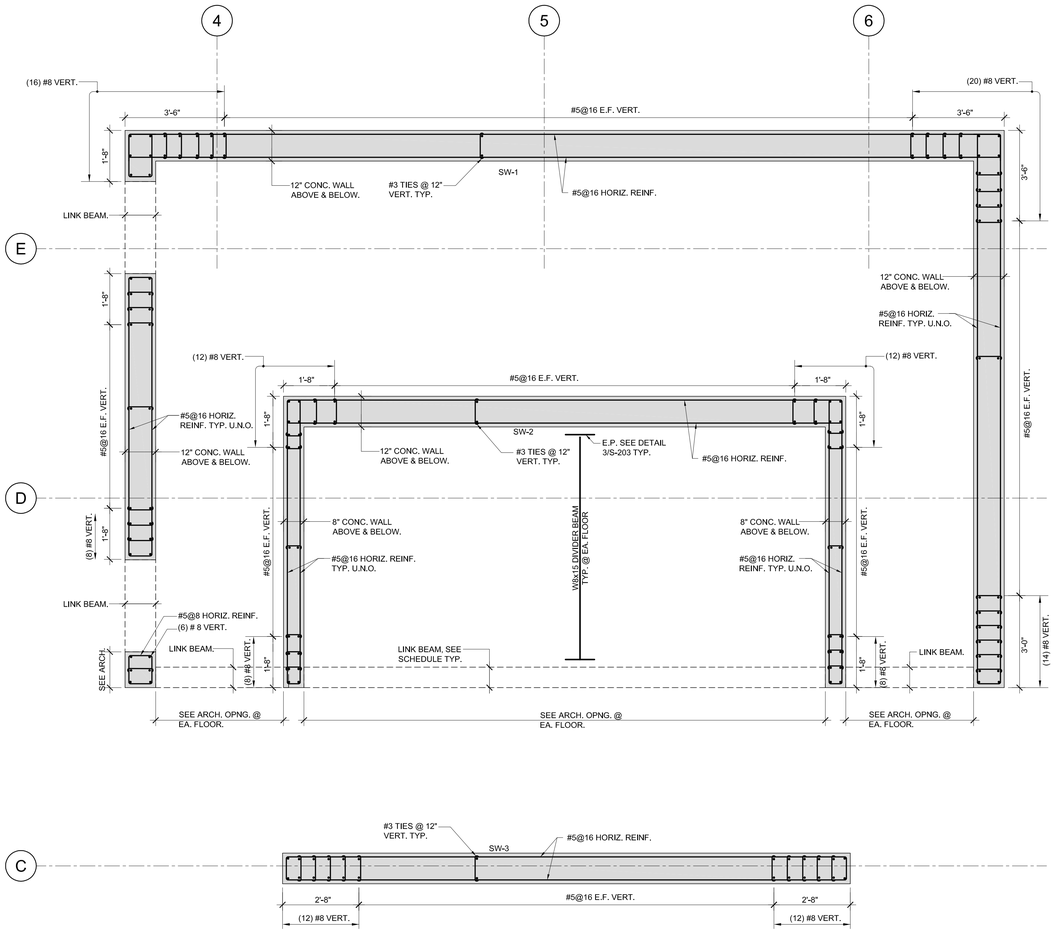
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CONCRETE SHEAR WALL DETAILS

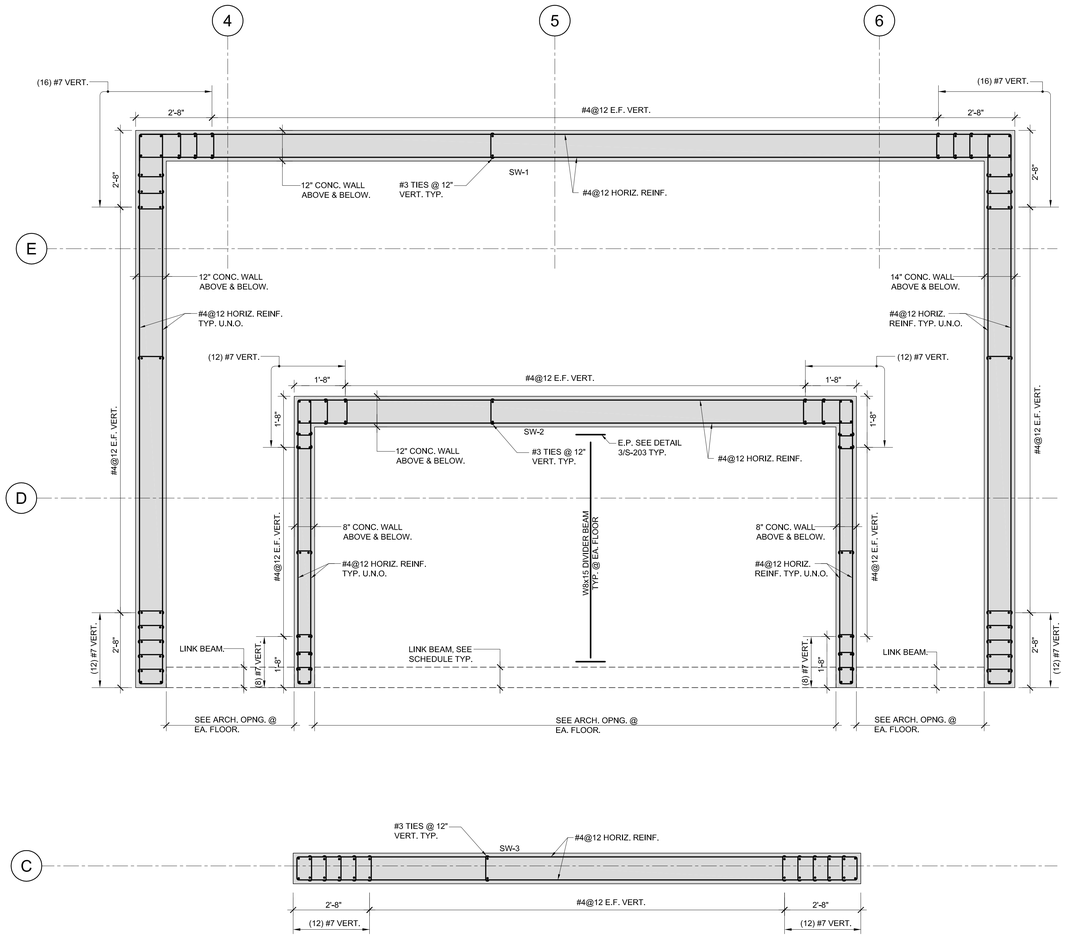
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PROJECT NO:	17143
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DRAWING BY:	TT/JC
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DWG NO:	S-203.00
NYC DOB NUMBER:	



A S-204 *SHEAR WALL PLAN DETAIL*
SCALE: ½"=1'-0" *(@ 2ND - 6TH FLOOR)*

NOTES
1. SEE A/S-203 FOR MORE INFO.



B S-204 *SHEAR WALL PLAN DETAIL*
SCALE: ½"=1'-0" *(@ 7TH - ROOF FLOOR)*

NOTES
1. SEE A/S-203 FOR MORE INFO.

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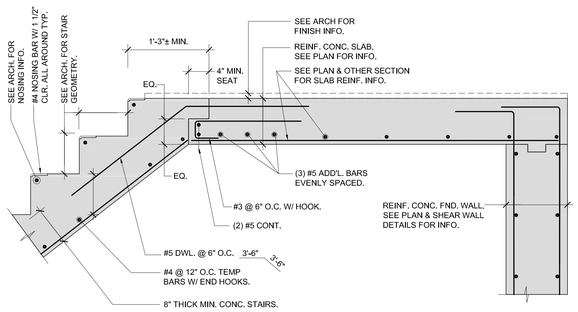
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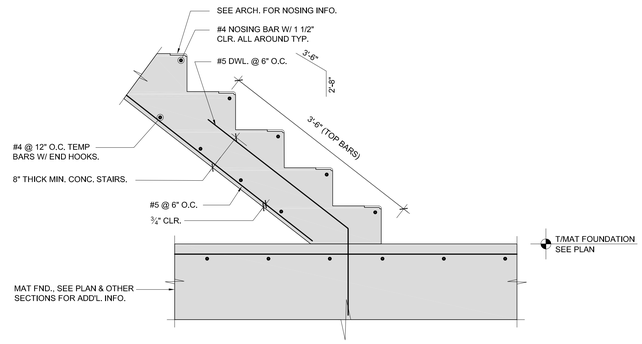
CONCRETE SHEAR WALL DETAILS

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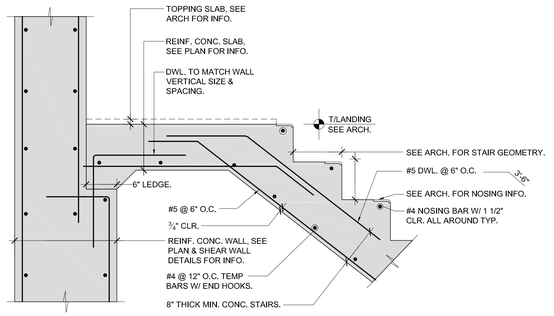
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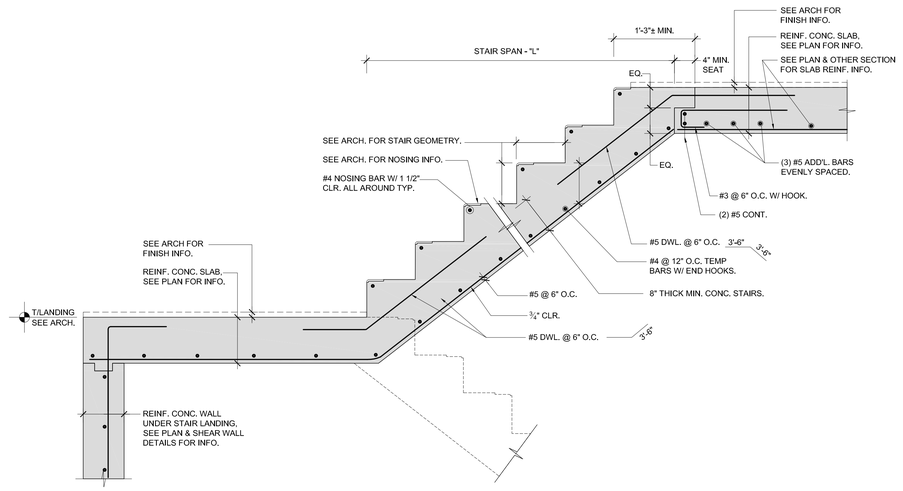
1 S-205 *SECTION @ CONC. STAIRS*
SCALE: 1"=1'-0"



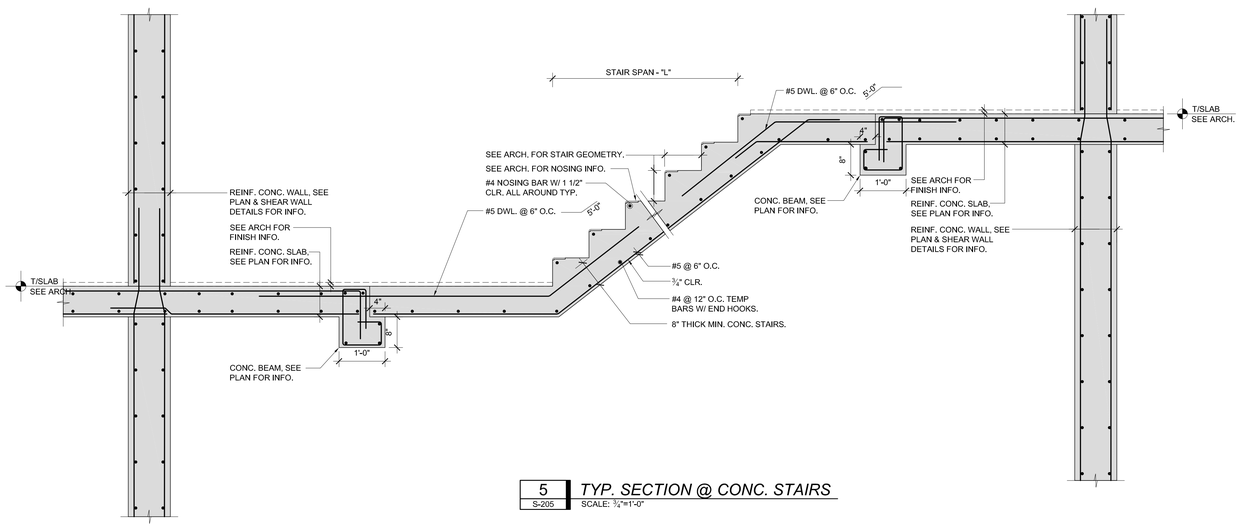
2 S-205 *TYP. SECTION @ CONC. STAIRS BOTTOM*
SCALE: 1"=1'-0"



3 S-205 *SECTION @ CONC. STAIRS*
SCALE: 1"=1'-0"



4 S-205 *SECTION @ CONC. STAIRS*
SCALE: 1"=1'-0"



5 S-205 *TYP. SECTION @ CONC. STAIRS*
SCALE: ¾"=1'-0"

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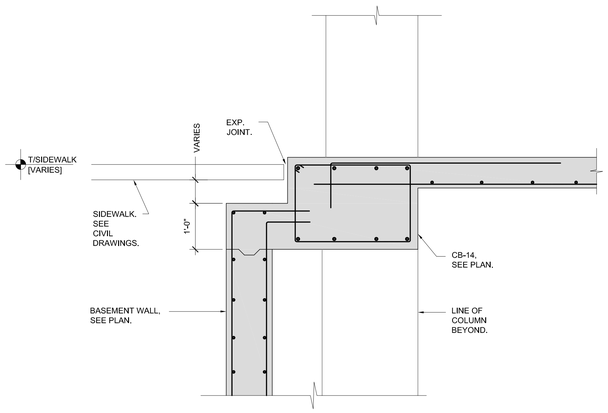
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CONCRETE SHEAR WALL DETAILS

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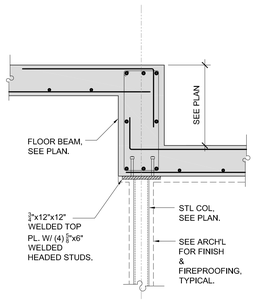
1 S-300 *WALL SECTION* SCALE: 3/4"=1'-0"

3 S-300 *WALL SECTION* SCALE: 3/4"=1'-0"

3 S-300 *WALL SECTION* SCALE: 3/4"=1'-0"

4 S-300 *WALL SECTION* SCALE: 3/4"=1'-0"

5 S-300 *WALL SECTION* SCALE: 3/4"=1'-0"

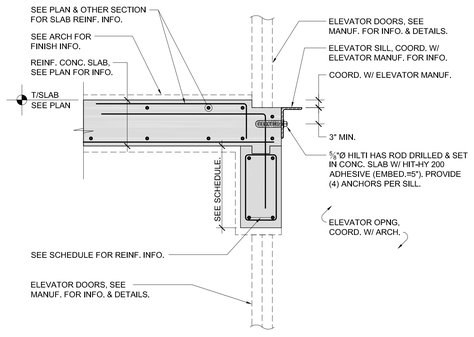


9 S-300 *WALL SECTION* SCALE: 3/4"=1'-0"

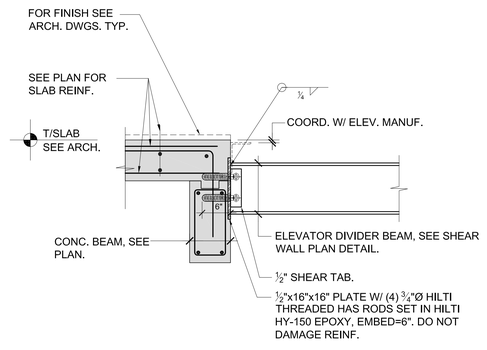
6 S-300 *WALL SECTION* SCALE: 3/4"=1'-0"

7 S-300 *WALL SECTION* SCALE: 3/4"=1'-0"

8 S-300 *WALL SECTION* SCALE: 3/4"=1'-0"



11 S-300 *TYPICAL SECTION @ ELEVATOR SILL* SCALE: 1"=1'-0"



12 S-300 *TYPICAL SECTION @ DIVIDER BEAM (DB)* SCALE: 1"=1'-0"

10 S-300 *WALL SECTION* SCALE: 3/4"=1'-0"

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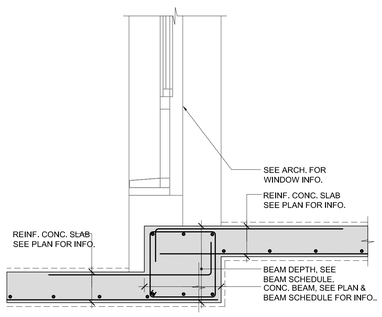
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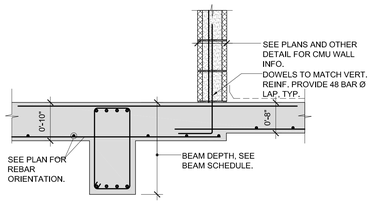


1 S-301 *SECTION @ SLAB ELEV. CHANGE* (@ 2ND FL. GREEN ROOF)
SCALE: 1"=1'-0"

2 S-301 *SECTION @ STAIR*
SCALE: 1"=1'-0"

3 S-300 *WALL SECTION*
SCALE: 3/4"=1'-0"

4 S-300 *WALL SECTION*
SCALE: 3/4"=1'-0"



5 S-301 *SECTION @ ELEVATOR CORE*
SCALE: 1"=1'-0"

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x		xx.xx.2018

NO.	REGULATORY SUBMISSIONS	DATE
2	DOB SUBMISSION	04.06.18
1	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELOPMENT

472 - 474 WILLIS AVE. BRONX, NY

CONCRETE SHEAR WALL DETAILS

SEAL & SIGNATURE

DATE:	4/6/2018
PROJECT NO:	17143
SCALE:	AS INDICATED
DRAWING BY:	TT/JC
CHECKED BY:	TT/CC
DWG NO:	S-301.00
NYC DOB NUMBER:	

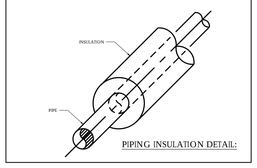
SYMBOLS & LEGEND KEY

	NEW DUCTWORK (SINGLE LINE)
	NEW DUCTWORK
	DUCT IN FIRE RATED ENCLOSURE
V.D. D.	VOLUME DAMPER
	INCLINED DROP IN THE DIRECTION OF AIR FLOW
C.O.	CLEANOUT
FC	FLEXIBLE CONNECTION
FD/AD	FIRE DAMPER AND ACCESS DOOR
S/D	SMOKE DETECTOR
M	MOTORIZED DAMPER
CG	CEILING GRILLE
CR	CEILING REGISTER
AL	1" ACOUSTICAL LINING. SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS
D	DRAIN
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
	COMBINATION BALANCING VALVE/FLOW MEASURING STATION
	SHUT OFF VALVE
	BALL VALVE
	GLOBE VALVE
	CONTROL VALVE
	STRAINER WITH BLOW DOWN VALVE
	UNION
	THREE WAY VALVE
	CHECK VALVE
	PRESSURE RELIEF VALVE
	AUTOMATIC AIR VENT
	THERMOMETER
	PRESSURE GAUGE WITH GATE VALVE
1.0"	LOUVERED DOOR W/ SQ.FT OF NFA
NFA	NET FREE AREA
T	THERMOSTAT
WAC	WALL AIR CONDITIONING UNIT
OED	OPEN ENDED DUCT
WMS	WIRE MESH SCREEN
AFF	ABOVE FINISHED FLOOR
DN	DOWN
TYP	TYPICAL
OAI	OUTSIDE AIR INTAKE
CAI	COMBUSTION AIR INTAKE
M.R.	MARKETING PURPOSES

PIPING INSULATION SCHEDULE

INSULATION THICKNESS	HOT WATER PIPE NOMINAL DIAMETER RANGE
1.5"	LESS THAN 1.5"
2"	GREATER THAN OR EQUAL TO 1.5"

NOTE:
1. IN COMPLIANCE TO THE 2016 NYCECC TABLE C403.2.10
2. FOR PIPING SMALLER THAN 1" AND LOCATED IN PARTITIONS WITHIN CONDITIONED SPACES, REDUCTION OF THE INSULATION THICKNESS BY 1 INCH SHALL BE PERMITTED BUT NOT TO A THICKNESS LESS THAN 1 INCH.
3. AS REFRIGERATION PIPING SHALL PROVIDE WITH 1.5" - INSULATION



PIPING INSULATION DETAIL:

COMPLIANCE WITH NYC ECCC:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC 2016.

ENERGY CODE COMPLIANCE NOTES

1. OUTDOOR SUPPLY AND RETURN AIR DUCTWORK SHALL BE INSULATED WITH MINIMUM OF R-8 RIGID INSULATION. IN ACCORDANCE WITH 2016 NYCECC SEC. C403.2.9.

2. SUPPLY AND RETURN DUCTWORK LOCATED IN UNCONDITIONED SPACE SHALL BE INSULATED WITH R-6 BATT INSULATION, IN ACCORDANCE WITH 2016 NYCECC SEC. C403.2.9.

3. SUPPLY AND RETURN DUCTWORK LOCATED IN CONDITIONED SPACE SHALL BE INSULATED WITH R-4 BATT INSULATION, IN ACCORDANCE WITH 2016 NYCECC SEC. C403.2.9.

4. ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS, AND CONNECTIONS IN DUCTWORK, SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS, (ADHESIVES), MASTIC-PLUS-EMBEDDED FABRIC SYSTEMS OR TAPES. TAPES AND MASTICS USED TO SEAL DUCTWORK SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A OR UL181B. DUCT CONNECTIONS TO FLANGES OF AIR DISTRIBUTION SYSTEM EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED. UNLISTED DUCT TAPE IS NOT PERMITTED AS A SEALANT ON ANY METAL DUCTS.

5. THE DUCTWORK IS CLASSIFIED AS LOW PRESSURE AND TO BE CONSTRUCTED IN ACCORDANCE WITH MECHANICAL CODE, SMACNA STANDARDS, AND IN ACCORDANCE WITH NYCECC SECTION C403.2.9.1.1. ALL LONGITUDINAL AND TRANSVERSE JOINTS, SEAMS AND CONNECTIONS OF SUPPLY AND RETURN DUCTS SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS (ADHESIVES), MASTIC-PLUS-EMBEDDED-FABRIC SYSTEMS OR TAPES INSTALLED IN ACCORDANCE WITH THE MANUFACTURERER'S INSTALLATION INSTRUCTIONS.

6. HEATING EQUIPMENT TO BE CONTROLLED BY A PROGRAMMABLE THERMOSTAT OR CONTROL PANEL. THERMOSTATIC SETBACK CONTROLS SHALL HAVE THE CAPABILITY TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURE DOWN TO 55° F IN COMPLIANCE WITH SECTION C403.2.4 OF THE 2016 NYCECC. THE WATER TEMPERATURE SHALL BE SET AS SPECIFIED BY EQUIPMENT MANUFACTURER BASED ON OUTDOOR AIR TEMPERATURE IN COMPLIANCE WITH SECTION C403.2.5 OF THE 2016 NYCECC.

7. FOR HEATING SYSTEMS PROVIDE 1½" PIPE INSULATION FOR PIPES LESS THAN 1½". PROVIDE 2" INSULATION FOR PIPES 1½" OR GREATER AS PER 2016 NYCECC, TABLE C403.2.10.

8. FOR SERVICE WATER HEATING SYSTEMS PROVIDE 1" PIPE INSULATION FOR PIPES LESS THAN 1¼". PROVIDE 1½" INSULATION FOR PIPES 1¼" OR GREATER AS PER 2016 NYCECC, TABLE C403.3.10.

9. FOR REFRIGERANT SYSTEMS PROVIDE 1" PIPE INSULATION FOR PIPES LESS THAN 1½". PROVIDE 1½" INSULATION FOR PIPES 1½" OR GREATER AS PER 2016 NYCECC, TABLE C403.3.10.

10. OPERATING AND MAINTENANCE MANUAL IS TO BE PROVIDED TO THE BUILDING OWNER BY THE MECHANICAL CONTRACTOR.

11. HEATING AND COOLING LOAD CALCULATIONS FOR DERIVING CORRECT EQUIPMENT SIZE. REFERENCE PROCEDURES IN THE ASHRAE/ACCA 183.

12. FOR SERVICE WATER HEATING SYSTEMS LOAD CALCULATIONS FOR DERIVING CORRECT EQUIPMENT SIZE. REFERENCE PROCEDURES IN THE ASPE GUIDELINES.

13. ALL OUTDOOR AIR INTAKE AND EXHAUST SYSTEMS SHALL BE EQUIPMENT WITH MOTORIZED DAMPERS THAT WILL AUTOMATICALLY SHUT WHEN THE SYSTEM OR SPACES ARE NOT IN USE. GRAVITY DAMPERS ARE PERMITTED FOR EXHAUST OR INTAKE AIRFLOWS OF 300 CFM OR LESS.

14. MOTORIZED DAMPERS SHALL HAVE A MAXIMUM LEAKAGE RATE OF 4 CFM PER SQ FT AT 1.0" W.G AND NON-MOTORIZED DAMPERS SHALL HAVE A MAXIMUM LEAKAGE RATE OF 20 CFM PER SQ FT AT 1.0" W.G.

15. DOMESTIC HOT WATER DISTRIBUTION SYSTEM SET POINT SHALL BE 110°F FOR DWELLINGS AND 90°F FOR OTHER OCCUPANCIES.

16. PROVIDE HEAT TRAPS ON THE SUPPLY AND DISCHARGE PIPING ASSOCIATED WITH EQUIPMENT FOR NON-CIRCULATING SYSTEMS.

COMMISSIONING:

OWNER SHALL ENGAGE A REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY TO PROVIDE COMMISSIONING SERVICES IN COMPLIANCE WITH SECTION C408 OF 2016 NYCECC. THE SPECIFICATIONS SHALL BE PROVIDED BY THE COMMISSIONING AGENCY AND TO BE SUBMITTED WITH DESIGN DOCUMENTS FOR BID. UPON COMPLETION OF FINAL COMMISSIONING THE COMMISSIONING AGENCY SHALL PROVIDE A REPORT NOTING THE COMPLETION OF COMMISSIONED SYSTEMS STATED BELOW:

SYSTEMS AND ASSOCIATED CONTROLS TO BE COMMISSIONED:
1. HEATING, COOLING, AIR HANDLING AND DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEMS, INSULATION AND THEIR RELATED AIR QUALITY MONITORING SYSTEMS.
2. AIR, WATER, AND OTHER ENERGY RECOVERY SYSTEMS.
3. MANUAL OR AUTOMATIC CONTROLS, WHETHER LOCAL OR REMOTE, ON ENERGY USING SYSTEMS INCLUDING BUT NOT LIMITED TO TEMPERATURE CONTROLS, SETBACK SEQUENCES, AND OCCUPANCY BASED CONTROL, INCLUDING ENERGY MANAGEMENT FUNCTIONS OF THE BUILDING MANAGEMENT SYSTEM.
4. PLUMBING, INCLUDING INSULATION OF PIPING AND ASSOCIATED VALVES, DOMESTIC AND PROCESS WATER PUMPING, AND MIXING SYSTEMS.
5. MECHANICAL HEATING SYSTEMS AND SERVICE WATER HEATING SYSTEMS.
6. REFRIGERATION SYSTEMS.
7. RENEWABLE ENERGY AND ENERGY STORAGE SYSTEMS.
8. OTHER SYSTEMS, EQUIPMENT AND COMPONENTS THAT ARE USED FOR HEATING, COOLING OR VENTILATION AND THAT AFFECT ENERGY USE.
9. AUTOMATIC LIGHTING SYSTEMS AS PER SECTION C408.3

COMMISSIONING PLAN SHALL FOLLOW ALL NECESSARY STEPS AS PER SECTION C408.2.1 OF 2016 NYCECC.

- ALL MOTORIZED DAMPERS SHALL BE CLASS I RATED FOR AIR LEAKAGE.
- ALL EQUIPMENT MUST BE UL/REFERENCE STANDARD APPROVED

MECHANICAL EQUIPMENT AND BUILDING SYSTEMS SHALL BE CONSTRUCTED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE 2014 NEW YORK CITY MECHANICAL CODE AND THE 2014 NEW YORK CITY FUEL AND GAS CODE.

TRAINING AND MANUALS:

UPON COMPLETION OF THE JOB, ALL APPLICABLE OPERATING AND SPECIFICATION MANUALS TO BE DELIVERED TO THE BUILDING STAFF. CONTRACTOR SHALL PROVIDE TRAINING FOR THE BUILDING MAINTENANCE STAFF TO ASSURE THAT THE SYSTEM IS MAINTAINED AND OPERATED PROPERLY.

NOTE:
ALL DUCTWORK IS LOW PRESSURE, LESS THAN 3" W.C. AIR LEAKAGE TEST IS NOT REQUIRED,

GENERAL N.Y.C. BUILDING CODE
(MECHANICAL CODE OF NEW YORK EFFECTIVE 2014 TO BE COMPLIED WITH)

1. MATERIAL AND EQUIPMENT SUBJECT TO CONTROLLED INSPECTION

   A. MECHANICAL VENTILLATION (M.V.) AIR CONDITION (A.C.)
   (1) INSPECTION AND TEST OF REQUIRED VENTILATION SYSTEMS PER MC-403

   B. HEATING EQUIPMENT
   (1) APPLICATION FOR EQUIPMENT USE PERMIT FOR HEATING SYSTEM TO BE ACCOMPANIED BY A SIGNED STATEMENT BY AN ARCHITECT OR ENGINEER INDICATING COMPLIANCE WITH CODE TEMPERATURES, ETC., PER MC-309

2. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES ETC., TO COMPLY WITH THE FOLLOWING:

   ARTICLE REFERENCE:

WORK ITEM OR MATERIAL (S)	SECTION
C. DUCT CONSTRUCTION	MC-603
D. AIR INTAKES AND OUTLETS	MC-608
E. FILTER	MC-605
F. FANS	MC-503
G. ELEC. WIRING AND EQUIP.	MC-301
H. AIR CLG HTG EQUIP	MC-302
I. FIRE CONTROLS	MC-509, MC-513
J. CONTROLS	MC-405
K. HEATING CAPACITY	MC-312
L. NOISE CRITERIAL LEVEL	MC-926
M. TEST PROCEEDURES FOR SPL	MC-926
N. PIPING INSULATION	MC-1204
O. INTAKES, EXHAUSTS, RELIEFS	MC-502

3. REFER TO ARCHITECTUAL DRAWINGS FOR FIRE RELATED WALL COMPOSITIONS.
4. MINIMUM TEMPERATURE TO BE MAINTAINED DURING HEATING SEASON: 68° F, WHEN 0° F OUTSIDE WITH 15 MPH WINDS HEATING REQUIREMENTS PER MC-309.
5. A STATEMENT WILL BE FILLED (BY OWNER OR TENANT IN POSSESSION) THAT THE VENTING SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION DURING NORMAL OCCUPANCY OF THE PREMISES.
6. THE VENTILATION INDEX OF ALL AREAS COMPLIES WITH THE MINIMUM CODE REQUIREMENTS MC-403. ALL CALCULATIONS OF VENTILATION INDEX MADE WITHOUT TAKING ANY CREDIT FOR EXTERIOR WINDOWS AND / OR OPENINGS.

ALL VENTILATION RATES ARE IN COMPLIANCE WITH NYC MECHANICAL CODE - 2014

GENERAL NOTES

1. COORDINATE ALL WORK WITH THE ARCHITECTURAL DRAWINGS. VERIFY LOCATION OF ALL VISIBLE DEVICES WITH ARCHITECT PRIOR TO INSTALLATION, INCLUDING THERMOSTATS, DIFFUSERS, GRILLES, REGISTERS, SENSOR ETC. APPEARANCE OF ALL VISIBLE DEVICES SHALL MATCH APPEARANCE OF EXISTING DEVICES FOR FINISH, COLOR AND MOUNTING FRAME. RECEIVE APPROVAL FROM THE ARCHITECT FOR ALL DEVICES PRIOR TO PURCHASE.
2. ALL SHEETMETAL SIZES INDICATED ARE CLEAR INSIDE DIMENSIONS.
3. CONTRACTOR SHALL FOLLOW BUILDING RULES & REGULATIONS AND THEIR DESIGN GUIDELINES.
4. BALANCE DIFFUSERS TO CFM SHOWN ON DRAWING.
5. DRAWINGS ARE INTENDED TO SHOW THE PROPER SIZE AND GENERAL LOCATION OF THE EQUIPMENT, PIPING, DUCTWORK, ETC. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND CONNECTIONS. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENTS OF SYSTEMS AND WORK INCLUDED IN CONTRACT. DEVIATION FROM LAYOUT SHOWN MUST BE APPROVED BY THE ARCHITECT/ENGINEER.
6. ALL DUCTWORK IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR DROPS, RISES AND TRANSITIONS.
7. THE SHEET METAL SHOP DRAWINGS SHALL INDICATE ALL HUNG CEILING STARTING POINTS, ELEVATIONS AND BREAK LINES. WHERE PIPING, LIGHTS AND DUCTWORK CONFLICTS, DUCTWORK SHALL BE SET UP OR DOWN.
8. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL LINE VOLTAGE CONDUIT AND WIRE. MAKE ALL LINE VOLTAGE FINAL WIRING CONNECTIONS. FURNISH AND INSTALL DISCONNECT SWITCHES UNLESS FURNISHED AS PART OF PACKAGE EQUIPMENT.
9. PROVIDE MANUAL DAMPERS IN EACH SPLIT OR TAP CONNECTION TO TRUNK DUCTS FOR BALANCING PURPOSES, EACH DAMPER PROVIDED WITH OPERATOR AND LOCKING DEVICE.
10. CONTRACTOR SHALL SUPPLY "AS BUILT DRAWINGS" AT THE CONCLUSION OF THE JOB.
11. CONTRACTOR TO BE RESPONSIBLE FOR DIFFUSER FRAME TYPE. MUST APPROVED BY ARCHITECT.
12. ALL HVAC SYSTEMS SHALL CONFORM WITH NEW YORK CITY BUILDING CODE, NEW YORK STATE ENERGY CONSERVATION CODE AND ALL APPLICABLE JURISDICTIONAL BODIES. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND APPROVALS, FEES AND CLOSEOUTS.
13. ALL DUCTWORK SHALL BE AND TESTED SEALED, BALANCED TO AN ALLOWABLE LEAKAGE OF 5%. SUBMIT BALANCE REPORT FOR APPROVAL TO DESIGN TEAM (ENGINEER/ARCHITECT)
14. CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR THE PERIOD OF ONE (1) YEAR.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR BALANCING OF AIR QUANTITIES AT ALL AIR CONDITIONING OUTLETS AND RETURNS AS SHOWN ON THE PLANS.
16. ALL HVAC DUCTWORK SHALL BE SUPPORTED FROM FLOOR BEAMS EITHER DIRECTLY OR INDIRECTLY BY MEANS OF STEEL FRAMEWORK. ALL EQUIPMENT SUSPENSION MUST BE APPROVED BY THE BUILDING STRUCTURAL ENGINEER. METHOD FOR HANGING EQUIPMENT WILL BE DETAILED ON THE SHEET METAL SHOP DRAWINGS.
17. SHOP DRAWINGS SHALL BE PREPARED WITH COMPLETE DIMENSIONAL INFORMATION, INCLUDING COORDINATES TO BRANCH DUCT AND DIFFUSERS STUBS. ELEVATIONS TO THE UNDERSIDE OF EXISTING LOW PRESSURE DUCTS AND NEW DUCTS, SHALL BE CLEARLY INDICATED ON THE DRAWING SUBMITTED AND SHALL BE CAREFULLY CHECKED FOR CONFORMANCE WITH CEILING HEIGHT REQUIREMENTS. ALL CONFLICTS MUST BE FLAGGED ON THE SHOP DRAWINGS. SHOP DWG SHALL INCLUDE A LIST OF REFERENCE DRAWINGS USED.
18. THIS CONTRACTOR IS RESPONSIBLE TO COORDINATE AND INCLUDE IN HIS BID THE RELOCATION OF ALL PIPING, HANGERS, CONDUITS, ETC. REQUIRED TO INSTALL DUCTWORK.
19. SUPPORT, PROTECT, MAINTAIN AND REPAIR ANY DAMAGED DUCTWORK, PIPING AND INSULATION AFFECTED BY THE WORK OF THIS PROJECT.
20. FURNISH ALL LABOR AND MATERIALS, TOOLS, EQUIPMENT AND SERVICES TO PERFORM THE ALTERATION AS INDICATED.
21. NO PIPING SHALL BE SMALLER THAN 3/4"
22. PROVIDE FITTINGS FOR CHANGE IN PIPE SIZES FOR FINAL CONNECTION AS REQUIRED.
23. PROVIDE UNION OR FLANGED CONNECTIONS AT EACH PIECE OF EQUIPMENT AND ON BOTH SIDES OF CONTROL VALVES.
24. DRAINAGE PIPING PITCH NOT LESS THAN 1/8 PER FOOT.
25. PROVIDE ACCESS DOORS IN DUCTWORK WHERE INDICATED OR REQUIRED FOR ACCESS TO SYSTEM COMPONENTS INCLUDING, BUT NOT LIMITED TO THE FOLLOWING.
   A. REHEAT COILS
   B. VOLUME DAMPERS
   C. VALVES
26. PROVIDE FIRE/SMOKE DAMPERS (WITH ACCESS DOORS) AT THE FOLLOWING POINTS.
   A. POINT OF PASSING THROUGH SHAFT WALLS TO CONNECT TO VERTICAL RISERS.
   B. WHERE PASSING THROUGH FLOOR OR ROOF CONSTRUCTION.
   C. WHERE PASSING THROUGH FIRE RATED PARTITIONS (REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF FIRE RATED PARTITIONS).
   D. WHERE INDICATED OR REQUIRED BY CODE.
27. FOR PIPE CONNECTION DETAILS FOR EQUIPMENT, SEE DETAILS ON DRAWINGS.
28. FOR AREAS WITH INACCESSIBLE CEILINGS, VOLUME DAMPERS SHALL BE PROVIDED WITH METAL FLEXIBLE CABLE OPERATORS FOR REMOTE OPERATION OF DAMPERS THROUGH FACE OF DIFFUSERS, GRILLES OR REGISTERS.
29. ALL DUCTWORK IS TO BE KEPT AS HIGH AS POSSIBLE SO AS TO MAINTAIN CEILING HEIGHTS SHOWN ON ARCHITECTURAL DRAWINGS.
30. WHERE PIPING, LIGHTS AND DUCTWORK CONFLICT, DUCTWORK SHALL SET UP AND DOWN.
31. PROVIDE DRAIN VALVES AT ALL LOW POINTS OF ALL WATER SYSTEM.
32. PROVIDE CONDENSATE PUMP FOR EACH AC UNIT, FAN COIL UNIT, ETC. IF GRAVITY CONDENSATE REMOVAL IS NOT POSSIBLE.

MECHANICAL DRAWING LIST

DWG No.	DRAWING TITLE	SCALE
EN-001	MECHANICAL COMCHECK SHEET	NONE
EN-002	MECHANICAL COMCHECK SHEET	NONE
M-001	MECHANICAL COVER SHEET (LEGEND, SYMBOLS AND NOTES)	NONE
M-100	MECHANICAL CELLAR PLAN	1/8" = 1'-0"
M-101	MECHANICAL 1ST FLOOR PLAN	1/8" = 1'-0"
M-102	MECHANICAL 2ND FLOOR PLAN	1/8" = 1'-0"
M-103	MECHANICAL 3RD - 5TH FLOOR PLAN	1/8" = 1'-0"
M-104	MECHANICAL 6TH FLOOR PLAN	1/8" = 1'-0"
M-105	MECHANICAL 7TH FLOOR PLAN	1/8" = 1'-0"
M-106	MECHANICAL 8TH - 14TH EVEN FLOOR PLAN	1/8" = 1'-0"
M-107	MECHANICAL 9TH - 13TH ODD FLOOR PLAN	1/8" = 1'-0"
M-108	MECHANICAL 15TH FLOOR PLAN	1/8" = 1'-0"
M-109	MECHANICAL ROOF & BULKHEAD PLAN	1/8" = 1'-0"
M-200	MECHANICAL SCHEDULES	NONE
M-300	MECHANICAL AIR RISER	NONE
M-400	MECHANICAL DETAIL SHEET 1	NONE
M-401	MECHANICAL DETAIL SHEET 2	NONE
M-402	MECHANICAL DETAIL SHEET 3	NONE

NEW YORK CITY BUILDING DEPARTMENT APPROVAL NOTE:

THIS PLAN IS APPROVED ONLY FOR WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON, OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

MECHANICAL
COVER SHEET

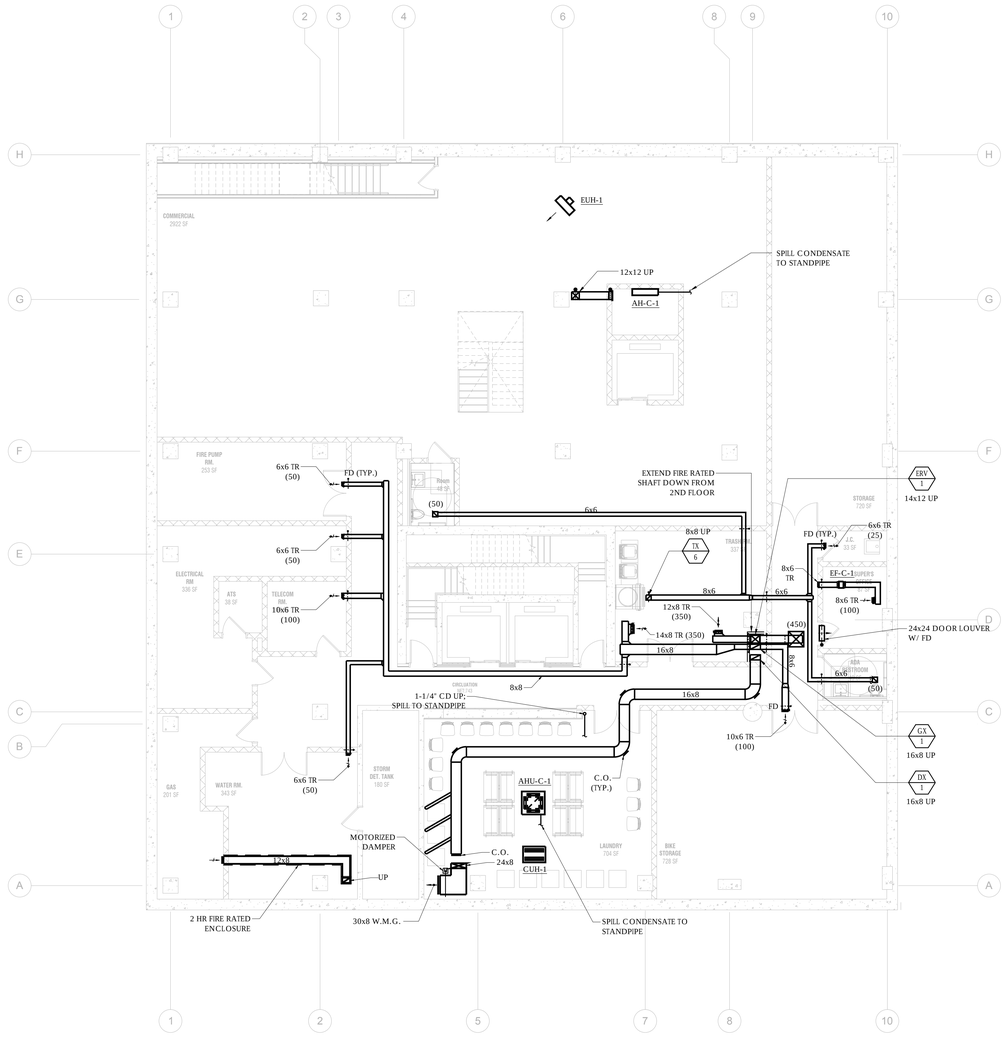
SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW W. WATKINS · 023161 · LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.F.
CHECKED BY:	S.R./D.C.
DWG NO:	M-001.00
NYC DOB NUMBER:	

ENGINEERS NOTES:

1) PROVIDE VOLUME DAMPERS AT EVERY AIR OUTLET UNLESS CONSTANT AIR REGULATORS ARE SPECIFIED.
2) PROVIDE DRAIN VALVES FOR EVERY HW RISER. REFER TO RISER DIAGRAM.
3) DRYER EXHAUST SHALL BE SMOOTH W/ ROUNDED ELBOWS.
4) PROVIDE THERMAL INSULATION FOR ALL SUPPLY AIR DUCTWORK.
5) PIAC HOT WATER CONTROL VALVE ACTUATORS SHALL BE NORMALLY OPEN WHEN NO POWER IS APPLIED.



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

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PROJECT

BETANCES VI DEVELEOPMENT
472 - 474 WILLIS AVE. BRONX, NY

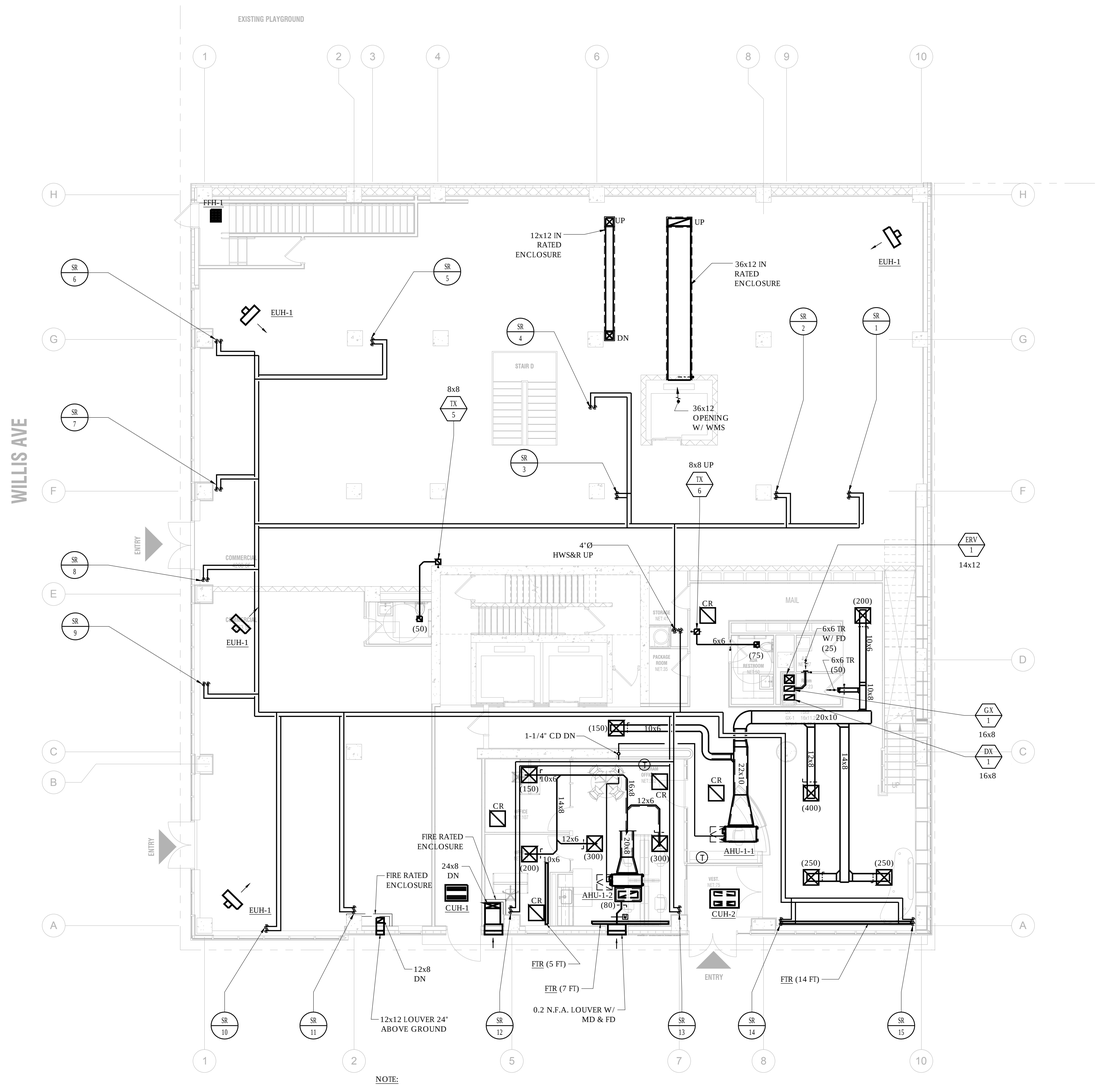
MECHANICAL
CELLAR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WATSO
083161
LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.F.
CHECKED BY:	S.R./D.C.
DWG NO:	M-100.00
NYC DOB NUMBER:	

NOTE:
1. PROVIDE THERMAL INSULATION FOR ALL SUPPLY AIR DUCTWORK.
2. PTAC HOT WATER CONTROL VALVE ACTUATORS SHALL BE NORMALLY OPEN WHEN NO POWER IS APPLIED.
3. PROVIDE SUB-DUCT FOR ALL TOILET AND KITCHEN EXHAUST CONNECTIONS AT RISERS. WHERE SUB-DUCT IS NOT POSSIBLE ENCLOSE BRANCHES IN 2HR FIRE RATED ENCLOSURE AND PROVIDE FIRE DAMPER WITH CONSTANT AIR REGULATOR ASSEMBLY.
4. ALL DUCT OFFSETS TO BE IN FIRE RATED ENCLOSURE BY G.C.
5. PROVIDE DRAIN VALVES FOR EVERY HW RISER. REFER TO RISER DIAGRAM.



NOTE:

1. LOUVERS IN COMMERCIAL AREA, PROVIDED BY GC, ARE BLANKED OFF. MECHANICAL CONTRACTOR FOR COMMERCIAL SPACES SHALL REMOVE THE COVER AND INSTALL AIR PLENUMS FOR INTAKE AND EXHAUST FROM AC UNITS. PLENUMS TO BE DRAINED TO STORM OR SANITARY SYSTEM.

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

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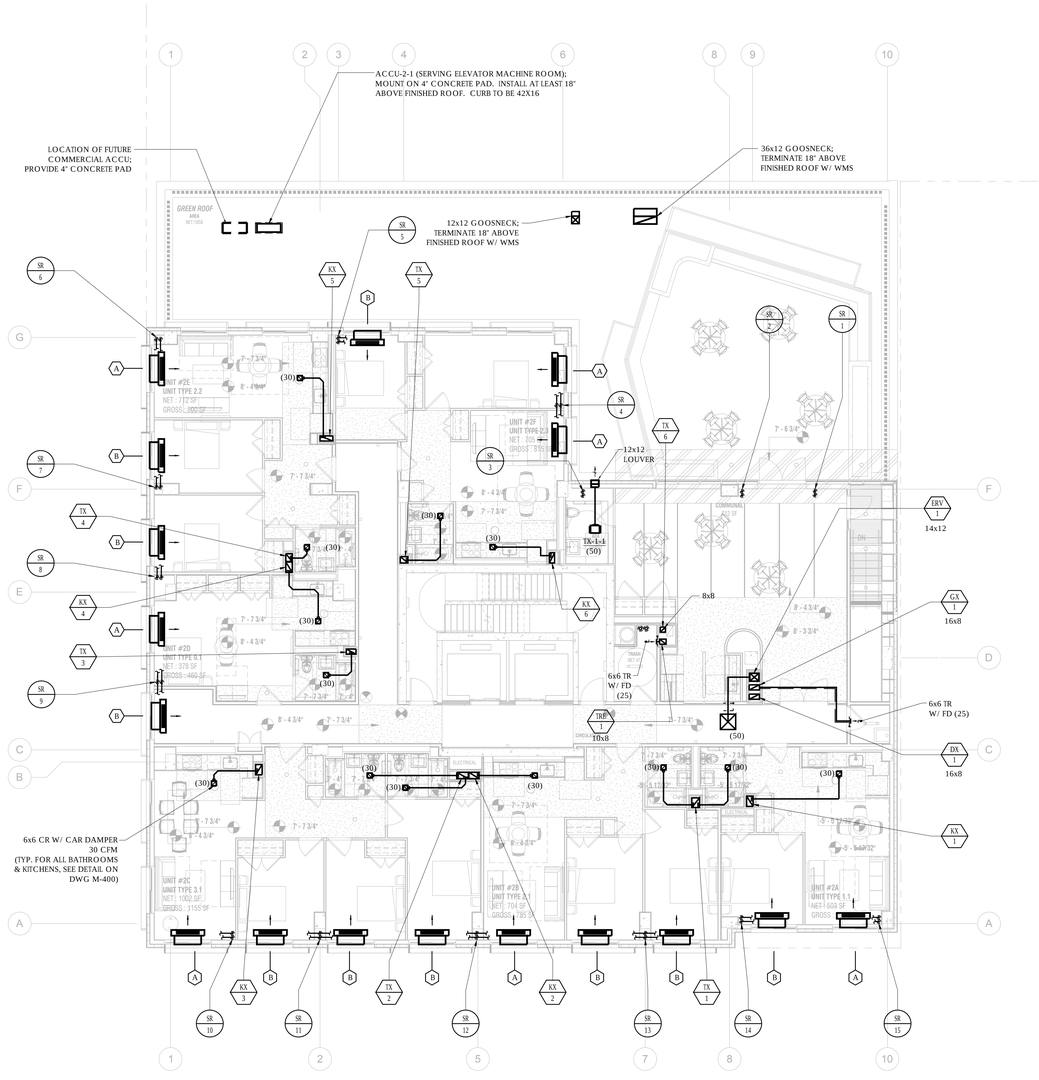
MECHANICAL
1ST FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WATRO
083161
LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.F.
CHECKED BY:	S.R./D.C.
DWG NO:	M-101.00
NYC DOB NUMBER:	

NOTE:
1. PROVIDE THERMAL INSULATION FOR ALL SUPPLY AIR DUCTWORK.
2. PTAC HOT WATER CONTROL VALVE ACTUATORS SHALL BE NORMALLY OPEN WHEN NO POWER IS APPLIED.
3. PROVIDE SUB-DUCT FOR ALL TOILET AND KITCHEN EXHAUST CONNECTIONS AT RISERS. WHERE SUB-DUCT IS NOT POSSIBLE ENCLOSE BRANCHES IN 2HR FIRE RATED ENCLOSURE AND PROVIDE FIRE DAMPER WITH CONSTANT AIR REGULATOR ASSEMBLY.
4. ALL DUCT OFFSETS TO BE IN FIRE RATED ENCLOSURE BY GC



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

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P 718.884.7676

STRUCTURAL
CUONO ENGINEERING PLLC
42 NORTH MAIN STREET
PORT CHESTER, NY 10573
P 914.305.5679

MEP
RODKIN CARDINALE A DIVISION OF SKYLINE ENGINEERING
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

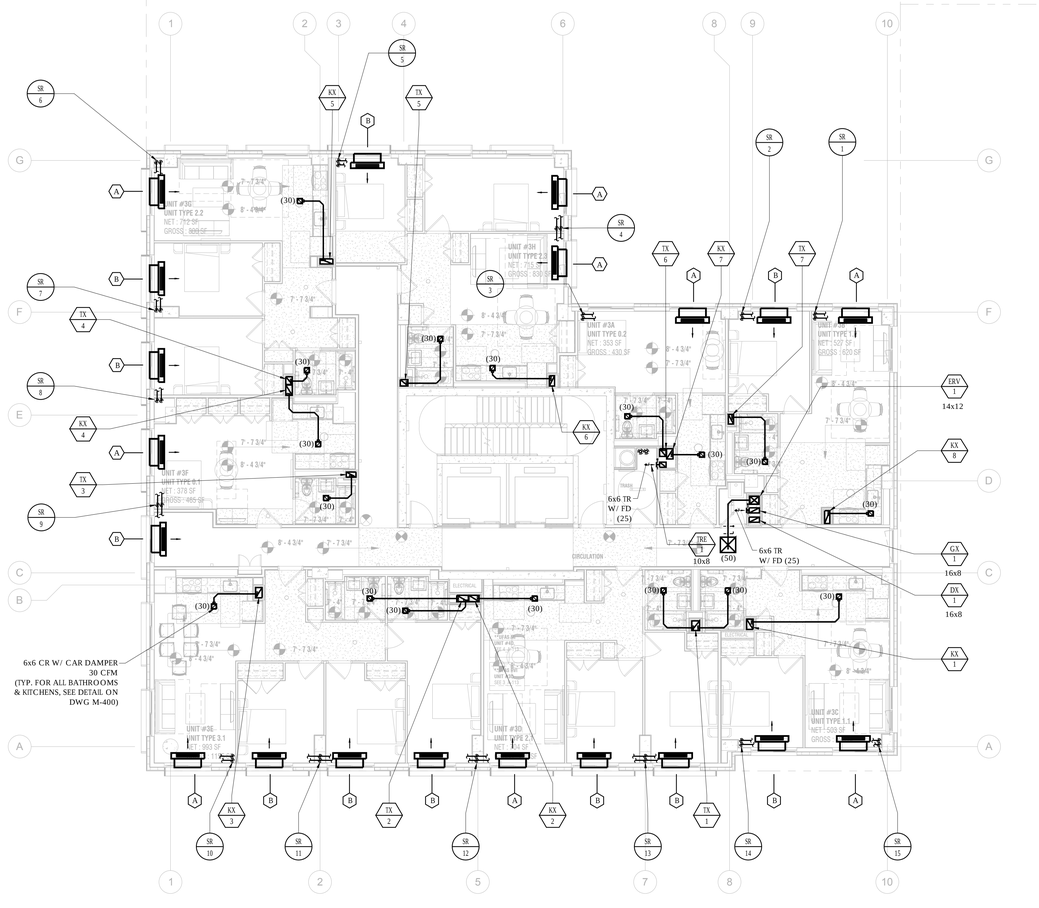
MECHANICAL
2ND FLOOR PLAN

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STATE OF NEW YORK · MATTHEW M. WATKINS · 083161 · LICENSED PROFESSIONAL ENGINEER

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3RD-5TH FLOOR PLAN
SCALE: 1/8" = 1'-0"

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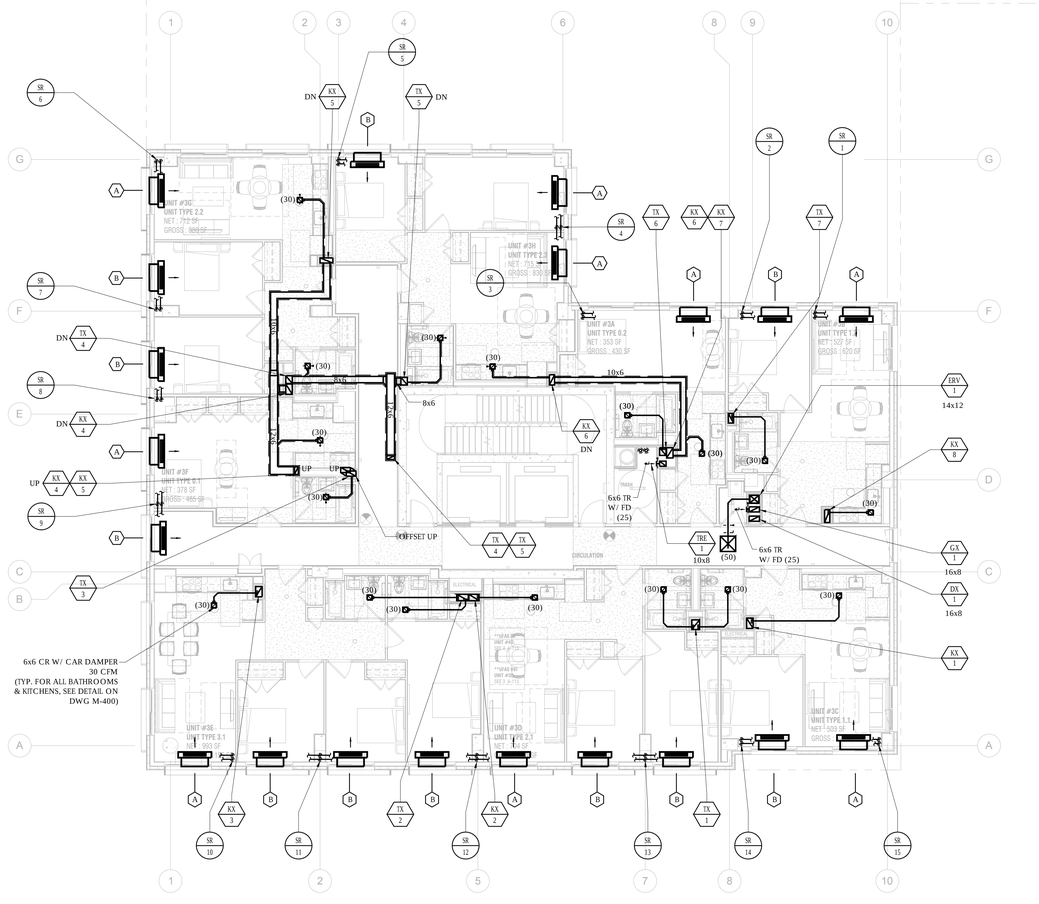
MECHANICAL
3RD-5TH FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · 32117 · MICHAEL W. WOLFF · LICENSED PROFESSIONAL ENGINEER

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

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MECHANICAL
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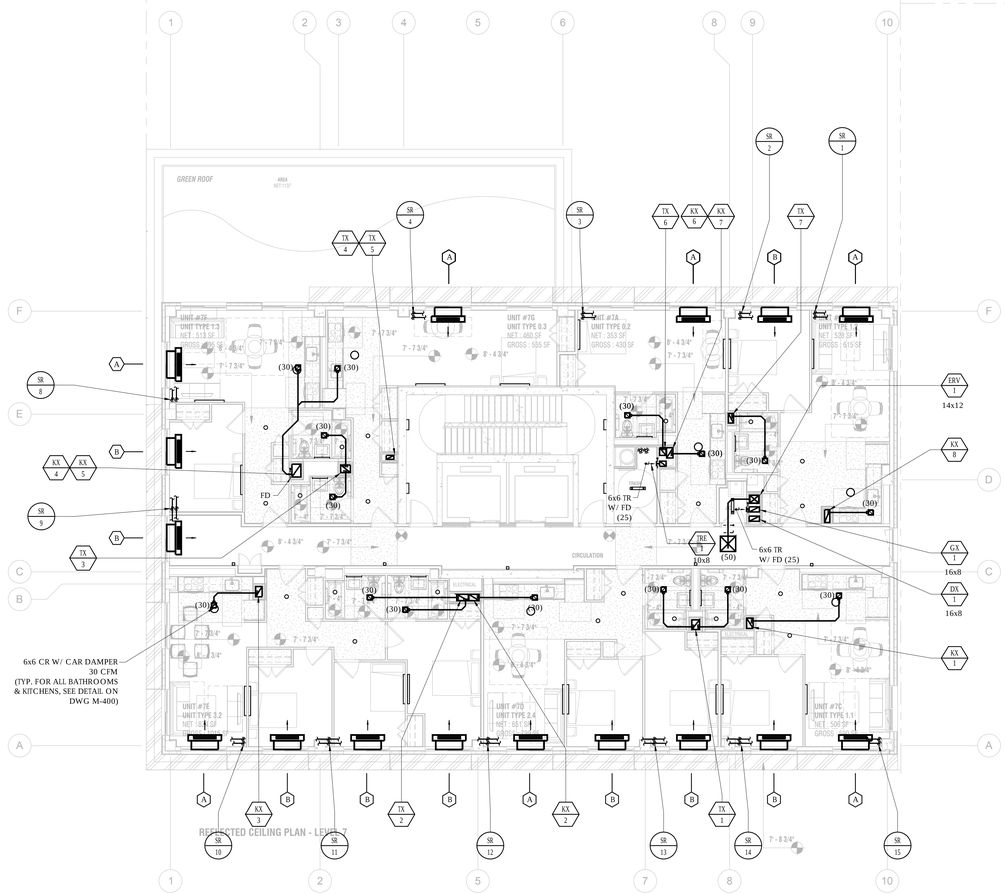
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STATE OF NEW YORK
MATTHEW M. WALKO
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7TH FLOOR PLAN

SCALE: 1/8" = 1'-0"

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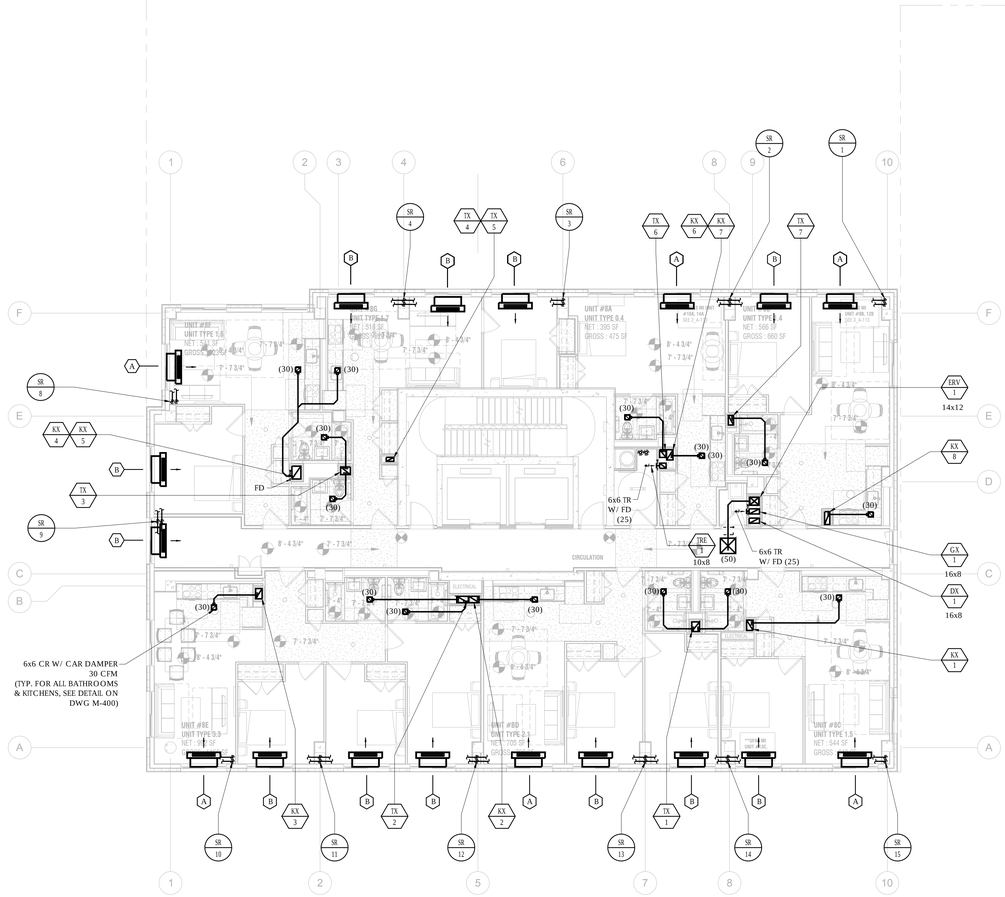
MECHANICAL
7TH FLOOR PLAN

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TYPICAL 8TH, 10TH, 12TH & 14TH
FLOOR PLAN
SCALE: 1/8" = 1'-0"

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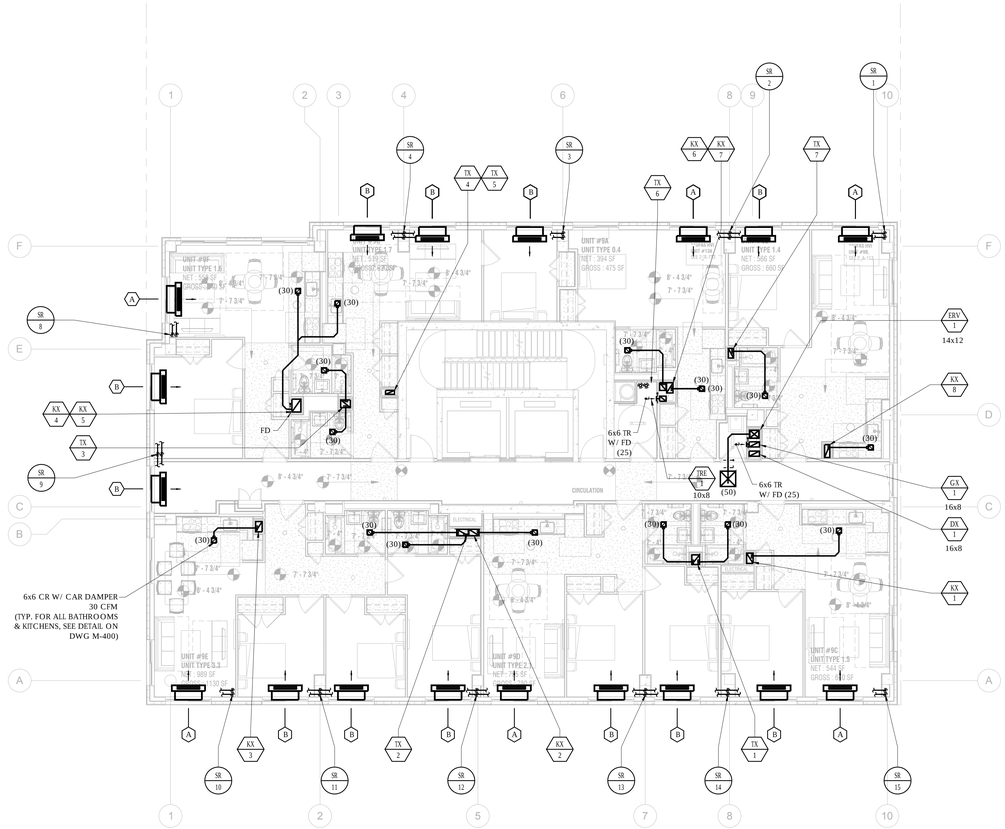
MECHANICAL
TYPICAL 8TH-14TH EVEN
FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WATSON
083162
LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
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TYPICAL 9TH, 11TH & 13TH
FLOOR PLAN
SCALE: 1/8" = 1'-0"

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472 - 474 WILLIS AVE. BRONX, NY

MECHANICAL
TYPICAL 9TH-13TH ODD
FLOOR PLAN

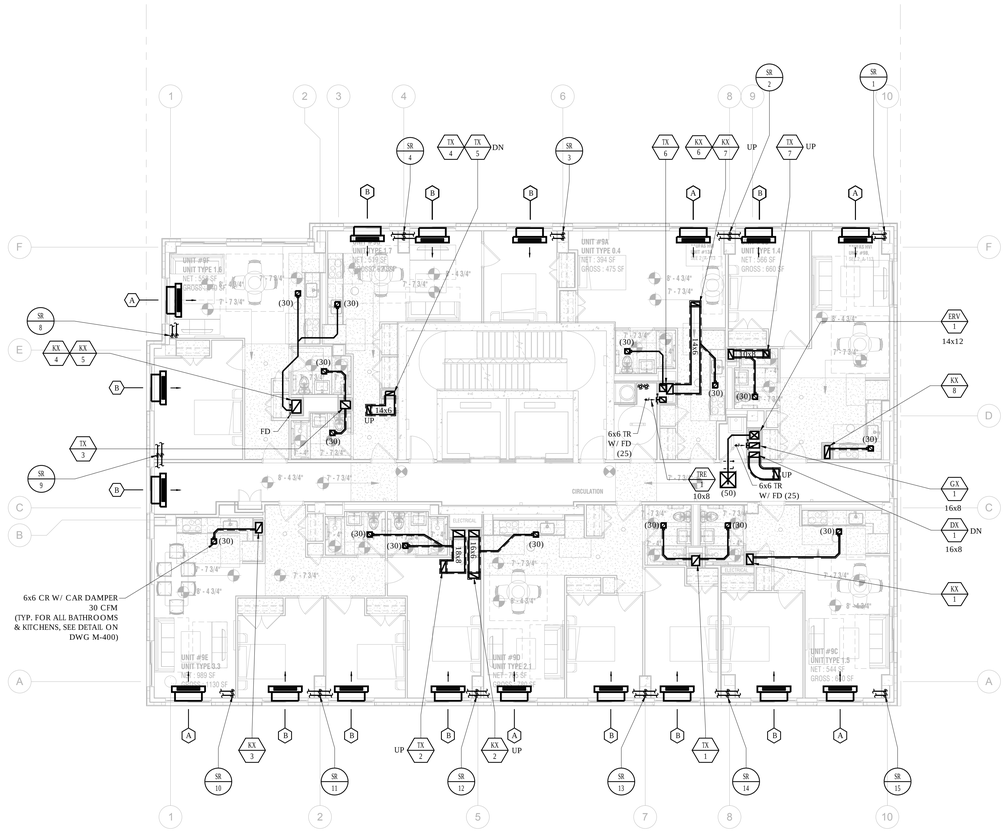
SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW W. WATSON · 043184 · LICENSED PROFESSIONAL ENGINEER

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TYPICAL 9TH, 11TH & 13TH
FLOOR PLAN
SCALE: 1/8" = 1'-0"

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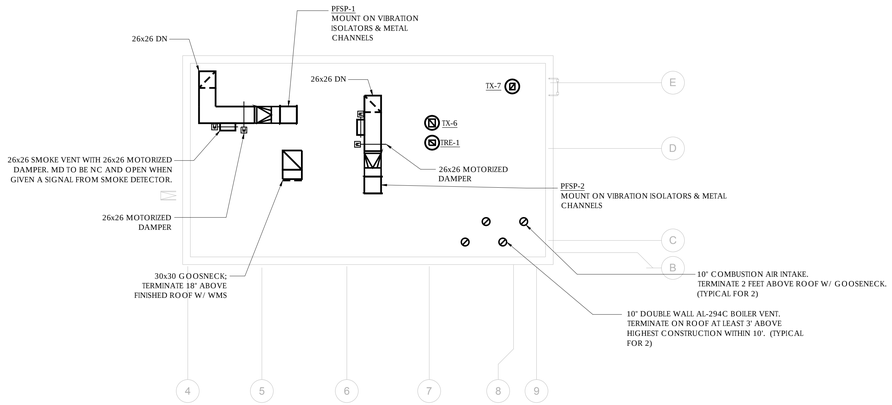
472 - 474 WILLIS AVE. BRONX, NY

MECHANICAL
15TH FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WATSO
LICENSED PROFESSIONAL ENGINEER
083161

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BULKHEAD PLAN

SCALE: 1/8" = 1'-0"

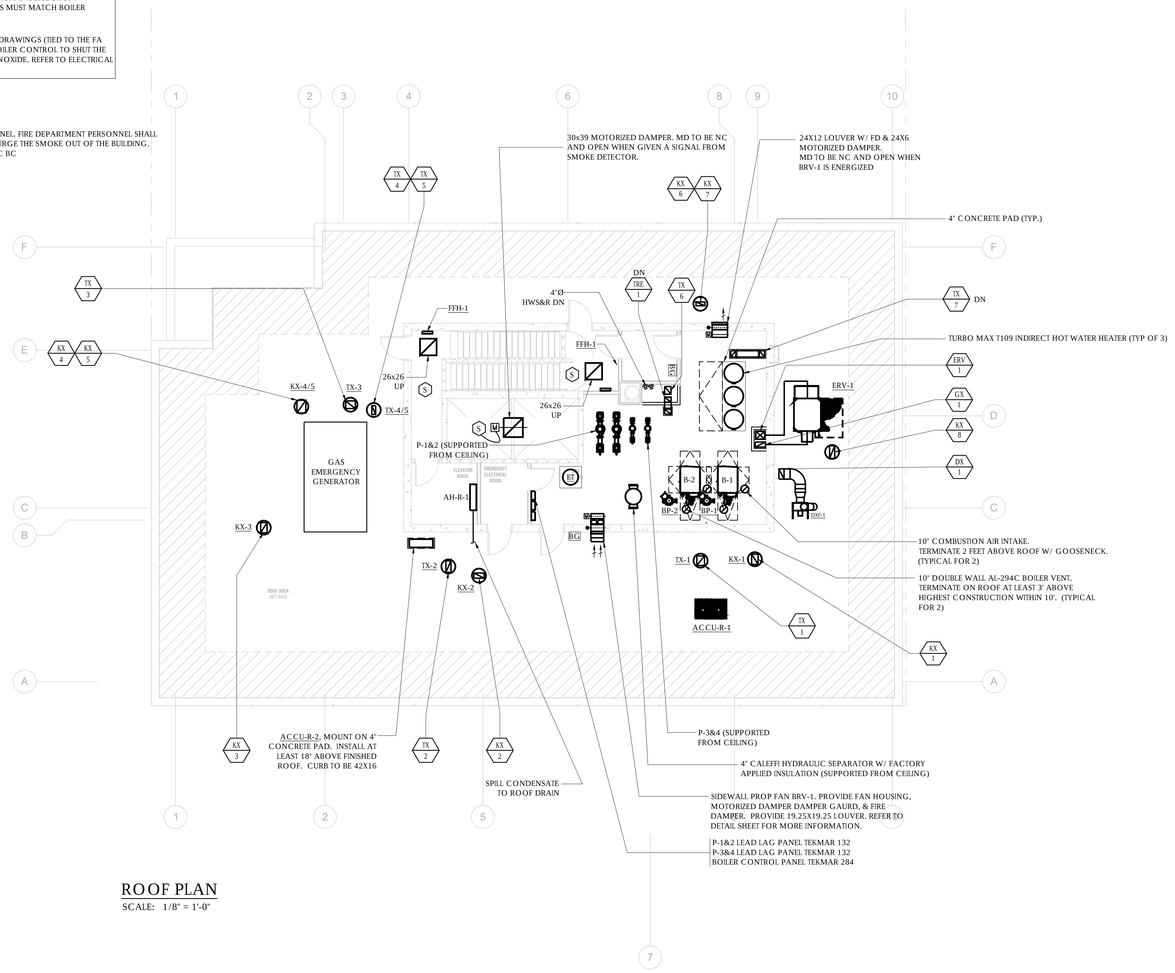
ROOF NOTES:
1) ALL DUCTWORK RUNNING OUTDOORS SHALL BE WEATHERPROOFED WITH FLEX CLAD OR APPROVED EQUAL.

NOTE:
1. PROVIDE 4" CONCRETE CURB FOR ALL FLOOR MOUNTED BOILER ROOM EQUIPMENT.
2. ALL PUMPS SHALL BE SUSPENDED FROM CEILING WITH VIBRATION ISOLATORS.
3. PROVIDE AL-29-4C DOUBLE WALL BOILER VENT MATERIAL.
4. REFER TO DETAIL ON M-402 FOR PIPING CONNECTIONS AND FITTINGS.
5. BOILER SHALL BE MOUNTED ON VIBRATION ISOLATORS WITH MINIMUM 1" DEFLECTION.
6. PRESSURE RELIEF VALVE SETTING ON ET-1 AND TURBOMAX HEATERS MUST MATCH BOILER RELIEF VALVE SETTING

IN ADDITION TO THE CO DETECTOR SHOWN ON ELECTRICAL DRAWINGS (TIED TO THE FA SYSTEM), PROVIDE ANOTHER CO DETECTOR TO BE TIED TO BOILER CONTROL TO SHUT THE BOILERS DOWN IN CASE OF HIGH BUILD UP OF CARBON MONOXIDE. REFER TO ELECTRICAL DRAWINGS FOR WIRING DIAGRAM.

SMOKE PURGE

1. PFSP-1 & 2 SHALL BE STARTED MANUALLY FROM SMOKE PURGE PANEL. FIRE DEPARTMENT PERSONNEL SHALL MANUALLY OPEN STAIR DOORS AT THE APPROPRIATE STORY TO PURGE THE SMOKE OUT OF THE BUILDING.
2. SYSTEM SHALL BE IN COMPLIANCE WITH SECTION 916 OF 2014 NYC BC
3. REFER TO FIRE ALARM DRAWINGS FOR MORE INFORMATION.



ROOF PLAN

SCALE: 1/8" = 1'-0"

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MECHANICAL
ROOF PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · JEFFREY M. WATKINS · LICENSED PROFESSIONAL ENGINEER · 083161

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BOILER SCHEDULE

UNIT TAG	LOCATION	SERVICE	TYPE	HEATING CAPACITY		ELECTRICAL DATA						LWT/EWT (DEG °F)	MANUFACTURER	MODEL #	OPERATING PRESSURE (PSI)	PRESSURE RELIEF VALVE SETTING (PSI)	EFFICIENCY	CODE REQUIRED EFFICIENCY	CSA	WEIGHTS
						BOILER			PUMP											
				INPUT MBH	OUTPUT MBH	VOLTS	PH	FLA AMPS	VOLTS	PH	AMPS									
B-1	ROOF BOILER RM	HEATING SYSTEM & DOMESTIC HOT WATER	WATER TUBE	3500	3276	120	1	9.9	SEE PUMP SCHEDULE FOR BP-1			150/ 120	LAARS	MAGNATHERM MGH3500	35 PSI	75 PSI	93.6	82	2033653	2278 LB
B-2	ROOF BOILER RM	HEATING SYSTEM & DOMESTIC HOT WATER	WATER TUBE	3500	3276	120	1	9.9	SEE PUMP SCHEDULE FOR BP-2			150/ 120	LAARS	MAGNATHERM MGH3500	35 PSI	75 PSI	93.6	82	2033653	2278 LB

1. 1) B-1 & B-2 BASED ON LAARS CORP. W/ (3) TURBOMAX T-109 INDIRECT HOT WATER HEATER WITH TANK BODY INSULATION R-20.8 (NYC-ECC REQUIRED R-12.5)
2. BOILERS SHALL PROVIDE WITH OUTDOOR SETBACK CONTROL THAT LOWERS THE BOILER WATER TEMPERATURE BASED ON THE OUTDOOR TEMPERATURE
3. BOILER BURNER SHALL MODULATE DOWN TO 20% OF FULL FIRE (5:1 TURNDOWN)
4. TURBOMAX PRESSURE RELIEF VALVE SETTING TO MATCH BOILER RELIEF VALVE.
5. PROVIDE CONDENSATE NEUTRALIZER KIT.

HYDRONIC PUMP SCHEDULE

UNIT TAG	SERVICE	LOCATION	MANUFACTURER	MODEL	PUMP DATA			MOTOR DATA				WEIGHT LB	REMARKS
					GPM	HEAD (FT)	IMPELLER DIA (INCHES)	HP	RPM	VOLT	PH		
BP-1	BOILER PUMP	BOILER ROOM	ARMSTRONG	4380 3x3x8	222	35	--	5	VARI	208	3	--	- VERTICAL IN-LINE - VFD SENSORLESS MOTOR CONTROLLED BY BOILER
BP-2	BOILER PUMP	BOILER ROOM	ARMSTRONG	4380 3x3x8	222	35	--	5	VARI	208	3	--	
HWP-1	HEATING SYSTEM	BOILER ROOM	ARMSTRONG	4300 3x3x10	265	75	--	10	VARI	208	3	--	- 1 PUMP IS STANDBY - VERTICAL IN-LINE - SENSORLESS WALL-MOUNTED VFD
HWP-2	HEATING SYSTEM	BOILER ROOM	ARMSTRONG	4300 3x3x10	265	75	--	10	VARI	208	3	--	
DHWP-1	DOMESTIC HOT WATER	BOILER ROOM	ARMSTRONG	1060-3D	125	25	--	1.5	VARI	208	3	--	- 1 PUMP IS STANDBY - VERTICAL INLINE PUMP
DHWP-2	DOMESTIC HOT WATER	BOILER ROOM	ARMSTRONG	1060-3D	125	25	--	1.5	VARI	208	3	--	

1. PROVIDE TRIPLE DUTY VALVES AND SUCTION GUIDES FOR ALL PUMPS
2. PROVIDE TEKMAR 132 PUMP SEQUENCING PANEL WITH CURRENT SENSORS FOR EACH SET OF PUMPS.
3. PROVIDE NEMA PREMIUM EFFICIENCY MOTORS FOR ALL PUMPS 1 HP OR GREATER.
4. STARTERS TO BE FURNISHED BY MECHANICAL CONTRACTOR AND INSTALLED BY ELECTRICAL CONTRACTOR. SEE ELECT. DWGS.
5. ALL MAGNETIC MOTOR STARTERS AND VFD PUMPS WILL HAVE INTEGRAL DISCONNECT SWITCH.

INCREMENTAL PACKAGED TERMINAL AC UNIT (PTAC)

UNIT TAG	MANUFACTURER	MODEL	CFM	COOLING CAPACITY BTU/HR	HEATING DATA				ELECTRICAL DATA			EER	REMARKS
					CAPACITY BTU/HR	EWT °F	GPM	COILS	VOLT	PH	AMPS		
(A)	ISLANDAIRE	EZNY12A2G2	340	11,836	8,000	140 °F	1.0	6030293 HI-CAPACITY	208	1	5.0	10.92	SEE NOTE
(B)	ISLANDAIRE	EZNY07A2G2	340	7,185	8,000	140 °F	1.0	6030293 HI-CAPACITY	208	1	2.79	11.99	SEE NOTE

NOTES:
1. PTAC LOUVER SHALL BE 42"X16" AS PER NYS ENERGY CODE.
2. LOUVERS SHALL BE PROVIDED BY MANUFACTURER. ALL SUBSTITUTED LOUVERS MUST BE REVIEWED AND APPROVED BY MANUFACTURER FOR PROPER INSTALLATION, ALIGNMENT, DRAINAGE, ETC. PRIOR TO INSTALLATION OF UNITS, MANUFACTURER REPRESENTATIVE SHALL REVIEW A TYPICAL INSTALLATION IN FIELD.
3. PROVIDE 1 GPM AUTO FLOW LIMITING VALVE FOR ALL PTACS.
4. PROVIDE MOTORIZED OA DAMPER, INTERLOCK WITH PTAC
5. PROVIDE BUILT-IN DIGITAL CONTROLS.

UNIT HEATER (HYDRONIC)

UNIT TAG	LOCATION	CAPACITY (BTUH)	GPM	CFM	V	PH	HP	CONTROL	MANUFACTURER	MODEL	REMARKS
UH-1	LAUNDRY RM	18,100	1.87	436	115	1	1/40	BUILT-IN	AIR-THERM	VS-40	REMOTE WIFI ENABLED TSTAT VERTICAL UNIT HEATER

CABINET UNIT HEATER (hydronic)

UNIT No.	CAPACITY, MBH	GPM	CFM	VOLTS	PHASE	HP	CONTROL	MANUFACTURER	MODEL	REMARKS
CUH-1	22.4	2.24	200	115	1	1/15	REMOTE	ROSEMEX	F-300-A-CRW6	REMOTE T-STAT CEILING RECESSED
CUH-2	40.0	4.00	400	115	1	1/15	REMOTE	ROSEMEX	F-400-C-CRW6	REMOTE T-STAT CEILING RECESSED

- HEATING CAPACITIES BASED ON 200F EWT, 60F EAT, AND 20 DELTA T
- CABINET HEATERS TO BE FACTORY FINISHED BAKED ENAMEL, COLOR SELECTED BY ARCHITECT.

VRF INDOOR UNIT SCHEDULE

UNIT TAG	LOCATION	SERVICE	SERVED BY	ESP	CFM	O.A. (CFM)	NOMINAL COOLING CAPACITY (TON)	TOTAL COOLING CAPACITY (MBH)	HEATING DATA	ELECTRICAL DATA				WEIGHT (LBS)	MANUFACTURER MODEL NUMBER	UNITS TYPE
									MBH	MCA	MOPS	VOLT	PH			
AH-C-1	1ST FLOOR	LAUNDRY RM	ACCU-R-1	- -	777	--	3.0 TON	36.2	40.6	0.56	15	208	1	54.0	LG-ARNU363TNC4	CASSETTE
AH-1-1	1ST FLOOR	MAIN LOBBY	ACCU-R-1	0.4	1250	--	4.0 TON	48.1	51.2	5.2	15	208	1	192	LG ARNU483B8A4	DUCTED
AH-1-2	1ST FLOOR	PROGRAM OFFICES	ACCU-R-1	0.4	950	--	3.0 TON	36.2	40.6	3.5	15	208	1	112	LG ARNU363BRA4	DUCTED
AH-2-1	2ND FLOOR	COMMUNAL	ACCU-R-1	- -	--	--	--	--	--	--	--	--	--	--	--	--
AH-C-2	ROOF ELEVATOR M/C. RM.	ROOF ELEVATOR M/C. RM.	ACCU-R-1	--	485	--	1.5 TON	18	22	POWER FROM ACCU				31.0	LG-LSN181HSV3	WALL MOUNTED
AH-R-1	ROOF ELEVATOR M/C. RM.	ROOF ELEVATOR M/C. RM.	ACCU-R-1	--	485	--	1.5 TON	18	22	POWER FROM ACCU				31.0	LG-LSN181HSV3	WALL MOUNTED

NOTES:
1. PROVIDE FLEXIBLE DUCT CONNECTIONS TO DUCTED AHU'S.
2. PROVIDE HANGING VIBRATION ISOLATORS.
3. PROVIDE DRY CONTACTS FOR FOR INTERFACING O.A. FANS
4. PROVIDE CONDENSATE PUMPS WHERE PROPER PITCH CANNOT BE MAINTAINED.

VRF AIR COOLED CONDENSING UNIT SCHEDULE

UNIT TAG	LOCATION	SERVICE	CONDENSER AIR (CFM)	NOMINAL COOLING CAPACITY (TON)	COOLING DATA	HEATING DATA	ELECTRICAL DATA					WEIGHT	REFRIGERANT		MANUFACTURER MODEL NUMBER	EER/SEER /CODE REQ	COP/HSPF	REMARKS
					CAP/BTU	CAP/BTU	MOP	MCA	VOLT	PH	HZ		TYPE	LBS				
ACCU-R-1	ROOF	BASE BUILDING	9850	10	120,000	135,000	60	40.3	208	3	60	540	410A	--	LG-ARUN121BTE4	12.5 EER 21.8 IEER	3.5 COP	HEAT PUMP
ACCU-2-1	2ND FL ROOF	AH-C-2	2,119	2	22,000	27,000	35	23	208	1	60	125 LB	410A	4.85 LB	LG-LSU240HLV	21 SEER	11 HSPF	HEAT PUMP
ACCU-R-2	ROOF	AH-R-1	2,119	2	22,000	27,000	35	23	208	1	60	125 LB	410A	4.85 LB	LG-LSU240HLV	21 SEER	11 HSPF	HEAT PUMP

NOTES:
1. PROVIDE 1.5 INCH INSULATION ON ALL REFRIGERATION LINES.
2. ALL REFRIGERANT PIPE RUNS AND SIZES PER MANUFACTURER'S RECOMMENDATION.
3. CONTROL WIRING BETWEEN CONDENSING UNIT AND HEAT PUMP UNITS- BY HVAC CONTRACTOR.
4. MECH. CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING, INCLUDING CONNECTION TO A PC PROVIDED BY OWNER.
5. ACCU'S TO BE MOUNTED ON 18" RAISED STEEL RAILS AND 1" NEOPRENE ISOLATORS.
6. ALL CONDENSING UNIT SHALL BE INSTALLED WITH AIR DISCHARGE GUIDE AS PER MANUFACTURER RECOMMENDATIONS
8. FUSED DISCONNECT SWITCHES TO BE FURNISHED BY MECHANICAL CONTRACTOR AND INSTALLED BY ELECTRICAL CONTRACTOR. SEE ELECT. DWGS

ELECTRIC HEATERS SCHEDULE

NO.	CAPACITY, BTUH	CAPACITY, WATTS	VOLTS	PH	MANUFACTURER	MODEL	REMARKS	LOCATION
FFH-1	13,650	4000	208	1	REZNOR	EHA-4	SURFACE MOUNTED W/ BUILT-IN THERMOSTAT	STAIRS

ELECTRIC UNIT HEATERS SCHEDULE

NO.	CFM	HEATING CAPACITY, (KW)	SERVICE LOCATION	FAN MOTOR HP	VOLTS	PH	HZ	MANUFACTURER/ MODEL No.	REMARKS
EUH-1	350	5	COMMERCIAL TEMPORARY HEAT	1/100	208	3	60	REZNOR EGEB-5	PROVIDE BUILT-IN THERMOSTAT AND CEILING MOUNT SWIVEL BRACKET KIT FOR HORIZONTAL DISCHARGE

ENERGY RECOVERY VENTILATOR

UNIT TAG	LOCATION	MANUFACTURER MODEL	EXHAUST CFM	SUPPLY CFM	HEATING BTU/HR (SENSIBLE)	COOLING BTU/HR (TOTAL)	SUPPLY FAN		EXHAUST FAN		ELECTRICAL DATA				EFF (SUM/WIN)	WEIGHT	REMARKS
							ESP	HP	ESP	HP	VOLT	PH	MCA	MOP			
ERV-1	ROOF	HE1.5XRT	1075	1200	48,427	14,443	0.75	1	1.0	1	208	1	7.7	15	57/68	395 LBS	

PROVIDE:
1. PREFABRICATED 14" INSULATED ROOF CURB,
2. DISCONNECT AND TRANSFORMER PACKAGED.
3. ENTHALPIC HIGH EFFICIENCY.
4. EXHAUST MOTORIZED DAMPER.
5. SUPPLY MOTORIZED DAMPER.
6. DIRTY FILTER SENSOR.
7. WEATHERPROOF PAINT FOR EXTERIOR FINISH.
8. PROVIDE EC FOR ALL 208V 1 PH MOTORS AND PROVIDE VFD FOR ALL 208 V 3 PH MOTORS
9. CONTACT KLIMA NY, LLC AT 212-678-5100 FOR PRICING

FAN SCHEDULE

N0	SERVICE	LOCATION	CFM	S.P.	F.R.P.M.	MOTOR				MANUFACTURER AND MODEL	REMARKS	ROOF/WALL OPENING	WEIGHT
						H.P.	B.H.P.	PH.	VOLTS				
TX-1	TOILET EXHAUST	ROOF	840	0.75	1502	1/4	0.19	1	115	GREENHECK G-103-VG	- W/ PREFABRICATED CURB - NEMA 3R DISCONNECT SWITCH MOUNTED AND WIRED	--	46
TX-2	TOILET EXHAUST	ROOF	840	0.75	1502	1/4	0.19	1	115	GREENHECK G-103-VG	- W/ PREFABRICATED CURB - NEMA 3R DISCONNECT SWITCH MOUNTED AND WIRED		46
TX-3	TOILET EXHAUST	ROOF	690	0.75	1488	1/4	0.17	1	115	GREENHECK G-099-VG	- W/ PREFABRICATED CURB - NEMA 3R DISCONNECT SWITCH MOUNTED AND WIRED		46
TX-4/5	TOILET EXHAUST	ROOF	350	0.5	1538	1/10	0.06	1	115	GREENHECK G-085-VG	- W/ PREFABRICATED CURB - NEMA 3R DISCONNECT SWITCH MOUNTED AND WIRED		33
TX-6	TOILET EXHAUST	BULKHEAD ROOF	585	0.75	1645	1/4	0.17	1	115	GREENHECK G-098-VG	- W/ PREFABRICATED CURB - NEMA 3R DISCONNECT SWITCH MOUNTED AND WIRED		46
TX-7	TOILET EXHAUST	BULKHEAD ROOF	390	0.75	1639	1/6	0.12	1	115	GREENHECK G-095-VG	- W/ PREFABRICATED CURB - NEMA 3R DISCONNECT SWITCH MOUNTED AND WIRED		38
KX-1	KITCHEN EXHAUST	ROOF	420	0.75	1462	1/4	0.11	1	115	GREENHECK G-098-VG	- W/ PREFABRICATED CURB - NEMA 3R DISCONNECT SWITCH MOUNTED AND WIRED		46
KX-2	KITCHEN EXHAUST	ROOF	420	0.75	1462	1/4	0.11	1	115	GREENHECK G-098-VG	- W/ PREFABRICATED CURB - NEMA 3R DISCONNECT SWITCH MOUNTED AND WIRED		46
KX-3	KITCHEN EXHAUST	ROOF	420	0.75	1462	1/4	0.11	1	115	GREENHECK G-098-VG	- W/ PREFABRICATED CURB - NEMA 3R DISCONNECT SWITCH MOUNTED AND WIRED		46
KX-4/5	KITCHEN EXHAUST	ROOF	840	0.75	1502	1/4	0.19	1	115	GREENHECK G-103-VG	- W/ PREFABRICATED CURB - NEMA 3R DISCONNECT SWITCH MOUNTED AND WIRED		46
KX-6/7	KITCHEN EXHAUST	ROOF	540	0.75	1587	1/4	0.15	1	115	GREENHECK G-098-VG	- W/ PREFABRICATED CURB - NEMA 3R DISCONNECT SWITCH MOUNTED AND WIRED		46
TRE-1	TRASH ROOM EXHAUST	BULKHEAD ROOF	350	0.5	1615	1/10	0.07	1	115	GREENHECK G-085-VG	- W/ PREFABRICATED CURB - NEMA 3R DISCONNECT SWITCH MOUNTED AND WIRED		33
DX-1	DRYER EXHAUST	ROOF	660	1.0	VAR	1	-	3	208	ENERVEX BEF300	-MDVS300 DRYER EXHAUST FAN SYSTEM -CONTACT CHIMNEY DESIGN SOLUTIONS OF NEW YORK CITY @ 800-685-7077 -MODULATING EXHAUST CONTROL WITH VARIABLE FREQUENCY DRIVE.		126
SF-R-1	BOILER ROOM VENTILATION	BOILER ROOM	800	0.3	1550	1/8	0.27	1	115	GREENHECK SS1-12-432-D	- FAN AND LOUVER MUST BE EQUIPPED WITH CLASS 1 MOTORIZED DAMPER FOR AIR LEAKAGE.		30
PFSP-1 & 2	POST FIRE SMOKE PURGE	STAIR BULKHEAD	9,400	0.75	1770	5.0	3.26	3	208	GREENHECK AX-72-190-0422-A50	- W/ PREFABRICATED CURB - PROVIDE UL-HT-5 OPTION, CAPABLE OF HANDLING 500 °F FOR 4 HOURS. - CONNECT TO FIRE ALARM SYSTEM - MOTORIZED DAMPER - DISCONNECT SWITCH WITH REMOTE VFD. VFD SHALL BE 100% REVERSIBLE TYPE. FAN SHALL OPERATE THROUGH BUILDING FIRE ALARM PANEL.		

DIFFUSER AND REGISTER SCHEDULE
(ANEMOSTAT AS STANDARD)

SYMBOL	MANUFACTURER	MODEL	CFM RANGE	SERVICE	NK.SIZE	PANEL SIZE	ACCESSORIES	TYPE	REMARKS
CD	ANEMOSTAT	EPL-D	0-125	SUPPLY	6" DIA.	24x24	-	LAY-IN	SEE NOTES
CD	ANEMOSTAT	EPL-D	126-275	SUPPLY	8" DIA.	24x24	-	LAY-IN	SEE NOTES
CD	ANEMOSTAT	EPL-D	276-380	SUPPLY	10" DIA.	24x24	-	LAY-IN	SEE NOTES
CD	ANEMOSTAT	EPL-D	381-550	SUPPLY	12" DIA.	24x24	-	LAY-IN	SEE NOTES
TR	ANEMOSTAT	20	--	SUPPLY	--	--	-	SURFACE	SEE PLANS FOR CFM & SIZES
CG	ANEMOSTAT	SAC3LD	0-500	RETURN	23x11	24x12	-	LAY-IN	NON-DUCTED RETURN GRILLES, SEE NOTES
CG	ANEMOSTAT	SAC3LD	501-1000	RETURN	23x23	24x24	-	LAY-IN	NON-DUCTED RETURN GRILLES, SEE NOTES
CG	ANEMOSTAT	S30HD	0-250	RETURN	12x12	-	-	SURFACE	NON-DUCTED RETURN GRILLES, SEE NOTES

NOTES:
1) MECHANICAL CONTRACTOR TO COORDINATE BORDER TYPES WITH CLG. CONSTRUCTION.
2) FURNISH PLASTER FRAMES FOR SHEETROCK AREAS, ANEMOSTAT MODEL "TBF".
3) DIFFUSERS LOCATED IN GYP. BOARD SHALL BE FURNISHED WITH CABLE DAMPERS YOUNG REGULATOR MODEL #800AW.
4) ALL BALANCING TO BE PERFORMED THRU BRANCH DAMPERS.
5) ALL EPL-D DIFFUSERS FURNISHED WITH DIRECTIONAL ADJUSTABLE DEFLECTORS.
6) CFM SHALL BE INDICATED ON DRAWINGS

DIRECTIONAL SQUARE NECK DIFFUSER SCHEDULE
(NOT FOR LAY IN CEILING)

MARK NO.	NECK SIZE	CFM RANGE	ANEMOSTAT MODEL No
A	6X6	0-100	D
B	9X9	101-250	D
C	12X12	251-500	D
D	15X15	501-750	D
E	18X18	751-900	D

1. MECHANICAL CONTRACTOR TO COORDINATE BORDER TYPES WITH CLG. CONSTRUCTION. SEE ARCHITECTURAL REFLECTED CLG. DRAWINGS.
2. ANEMOSTAT MODEL DF FOR SURFACE MOUNTED AND GYB BOARD CEILINGS.
3. ANEMOSTAT MODEL DP/DPD FOR 24X24 LAY-IN CEILINGS.
4. DIFFUSERS LOCATED IN GYP. BOARD SHALL BE FURNISHED WITH CABLE DAMPERS YOUNG REGULATOR MODEL #800AW.

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224 WEST 29TH STREET
NEW YORK, NY 10001
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KEY PLAN

NO.	DESCRIPTION	DATE
x		xx.xx.2017
NO.	**DESIGN & CONSTRUCTION SUBMISSIONS**	**DATE**

NO.	DESCRIPTION	DATE
2.	**DOB SUBMISSION**	**04.06.18**
1.	**DD SUBMISSION**	**04.06.18**
NO.	**REGULATORY SUBMISSIONS**	**DATE**

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

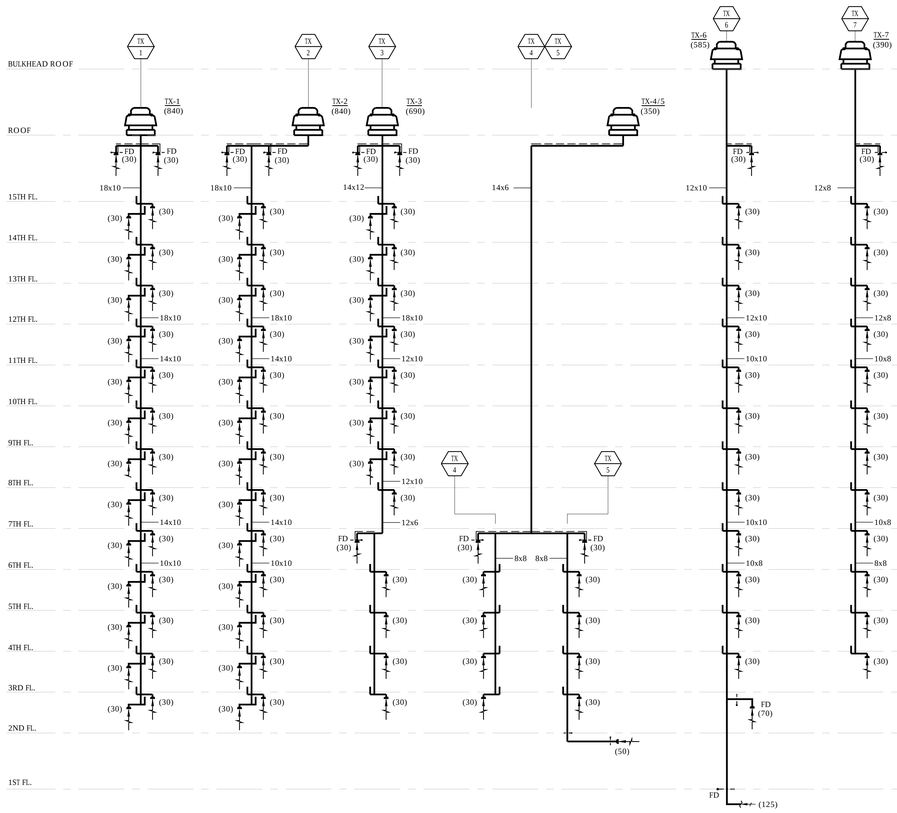
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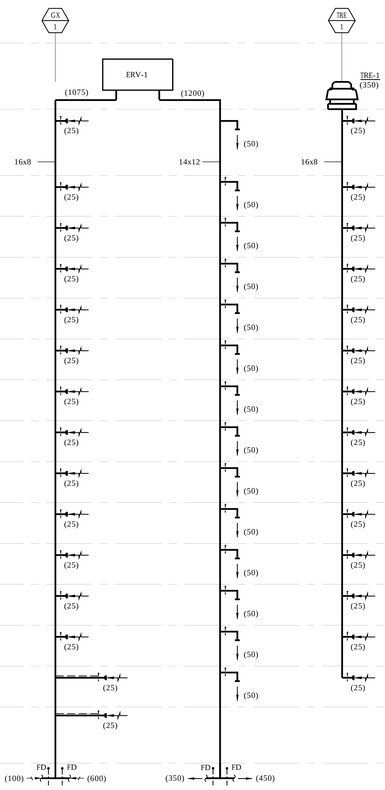
MECHANICAL SCHEDULES

SEAL & SIGNATURE

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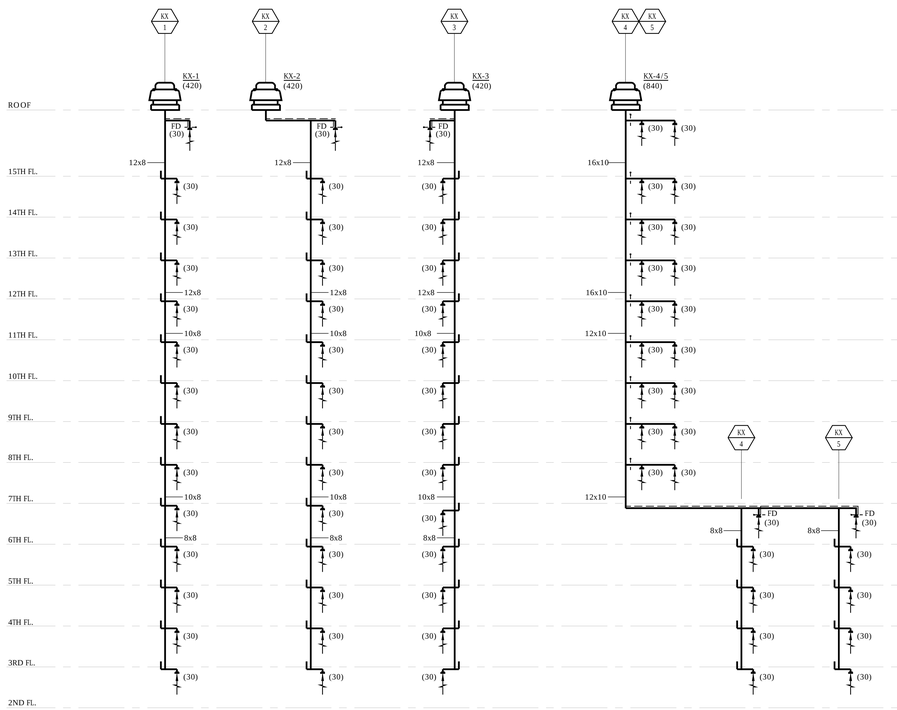
DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.F.
CHECKED BY:	S.R./D.C.
DWG NO:	M-200.00
NYC DOB NUMBER:	

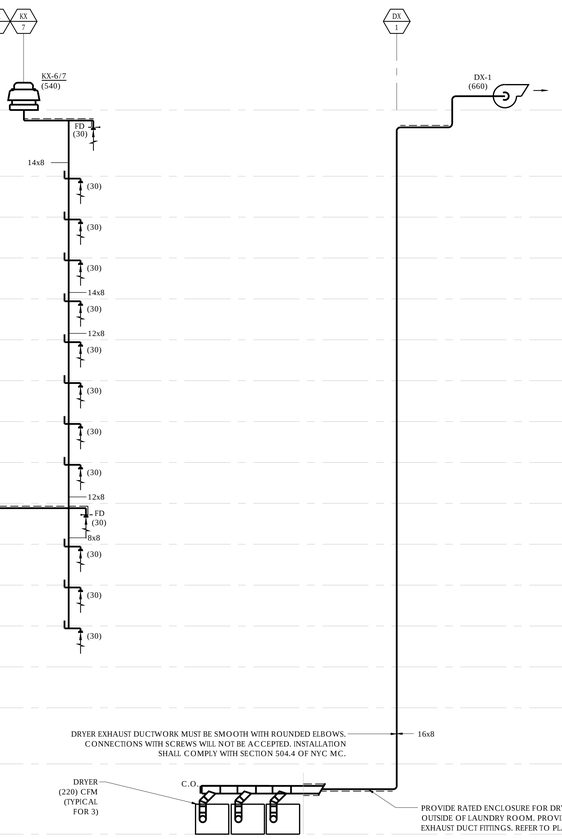




NOTES:

1. PROVIDE YOUNG REGULATOR CVR ASSEMBLY FOR ALL SUPPLY AND EXHAUST REGISTERS 50 CFM OR LESS. PROVIDE VOLUME DAMPERS IN ALL OTHER LOCATIONS. PROVIDE CVR DAMPER BOX ASSEMBLIES BY MFR., FIELD ASSEMBLED BOXES ARE NOT ACCEPTABLE. REFER TO DETAIL ON M-401.
2. BALANCE ALL CENTRAL EXHAUST FANS SUCH THAT, THE PRESSURE AT THE BOTTOM OF THE RISER WILL BE BETWEEN 0.2-0.3 IN OF W.C.
3. ALL DUCT OFFSETS SHALL BE IN 2 HR FIRE RATED ENCLOSURE BY G.C
4. REFER TO PLANS FOR TYPE OF AIR OUTLETS.
5. PROVIDE 1" A.L. 15' UPSTREAM OF ALL TX FANS.





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KEY PLAN

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x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

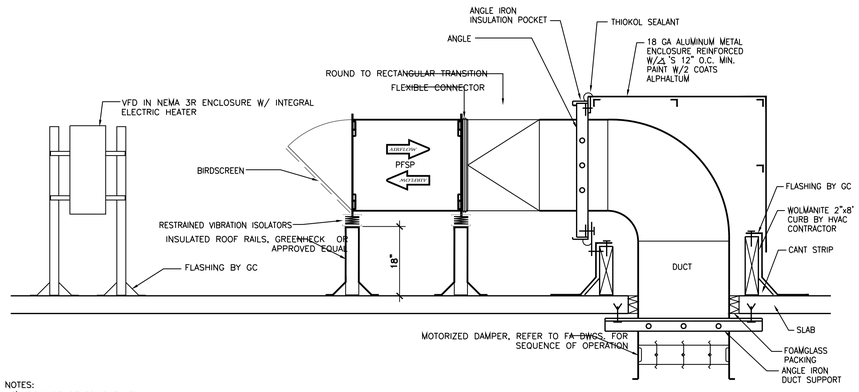
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MECHANICAL AIR RISER

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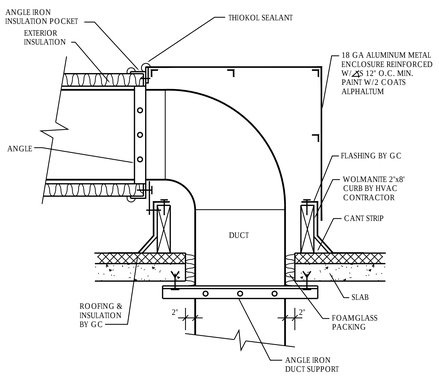
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PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.F.
CHECKED BY:	S.R./D.C.
DWG NO:	M-300.00
NYC DOB NUMBER:	



NOTES:
1) PROVIDE REVERSIBLE VFD
2) REFER TO FA DWGS FOR SEQUENCE OF OPERATION
3) ALL OUTDOOR DUCTWORK TO BE COVERED IN FLEX CLAD WEATHERPROOF ENCLOSURE

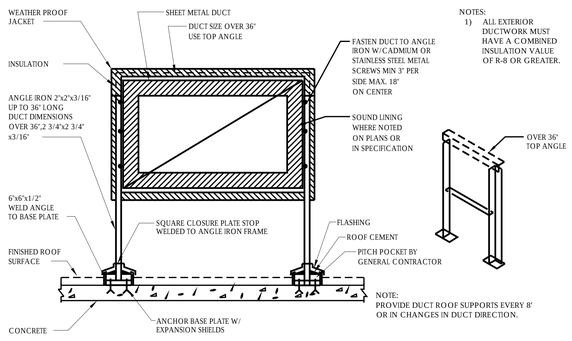
HORIZONTAL INSTALLATION OF POST FIRE SMOKE PURGE FAN ON BULKHEAD ROOF

NOT TO SCALE



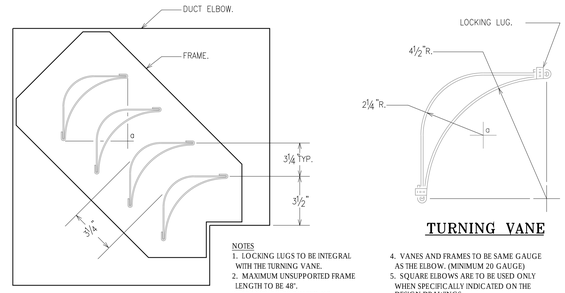
ROOF PENETRATION DETAIL

NO SCALE



NOTES:
1) ALL EXTERIOR DUCTWORK MUST HAVE A COMBINED INSULATION VALUE OF R-8 OR GREATER.

DETAIL OF SUPPORT AND INSULATION FOR ROOF MOUNTED DUCTWORK



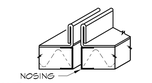
VANED ELBOW

NOTES
1. LOCKING LUGS TO BE INTEGRAL WITH THE TURNING VANE.
2. MAXIMUM UNSUPPORTED FRAME LENGTH TO BE 48".
3. FRAMES TO BE BOLTED OR RIVETED TO THE ELBOW.
4. VANES AND FRAMES TO BE SAME GAUGE AS THE ELBOW, (MINIMUM 20 GAUGE)
5. SQUARE ELBOWS ARE TO BE USED ONLY WHEN SPECIFICALLY INDICATED ON THE DESIGN DRAWINGS.

TURNING VANE

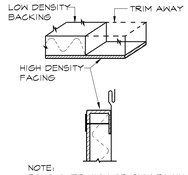
DOUBLE THICKNESS TURNING VANES FOR MITERED ELBOWS

NOT TO SCALE



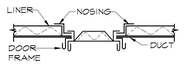
NOTE:
ENTERING, BUTTING & TRAILING EDGES OF LINER AT TRANSVERSE JOINTS TO BE COVERED BY NOSING

TRANSVERSE JOINT DETAIL

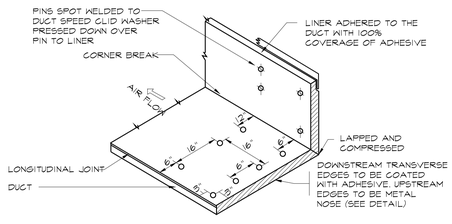


NOTE:
FOLD OVER HIGH DENSITY FACING ON ALL LONGITUDINAL JOINTS & SECURE WITH MECH. FASTENERS

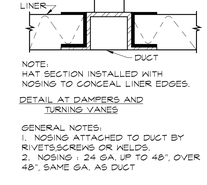
LONGITUDINAL JOINT DETAIL



ACCESS DOOR NOSING DETAIL



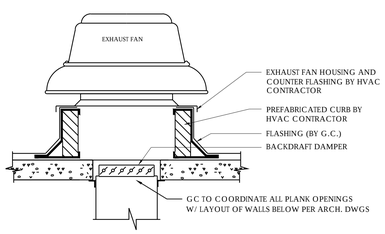
ACOUSTICAL DUCT LINER DETAIL



NOTE:
HAT SECTION INSTALLED WITH NOSING TO CONCEAL LINER EDGES.

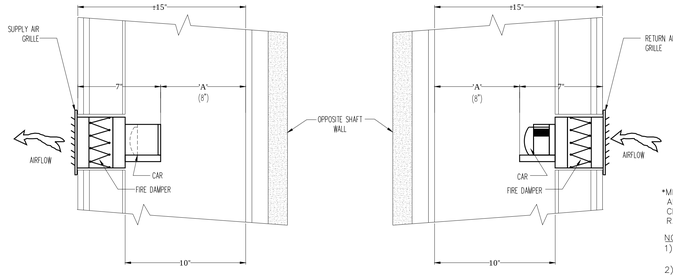
DETAIL AT DAMPERS AND TURNING VANES

GENERAL NOTES:
1. NOSING ATTACHED TO DUCT BY RIVETS,SCREWS OR WELDS.
2. NOSING : 24 GA. UP TO 48", OVER 48", SAME GA. AS DUCT



ROOF EXHAUST FAN CURB

NOT TO SCALE



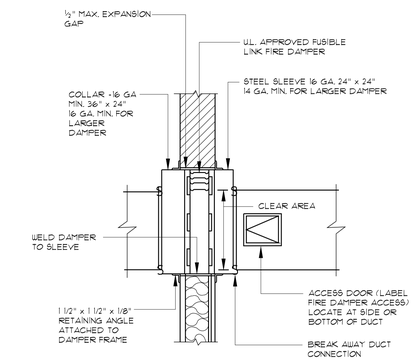
CAR DIA.	MAX. AIR FLOW CFM*	MINIMUM "A" DIMENSION CER-FE-II	CER-FS-II
4"	50	1.0"	1.0"
5"	95	1.0"	1.0"
6"	150	1.5"	1.5"
8"	235	2.0"	2.0"
10"	380	2.5"	2.5"

*MINIMUM CLEARANCE ASSUMES MAXIMUM AVAILABLE AIRFLOW FOR EACH CAR DIAMETER. CLEARANCES MAY BE REDUCED AT LOWER AIRFLOW RATES

NOTES:-
1) MINIMUM CLEARANCE "A" DIMENSION. MINUMUM DUCT SIZE IS 8"X8"
2) ALDES, MODEL CER-FEA-2 WITH THIN LINE DYNAMIC FIRE DAMPER AND GRILLE FOE EXHAUST.
3) ALDES, MODEL CSR-FSA-2 WITH THIN LINE DYNAMIC FIRE DAMPER FOR SUPPLY.
4) ASSEMBLY TO BE UL 2043 LISTED, TESTED AND MANUFACTURED BY FACTORY AS A COMPLETE ASSEMBLY.

CONSTANT AIRFLOW REGULATOR

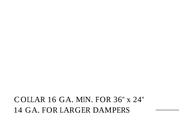
NOT TO SCALE



NOTES: 1. TYPE "B" OR "C" MOUNTING SHALL BE USED FOR ALL DAMPERS. TYPE "A" MOUNTING IS NOT PERMITTED.
2. DYNAMIC TYPE DAMPER SHALL BE PROVIDED FOR ALL SYSTEMS RUNNING DURING SMOKE CONDITION.
3. INSTALLATION MUST BE AS PER DAMPER MANUFACTURERS RECOMMENDATION.
4. DAMPER MANUFACTURER: ARLAN OR APPROVED EQUAL.

B.S.A. NO. 100-65 SM

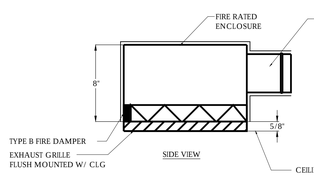
FIRE DAMPER DETAIL



NOTES: 1. TYPE "B" OR "C" MOUNTING SHALL BE USED FOR ALL DAMPERS. TYPE "A" MOUNTING IS NOT PERMITTED.
2. DYNAMIC TYPE DAMPER SHALL BE PROVIDED FOR ALL SYSTEMS RUNNING DURING SMOKE CONDITION.
3. INSTALLATION MUST BE AS PER DAMPER MANUFACTURERS RECOMMENDATION.
4. DAMPER MANUFACTURER: ARLAN OR APPROVED EQUAL.

HORIZONTAL FIRE DAMPER DETAIL

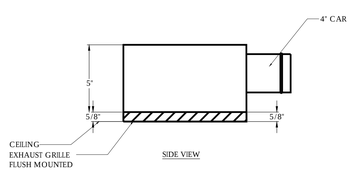
NOT TO SCALE



NOTES:
1) ALDES, MODEL CERB-CFS-2 W/ THIN LINE DYNAMIC FIRE DAMPER AND GRILLE.
2) ASSEMBLY TO BE UL LISTED, UL2043. TESTED AND MANUFACTURED BY FACTORY AS A COMPLETE ASSEMBLY.

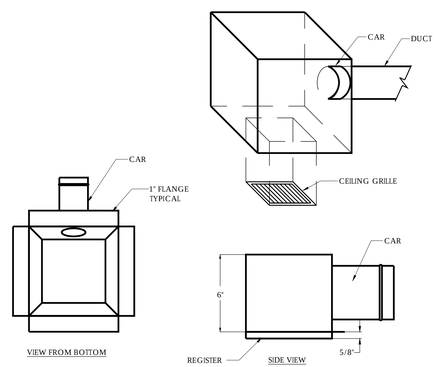
CEILING GRILLE WITH CAR ASSEMBLY DETAIL (WITH FIRE DAMPER)

NOT TO SCALE



CEILING GRILLE WITH CAR ASSEMBLY DETAIL

NOT TO SCALE



NOTE: PLENUM BOX AND CAR DAMPER SHALL BE FROM ONE MANUFACTURER, FEILD ASSEMBLY OF BOX IS NOT ACCEPTABLE.

CEILING GRILLE WITH CAR ASSEMBLY DETAIL

NOT TO SCALE

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ARCHITECT
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224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

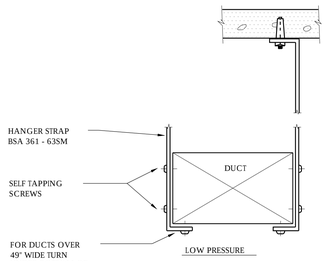
472 - 474 WILLIS AVE. BRONX, NY

MECHANICAL DETAIL SHEET

SEAL & SIGNATURE

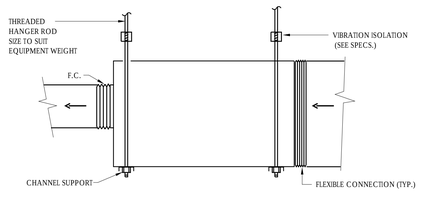
STATE OF NEW YORK · MATTHEW M. WATRO · LICENSED PROFESSIONAL ENGINEER · 083161

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.F.
CHECKED BY:	S.R./D.C.
DWG NO:	M-400.00
NYC DOB NUMBER:	



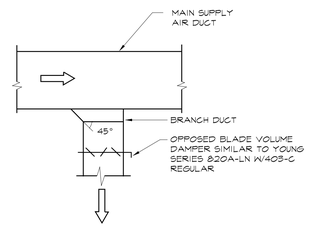
METHOD OF HANGING DUCTWORK

NOTE:
AT ALL DUCT LOCATIONS INCLUDING OFFSETS G.C. SHALL HOLD DUCT AS TIGHT AS POSSIBLE TO THE UNDERSIDE OF CONCRETE PLANK TO ENSURE MAX CLG. HT.
DISTANCE BETWEEN DUCTS HANGERS SHALL BE IN ACCORDANCE WITH RS-13-1 OF NYC BLDG. CODE

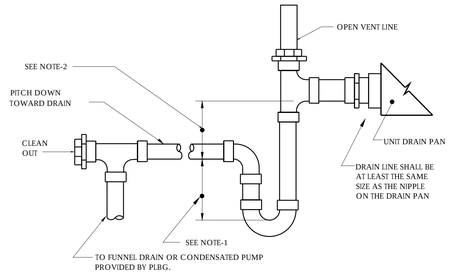


HANGING DETAIL H.V.A.C. EQUIPMENT

NOT TO SCALE



SUPPLY AIR DUCTWORK BRANCH DUCT CONNECTION

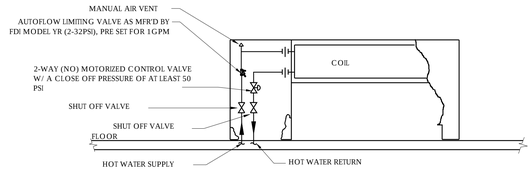


NOTES:

1. ON POSITIVE PRESSURE SYSTEM (E.G. DUCT COILS, BLOW-THRU UNITS, ETS.) DEPTH OF SEAL SHALL BE A MINIMUM OF 1.5 TIMES SYSTEM PRESSURE IN THE DRAIN PAN.
2. ON NEGATIVE PRESSURE SYSTEMS (E.G. DRW-THRU UNITS) DEPTH OF SEAL SHALL BE MINIMUM OF 1.5 TIMES SYSTEM PRESSURE IN THE DRAIN PAN.

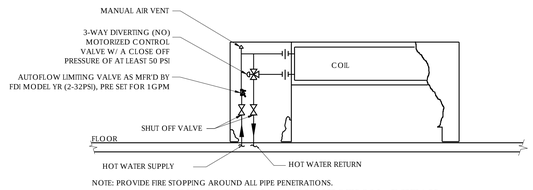
TYPICAL CONDENSATE DRAIN TRAP

NOT TO SCALE



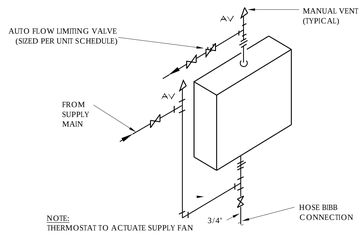
NOTE: PROVIDE FIRE STOPPING AROUND ALL PIPE PENETRATIONS.

PTAC PIPING CONNECTION DETAIL (2 WAY VALVE)



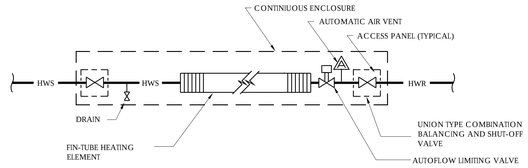
NOTE: PROVIDE FIRE STOPPING AROUND ALL PIPE PENETRATIONS.

PTAC PIPING CONNECTION DETAIL (3 WAY VALVE)



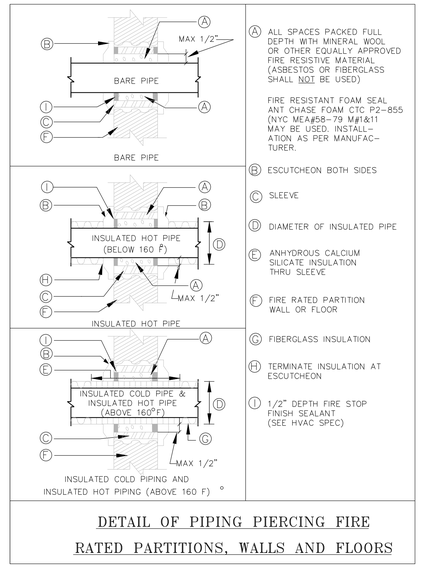
CABINET AND UNIT HEATER HOT WATER PIPING

NOT TO SCALE



ONE-ROW HOT WATER FIN-TUBE RADIATOR PIPING

NOT TO SCALE



A ALL SPACES PACKED FULL DEPTH WITH MINERAL WOOL OR OTHER EQUALLY APPROVED FIRE RESISTIVE MATERIAL (ASBESTOS OR FIBERGLASS SHALL NOT BE USED)

FIRE RESISTANT FOAM SEAL ANT CHASE FOAM CTC P2-855 (NYC MEA#58-79 M#1&11 MAY BE USED. INSTALL-ATION AS PER MANUFAC-TURER.

B ESCUTCHEON BOTH SIDES

C SLEEVE

D DIAMETER OF INSULATED PIPE

E ANHYDROUS CALCIUM SILICATE INSULATION THRU SLEEVE

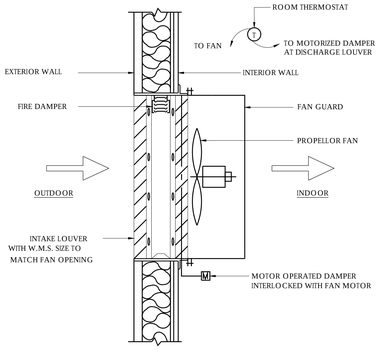
F FIRE RATED PARTITION WALL OR FLOOR

G FIBERGLASS INSULATION

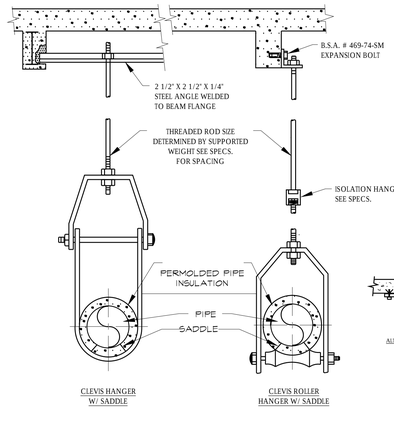
H TERMINATE INSULATION AT ESCUTCHEON

I 1/2" DEPTH FIRE STOP FINISH SEALANT (SEE HVAC SPEC)

DETAIL OF PIPING PIERCING FIRE RATED PARTITIONS, WALLS AND FLOORS

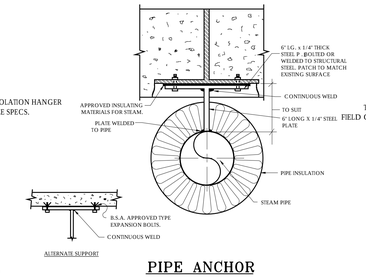


THRU THE WALL SUPPLY PROPELLER FAN DETAIL



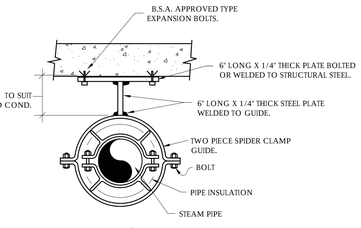
PIPE HANGING DETAIL

NOT TO SCALE



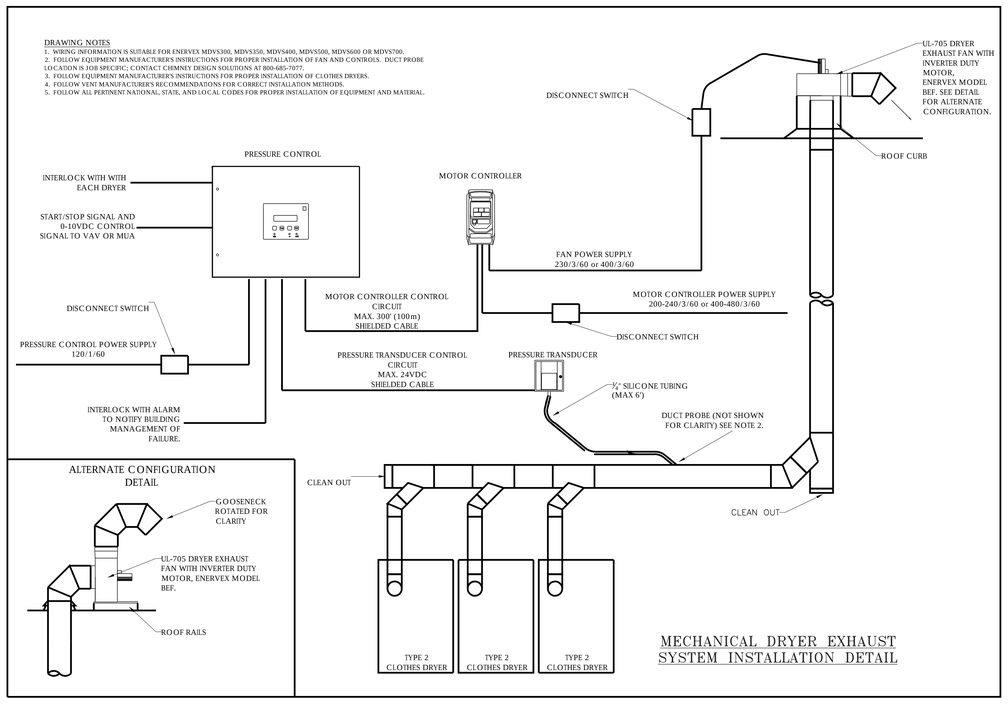
PIPE ANCHOR

NOT TO SCALE



PIPE GUIDE

NOT TO SCALE



MECHANICAL DRYER EXHAUST SYSTEM INSTALLATION DETAIL

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ARCHITECT
think! architecture and design pllc
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BROOKLYN, NY 11201
P 646.688.5898

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224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

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1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

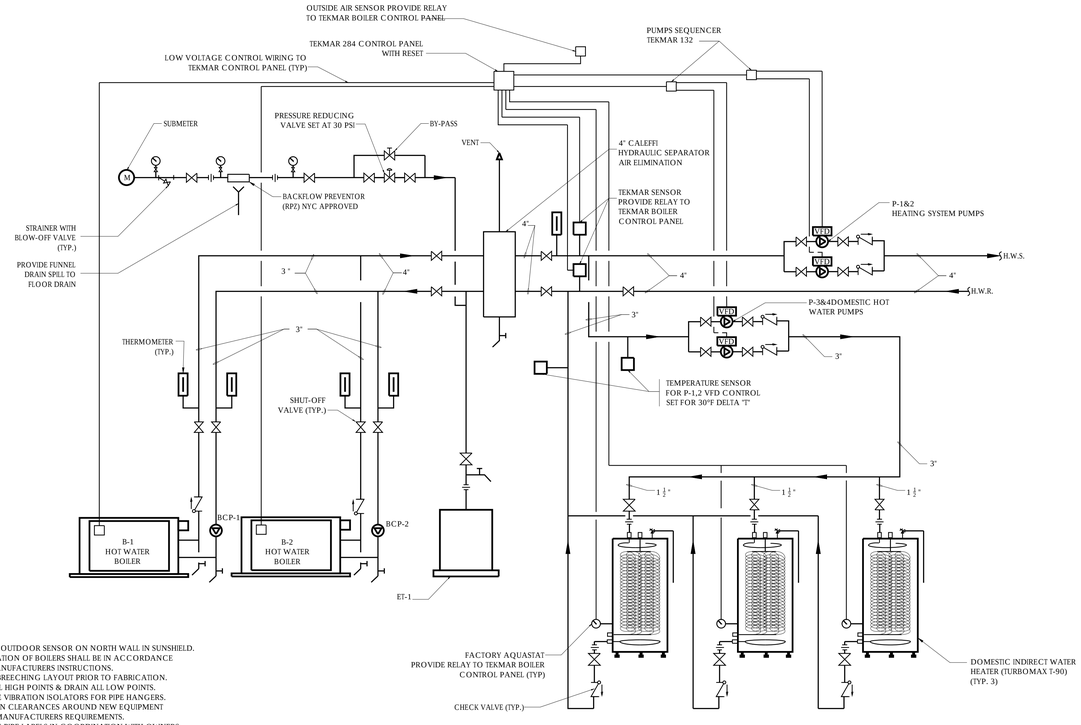
472 - 474 WILLIS AVE. BRONX, NY

MECHANICAL DETAILS

SEAL & SIGNATURE

STATE OF NEW YORK
JEFFREY M. RATNER
083161
LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.F.
CHECKED BY:	S.R./D.C.
DWG NO:	M-401.00
NYC DOB NUMBER:	

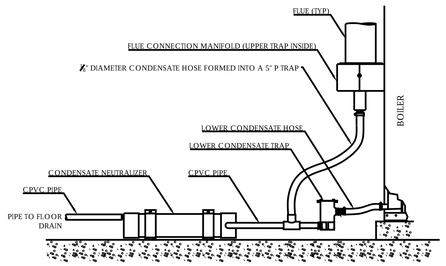


NOTES:

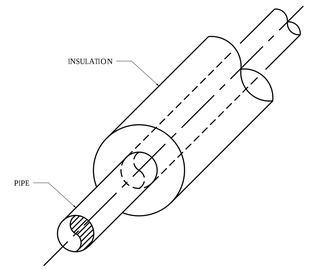
1) LOCATE OUTDOOR SENSOR ON NORTH WALL IN SUNSHIELD.
2) INSTALLATION OF BOILERS SHALL BE IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
3) SUBMIT BREECHING LAYOUT PRIOR TO FABRICATION.
4) VENT ALL HIGH POINTS & DRAIN ALL LOW POINTS.
5) PROVIDE VIBRATION ISOLATORS FOR PIPE HANGERS.
6) MAINTAIN CLEARANCES AROUND NEW EQUIPMENT AS PER MANUFACTURERS REQUIREMENTS.
7) PROVIDE PIPE LABELS IN COORDINATION WITH OWNERS REPRESENTATIVE.

COMBINATION HOT WATER BOILER/DOMESTIC WATER HEATER FLOW DIAGRAM

NOT TO SCALE



CONDENSATE CONNECTIONS FOR FLUE & BOILER

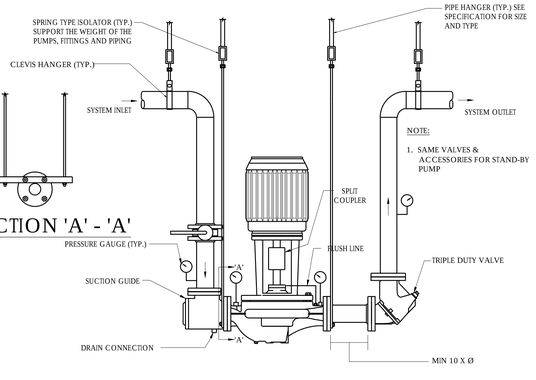


PIPING INSULATION DETAIL:

PIPING INSULATION SCHEDULE

INSULATION THICKNESS	HOT WATER PIPE NOMINAL DIAMETER RANGE
1.5"	LESS THAN 1 ½"
2"	1 ½" OR GREATER

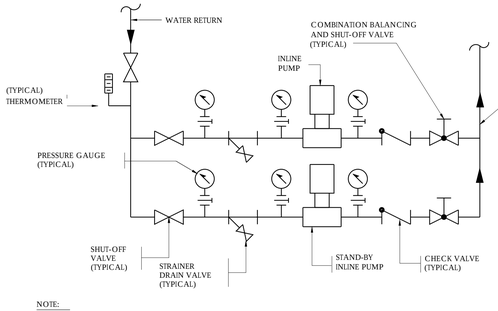
NOTE:
1) IN COMPLIANCE TO THE 2016 NEW YORK CITY ENERGY CONSERVATION CONSTRUCTION CODE.
2) BASED ON INSULATION HAVING A CONDUCTIVITY (K) NO EXCEEDING 0.27 BTU PER INCH/H•FT °F.



SECTION 'A' - 'A'

VERTICAL IN-LINE PUMP DETAIL CEILING MOUNTED

NOT TO SCALE

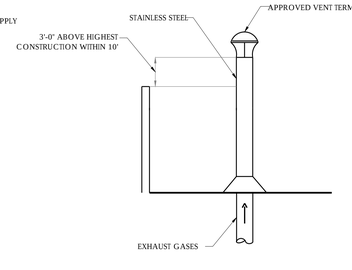


NOTE:

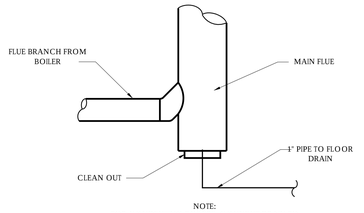
1. PUMPS AND PIPING SHALL BE SUPPORTED FROM THE ROOF. SUPPORT SHALL BE PROVIDED BY HVAC CONTRACTOR.

TYPICAL CONNECTIONS TO IN-LINE WATER PUMPS

NOT TO SCALE



BOILER COMBUSTION EXHAUST ROOF PENETRATION



NOTE:
FOR CONDENSING BOILERS, CONNECT DRAIN TO NUETRALIZER KIT BEFORE DISCHARGING TO FLOOR DRAIN

BOILER FLUE DRAIN CONNECTION DETAIL

NOT TO SCALE

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DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

MECHANICAL DETAILS

SEAL & SIGNATURE

STATE OF NEW YORK 31ST FROM W. TAYLOR 29 LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.F.
CHECKED BY:	S.R./D.C.
DWG NO:	M-402.00
NYC DOB NUMBER:	

1730 **Betances Family Apartments**

Location: **Willis Avenue** BRONX - POST 1964

Tax Block	2291
Tax Lot	1
Zoning Map No.	6A
Zoning District	R7

Storm and Sewage Flow Calculations

1 Actual Storm Drainage (using Q =AiC)

Area of site = 9,850.00 sq. ft. 0.226 acres

a. Cont. Flow Roof Area
Total CF roof area = sq. ft.
0 / 43560 x 5.95 x 0.95 = 0.000 cfs

b. Green Roof Area
Total Green Rf. area = sq. ft.
0 / 43560 x 5.95 x 0.70 = 0.000 cfs

c. Paved Area
Total paved area = sq. ft.
0 / 43560 x 5.95 x 0.85 = 0.000 cfs

d. Std Roof Drains
Total Std Roof area = 9,850.00 sq. ft.
9,850 / 43560 x 5.95 x 0.95= 1.278 cfs

e. Landscape Areas
Total Grassed area = sq. ft.
0 / 43560 x 5.95 x 0.20 = 0.000 cfs

f. Porous Asphalt and Permeable Pavers
Total Asphalt area = sq. ft.
0 / 43560 x 5.95 x 0.70 = 0.000 cfs

e. Total Developed storm water flow = 1.278 cfs

2 Sanitary drainage Calculation using population density Waste Flow

a. Existing 18" Combined Sewer in WILLIS AVENUE

230 persons/acre x 0.226 acres x 150 gal/person/day x 4 = 0.048 cfs
7.48 x 86,400

Summary

Storm flow developed	1.278 cfs	Storm Flow (Qall) =	0.250 cfs
		Sanitary	0.048 cfs
			0.298 cfs total.

PROJECT: **Betances Family Apartments** DATE: 02/28/18

LOCATION: **Willis Avenue**

BUILDING AND SITE CONDITIONS — Qall ALLOWABLE STORM FLOW :

Tributary area to the 18" Combined Sewer in WILLIS AVENUE — BRONX - POST 1964

Tributary Area =	9,850.00	sq. ft.		0.226	ACRES
AREA =	9,850.00	sq. ft.		0.226	ACRES
CONT FLOW ROOF	0.00	sq. ft.	0.95 =	0	
PAVED =	0.00	sq. ft.	0.85 =	0	
POROUS ASPHALT=	0.00	sq. ft.	0.70 =	0	
GREEN ROOF =	0.00	sq. ft.	0.70 =	0	
GRASS=	0.00	sq. ft.	0.20 =	0	
STD ROOF DRAINS	9,850.00	sq. ft.	0.95 =	9,357.50	
TOTAL =	9,850.00	sq. ft.			

Qall based on Tributary Area = 0.679 cfs

Greater of 0.25 cfs or 10% of the Qall = 0.250 cfs Qall =

Qall = A±/14,500

C_{WRT} = WEIGHTED RUNOFF = $C_{WR} = (\text{Roof} + \text{Paved} + \text{Asph} + \text{GreenRoof} + \text{Grass} + \text{Std.RD}) / \text{Area}$

$C_{WR} = (0.00 + 0.00 + 0.00 + 0.00 + 0.00 + 9,357.50) / 9,850.00 = 0.950$

DEVELOPED FLOW = $Q_{DEV} = C_{WR} \times A_T / 7,320$

where: Q_{DEV} = the developed flow rate in cfs
C_{WR} = the weighted runoff coefficient for the site area
A_T = the site area in ft²

$Q_{DEV} = (\text{Cont.Roof} + \text{Paved} + \text{Asph} + \text{GreenRoof} + \text{Grass} + \text{Std.Roof}) / 7,320.00 = 1.278$

(0.00 + 0.00 + 0.00 + 0.00 + 0.00 + 9,357.50)

Outflow will be controlled by an orifice tube and will vary with the depth of storage.

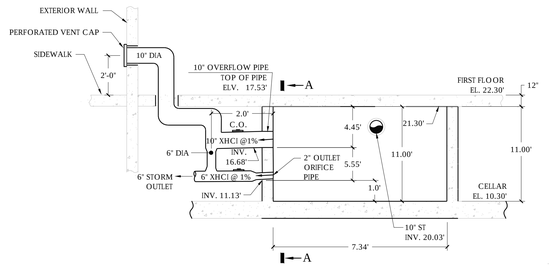
$t_V = 0.27[(C_{WR} \times A_T / Q_{DEV})^{0.5} - 15$

$t_V = 0.27[\ 0.950 \times 9,850.00 \ / \ 0.250\ ]^{0.5} - 15 = 37.24$ min.

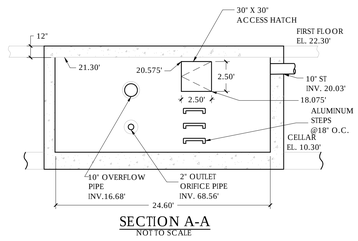
$V_V = [(0.19(C_{WR} \times A_T / t_V + 15) - 40)(Q_{DEV})]\ t_V$

$V_V = [(0.19)(\ 0.950 \times 9,850.00\ )(\ 37.24 + 15) - 40)(\ 0.25\ )]\ 37.24 = 895\ ft^3$

Flush orifice SDF = 1.400(QDRR)2.6(d0)4 + d0 .24 = 5.55 ft — 2 Orifice Tube dia, in.

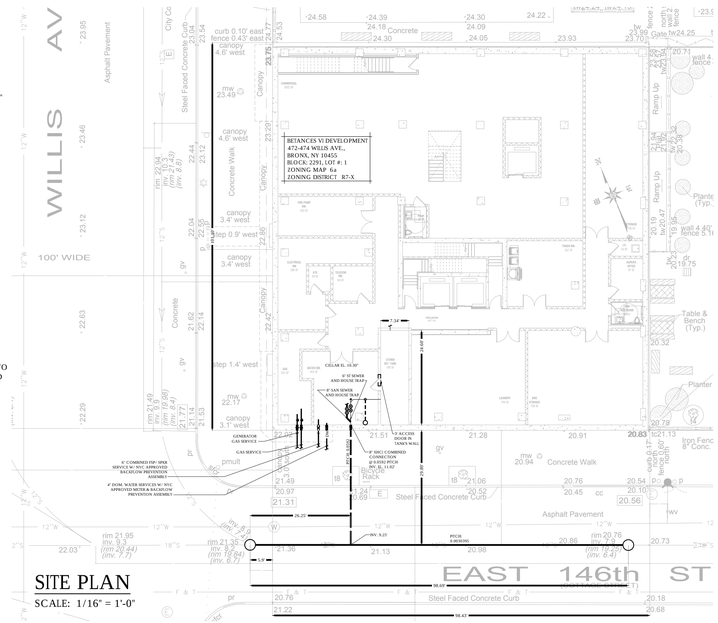


DETAIL OF STORM WATER DETENTION TANK
NOT TO SCALE



SECTION A-A
NOT TO SCALE

NOTE:
1. POUR TANK CHAMBERS IN PLACE
2. REQUIRED TANK VOLUME = 895 CU. FT
ACTUAL STORAGE TANK VOLUME = 995.5 CU. FT
3. STORM FLOW OF 1.278 CFS WILL BE RESTRICTED TO 0.298 CFS BY MEANS OF DETENTION FACILITIES AND CONTROLLED FLOW DEVICES.
4. NO SUBSTITUTE MATERIAL IS AVAILABLE.



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

SITE PLAN
SCALE: 3/32" = 1'-0"

DEP #

DOB #

SYMBOL LIST

S	STREET SEWER LINE MANHOLE
S	SANITARY SEWER
ST	STORM SEWER
	NEW CONNECTION TO EXISTING STREET SEWER
CI	CAST IRON
℄	CENTER LINE
EXIST.	EXISTING
INV. EL.	INVERT ELEVATION -NAVD 88
(INV. EL.)	INVERT ELEVATION -BROOKLYN HIGHWAY DATUM
MH	MANHOLE
T.O.S.	TOP OF SLAB
A.D.	AREA DRAIN
R.D.	ROOF DRAIN
O.D.	OVERFLOW DRAIN

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NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

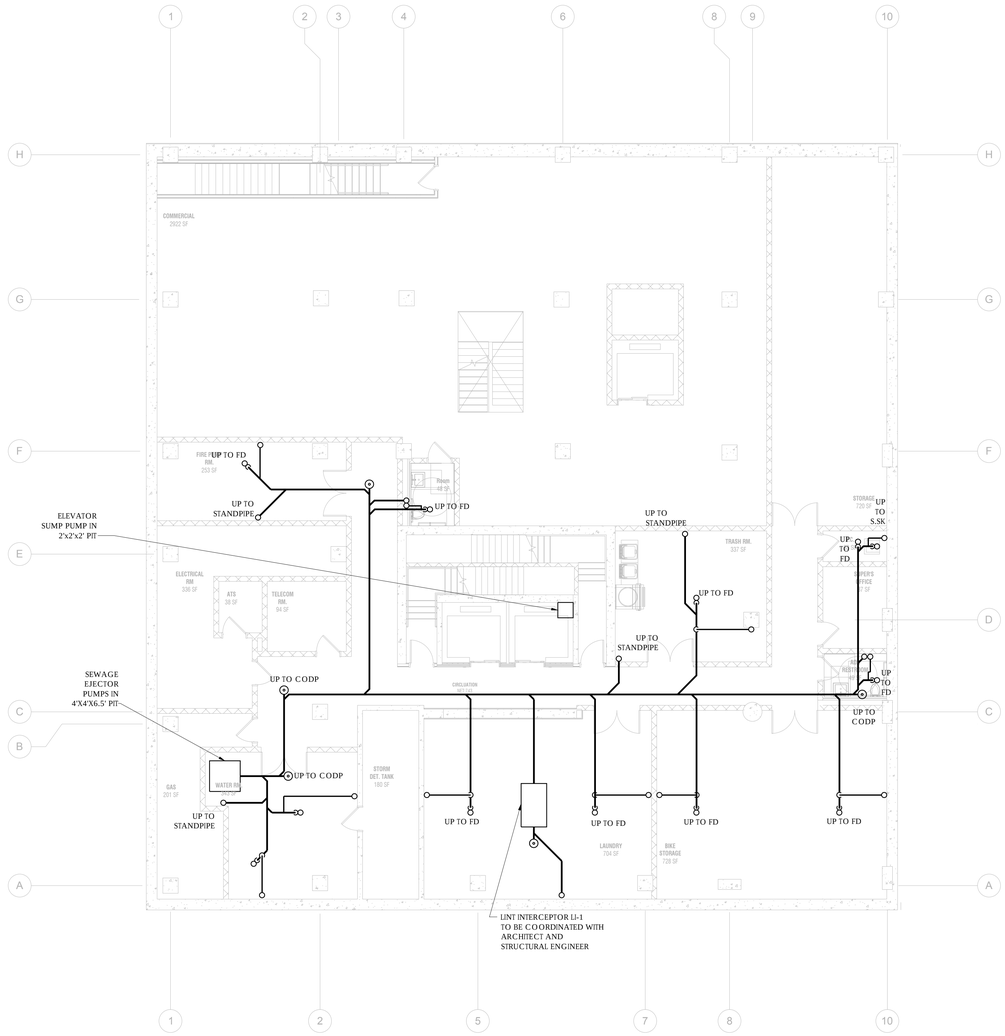
472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
SITE PLAN

SEAL & SIGNATURE

STATE OF NEW YORK — MATTHEW W. WATSON — LICENSED PROFESSIONAL ENGINEER — 031181

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-001.00
NYC DOB NUMBER:	



UNDERGROUND PLAN

SCALE: 1/8" = 1'-0"

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NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
UNDERGROUND PLAN

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WATKINS
LICENSED PROFESSIONAL ENGINEER
083161

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-099.00
NYC DOB NUMBER:	

PLUMBING PIPING CONNECTIONS:

				MAX GPM (PER NYC PL COODE)
1.	WC.:	4" S.	2" V.,	½" CW. 1.28 GPF 1.28 GPF (Public)
2.	LAV.:	½" W & V.,	½" H&CW.	1.00 GPM 1.50 GPM (Public)
3.	BT.:	½" W & V.,	½" H&CW.	1.75 GPM
4.	K.SK.:	2" W., ½" V.,	½" H&CW.	1.50 GPM
5.	S.SK.:	3" W. ½" V.,	½" H&CW.	

FOR HOT & COLD WATER PIPE SIZES REFER TO WATER RISER DIAGRAM.

FOR SANITARY AND VENT PIPE SIZES REFER TO SANITARY RISER DIAGRAM.

FOR STORM PIPE SIZES REFER TO STORM RISER DIAGRAM.

TOILETS MUST BE WATERSENSE APPROVED.

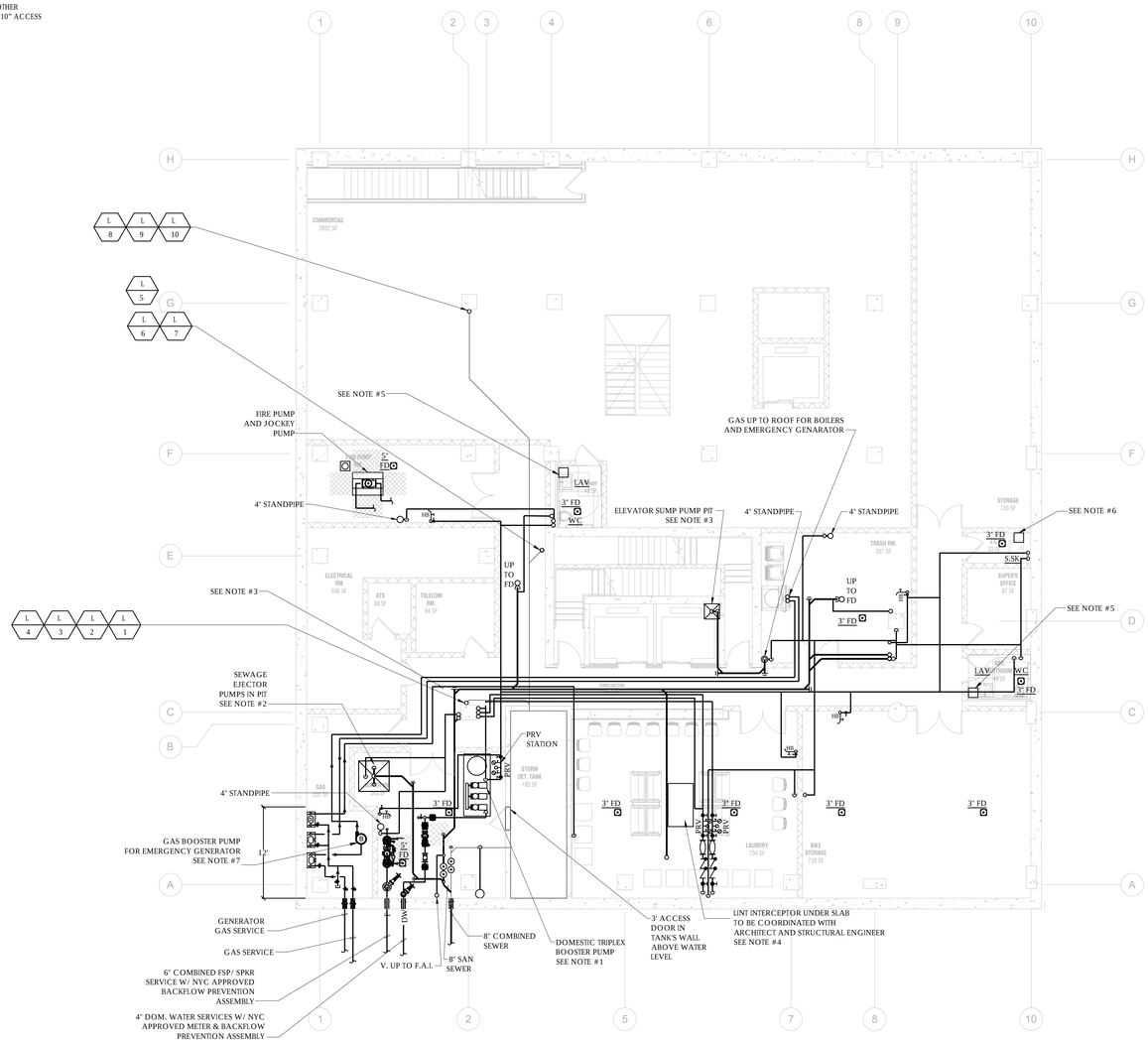
PROVIDE EACH FLOOR DRAIN WITH A ' TRAP GUARD ' BY ProVent SYSTEMS.

PROVIDE SHUTOFF VALVES ON THE WATER SUPPLY TO EACH FIXTURE, WATER HEATERS, APPLIANCES OR MECHANICAL EQUIPMENT AND AS REQUIRED BUILDING CODES.

PROVIDE ACCESS IN WALLS AND CEILINGS FOR VALVES OR OTHER APPURTENANCES, WHERE NEEDED. USE A MINIMUM OF 10" X 10" ACCESS PANELS COORDINATE LOCATIONS WITH ARCHITECT.

NOTES:

1. TRIPLEX DOMESTIC WATER BOOSTER PUMP W/ VFD DRIVES AND CONTROLLER. SEE SCHEDULE ON DRAWING P-300.
2. DUPLEX SEWER EJECTOR IN 4'x4'x6.5' CONCRETE PIT. SEE SCHEDULE ON DRAWING P-300 AND DETAILS ON DRAWING P-301.
3. ELEVATOR SUMP PUMP IN 2'x2'x2' CONCRETE PIT. SEE SCHEDULE ON DRAWING P-300 AND DETAILS ON DRAWING P-301.
4. LINT INTERCEPTOR. SEE DETAILS ON ON DRAWING P-301.
5. PROVIDE ELECTRIC HOT WATER HEATER UNDER LAV EEMAX MODEL EMT4 1.4KW, 120V W/ POWERS T/P LFE480 TEMPERING VALVE.
6. PROVIDE ELECTRIC HOT WATER HEATER UNDER LAV EEMAX MODEL EMT6 1.4KW, 120V W/ POWERS T/P LFE480 TEMPERING VALVE.
7. GAS BOOSTER PUMP. SEE SCHEDULE AND DETAILS ON GAS RISER DIAGRAM DRAWING. P-204.
8. ALL GAS PIPING IN PUBLIC CORRIDORS TO BE WELDED AND TESTED AND PROVEN TIGHT AT 10 PSIG FOR A MINIMUM OF 30 MINUTES.
9. ALL TRAPS IN NOT HEATED SPACES HAVE TO BE HEAT TRACED.
10. ALL STORM AND SANITARY PIPING IN NON-HEATED SPACES HAVE TO BE INSULATED.



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

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224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
CELLAR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW W. WATSON · LICENSED PROFESSIONAL ENGINEER · 093161

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-100.00
NYC DOB NUMBER:	

PLUMBING PIPING CONNECTIONS:

				MAX GPM (PER NYC PL COODE)
1.	WC.:	4" S. 2" V.,	¾" CW.	1.28 GPF 1.28 GPF (Public)
2.	LAV.:	½" W & V.,	½" H&CW.	1.00 GPM 1.50 GPM (Public)
3.	HT.:	½" W & V.,	½" H&CW.	1.75 GPM
4.	K.SK.:	2" W., ½" V.,	½" H&CW.	1.50 GPM
5.	S.SK.:	3" W. ½" V.,	½" H&CW.	

FOR HOT & COLD WATER PIPE SIZES REFER TO WATER RISER DIAGRAM.

FOR SANITARY AND VENT PIPE SIZES REFER TO SANITARY RISER DIAGRAM.

FOR STORM PIPE SIZES REFER TO STORM RISER DIAGRAM.

TOILETS MUST BE WATERSENSE APPROVED.

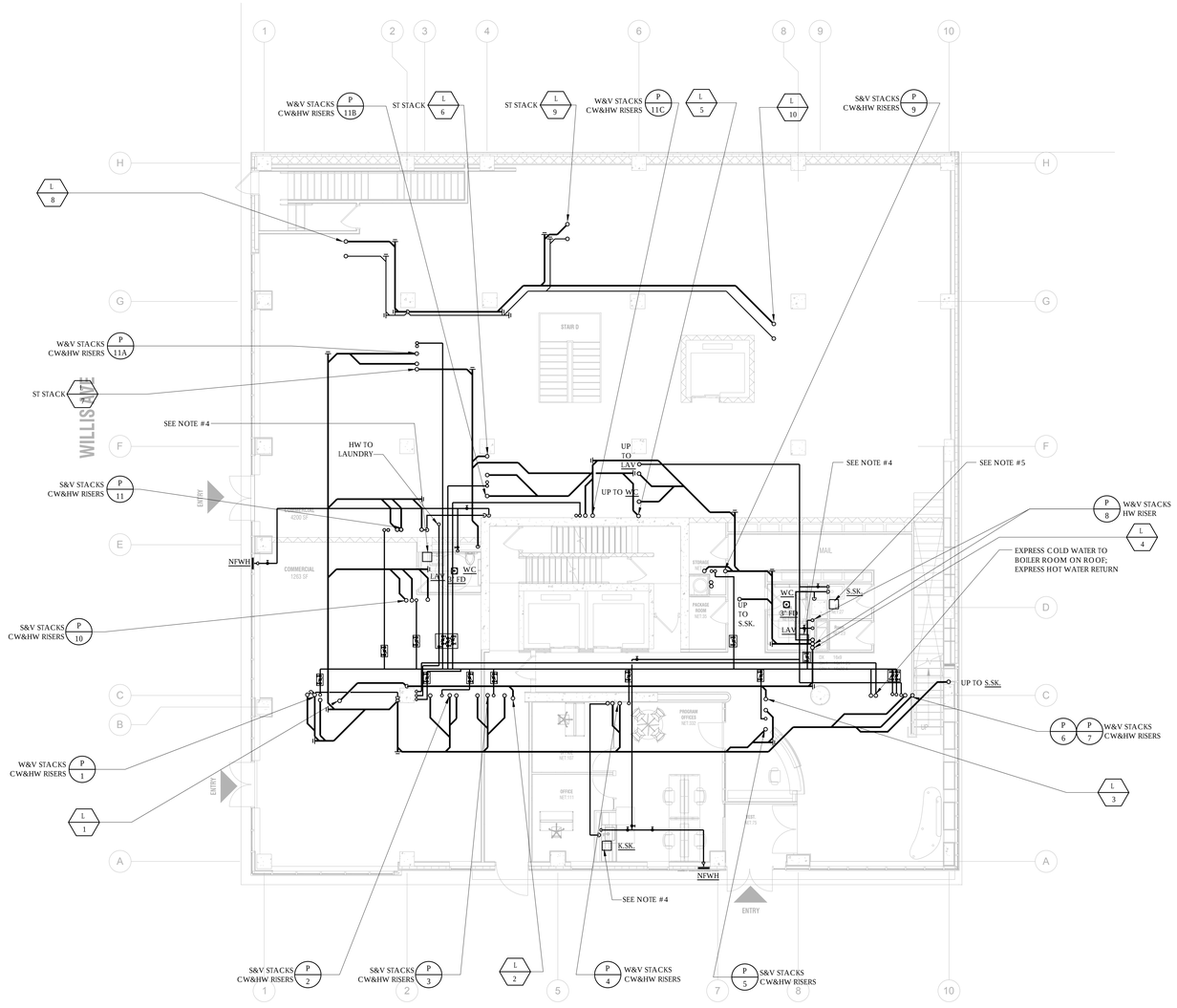
PROVIDE EACH FLOOR DRAIN WITH A ' TRAP GUARD ' BY ProVent SYSTEMS.

PROVIDE SHUTOFF VALVES ON THE WATER SUPPLY TO EACH FIXTURE, WATER HEATERS, APPLIANCES OR MECHANICAL EQUIPMENT AND AS REQUIRED BUILDING CODES.

PROVIDE ACCESS IN WALLS AND CEILINGS FOR VALVES OR OTHER APPURTENANCES, WHERE NEEDED. USE A MINIMUM OF 10" X 10" ACCESS PANELS COORDINATE LOCATIONS WITH ARCHITECT.

NOTES:

1. ALL GAS PIPING IN PUBLIC CORRIDORS TO BE WELDED AND TESTED AND PROVEN TIGHT AT 10 PSIG FOR A MINIMUM OF 30 MINUTES.
2. ALL TRAPS IN NOT HEATED SPACES HAVE TO BE HEAT TRACED.
3. ALL STORM AND SANITARY PIPING IN NON-HEATED SPACES HAVE TO BE INSULATED.
4. PROVIDE ELECTRIC HOT WATER HEATER UNDER LAV EEMAX MODEL EMT4, 1.4KW, 120V W/ POWERS T/P LFE480 TEMPERING VALVE.
5. PROVIDE ELECTRIC HOT WATER HEATER UNDER LAV EEMAX MODEL EMT6, 1.4KW, 120V W/ POWERS T/P LFE480 TEMPERING VALVE.



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

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RODKIN CARDINALE A DIVISION OF SKYLINE ENGINEERING
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

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PROJECT

BETANCES VI DEVELEOPMENT
472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
1ST FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WATERS
083161
LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-101.00
NYC DOB NUMBER:	

PLUMBING PIPING CONNECTIONS:

					MAX GPM (PER NYC PL COODE)
1.	WC.:	4" S.	2" V.,	½" CW.	1.28 GPF 1.28 GPF (Public)
2.	LAV.:	½" W & V.,	½" H&CW.		1.00 GPM 1.50 GPM (Public)
3.	BT.:	½" W & V.,	½" H&CW.		1.75 GPM
4.	K.SK.:	2" W.,	½" V.,	½" H&CW.	1.50 GPM
5.	S.SK.:	3" W.	½" V.,	½" H&CW.	

FOR HOT & COLD WATER PIPE SIZES REFER TO WATER RISER DIAGRAM.

FOR SANITARY AND VENT PIPE SIZES REFER TO SANITARY RISER DIAGRAM.

FOR STORM PIPE SIZES REFER TO STORM RISER DIAGRAM.

TOILETS MUST BE WATERSENSE APPROVED.

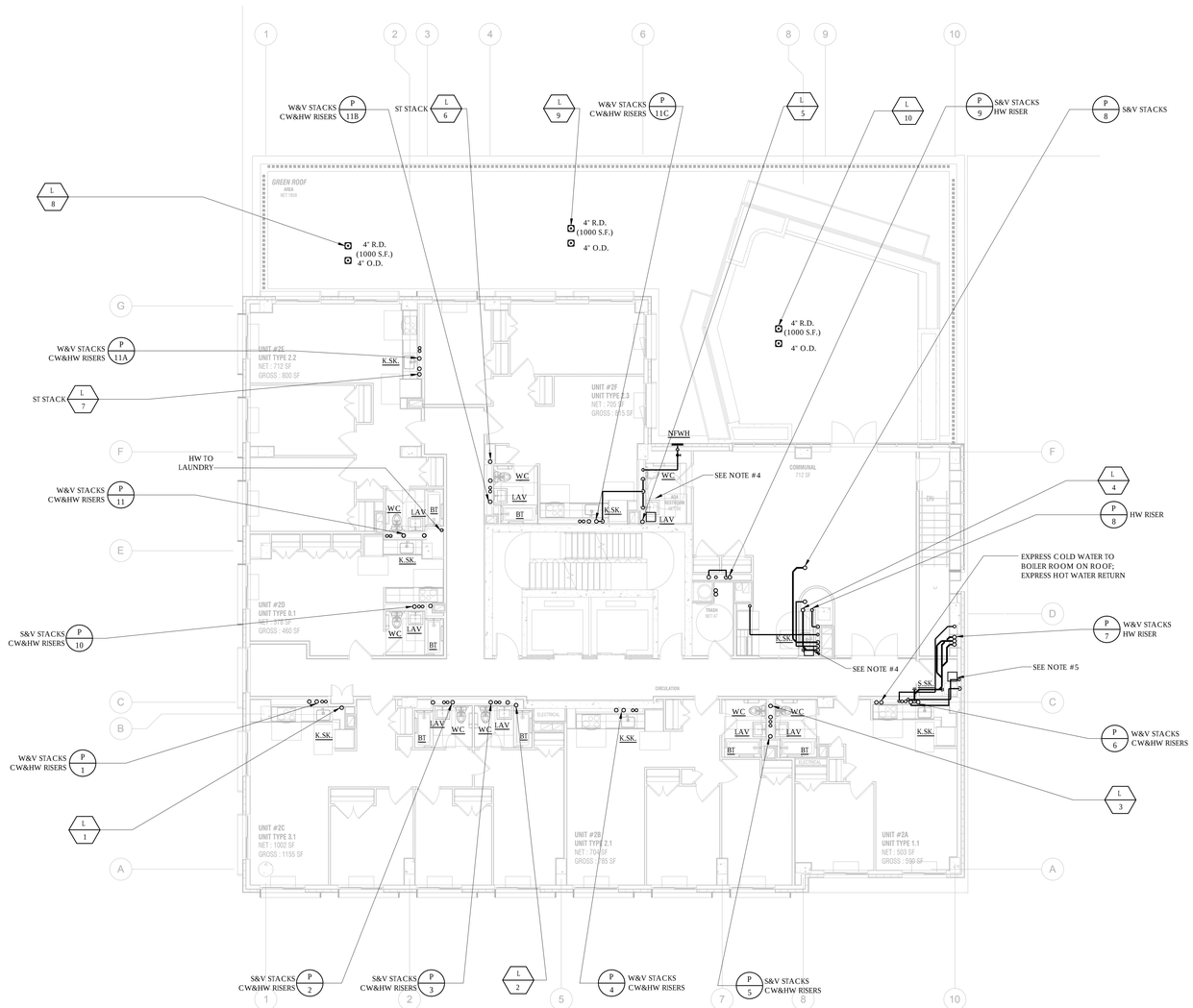
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PROVIDE SHUTOFF VALVES ON THE WATER SUPPLY TO EACH FIXTURE, WATER HEATERS, APPLIANCES OR MECHANICAL EQUIPMENT AND AS REQUIRED BUILDING CODES.

PROVIDE ACCESS IN WALLS AND CEILINGS FOR VALVES OR OTHER APPURTENANCES, WHERE NEEDED. USE A MINIMUM OF 10" X 10" ACCESS PANELS COORDINATE LOCATIONS WITH ARCHITECT.

NOTES:

1. ALL TRAPS IN NOT HEATED SPACES HAVE TO BE HEAT TRACED.
2. ALL STORM AND SANITARY PIPING IN NON-HEATED SPACES HAVE TO BE INSULATED.
3. PROVIDE PRESSURE REDUCING VALVES SET AT 50 PSI ON HOT AND COLD WATER SUPPLY FOR ALL RESIDENTIAL FIXTURES AND EQUIPMENT (IN APARTMENTS)
4. PROVIDE ELECTRIC HOT WATER HEATER UNDER LAV EEMAX MODEL EMT4 1.4KW, 120V W/ POWERS T/P LFe480 TEMPERING VALVE.
5. PROVIDE ELECTRIC HOT WATER HEATER UNDER LAV EEMAX MODEL EMT6 1.4KW, 120V W/ POWERS T/P LFE480 TEMPERING VALVE.



2ND FLOOR PLAN

SCALE: 1/8" = 1'-0"

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NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
2ND FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK MATTHEW M. WATSON 028316 LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-102.00
NYC DOB NUMBER:	

PLUMBING PIPING CONNECTIONS:

				MAX GPM (PER NYC PL COODE)
1.	WC.:	4" S. 2" V.,	¾" CW.	1.28 GPF 1.28 GPF (Public)
2.	LAV.:	½" W & V.,	½" H&CW.	1.00 GPM 1.50 GPM (Public)
3.	BT.:	½" W & V.,	½" H&CW.	1.75 GPM
4.	K.SK.:	2" W., ½" V.,	½" H&CW.	1.50 GPM
5.	S.SK.:	3" W. ½" V.,	¾" H&CW.	

FOR HOT & COLD WATER PIPE SIZES REFER TO WATER RISER DIAGRAM.

FOR SANITARY AND VENT PIPE SIZES REFER TO SANITARY RISER DIAGRAM.

FOR STORM PIPE SIZES REFER TO STORM RISER DIAGRAM.

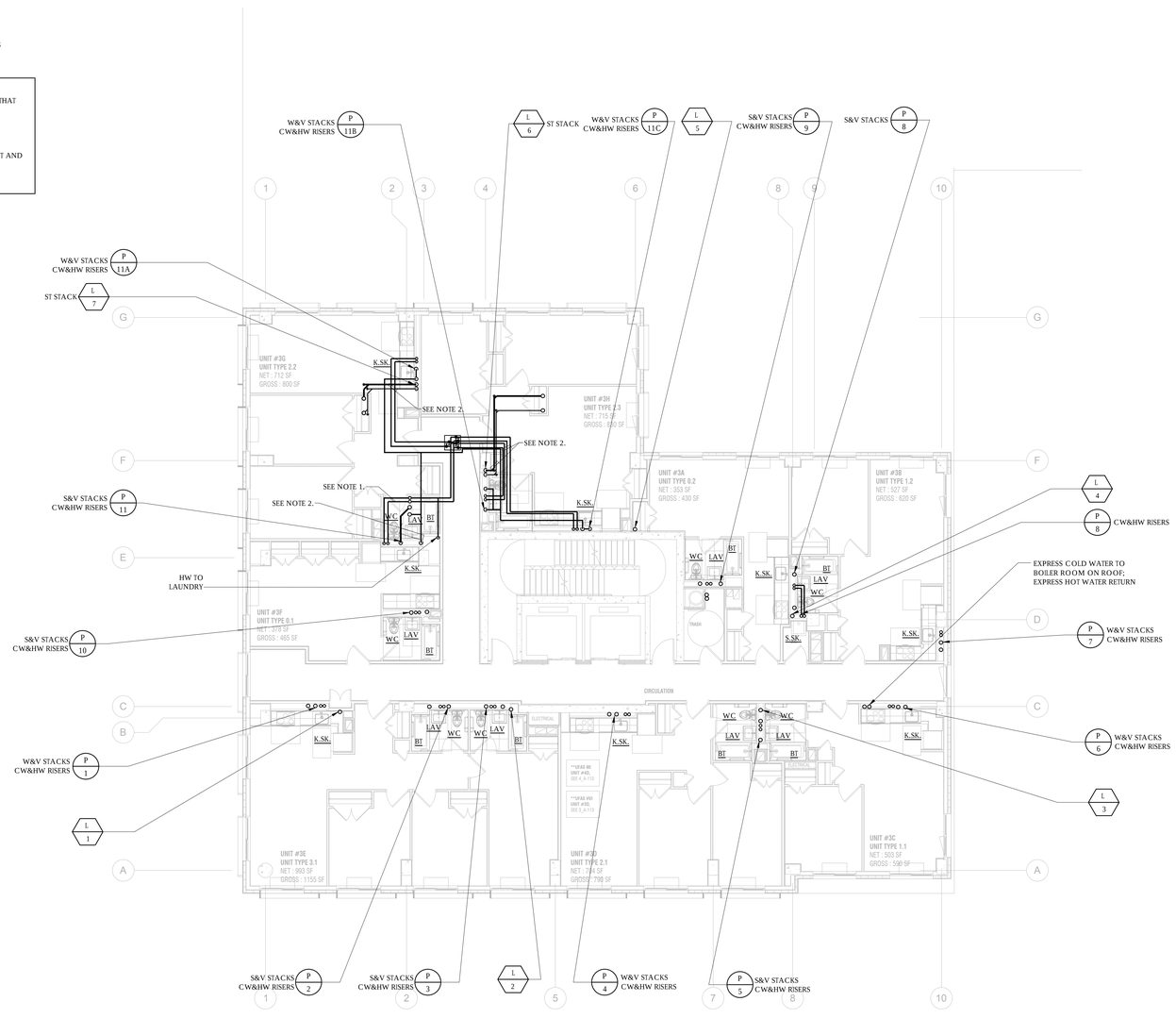
TOILETS MUST BE WATERSENSE APPROVED.

PROVIDE EACH FLOOR DRAIN WITH A ' TRAP GUARD ' BY ProVent SYSTEMS.

PROVIDE SHUTOFF VALVES ON THE WATER SUPPLY TO EACH FIXTURE, WATER HEATERS, APPLIANCES OR MECHANICAL EQUIPMENT AND AS REQUIRED BUILDING CODES.

PROVIDE ACCESS IN WALLS AND CEILINGS FOR VALVES OR OTHER APPURTENANCES, WHERE NEEDED. USE A MINIMUM OF 10" X 10" ACCESS PANELS COORDINATE LOCATIONS WITH ARCHITECT.

NOTES:
1. RESIDENTIAL DOMESTIC WATER OFFSETS ON THIS DRAWING THAT OCCUR ON 6TH FLOOR ONLY, REFER TO RISERS.
2. ALL SANITARY AND STORM PIPING OFFSETS SHOWN ON THIS DRAWING OCCUR ON 6TH FLOOR ONLY, REFER TO RISERS.
3. PROVIDE PRESSURE REDUCING VALVES SET AT 50 PSI ON HOT AND COLD WATER SUPPLY FOR ALL RESIDENTIAL FIXTURES AND EQUIPMENT (IN APARTMENTS) AT 3RD FLOOR ONLY.



3RD-6TH FLOOR PLAN
SCALE: 1/8" = 1'-0"

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224 WEST 29TH STREET
NEW YORK, NY 10001
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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
3RD-6TH FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK MATTHEW M. WATSO 083161 LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-103.00
NYC DOB NUMBER:	

PLUMBING PIPING CONNECTIONS:

					MAX GPM (PER NYC PL COODE)
1.	WC.:	4" S.	2" V.,	½" CW.	1.28 GPF 1.28 GPF (Public)
2.	LAV.:	½" W & V.,		½" H&CW.	1.00 GPM 1.50 GPM (Public)
3.	BT.:	½" W & V.,		½" H&CW.	1.75 GPM
4.	K.SK.:	2" W.,	½" V.,	½" H&CW.	1.50 GPM
5.	S.SK.:	3" W.	½" V.,	½" H&CW.	

FOR HOT & COLD WATER PIPE SIZES REFER TO WATER RISER DIAGRAM.

FOR SANITARY AND VENT PIPE SIZES REFER TO SANITARY RISER DIAGRAM.

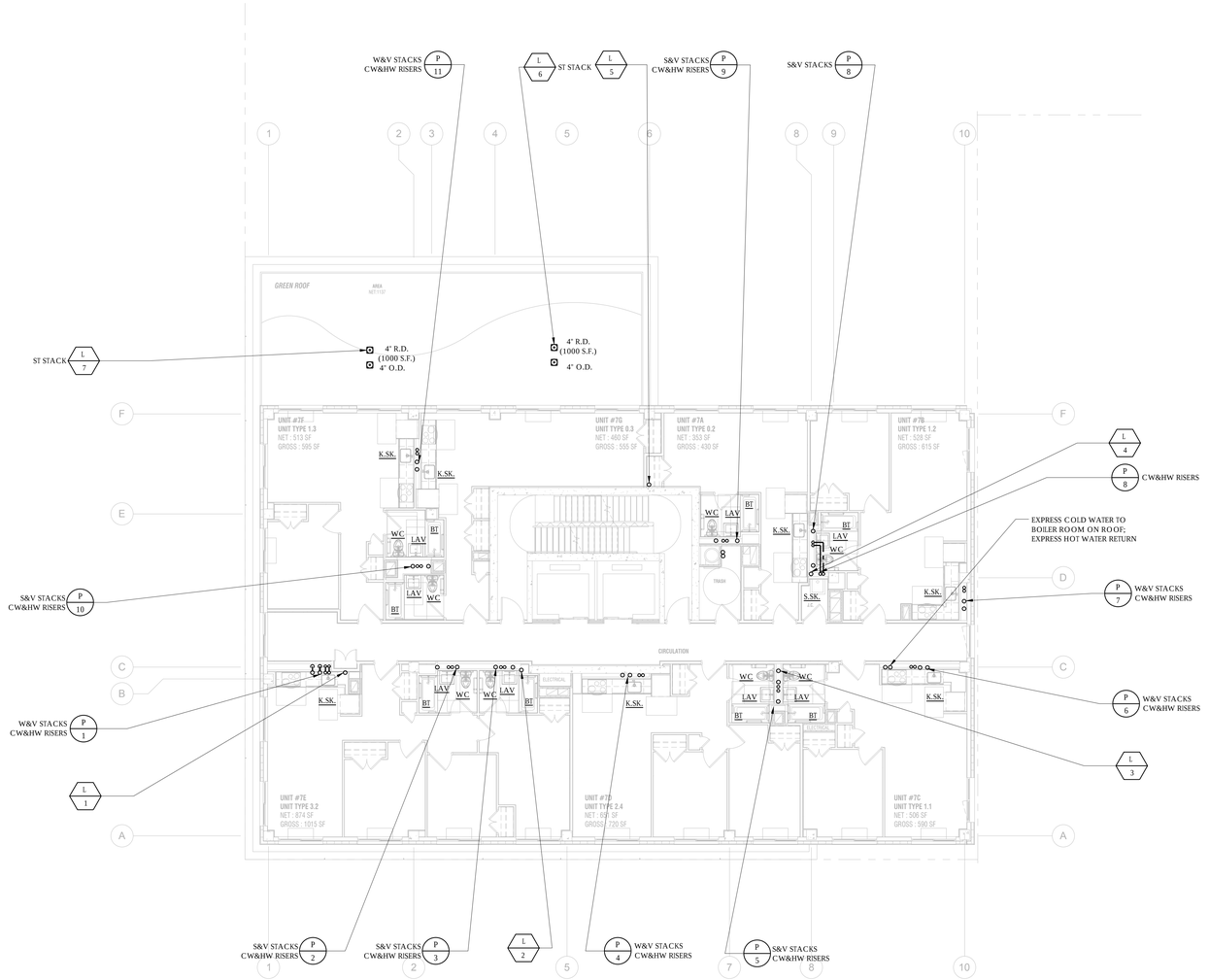
FOR STORM PIPE SIZES REFER TO STORM RISER DIAGRAM.

TOILETS MUST BE WATERSENSE APPROVED.

PROVIDE EACH FLOOR DRAIN WITH A ' TRAP GUARD ' BY ProVent SYSTEMS.

PROVIDE SHUTOFF VALVES ON THE WATER SUPPLY TO EACH FIXTURE, WATER HEATERS, APPLIANCES OR MECHANICAL EQUIPMENT AND AS REQUIRED BUILDING CODES.

PROVIDE ACCESS IN WALLS AND CEILINGS FOR VALVES OR OTHER APPURTENANCES, WHERE NEEDED. USE A MINIMUM OF 10" X 10" ACCESS PANELS COORDINATE LOCATIONS WITH ARCHITECT.



7TH FLOOR PLAN

SCALE: 1/8" = 1'-0"

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1 METROTECH CENTER NORTH, 6TH FLOOR
BROOKLYN, NY 11201
P 646.688.5898

CLIENT
LEMLE & WOLFF COMPANIES
5925 BROADWAY
BRONX, NY 10463
P 718.884.7676

STRUCTURAL
CUONO ENGINEERING PLLC
42 NORTH MAIN STREET
PORT CHESTER, NY 10573
P 914.305.5679

MEP
RODKIN CARDINALE A DIVISION OF SKYLINE ENGINEERING
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
7TH FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW M. RODKIN · 083161 · LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-104.00
NYC DOB NUMBER:	

PLUMBING PIPING CONNECTIONS:

				MAX GPM (PER NYC PL COODE)
1.	WC.:	4" S. 2" V.,	¾" CW.	1.28 GPF 1.28 GPF (Public)
2.	LAV.:	½" W & V.,	½" H&CW.	1.00 GPM 1.50 GPM (Public)
3.	BT.:	½" W & V.,	½" H&CW.	1.75 GPM
4.	K.SK.:	2" W., ½" V.,	½" H&CW.	1.50 GPM
5.	S.SK.:	3" W. ½" V.,	¾" H&CW.	

FOR HOT & COLD WATER PIPE SIZES REFER TO WATER RISER DIAGRAM.

FOR SANITARY AND VENT PIPE SIZES REFER TO SANITARY RISER DIAGRAM.

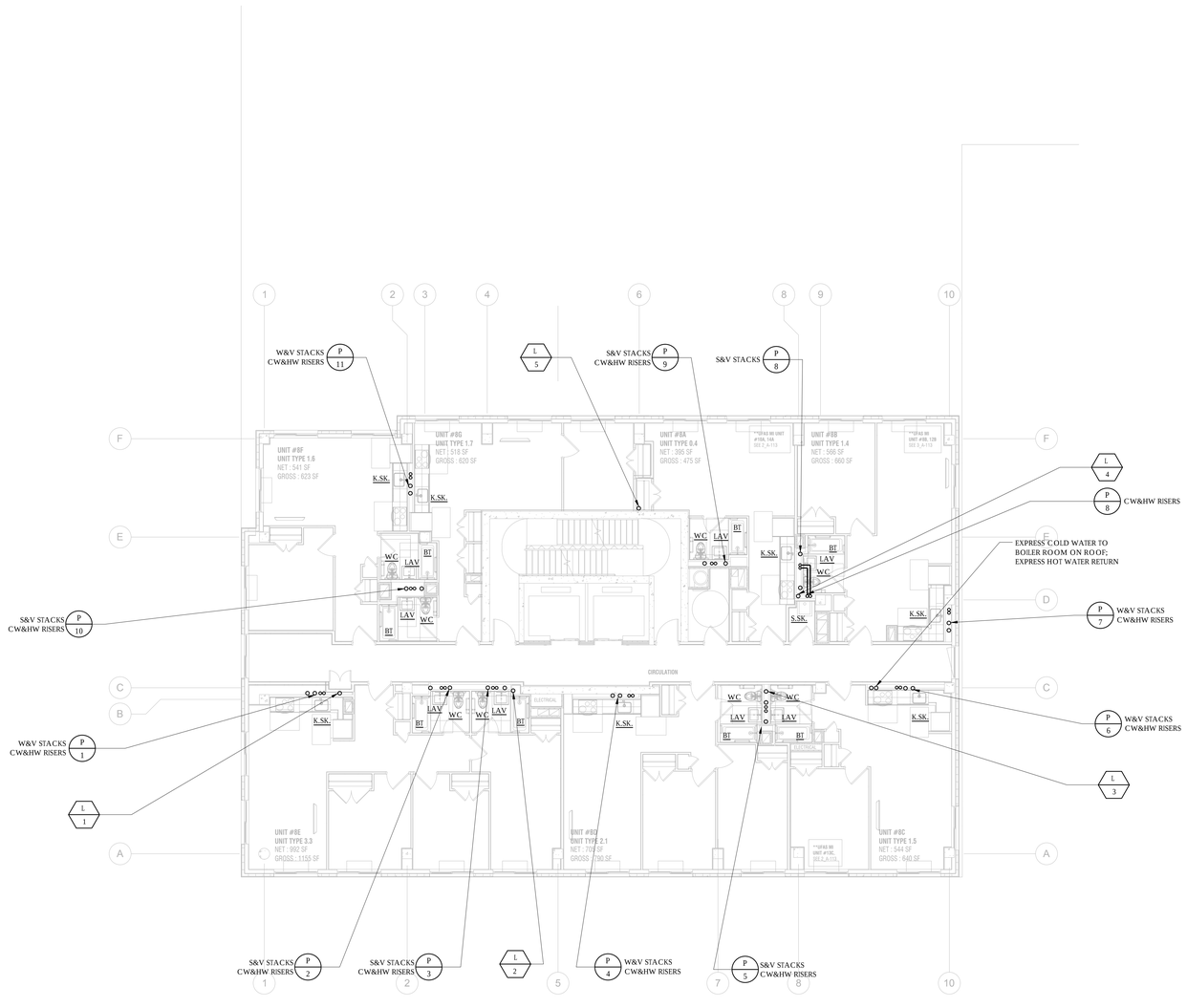
FOR STORM PIPE SIZES REFER TO STORM RISER DIAGRAM.

TOILETS MUST BE WATERSENSE APPROVED.

PROVIDE EACH FLOOR DRAIN WITH A ' TRAP GUARD ' BY ProVent SYSTEMS.

PROVIDE SHUTOFF VALVES ON THE WATER SUPPLY TO EACH FIXTURE, WATER HEATERS, APPLIANCES OR MECHANICAL EQUIPMENT AND AS REQUIRED BUILDING CODES.

PROVIDE ACCESS IN WALLS AND CEILINGS FOR VALVES OR OTHER APPURTENANCES, WHERE NEEDED. USE A MINIMUM OF 10" X 10" ACCESS PANELS COORDINATE LOCATIONS WITH ARCHITECT.



8TH, 10TH, 12TH, 14TH FLOOR PLAN

SCALE: 1/8" = 1'-0"

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NEW YORK, NY 10001
P 212.239.1892

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DOB APPROVAL

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PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
8TH, 10TH, 12TH, 14TH
FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW M. RODKIN · LICENSED PROFESSIONAL ENGINEER · 083141

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-105.00
NYC DOB NUMBER:	

PLUMBING PIPING CONNECTIONS:

				MAX GPM (PER NYC PL COODE)
1.	WC.:	4" S.	2" V.,	½" CW.	1.28 GPF 1.28 GPF (Public)
2.	LAV.:	½" W & V.,	½" H&CW.	1.00 GPM 1.50 GPM (Public)
3.	BT.:	½" W & V.,	½" H&CW.	1.75 GPM
4.	K.SK.:	2" W.,	½" V.,	½" H&CW.	1.50 GPM
5.	S.SK.:	3" W.	½" V.,	½" H&CW.	

FOR HOT & COLD WATER PIPE SIZES REFER TO WATER RISER DIAGRAM.

FOR SANITARY AND VENT PIPE SIZES REFER TO SANITARY RISER DIAGRAM.

FOR STORM PIPE SIZES REFER TO STORM RISER DIAGRAM.

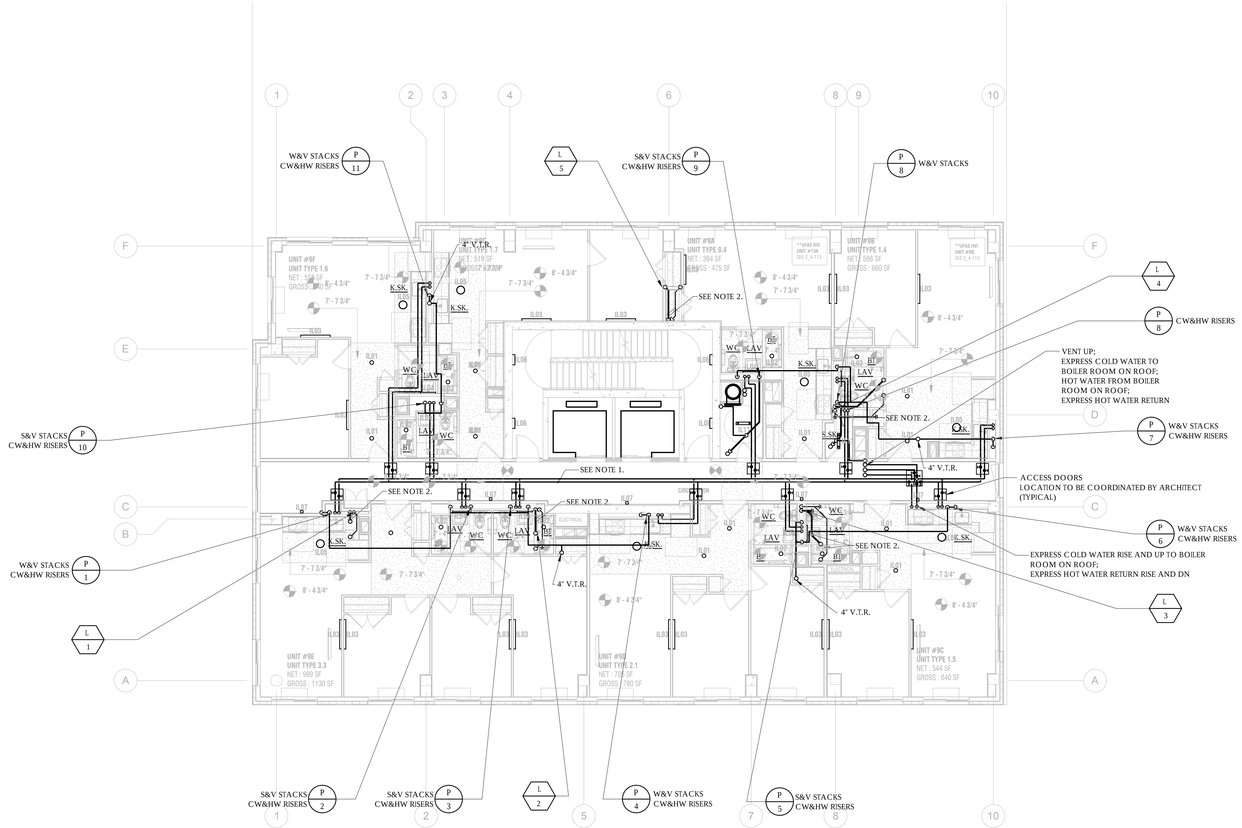
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PROVIDE ACCESS IN WALLS AND CEILINGS FOR VALVES OR OTHER APPURTENANCES, WHERE NEEDED. USE A MINIMUM OF 10" X 10" ACCESS PANELS COORDINATE LOCATIONS WITH ARCHITECT.

NOTES:
1. ALL RESIDENTIAL DOMESTIC WATER DISTRIBUTION OCCURS ON 15TH FLOOR ONLY, REFER TO RISERS.
2. ALL STORM PIPING OFFSETS SHOWN ON THIS DRAWING OCCUR ON 15TH FLOOR ONLY, REFER TO RISERS.



9TH, 11TH, 13TH, 15TH FLOOR PLAN

SCALE: 1/8" = 1'-0"

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P 212.239.1892

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DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
9TH, 11TH, 13TH, 15TH
FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW M. WATANG · 028161 · LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
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SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-106.00
NYC DOB NUMBER:	

PLUMBING PIPING CONNECTIONS:

				MAX GPM (PER NYC PL COODE)
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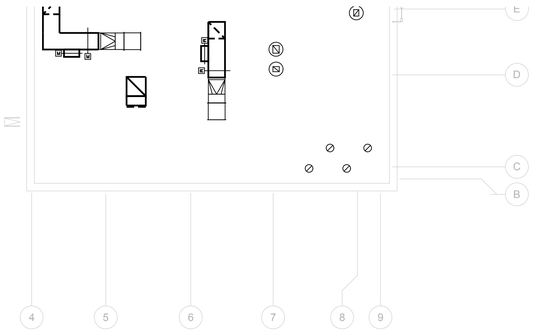
FOR STORM PIPE SIZES REFER TO STORM RISER DIAGRAM.

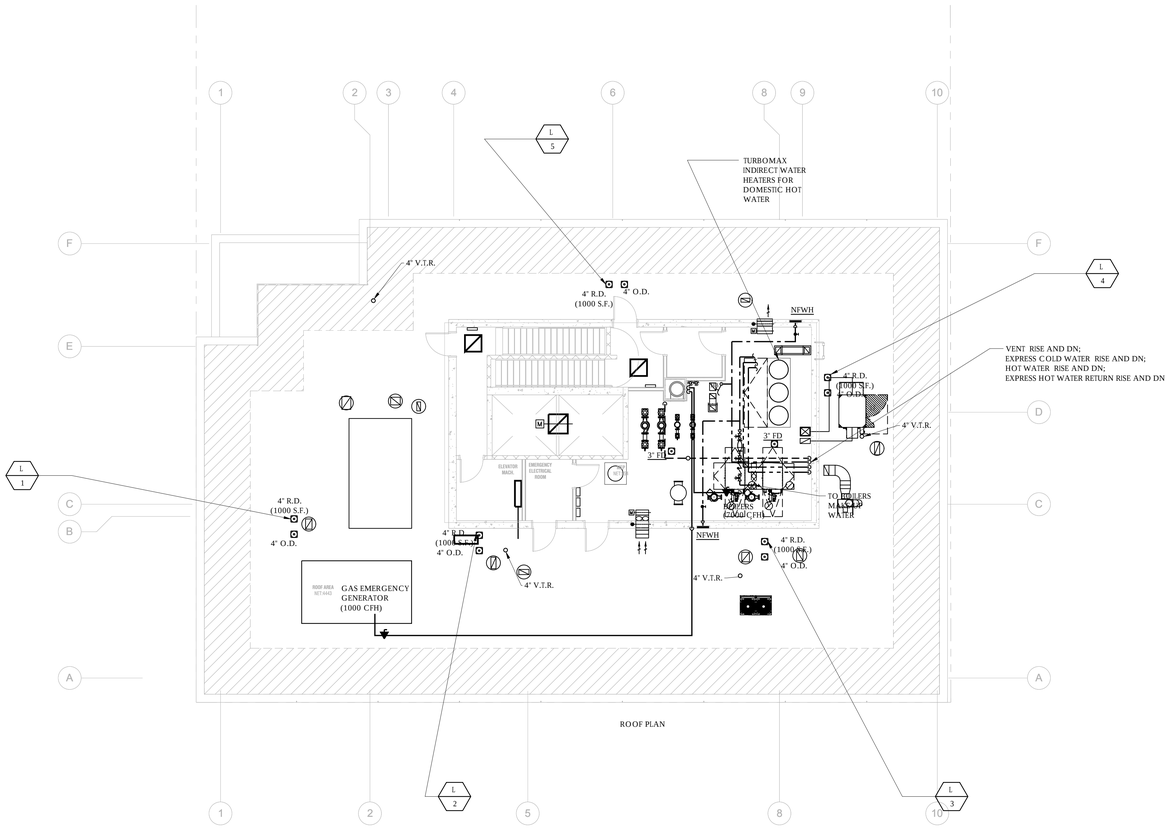
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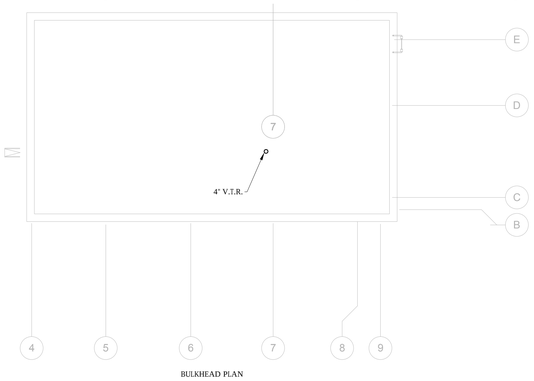
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ROOF PLAN



BULKHEAD PLAN

ROOF AND BULKHEAD PLANS
SCALE: 1/8" = 1'-0"

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P 914.305.5679

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P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

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DOB APPROVAL

TRUE

PROJECT

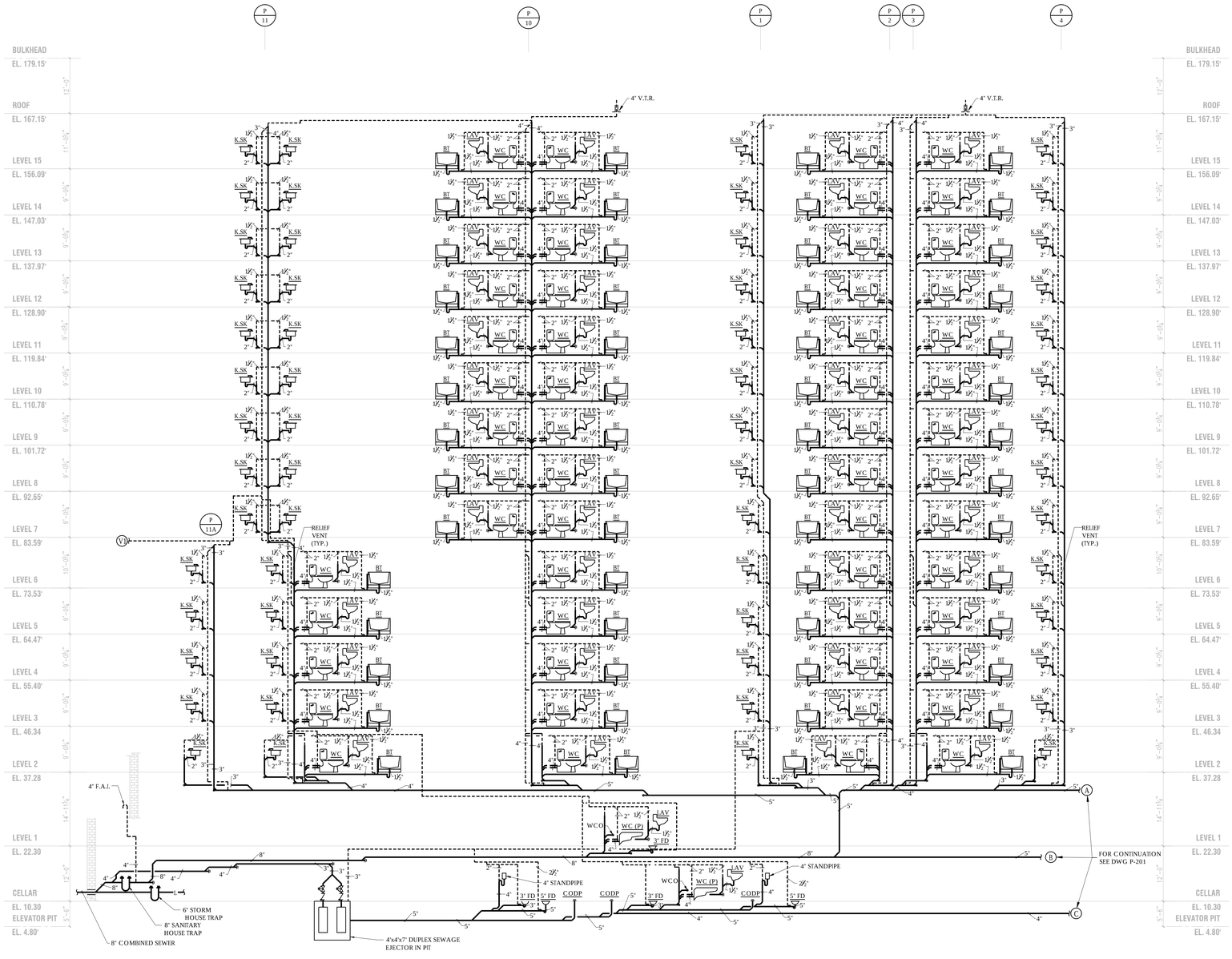
BETANCES VI DEVELEOPMENT
472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
ROOF PLAN

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WATSON
LICENSED PROFESSIONAL ENGINEER
028316

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-106.00
NYC DOB NUMBER:	



SANITARY RISER DIAGRAM I

SCALE: NTS

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DOB APPROVAL

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PROJECT

BETANCES VI DEVELEOPMENT

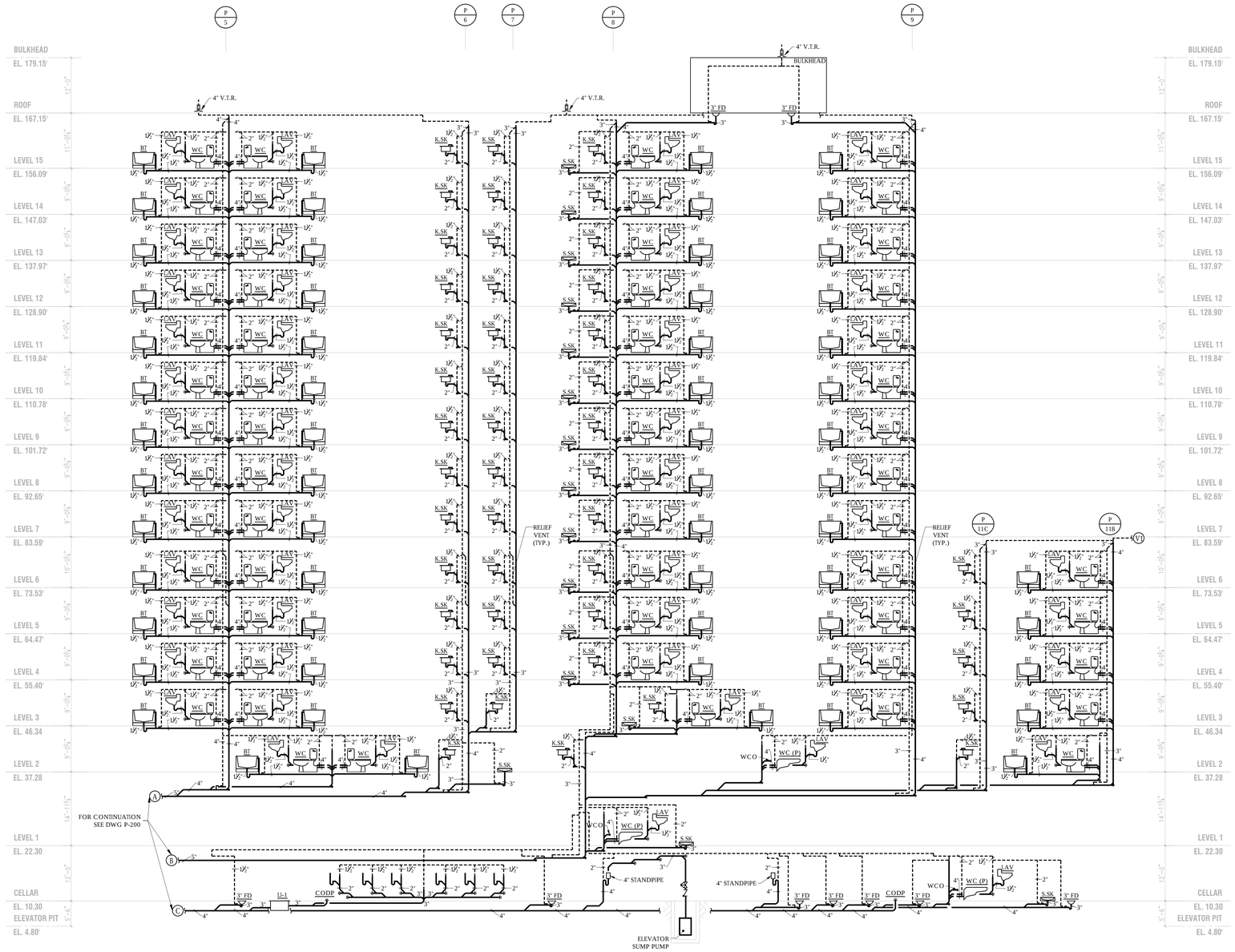
472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
SANITARY
RISER DIAGRAM I

SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW M. WATKO · LICENSED PROFESSIONAL ENGINEER · 083161

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-200.00
NYC DOB NUMBER:	



SANITARY RISER DIAGRAM II

SCALE: NTS

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ARCHITECT
think! architecture and design pllc
1 METROTECH CENTER NORTH, 6TH FLOOR
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PORT CHESTER, NY 10573
P 914.305.5679

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NEW YORK, NY 10001
P 212.239.1892

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DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

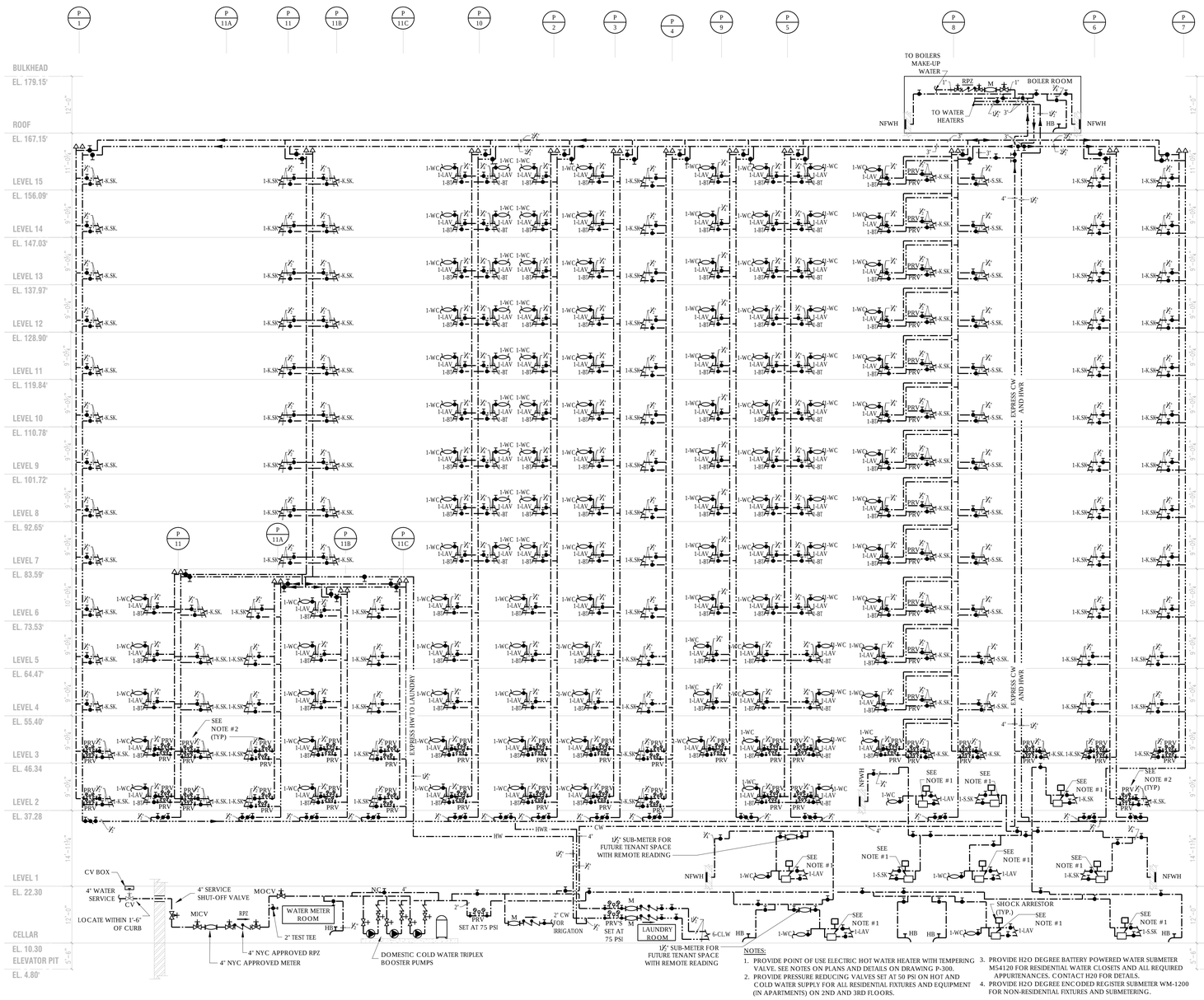
472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
SANITARY
RISER DIAGRAM II

SEAL & SIGNATURE

STATE OF NEW YORK · JEFFREY M. WATKINS · LICENSED PROFESSIONAL ENGINEER · 083161

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-201.00
NYC DOB NUMBER:	



NOTES:

1. PROVIDE POINT OF USE ELECTRIC HOT WATER HEATER WITH TEMPERING VALVE. SEE NOTES ON PLANS AND DETAILS ON DRAWING P-300.
2. PROVIDE PRESSURE REDUCING VALVES SET AT 50 PSI ON HOT AND COLD WATER SUPPLY FOR ALL RESIDENTIAL FIXTURES AND EQUIPMENT (IN APARTMENTS) ON 2ND AND 3RD FLOORS.
3. PROVIDE H2O DEGREE BATTERY POWERED WATER SUBMETER M54120 FOR RESIDENTIAL WATER CLOSETS AND ALL REQUIRED APPURTENANCES. CONTACT H20 FOR DETAILS.
4. PROVIDE H2O DEGREE ENCODED REGISTER SUBMETER WM-1200 FOR NON-RESIDENTIAL FIXTURES AND SUBMETERING.

DOMESTIC WATER RISER DIAGRAM

SCALE: NTS

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DOB APPROVAL

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PROJECT

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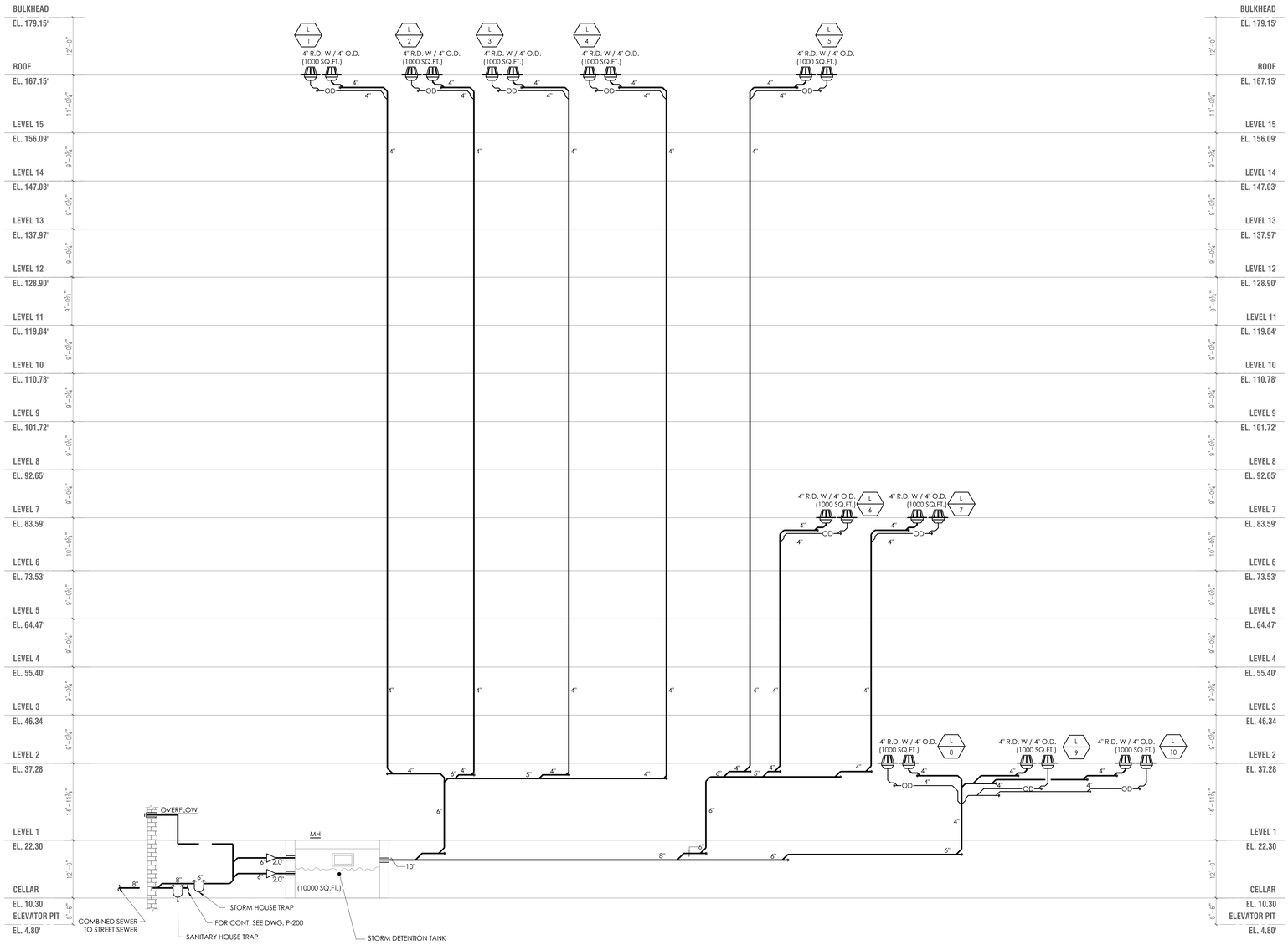
472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
DOMESTIC WATER
RISER DIAGRAM

SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW M. WATKINS · LICENSED PROFESSIONAL ENGINEER · 083161

DATE:	06 APRIL, 2018
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DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-202.00
NYC DOB NUMBER:	



STORM DRAINAGE RISER DIAGRAM

SCALE: NTS

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BETANCES VI DEVELEOPMENT

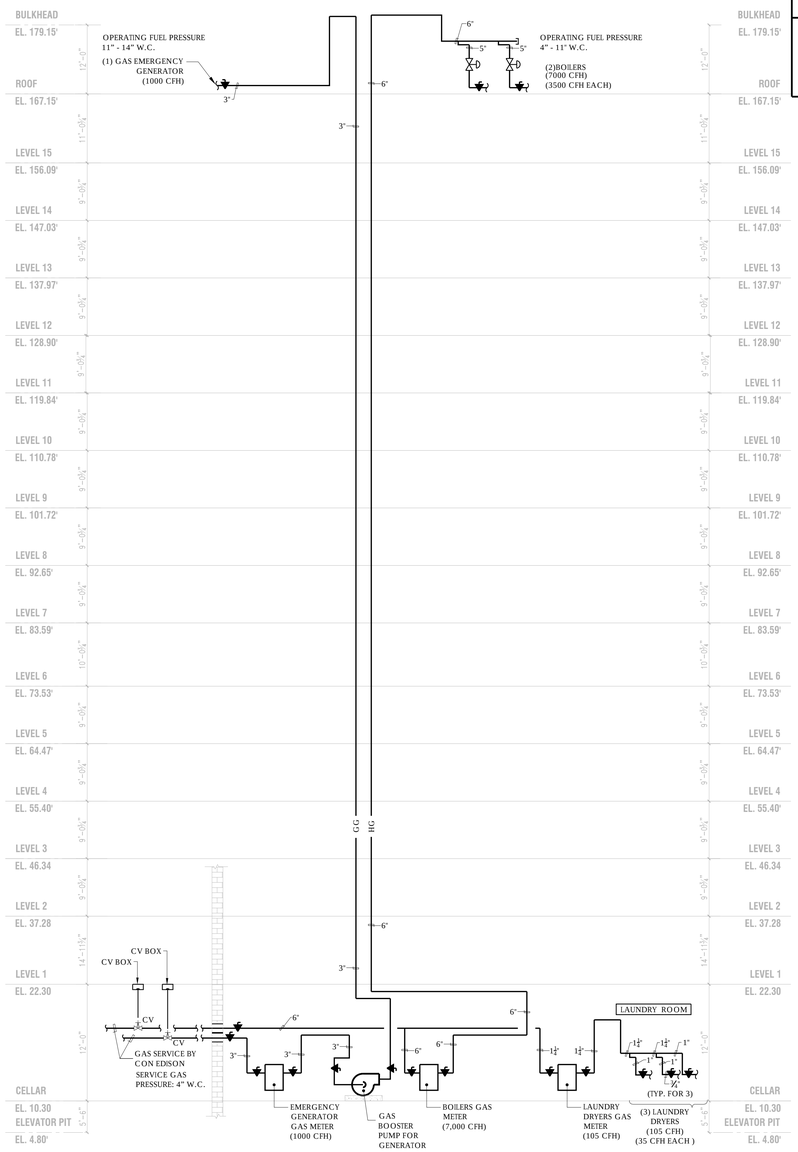
472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
STORM DRAINAGE
RISER DIAGRAM

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WATRO
LICENSED PROFESSIONAL ENGINEER
083161

DATE:	06 APRIL, 2018
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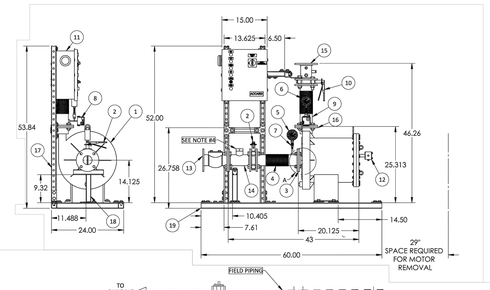


GAS RISER DIAGRAM

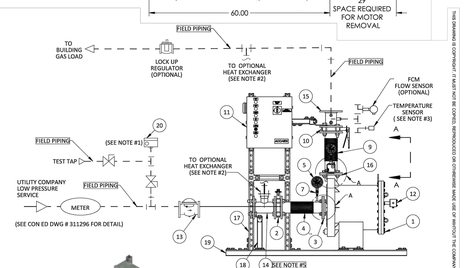
SCALE: NTS

GAS BOOSTERS SCHEDULE

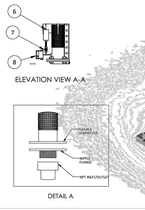
TAG #	LOCATION	TYPE	SERVICE	MAX FLOW [CFH]	BOOST [W.C.]	MOTOR DATA HP,EA.	RPM	PHASE	CYCLE	VOLTS	REMARKS
GB-1	CELLAR	SIMPLEX GAS BOOSTER	GAS FIRED EMERGENCY GENERATOR	5300	9	1/2	3450	1	60	208	SIMPLEX GAS BOOSTER SYSTEM FOR VARIABLE VOLUME OF NATURAL GAS TO A MAXIMUM OF 5,300 CFH WITH A CONSTANT ELEVATED DIFFERENTIAL GAS PRESSURE OF 6" W.C. SYSTEM SHALL CONTAIN ALL THE NECESSARY COMPONENTS AND FULLY INTEGRATED CONTROL SYSTEM, CLASS 1, GROUP D, 3450 RPM EXPLOSION PROOF MOTOR, CAPABLE OF OPERATING ON 208/1/60 POWER, EQUIVALENT TO A GENPAC # HB-3314-N4-UPS-REG. .



ITEM NO.	QTY.	DESCRIPTION	
1	1	BOOSTER	
2	1	INLET ISOLATION VALVE 3"	
3	1	INLET FLANGE CONNECTOR 3"	
4	1	INLET FLEXIBLE CONNECTOR 3"	
5	1	PRESSURE GAUGE 0-15" W.C	
6	1	PRESSURE GAUGE 0-30" W.C	
7	2	1/4" GAUGE COCK	
8	1	DISCH PRESSURE SWITCH (OPTIONAL)	
9	1	OUTLET FLEXIBLE CONNECTOR 3"	
10	1	OUTLET ISOLATION VALVE 3"	
11	1	SIMPLEX CONTROL PANEL	
12	1	EXPF ELECTRICAL JUNCTION BOX	
13	1	ECLIPSE CHECK VALVE 3200FA 3"	
14	1	INLET FLANGED SPOOL	SEE NOTE #5
15	1	OUTLET FLANGED SPOOL	
16	1	OUTLET FLANGE CONNECTOR 3"	
17	1	UNI-STRUT CONTROL PANEL SUPPORT FRAME	
18	1	UNI-STRUT PIPING SUPPORT FRAME	
19	1	UNI-STURT BASE FRAME	
20	1	LOW INLET GAS PRESSURE SWITCH	SEE NOTE #1



MODEL:	
RATINGS/CAPACITIES: 5,300 CFH MAXIMUM 9" W.C. DIFFERENTIAL	
ELECTRICAL:	☐ 115/1/60 ☐ 208/1/60 ☐ 208/3/60 ☐ 460/3/60
1/2 HP	
PANEL:	☐ NEMA 4 ☐ NEMA 7
LOW PRESSURE SWITCH:	☐ NEMA 4 ☐ NEMA 7
OPTIONS: ☐ INT (ON DEMAND CONTROL, INTERLOCKS) ☐ HEX (RECIRCULATION HEAT EXCHANGER) ☐ VFD (VARIABLE SPEED CONTROL) ☐ FCM (AUTO FLOW CONTROL) ☐ PFCM (AUTO FLOW CONTROL) ☐ REG (DISCHARGE PRESSURE REGULATION) ☐ GLD (GAS LEAK DETECTION) ☐ UPS (BATTERY BACK UP POWER SUPPLY)	



NOTES:

(1) INLET LOW GAS PRESSURE SWITCH SHIPPED LOOSE FOR FIELD INSTALLATION BY OTHERS IN ACCORDANCE WITH CON EDISON SPECIFICATION G-2040-9

(2) SEE DRAWING DB308 FOR CONNECTION DETAIL FOR THE OPTIONAL HEAT EXCHANGER MODULE

(3) L/S/D WITH HEAT EXCHANGER OPTION ONLY

(4) FINAL DIMENSIONS MAY VARY DEPENDING ON COMPONENT SELECTION AND ORIENTATION

(5) TEE CONNECTION FOR OPTIONAL HEAT EXCHANGER

ACCARDI COMPANIES
INNOVATIVE COMBUSTION SOLUTIONS

ALL DIMENSIONS ARE IN INCHES	DRAWN BY: --
PAGE: 1 OF 1	DRAWN DATE: --
DRAWING TITLE: COMPAC HB SERIES PACKAGED HERMATICALLY SEALED GAS BOOSTER SYSTEM PIPING SCHEMATIC	REV: --
DRAWING NUMBER:	HB-3314-0.5

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PORT CHESTER, NY 10573
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MEP
RODKIN CARDINALE A DIVISION OF SKYLINE ENGINEERING
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

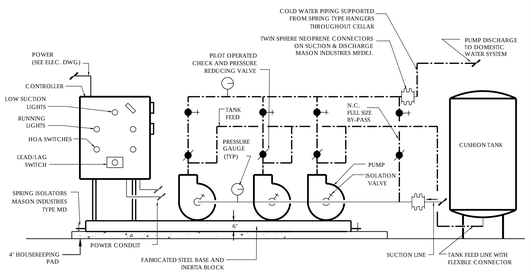
472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
GAS
RISER DIAGRAM

SEAL & SIGNATURE

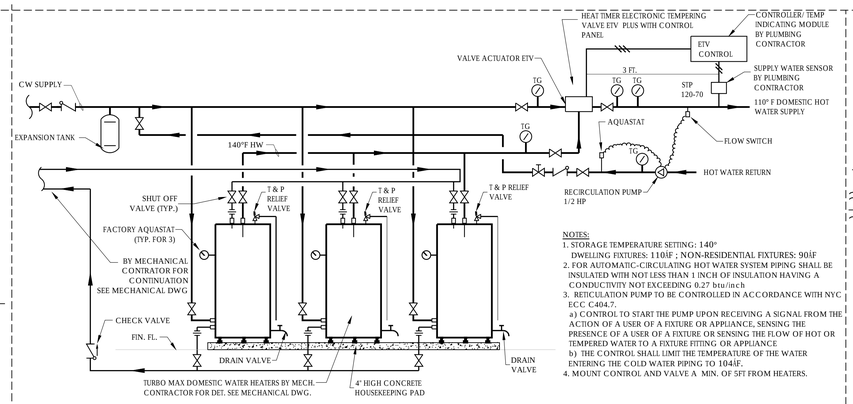
STATE OF NEW YORK · MATTHEW M. RATNER · 033161 · LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-204.00
NYC DOB NUMBER:	



SCHEMATIC OF TRIPLEX DOMESTIC WATER BOOSTER PUMPS

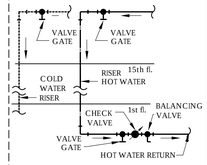
N.T.S.



NOTES:
1. STORAGE TEMPERATURE SETTING: 140°
   DWELLING FIXTURES: 110ûF ; NON-RESIDENTIAL FIXTURES: 90ûF
2. FOR AUTOMATIC-CIRCULATING HOT WATER SYSTEM PIPING SHALL BE INSULATED WITH NOT LESS THAN 1 INCH OF INSULATION HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 btu/inch
3. RETICULATION PUMP TO BE CONTROLLED IN ACCORDANCE WITH NYC ECC C404.7.
   a) CONTROL TO START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE
   b) THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD WATER PIPING TO 104ûF.
4. MOUNT CONTROL AND VALVE A MIN. OF 5FT FROM HEATERS.

DOMESTIC HOT WATER AND ELECTRONIC MIXING VALVE PIPING DETAIL

N.T.S.



DIAGRAMMATIC VALVES ARRANGEMENT AT CONNECTION TO WATER RISERS

N.T.S.

SYMBOL LIST

S OR SAN	SANITARY DRAINAGE PIPING (S)
ST OR L	STORM WATER DRAINAGE PIPING (ST)
S	UNDERGROUND DRAINAGE PIPING
ST	UNDERGROUND STORM PIPING
	VENT PIPING (V)
	COLD WATER PIPING (CW)
	HOT WATER PIPING (HW)
	HOT WATER PIPING RETURN (HWR)
G	GAS PIPING (G)
BG	BOILER GAS LINE (BG)
DG	DRYERS GAS LINE (DG)
PD	EJECTOR DISCHARGE
SP	SPRINKLER PIPING

	CONTROL VALVE	GD	GARAGE DRAIN
	CHECK VALVE	GPM	GALLON PER MINUTE
PRV PRV	PRESSURE REDUCING VALVE	(H)WC (H)LAV (H)BT	ACCESSIBLE FIXTURES
	GAS VALVE	HB	HOSE BIBB
CO	CLEANOUT	HP	HORSEPOWER
CODP	CLEANOUT DECKPLATE	HT	HOUSE TRAP
P 1	PLUMBING STACK	HWH	HOT WATER HEATER
		IE	INVERT ELEVATION
L 1	VERTICAL STORM LEADER	K.SK	KITCHEN SINK
		LAV	LAVATORY
		MH	MANHOLE
G 1	GAS RISER	NFWH	NONE FREEZE WALL HYDRANT
		PD	PUMP DISCHARGE
AC	ACRES	PL	PROPERTY LINE
AD	AREA DRAIN	Q	FLOW RATE
BFP	BACKFLOW PREVENTER	R	RANGE
B.SK	BAR SINK	RCV	RISER CONTROL VALVE
BT	BATH TUB	RD	ROOF DRAIN
BWV	BACKWATER VALVE	RPM	REVOLUTIONS PER MINUTE
CFS	CUBIC FEET PER SECOND	SF.FT.	SQUARE FEET
℄ EL	CENTERLINE ELEVATION	SS	SERVICE SINK
CI	CAST IRON	T	TIME
CLG	CEILING	TD	TERRACE DRAIN
DIP	DUCTILE IRON PIPE	TYP	TYPICAL
(E)	EXISTING	VB	VACUUM BREAKER
F.A.I.	FRESH AIR INLET	VTR	VENT THRU ROOF
FD	FLOOR DRAIN	W	WASTE
FIN.FL.EL	FINISHED FLOOR ELEVATION	WC	WATER CLOSET
FU	FIXTURE UNIT	W/D	WASHER/DRYER
GAL.	GALLON	WH	WALL HYDRANT
M.P.	MARKETING PURPOSES		

PUMP SCHEDULE

TAG #	LOCATION	TYPE	SERVICE	GPM,EA.	FT TDH	MOTOR DATA					REMARKS
						RPM	HP,EA.	PHASE	CYCLE	VOLTS	
BP-1	CELLAR	TRIPLEX VARIABLE SPEED DRIVE	DOMESTIC WATER	105	162	3500	7.5	3	60	208	TRIPLEX DOMESTIC WATER BOOSTER PUMPS W/ VFD DRIVES AND CONTROLLER. EACH OF THE THREE (3) PUMPS SHOULD BE GRUNDFOS MODEL CR15-4 MULTI STAGE VERTICAL IN-LINE PUMP, STAINLESS STEEL CONSTRUCTION WITH MECHANICAL SEAL. 7.5 HP, 208V, 3 PHASE (PUMP RATED 105 GPM @ 70 PSI). 4" LEAD FREE COPPER SUCTION AND DISCHARGE MANIFOLD – GROOVED CONNECTION. WITH 86 GALLON CUSHION TANK 150 PSI WP.
EJ-1	CELLAR	DUPLEX SUBMERSIBLE	BUILDING SEWER	70	25	3255	3	3	60	208	DUPLEX EJECTOR PUMPS IN 4'x4'x6.5' CONCRETE PIT. PUMPS SHOULD BE FLYGT MODEL DP3069, IMPELLER 253, EACH RATED FOR 70 GPM @ 25' TDH, 3 HP, 3255 RPM 208/3/60 VAC. WITH HIGH LEVEL ALARM OUTPUT FOR BMS, CONTROLS, POLISHED ALUMINUM DIAMOND PLATE COVER AND DOUBLE JUNCTION BOX.
SP-1	CELLAR (PIT)	SIMPLEX SUBMERSIBLE	ELEVATOR PIT	100	25	3500	1	1	60	115	STANCOR PUMP SYSTEM SE-100 WITH HIGH LEVEL ALARM OUTPUT FOR BMS IN 2' x 2'x 2' PIT
HWRP-1	BOILER ROOM AT ROOF	HW CIRCULATION	DOMESTIC HOT WATER RETURN	16	25	1750	1/2	3	60	208	BELL AND GOSSETT Series 60; ALL BRONZE MODEL

INSULATION REQUIREMENTS:

A. COLD WATER PIPING

1. COLD WATER - ALL SIZES - 1" INSULATION, A.S. JACKET.
2. STORM DRAINAGE PIPING ALL HORIZONTAL RUNS AND DRAIN BODY - MINIMUM 1" INSULATION, A.S. JACKET.

B. HOT WATER PIPING

1. HOT WATER -½" TO 1¼" I.D. - 1" INSULATION, A.S. JACKET.
2. HOT WATER SUPPLY - 1½" AND LARGER - 1½" INSULATION, A.S. JACKET.
3. HOT WATER CIRCULATING - ALL SIZES - 1" INSULATION, A.S. JACKET.
4. FIRST 8 FEET OF BRANCH PIPING (e.g. CROTONS) MUST ALSO BE INSULATED OFF OF THE HOT WATER RISERS.

ENERGY CODE COMPLIANCE NOTES:

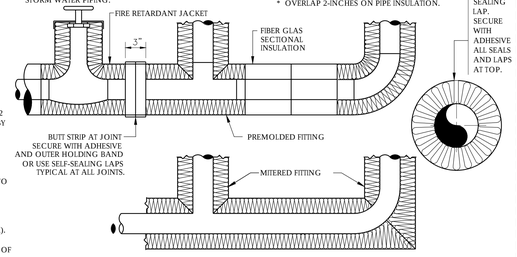
1. SERVICE WATER HEATING EQUIPMENT PERFORMANCE EFFICIENCY:
   WATER HEATING EQUIPMENT AND HOT WATER STORAGE TANKS SHALL MEET THE REQUIREMENTS OF TABLE 504.2 OF THE ENERGY CONSERVATION CODE OF NYS. THE EFFICIENCY SHALL BE VERIFIED THROUGH DATA FURNISH BY THE MANUFACTURER OR THROUGH CERTIFICATION UNDER AN APPROVED CERTIFICATION PROGRAM.
2. TEMPERATURE CONTROLS:
   SERVICE WATER HEATING EQUIPMENT SHALL BE PROVIDED WITH CONTROLS TO ALLOW A SET POINT OF 110°F (43°C) FOR EQUIPMENT SERVING DWELLING UNITS AND 90°F (32°C) FOR EQUIPMENT SERVING OTHER OCCUPANCIES. THE OUTLET TEMPERATURE OF LAVATORIES IN PUBLIC FACILITY REST ROOMS SHALL BE LIMITED TO 110°F (43°C).
3. PIPE INSULATION:
   FOR AUTOMATIC CIRCULATING HOT WATER SYSTEMS, PIPING SHALL BE INSULATED WITH 1 INCH (25mm) OF INSULATION HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 BTU PER INCH/HxFT2x°F (1.53 W PER 25 mm/m2xK). REFER TO INSULATION REQUIREMENTS ABOVE. THE FIRST 8 FEET (2438mm) OF PIPING IN NONCIRCULATING SYSTEMS SERVED BY EQUIPMENT WITHOUT INTEGRAL HEAT TRAPS SHALL BE INSULATED WITH 0.5 INCH (12.7mm) OF MATERIAL HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 BTU PER INCH/HxFT2x°F (1.53 W PER 25mm/m2xK).
4. HOT WATER SYSTEM CONTROLS:
   AUTOMATIC CIRCULATING HOT WATER SYSTEM PUMPS OR HEAT TRACE SHALL BE ARRANGED TO BE CONVENIENTLY TURNED OFF AUTOMATICALLY OR MANUALLY WHEN THE HOT WATER SYSTEM IS NOT IN OPERATION.

CONCEALED VALVES AND FITTINGS

* WRAP WITH 1-INCH THICK, 1-POUND DENSITY TO REQUIRED PIPE INSULATION THICKNESS.
* SECURE WITH WIRE OR TAPE.
* VAPOR SEAL COLD WATER, CHILLED WATER AND STORM WATER PIPING.

EXPOSED VALVES AND FITTINGS

* PREMOLDED FIBER GLASS OR RADIAL MITERED PIPE INSULATION.
* SKIM COAT OF INSULATING CEMENT.
* WRAP WITH FIBER GLASS REINFORCING CLOTH.
* FINISH COAT OF MASTIC.
* OVERLAP 2-INCHES ON PIPE INSULATION.



INSULATION OF PIPING,VALVES AND FITTINGS FOR EXPOSED AND CONCEALED LOCATIONS

GENERAL NOTES

1. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL CONDITIONS AND SHALL CALL SAME TO THE ATTENTION OF THE ARCHITECT AND CONSTRUCTION MANAGER IF THEY VARY FROM THE LOCATIONS INDICATED IN THE DRAWINGS. THE DRAWINGS ARE NOT TO BE SCALED.
2. ALL PLUMBING WORK SHALL BE IN STRICT ACCORDANCE WITH THE RULES AND REGULATIONS GOVERNING PLUMBING AND DRAINAGE WORK; SHALL CONFORM TO ALL OTHER APPLICABLE REGULATIONS AND SHALL MEET REQUIREMENTS OF INSPECTING AUTHORITIES INCLUDING THE NYC BUILDING CODE.
3. IT IS NOT THE INTENTION OF THESE CONTRACT DRAWINGS NOR OF THE SPECIFICATIONS TO DESCRIBE OR TO SHOW IN DETAIL, ALL THE VARIOUS PIECES OF APPARATUS AND APPURTENANCES AND THEIR CONNECTIONS. THIS CONTRACTOR SHALL, AS PART OF THE CONTRACT, FURNISH AND INSTALL ALL INCIDENTALS, SUCH AS PIPE, FITTINGS, VALVES, ETC., REQUIRED TO COMPLETE THE INSTALLATION OF THE EQUIPMENT. THIS CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS AND PLUMBING DRAWINGS FOR EXACT LOCATION OF FIXTURES INCLUDING TYPE AND QUANTITIES. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND CONNECTING ALL FIXTURES AND EQUIPMENT.
4. ALL WORK DESCRIBED IN THE SPECIFICATIONS AND NOT SHOWN ON THE DRAWINGS, OR VICE VERSA, SHALL BE INSTALLED IN A MANNER SIMILAR TO THE WORK SHOWN OR DESCRIBED.
6. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS EXACT LOCATION SHALL BE COORDINATED WITH ALL TRADES, ARCHITECTURAL DRAWINGS, GENERAL CONTRACTOR AND PRIME CONTRACTOR.
7. ALL EXPOSED PIPING PENETRATIONS THROUGH WALLS OR CEILINGS SHALL BE PROVIDED WITH APPROPRIATE FIRE RETARDANT SEALANT AND ESCUTCHEONS.
8. ALL FIXTURES TO BE SEALED WHERE FIXTURE COMES IN CONTACT WITH WALLS OR FLOOR WITH CLEAR SEALANT.
9. COORDINATE ALL WORK WITH ALL OTHER CONTRACTORS PERTAINING TO THE LOCATION OF PLUMBING AND DRAINAGE PIPING HVAC WORK, LIGHTING FIXTURES, AND ELECTRICAL, PROVIDE ALL NECESSARY PIPING OFFSETS AND CHANGES IN DIRECTION TO ACCOMPLISH A COMPLETE INSTALLATION.
10. SUBMISSION OF A PROPOSAL SHALL BE EVIDENCE THAT A CAREFUL EXAMINATION OF THE SITE, DRAWINGS & SPECIFICATIONS HAS BEEN MADE AND THE CONTRACTOR IS FAMILIAR WITH THOSE ITEMS AND AREAS THAT WILL PRESENT DIFFICULTY TO THE PERFORMANCE OF THIS CONTRACT. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT, ETC NECESSARY TO COMPLETE ALL WORK AS A RESULT OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN.
    A. ALL DIMENSIONS AND EXISTING SITE CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THIS SITE BEFORE PROCEEDING WITH ANY WORK.
11. SANITARY DRAINAGE SHALL HAVE A UNIFORM GRADE OF 1/4" PER FOOT, FOR 2 1/2" AND SMALLER AND AN 1/8" PER FOOT FOR 3" OR LARGER, U.O.N.
12. PROVIDE CLEANOUTS , CLEANOUTS SHALL BE SAME SIZE AS THE PIPES THEY SERVE UP TO 4 INCHES, AND NOT LESS THAN 4 INCHES FOR LARGER PIPING.
13. PROVIDE CLEANOUTS FOR CHANGES IN DIRECTION FOR ALL SANITARY PIPING.
14. TEMPORARY FACILITIES TO REMAIN OPERATIONAL DURING CONSTRUCTION. TEMPORARILY ROUTING OF PIPING SHALL BE PROVIDED AS NOT TO INTERFERE WITH NEW CONSTRUCTION EXCEPT AS OTHERWISE DIRECTED BY OWNERS REPRESENTATIVE.
15. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH RESPECT TO OTHER TRADES, STRUCTURE AND CEILING HEIGHTS. CONTRACTOR SHALL COORDINATE ALL WORK WITH ARCHITECTURAL LAYOUTS, INCLUDING CEILING HEIGHTS.
16. PROVIDE EACH FLOOR DRAIN WITH A 'TRAP GUARD' BY ProVent SYSTEM.

N.Y.C. BUILDING DEPARTMENT NOTES

THE PLUMBING SYSTEMS (SANITARY, STORM WATER, VENT, WATER DISTRIBUTION) AND ALL ASSOCIATED EQUIPMENT SHALL BE CONSTRUCTED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE NEW 2014 NEW YORK CITY BUILDING CODE, AS CITED IN CHAPTER 29 AND REFERENCED TO THE NEW YORK CITY PLUMBING CODE(NYCPC).

1. THE SANITARY SYSTEM SHALL BE IN FULL ACCORDANCE WITH THE GENERAL PROVISIONS IN THE NYCPC- CHAPTER 7; SANITARY DRAINAGE.
2. THE MATERIALS USED IN THE PLUMBING SYSTEM SHALL BE PROVIDED IN FULL ACCORDANCE WITH SECTION PC702-MATERIALS AND PC605-MATERIALS, JOINTS & CONNECTIONS.
3. EQUIPMENT HOOK-UP AND THE JOINING OF PIPING SHALL BE IN FULL COMPLIANCE WITH SECTION PC705-JOINTS AND PC706-CONNECTION BETWEEN DRAINAGE PIPING AND FITTING.
4. ALL FIXTURES SHALL COMPLY WITH THE REQUIREMENTS OUTLINED IN THE NYCPC- CHAPTER 4; FIXTURES, FAUCETS AND FITTINGS.
5. THE INSTALLATION OF FIXTURES WILL BE IN FULL ACCORDANCE WITH SECTION PC405- INSTALLATION OF FIXTURES.
6. TRAPS FOR FIXTURES AND DRAIN LINES WILL BE PROVIDED AND CLEANOUTS INSTALLED IN FULL ACCORDANCE WITH PC708-CLEANOUTS AND PC1002- TRAP REQUIREMENTS.
7. VERTICAL AND HORIZONTAL PIPING WILL BE HUNG AND SUPPORTED IN THE FULL COMPLIANCE WITH PC308- PIPING SUPPORT.
8. THE WATER SUPPLY SYSTEM SHALL BE INSTALLED IN FULL COMPLIANCE WITH THE NYCPC- CHAPTER 6; WATER SUPPLY AND DISTRIBUTION.
9. THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN FULL COMPLIANCE WITH THE NYCPC- CHAPTER 7; SANITARY DRAINAGE.
10. THE VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN FULL COMPLIANCE WITH THE NYCPC- CHAPTER 9; VENTS.
11. CHANGES IN DIRECTION IN DRAINAGE PIPING SHALL BE MADE WITH APPROPRIATE USE OF 45 DEGREE WYES, LONG SWEEPS, SHORT SWEEPS, SIXTH, EIGHT OR SIXTEENTH BENDS OR BY A COMBINATION OF THESE OR EQUIVALENT FITTINGS.
12. SANITARY TEES AND QUARTER BENDS MAY BE USED IN DRAINAGE LINES ONLY WHERE THE DIRECTION OF FLOW IS FROM THE HORIZONTAL TO THE VERTICAL.
13. SHORT SWEEPS WILL BE PERMITTED IN DRAINAGE PIPING 3 INCH DIAMETER OR LARGER FOR ANY OFFSETS EITHER HORIZONTAL OR VERTICAL.
14. PROTECTION OF PIPING AS OUTLINED IN PC305- PROTECTION OF PIPES AND PLUMBING SYSTEM COMPONENTS, SHALL BE PROVIDED AS REQUIRED.
15. TESTS AND INSPECTIONS OF PLUMBING PIPING SYSTEMS SHALL BE IN ACCORDANCE WITH NYCPC-SECTION PC 312.
16. STORM DRAINAGE PIPING AND SIZING SHALL BE IN ACCORDANCE WITH NYCPC-CHAPTER 11; STORM DRAINAGE.
17. INDIRECT, SPECIAL AND MISCELLANEOUS PIPING SHALL BE AS DIRECTED IN THE NYCPC-CHAPTER 8; INDIRECT/SPECIAL WASTE.
18. GAS PIPING INSTALLATION, MATERIAL AND SIZES SHALL ADHERE TO THE NEW NEW YORK CITY FUEL GAS CODE.
19. ALL PLUMBING FIXTURES SHALL COMPLY WITH LOCAL LAW 29/89- LOW FLOW FIXTURES.
20. RODENT PROOFING SHALL COMPLY WITH SECTION PC304-RODENT PROOFING.
21. PROVIDE COMMISSIONING AS PER SECTION 408 IN THE 2014 NYCECC. REFER TO SPECIFICATIONS FOR MORE INFORMATION.

NYC ECC NOTES:

1. THE PLUMBING HEATED WATER SERVICE PIPING USES THE MAXIMUM ALLOWABLE PIPE METHOD AND IS IN ACCORDANCE WITH SECTION C404.5.1 AND TABLE C404.5.1 BELOW.

2. THE RESIDENTIAL SOURCE OF HEATED WATER IS A CIRCULATED HEATING WATER SYSTEM.

3. INSTANTANEOUS POINT OF USE HOT WATER HEATERS SHALL BE PROVIDED FOR ALL PUBLIC LAVATORIES WITHIN MAXIMUM ALLOWABLE PIPE LENGTHS SPECIFIED IN TABLE C404.5.1.BELOW' .

NOMINAL PIPE SIZE (IN)	MAXIMUM PIPE LENGTH (FEET)	
	PUBLIC LAVATORY FAUCETS	OTHER FIXTURES & APPLICANCES
½	2	43
¾	0.5	21
1	0.5	13
1 ¼	0.5	8
1 ½	0.5	6

MiniTank™

1.5, 2.5, 4 and 6 Gallon Mini Tanks Deliver Hot Water Efficiently

Performance Features
- Point-of-use heating eliminates long hot water pipe runs
- Compact design fits virtually anywhere
- Easy and ready to install
- Hot or cold water feed
- Adjustable temperature control 50°-140°F
- T&P relief valve included
- Glass lined tank for extended life
- Floor and wall mountable, wall bracket included
- Field replacesable element
- ETL tested to UL 174 and NSF 372
- EMT1, EMT2.5 and EMT4 plug into standard outlets, cord included. EMT6 must be hard wired, pig tail included
- Single weld design
- Tank status indicator light –
  Green: ready mode
  Red: heating mode
- Warranty, five (5) years limited on leaks, two (2) years on defects

Product Specifications

Voltage:	120V
Amperage:	12 A
Heating Capacity:	1440 watts
Phase:	Single
Temperature Range:	50°F-140°F
Maximum Operating Pressure:	150 PSI

	Tank Volume (gal)	Weight (lb)	Fittings	Recovery time based on 50° temp. rise.
EMT1	1.5	11.7	1/2" NPT connections at TOP of unit	8 minutes
EMT2.5	2.5	15.5	1/2" NPT connections at TOP of unit	15 minutes
EMT4	4.0	19.3	1/2" NPT connections at TOP of unit	24 minutes
EMT6	6.0	24.9	3/4" NPT connections at TOP of unit	37 minutes

Special Design Service
Inquiries for units for unique applications are welcome.
Call our Technical Service department at **1-800-543-6163**.

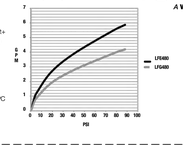
Suggested Specification
Water heater shall be an Eemax MiniTank model number EMT_____.
Unit shall be glass lined with a single weld design. Water connections and supplied T&P valve to be located on top of the unit. Unit shall have an status indicator light with adjustable thermostat. Unit to have a 5 year warranty against leaks.
Certified to UL174.

Series LFe480 Lavatory Tempering Valve

Specifications
Connections ..... See ordering code
Maximum Operating Pressure ..... 125 psi (861 kPa)
Maximum Hot Water Temperature ..... 180°F (82°C)
Minimum Hot Water Supply Temperature ..... 5°F (3°C) above set point+
Hot Water Inlet Temperature Range ..... 120 – 180°F (49 – 82°C)
Cold Water Inlet Temperature Range ..... 40 – 80°F (4 – 27°C)
Temperature Adjustment Range ..... 80 – 120°F (27 – 49°C)
Minimum Flow
LFe480 ..... 0.5 gpm (1.9 lpm)
LFG480 ..... 0.25 gpm (1.0 lpm)
Listing ..... ASSE 1070, IAPMO cUPC
Approval ..... CSA B125.3

* The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.
+ With Equal Pressure

Flow Capacity

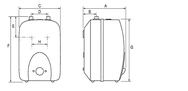


POWERS™ A WATTS Brand

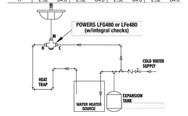
Specifications
Electric Tankless Water Heater



NO LEAD
The wetted surface of this product contacted by consumable water contains 0.25% lead and meets NSF/ANSI 372



Dimensions	EMT1		EMT2.5		EMT4		EMT6	
Key	Inch	mm	Inch	mm	Inch	mm	Inch	mm
A	9.83	249.7	11.25	285.8	12.78	324.1	14.24	361.7
B	3.03	77.0	3.13	79.5	3.94	100.1	3.35	85.1
C	9.72	246.9	10.91	277.1	12.27	311.7	13.85	351.8
D	3.94	100.1	3.94	100.1	3.94	100.1	3.94	100.1
E	5.08	129.0	5.61	142.5	6.46	164.1	7.52	191.0
F	15.09	383.3	16.89	429.0	18.03	458.0	20.79	528.1
G	14.29	363.0	16.09	408.7	17.31	439.7	20.01	508.3
H	2.52	64.0	2.52	64.0	2.52	64.0	2.52	64.0

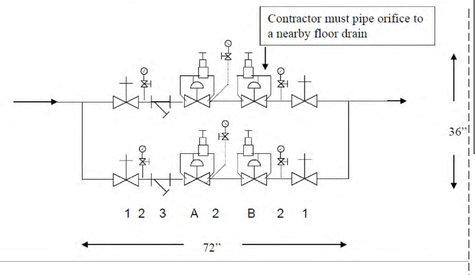


Equipment: Master Pressure Reducing Valve Station – Domestic Cold Water

Legend:
1 = Isolation Valve, Full Ported
2 = Pressure Gauge, 4" Face, SS Case, 0-300 psi range
3 = Y-Strainer, 150F, Punched SS Strainer

A = Pressure Reducing Valve (PRV), Cla-Val 90G-01ASKxHCSI 150Lb Flanged Ends, BS, EPDM, Range: 30-300 psi

B = Excess Pressure Safety Valve (XPSV), Cla-Val 50G-33KxHCSI 150Lb Flanged Ends, BB, EPDM, Range: 20-200 psi
Pipe Relief Orifice to Floor Drain



PRESSURE REDUCING VALVE SCHEDULE

LOCATION	SERVICE	SIZE	INLET (PSI)	OUTLET (PSI)	XPSV C (PSI)	CAPACITY (GPM)	MANUFACTURER
CELLAR	CW FOR CELLAR AND FIRST FLOOR	2½"	100	75	79	70	PRESSURE REDUCING VALVES STATIONS AS PROVIDED BY HARPER CONTROLS INC. OR APPROVED EQUAL.
CELLAR	CW & HW FOR LAUNDRY	1½"	100	75	79	70	
2ND AND 3RD FLOORS	CW & HW SUPPLY FOR FIXTURES AND EQUIPMENT	VARIES	100	50	VARIES	VARIES	PRESSURE REDUCING VALVES TO BE AS WATTS LFN55B OR APPROVED EQUAL.

PRESSURE REDUCING VALVES DETAILS AND SCHEDULE

N.T.S.

LFN55B
Standard Capacity Pressure Reducing Valves
- Sizes ½" – 2" (15 – 50mm)
- Durable brass spring cage
- Intergral strainer
- Proven and economical valve
- Ideal for new residential construction
- Designed and assembled in the USA



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NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

PLUMBING DETAILS I

SEAL & SIGNATURE

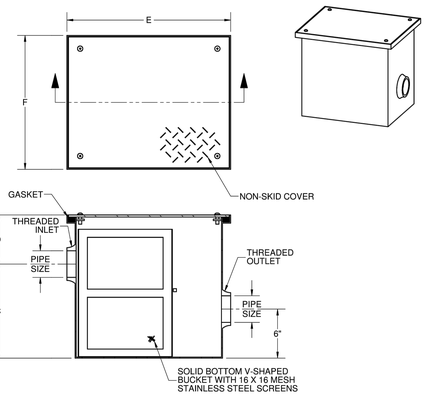
STATE OF NEW YORK — JEFFREY M. REVISKY — LICENSED PROFESSIONAL ENGINEER — 083161

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-300.00
NYC DOB NUMBER:	

SPECIFICATION:
JOSAM 61800 SERIES LINT INTERCEPTOR WITH ACID RESISTANT COATING, NON SKID COVER, GALVANIZED STEEL BUCKET WITH STAINLESS STEEL SCREENS AND THREADED CONNECTIONS.

SOLIDS INTERCEPTOR
LINT TRAP

SERIES **61800**



	TYPE NO.	FLOW RATE (GPM)	MAX NO. OF WASHERS	PIPE SIZE	C	D	E	F	G
	61805	70	7	3	12	15	20	17	27
61805-EXT									

-EXT EXTENSION 6" STANDARD, OR SPECIFY HEIGHT SPECIFY DIMENSIONS "D" 15 AND "G" 27

EXTENSION NEEDED. CONTRACTOR TO PROVIDE 'D' AND 'G' DIMENSIONS BASED ON FINAL LAYOUT SHOP DRAWINGS

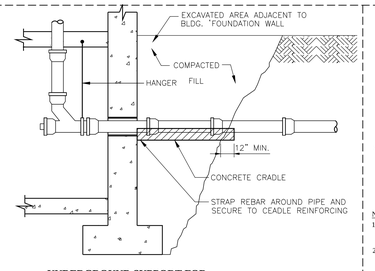
* WILL INCREASE ACCORDINGLY WITH NEW "D" DIMENSION

DATE OF LAST CHANGE: 11/7/14

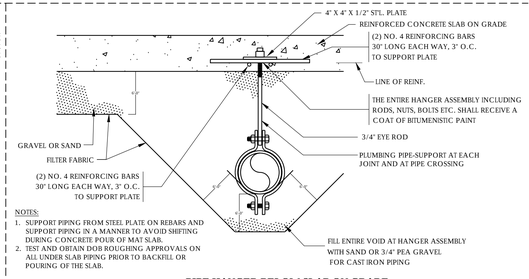
DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES AND CHANGE WITHOUT NOTICE. WE CAN ASSUME NO RESPONSIBILITY FOR USE OF SUPERSEDED OR VOID DATA.

JOSAM COMPANY
MICHIGAN CITY, INDIANA

NOTES

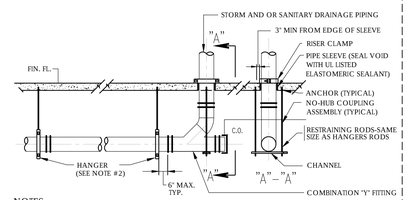


UNDERGROUND SUPPORT FOR PIPING AT FOUNDATION WALL
N.T.S.



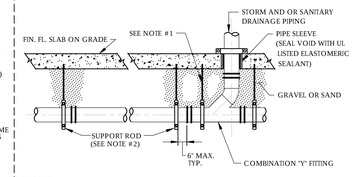
NOTES:
1. SUPPORT PIPING FROM STEEL PLATE ON REBARS AND SUPPORT PIPING IN A MANNER TO AVOID SHIFTING DURING CONCRETE POUR OF MAT SLAB.
2. TEST AND OBTAIN DOB ROUGHING APPROVALS ON ALL UNDER SLAB PIPING PRIOR TO BACKFILL OR POURING OF THE SLAB.

PIPE HANGER BELOW SLAB ON GRADE
SCALE: N.T.S.



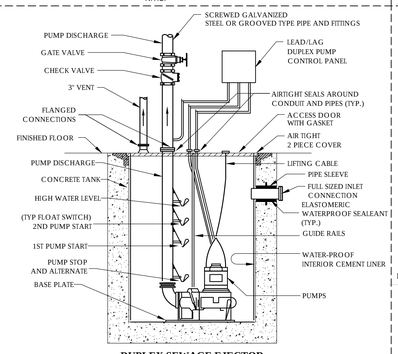
NOTES:
1. PROVIDE RESTRAINING ASSEMBLY AT THE BASE OF EACH STACK.
2. PROVIDE A HANGER AT EACH JOINT.
3. SIZE OF HANGER RODS AND RESTRAINING RODS SHALL BA AS PER CODE AND CAST IRON INSTITUTE STANDARDS.
4. FOR HORIZONTAL SOIL, WASTE, & VENT PIPING LARGER THAN 5" PROVIDE HANGER ON EACH SIDE OF EACH NO-HUB COUPLING SPACED NO FURTHER THAN 18" OR LESS THAN 3" FROM THE COUPLING ENDS.

NO-HUB PIPING RESTRAINING DETAIL
N.T.S.

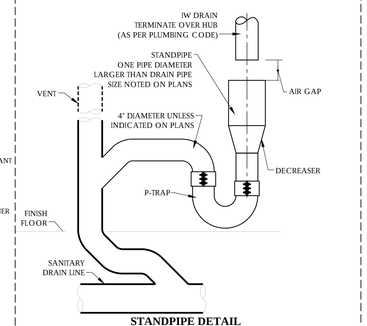


NOTES:
1. PROVIDE RESTRAINING SUPPORT ROD AT THE BASE OF EACH STACK.
2. PROVIDE A SUPPORT ROD AT EACH JOINT.
3. SIZE OF SUPPORT RODS SHALL BE AS PER CODE AND CAST IRON INSTITUTE STANDARDS.
4. FOR HORIZONTAL SOIL, WASTE, & VENT PIPING LARGER THAN 5" PROVIDE HANGER ON EACH SIDE OF EACH NO-HUB COUPLING SPACED NO FURTHER THAN 18" OR LESS THAN 3" FROM THE COUPLING ENDS.

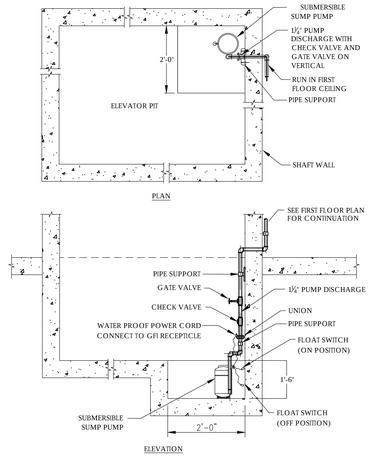
UNDERSLAB PIPING SUPPORT DETAIL
N.T.S.



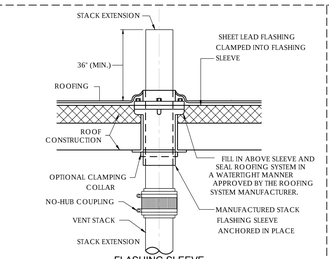
DUPLEX SEWAGE EJECTOR
N.T.S.



STANDPIPE DETAIL
N.T.S.



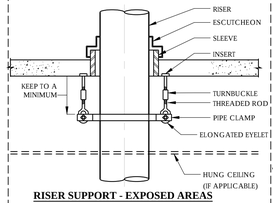
ELEVATOR SUMP PUMP DETAIL
N.T.S.



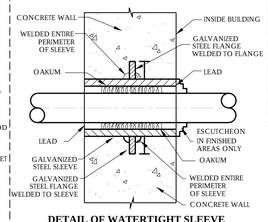
FLASHING SLEEVE

NOTE:
FINAL VENT STACK OUTLET LOCATION TO BE 15 FEET (MIN.) AWAY FROM ANY OUTSIDE VENTILATION AIR INTAKE LOCATION, 10 FEET (MIN.) FROM ANY WALL OR STRUCTURE AND 3 (MIN.) FEET ABOVE STRUCTURE.

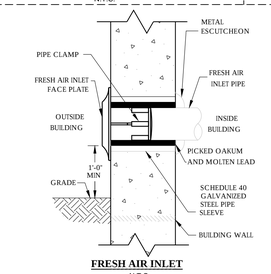
VENT THRU ROOF
N.T.S.



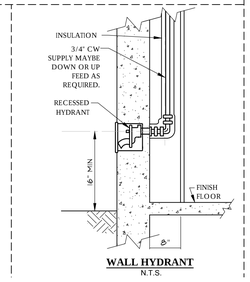
RISER SUPPORT - EXPOSED AREAS
N.T.S.



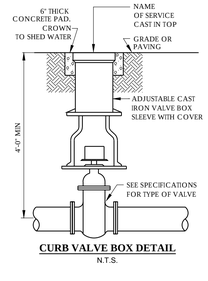
DETAIL OF WATERTIGHT SLEEVE
N.T.S.



FRESH AIR INLET
N.T.S.



WALL HYDRANT
N.T.S.



CURB VALVE BOX DETAIL
N.T.S.

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NEW YORK, NY 10001
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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
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1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

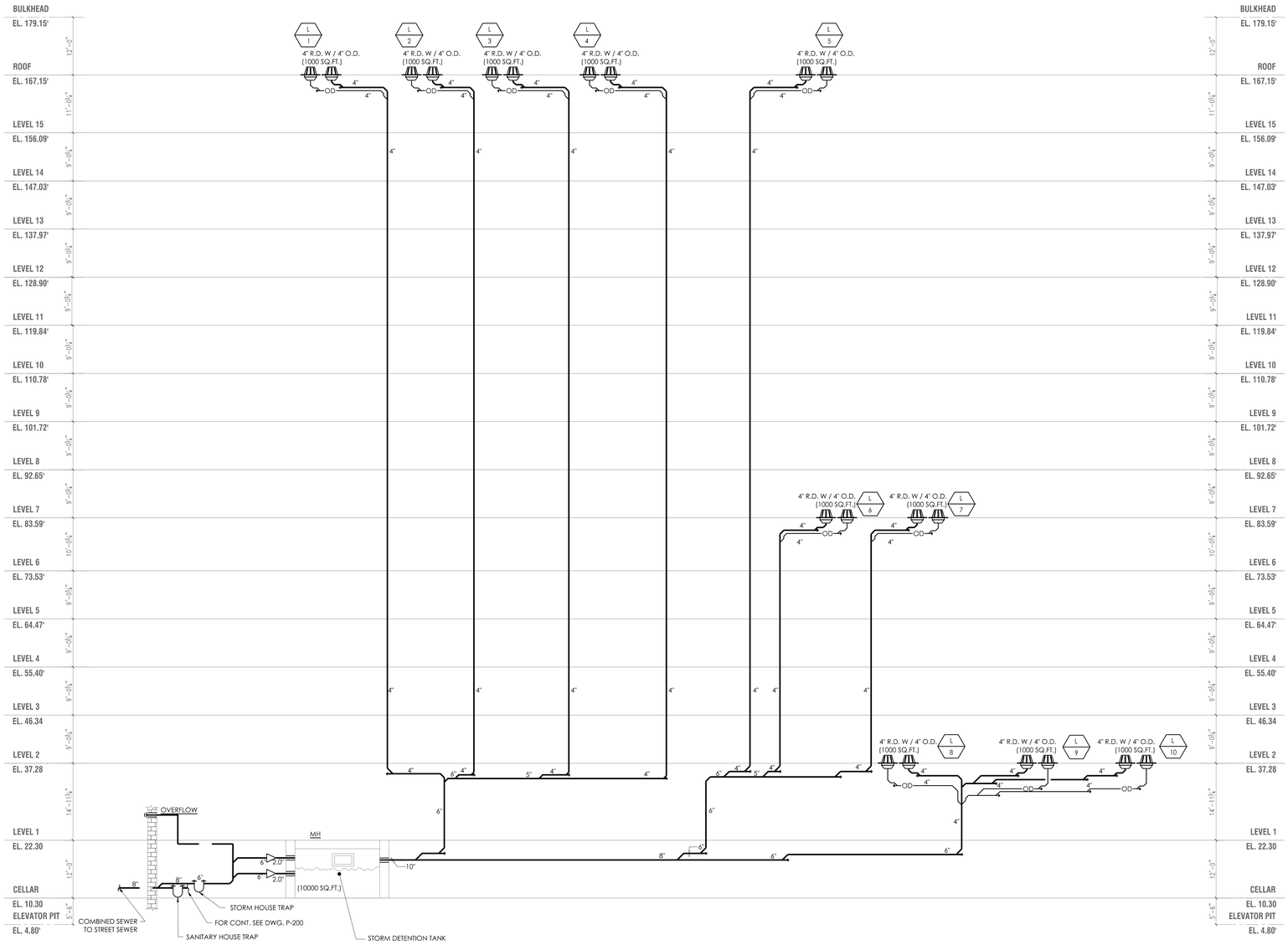
BETANCES VI DEVELEOPMENT
472 - 474 WILLIS AVE. BRONX, NY

PLUMBING DETAILS II

SEAL & SIGNATURE

STATE OF NEW YORK MATTHEW M. WATSON LICENSED PROFESSIONAL ENGINEER 083167

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-301.00
NYC DOB NUMBER:	



STORM DRAINAGE RISER DIAGRAM

SCALE: NTS

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NEW YORK, NY 10001
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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
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1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

PLUMBING
STORM DRAINAGE
RISER DIAGRAM

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WATRO
LICENSED PROFESSIONAL ENGINEER
083161

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	S.R./D.C.
DWG NO:	P-203.00
NYC DOB NUMBER:	

NEW YORK CITY SPRINKLER NOTES:

1. THE INSTALLATION COMPONENTS, SIZING, SPACING, CLEARANCES, POSITION AND TYPES OF SYSTEMS SHALL CONFORM TO 2014 NYC BUILDING CODE , APPENDIX Q, SECTION BC Q102 , SECTION BC 903, AND NFPA 13-2007.
2. ONLY APPROVED MATERIALS SHALL BE USED AS PER CHAPTER 6 OF APPENDIX Q, SECTION BC Q102.
3. WATER SUPPLY FOR AUTOMATIC SPRINKLER SYSTEMS SHALL COMPLY WITH BC SECTION 903.3.5 AND LIMITED AREA SPRINKLER SYSTEM SECTION 903.3.5.1.1.
4. DIRECT CONNECTION OF SPRINKLERS TO THE PUBLIC WATER SYSTEM SHALL CONFORM TO SECTION BC Q102.1 CHAPTER 23.
5. SPRINKLER SHALL BE PROTECTED AGAINST FREEZING AND INJURY AS PER APPENDIX Q, SECTION BC Q102 AND SEC. 8.16.4.1.
6. INSPECTIONS AND TESTS OF SPRINKLERS SHALL BE CONDUCTED AS PER SEC. 901.5 AND APPENDIX Q, SECTION BC Q102, CHAPTER 26.
7. THE OCCUPANCY OF THE AREAS TO BE SPRINKLERED IN ACCORDANCE WITH SECTION 5.1 AND A.5.1 OF APPENDIX Q, SECTION BC Q102.
8. WATER SUPPLY TEST PIPES AND GAUGES SHALL BE PROVIDED AS PER SEC. 8.17.3 AND 8.17.4 AND APPENDIX Q, SECTION BC Q102.
9. PIPING, FITTINGS, SPECIFICATIONS, PIPE SCHEDULES, SYSTEM TEST PIPES, PROTECTION AGAINST CORROSION DAMAGE, VALVES, HANGERS, SPRINKLER GUARDS AND SHIELDS SHALL BE AS PER APPENDIX Q, SECTION BC Q102, CHAPTER 6 AND 9.
10. STOCK OF EXTRA SPRINKLERS SHALL BE FURNISHED AS PER SEC. 6.2.9 OF APPENDIX Q, SECTION BC Q102 (REQUIRED FOR EACH TEMPERATURE RATING).
11. SPRINKLER ALARM WILL BE IN ACCORDANCE WITH NFPA 13, SECT.6.9 AND SEC. 8.17.1 OF APPENDIX Q, SECTION BC Q102 . WATER FLOW ALARM LOCATED IN CELLAR SUPER'S OFFICE.
12. SPACING, LOCATION AND POSITION OF SPRINKLER WILL BE AS PER SECTION 8 NFPA 13-2007 AND APPENDIX Q, SECTION BC Q102.
13. ALL BLIND SPACES EXCEEDING 6' IN WIDTH OR DEPTH WHICH CONTAIN COMBUSTIBLE MATERIAL WILL BE SPRINKLED.
14. ALL PIPING PASSING THROUGH WALL WILL COMPLY WITH SECTION BC713.
15. SPRINKLERS FOR PILED STORAGE SHALL BE INSTALLED AS DEFINED IN CHAPTER 12 OF NFPA 13-2007.
16. DISTANCE OF SPRINKLERS FROM HEAT SOURCE SHALL BE AS PER NFPA13-2007 TABLE 8.3.2.5 (A).
17. AS PER SECTION BC903.1.2 PROVIDE DEPARTMENT OF WATER SUPPLY LETTER WITH FLOW TEST DATA IF THERE IS A DIRECT CONNECTION TO THE STREET WATER SUPPLY.
18. THIS APPLICATION IS NOT FILED AS A RESULT OF ACTIONS BY THE FIRE COMMISSIONER AS AUTHORIZED BY THE B.S&A TO MODIFY THE CERTIFICATE OF OCCUPANCY NOR IS SUCH ACTION PENDING.
19. ALL VALVES SHALL BE IDENTIFIED AS REQUIRED BY SEC. 6-7.4 OF NFPA13-2007.
20. DRAINAGE SHALL CONFORM TO SECTION 8.16.2 AND APPENDIX Q, SECTION BC Q102.
21. A ONE PIECE REDUCING FITTING OF GOOD DESIGN SHOULD BE USED WHEREVER A CHANGE IS MADE IN THE SIZE OF PIPE, AS PER SECTION 6.4.6 OF APPENDIX Q, SECTION BC Q102.
22. ALL VALVES ON CONNECTIONS TO WATER SUPPLY TO SPRINKLER SHALL BE APPROVED O.S.&Y. OR APPROVED INDICATOR TYPE.
23. DRAIN VALVES AND TEST VALVES SHALL BE APPROVED TYPE AS PER SECTION 6.7.3 OF APPENDIX Q, SECTION BC Q102.
24. PIPES SHOULD BE SUPPORTED BY APPROVED ADJUSTABLE HANGERS. HANGERS SHALL BE OF THE TYPE APPROVED FOR USE WITH THE PIPE OR TUBE INVOLVED, AS PER CHAPTER 9 OF APPENDIX Q, SECTION BC Q102.
25. PROVISIONS SHOULD BE MADE TO FACILITATE FLUSHING SYSTEM PIPING BY PROVIDING FLUSHING CONNECTION CONSISTING OF A CAPPED NIPPLE 4' LONG ON END OF A CROSS MAIN AS PER SECTION 8.16.3 OF APPENDIX Q, SECTION BC Q102.
26. SPRINKLERS SHALL BE AN APPROVED TYPE PER SECTION 6.1 & 6.2 OF APPENDIX Q, SECTION BC Q102.
27. TEMPERATURE RATING SHALL COMPLY WITH SECTION 8.3.2 OF APPENDIX Q, SECTION BC Q102.
28. 18" MINIMUM CLEARANCE TO STORAGE BELOW SPRINKLER DEFLECTOR AS PER SECTION 8.5.6 OF APPENDIX Q, SECTION BC Q102.
29. SPRINKLER SYSTEM COMPLIES WITH NFPA 13-2007 AS MODIFIED BY APPENDIX Q, SECTION BC Q102.
30. AUTOMATIC INTERLOCK CUTOFF SWITCH FOR VENTILATION WILL CONFORM TO CHAPTER 6 OF THE MECHANICAL CODE (APPLICABLE ONLY IF THERE IS AN AIR SYSTEM UTILIZING RECIRCULATED AIR AND REQUIRING A THERMOSTATIC DEVICE).
31. HYDRAULICALLY DESIGNED SPRINKLER SYSTEMS SHALL BE IN ACCORDANCE WITH CHAPTER 11 OF APPENDIX Q, SECTION BC Q102, NFPA 13, SECTION 11.2.2 AND TABLE 11.2.3.1.1.
32. FIRE DEPARTMENT CONNECTION SHALL BE IN ACCORDANCE WITH APPENDIX Q, SECTION 102, 8.17.2.AND CAPS SHALL BE PAINTED GREEN AS PER LLS8/09.
33. MINIMUM BRANCH PIPE SIZE TO BE ONE INCH (1").
34. MINIMUM OPERATING PRESSURE FOR A SPRINKLER SHALL BE 7PSI.
35. SPRINKLERS PIPING AND COMBINED SPRINKLERS / STANDPIPE PIPING SHALL BE PAINTED IN ACCORDANCE WITH LOCAL LAW 58/2009.
36. THE SPRINKLER SYSTEM SHALL UNDERGO SUCCESSFUL HYDROSTATIC PRESSURE TESTING BY A LICENSED MASTER PLUMBER OR LICENSED FIRE SUPPRESSION PIPING CONTRACTOR IN ACCORDANCE WITH LOCAL LAW 63 OF 2009.
37. IDENTIFICATION OF VALVES SHALL BE AS PER NFPA 13, 8.16.1.1.8, 8.17.2.4.7 AND
    6.7.4.1 ALL CONTROL, DRAIN, AND TEST CONNECTION VALVES SHALL BE PROVIDED WITH PERMANENTLY MARKED WEATHERPROOF METAL OR RIGID PLASTIC IDENTIFICATION SIGNS.
    6.7.4.2 THE IDENTIFICATION SIGN SHALL BE SECURED WITH CORROSION RESISTANT WIRE, CHAIN, OR OTHER APPROVED MEANS.
    6.7.4.3 THE CONTROL VALVE SIGN SHALL IDENTIFY THE PORTION OF THE BUILDING SERVED.
    6.7.4.3.1* SYSTEMS THAT HAVE MORE THAN ONE CONTROL VALVE THAT MUST BE CLOSED TO WORK ON A SYSTEM OR SPACE SHALL HAVE A SIGN REFERRING TO EXISTENCE AND LOCATION OF OTHER VALVES.

NEW YORK CITY STANDPIPE NOTES

1. THE INSTALLATION COMPONENTS, SIZING, SPACING, CLEARANCES, POSITION AND TYPES OF SYSTEMS SHALL CONFORM TO 2014 NYC BUILDING CODE, APPENDIX Q, SECTION BC Q105, SECTION BC 905, AND NFPA 14-2007.
2. TWO-WAY FIRE DEPARTMENT CONNECTION SHALL BE AS PER SECTION BC Q105, CHAPTER 4 (4.8.2).
3. TWO-WAY FIRE DEPARTMENT CONNECTION LOCATION SHALL BE AS PER SECTION BC Q105, CHAPTER 4 (4.8.2.2 .G).
4. TWO-WAY FIRE DEPARTMENT CONNECTION SHALL HAVE APPROVED TYPE 3/4" AUTOMATIC BALL DRIP SET IN HORIZONTAL POSITION, CHAPTER 4 (4.8.2.2.H).
5. HOSE CONNECTION SHALL HAVE NOMINAL 2-1/2" THREADS CONFORMING TO FDNY STANDARDS, CHAPTER4 (4.7.2).
6. CAPS SHALL BE PAINTED RED, COMBINATION SHALL BE PAINTED YELLOW FOR SOLEY, SPRINKLER SHALL BE PAINTED GREEN, CHAPTER 4 (4.8.2.1). ALL EXPOSED PIPE SHALL BE PAINTED RED.
7. STANDPIPE LOCATION SHALL BE AS PER SECTION BC 905, 905.2 AND NFPA 14, CHAPTER 7.
8. APPROVED 3-WAY MANIFOLD WILL BE LOCATED ABOVE ROOF. IF AREA IS NOT HEATED A CONTROL VALVE AND AUTOMATIC BALL DRIP IN HEATED SPACE BELOW WILL BE PROVIDED, BC Q105 CHAPTER (7.3.2.2).
9. PIPE AND FITTINGS FOR STANDPIPE WILL BE ACCORDING TO NYC CODE. ALL PIPES AND FITTINGS AS APPROVED BY BOARD OF STANDARDS AND APPEALS.
10. TEST SHALL COMPLY WITH APPENDIX Q SECTION 8.16.4.2.1.
11. RISER LOCATION SHALL COMPLY WITH BC 905, 905.1.1.
12. INSTALL RISER CONTROL VALVES AS PER BC 905 CHAPTER 4 (6.2.2.1).
13. FIRE PUMP IF REQUIRED, SHALL BE INSTALLED AS PER APPENDIX Q, CHAPTER 9, (9.12.2.A).
14. ELECTRIC EQUIPMENT USED IN CONJUNCTION WITH THE STANDPIPE SYSTEM SHALL COMPLY WITH APPENDIX Q, CHAPTER 9, (9.12.2.D).
15. ALL DEVICES SHALL BEAR MANUFACTURER'S NAME AND NUMBER OF APPROVAL CHAPTER 6 (6.2.2.3).
16. CONTROL VALVES SHALL INDICATED BY SIGNS AND ARROWS. VALVE GREATER THAN 7'-0" FEET ABOVE FLOOR AS PER WILL BE MADE ACCESSIBLE BY MEANS OF APPROVED IRON LADDERS. APPENDIX Q, CHAPTER 6 (6.2.2.2.6).
17. VALVES SHALL BE SEALED CLOSED BY MEANS OF HEAVY CHAINS OR APPROVED TYPE LOCKS.
18. AN ELEVATOR SHALL BE MAINTAINED AT ALL TIME FOR FIRE DEPT. USE.
19. THE COMPLETE STANDPIPE SYSTEM SHALL COMPLY WITH SECTION BC 905, AND APPENDIX Q SECTION BC Q1051 AND DIVISION OF FIRE PREVENTION.
20. STANDPIPE PIPING (INCLUDING RISERS AND CROSS-CONNECTIONS) SHALL BE PAINTED IN ACCORDANCE WITH LOCAL LAW 58 / 2009.
21. THE STANDPIPE SYSTEM SHALL UNDERGO SUCCESSFUL HYDROSTATIC PRESSURE TESTING BY A LICENSED MASTER PLUMBER OR LICENSED FIRE SUPPRESSION PIPING CONTRACTOR IN ACCORDANCE WITH LOCAL LAW 63 / 2009.
22. STANDPIPE PIPING TO BE PROVIDED WITH APPROVED PAINTED SIGNS HAVING RED BACKGROUND WITH MINIMUM 1 INCH WHITE LETTERS FOR INTERIOR AND WHITE BACKGROUND WITH MINIMUM 1 INCH RED LETTERS FOR EXTERIOR AS PER MODIFIED NFPA 14 4.10.AND APPENDIX Q.
23. SIGNS SHALL BE SECURED TO A DEVICE OR THE BUILDING WALL WITH CORROSIONRESISTANT CHAINS OR FASTENERS, AS PER NFPA 14, 6.6
24. WHERE A FIRE PUMP IS PROVIDED, A SIGN SHALL BE LOCATED IN THE VICINITY OF THE PUMP INDICATING THE MINIMUM PRESSURE AND FLOW REQUIRED AT THE PUMP DISCHARGE FLANGE TO MEET THE SYSTEM DEMAND, AS PER NFPA 14, 6.7

WALL FIRE RATINGS:

WALLS OF ALL MECHANICAL SPACES (BOILER ROOM, WATER METER ROOM, PUMP ROOM, GAS METER ROOM, LAUNDRY ROOM, STORAGE ROOM, ETC.) SHALL BE 2HR FIRE RATED.

WALLS BETWEEN THE APARTMENTS AND THE PUBLIC HALLWAYS SHALL BE 2HR FIRE RATED.

ALL WALL PARTITIONS BETWEEN ROOMS WITHIN THE APARTMENTS SHALL BE 1HR FIRE RATED.

WALLS AROUND COMPACTOR AND REFUSE ROOMS SHALL BE 3HR FIRE RATED.

SCOPE OF WORK:

- NEW 10 STORY APARTMENT BUILDING R2 OCCUPANCY.
- INSTALLATION OF
  A COMBINED CLASS I AUTOMATIC FIRE STANDPIPE-SPRINKLER SYSTEM THROUGHOUT
  WITH FIRE PUMP AND WET-PIPE SPRINKLER SYSTEM
  AS PER BC 905.3.
- INSTALLATION OF NEW FIRE SERVICE AND DCDA (BACKFLOW PREVENTER) IS FILED UNDER NEW BUILDING APPLICATION NB # 321195979
- STREET CONNECTION APPLICATION # 4360
- COMPLY WITH 1 RCNY 3616-02 FOR SPRINKLERS IN CLOSETS AND PANTRIES
- SPRINKLER SPACING SHALL BE PER NFPA 13-2007 SECTION 11.2.3.1.5

APPLICATIONS FILED SEPARATELY:

- SPRINKLER FIRE ALARM SYSTEM #321487182.

TR-1 INSPECTIONS:

- SPRINKLER SYSTEMS (BC 1704.23)
- STANDPIPE SYSTEMS (BC 1704.24)
- FIRE-RESISTANT PENETRATIONS AND JOINTS (BC1704.27)

FIRE PROTECTION SYMBOLS & ABBREVIATIONS

F	COMBINED FIRE STANDPIPE AND SPRINKLER PIPING
SPKR	SPRINKLER PIPING
D	SPRINKLER DRAIN
	GATE VALVE
	CONTROL VALVE WITH TAMPER SWITCH
PRV	PRESSURE REDUCING VALVE
	WATER FLOW SWITCH
	CHECK VALVE
ABD	GATE VALVE
	DROP / DOWN
	RISE / UP
	TOP CONNECTION
	BOTTOM CONNECTION
	SLOPE CHANGE IN PIPE ELEVATION
	TWO-WAY FIRE DEPARTMENT CONNECTION
	FIRE HOSE VALVE (FHV)
	FLOOR CONTROL VALVE ASSEMBLY (FCV)
	FLOOR CONTROL VALVE ASSEMBLY (FCV)
	SPRINKLER DRAIN INSPECTOR TEST VALVE ASSEMBLY
	SPRINKLER RISER
A.B.D.	AUTOMATIC BALL DRIP
A.F.F.	ABOVE FINISH FLOOR
CHV	CHECK VALVE
CLG. EL.	CEILING ELEVATION
CV	CURB VALVE
CV W/ A.B.D.	CHECK VALVE WITH AUTOMATIC BALL DRIP
C.P.	CONTROL PANEL
FCVA	FLOOR CONTROL VALVE ASSEMBLY
F.D.	FLOOR DRAIN
FL	FLOOR
M.P.	MARKETING PURPOSES
NO	NORMALLY OPEN
N.T.S.	NOT TO SCALE
O.S.& Y.	OUTSIDE STEM AND YOKE VALVE
PG	PRESSURE GAUGE
PSI	POUND PER SQUARE INCH
R.C.V.	RISER CONTROL VALVE
T.S.	TAMPER SWITCH
W.F.S.	WATER FLOW SWITCH
WH	WATER HYDRANT
	CONCEALED OR SEMI-RECESSED SPRINKLER HEAD
	UPRIGHT/PENDENT SPRINKLER HEAD
	SIDE WALL SPRINKLER HEAD
E	EXTEND COVERAGE SIDE WALL SPRINKLER HEAD

PIPE AND FITTINGS MATERIALS

A. MAIN PIPING AND BRANCHES SHALL BE SCHEDULE 40 BLACK STEEL STANDARD WEIGHT, SUITABLE FOR 175 PSI WORKING PRESSURE ASTM A 53 B ERW.
B. FITTINGS SHALL BE VICTAULIC FITTINGS ON MAIN AND THREADED, STANDARD WEIGHT, MALLEABLE IRON (175 PSI), OR ROLLED GROVED WITH VICTAULIC FITTINGS ON BRANCHES.

HYDRANT FLOW TEST DATA:

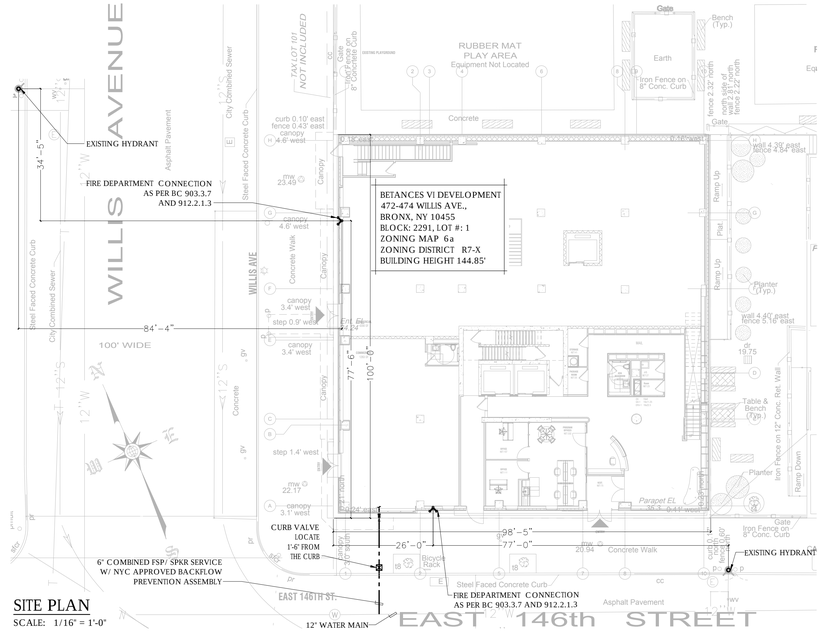
THE HYDRANT FLOW TEST IN THE VICINITY OF 474 WILLIS AVE., BRONX WAS PERFORMED ON 11/24/2017 AT 8:51 AM WITH THE FOLLOWING RESULTS:

STATIC PRESSURE: 45 PSI

RESIDUAL PRESSURE: 44 PSI

TEST FLOW: 500 GPM

THE STATIC PRESSURE WAS TAKEN ON A 12 INCH WATER MAIN WHICH IS FED FROM TWO DIRECTIONS ON THE NORTH SIDE OF EAST 148TH ST. 2ND HYDRANT WEST OF BROOK AVE. WAS 45 PSI. THE RESIDUAL PRESSURE AT THIS POINT WAS 44 PSI WHEN 500 GPM WERE FLOWING FROM THE NORTH SIDE OF EAST 148TH ST. 1ST HYDRANT WEST OF BROOK AVE..



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

SPRINKLER APPLICATION CHART

LEGEND	TYPE	RESPONSE TYPE	COVERAGE SPACING OR AREA	DENSITY	TEMPERATURE RATING	K-FACTOR	FLOW [GPM]	PRESSURE [PSI]	MANUFACTURER	LISTING	MODEL
●	PENDANT CONCEALED	FAST RESPONSE	UP TO 20'X20', MIN 8'	0.10 GPM/ SQ. FT.	165°	4.9	20	16.7	RELIABLE	UL LISTED UL GUIDE #VKKW	RFC 49
▶	SIDEWALL RESIDENTIAL	FAST RESPONSE	UP TO 16'X20'	0.10 GPM/ SQ. FT.	155°	4.2	23	27.4	RELIABLE	UL LISTED UL GUIDE #VKKW	RFS42
E ▶	EXTENDED COVERAGE SIDEWALL	FAST RESPONSE	UP TO 14'X26'	0.10 GPM/ SQ. FT.	155°	5.8	46	62.9	RELIABLE	UL LISTED UL GUIDE #VKKW	F1RES 58 HSWX
○	UPRIGHT 212° F-BOILER RM	QUICK RESPONSE	130 SQ. FT.	0.15 GPM/ SQ. FT.	165°F ROOM 212°F BOILER	5.6	14.8	7	RELIABLE	UL LISTED UL GUIDE #VNIV	GFR
●	PENDANT CONCEALED	QUICK RESPONSE	225 SQ. FT.	0.10 GPM/ SQ. FT.	165°	5.6	14.8	7	RELIABLE	UL LISTED UL GUIDE #VNIV	F1FR 56

* SPRINKLER HEADS INSIDE BOILER ROOM SHALL HAVE 212°F TEMPERATURE RATING.

NOTES:

1. CHECK VALVE RELIABLE MODEL G UL #143V, MEA #258-93-E.
2. NIBCO F607 OS&Y VALVE UL #262.
3. THE FIRE ALARM IS FILED UNDER SEPARATE APPLICATION.
4. THE BACKFLOW PREVENTER VALVES SHALL BE ELECTRICALLY SUPERVISED BY A TAMPER SWITCH INSTALLED IN ACCORDANCE WITH NFPA 72 AND SEPARATELY ANNUNCIATED.
5. ALL VALVES CONTROLLING THE WATER SUPPLY FOR AUTOMATIC SPRINKLER SYSTEMS, PUMPS, WATER FLOW SWITCHES ON ALL SPRINKLER SYSTEMS SHALL BE ELECTRICALLY SUPERVISED BY THE FIRE ALARM SYSTEM.
6. DOUBLE CHECK VALVE ASSEMBLY (DDCV) WATER BACKFLOW PREVENTOR DEVICE MUST BE INSTALLED AS PER DEP APPROVED DOCUMENTS.
7. PROVIDE ADJUSTABLE PRESSURE RESTRICTING VALVE ON 2 1/2" ANGLE VALVE WHEN PRESSURE EXCEEDS 175 PSI.
8. PROVIDE PRESSURE RESTRICTING VALVES ON ALL ANGLE HOSE VALVES. ON CELLAR PER NFPA14-2007 SECTION 7.8.3.
9. MAIN PIPING AND BRANCHES SHALL BE SCHEDULE 40 BLACK STEEL STANDARD WEIGHT, SUITABLE FOR 175 PSI WORKING PRESSURE ASTM A 53 B ERW.
10. FITTINGS SHALL BE VICTAULIC FITTINGS ON MAIN AND THREADED, STANDARD WEIGHT, MALLEABLE IRON (175 PSI), OR ROLLED GROOVED WITH VICTAULIC FITTINGS ON BRANCHES.
11. COMPLY WITH NFPA-20 2007 EDITION FOR FIRE PUMP REQUIREMENTS.
12. SPRINKLER SYSTEM IS DESIGNED BASED ON NFPA 13 2007 EDITION.
13. MINIMUM RESIDUAL PRESSURE AT MOST REMOTE HOSE OUTLET SHALL BE 65 PSI AT 250 GPM PER NFPA14-2007 SECTION 7.10.2.2.

NYC ENERGY CODE COMPLIANCE

WORK TIMES FA, FP, SD, SP, FS, EQ, CC, OT/BPP or OT/FPP, IN ACCORDANCE WITH 1 RCNY §5000-01(e)(2)(ii) ARE EXEMPT FROM ENERGY ANALYSIS.

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

SPRINKLER / STANDPIPE SITE PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW M. WATKO · 083167 · LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	D.C.
DWG NO:	SPSD-001.00
NYC DOB NUMBER:	

ORDINARY HAZARD GROUP OCCUPANCY

SPRINKLER SYSTEM IS DESIGNED BASED ON NFPA 13

1) MECHANICAL ROOMS, BUIDING STORAGE ROOMS, COMMERCIAL SPACE, OFFICES, LAUNDRY, BIKE STORAGE
-ORDINARY HAZARD SPRINKLER HEAD SPACING:
130 SQ FT. PER SPRINKLER HEAD.

DESIGN DENSITY 0.15 GPM/SQ. FT.

2) TOTAL SPRINKLER HEADS IN CELLAR: 104

SPRINKLER HEAD LEGEND - GENERAL	
SYMBOL	DESCRIPTION
●	CONCEALED SPRINKLER HEAD
○	UPRIGHT/PENDENT SPRINKLER HEAD
◀	SIDE WALL SPRINKLER HEAD

NOTES:

1. WALLS BETWEEN THE APARTMENTS AND THE PUBLIC HALLWAYS SHALL BE 2HR FIRE RATED.
2. ALL WALL PARTITIONS BETWEEN APARTMENTS SHALL BE 1HR FIRE RATED.
3. WALLS AROUND REFUSE ROOMS SHALL BE 3HR FIRE RATED.
4. THE FOLLOWING ROOMS / SPACES SHALL NOT BE SPRINKLERED:
   - ELECTRICAL ROOMS AND CLOSETS.
   - ELEVATOR CONTROL ROOM
   - TOILET ROOMS LESS THAN 55 SQ.FT.
   - CLOTHES CLOSETS-LINEN CLOSETS LESS THAN 12 SQ.FT.
   - HUNG CEILING SPACE.

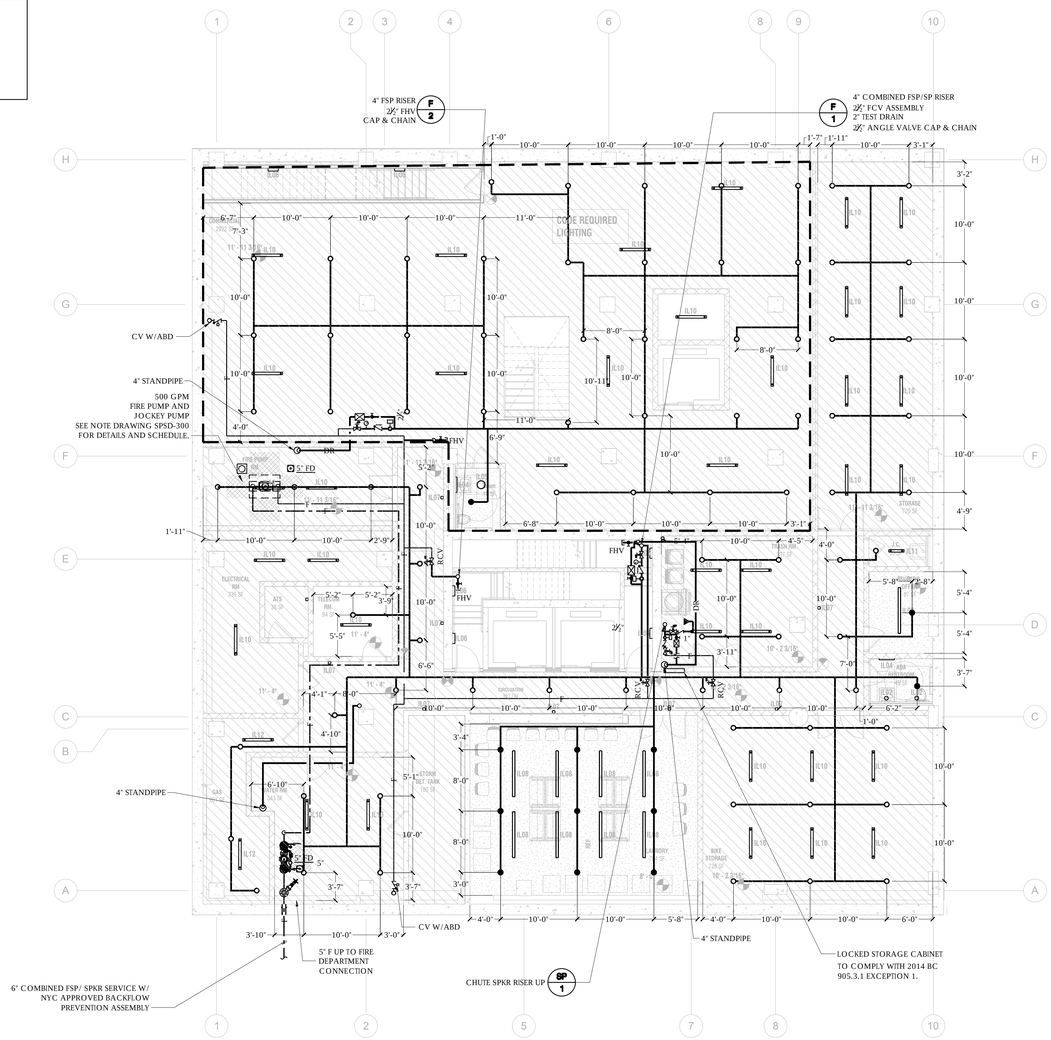
DRAWING GENERAL NOTES:

1. SPRINKLER HEAD LOCATIONS SHOWN ON SPRINKLER DRAWING ARE DIAGRAMMATIC.

   REFER TO ARCHITECTURAL REFLECTED ARCHITECTURAL PLAN FOR EXACT SPRINKLER HEAD LOCATION AND ALIGNMENT.
2. SPRINKLER CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPLETE SHOP DRAWINGS INCLUDING HEAD LOCATIONS, PIPE SIZING AND HYDRAULIC CALCULATIONS.

   SPRINKLER SHOP DRAWINGS AND CALCULATIONS SHALL BEAR THE SEAL OF AN ENGINEER LICENSED IN THE PROJECT STATE.
3. ALL CONCEALED SPRINKLER HEADS SHALL HAVE WHITE FINISH CAPS UNLESS OTHERWISE NOTED ON DRAWINGS OR AS OTHERWISE DIRECTED BY ARCHITECT.
4. ALL SPRINKLER HEAD LOCATIONS TO BE FIELD COORDINATED WITH LIGHTING FIXTURES: - IN GYP. BD CEILING AREAS SPRINKLERS TO BE ALIGNED WITH OR CENTERED BETWEEN ADJACENT LIGHT FIXTURES.
5. SPRINKLER HEAD LOCATIONS SHALL BE LOCATED TO AVOID OBSTRUCTIONS (LTG FIXTURES, BEAMS, ETC.) WITH MINIMUM ALLOWABLE DISTANCES AS REQUIRED PER NFPA-13 AND LOCAL JURISDICTION.
6. ADDITIONAL PENDENT SPRINKLER HEAD TO BE INSTALL WHERE THE SOFFITS USED FOR THE INSTALLATION OF SIDEWALL SPRINKLER HEADS EXCEEDS 8".
7. LIGHTING FIXTURE CUTS NOT PROVIDED. CONTRACTOR TO VERIFY IN FIELD FOR MINIMUM DISTANCE BETWEEN SPRINKLERS AND LTG FIXTURES TO ENSURE ADEQUATE COVERAGE.

NOTE:
PROVIDE PRV ON FLOOR CONTROL VALVE ASSEMBLIES AND PRESSURE RESTRICTIONS ON FIRE HOSE VALVES AT CELLAR.



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

CEILING SYMBOL & MATERIAL LEGEND

SYMBOL	DESCRIPTION	MATERIAL	DESCRIPTION
TAG	KEYNOTE TAG		EXPOSED CONCRETE PLANK
0.00	SPOT ELEVATION		SKIM COATED CONCRETE PLANK
C/S	CARBON / SMOKE DETECTOR		GYPSUM DROP CEILING
	EXIT SIGN		EXTERIOR METAL PANEL (ACM) SYSTEM

LIGHTING FIXTURE SCHEDULI

MARK	SYMBOL	TYPE
IL01		INTERIOR RECESSED DOWNLIGH
IL02		INTERIOR RECESSED DOWNLIGH
IL03		INTERIOR WALL SCONCE HOR.
IL04		INTERIOR WALL SCONCE HOR.
IL05		INTERIOR RECESSED FIXTURE R
IL06		INTERIOR WALL MOUNT ROUND
IL07		INTERIOR WALL SCONCE VER.
IL08		INTERIOR BOX PENDANT
IL09		INTERIOR RECESSED DOWNLIGH
IL10		INTERIOR LINEAR PENDANT 8'
IL11		INTERIOR LINEAR PENDANT 3'
IL12		INTERIOR LINEAR PENDANT 8'
IL13		INTERIOR LED STRIP LIGHT

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NEW YORK, NY 10001
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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

SPRINKLER / STANDPIPE CELLAR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW M. RATINO · 083161 · LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	D.C.
DWG NO:	SPSD-100.00
NYC DOB NUMBER:	

ORDINARY HAZARD GROUP OCCUPANCY

SPRINKLER SYSTEM IS DESIGNED BASED ON NFPA 13

1) MECHANICAL ROOMS, BUIDING STORAGE ROOMS, COMMERCIAL SPACE, OFFICES, LAUNDRY, BIKE STORAGE
-ORDINARY HAZARD SPRINKLER HEAD SPACING:
130 SQ FT. PER SPRINKLER HEAD.

DESIGN DENSITY 0.15 GPM/SQ. FT.

2) TOTAL SPRINKLER HEADS IN CELLAR: 113

SPRINKLER HEAD LEGEND - GENERAL	
SYMBOL	DESCRIPTION
●	CONCEALED SPRINKLER HEAD
○	UPRIGHT/PENDENT SPRINKLER HEAD
◀	SIDE WALL SPRINKLER HEAD

NOTES:

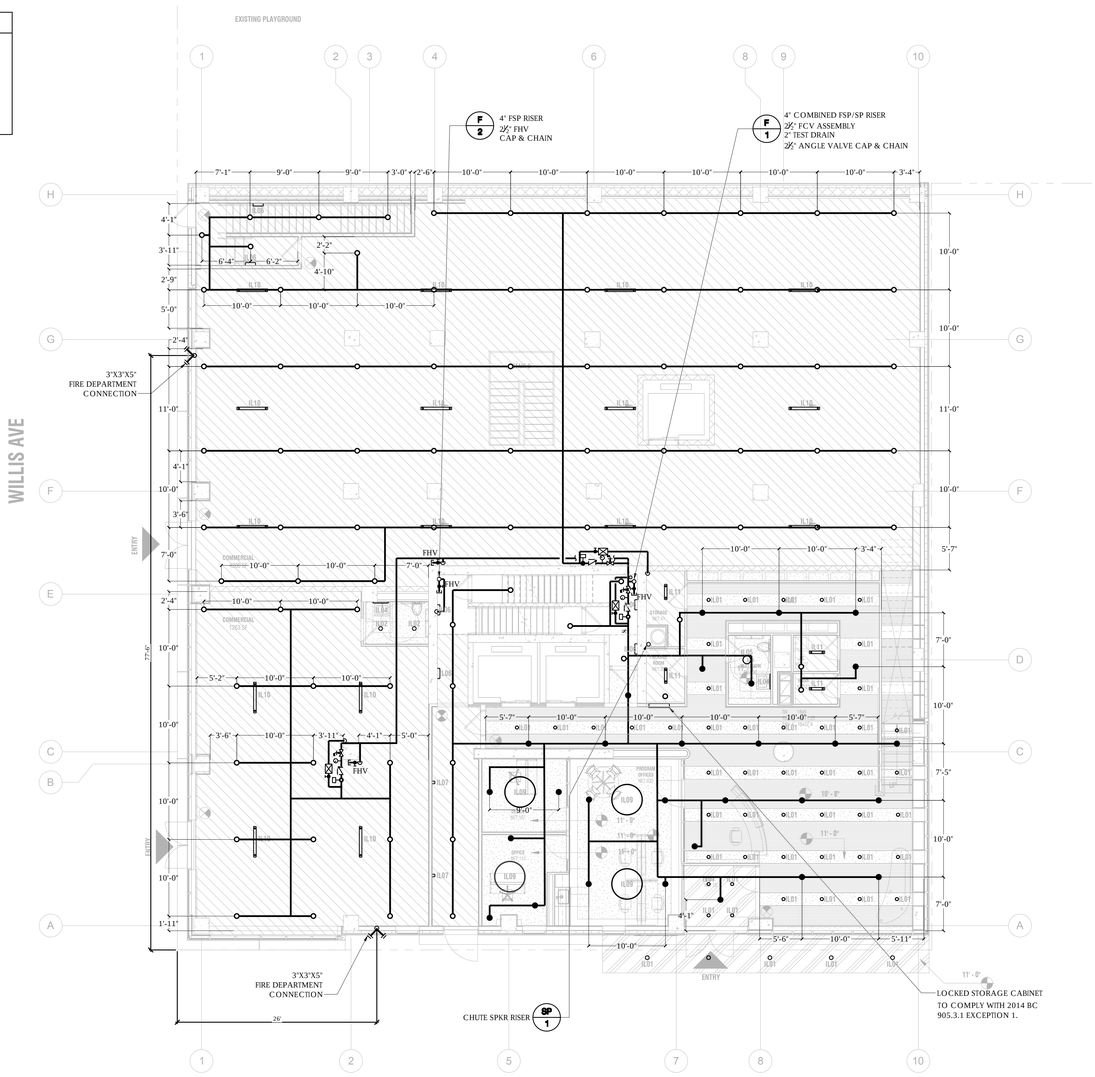
1. WALLS BETWEEN THE APARTMENTS AND THE PUBLIC HALLWAYS SHALL BE 2HR FIRE RATED.
2. ALL WALL PARTITIONS BETWEEN APARTMENTS SHALL BE 1HR FIRE RATED.
3. WALLS AROUND REFUSE ROOMS SHALL BE 3HR FIRE RATED.
4. THE FOLLOWING ROOMS / SPACES SHALL NOT BE SPRINKLERED:
   - ELECTRICAL ROOMS AND CLOSETS.
   - ELEVATOR CONTROL ROOM
   - TOILET ROOMS LESS THAN 55 SQ.FT.
   - CLOTHES CLOSETS-LINEN CLOSETS LESS THAN 12 SQ.FT.
   - HUNG CEILING SPACE.

DRAWING GENERAL NOTES:

1. SPRINKLER HEAD LOCATIONS SHOWN ON SPRINKLER DRAWING ARE DIAGRAMMATIC.

   REFER TO ARCHITECTURAL REFLECTED ARCHITECTURAL PLAN FOR EXACT SPRINKLER HEAD LOCATION AND ALIGNMENT.
2. SPRINKLER CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPLETE SHOP DRAWINGS INCLUDING HEAD LOCATIONS, PIPE SIZING AND HYDRAULIC CALCULATIONS.

   SPRINKLER SHOP DRAWINGS AND CALCULATIONS SHALL BEAR THE SEAL OF AN ENGINEER LICENSED IN THE PROJECT STATE.
3. ALL CONCEALED SPRINKLER HEADS SHALL HAVE WHITE FINISH CAPS UNLESS OTHERWISE NOTED ON DRAWINGS OR AS OTHERWISE DIRECTED BY ARCHITECT.
4. ALL SPRINKLER HEAD LOCATIONS TO BE FIELD COORDINATED WITH LIGHTING FIXTURES: - IN GYP. BD CEILING AREAS SPRINKLERS TO BE ALIGNED WITH OR CENTERED BETWEEN ADJACENT LIGHT FIXTURES.
5. SPRINKLER HEAD LOCATIONS SHALL BE LOCATED TO AVOID OBSTRUCTIONS (LTG FIXTURES, BEAMS, ETC.) WITH MINIMUM ALLOWABLE DISTANCES AS REQUIRED PER NFPA-13 AND LOCAL JURISDICTION.
6. ADDITIONAL PENDENT SPRINKLER HEAD TO BE INSTALL WHERE THE SOFFITS USED FOR THE INSTALLATION OF SIDEWALL SPRINKLER HEADS EXCEEDS 8".
7. LIGHTING FIXTURE CUTS NOT PROVIDED. CONTRACTOR TO VERIFY IN FIELD FOR MINIMUM DISTANCE BETWEEN SPRINKLERS AND LTG FIXTURES TO ENSURE ADEQUATE COVERAGE.



CEILING SYMBOL & MATERIAL LEGEND

SYMBOL	DESCRIPTION	MATERIAL	DESCRIPTION
TAG	KEYNOTE TAG		EXPOSED CONCRETE PLANK
0.00	SPOT ELEVATION		SKIM COATED CONCRETE PLANK
C/S	CARBON / SMOKE DETECTOR		GYPSUM DROP CEILING
	EXIT SIGN		EXTERIOR METAL PANEL (ACM) SYSTEM

LIGHTING FIXTURE SCHEDULI

MARK	SYMBOL	TYPE
IL01	○	INTERIOR RECESSED DOWNLIGH
IL02	○	INTERIOR RECESSED DOWNLIGH
IL03		INTERIOR WALL SCONCE HOR.
IL04		INTERIOR WALL SCONCE HOR.
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IL06		INTERIOR WALL MOUNT ROUND
IL07		INTERIOR WALL SCONCE VER.
IL08		INTERIOR BOX PENDANT
IL09	◯	INTERIOR RECESSED DOWNLIGH
IL10		INTERIOR LINEAR PENDANT @
IL11		INTERIOR LINEAR PENDANT 3'
IL12		INTERIOR LINEAR PENDANT @
IL13		INTERIOR LED STRIP LIGHT

1ST FLOOR PLAN

SCALE: 1/8" = 1'-0"

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KEY PLAN

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DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

SPRINKLER / STANDPIPE
1ST FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW M. WAYNO · LICENSED PROFESSIONAL ENGINEER · 083161

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	D.C.
DWG NO:	SPSD-101.00
NYC DOB NUMBER:	

OCCUPANCY REQUIREMENT

1) LIGHT HAZARD RESIDENTIAL SPRINKLER
HEAD SPACING:
-UPRIGHT/PENDENT HEAD MAX 20'X20' SQ.FT.
-SIDEWALL MAX COVERAGE; 16' X 24'.

-DESIGN DENSITY 0.10 GPM/SQ. FT.

2) LIGHT HAZARD GROUP
CORRIDOR
-DESIGN DENSITY: 0.10 GPM/SQ. FT.
SPRINKLER HEAD COVERAGE: 225 SQ.FT.

3) ORDINARY HAZARD GROUP
REFUSE ROOM, JANITOR'S ROOM, TELE/DATA ROOM
-DESIGN DENSITY: 0.15 GPM/SQ. FT.
SPRINKLER HEAD COVERAGE: 130 SQ.FT.

4) TOTAL SPRINKLER HEADS: 58

SPRINKLER HEAD LEGEND - GENERAL	
SYMBOL	DESCRIPTION
●	CONCEALED SPRINKLER HEAD
○	UPRIGHT/PENDENT SPRINKLER HEAD
▶	SIDE WALL SPRINKLER HEAD

NOTES:

1. **WALLS BETWEEN THE APARTMENTS AND THE PUBLIC HALLWAYS SHALL BE 2HR FIRE RATED.**
2. **ALL WALL PARTITIONS BETWEEN APARTMENTS SHALL BE 1HR FIRE RATED.**
3. **WALLS AROUND REFUSE ROOMS SHALL BE 3HR FIRE RATED.**
4. **THE FOLLOWING ROOMS / SPACES SHALL NOT BE SPRINKLERED:**
   - **ELECTRICAL ROOMS AND CLOSETS.**
   - **ELEVATOR CONTROL ROOM**
   - **TOILET ROOMS LESS THAN 55 SQ.FT.**
   - **CLOTHES CLOSETS-LINEN CLOSETS LESS THAN 12 SQ.FT.**
   - **HUNG CEILING SPACE.**

DRAWING GENERAL NOTES:

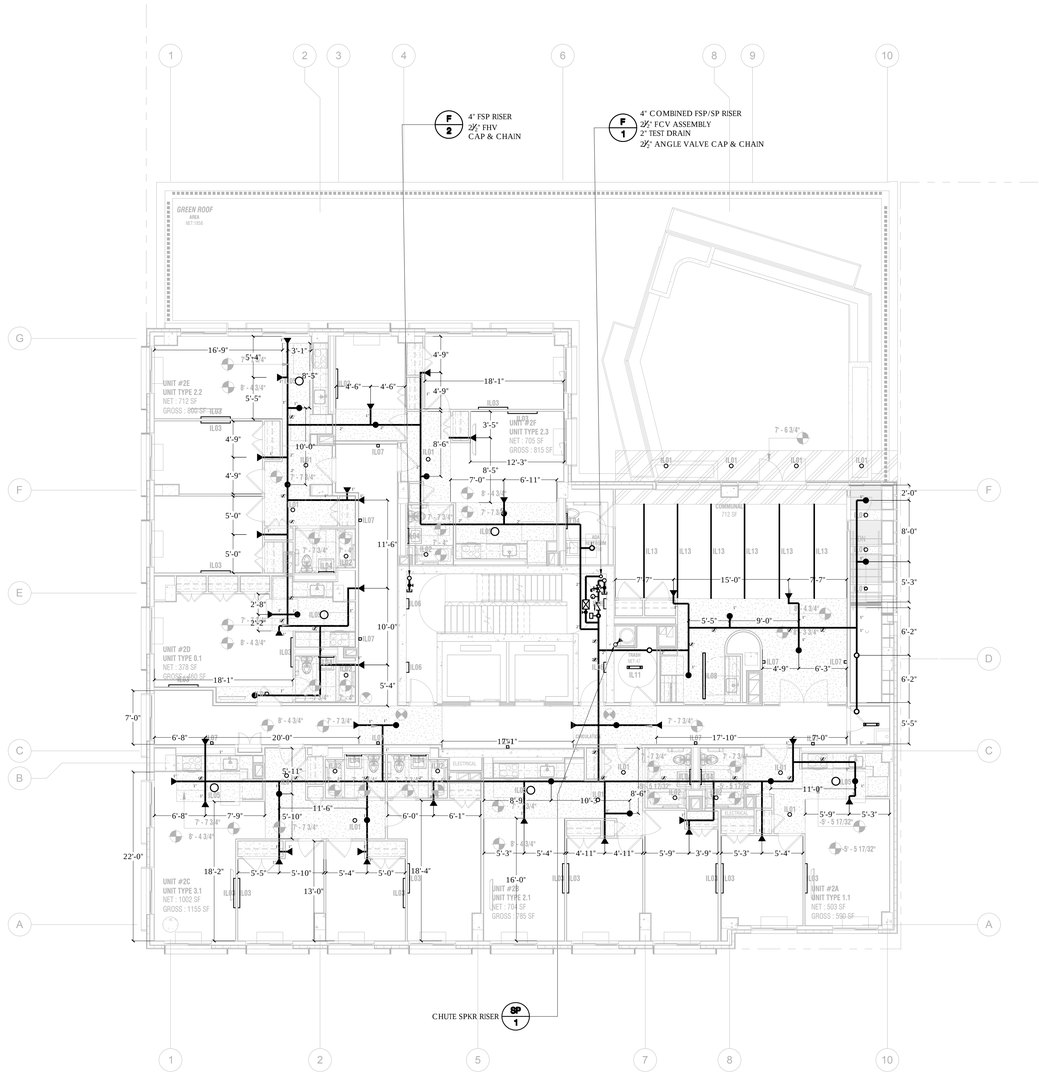
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2. SPRINKLER CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPLETE SHOP DRAWINGS INCLUDING HEAD LOCATIONS, PIPE SIZING AND HYDRAULIC CALCULATIONS.

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6. ADDITIONAL PENDENT SPRINKLER HEAD TO BE INSTALL WHERE THE SOFFITS USED FOR THE INSTALLATION OF SIDEWALL SPRINKLER HEADS EXCEEDS 8".
7. LIGHTING FIXTURE CUTS NOT PROVIDED. CONTRACTOR TO VERIFY IN FIELD FOR MINIMUM DISTANCE BETWEEN SPRINKLERS AND LTG FIXTURES TO ENSURE ADEQUATE COVERAGE.

TOILET ROOMS IN EXCESS OF 55 SQ.FT. SHALL BE SPRINKLERED

CLOTHES CLOSETS
IN EXCESS OF 12 SQ.FT. SHALL BE SPRINKLERED AS PER RCN43616-02



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

CEILING SYMBOL & MATERIAL LEGEND

SYMBOL	DESCRIPTION	MATERIAL	DESCRIPTION
TAG	KEYNOTE TAG		EXPOSED CONCRETE PLANK
0.00	SPOT ELEVATION		SKIM COATED CONCRETE PLANK
C/S	CARBON / SMOKE DETECTOR		GYPSUM DROP CEILING
	EXIT SIGN		EXTERIOR METAL PANEL (ACM) SYSTEM

LIGHTING FIXTURE SCHEDULE

MARK	SYMBOL	TYPE
IL01		INTERIOR RECESSED DOWNLIGHT
IL02		INTERIOR RECESSED DOWNLIGHT
IL03		INTERIOR WALL SCONCE HOR.
IL04		INTERIOR WALL SCONCE HOR.
IL05		INTERIOR RECESSED FIXTURE ROUND
IL06		INTERIOR WALL MOUNT ROUND
IL07		INTERIOR WALL SCONCE VER.
IL08		INTERIOR BOX PENDANT
IL09		INTERIOR RECESSED DOWNLIGHT ROUND
IL10		INTERIOR LINEAR PENDANT 8'
IL11		INTERIOR LINEAR PENDANT 3'
IL12		INTERIOR LINEAR PENDANT 8'
IL13		INTERIOR LED STRIP LIGHT

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PORT CHESTER, NY 10573
P 914.305.5679

MEP
RODKIN CARDINALE A DIVISION OF SKYLINE ENGINEERING
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

SPRINKLER / STANDPIPE
2ND FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WATKO
LICENSED PROFESSIONAL ENGINEER
083161

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	D.C.
DWG NO:	SPSD-102.00
NYC DOB NUMBER:	

OCCUPANCY REQUIREMENT

1) LIGHT HAZARD RESIDENTIAL SPRINKLER HEAD SPACING:
   -UPRIGHT/PENDENT HEAD MAX 20'X20' SQ.FT.
   -SIDEWALL MAX COVERAGE; 16' X 24'.

   -DESIGN DENSITY 0.10 GPM/SQ. FT.

2) LIGHT HAZARD GROUP
   CORRIDOR
   -DESIGN DENSITY: 0.10 GPM/SQ. FT.
   SPRINKLER HEAD COVERAGE: 225 SQ.FT.

3) ORDINARY HAZARD GROUP
   REFUSE ROOM, JANITOR'S ROOM, TELE/DATA ROOM
   -DESIGN DENSITY: 0.15 GPM/SQ. FT.
   SPRINKLER HEAD COVERAGE: 130 SQ.FT.

4) TOTAL SPRINKLER HEADS:

3RD FL.	59
4TH &6TH FL'S.	58
5TH FL.	59

SPRINKLER HEAD LEGEND - GENERAL	
SYMBOL	DESCRIPTION
●	CONCEALED SPRINKLER HEAD
○	UPRIGHT/PENDENT SPRINKLER HEAD
◀	SIDE WALL SPRINKLER HEAD

NOTES:

1. WALLS BETWEEN THE APARTMENTS AND THE PUBLIC HALLWAYS SHALL BE 2HR FIRE RATED.
2. ALL WALL PARTITIONS BETWEEN APARTMENTS SHALL BE 1HR FIRE RATED.
3. WALLS AROUND REFUSE ROOMS SHALL BE 3HR FIRE RATED.
4. THE FOLLOWING ROOMS / SPACES SHALL NOT BE SPRINKLERED:
   - ELECTRICAL ROOMS AND CLOSETS.
   - ELEVATOR CONTROL ROOM
   - TOILET ROOMS LESS THAN 55 SQ.FT.
   - CLOTHES CLOSETS-LINEN CLOSETS LESS THAN 12 SQ.FT.
   - HUNG CEILING SPACE.

DRAWING GENERAL NOTES:

1. SPRINKLER HEAD LOCATIONS SHOWN ON SPRINKLER DRAWING ARE DIAGRAMMATIC.

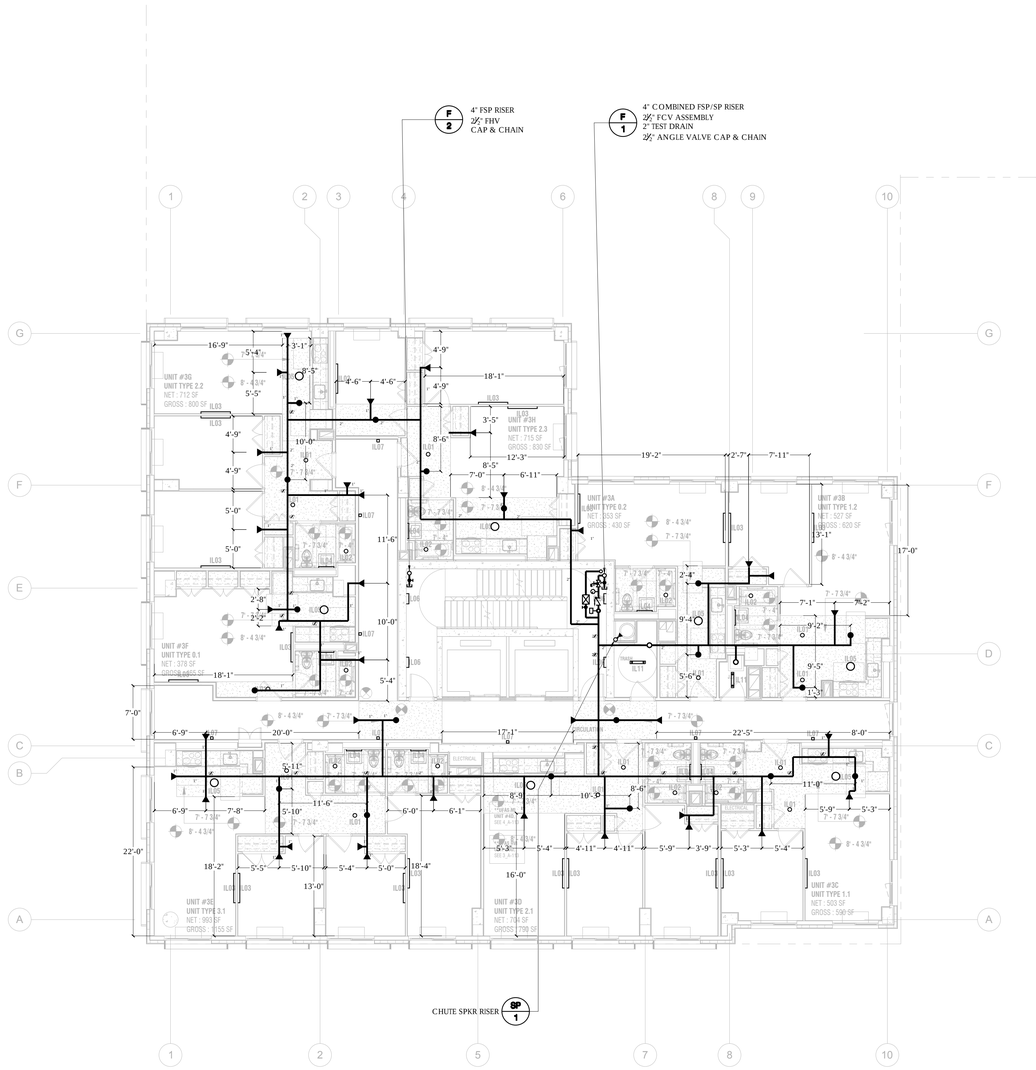
   REFER TO ARCHITECTURAL REFLECTED ARCHITECTURAL PLAN FOR EXACT SPRINKLER HEAD LOCATION AND ALIGNMENT.

2. SPRINKLER CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPLETE SHOP DRAWINGS INCLUDING HEAD LOCATIONS, PIPE SIZING AND HYDRAULIC CALCULATIONS.

   SPRINKLER SHOP DRAWINGS AND CALCULATIONS SHALL BEAR THE SEAL OF AN ENGINEER LICENSED IN THE PROJECT STATE.

3. ALL CONCEALED SPRINKLER HEADS SHALL HAVE WHITE FINISH CAPS UNLESS OTHERWISE NOTED ON DRAWINGS OR AS OTHERWISE DIRECTED BY ARCHITECT.
4. ALL SPRINKLER HEAD LOCATIONS TO BE FIELD COORDINATED WITH LIGHTING FIXTURES: - IN GYP. BD CEILING AREAS SPRINKLERS TO BE ALIGNED WITH OR CENTERED BETWEEN ADJACENT LIGHT FIXTURES.
5. SPRINKLER HEAD LOCATIONS SHALL BE LOCATED TO AVOID OBSTRUCTIONS (LTG FIXTURES, BEAMS, ETC.) WITH MINIMUM ALLOWABLE DISTANCES AS REQUIRED PER NFPA-13 AND LOCAL JURISDICTION.
6. ADDITIONAL PENDENT SPRINKLER HEAD TO BE INSTALL WHERE THE SOFFITS USED FOR THE INSTALLATION OF SIDEWALL SPRINKLER HEADS EXCEEDS 8".
7. LIGHTING FIXTURE CUTS NOT PROVIDED. CONTRACTOR TO VERIFY IN FIELD FOR MINIMUM DISTANCE BETWEEN SPRINKLERS AND LTG FIXTURES TO ENSURE ADEQUATE COVERAGE.

TOILET ROOMS, IN EXCESS OF 55 SQ.FT. SHALL BE SPRINKLERED	CLOTHES CLOSETS IN EXCESS OF 12 SQ.FT. SHALL BE SPRINKLERED AS PER RCN43616-02



CEILING SYMBOL & MATERIAL LEGEND

SYMBOL	DESCRIPTION	MATERIAL	DESCRIPTION
TAG	KEYNOTE TAG		EXPOSED CONCRETE PLANK
0.00'	SPOT ELEVATION		SKIM COATED CONCRETE PLANK
C/S	CARBON / SMOKE DETECTOR		GYPSUM DROP CEILING
	EXIT SIGN		EXTERIOR METAL PANEL (ACM) SYSTEM

LIGHTING FIXTURE SCHEDULE

MARK	SYMBOL	TYPE
IL01	○	INTERIOR RECESSED DOWNLIGHT
IL02	○	INTERIOR RECESSED DOWNLIGHT
IL03	▭	INTERIOR WALL SCONCE HOR.
IL04	▭	INTERIOR WALL SCONCE HOR.
IL05	○	INTERIOR RECESSED FIXTURE ROUND
IL06	▭	INTERIOR WALL MOUNT ROUND
IL07	▯	INTERIOR WALL SCONCE VER.
IL08	▭	INTERIOR BOX PENDANT
IL09	○	INTERIOR RECESSED DOWNLIGHT ROUND
IL10	▭	INTERIOR LINEAR PENDANT 6'
IL11	▭	INTERIOR LINEAR PENDANT 3'
IL12	▭	INTERIOR LINEAR PENDANT 6'
IL13	▭	INTERIOR LED STRIP LIGHT

3RD-6TH FLOOR PLAN

SCALE: 1/8" = 1'-0"

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RODKIN CARDINALE A DIVISION OF SKYLINE ENGINEERING
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

SPRINKLER / STANDPIPE
3RD-6TH FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WATKINS
0831 61
LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	D.C.
DWG NO:	SPSD-103.00
NYC DOB NUMBER:	

OCCUPANCY REQUIREMENT

1) LIGHT HAZARD RESIDENTIAL SPRINKLER
HEAD SPACING:
-UPRIGHT/PENDENT HEAD MAX 20'X20' SQ.FT.
-SIDEWALL MAX COVERAGE; 16' X 24'.

-DESIGN DENSITY 0.10 GPM/SQ. FT.

2) LIGHT HAZARD GROUP
CORRIDOR
-DESIGN DENSITY: 0.10 GPM/SQ. FT.
SPRINKLER HEAD COVERAGE: 225 SQ.FT.

3) ORDINARY HAZARD GROUP
REFUSE ROOM, JANITOR'S ROOM, TELE/DATA ROOM
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SPRINKLER HEAD COVERAGE: 130 SQ.FT.

4) TOTAL SPRINKLER HEADS: 91

SPRINKLER HEAD LEGEND - GENERAL	
SYMBOL	DESCRIPTION
●	CONCEALED SPRINKLER HEAD
○	UPRIGHT/PENDENT SPRINKLER HEAD
▶	SIDE WALL SPRINKLER HEAD

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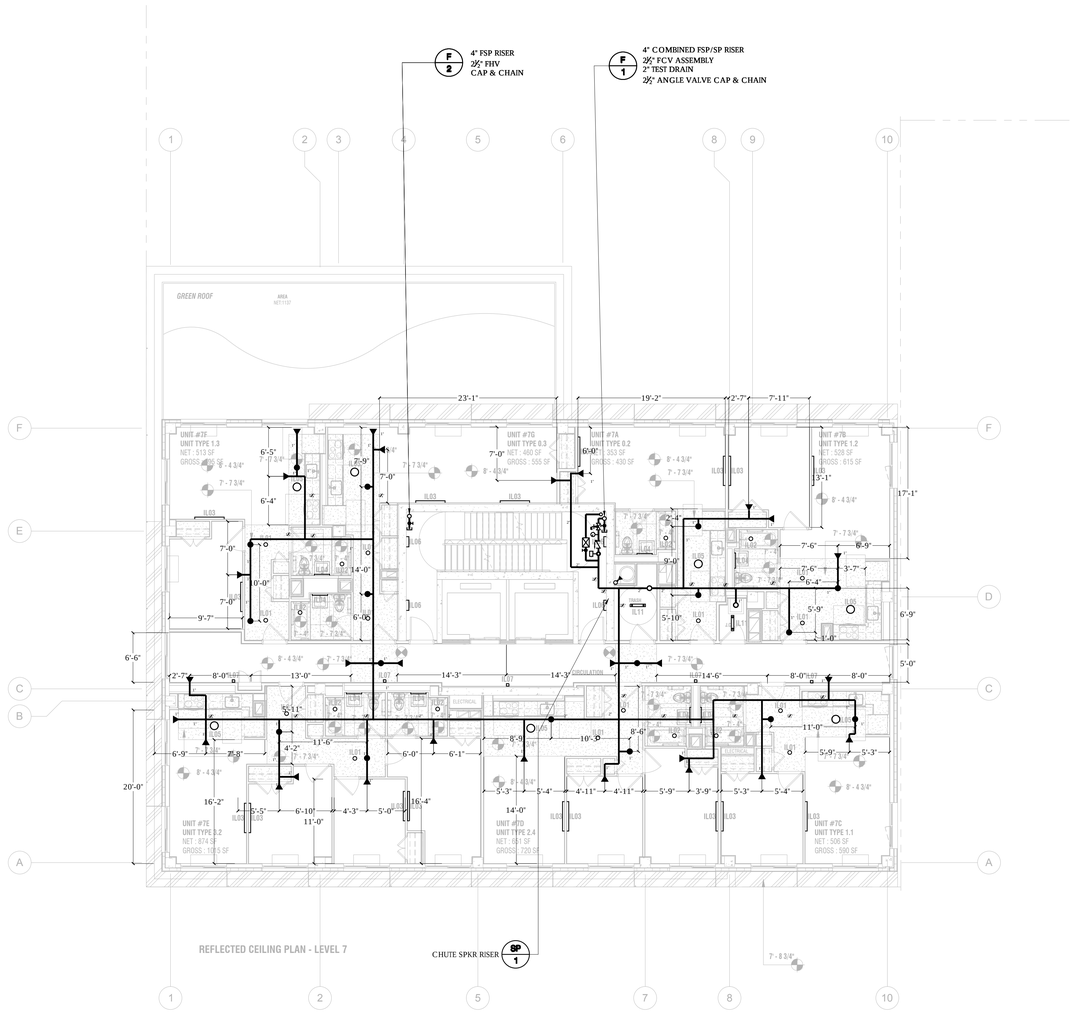
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TOILET ROOMS, IN EXCESS OF 55 SQ.FT. SHALL BE SPRINKLERED	CLOTHES CLOSETS IN EXCESS OF 12 SQ.FT. SHALL BE SPRINKLERED AS PER RCN43616-02



7TH FLOOR PLAN

SCALE: 1/8" = 1'-0"

CEILING SYMBOL & MATERIAL LEGEND

SYMBOL	DESCRIPTION	MATERIAL	DESCRIPTION
TAG	KEYNOTE TAG		EXPOSED CONCRETE PLANK
0.00	SPOT ELEVATION		SKIM COATED CONCRETE PLANK
C/S	CARBON / SMOKE DETECTOR		GYPSUM DROP CEILING
	EXIT SIGN		EXTERIOR METAL PANEL (ACM) SYSTEM

LIGHTING FIXTURE SCHEDULE

MARK	SYMBOL	TYPE
IL01	○	INTERIOR RECESSED DOWNLIGHT
IL02	○	INTERIOR RECESSED DOWNLIGHT
IL03	▭	INTERIOR WALL SCONCE HOR.
IL04	▭	INTERIOR WALL SCONCE HOR.
IL05	○	INTERIOR RECESSED FIXTURE ROUND
IL06	▭	INTERIOR WALL MOUNT ROUND
IL07	▯	INTERIOR WALL SCONCE VER.
IL08	▭	INTERIOR BOX PENDANT
IL09	◯	INTERIOR RECESSED DOWNLIGHT ROUND
IL10	▭	INTERIOR LINEAR PENDANT 8'
IL11	▭	INTERIOR LINEAR PENDANT 3'
IL12	▭	INTERIOR LINEAR PENDANT 8'
IL13	▭	INTERIOR LED STRIP LIGHT

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NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

SPRINKLER / STANDPIPE
7TH FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WONG
083161
LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	D.C.
DWG NO:	SPSD-104.00
NYC DOB NUMBER:	

OCCUPANCY REQUIREMENT

1) LIGHT HAZARD RESIDENTIAL SPRINKLER
HEAD SPACING:
-UPRIGHT/PENDENT HEAD MAX 20'X20' SQ.FT.
-SIDEWALL MAX COVERAGE; 16' X 24'.

-DESIGN DENSITY 0.10 GPM/SQ. FT.

2) LIGHT HAZARD GROUP
CORRIDOR
-DESIGN DENSITY: 0.10 GPM/SQ. FT.
SPRINKLER HEAD COVERAGE: 225 SQ.FT.

3) ORDINARY HAZARD GROUP
REFUSE ROOM, JANITOR'S ROOM, TELE/DATA ROOM
-DESIGN DENSITY: 0.15 GPM/SQ. FT.
SPRINKLER HEAD COVERAGE: 130 SQ.FT.

4) TOTAL SPRINKLER HEADS: 90

SPRINKLER HEAD LEGEND - GENERAL	
SYMBOL	DESCRIPTION
●	CONCEALED SPRINKLER HEAD
○	UPRIGHT/PENDENT SPRINKLER HEAD
▶	SIDE WALL SPRINKLER HEAD

NOTES:

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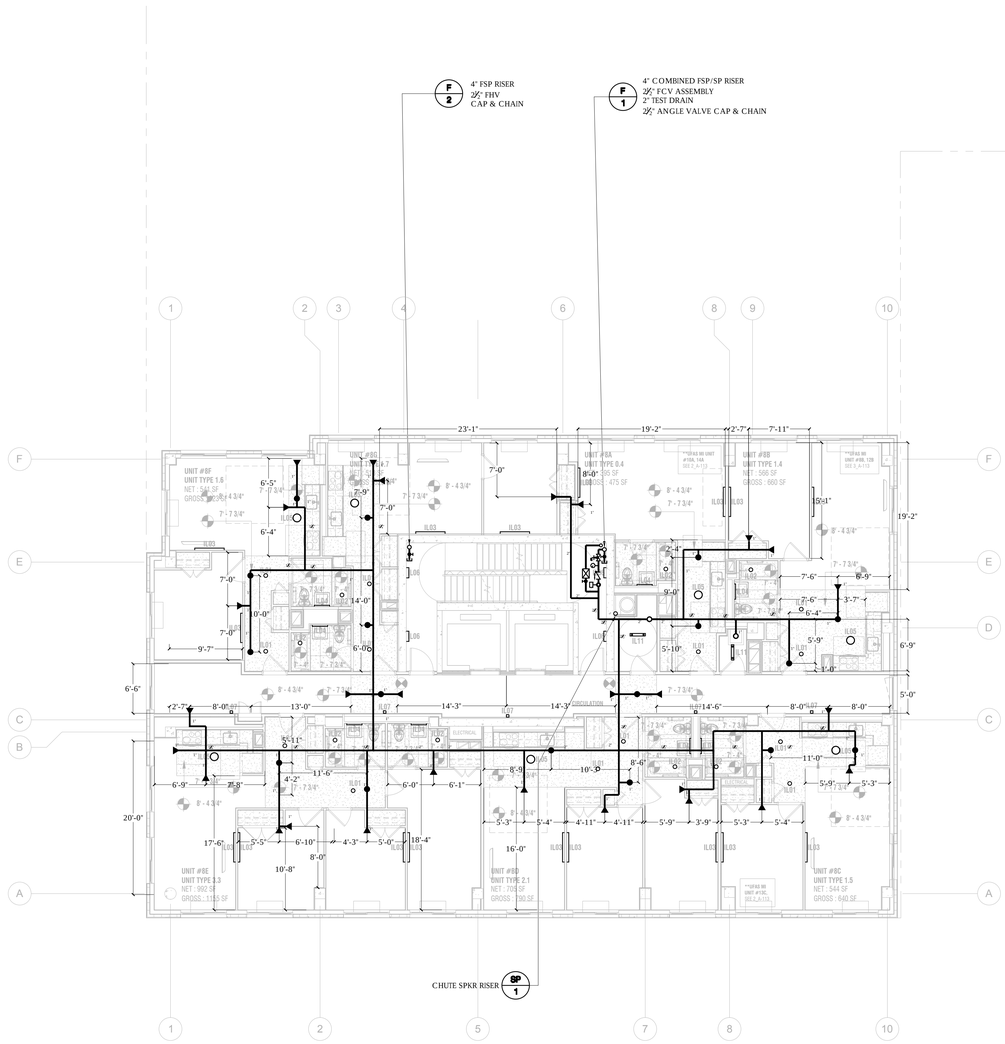
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CEILING SYMBOL & MATERIAL LEGEND

SYMBOL	DESCRIPTION	MATERIAL	DESCRIPTION
TAG	KEYNOTE TAG		EXPOSED CONCRETE PLANK
0.00	SPOT ELEVATION		SKIM COATED CONCRETE PLANK
C/S	CARBON / SMOKE DETECTOR		GYPSUM DROP CEILING
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IL12		INTERIOR LINEAR PENDANT 8'
IL13		INTERIOR LED STRIP LIGHT

8TH, 10TH, 12TH, 14TH FLOOR PLAN

SCALE: 1/8" = 1'-0"

THIS APPLICATION: FOR SPRINKLER AND STANDPIPE WORK ONLY

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KEY PLAN

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1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

SPRINKLER / STANDPIPE
8TH, 10TH, 12TH, 14TH
FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK
MATTHEW M. WATKINS
083161
LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
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NYC DOB NUMBER:	

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DRAWING GENERAL NOTES:

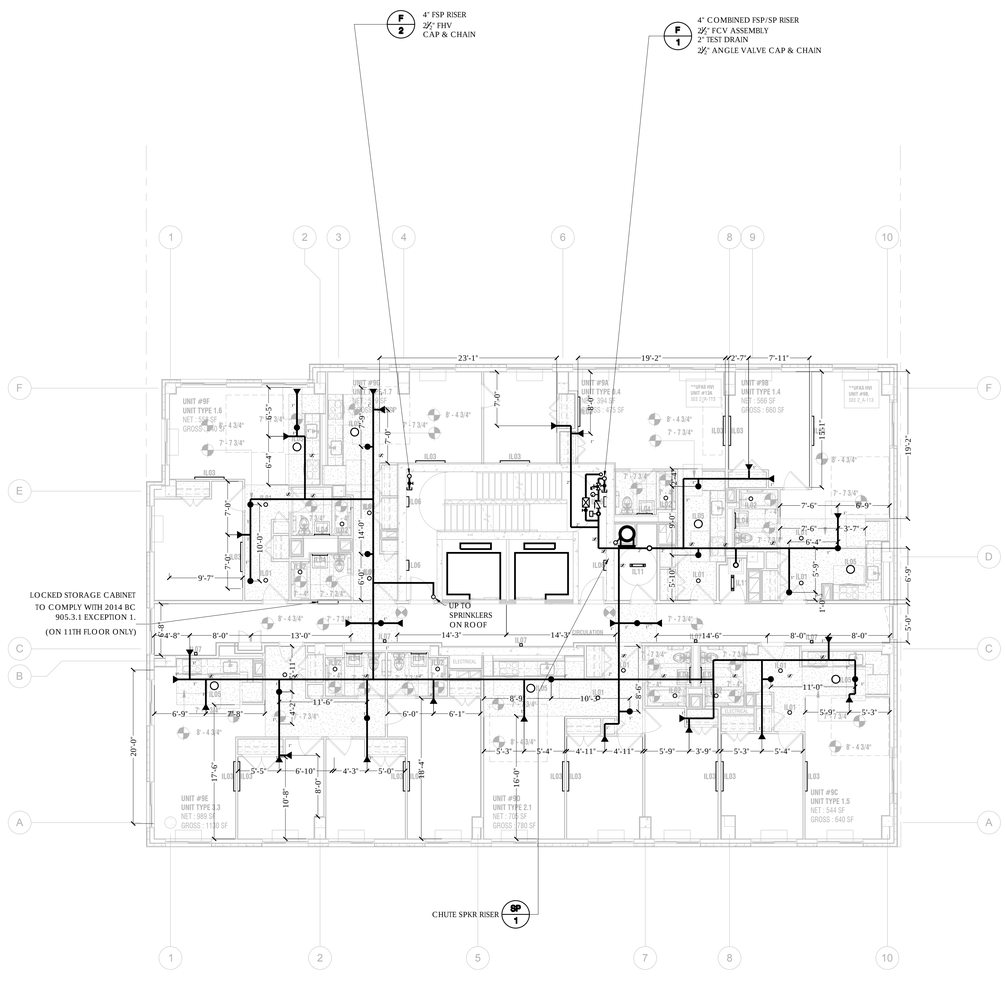
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SYMBOL	DESCRIPTION	MATERIAL	DESCRIPTION
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C/S	CARBON / SMOKE DETECTOR		GYPSUM DROP CEILING
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MARK	SYMBOL	
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IL06		INTERIOR WALL MO
IL07		INTERIOR WALL SC
IL08		INTERIOR BOX PEN
IL09		INTERIOR RECESSE
IL10		INTERIOR LINEAR F
IL11		INTERIOR LINEAR F
IL12		INTERIOR LINEAR F
IL13		INTERIOR LED STRI

9TH, 11TH, 13TH, 15TH FLOOR PLAN
SCALE: 1/8" = 1'-0"

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
2.	DOB SUBMISSION	04.06.18
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

SPRINKLER / STANDPIPE
9TH, 11TH, 13TH, 15TH
FLOOR PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW M. RATINO · 083161 · LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	M.I.
CHECKED BY:	D.C.
DWG NO:	SPSD-106.00
NYC DOB NUMBER:	

ORDINARY HAZARD GROUP OCCUPANCY
1) BOILER ROOM, TRASH ROOM, STORAGE ROOMS, AND MECH. EQUIPMENT ROOMS. -ORDINARY HAZARD SPRINKLER HEAD SPACING: 130 SQ FT. PER SPRINKLER HEAD. DESIGN DENSITY 0.15 GPM/SQ. FT.
2) TOTAL SPRINKLER HEADS ON ROOF: 13

SPRINKLER HEAD LEGEND - GENERAL	
SYMBOL	DESCRIPTION
●	CONCEALED SPRINKLER HEAD
○	UPRIGHT/PENDENT SPRINKLER HEAD
▶	SIDE WALL SPRINKLER HEAD

• SPRINKLER HEADS INSIDE BOILER ROOM SHALL HAVE 212°F TEMPERATURE RATING.

NOTES:

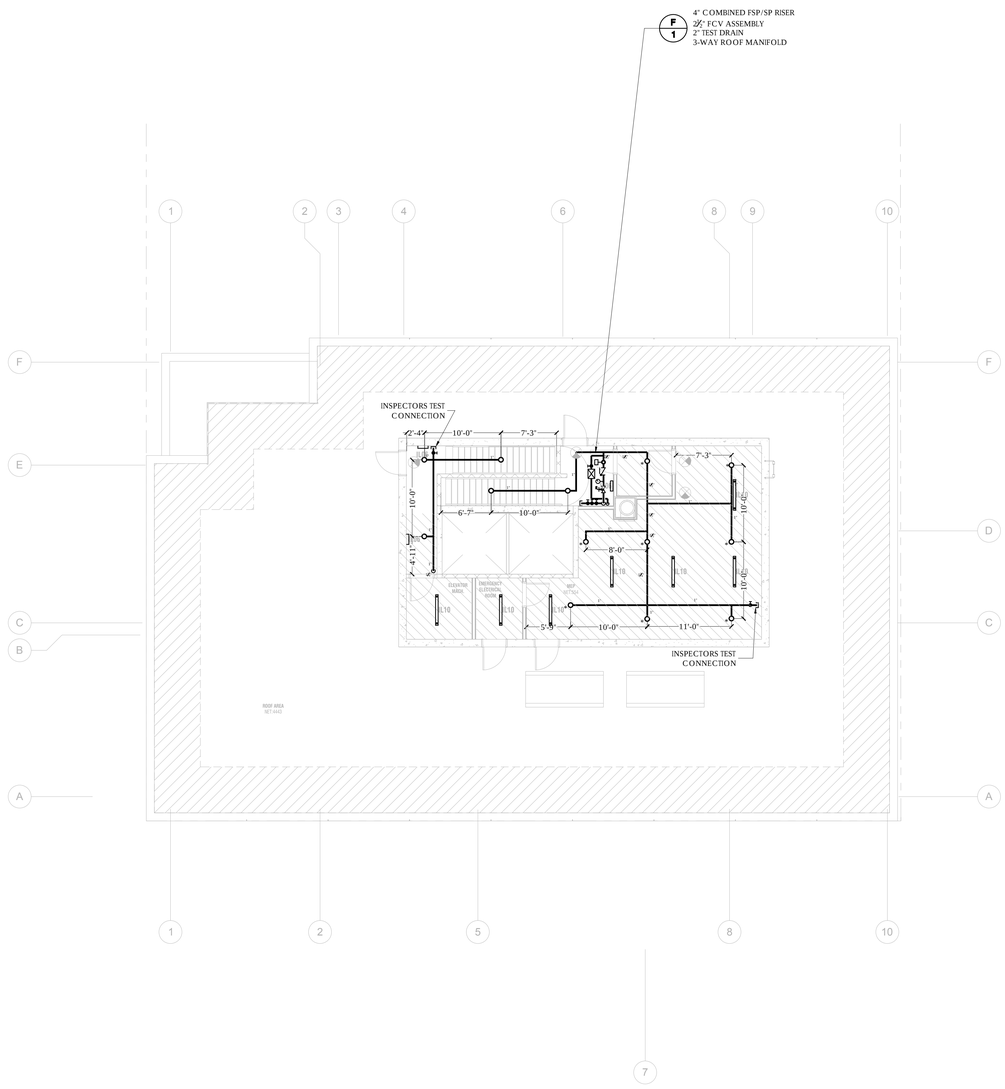
1. WALLS BETWEEN THE APARTMENTS AND THE PUBLIC HALLWAYS SHALL BE 2HR FIRE RATED.
2. ALL WALL PARTITIONS BETWEEN APARTMENTS SHALL BE 1HR FIRE RATED.
3. WALLS AROUND REFUSE ROOMS SHALL BE 3HR FIRE RATED.
4. THE FOLLOWING ROOMS / SPACES SHALL NOT BE SPRINKLERED:
   - ELECTRICAL ROOMS AND CLOSETS.
   - ELEVATOR CONTROL ROOM
   - TOILET ROOMS LESS THAN 55 SQ.FT.
   - CLOTHES CLOSETS-LINEN CLOSETS LESS THAN 12 SQ.FT.
   - HUNG CEILING SPACE.

DRAWING GENERAL NOTES:

1. SPRINKLER HEAD LOCATIONS SHOWN ON SPRINKLER DRAWING ARE DIAGRAMMATIC.

   REFER TO ARCHITECTURAL REFLECTED ARCHITECTURAL PLAN FOR EXACT SPRINKLER HEAD LOCATION AND ALIGNMENT.
2. SPRINKLER CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPLETE SHOP DRAWINGS INCLUDING HEAD LOCATIONS, PIPE SIZING AND HYDRAULIC CALCULATIONS.

   SPRINKLER SHOP DRAWINGS AND CALCULATIONS SHALL BEAR THE SEAL OF AN ENGINEER LICENSED IN THE PROJECT STATE.
3. ALL CONCEALED SPRINKLER HEADS SHALL HAVE WHITE FINISH CAPS UNLESS OTHERWISE NOTED ON DRAWINGS OR AS OTHERWISE DIRECTED BY ARCHITECT.
4. ALL SPRINKLER HEAD LOCATIONS TO BE FIELD COORDINATED WITH LIGHTING FIXTURES: - IN GYP. BD CEILING AREAS SPRINKLERS TO BE ALIGNED WITH OR CENTERED BETWEEN ADJACENT LIGHT FIXTURES.
5. SPRINKLER HEAD LOCATIONS SHALL BE LOCATED TO AVOID OBSTRUCTIONS (LTG FIXTURES, BEAMS, ETC.) WITH MINIMUM ALLOWABLE DISTANCES AS REQUIRED PER NFPA-13 AND LOCAL JURISDICTION.
6. ADDITIONAL PENDENT SPRINKLER HEAD TO BE INSTALL WHERE THE SOFFITS USED FOR THE INSTALLATION OF SIDEWALL SPRINKLER HEADS EXCEEDS 8".
7. LIGHTING FIXTURE CUTS NOT PROVIDED. CONTRACTOR TO VERIFY IN FIELD FOR MINIMUM DISTANCE BETWEEN SPRINKLERS AND LTG FIXTURES TO ENSURE ADEQUATE COVERAGE.



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

CEILING SYMBOL & MATERIAL LEGEND

SYMBOL	DESCRIPTION	MATERIAL	DESCRIPTION
TAG	KEYNOTE TAG		EXPOSED CONCRETE PLANK
0.00	SPOT ELEVATION		SKIM COATED CONCRETE PLANK
C/S	CARBON / SMOKE DETECTOR		GYPSUM DROP CEILING
	EXIT SIGN		EXTERIOR METAL PANEL (ACM) SYSTEM

LIGHTING FIXTURE SCH

MARK	SYMBOL	
IL01	○	INTERIOR RECESSE
IL02	○	INTERIOR RECESSE
IL03		INTERIOR WALL SC
IL04		INTERIOR WALL SC
IL05	○	INTERIOR RECESSE
IL06	▭	INTERIOR WALL MO
IL07	▯	INTERIOR WALL SC
IL08		INTERIOR BOX PEN
IL09	◯	INTERIOR RECESSE
IL10		INTERIOR LINEAR P
IL11		INTERIOR LINEAR P
IL12		INTERIOR LINEAR P
IL13		INTERIOR LED STRI

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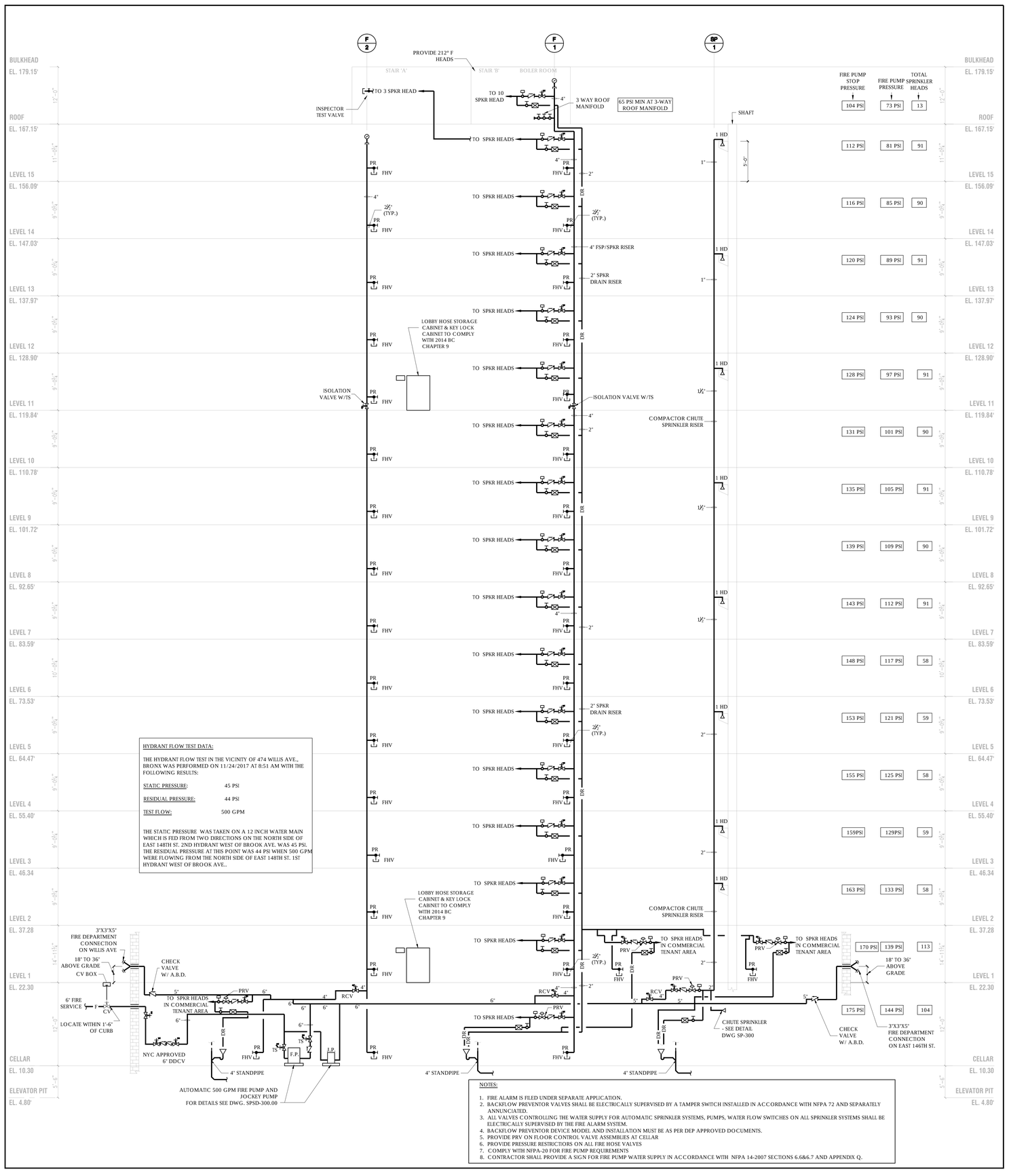
472 - 474 WILLIS AVE. BRONX, NY

SPRINKLER / STANDPIPE ROOF PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · MATTHEW M. WAYNO · 083161 · LICENSED PROFESSIONAL ENGINEER

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RISER DIAGRAM
SCALE: 1/8" = 1'-0"

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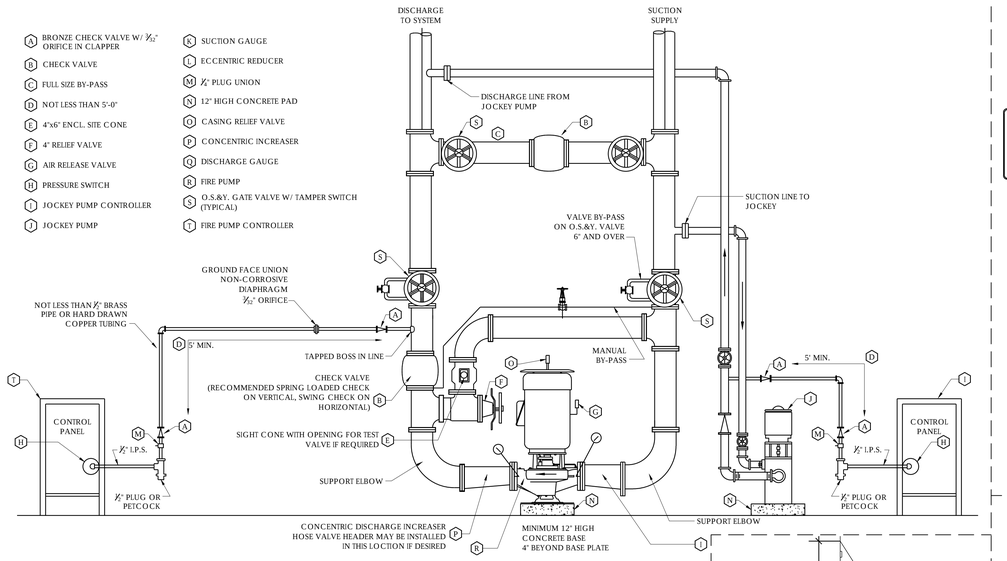
SPRINKLER / STANDPIPE RISER DIAGRAM

SEAL & SIGNATURE

STATE OF NEW YORK MATTHEW M. WATRO 083161 LICENSED PROFESSIONAL ENGINEER

DATE:	06 APRIL, 2018
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DWG NO:	SPSD-200.00
NYC DOB NUMBER:	

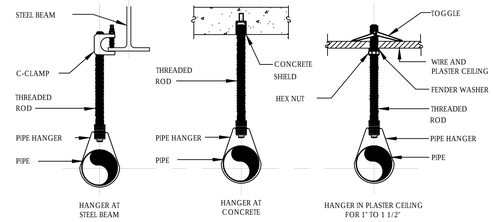
- A BRONZE CHECK VALVE W/ 3/32" ORIFICE IN CLAPPER
- B CHECK VALVE
- C FULL SIZE BY-PASS
- D NOT LESS THAN 5'-0"
- E 4"x6" ENCL. SITE CONE
- F 4" RELIEF VALVE
- G AIR RELEASE VALVE
- H PRESSURE SWITCH
- I JOCKEY PUMP CONTROLLER
- J JOCKEY PUMP
- K SUCTION GAUGE
- L ECCENTRIC REDUCER
- M ¾" PLUG UNION
- N 12" HIGH CONCRETE PAD
- O CASING RELIEF VALVE
- P CONCENTRIC INCREASER
- Q DISCHARGE GAUGE
- R FIRE PUMP
- S O.S.&Y. GATE VALVE W/ TAMPER SWITCH (TYPICAL)
- T FIRE PUMP CONTROLLER



VERTICAL INLINE AUTOMATIC FIRE PUMP
N.T.S.

PUMP SCHEDULE

PUMP #	LOCATION	TYPE	SERVICE	GPM	TDH, PSI	MOTOR DATA					REMARKS
						RPM	HP,EA.	PHASE	CYCLE	VOLTS	
FP-1	CELLAR	IN-LINE FIRE PUMP	STANDPIPES & SPRINKLERS	500	120	3500	60	3	60	208	ITT/A-C FIRE PUMP SERIES 1580, MODEL 4X4X9.5F, UL/FM W/REDUCED VOLTAGE SOFT START CONTROLLER AND AUTOMATIC TRANSFER SWITCH.
JP-1	CELLAR	JOCKEY PUMP	STANDPIPES & SPRINKLERS	10	130	3500	2	3	60	208	GRUNDFOS MODEL CR 3-12



HANGER DETAIL
N.T.S.

HANGER SPACING AND ROD SCHEDULE

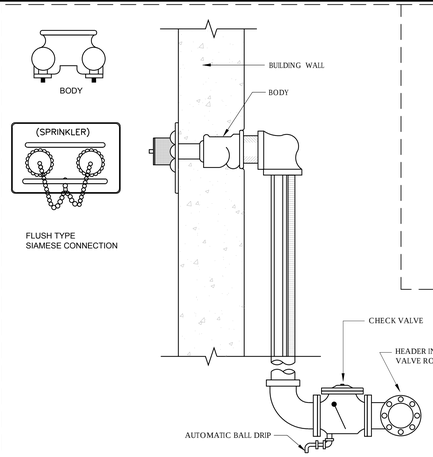
PIPE SIZE	ROD SIZE	SPACING	PIPE SIZE	ROD SIZE	SPACING	PIPE SIZE	ROD SIZE	SPACING
1"	3/8"	5'-8'	1 1/2"	3/8"	8'-10'	4"	1/2"	12'-15'
1 1/4"	3/8"	6'-10'	2"	3/8"	10'-12'	5"	1/2"	12'-15'
			2 1/2"	3/8"	10'-12'	6"	1/2"	12'-15'
			3"	3/8"	10'-12'			

HANGERS AND SUPPORTS SHALL COMPLY WITH NFPA 13, SECT. 9.3:

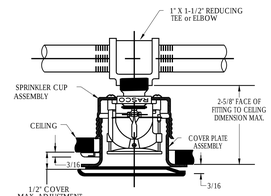
A. HORIZONTAL PIPING HANGERS AND SUPPORTS

1. EXCEPT AS OTHERWISE INDICATED, PROVIDE FACTORY-FABRICATED HORIZONTAL PIPING HANGERS AND SUPPORTS COMPLYING WITH MSS SP-58, OF ONE OF THE FOLLOWING MSS TYPES LISTED TO SUIT HORIZONTAL PIPING SYSTEMS, IN ACCORDANCE WITH MSS SP-69 AND MANUFACTURER'S PUBLISHED PRODUCT INFORMATION. USE ONLY ONE TYPE BY ONE MANUFACTURER FOR EACH PIPING SERVICE. SELECT SIZE OF HANGERS AND SUPPORTS TO EXACTLY FIT PIPE SIZE FOR BARE PIPING.

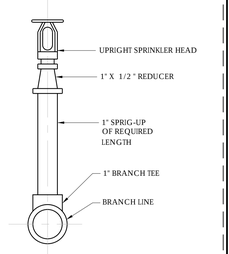
2. HANGERS AND SUPPORTS FOR SPRINKLER PIPING AND EQUIPMENT SHALL BE SEISMIC-RESTRAINT AS REQUIRED BY NFPA 13-2002 SECTION 9.3.1.2 . SEISMIC SUPPORTS ARE NOT REQUIRED FOR:
   2.1 PIPING SUPPORTED BY ROD HANGERS PROVIDED THAT HANGERS IN THE PIPE RUN ARE 6" OR LESS IN LENGTH FROM THE TOP OF THE PIPE TO THE SUPPORTING STRUCTURE.



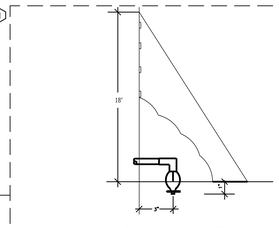
TYPICAL WALL MOUNT SIAMESE CONNECTION
N.T.S.



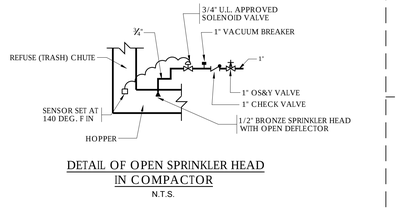
CONCEALED SPRINKLER
N.T.S.



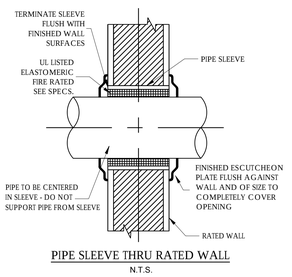
UPRIGHT SPRINKLER HEAD DETAIL
N.T.S.



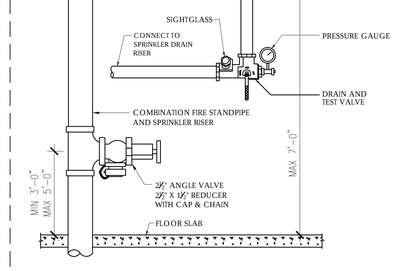
CANOPY FOR PROTECTION SPRINKLERS IN SERV. CHUTE
N.T.S.



DETAIL OF OPEN SPRINKLER HEAD IN COMPACTOR
N.T.S.

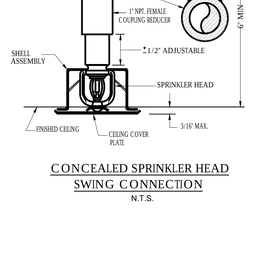


PIPE SLEEVE THRU RATED WALL
N.T.S.

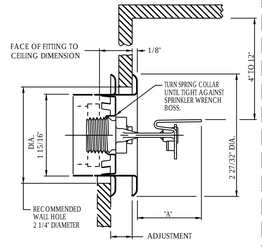


STANDPIPE AND SPRINKLER VALVE ASSEMBLY
N.T.S.

NOTE:
PROVIDE AJUSTABLE PRESSURE REDUCING VALVE ON 2½" ANGLE VALVE AT CELLAR AND WHEN PRESSURE EXCEEDS 100 PSI.

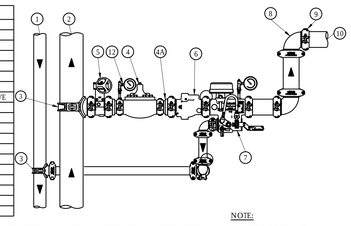


CONCEALED SPRINKLER HEAD SWING CONNECTION
N.T.S.



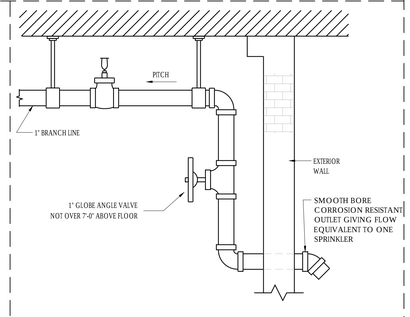
SIDEWALL SPRINKLER HEAD
N.T.S.

LEGEND	
1	DRAIN RISER
2	RISER
3	VIC MECHANICAL TEE STYLE 920N
4	PRESSURE REDUCING VALVE
4A	VIC CONC. REDUCER No. 50
5	VIC FIRELOCK BUTTERFLY VALVE SERIES 705W
6	VIC FIRELOCK CHECK VALVE SERIES 717
7	VIC FIRELOCK ZONE CONTROL RISER MODULE SERIES 747MP W/PSI RELIEF VALVE
8	VIC FIRELOCK 90 DEG ELBOW No. 001
9	VIC FIRELOCK EZ RIGID COUPLING STYLE 009 (OR) RIGID COUPLING STYLE 005
10	TO SPRINKLER SYSTEM
11	UL LISTED FM APPROVED FLOW SWITCH (SYSTEM SENSOR MODEL WFD)
12	PRESSURE GAUGE
13	ISOLATION VALVE FOR GAUGE
14	PRESSURE RELIEF VALVE
15	SHUT OFF VALVE (OFFSET HANDLE FOR ACCESS ON BOTH SIDES)
16	SITE GLASS (VISIBLE FROM BOTH SIDES)
17	TEST AND DRAIN VALVE (HANDLE ON BOTH SIDES)
18	GROOVED DRAIN CONNECTION



FLOOR CONTROL RISER VALVE ASSEMBLY WITH PRV
N.T.S.

NOTE:
PROVIDE AT CELLAR



INSPECTOR'S TEST CONNECTION
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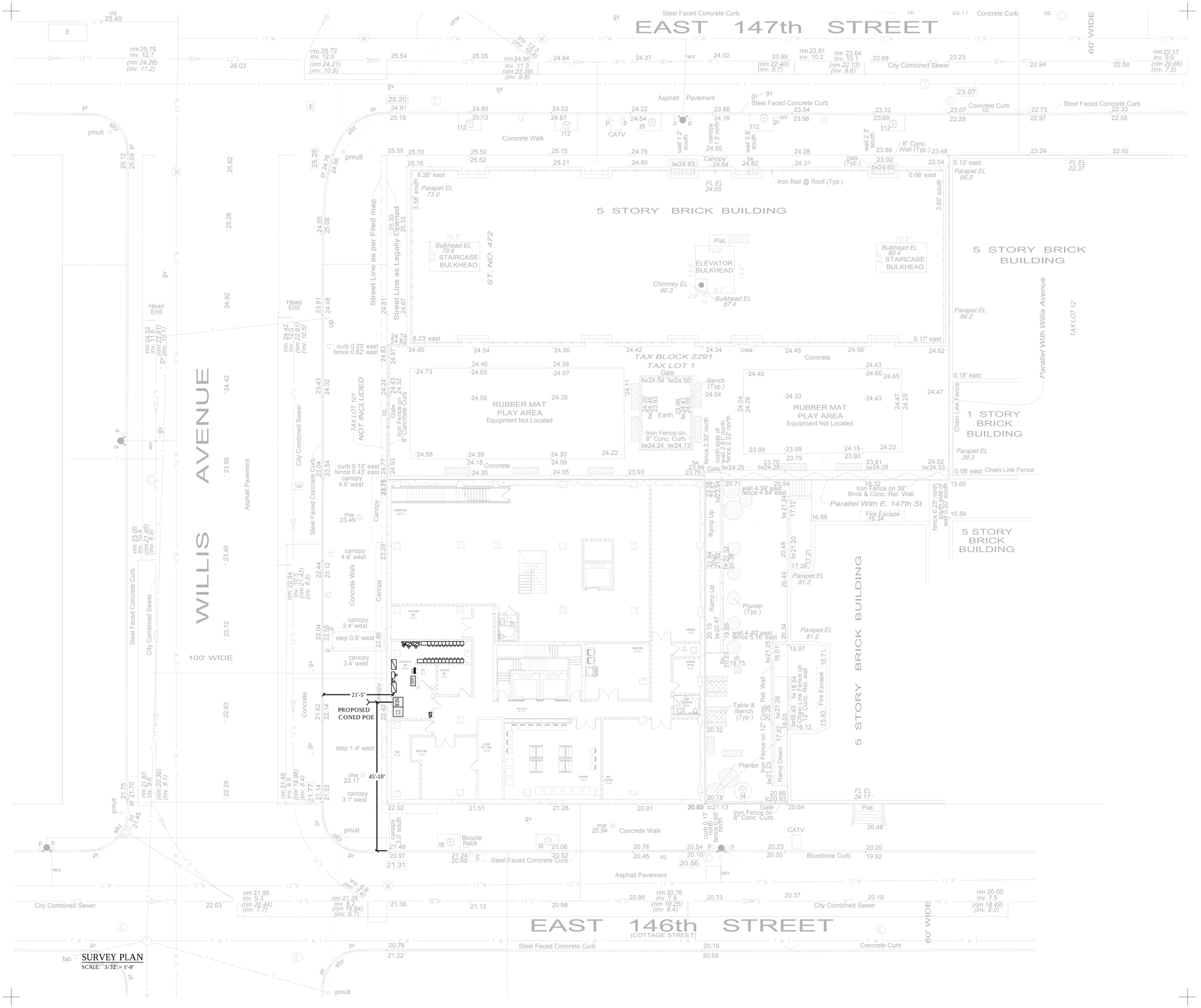
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SPRINKLER / STANDPIPE DETAILS

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STATE OF NEW YORK — MATTHEW M. WARD — 083161 — LICENSED PROFESSIONAL ENGINEER

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472 - 474 WILLIS AVE. BRONX, NY

ELECTRICAL
SURVEY PLAN

SEAL & SIGNATURE

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CHECKED BY:	B.B.
DWG NO:	E-001.00
NYC DOB NUMBER:	

ELECTRICAL NOTES

A. BASIC ELECTRICAL REQUIREMENTS

1. THE "AIA GENERAL CONDITIONS (A201) OF THE CONTRACT FOR CONSTRUCTION" LATEST EDITION AND THE APPENDED SUPPLEMENTARY GENERAL CONDITIONS ARE PART OF THIS CONTRACT.
2. ALL WORK AND MATERIALS SHALL CONFORM WITH THE 2008 EDITION OF THE NATIONAL ELECTRICAL CODE WITH N.Y.C. SUPPLEMENT, LOCAL BUILDING CODE, OSHA REGULATIONS, LOCAL, STATE & FEDERAL AUTHORITY HAVING JURISDICTION.
3. SECURE PERMITS AND CERTIFICATES OF APPROVAL, PAY ALL FEES AND CHARGES. DELIVER THE CERTIFICATES TO THE ARCHITECT BEFORE FINAL BILLING.
4. DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES, REGULATIONS, BUILDING STANDARDS AND THE BEST PRACTICES OF THE TRADE FOR INSTALLATION OF ELECTRICAL WORK.
5. COORDINATE THE INSTALLATION OF ALL WORK WITH THE WORK OF ALL OTHER TRADES. IN THE EVENT THAT ANY WORK IS INSTALLED WITHOUT PROPER PRIOR COORDINATION OR REGARD TO THE WORK OF OTHER TRADES, THIS CONTRACTOR SHALL REMOVE AND RELOCATE HIS WORK TO SUIT REQUIREMENTS OF OTHER TRADES AT NO ADDITIONAL COST TO THE OWNER.
6. THIS CONTRACTOR SHALL FURNISH ALL SUPERVISION, LABOR, SERVICES, EQUIPMENT, MATERIAL, TOOLS, TRUCKING, HOISTING AND ERECTING APPARATUS, TRANSPORTATION AND SHALL PAY FOR ALL FEES, PERMITS, INSPECTIONS, CERTIFICATES AND RELATED ITEMS TO PROPERLY CARRY OUT THE CONTRACT WORK TO COMPLETION.
7. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER.
8. ELECTRONIC AS-BUILT DRAWINGS ARE TO BE PROVIDED IN AUTOCAD FORMAT 2002 AT THE COMPLETION OF WORK, REFLECTING AS-BUILT CONDITIONS.
9. PRIOR TO INSTALLATION OF ANY RECEPTACLES, SWITCHES, SECURITY DEVICES, TELEPHONE OUTLETS, LIGHTING FIXTURES, ETC. REFER TO ARCHITECTURAL DRAWINGS AND/OR OBTAIN EXACT LOCATIONS & MOUNTING HEIGHTS FROM THE ARCHITECT. PROVIDE TEMPORARY LIGHT AND POWER AS REQUIRED FOR ALL TRADES. GOVERNED BY THE AUTHORITIES HAVING JURISDICTION AND OSHA. OWNER SHALL PAY COSTS ASSOCIATED WITH THE ELECTRIC UTILITY CO. DEMAND AND ENERGY CHARGES.

a. POWER - MINIMUM CAPACITY - 0.5 KVA PER 1000 SQUARE FEET.
b. LIGHTING - MINIMUM CAPACITY - 1/3 WATT PER SQUARE FEET.

10. ALL PENETRATIONS OF FIRE RATED WALLS, FLOORS OR CEILINGS SHALL BE SEALED WITH AND APPROVED MATERIAL TO PROVIDE AN EQUAL RATING. AS WALL, FLOOR OR CEILING ASSEMBLY BEING PENETRATED. ALL OPENINGS ON WALLS OF ELECTRIC CLOSETS AND TELEPHONE/COMMUNICATION CLOSETS SHALL BE SEALED.
11. THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ARCHITECT FOR APPROVAL DETAILED SHOP DRAWINGS AND/OR CATALOG CUTS FOR ALL EQUIPMENT DESCRIBED HEREIN OR ON THE DRAWINGS. SHOP DRAWINGS SHALL BE CLEARLY MARKED TO DEMONSTRATE COMPLIANCE WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. ALSO PROVIDE PLAN AND ELEVATION SHOP DRAWINGS OF ALL ELECTRIC CLOSETS AND CONDUIT ROUTING PRIOR TO CONSTRUCTION. PROVIDE A LIST OF MANUFACTURERS FOR EACH PIECE OF EQUIPMENT PRIOR TO PURCHASE FOR APPROVAL.
12. ALL EQUIPMENT SHALL BE UL LISTED AND IN COMPLIANCE WITH LOCAL CODE.
13. CONTRACTOR SHALL SUBMIT TO THE BUILDING OWNER AND TENANT A DETAILED SCHEDULE FOR WORK WITH THE BID PROPOSAL. SCHEDULE SHALL IDENTIFY ALL SPECIFIC MILESTONES AND DATES FOR THE PROJECT.
14. THE CONTRACTOR, PRIOR TO FINAL ACCEPTANCE, SHALL CLEAN ALL SWITCHES, CABINETS, DEVICE PLATES, FIXTURES AND OTHER ITEMS FURNISHED UNDER THIS CONTRACT AND SHALL ENSURE THAT ALL PANELBOARD DIRECTORIES ARE IN PLACE AND COMPLETED OR REVISED AS REQUIRED BY THE WORK AND THAT ALL IDENTIFICATION AND MARKING OF EQUIPMENT, CABLES, JUNCTION BOXES AND OTHER ITEMS IS COMPLETED.
15. THE CONTRACTOR SHALL FURNISH A GUARANTEE COVERING LABOR, MATERIALS AND EQUIPMENT FOR A PERIOD OF (1) YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK. HE SHALL AGREE TO REPAIR AND MAKE GOOD, AT HIS OWN EXPENSE, ALL DEFECTS AND OMISSIONS WHICH MAY APPEAR DURING THE TIME OF SAID GUARANTEE.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING DETAIL SWITCHBOARD SHOP DRAWINGS INDICATING SWITCHGEAR LOCATION, BUS TAPS, FEEDER(S), ETC. IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUREAU OF ELECTRICAL CONTROLS. OBTAIN APPROVAL FROM BEC PRIOR TO COMMENCING WORK IN THE ELECTRICAL ROOM.
17. PROVIDE EXPANSION JOINT WHERE REQUIRED FOR THE INSTALLATION.
18. THE CENTER LINE OF ALL OVERCURRENT PROTECTION SHALL NOT EXCEED 6'-6" ABOVE FINISHED FLOOR.
19. ALL OUTLETS ON THE EXTERIOR OF THE BUILDING & ROOFTOP SHALL BE GFI TYPE AND BE PROVIDED WITH WEATHERPROOF ENCLOSURE.
20. ALL ELECTRIC & CONTROLS PANELS IN THE MECHANICAL, PUMP & BOILER ROOMS SHALL HAVE A MINIMUM CLEARANCE OF 3'-0" IN FRONT OF PANELS. COORDINATE WITH OTHER TRADES OFFSETS AS REQUIRED.
21. PROVIDE 4" CONCRETE PAD ON ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT.
22. PROVIDE PANIC HARDWARE FOR ALL DOORS LEADING OUT OF ELECTRIC ROOM. COORDINATE WITH ARCHITECT.

B. RACEWAYS

1. ALL WIRING SHALL BE IN CONDUIT AND CONCEALED. MINIMUM SIZE SHALL BE 3/4".
2. ALL RACEWAYS CONDUIT, ETC. SHALL BE MECHANICALLY JOINED TOGETHER INTO A CONTINUOUS ELECTRICAL CIRCUIT. AT ALL BOXES, FITTINGS AND ENCLOSURES, LOCK NUTS AND BUSHINGS SHALL BE USED TO PROVIDE A MECHANICALLY SECURE CONNECTION.
3. UNLESS OTHERWISE NOTED, CONDUIT SHALL BE ELECTRICAL METALLIC TUBING (EMT) EXCEPT WHERE SUBJECT TO PHYSICAL DAMAGE, WET LOCATION, UNDERGROUND AND HAZARDOUS AREAS, PROHIBITED BY CODES PROVIDE RIGID GALVANIZED STEEL (RGS). ALL CONDUIT FITTINGS SHALL BE COMPRESSION TYPE.
4. FLEXIBLE STEEL CONDUIT SHALL BE USED FOR CONNECTIONS FROM OUTLET BOXES TO LIGHTING FIXTURES, MOTORS, TRANSFORMERS AND TO OTHER EQUIPMENT SUBJECT TO VIBRATION AS PERMITTED BY CODE.
5. PROVIDE FLEXIBLE LIQUID CONDUIT TO ALL MECHANICAL EQUIPMENT LOCATED ON ROOF, BUILDING EXTERIOR, PUMP ROOM, WATER METER ROOM & BOILER ROOM.
6. RACEWAYS SHALL BE AS MANUFACTURED BY NATIONAL ELECTRIC PRODUCTS, TRIANGLE & REPUBLIC STEEL OR APPROVED EQUAL.
7. TYPE 'AC' (BX) STEEL ARMORED CABLES MAY BE USED FOR LIGHTING AND POWER BRANCH CIRCUITS IN HUNG CEILING AND IN DRY-WALL PARTITIONS, EXCEPT ALL HOMERUNS SHALL BE WIRED IN CONDUIT. TYPE 'AC' CABLE MAY NOT BE RUN IN ELECTRICAL CLOSET. 'MC' CABLE SHALL BE UTILIZED IN PLACES OF ASSEMBLY & APARTMENT FEEDERS . PROVIDE SEPARATE EQUIPMENT GROUND CONDUCTOR IN ALL 'MC' CABLES WHERE NOT SUBJECT TO CORROSIVE CONDITIONS.
8. ALL CONDUIT INSTALLED IN THE GARAGE SHALL BE RIGID GALVANIZED STEEL WITH THREADED FITTINGS.
9. ALL CONDUIT INSTALLED IN GAS METER ROOM SHALL BE RIGID GALVANIZED CONDUIT.

C. WIRE AND CABLE

1. UNLESS OTHERWISE SPECIFIED OR SPECIFICALLY INDICATED ON THE DRAWINGS, ALL CONDUCTORS FOR LIGHTING AND POWER SHALL BE TINNED SINGLE CONDUCTOR ANNEALED COPPER BUILDING WIRES OF MINIMUM 98% CONDUCTIVITY WITH DISTINCTIVE COLOR MARKING, 600 VOLT INSULATION, COLOR CODED AS SPECIFIED HEREINAFTER. CONDUCTORS #10 AWG AND SMALLER SHALL BE SOLID TYPE, THHN/THWN, #8 AWG AND LARGER SHALL BE STRANDED, TYPE THHN/THWN.
2. WIRING FOR LIGHTING AND POWER WITHIN THE APARTMENT SHALL BE #12 AWG MINIMUM. CONTROL WIRING SHALL BE #18 AWG MINIMUM, UNLESS OTHERWISE INDICATED ON THE SCHEDULES. BRANCH CIRCUIT HOMERUN CONDUCTORS EXCEEDING 75 FEET SHALL BE INCREASED TO #10 AWG. MINIMUM.
3. PROVIDE A MINIMUM WIRE SIZE OF NO. 10 AWG FOR HOUSE LIGHTING & POWER. FEEDER RUNS OVER 75' SHALL BE NO. 8 AWG UNLESS NOTED ON SCHEDULES.
4. COLOR CODES FOR WIRING SHALL BE IN ACCORDANCE WITH INDUSTRY STANDARDS.
5. FEEDER AND BRANCH CIRCUIT WIRE SIZES SHALL BE ADJUSTED AS REQUIRED TO COMPENSATE FOR VOLTAGE DROP.
6. ALL CONDUCTORS INSTALLED EXPOSED IN HUNG CEILING SHALL BE PLENUM RATED.
7. PROVIDE A SAFETY GROUND CONDUCTOR IN EACH RACEWAY FOR FEEDERS AND BRANCH CIRCUITS UNLESS OTHERWISE NOTED.
8. PROVIDE A SEPARATE NEUTRAL CONDUCTOR FOR EACH RECEPTACLE & EQUIPMENT CIRCUIT.

D. ELECTRICAL BOXES AND FITTINGS

1. OUTLET BOXES: GALVANIZED, SHEET-STEEL WITH MOUNTING HOLES, CABLE AND CONDUIT SIZED KNOCKOUT OPENINGS IN BOTTOM AND SIDES, COVER AND GROUNDING SCREWS.

a. LIGHTING FIXTURE BOX: 4 INCH OCTAGON WITH 3/8 INCH FIXTURE STUD.
b. DEVICE BOXES: NOMINAL 4 INCH SQUARE MINIMUM 2-1/8 INCHES DEEP OR AS REQUIRED. MULTI-DEVICE BOXES SHALL BE OF THE MULTI-GANG TYPE.

2. JUNCTION, PULL AND SPLICE BOXES: GALVANIZED CODE-GAUGE SHEET-STEEL JUNCTION AND PULL BOXES, WITH SCREW-ON COVERS, WELDED SEAMS AND EQUIPPED WITH STAINLESS STEEL NUTS, BOLTS, SCREWS AND WASHERS. BOXES INSTALLED OUTDOORS TO BE FABRICATED OF ALUMINUM AND HAVE COVER GASKETS.
3. ALL BOXES, FITTINGS, ETC. INSTALLED IN MECHANICAL, COMPACTOR, REFUSE, TRASH, WATER METER, PUMP, GAS, STEAM & ELEVATOR MACHINE ROOMS SHALL BE SUITABLE FOR WET LOCATION.
4. MOUNTING HEIGHTS FOR DEVICES MEASURED FROM THE FINISHED FLOOR TO THE CENTERLINE OF THE OUTLET SHALL BE IN ACCORDANCE WITH THE FOLLOWING UNLESS OTHERWISE NOTED. ALSO COORDINATE WITH ARCHITECTURAL DRAWINGS PRIOR TO INSTALLATION.

a. WALL LIGHT SWITCHES: 4 FEET.
b. WALL RECEPTACLES: 1 FOOT 6 INCHES. (U.O.N.)
c. WALL RECEPTACLES IN MECH. EQUIPMENT ROOM, PUMP RM, WATER METER RM & BOILER RM: 4 FEET.
d. PUSH-BUTTON FOR POWER AND SIGNAL: 4 FEET.
e. INDIVIDUALLY MOUNTED MOTOR STARTERS: 4 FEET TO HANDLE.
f. WALL MOUNTED TELEPHONE & DATA OUTLETS: 1 FOOT 6 INCHES. (U.O.N.)
g. WALL TELEPHONE OUTLETS: 4 FEET. (U.O.N.)
h. CONTROLLED ACCESS CARD READERS: 3 FEET 6 INCHES. (U.O.N.)
i. APARTMENT INTERCOM STATION: 4 FEET. (U.O.N.)
j. ALL DEVICES WITHIN HANDICAP APARTMENT SHALL BE MOUNTED IN COMPLIANCE WITH ADA REQUIREMENTS: NOT TO EXCEED 4 FEET ABOVE FINISHED FLOOR.
k. BREAKGLASS STATION 5'-0" A.F.F.

E. WIRING DEVICES

1. RECEPTACLES AND SWITCHES IN ALL FINISHED AREAS SHALL BE OF DECORA TYPE AND NEMA CONFIGURATION ON DRAWINGS AND SPECIFICATIONS. PROVIDE COVERPLATES FOR ALL WIRING DEVICES, UNLESS OTHERWISE NOTED. WIRING DEVICES SHALL BE IN ACCORDANCE AS MANUFACTURED BY HUBBELL, LEVITON, OR PASS & SEYMOUR.
2. COVERPLATES SHALL BE 0.10 INCH THICK, SPECIFICATION GRADE, NON-COMBUSTIBLE THERMOPLASTIC, SMOOTH FINISH, WITH COLOR AS SELECTED BY ARCHITECT, UNLESS OTHERWISE NOTED.
3. RECEPTACLES SHALL NOT BE INSTALLED BACK-TO-BACK. OFFSET RECEPTACLES BY MINIMUM OF 24 INCHES.
4. PROVIDE LOCK-OUT DEVICE ON ALL CIRCUIT BREAKERS SERVING EMERGENCY LIGHTING, EXIT SIGNS, SECURITY SYSTEMS, EPO AND FIRE/SMOKE DAMPERS.
5. PRIOR TO ROUGH-IN FOR OUTLET, CONTRACTOR SHALL VERIFY OUTLET TYPE FOR UNITS BEING SERVED SUCH AS WASHER, DRYER, REFRIGERATOR, OVEN, ETC.
6. ALL DEVICES IN WET, DAMP OR EXTERIOR LOCATIONS SUCH AS GARAGES, ROOF AND ELEVATOR PIT SHALL BE INSTALLED IN WEATHERPROOF BOXES. ALL OUTLETS SHALL BE G.F.I. TYPE.
7. ALL EXTERIOR OUTLETS SHALL BE RECESSED MOUNTED 20A, 125V GFCI TYPE WITH WEATHERPROOF COVERPLATE
8. ALL OUTLETS WITHIN THE KITCHEN, PANTRY, LAUNDRY ROOM SHALL BE GROUND FAULT INTERRUPTING TYPE.
9. KEY SWITCHES, WHERE INDICATED, SHALL BE SINGLE GANG COVERPLATE.
10. FOR ADDITIONAL REQUIREMENTS REFER TO BOOK SPECIFICATION.
11. ALL OUTLETS IN ALL COMMON SPACES, AMENITIES SPACES, CORRIDORS, LOBBIES, HALLS ETC. IN A RESIDENTIAL BUILDINGS MUST BE TAMPER RESISTANCE.

F. CIRCUITS AND MOTOR DISCONNECTS

1. DISCONNECT SWITCHES SHALL BE HEAVY DUTY, 600V OR 240V AS REQUIRED, WITH GROUNDING LUG. PROVIDE FUSED TYPE AS INDICATED. FUSE CLIPS SHALL BE REJECTION TYPE.
2. PROVIDE NEMA 1 ENCLOSURE, EXCEPT FOR DAMP & OUTDOOR LOCATIONS ENCLOSURES SHALL BE NEMA 3R.
3. ALL SWITCHING IN BOILER ROOM , PUMP ROOM, WATER ROOM, FIRE PUMP ROOM, & TRASH ROOM SHALL BE NEMA 3R.
4. DISCONNECT SWITCHES SHALL BE BY SQUARE D, GENERAL ELECTRIC OR CUTLER-HAMMER.
5. PROVIDE A FUSED/UNFUSED DISCONNECT FOR EACH PIECE OF MECHANICAL EQUIPMENT.
6. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

G. IDENTIFICATIONS

1. ALL WIRES SHALL BE IDENTIFIED BY PANEL AND CIRCUIT NUMBER AT ALL TERMINATION AND SPLICE POINTS BY THE USE OF BRADY B-500 VINYL CLOTH TAPE OR EQUIVALENT METHOD.
2. ALL JUNCTION BOXES SHALL BE IDENTIFIED WITH PANEL AND CIRCUIT NUMBERS OF ALL CIRCUITS OR NAME OF COMMUNICATIONS SYSTEM CABLING CONTAINED WITHIN. JUNCTION BOXES IN EXPOSED LOCATIONS SHALL BE CLEARLY MARKED WITH A BOLD, INDELIBLE MARKING PEN. LETTERING SHALL BE NEATLY AND LEGIBLY PRINTED. JUNCTION BOXES ON EMERGENCY SERVICE SHALL BE PAINTED RED AND LABELED AS EMERGENCY.
3. PANELBOARDS, DISCONNECT SWITCHES, STARTERS AND EQUIPMENT ENCLOSURES SHALL BE IDENTIFIED WITH ENGRAVED BLACK AND WHITE PLASTIC NAMEPLATES INDICATING EQUIPMENT SERVED, VOLTAGE & AMPERE RATING AND INCOMING FEEDER DESIGNATION. NAMEPLATES SHALL BE FASTENED WITH TWO COUNTER SUNK OVAL HEAD SCREWS.

H. GROUNDING

1. METAL RACEWAYS, METAL ENCLOSURES OF ELECTRICAL DEVICES & OTHER EQUIPMENT SHALL BE COMPLETELY GROUNDED IN AN APPROVED MANNER. PROPER HARDWARE REQUIRED FOR A COMPLETE GROUNDING SYSTEM SHALL BE INSTALLED BY THE CONTRACTOR.
2. PROVIDE A SEPARATE GROUNDING CONDUCTOR IN EACH CONDUIT OR FOR EACH CIRCUIT WHERE INDICATED ON DRAWINGS AND WHERE REQUIRED BY CODE.
3. SERVICE GROUNDING ELECTRODE CONDUCTOR SHALL BE SIZE IN ACCORDANCE WITH NEC SECTION 250-66.
4. FOR ADDITIONAL REQUIREMENTS REFER TO BOOK SPECIFICATION.

I. COMMUNICATION RACEWAY SYSTEMS

1. FOR EACH VOICE/DATA/CABLE TV OUTLET, PROVIDE A 4 INCH BY 4 INCH BY 1-1/8 INCH DEEP OUTLET BOX OR LOW VOLTAGE CABLE TERMINATION. ALL WIRING OUTSIDE TENANT UNIT SHALL BE IN FLEX DUCT OR EMT CONDUIT.
2. EMPTY CONDUIT OR FLEXIBLE DUCT FROM EACH APARTMENT SHALL BE INSTALLED AS PER LOCAL SERVICE PROVIDER. WITH DRAG LINES. PROVIDE NYLON PULLCORD IN ALL RACEWAYS. & FLEX DUCT.
3. ALL COMMUNICATION CONDUIT INSTALLATIONS MUST CONFORM TO LOCAL CODES AND BCSI STANDARDS,
4. INCLUDING BUT NOT LIMITED TO, THE 60 INCH BEND RADIUS AND PULLBOX REQUIREMENTS.
5. ALL CONDUITS MUST HAVE PROTECTIVE PLASTIC 'BUSHINGS' INSTALLED ON THE ENDS TO PROTECT CABLES FROM DAMAGE.
6. COORDINATE WITH VOICE/DATA/CABLE TV VENDOR FOR EXACT VOICE/DATA/ CABLE TV CABLING AND CONDUIT REQUIREMENTS.
7. EACH HOME RUN FORM SHALL BE IDENTIFIED AND THE DISTRIBUTION PANEL & MAIN HEAD END EQUIPMENT.
8. PROVIDE INDEPENDENT SUPPORT FOR ALL LOW VOLTAGE WIRING, DO NOT INSTALL WITH POWER CONDUITS.
9. FOR ADDITIONAL REQUIREMENTS REFER TO LOW VOLTAGE RISER & SPECIFICATIONS.

J. MISCELLANEOUS

1. PROVIDE A MINIMUM OF 12 INCH SEPARATION BETWEEN POWER AND COMMUNICATIONS WIRING. COORDINATE WITH SYSTEM VENDOR PRIOR TO INSTALLATION.
2. FEEDER TAPS SHALL INCLUDE ALL CONDUCTORS PER PHASE.
3. ACCEPT DELIVERY AND INSTALL ALL MISCELLANEOUS ELECTRICAL EQUIPMENT AND DEVICES TO INCLUDE BUT NOT LIMITED TO MONITORS, DVR, CAMERAS, MICROWAVES, REFRIGERATORS, OWNER PRE-PURCHASED EQUIPMENT, ETC.
4. ALL PULL BOXES, JUNCTION BOXES, SPLICES BOXES MUST MUST BE ACCESSIBLE.
5. PROVIDE INDEPENDENT SUPPORT OF POWER & COMMUNICATION WIRING.

K. MOTOR CONTROLLERS

1. CONTRACTOR SHALL COORDINATE WITH HVAC & CONTROL CONTRACTORS TO PROVIDE PROPER CONTROL AND PILOT DEVICES AND CONTROL WIRING IN MOTOR STARTERS OR VARIABLE FREQUENCY DRIVE.
2. CONTRACTOR SHALL INSTALL & WIRE STARTERS, CONTROL EQUIPMENT, AND CONTROL DEVICES SHIPPED LOOSE WITH EQUIPMENT PROVIDED BY OTHER TRADES AND NOT INSTALLED NOR WIRED BY OTHER TRADES.
3. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

L. LIGHTING FIXTURES

1. FOR LIGHTING FIXTURE SPECIFICATIONS REFER TO ARCHITECTURAL DRAWINGS.
2. PROVIDE BRACKETS, MOUNTING DEVICES, ACCESSORIES, ETC. AS REQUIRED.
3. PROVIDE INDIVIDUAL INTEGRAL SWITCHES FOR EACH TASK AND UNDER-COUNTER LIGHT FIXTURE UNLESS OTHERWISE INDICATED.
4. ALL LIGHTING FIXTURES SHALL BE MANUFACTURED, FURNISHED, AND INSTALLED IN COMPLIANCE WITH ALL APPLICABLE CODES AND GOVERNMENT AGENCIES HAVING JURISDICTION.
5. ALL FIXTURES SHALL BE IN COMPLIANCE WITH THE CURRENT APPLICABLE UNDERWRITERS LABORATORIES STANDARDS AND SHALL BEAR THE UL LABEL.
6. SUBMIT DETAILED SHOP DRAWINGS OF LIGHTING FIXTURES IN FULL COMPLIANCE WITH THE SPECIFICATIONS. DATA TO BE SUBMITTED SHALL INCLUDE BUT NOT LIMITED TO DIMENSIONED AND DETAILED INFORMATION ABOUT FIXTURE CONSTRUCTION, MOUNTING AND INSTALLATION.
7. FOR ADDITIONAL REQUIREMENTS, REFER TO LIGHTING CONSULTANT FIXTURE SCHEDULE AND SPECIFICATIONS.

M. LIGHTING CONTROL

1. ALL EXTERIOR LIGHTING FIXTURES SHALL BE CONTROLLED VIA PHOTOCELL AND TIME CLOCK UNLESS OTHERWISE NOTED. PROVIDE ALL ASSOCIATED CONTACTOR PANEL OR CONTROL PANEL AS INDICATED ON THE PLANS.
2. LIGHTING SWITCHES ARE SHOWN FOR ARRANGEMENT ONLY. PROVIDE NUMBER OF SWITCHES REQUIRED PER AREA.
3. THE ABOVE REQUIREMENTS SHALL NOT APPLY TO EMERGENCY, NIGHT LIGHTING AND EXIT SIGN CIRCUITS.
4. OCCUPANCY SENSORS SHALL BE INSTALLED AT THE LOCATIONS AS NOTED ON THE FLOOR PLANS
5. PROVIDE OCCUPANCY SENSOR IN ALL PUBLIC CORRIDORS, LAUNDRY ROOM, OFFICES AND AS NOTED ON THE PLANS.

N. ELECTRICAL TESTING

1. TEST AND ADJUST ALL EQUIPMENT AND WIRING INSTALLED/CONNECTED UNDER THIS CONTRACT, INCLUDING ELECTRICAL EQUIPMENT FURNISHED BY OTHERS, TO DETERMINE PROPER POLARITY, PHASING, FREEDOM FROM GROUNDS AND SHORTS AND OPERATION OF EQUIPMENT. ALL MEASURING INSTRUMENTS MUST BE PROPERLY CALIBRATED.
2. WHENEVER ANY AUTHORITIES HAVING JURISDICTION REQUIRE THAT ANY WORK BE TESTED OR APPROVED, CONTRACTOR SHALL PROVIDE PROPER FACILITIES FOR ACCESS & PERSONNEL FOR INSPECTION.
3. CHECK ALL LIGHTING FIXTURE SENSORS AND RECEPTACLES FOR PROPER OPERATION.
4. TEST ALL LOW VOLTAGE SYSTEMS & DEVICES SUCH AS CCTV, INTERCOM, SMOKE DETECTOR, DOOR ACCESS SYSTEM, FIRE ALARM, ETC TO VERIFY THAT THEY FUNCTION IN A COORDINATED FASHION WITH THE MANUFACTURERS RECOMMENDATIONS. SUBMIT A CERTIFIED REPORT DESCRIBING THE TESTING AND ALL RESULTS. TAKE ALL REQUIRED CORRECTIVE MEASURES. SUBMIT A COPY OF TEST RESULTS TO THE OWNER REPRESENTATIVE.
5. CHECK ALL SYSTEM AND EQUIPMENT GROUNDS FOR PROPER VALUE OF RESISTANCE USING THE MEGGER GROUND TESTER IN ACCORDANCE WITH MANUFACTURER'S STANDARD INSTRUCTIONS. TEST INSULATION RESISTANCE OF ALL NEW AND AFFECTED EXISTING FEEDERS PRIOR TO ENERGIZING.
6. BALANCE, AS EQUALLY AS POSSIBLE, THE LOADS CONNECTED TO EACH PHASE OF ALL CIRCUITS CONNECTED TO PANELBOARDS.
7. AT THE COMPLETION OF WORK, CHECK THE LOAD CURRENT IN EACH FEEDER AND MAKE SUCH ADJUSTMENTS AS ARE NECESSARY TO CORRECT LOAD IMBALANCE. MAXIMUM IMBALANCE SHALL NOT EXCEED 10 PERCENT.

O. MISCELLANEOUS MECHANICAL

1. REFER TO HVAC/PLUMBING/FIRE PROTECTION PLANS FOR EXACT LOCATIONS AND QUANTITIES OF ALL DEVICES, INCLUDING BUT NOT LIMITED TO, THERMO- STATS, FIRE DAMPERS, SMOKE DAMPERS, DUCT DETECTORS, WATER FLOW AND VALVE TAMPER SWITCHES, ETC. COORDINATE WITH RESPECTIVE CONTRACTOR.
2. COORDINATE WITH HVAC/PLUMBING/FIRE PROTECTION PLANS FOR EXACT LOCATION AND PIPING LENGTHS TO BE HEAT TRACED. PROVIDE POWER FEEDER AS SPECIFIED HEREIN OR AS REQUIRED UNDER OTHER DIVISION OF THIS WORK.
3. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

P. CONTROL WIRING

1. REFER TO HVAC/PLUMBING/FIRE PROTECTION DRAWINGS AND SPECIFICATIONS FOR SYSTEM CONTROL REQUIREMENTS. PROVIDE ALL REQUIRED 120 VOLT POWER, 120 VOLT AND LOW VOLTAGE CONTROL WIRING AND RELATED DEVICES TO ACCOMMODATE SPECIFIED SEQUENCE OF OPERATIONS. COORDINATE WITH RESPECTIVE TRADE CONTRACTOR.
2. CONTROL TRANSFORMERS WHERE REQUIRED SHALL BE INSTALLED IN VENTILATED ENCLOSURE.
3. PROVIDE SHOP DRAWINGS AND CONTROL WIRING DIAGRAMS FOR ALL PUMPS, FANS, VARIABLE FREQUENCY DRIVE, ETC. WIRED VIA CONTROLLER OR TIME CLOCK FOR REVIEW PRIOR TO INSTALLATION.
4. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

Q. PANELBOARDS

1. ALL HOUSE PANELBOARDS SHALL HAVE COPPER BUS BARS OF RATINGS AS INDICATED ON THE CONTRACT DRAWINGS. CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE WITH THERMAL MAGNETIC TRIP. WHERE MAIN BREAKERS ARE REQUIRED THEY SHALL BE MOUNTED SEPARATELY FROM THE BRANCH CIRCUIT BREAKERS. PROVIDE COPPER NEUTRAL BUS AND GROUND BUS BONDED TO CABINET ENCLOSURE.
2. DISTRIBUTION PANELBOARD(S) WHERE REQUIRED SHALL BE PROVIDED WITH EITHER SWITCH/FUSE OR CIRCUIT BREAKERS AS SCHEDULED ON THE DRAWINGS. AND SHALL HAVE A RATING OF 1000 AMPERE PER SQUARE INCH.
3. LIGHTING AND POWER PANELBOARD CIRCUIT BREAKER RATINGS SHALL BE AS INDICATED ON PANELBOARD SCHEDULES. WHERE SHORT CIRCUIT RATINGS ARE NOT INDICATED, RATINGS SHALL BE AS REQUIRED BY SHORT CIRCUIT STUDY. PROVIDE WARNING LABELS ON PANEL COVERS.
4. PANEL SHALL HAVE A MINIMUM OF 6 INCH GUTTER SPACE ON BOTH SIDES AND ON TOP AND BOTTOM.
5. PANEL SHALL BE FINISHED IN ANSI 61 BAKED GRAY ENAMEL AND SHALL BE LOCKABLE AND KEYED ALIKE. ENGRAVED NAMEPLATES SHALL BE FURNISHED FOR EACH PANELBOARD.
6. PANEL SHALL BE SUPPORTED FROM FLOOR, INDEPENDENTLY OF WALL CONSTRUCTION BUT LATERALLY SECURED TO WALL.
7. FURNISH AND INSTALL TYPEWRITTEN DIRECTORIES FOR ALL PANELBOARDS.
8. ALL PANEL BACK BOXES ARE TO BE 42 CIRCUIT BACK BOXES WITH BUS BARS TO ACCOMMODATE FUTURE CIRCUIT BREAKERS, UNLESS SHOWN OTHERWISE ON PLANS.
9. APARTMENT LOAD CENTER SHALL BE SQUARE D "QO" TYPE LOAD CENTER WITH COPPERBUS & QO PLUG ON CIRCUIT BREAKERS, AIC RATINGS ARE SHOWN ON SCHEDULE DRAWING E-300.
10. CONTRACTOR MAY USE APPROVED UTILITY COMBINATION BOLTED SWITCH/METER FOR INDIVIDUAL METERING.
11. ALL CIRCUIT BREAKERS SERVING MECHANICAL EQUIPMENT SHALL TYPE "HACR".
12. PROVIDE 4" INCH CONCRETE PAD FOR ALL FLOOR MOUNTED ELECTRICAL PANEL, SWITCHBOARD, ETC.
13. APARTMENT PANELBOARD SHALL BE MOUNTED SO THAT THE TOP MOST CIRCUIT BREAKER DOES NOT EXCEED 48" A.F.F.
14. FOR ADDITIONAL REQUIREMENTS REFER TO BOOK SPECIFICATION.
15. TANDEM OR TWIN CIRCUIT BREAKERS ARE NOT ACCEPTABLE.

R. SECURITY SYSTEMS

1. COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATIONS OF ALL DEVICES. WORK SHALL INCLUDE:

a. CONDUIT AND STUB-UPS.
b. 120 VOLT POWER TO CCTV CAMERAS, MONITOR, DVR, ETC..
c. POWER AND CONTROL WIRING SHALL BE IN ACCORDANCE WITH VENDOR REQUIREMENTS.
d. TESTING AND START-UP.
e. FOR ADDITIONAL REQUIREMENTS REFER TO LOW VOLTAGE RISER.

2. PROVIDE OUTLET BOXES, BACK BOXES OR SPLICE BOXES AS REQUIRED BY SECURITY VENDOR FOR EACH DEVICE. DEVICE INSTALLED ON THE EXTERIOR OF THE BUILDING OR DAMP LOCATION SHALL BE SUITABLE FOR WET LOCATION.
3. PROVIDE A 3/4 INCH CONDUIT FROM EACH DEVICE BOX TO CEILING AREA.
4. PROVIDE 120V AC POWER SUPPLY AS REQUIRED, INCLUDING CONDUIT AND WIRING, TO EACH PIECE OF EQUIPMENT REQUIRING 120 VOLT POWER SUPPLY AS REQUIRED BY VENDOR.
5. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH ARCHITECT.

S. APARTMENT FITOUT

1. WHERE APARTMENT LAYOUT IS NOT SHOWN PROVIDE COMPLETE ELECTRIC FIT-OUT OF ALL UNITS AS SHOWN IN TYPICAL UNIT LAYOUT DETAIL.
2. ALL 120V, SINGLE PHASE, 15A & 20A BRANCH CIRCUITS SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS HALLWAYS, OR SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A LISTED ARC FAULT CIRCUIT INTERRUPTER, COMBINATION-TYPE, INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT.
3. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH OWNER AND/OR ARCHITECT.
4. EACH AND ALL RECEPTACLES IN TENANTS' BATHROOMS, KITCHENS & TERRACE SHALL BE G.F.I. TYPE.
5. ALL ELECTRICAL & LOW VOLTAGE DEVICES IN HANDICAP APARTMENTS SHALL BE MOUNTED IN ACCORDANCE WITH ADA REQUIREMENTS.
6. FURNISH & INSTALL 120 VOLT HARDWIRED COMBINATION/SMOKE DETECTORS WITH INTEGRAL STROBE (75 CANDELA) IN HANDICAP APARTMENT AS PER ADA & THE UNIFORM FEDERAL ACCESSIBILITY STANDARDS (UFAS) 4.28.
7. APARTMENT HAVING MORE THAN ONE SMOKE OR CARBON MONOXIDE DETECTOR SHALL BE WIRED SO THAT ANY ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE

LIGHTING FIXTURE SCHEDULE

MARK	SYMBOL	TYPE	LOCATION	MANUFACTURER	MODEL / CATALOG #	FINISH	WATTAGE	NOTES
IL01	⊘	INTERIOR RECESSED DOWNLIGHT	RES. UNITS	WAC LIGHTING	WACP160279	WHITE	11	
IL02	⊘	INTERIOR RECESSED DOWNLIGHT	RES. BATHROOMS	WAC LIGHTING		WHITE	11	WATER PROOF
IL03	▭	INTERIOR WALL SCONCE HOR.	RES. LIVING RMS	OXYGEN LIGHTING	3-590-24	SATIN NICKEL	(2X)11.9	
IL04	▭	INTERIOR WALL SCONCE HOR.	RES. BATHROOMS	OXYGEN LIGHTING	-	-	-	
IL05	○	INTERIOR RECESSED FIXTURE ROUND	KITCHENS	OXYGEN LIGHTING	32-601-20	SATIN NICKEL	18.2	
IL06	▭	INTERIOR WALL MOUNT ROUND	EGRESS STAIR	WAC LIGHTING	FM-214-27-WT	WHITE	24	
IL07	▯	INTERIOR WALL SCONCE VER.	CORRIDOR	OXYGEN LIGHTING	3-518-24	WHITE	11.9	
IL08	▬	INTERIOR BOX PENDANT	COMMUNITY ROOM / LAUNDRY	FINELITE	HP-4 D-6'-S-8-30-BG-120V-FA-SC-CX		37	
IL09	○	INTERIOR RECESSED DOWNLIGHT ROUND	PROGRAM OFFICES	SKYDOME	FSDL-44-FLXP-7000L-35K-1C-120-LD1-U-WH	-	70	
IL10	▬	INTERIOR LINEAR PENDANT 6'	UTILITIES	UL LIGHTING	LTSC104-1-T8-4-S-DLT2	-	32	
IL11	▬	INTERIOR LINEAR PENDANT 3'	UTILITIES	UL LIGHTING	LTSC104-1-T8-4-S-DLT2	-	17	
IL12	▬	INTERIOR LINEAR PENDANT 6'	HAZARDOUS AREA	UL LIGHTING		-	32	EXPLOSION PROOF
IL13	▬	INTERIOR LED STRIP LIGHT	COMMUNITY ROOM	DELTA LIGHT	FEMTOLINE 25		5W/FT	

- ALL LAMP SUPPLIED W/ FIXTURE SHALL BE PREMIUM BRAND LAMPS, SYLVANIA OR G.E.
- LIGHTING SCHEDULE FOR INFORMATION ONLY. REFER TO ARCHITECTURAL DRAWINGS AND FIXTURE SCHEDULE FOR EXACT TYPES, QUANTITIES, LOCATIONS AND CONTROLS. CONTRACTOR SHALL ADVISE OF ANY DISCREPANCIES BETWEEN THIS SCHEDULE AND ARCHITECTURAL LIGHTING FIXTURE SCHEDULE. ARCHITECTURAL FIXTURE SCHEDULE TAKES PRECEDENCE.

ELECTRICAL SYMBOL LIST

⊕	DUPLEX RECEPTACLE 20A-2P-125V/SPECIFICATION GRADE	SC	BRK ELECTRONICS #SC7010BV HARDWIRED 120V COMBINATION SMOKE/CARBON MONOXIDE DETECTOR WITH BATTERY BACK-UP. BATTERIES SHALL BE EITHER EVEREADY MODEL 522, DURACELL MODEL MN1604, MX1604 OR ULTRALIFE U9VL-J. DEVICE MUST BE INSTALLED WITHIN 15 FEET OF BEDROOM DOOR.
$\oplus_C$	DUPLEX RECEPTACLE 20A-2P-125V/SPECIFICATION GRADE C - ABOVE COUNTER INCLUDES GFI, R - RANGE, DW - DISHWASHER, MW - MICROWAVE, REF - REFRIGERATOR		HOMERUN TO DESIGNATED PANEL. 1 ARROW DESIGNATES 1 CIRCUIT, 2 ARROWS DESIGNATE 2 CIRCUITS, 3 ARROWS DESIGNATE 3 CIRCUITS
$\oplus_{GFI}$	DUPLEX RECEPTACLE 20A-2P-125V/SPECIFICATION GRADE GROUND FAULT INTERRUPTION TYPE RECEPTACLES	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
⊕	DUPLEX RECEPTACLE 20A-2P-125V/SPECIFICATION GRADE SPLIT WIRE SO THAT ONLY ONE RECEPTACLE WILL BE CONTROLLED BY SWITCH & THE OTHER UNSWITCHED	MD	MOTORIZED DAMPER
⊕	QUAD DUPLEX RECEPTACLE, 125V, 20A GROUNDING	FDS	LOCKABLE FUSE DISCONNECT SWITCH
⊕	SIMPLEX RECEPTACLE 20A-2P-125V/SPECIFICATION GRADE	J	JUNCTION BOX
⊕	DUPLEX RECEPTACLE 20A-2P-125V/SPECIFICATION GRADE SURGE TYPE RECEPTACLES	M	CT METER
▼	TECHNOLOGY OUTLET WITH TWO INSERTS (1) RJ-45, & ONE (1) COAXIAL CABLE		SURFACE MOUNTED LIGHTING/POWER PANEL
▼	TELEPHONE OUTLET WITH TWO (2) RJ-45 INSERTS	X	MOTOR - NO. DENOTES HORSEPOWER
▽	DATA OUTLET WITH TWO (2) CAT-6E CABLES INSERTS		RECESSED APARTMENT PANELBOARD
TV	TELEVISION OUTLET WITH ONE (1) COAXIAL CABLE INSERT		MOTOR STARTER
	OCCUPANCY SENSOR (CEILING MOUNTED): SENSOR SWITCH CM-11 (LOW VOLTAGE) AND POWER PACK WATTSTOPPER WT SERIES (LOW VOLTAGE) AND POWER PACK FOR CORRIDOR AREAS		FUSED, UNFUSED DISCONNECT SWITCH
	DAYLIGHT CONTROL SENSOR (CEILING MOUNTED): SENSOR SWITCH CM-PC (LOW VOLTAGE) AND POWER PACK WATTSTOPPER LS-301 (LOW VOLTAGE) AND POWER PACK PROVIDED NEAR WINDOWS OF APPLICABLE SPACES	S_T	THERMAL OVERLOAD SWITCH
	VACANCY SENSOR (WALL MOUNTED): SENSOR SWITCH WSD-PDT (LINE VOLTAGE) WATTSTOPPER UW-100 (LINE VOLTAGE) (WATTSTOPPER - OPERATION MUST BE SET WITH DIP SWITCHES) PROVIDED IN SMALL OFFICE OR BATHROOM OF APPLICABLE SPACE	CP	FACTORY WIRED CONTROL PANEL
	VACANCY SENSOR (CEILING MOUNTED): SENSOR SWITCH CM-PDT-9 (LOW VOLTAGE) AND POWER PACK WATTSTOPPER EQUIVALENT WITH POWER PACK PROVIDE LOW VOLTAGE WALL STATIONS/SWITCHES AS INDICATED ON THE DRAWINGS PROVIDED IN SMALL OFFICE OR BATHROOM OF APPLICABLE SPACE	VFD	VARIABLE FREQUENCY DRIVE
	VACANCY SENSOR (CEILING MOUNTED): SENSOR SWITCH CM-PDT-10 (LOW VOLTAGE) AND POWER PACK WATTSTOPPER DT-300 (LOW VOLTAGE) AND POWER PACK PROVIDE LOW VOLTAGE WALL STATIONS/SWITCHES AS INDICATED ON THE DRAWINGS PROVIDED IN LARGE AREAS	SWC	STRUCTURE WIRING CABINET
		VFD	VARIABLE FREQUENCY DRIVE WITH INTEGRAL DISCONNECT SWITCH
S	SINGLE POLE LIGHT SWITCH	S-ONE	VERIZON BOX
S_{LV}	LOW VOLTAGE WALL STATION/SWITCH: SENSOR SWITCH SPODM WALL STATION WATTSTOPPER LMSW-100 WALL SWITCH INTERFACE WITH VACANCY SENSORS	DC	DOOR CONTACT
S_{3a}	THREE WAY LIGHT SWITCH "a" DENOTES CONTROLLED LIGHTING FIXTURE		CLOSED CIRCUIT TELEVISION CAMERA
		CR	PROXIMITY KEY FOB
			EXIT SIGN
		TC	TIME CLOCK
		PC	PHOTO CELL
			ILLUMINATED PUSH BUTTON
		IC	AUDIO INTERCOM STATION
		IC M	MASTER INTERCOM STATION

ABBREVIATIONS

AH	AIR HANDLING UNIT	EM	EMERGENCY
ACC	AIR CONDENDSING COMPRESSOR	FFH	FAN FORCED HEATER
CX	COMPACTOR ROOM EXHAUST FAN	GFI	GROUND FAULT INTERRTUPER
DX	DRYER EXHAUST FAN	KX	KITCHEN EXHAUST FAN
AFF	ABOVE FINISHED FLOOR	MUA	MAKE-UP AIR UNIT
UON	UNLESS OTHERWISE NOTED	TX	TOILET EXHAUST FAN
WG	WIREGUARD	WP	WEATHERPROOF

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

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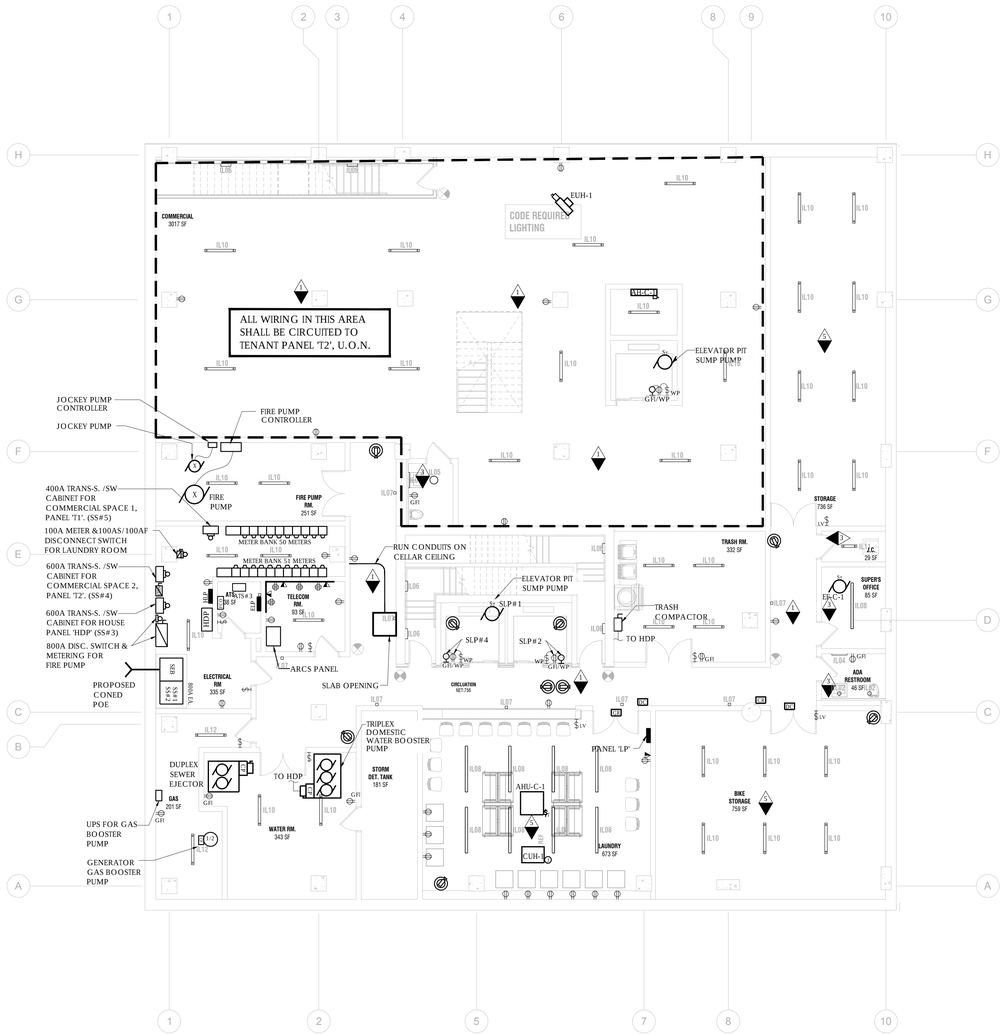
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ELECTRICAL ABBREVIATIONS & SYMBOL LIST

SEAL & SIGNATURE

DATE: 06 APRIL, 2018
PROJECT NO: RC 1730
SCALE: AS NOTED
DRAWING BY: I.F.
CHECKED BY: B.B.
DWG NO: E-011.00
NYC DOB NUMBER:



CELLAR PLAN

SCALE: 1/8" = 1'-0"

NOTES:

1. ALL NORMAL LIGHTING, RECEPTACLES & MECHANICAL/PLUMBINGSHALL BE CIRCUITED TO PANEL 'HLP' LOCATED IN THE ELECTRIC METER ROOM, U.O.N..
2. NORMAL LIGHTING IN CORRIDOR TO BE CONTROLLED VIA OCCUPANCY SENSORS.
3. LIGHTING FIXTURES CIRCUIT NUMBERS SHOWN AS 'ELP#No' ARE CONNECTED TO EMERGENCY GENERATOR CIRCUIT.
4. REFER TO DRAWING E-300 FOR CIRCUITING REQUIREMENTS.
5. EXIT LIGHTS TO BE CIRCUITED TO NEAREST STAIR LIGHTING FIXTURE CIRCUIT.
6. ALL AREAS WITH OCCUPANCY SENSOR SHALL HAVE LOW VOLTAGE VACANCY SENSOR SWITCH FOR LIGHTING MANUAL ON AND AUTO OFF.
7. TAP RECEPTACLE AHEAD OF LIGHT SWITCH.
8. PROVIDE 3/4"C THICK FIRE RETARDANT PLYWOOD BACKBOARD 8'-0" HIGH FOR TELCO, INSTALLED UNDER CARPENTER'S SCOPE.
9. TELCOM EQUIPMENT, RACKS AND CABLE TRAYS SHALL BE GROUNDED AS PER MANUFACTURER REQUIREMENT.
10. COORDINATE ALL CONDUIT ROUTING IN FIELD WITH ARCHITECT AND CONSTRUCTION MANAGER.
11. COORDINATE EXACT LOCATION OF CONTROL PANELS, STARTERS & VFD WITH MECHANICAL CONTRACTOR. PRIOR TO INSTALLATION MAINTAIN A MINIMUM WORKING CLEARANCE OF 3 FEET IN FRONT OF ALL EQUIPMENT.
12. COORDINATE EXACT LOCATION OF POWER SUPPLIES FOR SUMP PUMP AND SEWAGE EJECTOR PUMP ALARM PANELS WITH PLUMBING TRADE AND OWNER PRIOR TO INSTALLATION.
13. EXTERIOR LIGHTING FIXTURES, SHALL BE CONTROLLED BY PHOTOCELL TO TURN LIGHTS ON AND A TIME CLOCK TO TURN LIGHTS OFF, UON.
14. PROVIDE EMERGENCY OVERRIDE RELAY FOR ALL SWITCHED EMERGENCY LIGHTING FIXTURES (TYPICAL).

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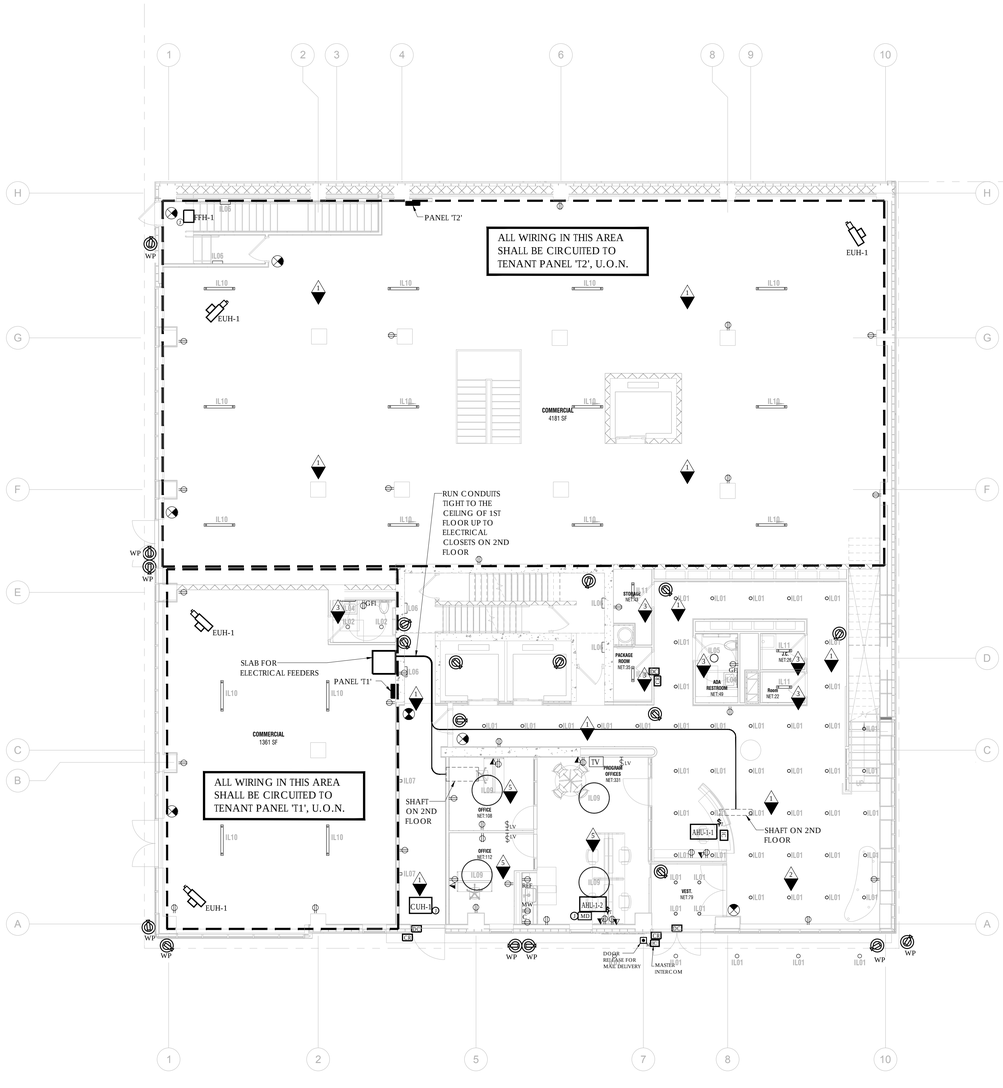
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CELLAR PLAN

SEAL & SIGNATURE

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
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CHECKED BY:	B.B.
DWG NO:	E-100.00
NYC DOB NUMBER:	



1ST FLOOR PLAN

SCALE: 1/8" = 1'-0"

NOTES:

1. ALL NORMAL LIGHTING, RECEPTACLES & MECHANICAL/PLUMBINGSHALL BE CIRCUITED TO PANEL 'HLP' LOCATED IN THE ELECTRIC METER ROOM, U.O.N.
2. NORMAL LIGHTING IN CORRIDOR TO BE CONTROLLED VIA OCCUPANCY SENSORS.
3. LIGHTING FIXTURES CIRCUIT NUMBERS SHOWN AS 'ELP#No' ARE CONNECTED TO EMERGENCY GENERATOR CIRCUIT.
4. REFER TO DRAWING E-300 FOR CIRCUITING REQUIREMENTS.
5. EXIT LIGHTS TO BE CIRCUITED TO NEAREST STAIR LIGHTING FIXTURE CIRCUIT.
6. ALL AREAS WITH OCCUPANCY SENSOR SHALL HAVE LOW VOLTAGE VACANCY SENSOR SWITCH FOR LIGHTING MANUAL ON AND AUTO OFF.
7. COORDINATE ALL CONDUIT ROUTING IN FIELD WITH ARCHITECT AND CONSTRUCTION MANAGER.
8. COORDINATE EXACT LOCATION OF CONTROL PANELS, STARTERS & VFD WITH MECHANICAL CONTRACTOR. PRIOR TO INSTALLATION MAINTAIN A MINIMUM WORKING CLEARANCE OF 3 FEET IN FRONT OF ALL EQUIPMENT.
9. EXTERIOR LIGHTING FIXTURES, SHALL BE CONTROLLED BY PHOTOCELL TO TURN LIGHTS ON AND A TIME CLOCK TO TURN LIGHTS OFF, UON.
10. PROVIDE EMERGENCY OVERRIDE RELAY FOR ALL SWITCHED EMERGENCY LIGHTING FIXTURES (TYPICAL).

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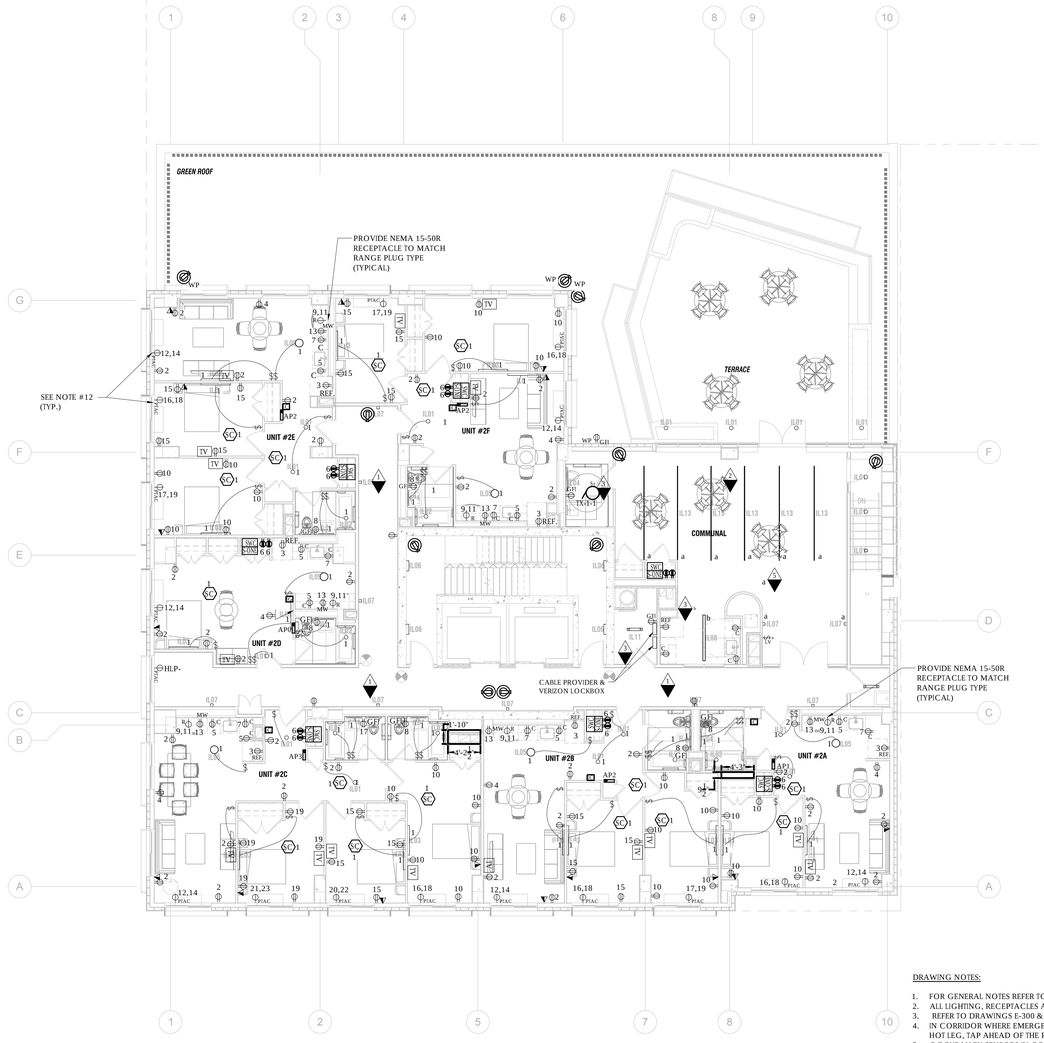
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ELECTRICAL
1ST FLOOR PLAN

SEAL & SIGNATURE

DATE:	06 APRIL, 2018
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SCALE:	AS NOTED
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CHECKED BY:	B.B.
DWG NO:	E-101.00
NYC DOB NUMBER:	



2ND FLOOR PLAN

SCALE: 1/8" = 1'-0"

DRAWING NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING E-100 & FOR APARTMENT FITOUT NOTES, REFER TO DRAWING E-010
2. ALL LIGHTING, RECEPTACLES AND MECHANICAL EQUIPMENT IN THE COMMON AREA SHALL BE CIRCUITED TO PANEL 'HLP'
3. REFER TO DRAWINGS E-300 & 301 FOR CIRCUITING REQUIREMENTS.
4. IN CORRIDOR WHERE EMERGENCY FIXTURE ARE CONNECTED TO THE SAME CIRCUIT AS THE NORMAL FIXTURES PROVIDE AN ADDITIONAL HOT LEG, TAP AHEAD OF THE POWER PACK TO DESIGNATED "EM" FIXTURES FOR 24 HOUR OPERATION.
5. OCCUPANCY SENSORS IN CORRIDORS AND ELEV. LOBBIES SHALL CONTROL NORMAL LIGHTING FIXTURES ONLY.
6. EXIT LIGHTS TO BE CIRCUITED TO NEAREST STAIR LIGHTING CIRCUIT.
7. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH ARCHITECT.
8. REFER TO MECHANICAL PLANS FOR EXACT HVAC UNIT DESIGNATION WITHIN EACH APARTMENT.
9. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH ARCHITECT.
10. ALL DEVICES IN APARTMENTS SHALL BE CIRCUITED TO LOCAL APARTMENT PANEL 'AP'.
11. APARTMENT PANEL SWC, AND FIOS CABINET SHALL BE RECESSED MOUNTED.
12. RECEPTACLES FOR PTAC UNITS SHALL BE CONCEALED BEHIND PTACS.
13. EXTERIOR LIGHTING FIXTURES, SHALL BE CONTROLLED BY PHOTOCELL TO TURN LIGHTS ON AND A TIME CLOCK TO TURN LIGHTS OFF, UON.
14. PROVIDE EMERGENCY OVERRIDE RELAY FOR ALL SWITCHED EMERGENCY LIGHTING FIXTURES (TYPICAL).

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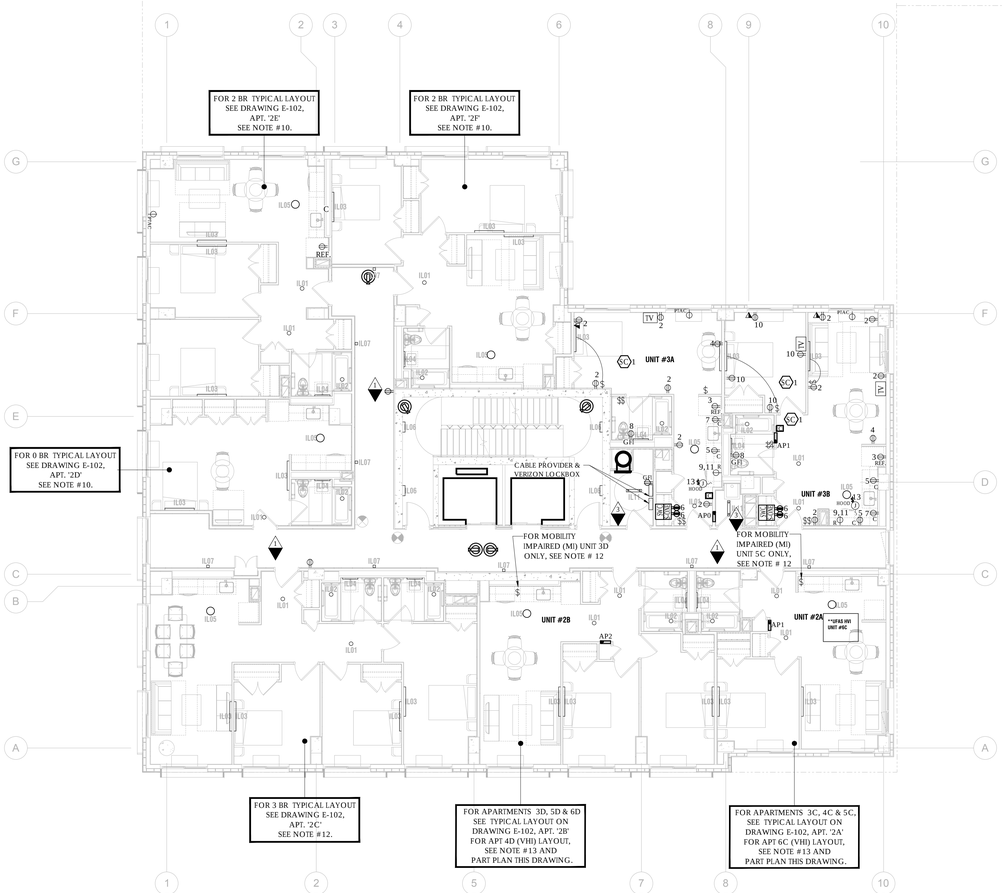
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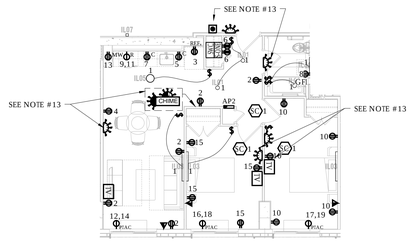
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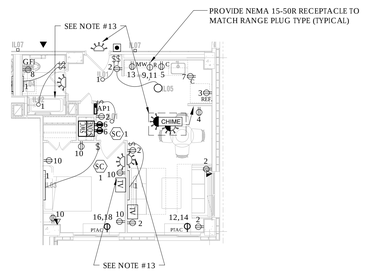
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3RD-6TH FLOOR PLAN
SCALE: 1/8" = 1'-0"



VISION/HEARING IMPAIRED (HVI) UNIT. APARTMENT '4D'
SCALE: 1/8" = 1'-0"



VISION/HEARING IMPAIRED (HVI) UNIT. APARTMENT '6C'
SCALE: 1/8" = 1'-0"

DRAWING NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING E-100 & FOR APARTMENT FITOUT NOTES, REFER TO DRAWING E-010
2. ALL LIGHTING, RECEPTACLES AND MECHANICAL EQUIPMENT IN THE COMMON AREA SHALL BE CIRCUITED TO PANEL 'HLP'
3. REFER TO DRAWINGS E-300 & 301 FOR CIRCUITING REQUIREMENTS.
4. IN CORRIDOR WHERE EMERGENCY FIXTURE ARE CONNECTED TO THE SAME CIRCUIT AS THE NORMAL FIXTURES PROVIDE AN ADDITIONAL HOT LEG, TAP AHEAD OF THE POWER PACK TO DESIGNATED 'EM' FIXTURES FOR 24 HOUR OPERATION.
5. OCCUPANCY SENSORS IN CORRIDORS AND ELEV. LOBBIES SHALL CONTROL NORMAL LIGHTING FIXTURES ONLY.
6. EXIT LIGHTS TO BE CIRCUITED TO NEAREST STAIR LIGHTING CIRCUIT.
7. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH ARCHITECT.
8. REFER TO MECHANICAL PLANS FOR EXACT HVAC UNIT DESIGNATION WITHIN EACH APARTMENT.
9. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH ARCHITECT.
10. ALL DEVICES IN APARTMENTS SHALL BE CIRCUITED TO LOCAL APARTMENT PANEL 'AP'.
11. APARTMENT PANEL SWC, AND FIOS CABINET SHALL BE RECESSED MOUNTED.
12. FOR ADA/MOBILITY IMPAIRED (MI) UNITS (APTS. 3D & 5C) PROVIDE SEPARATE CONTROL SWITCH FOR RANGE HOOD FAN WITHIN REACHABLE LOCATION.
13. PROVIDE ALL REQUIRED DEVICES FOR HEARING /VISUALLY IMPAIRED (VHI) UNITS (APTS. 4D & 6C). REFER TO DETAILS F & I ON DRAWING E-400.

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DOB APPROVAL

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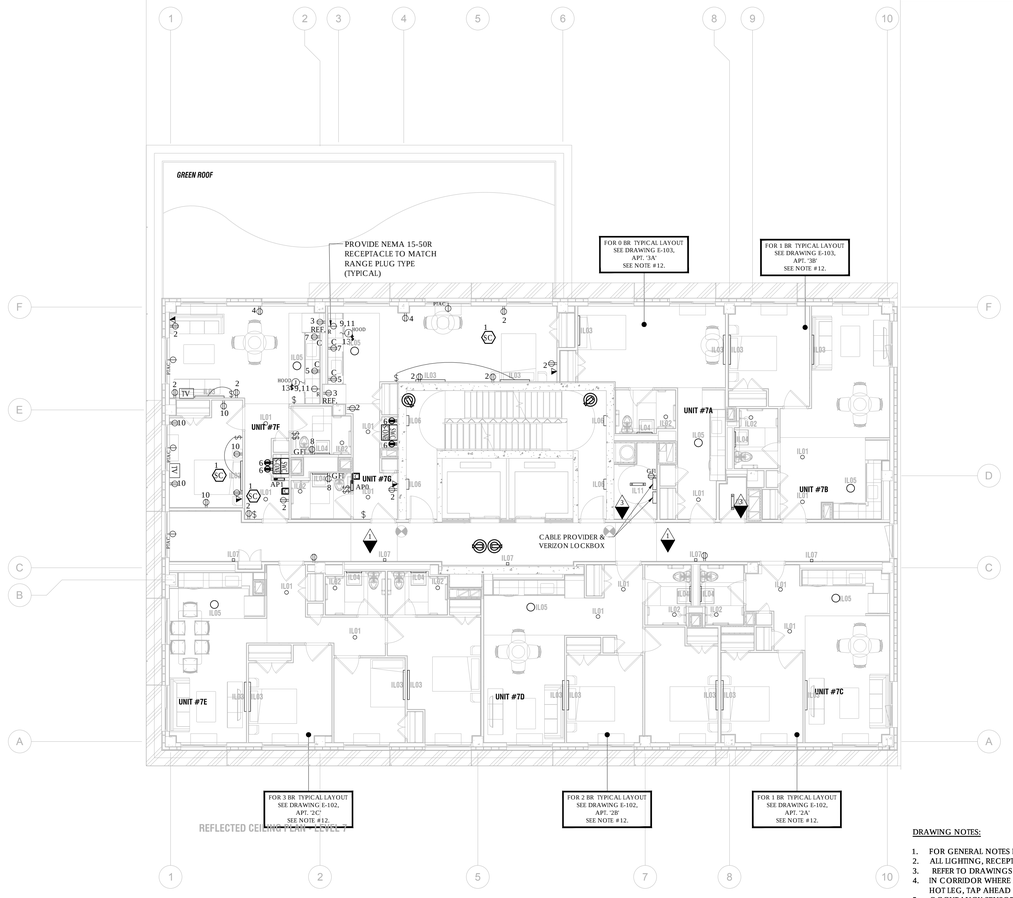
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ELECTRICAL
3RD-6TH FLOOR PLAN

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CHECKED BY:	B.B.
DWG NO:	E-103.00
NYC DOB NUMBER:	



7TH FLOOR PLAN

SCALE: 1/8" = 1'-0"

DRAWING NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING E-100 & FOR APARTMENT FITOUT NOTES, REFER TO DRAWING E-010
2. ALL LIGHTING, RECEPTACLES AND MECHANICAL EQUIPMENT IN THE COMMON AREA SHALL BE CIRCUITED TO PANEL 'HLP'
3. REFER TO DRAWINGS E-300 & 301 FOR CIRCUITING REQUIREMENTS.
4. IN CORRIDOR WHERE EMERGENCY FIXTURE ARE CONNECTED TO THE SAME CIRCUIT AS THE NORMAL FIXTURES PROVIDE AN ADDITIONAL HOT LEG, TAP AHEAD OF THE POWER PACK TO DESIGNATED "EM" FIXTURES FOR 24 HOUR OPERATION.
5. OCCUPANCY SENSORS IN CORRIDORS AND ELEV. LOBBIES SHALL CONTROL NORMAL LIGHTING FIXTURES ONLY.
6. EXIT LIGHTS TO BE CIRCUITED TO NEAREST STAIR LIGHTING CIRCUIT.
7. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH ARCHITECT.
8. REFER TO MECHANICAL PLANS FOR EXACT HVAC UNIT DESIGNATION WITHIN EACH APARTMENT.
9. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH ARCHITECT.
10. ALL DEVICES IN APARTMENTS SHALL BE CIRCUITED TO LOCAL APARTMENT PANEL 'AP'.
11. APARTMENT PANEL SWC, AND FIOS CABINET SHALL BE RECESSED MOUNTED.
12. WHERE NO APARTMENT LAYOUT IS NOTED, PROVIDE COMPLETE POWER, LIGHTING AND COMMUNICATION LAYOUT, REFER TO TYPICAL APARTMENT FLOOR PLAN.

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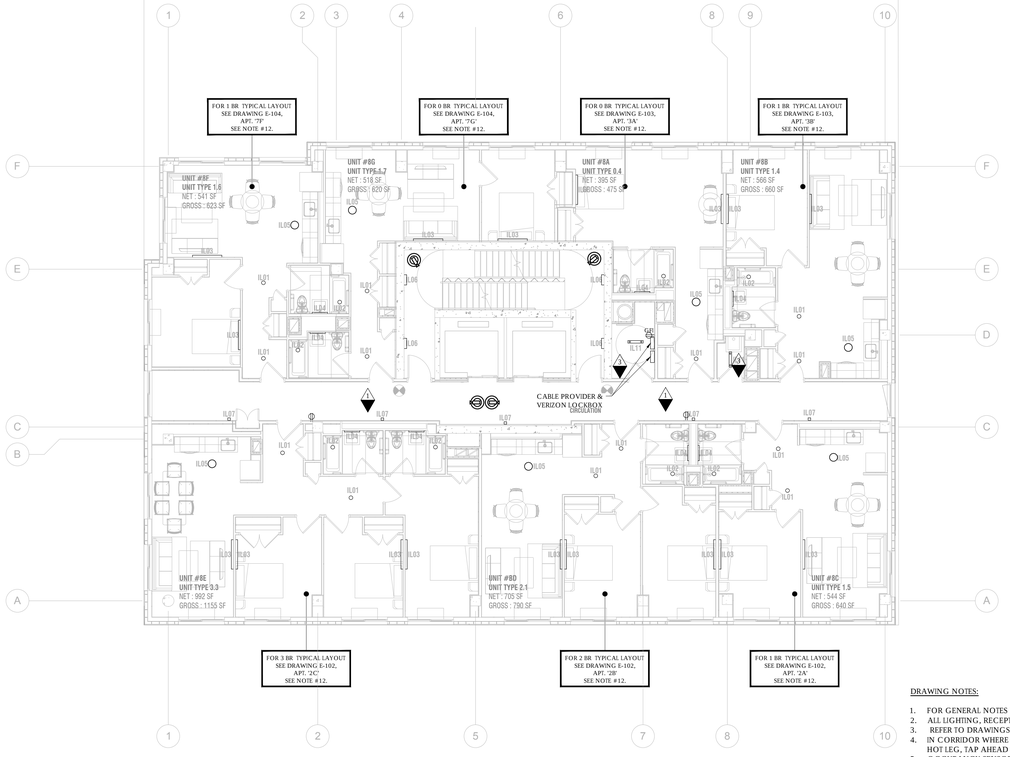
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PROJECT NO:	RC 1730
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DRAWING BY:	I.F.
CHECKED BY:	B.B.
DWG NO:	E-104.00
NYC DOB NUMBER:	



8TH-15TH FLOOR PLAN

SCALE: 1/8" = 1'-0"

DRAWING NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING E-100 & FOR APARTMENT FITOUT NOTES, REFER TO DRAWING E-010
2. ALL LIGHTING, RECEPTACLES AND MECHANICAL EQUIPMENT IN THE COMMON AREA SHALL BE CIRCUITED TO PANEL 'HRP'
3. REFER TO DRAWINGS E-300 & 301 FOR CIRCUITING REQUIREMENTS.
4. IN CORRIDOR WHERE EMERGENCY FIXTURE ARE CONNECTED TO THE SAME CIRCUIT AS THE NORMAL FIXTURES PROVIDE AN ADDITIONAL HOT LEG, TAP AHEAD OF THE POWER PACK TO DESIGNATED 'EM' FIXTURES FOR 24 HOUR OPERATION.
5. OCCUPANCY SENSORS IN CORRIDORS AND ELEV. LOBBIES SHALL CONTROL NORMAL LIGHTING FIXTURES ONLY.
6. EXIT LIGHTS TO BE CIRCUITED TO NEAREST STAIR LIGHTING CIRCUIT.
7. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH ARCHITECT.
8. REFER TO MECHANICAL PLANS FOR EXACT HVAC UNIT DESIGNATION WITHIN EACH APARTMENT.
9. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH ARCHITECT.
10. ALL DEVICES IN APARTMENTS SHALL BE CIRCUITED TO LOCAL APARTMENT PANEL 'AP'.
11. APARTMENT PANEL SWC, AND FIOS CABINET SHALL BE RECESSED MOUNTED.
12. WHERE NO APARTMENT LAYOUT IS NOTED, PROVIDE COMPLETE POWER, LIGHTING AND COMMUNICATION LAYOUT, REFER TO TYPICAL APARTMENT FLOOR PLAN.

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

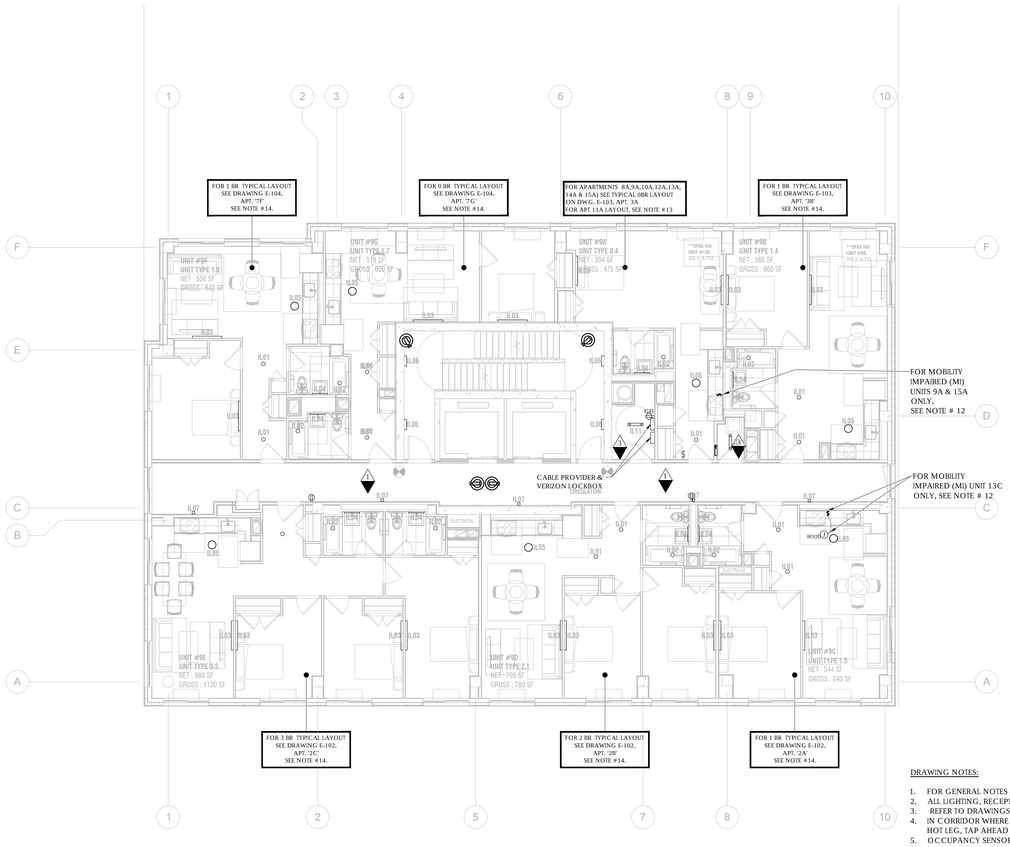
BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

ELECTRICAL
TYPICAL 8TH-14TH EVEN
FLOOR PLAN

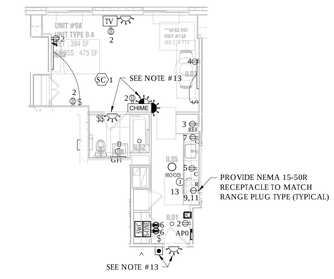
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8TH-15TH FLOOR PLAN

SCALE: 1/8" = 1'-0"



VISION/HEARING IMPAIRED (HVI) UNIT. APARTMENT '13A'

SCALE: 1/8" = 1'-0"

DRAWING NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING E-100 & FOR APARTMENT FITOUT NOTES, REFER TO DRAWING E-010
2. ALL LIGHTING, RECEPTACLES AND MECHANICAL EQUIPMENT IN THE COMMON AREA SHALL BE CIRCUITED TO PANEL 'HRP'
3. REFER TO DRAWINGS E-300 & 301 FOR CIRCUITING REQUIREMENTS.
4. IN CORRIDOR WHERE EMERGENCY FIXTURE ARE CONNECTED TO THE SAME CIRCUIT AS THE NORMAL FIXTURES PROVIDE AN ADDITIONAL HOT LEG, TAP AHEAD OF THE POWER PACK TO DESIGNATED 'EM' FIXTURES FOR 24 HOUR OPERATION.
5. OCCUPANCY SENSORS IN CORRIDORS AND ELEV. LOBBIES SHALL CONTROL NORMAL LIGHTING FIXTURES ONLY.
6. EXIT LIGHTS TO BE CIRCUITED TO NEAREST STAIR LIGHTING CIRCUIT.
7. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH ARCHITECT.
8. REFER TO MECHANICAL PLANS FOR EXACT HVAC UNIT DESIGNATION WITHIN EACH APARTMENT.
9. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH ARCHITECT.
10. ALL DEVICES IN APARTMENTS SHALL BE CIRCUITED TO LOCAL APARTMENT PANEL 'AP'.
11. APARTMENT PANEL SWC, AND FIOS CABINET SHALL BE RECESSED MOUNTED.
12. FOR ADA/MOBILITY IMPAIRED (MI) UNITS (APTS. 9A,13C & 15A) PROVIDE SEPARATE CONTROL SWITCH FOR RANGE HOOD FAN WITHIN REACHABLE LOCATION.
13. PROVIDE ALL REQUIRED DEVICES FOR HEARING/VISUALLY IMPAIRED (VHI) UNITS (APTS. 13A). SEE PART PLAN THIS DRAWING AND REFER TO DETAILS F & I ON DRAWING E-400.
14. WHERE NO APARTMENT LAYOUT IS NOTED, PROVIDE COMPLETE POWER, LIGHTING AND COMMUNICATION LAYOUT, REFER TO TYPICAL APARTMENT FLOOR PLAN.

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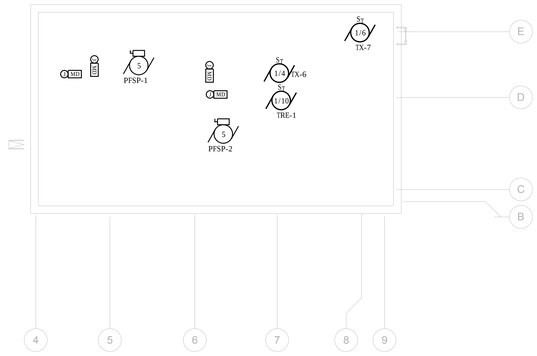
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472 - 474 WILLIS AVE. BRONX, NY

ELECTRICAL
TYPICAL 9TH-13TH ODD
FLOOR PLAN

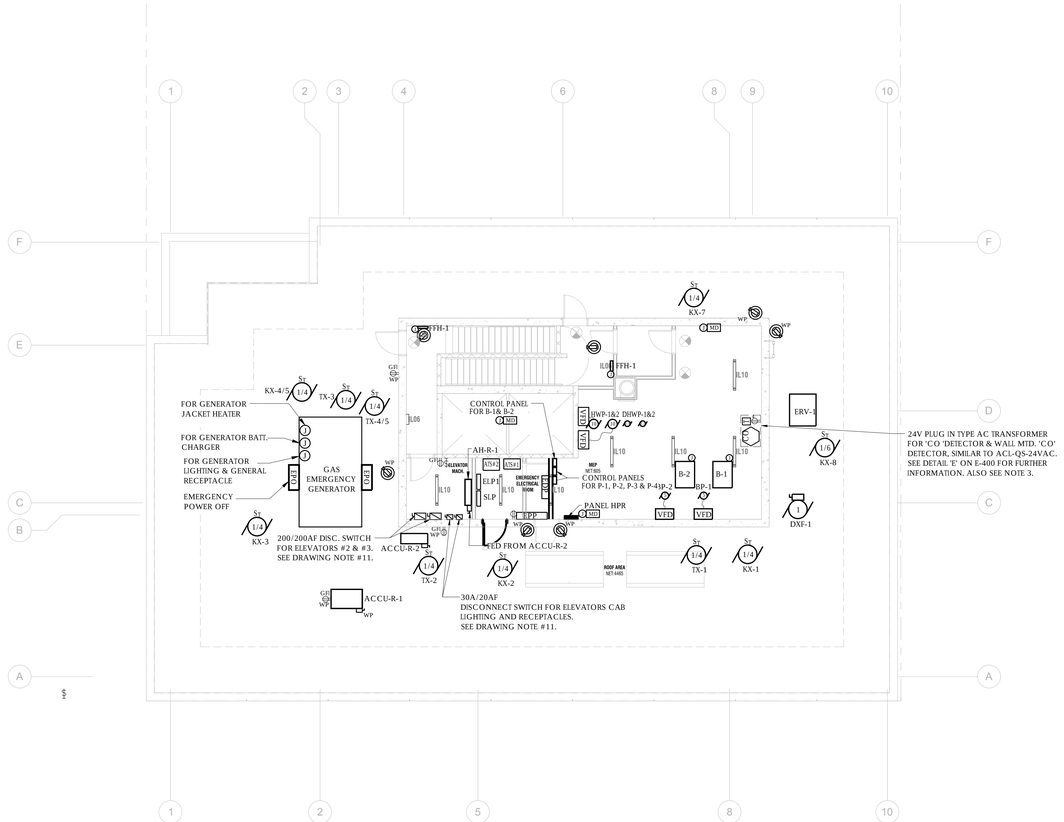
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CHECKED BY:	B.B.
DWG NO:	E-106.00
NYC DOB NUMBER:	



BULKHEAD PLAN

SCALE: 1/8" = 1'-0"



ROOF PLAN

SCALE: 1/8" = 1'-0"

DRAWING NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING E-100.
2. REFER TO DRAWINGS E-300 & E-301 FOR CIRCUITING REQUIREMENTS.
3. ACTIVATION OF A CARBON MONOXIDE DETECTOR, SHALL SHUT DOWN BOILERS.
4. COORDINATE EXACT LOCATION OF CONTROL PANELS, STARTERS & VFD WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.
5. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3 FEET IN FRONT OF ALL EQUIPMENT.
6. ALL LIGHTING, RECEPTACLES AND MECHANICAL EQUIPMENT SHALL BE CIRCUITED TO PANEL 'HRP' LOCATED ON THE ROOF IN MEP ROOM.
7. EXIT LIGHTS TO BE CIRCUITED TO NEAREST STAIR LIGHTING FIXTURE CIRCUIT.
8. EXTERIOR LIGHTING FIXTURES, SHALL BE CONTROLLED BY PHOTOCELL TO TURN LIGHTS ON AND A TIME CLOCK TO TURN LIGHTS OFF.
9. IN THE AREA WHERE EMERGENCY FIXTURE ARE CONNECTED TO THE SAME CIRCUIT AS THE NORMAL FIXTURES PROVIDE AN ADDITIONAL HOT LEG, TAP AHEAD OF THE POWER PACK TO DESIGNATED 'EM' FIXTURES FOR 24 HOUR OPERATION.
10. ALL EQUIPMENT ON ROOF SHALL BE SUITABLE FOR WET LOCATION.
11. PROVIDE LOCKABLE DISCONNECT SWITCH CAPABLE OF BEING LOCKED IN THE OPEN POSITION.
12. MOTORIZED DAMPER INTERLOCKED WITH CORRESPONDING POST FIRE SMOKE PURGE FAN (PFSP-1 & PFSP-2). COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
13. COORDINATE EXACT ROUGH-IN LOCATION OF EACH DEVICE PRIOR TO INSTALLATION WITH ARCHITECT.

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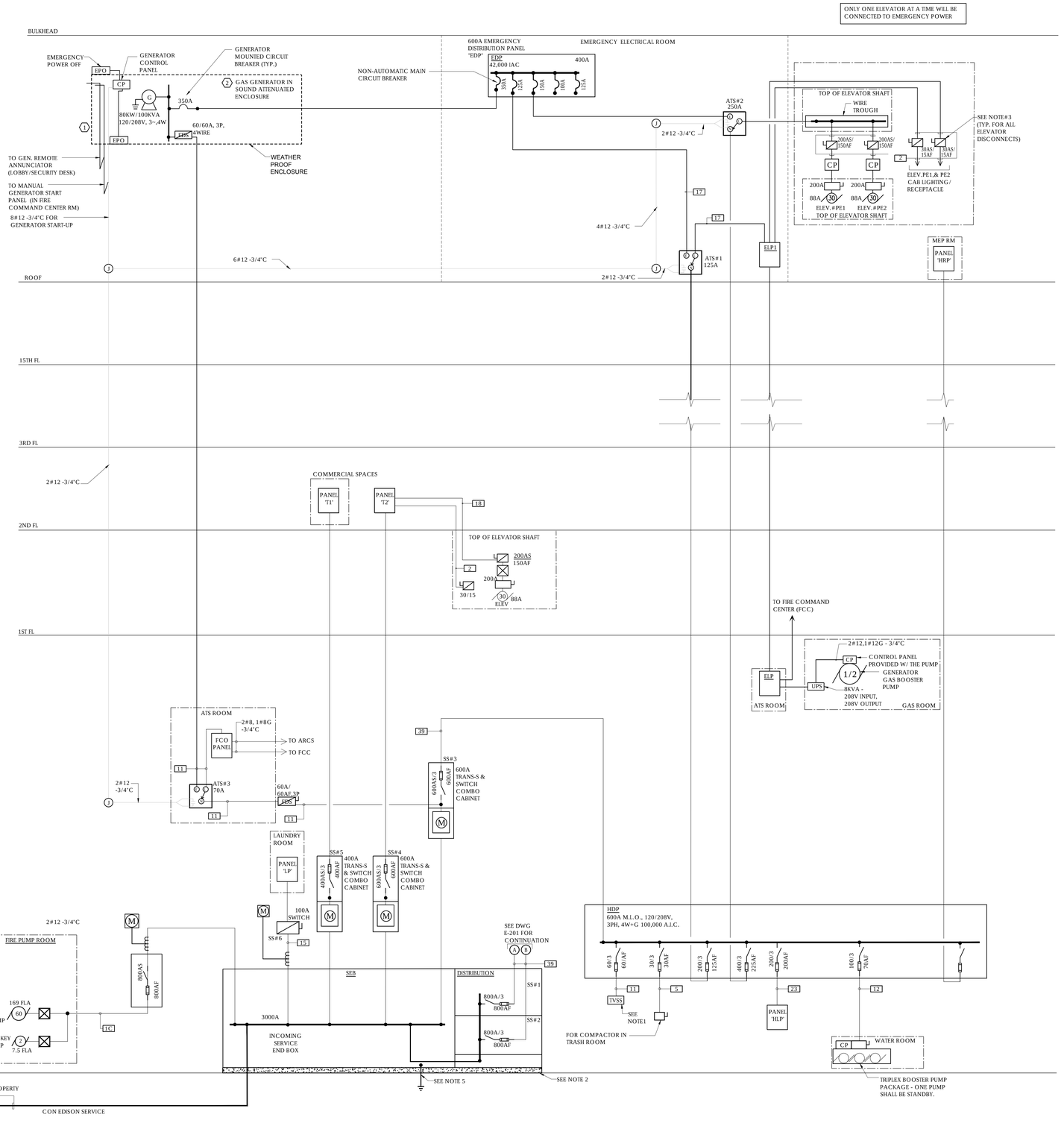
BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

ELECTRICAL
ROOF PLAN

SEAL & SIGNATURE

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LEGEND OF FEEDER SIZES - ALUMINUM CONDUCTORS

FEEDER SYMBOL	CONDUCTORS (3 PHASE, 3 WIRE) WITH GROUND	RACEWAY SIZE	CONDUCTORS (3 PHASE, 4 WIRE) WITH GROUND	RACEWAY SIZE	NOMINAL AMP RATING
14	3#1 & 1#6G.	1 1/4 "			100
15			4#1 & 1#6G.	1 1/2"	
16	3#2/0 & 1#4G.	2"			125
17			4#2/0 & 1#4G.	2"	
18	3#3/0 & 1#4G.	2"			150
19			4#3/0 & 1#4G.	2"	
20	3#4/0 & 1#4G.	2 1/2"			175
21			4#4/0 & 1#4G.	2 1/2"	
22	3#250kcmil & 1#4G.	2 1/2"			200
23			4#250kcmil & 1#4G.	2 1/2"	
24	3#300kcmil & 1#2G.	2 1/2"			225
25			4#300kcmil & 1#2G.	3"	
26	3#350kcmil & 1#2G.	3"			250
27			4#350kcmil & 1#2G.	3"	
28	3#500kcmil & 1#2G.	3"			300
29			4#500kcmil & 1#2G.	3 1/2"	
30	3#700kcmil & 1#1G.	3 1/2"			350
31			4#700kcmil & 1#1G.	4"	
32	3#750kcmil & 1#1G.	3 1/2"			400
33			4#750kcmil & 1#1G.	4"	
34	2 Sets (3#350kcmil & 1#1/0G.)	(2) 2 1/2"			500
35			2 Sets (4#350kcmil & 1#1/0G.)	(2) 3"	
36	2 Sets (3#500kcmil & 1#2/0G.)	(2) 3"			600
37			2 Sets (4#500kcmil & 1#2/0G.)	(2) 3 1/2"	
38	3 Sets (3#400kcmil & 1#3/0G.)	(3) 3"			800
39			3 Sets (4#400kcmil & 1#3/0G.)	(3) 3"	
40	3 Sets (3#600kcmil & 1#4/0G.)	(3) 3 1/2"			1000
41			3 Sets (4#600kcmil & 1#4/0G.)	(3) 4"	
42	4 Sets (3#500kcmil & 1#250kcmil G.)	(4) 3"			1200
43			4 Sets (4#500kcmil & 1#250kcmil G.)	(4) 3 1/2"	
44	4 Sets (3#600kcmil & 1#350kcmil G.)	(4) 3 1/2"			1300
45			4 Sets (4#600kcmil & 1#350kcmil G.)	(4) 4"	

** Feeder is upsized to compensate for voltage drop

NOTES:
1. CONDUCTOR SIZES FOR THE ASSOCIATED NOMINAL AMPERE RATING ARE THE MINIMUM ALLOWED BASED UPON NEC TABLE 310.16 WITH NO GREATER THAN THR ε
IN AN AMBIENT NOT TO EXCEED 30 DEGREES C. FEEDER TAGS MAY BE OVERSIZED FOR THE ASSOCIATED OVERCURRENT PROTECTION TO ACCOUNT FOR DERATING FACTORS OR LIMIT VOLTAGE DROP.
2. RACEWAY SIZES ARE THE MINIMUM ALLOWED BASED UPON NEC TABLE C1 FOR THHN/THWN CONDUCTORS IN EMT. RACEWAY SIZES SHALL BE INCREASED TO ACCOMMODATE DIFFERING INSULATION SYSTEMS AND RACEWAY TYPES TO LIMIT RACEWAY FILL TO LESS THAN 40%.
3. FEEDERS DESIGNATED IN MULTIPLE SETS SHALL HAVE THE REQUIRED SETS INSTALLED IN PARALLEL.

LEGEND OF FEEDER SIZES - COPPER CONDUCTORS

FEEDER SYMBOL	CONDUCTORS (3 PHASE, 3 WIRE) WITH GROUND	RACEWAY SIZE	CONDUCTORS (3 PHASE, 4 WIRE) WITH GROUND	RACEWAY SIZE	NOMINAL AMPERE RATING
1C	3#4/0 & 1#4G.	2"			225
2C			4#4/0 & 1#4G.	2 1/2"	

NOTES:
1. CONDUCTOR SIZES FOR THE ASSOCIATED NOMINAL AMPERE RATING ARE THE MINIMUM ALLOWED BASED UPON NEC TABLE 310.16 WITH NO GREATER THAN THREE ε
IN AN AMBIENT NOT TO EXCEED 30 DEGREES C. FEEDER TAGS MAY BE OVERSIZED FOR THE ASSOCIATED OVERCURRENT PROTECTION TO ACCOUNT FOR DERATING FACTORS OR LIMIT VOLTAGE DROP.
2. RACEWAY SIZES ARE THE MINIMUM ALLOWED BASED UPON NEC TABLE C1 FOR THHN/THWN CONDUCTORS IN EMT. RACEWAY SIZES SHALL BE INCREASED TO ACCOMMODATE DIFFERING INSULATION SYSTEMS AND RACEWAY TYPES TO LIMIT RACEWAY FILL TO LESS THAN 40%.
3. FEEDERS DESIGNATED IN MULTIPLE SETS SHALL HAVE THE REQUIRED SETS INSTALLED IN PARALLEL.

NOTES
1. PROVIDE TVSS (TRANSIENT VOLTAGE SURGE SUPPRESSOR) BY SQUARE D OR CURRENT TECHNOLOGY. REFER TO E-010 FOR SPECS. TVSS MUST BE MOUNTED ADJACENT TO PANEL HDP.
2. PROVIDE 4" CONCRETE PAD FOR SWITCHBOARD EQUIPMENT.
3. PROVIDE DUAL ELEMENT TIME-DELAY FUSES FOR ELEVATOR.
4. PROVIDE DISCONNECT SWITCH LOCKABLE IN THE OPEN POSITION.
5. GROUND SWITCH BOARD AS REQUIRED. REFER TO GENERAL NOTES FOR INFORMATION.
6. WALL MOUNTED METER CENTER SHALL BE INSTALLED AT LEAST 12" ABOVE FINISHED FLOOR.
7. FEEDERS UP TO APARTMENT PANELS ARE UP SIZED TO ALLOW FOR 4% VOLTAGE DROP TO MEET ENERGY CODE.

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KEY PLAN

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DOB APPROVAL

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BETANCES VI DEVELEOPMENT

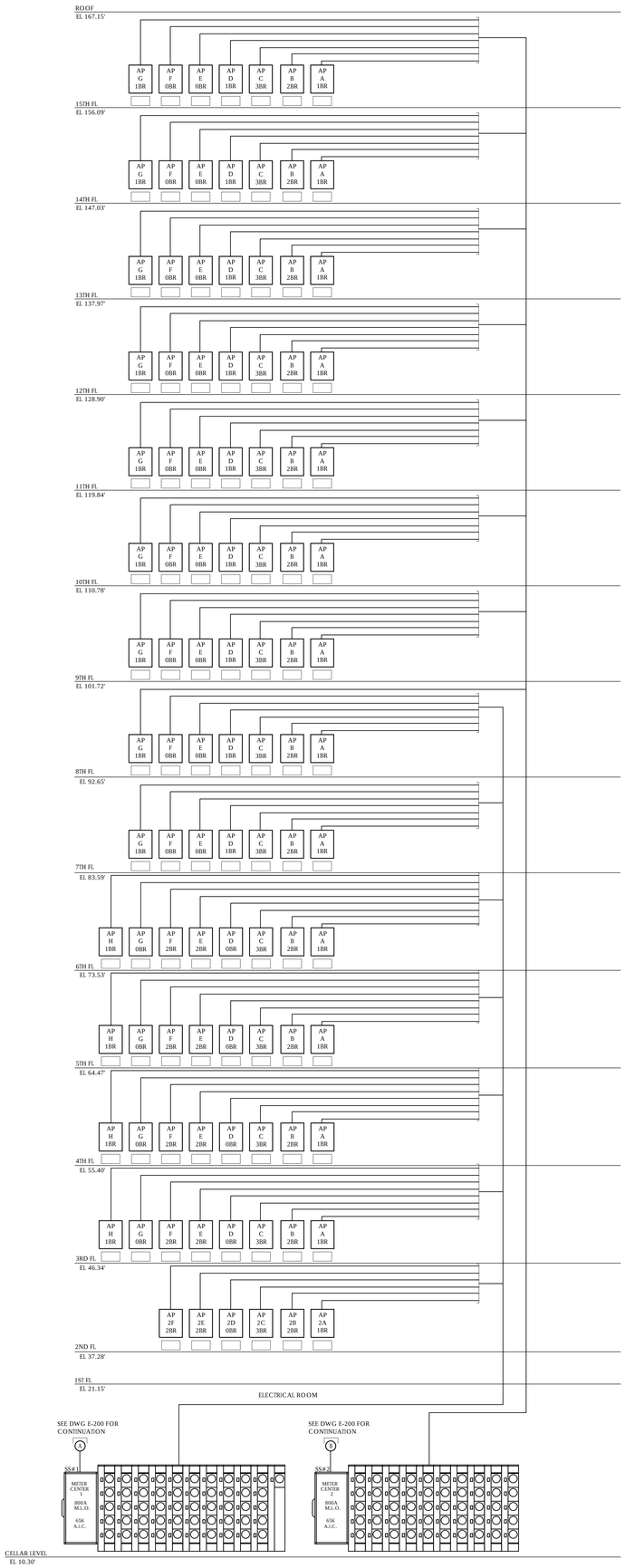
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ELECTRICAL

POWER RISER DIAGRAM

SEAL & SIGNATURE

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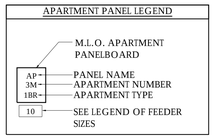


LEGEND OF FEEDER SIZES - ALUMINUM MC CABLES

FEEDER DESIGNATION	CONDUCTORS (1 PHASE, 3 WIRE) WITH GROUND	RACEWAY SIZE	CONDUCTORS (3 PHASE, 4 WIRE) WITH GROUND	RACEWAY SIZE	NOMINAL AMP RATING
4	3#2 & 1#6G.	MC CABLE			70, 80, 90
5			4#2 & 1#6G.	MC CABLE	
6	3#1 & 1#4G.	MC CABLE			100
7			4#1 & 1#4G.	MC CABLE	
8	3#2/0 & 1#4G.	MC CABLE			125
9			4#2/0 & 1#4G.	MC CABLE	
10	3#3/0 & 1#4G.	MC CABLE			150
11			4#3/0 & 1#4G.	MC CABLE	
12	3#4/0 & 1#2G.	MC CABLE			175
13			4#4/0 & 1#2G.	MC CABLE	

NOTES:
1. CONDUCTOR SIZES FOR THE ASSOCIATED NOMINAL AMPERE RATING ARE THE MINIMUM ALLOWED BASED UPON NEC TABLE 310.16 WITH NO GREATER THAN THREE CUf s IN AN AMBIENT NOT TO EXCEED 30 DEGREES C. FEEDER TAGS MAY BE OVERSIZED FOR THE ASSOCIATED OVERCURRENT PROTECTION TO ACCOUNT FOR DERATING FACTORS OR LIMIT VOLTAGE DROP.
2. RACEWAY SIZES ARE THE MINIMUM ALLOWED BASED UPON NEC TABLE C1 FOR THHN/THWN CONDUCTORS IN EMT. RACEWAY SIZES SHALL BE INCREASED TO ACCOMMODATE DIFFERING INSULATION SYSTEMS AND RACEWAY TYPES TO LIMIT RACEWAY FILL TO LESS THAN 40%.
3. FEEDERS DESIGNATED IN MULTIPLE SETS SHALL HAVE THE REQUIRED SETS INSTALLED IN PARALLEL.

APARTMENT PANEL LEGEND



APT PANEL MAIN C.B.
0BR - 70A C.B. = AP0
1BR - 80A C.B. = AP1
2BR - 90A C.B. = AP2
3BR - 100A C.B. = AP3

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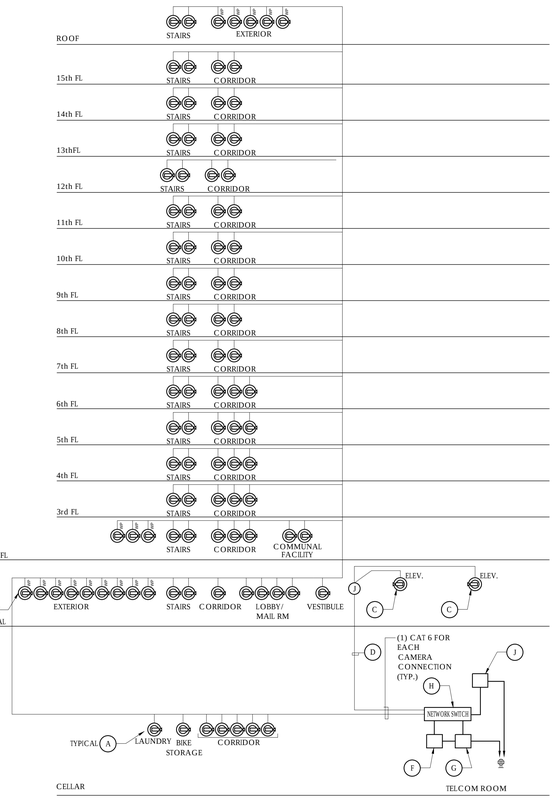
PROJECT

BETANCES VI DEVELEOPMENT
472 - 474 WILLIS AVE. BRONX, NY

ELECTRICAL
POWER RISER DIAGRAM

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CCTV SYSTEM RISER DIAGRAM

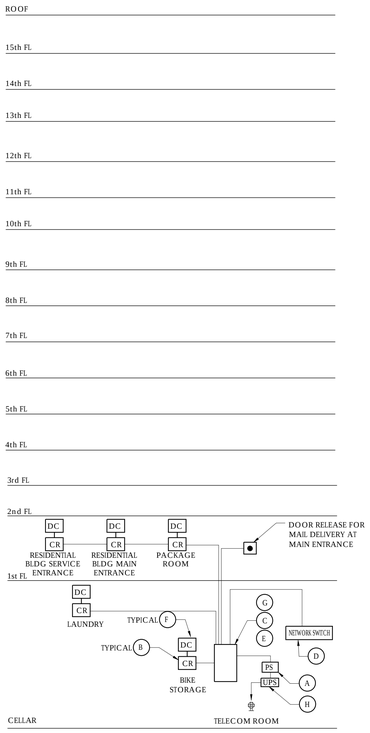
N.T.S.

CCTV SYSTEM		
EQUIPMENT / CABLE SCHEDULE		
DESIGNATION	DESCRIPTION	MANUFACTURER/ CATALOG NO.
A	WALL/CEILING MOUNTED CAMERA INTERIOR	AVIGILON 1.0C-H3A-D01 (STAIRWELLS, ROOF LANDINGS, EXITS) AVIGILON 2.0C-H3A-D01 (ALL OTHER GND FL CAMERAS) AVIGILON 6.0L-H4F-D01-IR (HALLWAYS 2ND-18TH)
B	WEATHERPROOF/VANDALPROOF CAMERA EXTERIOR	AVIGILON 2.0C-H3A-DP1 FOR SINGLE IMAGER APPLICATIONS AVIGILON 9W-H3-3MH-DP1 FOR MULTI-IMAGE APPLICATIONS
C	ELEVATOR CAB CAMERA	CAMERA(SAMSUNG SNB-6011-B) CAMERA HOUSING (SAMSUNG SHD-200C) MEDIA CONVERTOR (EVERFOCUS PANUN)
D	ELEVATOR TRAVELER CABLE	TWO RUNS OF TRAVELER RATED STRANDED RG6 COAXIAL CABLE (IN EACH ELEVATOR SHAFT)
E	VMS SOFTWARE AND LICENSING	VIDEO INSIGHT V6.0
F	VMS SERVER	HP PROLIANT DL80 GEN9 SERVER WITH 2 80GB SOLID STATE OS DRIVES CONFIGURED RAID 1 MIRRORED FOR REDUNDANCY. 6-4TB HARD DISK DRIVES CONFIGURED RAID 6 DOUBLE PARITY YIELDING 16TB OF VIDEO STORAGE. OPERATING SYSTEM WINDOWS SERVER 2012 STANDARD. POWER SUPPLIES DUAL REDUNDANT.
G	UNINTERUPTIBLE POWER SUPPLY	MINUTEMAN POWER TECHNOLOGY MODEL PRO1500RT
H	NETWORK SWITCH	NETGEAR PROSAFE GS728TP OR GS748TP GIGABIT POE//POE+ SMART SWITCH, QUANTITY AS REQUIRED.
J	CONCIERGE MONITORING EQUIPMENT	DISPLAY LG ULTRAWIDE 25 INCH DISPLAY WORKSTATION INTEL NUC6i33SYK WIN10 4GB RAM 160GB M.2 SSD

- PROVIDE POINT TO POINT CABLING /TERMINATIONS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND REQUIREMENTS.
- COORDINATE MOUNTING REQUIREMENTS WITH ARCHITECT AND OWNER. PROVIDE REQUIRED CAMERA MOUNTS.
- PROVIDE (1) CAT 6 CABLE FOR EACH CAMERA.

NOTES:

1. ALL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WIRING DIAGRAMS.
2. SUBMIT COMPLETE SHOP DRAWINGS AND WIRING DIAGRAMS FOR ALL SYSTEM COMPONENTS AND INTERCONNECTIONS.
3. REFER TO FLOOR PLANS FOR EXACT LOCATIONS OF ALL OUTLETS.
4. FINAL COMMISSIONING & PROGRAMMING SHALL BE PERFORMED IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE.
5. ALL BACKBOXES FOR CCTV SHALL BE RECESSED MOUNTED IN STANDARD 4" BOX.
6. THE ELECTRICAL CONTRACTOR SHALL FURNISH & INSTALL AN ELEVATOR TRAVEL CABLE IN ACCORDANCE WITH ELEVATOR & SECURITY VENDOR REQUIREMENTS.
7. FINAL LOCATIONS TO BE APPROVED BY SECURITY CONSULTANT AND OWNER.



CARD ENTRY SYSTEM RISER DIAGRAM

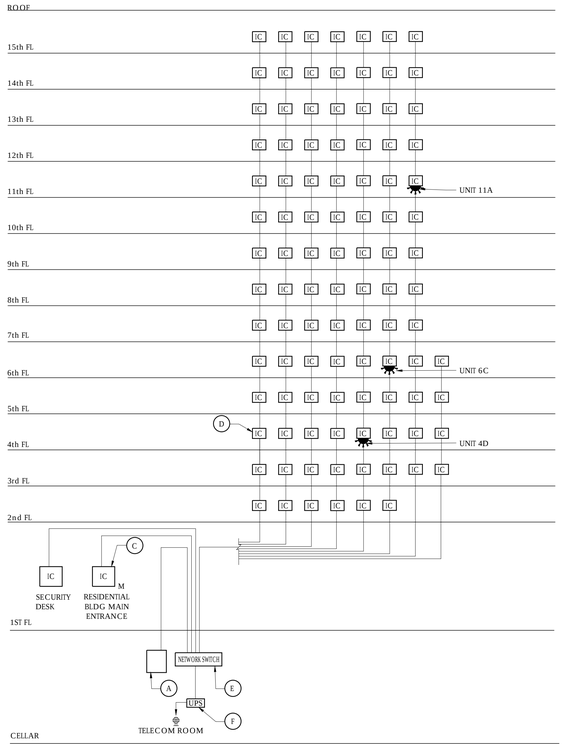
N.T.S.

CARD ENTRY SYSTEM		
EQUIPMENT / CABLE SCHEDULE		
DESIGNATION	DESCRIPTION	MANUFACTURER/ CATALOG NO.
A	ACCESS CONTROL POWER SUPPLY	LSP-FPO150C8D8E2
B	ACCESS CONTROL READER	S2-900PMNNEKEA003
C	ACCESS CONTROL SERVER ACCESS CONTROL PANEL	S2-EXT-16RM S2-EP-1501 (1 PER DOOR)
D	NETWORK SWITCH	SEE DESIGNATION H ON CCTV SCHEDULE FOR INFORMATION.
E	FACIAL RECOGNITION SERVER	HP DL60 FACIAL RECOGNITION SOFTWARE/FST IMID/SAFERISE
F	ELECTRIC STRIKES	ULTRALINE 7400, 7401
G	ACCESS CONTROL PANEL	S2-EP-1501
H	UPS	MINUTEMAN POWER TECHNOLOGY MODEL PRO1500RT

LEGEND:
22/6 SHIELDED CABLE AND 18/14 AWG CABLE

NOTES:

1. ALL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WIRING DIAGRAMS.
2. SUBMIT COMPLETE SHOP DRAWINGS AND WIRING DIAGRAMS FOR ALL SYSTEM COMPONENTS AND INTERCONNECTIONS.
3. FINAL COMMISSIONING & PROGRAMMING SHALL BE PERFORMED IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE.
4. FINAL LOCATIONS TO BE APPROVED BY SECURITY CONSULTANT.
5. PROVIDE RELAYS, TRANSFORMERS, POWER WIRING, CONTROL WIRING BETWEEN INTERCOM STATION AND REMOTE FLASHING LIGHT AS REQUIRED AND AS PER MANUFACTURERS REQUIREMENTS
6. ALL QUANTITIES SHALL BE AS REQUIRED FOR COMPLETE OPERATIONAL SYSTEM.



AUDIO INTERCOM SYSTEM RISER DIAGRAM

N.T.S.

AUDIO INTERCOM SYSTEM		
EQUIPMENT / CABLE SCHEDULE		
DESIGNATION	DESCRIPTION	MANUFACTURER/ CATALOG NO.
A	INTERCOM ENTRY PANEL	2N TELECOMMUNICATION (2N HELIOS IP VERSO 9155101C) 2N HELIOS IP VARIO (2N LCD KEYPAD 9155036)
C	CONCIERGE MASTER INTERCOM STATION AND TELEPHONE	GRANDSTREAM GXV3240
D	APARTMENT/2N TELECOMUNICATION - 2N INDOOR TOUCH SCREEN	2N INDOOR TOUCH 91378365
E	NETWORK SWITCH	SEE DESIGNATION H ON CCTV SCHEDULE FOR INFORMATION.
F	UNINTERUPTIBLE POWER SUPPLY	MINUTEMAN POWER TECHNOLOGY MODEL PRO1500RT

- RACK EQUIPMENT CABINET TRIPPLITE SR42UB
- MONITOR MOUNTING BRACKET STARTECH RKLCDBK

NOTES:

1. ALL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WIRING DIAGRAMS.
2. SUBMIT COMPLETE SHOP DRAWINGS AND WIRING DIAGRAMS FOR ALL SYSTEM COMPONENTS AND INTERCONNECTIONS.
3. REFER TO FLOOR PLANS FOR EXACT LOCATIONS OF ALL OUTLETS.
4. FINAL COMMISSIONING & PROGRAMMING SHALL BE PERFORMED IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE.
5. ALL BACKBOXES, SPLICE BOXES, JUNCTION BOXES, FOR INTERCOM & CCTV SHALL BE RECESSED MOUNTED IN STANDARD 4" BOX LOCATED IN THE INTERIOR AND/OR IN MASONRY ON THE EXTERIOR OF THE BUILDING.
6. THE ELECTRICAL CONTRACTOR SHALL FURNISH & INSTALL AN ELEVATOR TRAVEL CABLE IN ACCORDANCE WITH ELEVATOR & SECURITY VENDOR REQUIREMENTS.
7. FURNISH & INSTALL HANDFREE INTERCOM STATION IN ALL HANDICAP APARTMENT. PROVIDE AUXILIARY RELAY GHRY-238400 AND WALL MOUNTED VISUAL DETECTOR ABOVE UNIT.
8. ACTIVATION OF DOOR BELL OUTSIDE HEARING/VISUALLY IMPAIRED APARTMENTS WITH CAUSE THE CHIME TO RING & ACTIVATE FLASHING LIGHT MOUNTED ADJACENT TO CHIME.
9. ACTIVATION OF INTERCOM SYSTEM IN HEARING/VISUALLY IMPAIRED APARTMENTS WITH CAUSE THE TONE TO RING & ACTIVATE FLASHING LIGHT MOUNTED ABOVE INTERCOM STATION.
10. PROVIDE RELAYS, TRANSFORMERS, POWER WIRING, CONTROL WIRING BETWEEN INTERCOM STATION STATION AND REMOTE FLASHING LIGHT AS REQUIRED AND AS PER MANUFACTURERS REQUIREMENTS.
11. HEARING/VISUALLY IMPAIRED UNITS, REFER TO FLOOR PLANS FOR LOCATIONS.

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P 914.305.5679

MEP
RODKIN CARDINALE A DIVISION OF SKYLINE ENGINEERING
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

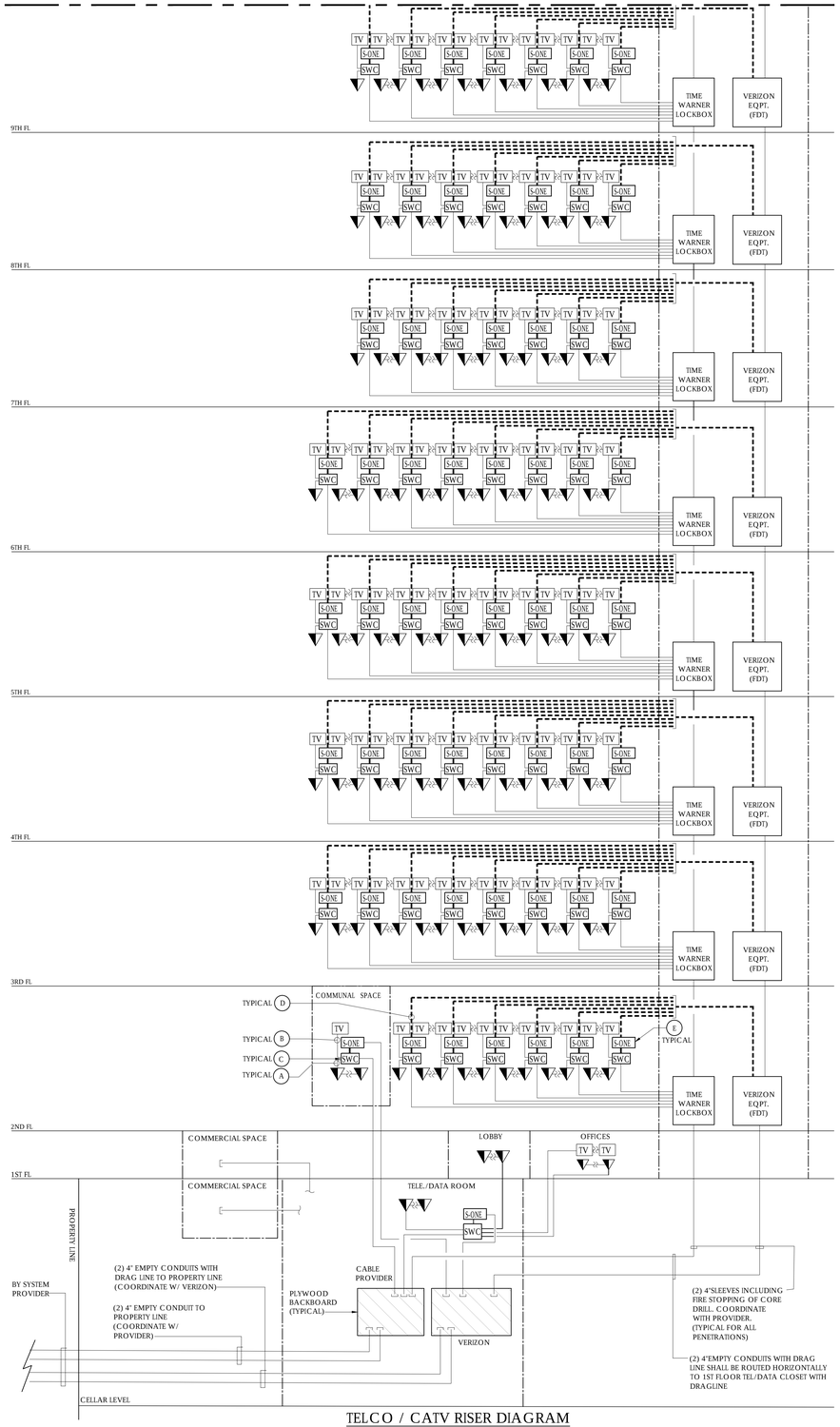
472 - 474 WILLIS AVE. BRONX, NY

ELECTRICAL
CCTV, CARD ACCESS &
AUDIO INTERCOM RISER
DIAGRAM

SEAL & SIGNATURE

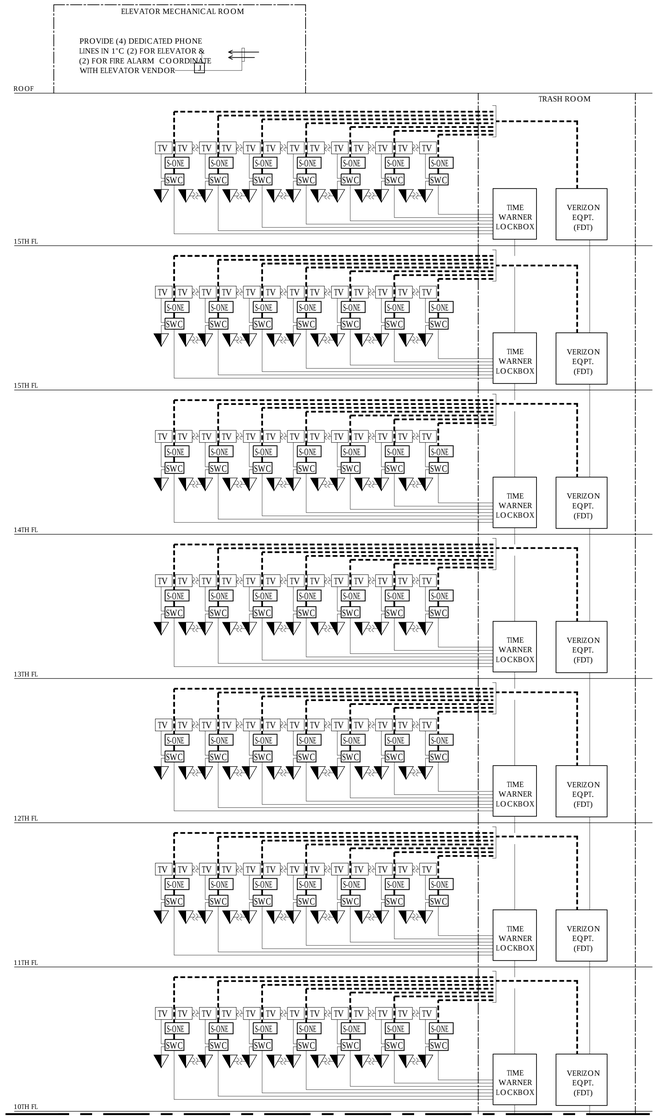
DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	I.F.
CHECKED BY:	B.B.
DWG NO:	E-202.00
NYC DOB NUMBER:	

MATCHLINE - SEE THIS DRAWING FOR CONTINUATION



TELCO / CATV RISER DIAGRAM

N.T.S.



MATCHLINE - SEE THIS DRAWING FOR CONTINUATION

LEGEND

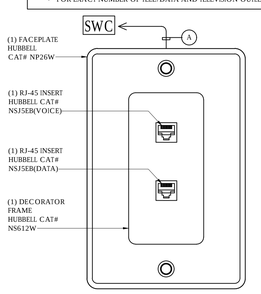
———	FURNISHED & INSTALLED BY ELECTRICAL CONTRACTOR	▼	TELEPHONE/DATA OUTLETS FURNISHED & INSTALLED BY ELECTRICAL CONTRACTOR
- - -	FURNISHED & INSTALLED BY THE ELECTRICAL CONTRACTOR FOR FIBER OPTIC CABLE INSTALLATION BY VERIZON	TV	TELEVISION OUTLET FURNISHED & INSTALLED BY ELECTRICAL CONTRACTOR

TELCO / CATV SYSTEM

EQUIPMENT / CABLE SCHEDULE

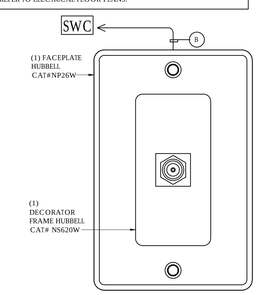
DESIGNATION	DESCRIPTION	MANUFACTURER/CATALOG NO.	
A	(2) 4 PAIR CAT 6	TAPPAN CABLE	FURNISHED & INSTALLED BY ELECTRICAL CONTRACTOR
B	(1) RG-6 CABLE	COMMSCOPE CABLE	FURNISHED & INSTALLED BY ELECTRICAL CONTRACTOR
C	STRUCTURE WIRING CABINET	BY HUBBELL	ELECTRICAL CONTRACTOR TO FURNISH & INSTALL SWC BOXES. COORDINATE INSTALLATION WITH VERIZON AND CABLE PROVIDER
D	(1) MICRODUCT FOR FUTURE FIOS	AS DETERMINED BY VERIZON	ELECTRICAL CONTRACTOR TO PROVIDE (1) MICRODUCT FOR FUTURE FIOS FROM DEMARK LOCATION ON EACH FLOOR TO EACH UNIT SWC. CABLE PROVIDED AND INSTALLED BY VERIZON
E	VERIZON FIOS PANEL S-ONE	VERIZON	FURNISH BY VERIZON AND INSTALLED BY ELECTRICAL CONTRACTOR, COORDINATE INSTALLATION & TERMINATION WITH LOCAL SERVICE PROVIDER

- ALL WIRING & TERMINATIONS SHALL BE COORDINATED WITH LOCAL PROVIDER REQUIREMENTS.
- SUBMIT COMPLETE SHOP DRAWINGS AND WIRING DIAGRAMS FOR ALL SYSTEM COMPONENTS AND INTERCONNECTIONS.
- THE COMPLETE SYSTEM CABLING SHALL BE COORDINATED WITH THE LOCAL CABLE TV COMPANY.
- REFER TO PLANS FOR EXACT LOCATIONS AND QUANTITIES OF ALL OUTLETS.
- FOR ALL OUTLETS, PROVIDE A 4 X 4 BOX WITH SINGLE GANG DEVICE PLATE.
- CONTRACTOR / LOCAL TV PROVIDER SHALL TIE IN ONE CHANNEL OF CCTV (1st FLOOR 'LOBBY' CAMERA) TO CATV EQUIPMENT IN TELEPHONE ROOM FOR TENANT SURVEILLANCE OF FRONT DOOR.
- PROVIDE 120 VOLT DUPLEX SURGE OUTLET IN EACH UNIT FOR SWC BOXES PER LOCAL PROVIDER REQUIREMENTS AND CONNECT TO NEAREST UNSWITCHED CIRCUIT.
- FOR EXACT NUMBER OF TELE/DATA AND TELEVISION OUTLETS REFER TO ELECTRICAL FLOOR PLANS.



1 TELE/DATA OUTLET DETAIL (▼)

N.T.S.



2 T.V. OUTLET DETAIL(TV)

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

ELECTRICAL
TELECOM/ CATV
RISER DIAGRAM

SEAL & SIGNATURE

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	I.F.
CHECKED BY:	B.B.
DWG NO:	E-203.00
NYC DOB NUMBER:	

HDP

TAG: HDP VOLT: 208/120V 3 PHASE 4 WIRE
BUS: 600 AMPS A/C: 100,000 AMPS SYM

CIRCUIT NO.	LOAD DESIGNATION	OVERCURRENT DEVICE SWITCH	FUSE	POLE	DEMAND LOAD KVA	AMPS	REMARKS
1	TVSS	60	60	3		0	
2	ATS #1 ELP1/ELP	200	125	3	64	178	
3	HPBR	100	100	3	31	86	
4	HLP	100	100	3	34	95	
5	TRIPLEX BOOSTER PUMP	60	60	3	11	32	
6	TRASH COMPACTOR	30	30	3	5	14	
7	EPP	400	400	3	75	209	
8	HPR	200	200	3	58	162	
			TOTAL	:	139	386	
			DEMAND LOAD		118	328	

NOTES:
1. PROVIDE LUGS TO ACCOMMODATE FEEDER SIZES AS IDENTIFIED ON THE RISER DIAGRAM FOR SUPPLY AND ALL LOADS. (THIS NOTE APPLICABLE TO ALL TERMINATIONS.)
2. "SPACE" SHALL CONSTITUTE ALL REQUIRED BUS, SUPPORTS AND HARDWARE NECESSARY TO INSTALL THE PROTECTIVE DEVICE UP TO THE FRAME LIMITATION INDICATED.

EPP

TAG: EPP VOLT: 208/120V 3 PHASE 4 WIRE
BUS: 400 AMPS MAIN: MLO A/C: 42,000 AMPS SYM

CIRCUIT NO.	LOAD DESIGNATION	OVERCURRENT DEVICE TRIP	POLE	LOAD KVA	AMPS	REMARKS
	SPARE	60				
2	SLP	30	3	9	25	
1	SPARE	100				
2	ELEVATORS @ (30HP EA)	200	3	63	176	
3	SPF-1 @ 5 HP	30	3	6	17	
4	SPF-2 @ 5 HP	30	3	6	17	
		TOTAL	LOAD	75	209	

NOTES:
1. PROVIDE LUGS TO ACCOMMODATE FEEDER SIZES AS IDENTIFIED ON THE RISER DIAGRAM FOR SUPPLY AND ALL LOADS. (THIS NOTE APPLICABLE TO ALL TERMINATIONS.)
2. "SPACE" SHALL CONSTITUTE ALL REQUIRED BUS, SUPPORTS AND HARDWARE NECESSARY TO INSTALL THE PROTECTIVE DEVICE UP TO THE FRAME LIMITATION INDICATED.

TAG: EDP VOLT: 208/120V 3 PHASE 4 WIRE
BUS: 600 AMPS MAIN: MCB A/C: 42,000 AMPS SYM

CIRCUIT NO.	LOAD DESIGNATION	OVERCURRENT DEVICE TRIP	POLE	LOAD KVA	AMPS	REMARKS
1	ATS#1 ELP1, ELP	125	3	20	54	
2	ATS#2 EPP	400	3	86	238	
3	SPARE	100	3			
4	SPARE	100	3			
		TOTAL	LOAD	105	292	

NOTES:
1. PROVIDE LUGS TO ACCOMMODATE FEEDER SIZES AS IDENTIFIED ON THE RISER DIAGRAM FOR SUPPLY AND ALL LOADS. (THIS NOTE APPLICABLE TO ALL TERMINATIONS.)
2. "SPACE" SHALL CONSTITUTE ALL REQUIRED BUS, SUPPORTS AND HARDWARE NECESSARY TO INSTALL THE PROTECTIVE DEVICE UP TO THE FRAME LIMITATION INDICATED.

PANEL NAME: HLP

LOCATION: MEP ROOM - CELLAR LEVEL

225 AMP M.L.O., 120/208VOLTS,3 PH,4 WIRE
60 HERTZ, A.C., SOLID NEUTRAL & GND

MOUNTING: SURFACE
A.I.C. RATING: 42,000

EQUIP LOAD KVA	LOAD SERVES	BKR RTG IN AMPS	CKT No.	A	B	C	CKT No.	BKR RTG IN AMPS	LOAD SERVES	EQUIP LOAD KVA
0.48	UTILITY ROOMS LIGHTING-1ST FLOOR	20	1	0.98			2	20	CELLAR UTILITY ROOMS RECEPTACLE	0.50
0.20	CORRIDOR LIGHTING 1ST FLOOR	20	3		1.64		4	20	CORRIDOR RECEPTACLES 1ST, 2ND FL	1.44
1.36	RESIDENTIAL MAIN/ELEVATOR LOBBY LIGHTING	20	5			2.80	6	20	CORRIDOR RECEPTACLES 3RD, 4TH FL	1.44
0.98	CORRIDOR LIGHTING 1ST FLOOR	20	7	0.98			8	20	SPARE	
1.02	CORRIDOR LIGHTING 2ND-3RD FLOOR	20	9		1.05		10	15/2P	AH-1-18, AH-19 (IT CLOSETS - 1ST FL)	0.03
0.45	OFICCES (2ND FL) LIGHTING	20	11			0.48	12		2#12, 1#12GND-3/4"C.	0.03
0.65	CORRIDOR LIGHTING 4TH FLOOR FLOOR	20	13	1.15			14	20	I.T. CLOSET RECEPTACLES	0.50
0.50	I.T. CLOSET RECEPTACLES	20	15		1.00		16	20	I.T. CLOSET RECEPTACLES	0.50
0.50	I.T. CLOSET RECEPTACLES	20	17			1.00	18	20	I.T. CLOSET RECEPTACLES	0.50
0.50	I.T. CLOSET RECEPTACLES	20	19	0.70			20	20	UH-1 (BLDG MAINTENANCE/STORAGE)	0.20
2.50	DUPLEX SEWER EJECTOR PUMP (3HP)	30/3P	21		3.00		22	20	MOTORIZED DAMPERS (1ST FL)	0.50
2.50	3#10,1#10G-3/4"C.		23			3.00	24	20	FIRE SMOKE DAMPERS (1ST FL)	0.50
2.50			25	2.86			26	20	CH-2 ELEV. LOBBY-1ST FL	0.36
2.00	FFH-1	25/2P	27		3.58		28	25/2P	ACCU-1-2	1.58
2.00	2#10, 1#10GND-3/4"C.		29			3.6	30		2#10,1#10GND-3/4"C.	1.58
1.63	ACCU-1-4	30/2P	31	3.2			32	25/2P	ACCU-1-3	1.58
1.63	2#10, 1#10GND-3/4"C.		33		3.21		34		2#10,1#10GND-3/4"C.	1.58
0.90	MANAGEMENT SUITE/OFFICES RECEPT (2ND FL)	20	35			1.26	36	20	CH-2 (VESTIBULE-2ND FL)	0.36
0.72	OFFICES RECEPT (2ND FL)	20	37	1.46			38	15/2P	PTAC (MANAGEM. OFFICE - 2ND FL)	0.74
1.50	COPIER	20	39		2.24		40		2#12, 1#12GND-3/4"C.	0.74
0.36	CH-1 (COORIDOR TOWARD TO EXIT - 2ND FL)	20	41			1.10	42	15/2P	PTAC (MANAGEM. OFFICE - 2ND FL)	0.74
0.50	FIRE SMOKE DAMPERS (2ND FL)	20	43	1.24			44		2#12, 1#12GND-3/4"C.	0.74
0.42	PTAC (COMPACT. ROOM)	15/2P	45		0.53		46	15/2P	AH-2-1 (LOBBY - 2ND FL)	0.11
0.42	2#12 & 1#12G - 3/4"C		47			0.53	48		2#12, 1#12GND-3/4"C.	0.11
0.00	SPARE	20	49	0.00			50	20	SPARE	0.00
0.00	SPARE	20	51		0.00		52	20	SPARE	0.00
0.00	SPARE	20	53			0.00	54	20	SPARE	0.00

TOTAL PER PHASE: 12.6 16.2 13.7

NOTE:
1. PROVIDE 2#8 & 1#8G - 3/4"C FOR EXTERIOR BUILDING LIGHTING
2. PROVIDE MINIMUM OF NUMBER 10 WIRE FOR ALL HOUSE BRANCH CIRCUITS U.O.N.

UNITS	KVA	AMPS
TOTAL CONNECTED LOAD	42.57	118.20
TOTAL DEMAND LOAD	34.06	94.50

PANEL NAME: ELP

LOCATION: 2ND FLOOR - ELECTRICAL METER ROOM - 1ST FLOOR

225 AMP M.L.O., 120/208VOLTS,3 PH,4 WIRE
60 HERTZ, A.C., SOLID NEUTRAL & GND

MOUNTING: SURFACE
A.I.C. RATING: 42,000

EQUIP LOAD KVA	LOAD SERVES	BKR RTG IN AMPS	CKT No.	A	B	C	CKT No.	BKR RTG IN AMPS	LOAD SERVES	EQUIP LOAD KVA
0.25	EXIT SIGN 1ST TO 7TH FL	20	1	1.01			2	20	UTILITY ROOMS LTG	0.76
0.30	STAIR LIGHTING - 1ST FL TO 4TH FL	20	3		1.00		4	20	ELEVATOR SUMP PUMP	0.70
0.30	STAIR LIGHTING - 1ST FL TO 4TH FL	20	5			1.10	6	20	ELEV. PIT RECEPT & LTG	0.80
1.40	CORRIDOR LIGHTING - 1ST FL TO 4TH FL	20	7	2.40			8	20	ELEVATOR#1 CAB LTG, RECEP.	1.00
0.98	RESIDENTIAL LOBBY LIGHTING	20	9		1.98		10	20	ELEVATOR#2 CAB LTG, RECEP.	1.00
0.00	SPARE	20	11			0.10	12	20		0.10
0.30	EXTERIOR LIGHTING- 1ST FLOOR	20	13	0.30			14	20	DGP	0.00
0.32	EXTERIOR LIGHTING- 1ST FLOOR	20	15		0.32		16	20	DGP	0.00
0.04	EXTERIOR LIGHTING - 2ND FLOOR	20	17			0.04	18	20	DGP	0.00
0.00	SPARE	20	19	0.00			20	20	SPARE	0.00
1.00	FSD CELLAR FLOOR	20	21		1.00		22	20	SPARE	0.00
0.56	GAS BOOSTER V/A UPS	20/2P	23			0.56	24	20	SPARE	0.00
0.56	2#12, 1#12G - 3/4"C		25	0.56			26	20	SPARE	0.00
0.40	FIRE COMMAND STATION	20	27		0.40		28	20	SPARE	0.00
0.00	SPARE	20	29			1.0	30	20	FIRE COMMAND CENTER RECEPTACLES	1.00
0.00	SPARE	20	31	0.0			32	20	SPARE	0.00
0.00	SPARE	20	33		0.00		34	20	SPARE	0.00
0.00	SPARE	20	35			0.00	36	20	SPARE	0.00
0.00	SPARE	20	37	0.50			38	20	FSD 4TH TO 10TH FL	0.50
0.00	SPARE	20	39		0.00		40	20	SPARE	0.00
0.00	SPARE	20	41			0.00	42	20	SPARE	0.00

TOTAL PER PHASE: 4.8 4.7 2.8

NOTE:
1. PROVIDE 2#8 & 1#8G - 3/4"C FOR EXTERIOR BUILDING LIGHTING
2. PROVIDE MINIMUM OF NUMBER 10 WIRE FOR ALL HOUSE BRANCH CIRCUITS U.O.N.

UNITS	KVA	AMPS
TOTAL CONNECTED LOAD	12.28	34.10

PANEL NAME: HPR

LOCATION: MEETING ROOM - 8TH FLOOR

225 AMP M.L.O., 120/208VOLTS,3 PH,4 WIRE
60 HERTZ, A.C., SOLID NEUTRAL & GND

MOUNTING: SURFACE
A.I.C. RATING: 42,000

EQUIP LOAD KVA	LOAD SERVES	BKR RTG IN AMPS	CKT No.	A	B	C	CKT No.	BKR RTG IN AMPS	LOAD SERVES	EQUIP LOAD KVA
0.98	CORRIDOR LIGHTING 5TH -6TH FLOOR	20	1	2.42			2	20	CORRIDOR RECEPTACLES 5TH, 6TH FLOOR	1.44
0.49	CORRIDOR LIGHTING 7TH FLOOR	20	3		0.49		4	20	CORRIDOR RECEPTACLES 7TH FL	0.00
1.06	LIGHTING 8TH FLOOR	20	5			1.06	6	30/3P	SPARE	0.00
0.50	FIRE SMOKE DAMPERS	20	7	0.50			8			0.00
2.68	ROOF TOP UNIT RT-1	40/3P	9		2.68		10			0.00
2.68	3#8,1#10GND-1"C.		11			2.68	12		SPARE	0.00
2.68			13	2.68			14	30/3P		0.00
1.14	ERV-1	15/3P	15		1.14		16			0.00
1.14	3#12,1#12GND-3/4"C.		17			3.22	18	40/2P	ACCU-R-1	2.08
1.14			19	3.22			20		2#8,1#10GND-1"C.	2.08
1.18	INDUCER FAN IF-1	20	21		2.08		22	20	RECEPTACLES 8TH FL	0.90
0.20	MOTORIZED DAMPERS	20	23			0.92	24	20	RECEPTACLES 8TH FL	0.72
1.10	PANTRY APPL 8TH FL	20	25	1.60			26	20	FIRESMOKE DAMPERS	0.50
1.10	PANTRY APPL 8TH FL	20	27		1.30		28	20	SWC/S-ONE, EF-8-1	0.20
0.80	REFR	20	29			1.3	30	20	EBB-8-1	0.50
1.50	MICROWAVE	20	31	3.5			32	25/2P	FFH-1 - (8TH FL STAIR A)	2.00
1.50	DISHWASHER	20	33		3.50		34		2#10,1#10GND-3/4"C.	2.00
0.42	PTAC	15/2P	35			2.42	36	25/2P	FFH-1 - (8TH FL STAIR B)	2.00
0.42	2#12 & 1#12G - 3/4"C		37	2.42			38		2#10,1#10GND-3/4"C.	2.00
0.42	PTAC	15/2P	39		0.64		40	15/2P	AH-8-1	0.22
0.42	2#12 & 1#12G - 3/4"C		41			0.64	42		2#12 & 1#12G - 3/4"C	0.22
1.08	KX-1, TX-1, KX-2	20	43	1.78			44	20	KX-3	0.70
1.60	TX-2	20	45		2.66		46	20	KX-4, TX-3	1.06
1.08	TX-4, KX-3, TX-5,	20	47			1.80	48	20	KX-6, TX-6	0.72
0.50	FSD (5TH, 6TH FL)	20	49	2.50			50	25/2P	FFH-1 - (5TH FL STAIR B)	2.00
0.70	CH-2 (5TH, 6TH FL)	20	51		2.70		52		2#10,1#10GND-3/4"C.	2.00
0.35	CH-2 (7TH FL)	20	53			2.35	54	25/2P	FFH-1 - (5TH FL STAIR A)	2.00
0.50	FSD (7TH FL)	20	55	2.50			56		2#10,1#10GND-3/4"C.	2.00
0.50	FSD (7TH FL)	20	57		0.90		58	20	GFI RECEPTACLES - 8TH FLOOR	0.40
0.50	FSD (7TH FL)	20	59			0.90	60	20	GFI RECEPTACLES - ROOF	0.40
0.00	SPARE	20	61	0.00			62	20	SPARE	0.00
0.00	SPARE	20	63		0.00		64	20	SPARE	0.00
0.00	SPARE	20	65			0.00	66	20	SPARE	0.00
0.00	SPARE	20	67	0.00			68	20	SPARE	0.00
0.00	SPARE	20	69		0.00		70	20	SPARE	0.00
0.00	SPARE	20	71			0.00	72	20	SPARE	0.00

TOTAL PER PHASE: 23.1 18.1 17.3

NOTE:
1. PROVIDE 2#8 & 1#8G - 3/4"C FOR EXTERIOR BUILDING LIGHTING
2. PROVIDE MINIMUM OF NUMBER 10 WIRE FOR ALL HOUSE BRANCH CIRCUITS U.O.N.

UNITS	KVA	AMPS
TOTAL CONNECTED LOAD	58.49	162.40
TOTAL DEMAND LOAD	46.79	129.90

PANEL NAME: LP

LOCATION: LAUNDRY ROOM - CELLAR

225 AMP M.L.O., 120/208VOLTS,3 PH,4 WIRE
60 HERTZ, A.C., SOLID NEUTRAL & GND

MOUNTING: SURFACE
A.I.C. RATING: 42,000

EQUIP LOAD KVA	LOAD SERVES	BKR RTG IN AMPS	CKT No.	A	B	C	CKT No.	BKR RTG IN AMPS	LOAD SERVES	EQUIP LOAD KVA
1.00	LAUNDRY ROOM RECEPT	20	1	2.00			2	20	LAUNDRY ROOM LTG	1.00
1.20	WASHER	20	3		2.60		4	20	DRYER	1.40
1.20	WASHER	20	5			2.60	6	20	DRYER	1.40
1.20	WASHER	20	7	2.60			8	20	DRYER	1.40
1.20	WASHER	20	9		2.60		10	20	DRYER	1.40
0.42	PTAC	15/2P	11			1.82	12	20	DRYER	1.40
0.42	2#12 & 1#12G - 3/4"C		13	1.82			14	20	VENDING MACHINE	1.40
0.36	CH-3	20	15		0.41		16	20	MOTORIZED DAMPER	0.05
0.00	SPARE	20	17			0.77	18		DX-1	0.77
0.00	SPARE	20	19	0.77			20	20/3P	3#12,1#12G IN 3/4"C	0.77
0.00	SPARE	20	21		0.77		22			0.77
0.00	SPARE	20	23			0.00	24	20	SPARE	0.00

TOTAL PER PHASE: 13.7 11.5 10.3

NOTE:

UNITS	KVA	AMPS
TOTAL CONNECTED LOAD	35.57	98.70
TOTAL DEMAND LOAD	28.45	79.00

PANEL NAME: ELP1

LOCATION: 8TH FLOOR - EMERGENCY ELECTRICAL ROOM

225 AMP M.L.O., 120/208VOLTS,3 PH,4 WIRE
60 HERTZ, A.C., SOLID NEUTRAL & GND

MOUNTING: SURFACE
A.I.C. RATING: 42,000

EQUIP LOAD KVA	LOAD SERVES	BKR RTG IN AMPS	CKT No.	A	B	C	CKT No.	BKR RTG IN AMPS	LOAD SERVES	EQUIP LOAD KVA
0.25	EXIT SIGN 5TH FL TO ROOF	20	1	1.50			2	20	CORRIDOR LIGHTING 5TH FL TO 7TH	1.25
0.30	STAIR 'A' 5TH FL TO ROOF	20	3		0.65		4	20	EXTERIOR LIGHTING - 8TH FLOOR	0.35
0.30	STAIR 'B' 5TH FL TO ROOF	20	5			0.55	6	20	RECYCLING/JAN. RM - 5TH TO 7TH	0.25
2.00	GENERATOR JACKET HEATER	20/2P	7	2.00			8	20	ELEV. CONTROL RM LTG - 8TH FL	
2.00			9		2.10		10	20	EXIT SIGNS	0.10
0.40	GEN BATTARY CHARGER	20	11			0.50	12	20	SPARE	
0.20	GEN. LTG & RECEPT	20	13	0.30			14	20	SPARE	0.10
1.00	FSD	20	15		1.00		16	20	SPARE	0.00
0.72	RECEPTACLES - 8TH FL	20	17			0.72	18	20	SPARE	0.00
0.00	SPARE	20	19	0.00			20	20	SPARE	0.00
0.00	SPARE	20	21		0.00		22	20	SPARE	0.00
0.00	SPARE	20	23			0.00	24	20	SPARE	0.00
0.00	SPARE	20	25	0.00			26	20	SPARE	0.00
0.00	SPARE	20	27		0.00		28	20	SPARE	0.00
0.00	SPARE	20	29			0.0	30	20	SPARE	0.00

TOTAL PER PHASE: 3.8 3.8 1.8

NOTE:
1. PROVIDE FEED THRU LUGS

UNITS	KVA	AMPS
TOTAL CONNECTED LOAD	9.22	25.60

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

ELECTRICAL
PANEL SCHEDULES

SEAL & SIGNATURE

DATE: 06 APRIL, 2018
PROJECT NO: RC 1730
SCALE: AS NOTED
DRAWING BY: I.F.
CHECKED BY: B.B.
DWG NO:

E-300.00

NYC DOB NUMBER:

PANEL NAME: AP0

0 BEDROOM APARTMENT
125 AMP M.L.O., 120/208VOLTS,1 PH,3 WIRE
60 HERTZ, A.C., SOLID NEUTRAL & GND

LOCATION: APARTMENT UNIT

MOUNTING: RECESSED
A.I.C. RATING: 10,000

208

EQUIP LOAD KVA	LOAD SERVED	BKR RTG IN AMPS	CKT No.	A	B	CKT No.	BKR RTG IN AMPS	LOAD SERVED	EQUIP LOAD KVA
0.50	LIGHTING & SMOKE/CO DETECTOR	20	1	1.4		2	20	LIVING ROOM RECEPTACLES	0.90
0.80	REFRIGERATOR RECEPTACLE	20	3		1.0	4	20	DINING RECEPTACLE	0.18
1.10	SMALL APPLIANCES	20	5	1.3		6	20	SWC/S-ONE, EXHAST FAN	0.20
1.10	SMALL APPLIANCES	20	7		2.1	8	20	BATHROOM RECEPTACLE	1.00
4.00	RANGE	50/2P	9	4.0		10	20	SPARE	0.00
4.00	3#8 & 1#10G - 3/4"C		11		4.5	12	20/2P	PTAC-B	0.50
1.50	MICROWAVE	20	13	2.0		14		2#12 & 1#12G - 3/4"C	0.50
0.00	SPARE	20	15		0.0	16	20	SPARE	0.00
0.00	SPARE	20	17	0.0		18	20	SPARE	0.00

TOTAL PER PHASE: 8.7 7.6

UNITS	KVA	AMPS
TOTAL CONNECTED LOAD	16.28	78.30
TOTAL DEMAND LOAD	14.60	70.21

PANEL NAME: AP1

1 BEDROOM APARTMENT
125 AMP M.L.O., 120/208VOLTS,1 PH,3 WIRE
60 HERTZ, A.C., SOLID NEUTRAL & GND

LOCATION: APARTMENT UNIT

MOUNTING: RECESSED
A.I.C. RATING: 10,000

208

EQUIP LOAD KVA	LOAD SERVED	BKR RTG IN AMPS	CKT No.	A	B	CKT No.	BKR RTG IN AMPS	LOAD SERVED	EQUIP LOAD KVA
0.50	LIGHTING & SMOKE/CO DETECTOR	20	1	1.2		2	20	LIVING ROOM RECEPTACLES	0.72
0.80	REFRIGERATOR RECEPTACLE	20	3		1.0	4	20	DINING RECEPTACLE	0.18
1.10	SMALL APPLIANCES	20	5	1.3		6	20	SWC/S-ONE, EXHAST FAN	0.20
1.10	SMALL APPLIANCES	20	7		2.1	8	20	BATHROOM RECEPTACLE	1.00
4.00	RANGE	50/2P	9	4.7		10	20	BEDROOM	0.72
4.00	3#8 & 1#10G - 3/4"C		11		4.5	12	20/2P	PTAC	0.50
1.50	MICROWAVE	20	13	2.0		14		2#12 & 1#12G - 3/4"C	0.50
0.00	SPARE	20	15		0.5	16	20/2P	PTAC	0.50
0.00	SPARE	20	17	0.5		18		2#12 & 1#12G - 3/4"C	0.50

TOTAL PER PHASE: 9.7 8.1

UNITS	KVA	AMPS
TOTAL CONNECTED LOAD	17.82	85.70
TOTAL DEMAND LOAD	15.79	75.92

PANEL NAME: AP2

2 BEDROOM APARTMENT
125 AMP M.L.O., 120/208VOLTS,1 PH,3 WIRE
60 HERTZ, A.C., SOLID NEUTRAL & GND

LOCATION: APARTMENT UNIT

MOUNTING: RECESSED
A.I.C. RATING: 10,000

208

EQUIP LOAD KVA	LOAD SERVED	BKR RTG IN AMPS	CKT No.	A	B	CKT No.	BKR RTG IN AMPS	LOAD SERVED	EQUIP LOAD KVA
0.50	LIGHTING & SMOKE/CO DETECTOR	20	1	1.6		2	20	LIVING ROOM RECEPTACLES	1.08
0.80	REFRIGERATOR RECEPTACLE	20	3		1.0	4	20	DINING RECEPTACLE	0.18
1.10	SMALL APPLIANCES	20	5	1.3		6	20	SWC/S-ONE, EXHAST FAN	0.20
1.10	SMALL APPLIANCES	20	7		2.1	8	20	BATHROOM RECEPTACLE	1.00
4.00	RANGE	50/2P	9	4.7		10	20	MASTER BEDROOM	0.72
4.00	3#8 & 1#10G - 3/4"C		11		4.5	12	20/2P	PTAC	0.50
1.50	MICROWAVE	20	13	2.0		14		2#12 & 1#12G - 3/4"C	0.50
0.72	BEDROOM 2	20	15		1.2	16	20/2P	PTAC	0.50
0.41	PTAC	20/2P	17	0.9		18		2#12 & 1#12G - 3/4"C	0.50
0.41	2#12 & 1#12G - 3/4"C		19		0.4	20	20	SPARE	0.00
0.00	SPARE	20	21	0.0		22	20	SPARE	0.00
0.00	SPARE	20	23		0.0	24	20	SPARE	0.00

TOTAL PER PHASE: 10.5 9.2

UNITS	KVA	AMPS
TOTAL CONNECTED LOAD	19.72	94.80
TOTAL DEMAND LOAD	16.99	81.68

PANEL NAME: AP3

3 BEDROOM APARTMENT
125 AMP M.L.O., 120/208VOLTS,1 PH,3 WIRE
60 HERTZ, A.C., SOLID NEUTRAL & GND

LOCATION: APARTMENT UNIT

MOUNTING: RECESSED
A.I.C. RATING: 10,000

208

EQUIP LOAD KVA	LOAD SERVED	BKR RTG IN AMPS	CKT No.	A	B	CKT No.	BKR RTG IN AMPS	LOAD SERVED	EQUIP LOAD KVA
0.50	LIGHTING & SMOKE/CO DETECTOR	20	1	1.8		2	20	LIVING ROOM RECEPTACLES	1.26
0.80	REFRIGERATOR RECEPTACLE	20	3		1.0	4	20	DINING RECEPTACLE	0.18
1.10	SMALL APPLIANCES	20	5	1.3		6	20	SWC/S-ONE, EXHAST FAN	0.20
1.10	SMALL APPLIANCES	20	7		2.1	8	20	MASTER BATHROOM RECEPT.	1.00
4.00	RANGE	50/2P	9	4.7		10	20	MASTER BEDROOM	0.72
4.00	3#8 & 1#10G - 3/4"C		11		4.5	12	20/2P	PTAC	0.50
1.50	MICROWAVE	20	13	2.0		14		2#12 & 1#12G - 3/4"C	0.50
0.72	BEDROOM 2	20	15		1.2	16	20/2P	PTAC	0.50
1.00	BATHROOM 2	20	17	1.5		18		2#12 & 1#12G - 3/4"C	0.50
0.72	BEDROOM 3	20	19		1.2	20	20/2P	PTAC	0.50
0.41	PTAC	20/2P	21	0.9		22		2#12 & 1#12G - 3/4"C	0.50
0.41	2#12 & 1#12G - 3/4"C		23		0.4	24	20	SPARE	0.00

TOTAL PER PHASE: 12.2 10.4

UNITS	KVA	AMPS
TOTAL CONNECTED LOAD	22.62	108.80
TOTAL DEMAND LOAD	18.66	89.69

NOTES

ALL 120V, SINGLE PHASE, 15A & 20A BRANCH CIRCUITS SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION-TYPE, INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT.

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KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

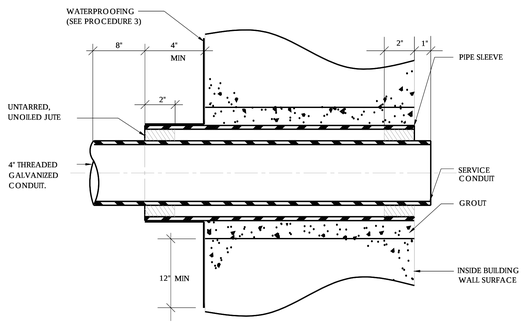
ELECTRICAL
PANEL SCHEDULES

SEAL & SIGNATURE

DATE: 06 APRIL, 2018
PROJECT NO: RC 1730
SCALE: AS NOTED
DRAWING BY: I.F.
CHECKED BY: B.B.
DWG NO:

E-301.00

NYC DOB NUMBER:



A SERVICE CONDUIT SLEEVE

1 - TO SEAL SERVICE CONDUIT IN SLEEVE

APPLY UNATERRED, UNOILED CUTE PACKING BETWEEN CONDUIT AND SLEEVE IN SUCH A MANNER AS TO COMPLETELY FILL THE SPACE, INSERT APPROVED DUCT SEALING FOAM MATERIAL AS NOTED ABOVE, AND MAKE SURE THAT A COMPLETE BOND IS ACHIEVED BETWEEN CONDUIT AND SLEEVE.

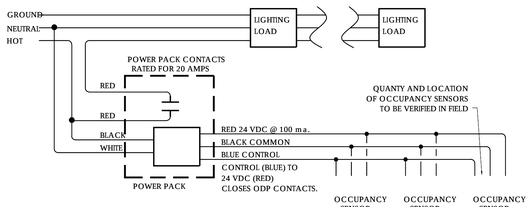
2 - TO GROUT SLEEVE IN WALL

THE GROUT FOR SEALING THE SLEEVE IN WALL SHALL BE A 1:3 MIXTURE CONSISTING OF ONE PART OF PORTLAND CEMENT AND 3 PARTS OF CLEAN SAND WITH A MINIMUM OF WATER. THE SLEEVE SHALL BE FREE FROM MILL SCALE, RUST, GREASE, OR OTHER DEFECTS. CARE SHOULD BE TAKEN TO HAVE THE GROUT IN COMPLETE CONTACT WITH THE ENTIRE SURFACE OF THE SLEEVE PASSING THROUGH THE WALL.

3 - WATERPROOFING

THE WATERPROOFING SHALL BE APPLIED BY THE CONTRACTOR TO FORM A CONTINUOUS MEMBRANE EXTENDING FROM THE END OF THE SLEEVE TO A POINT ON THE WALL AT LEAST 12" BEYOND THE GROUTLINE.

NOT TO SCALE



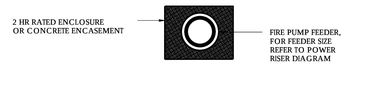
B TYPICAL CORRIDOR OCCUPANCY SENSOR WIRING DIAGRAM

NOT TO SCALE

C BOILER ROOM SHUTDOWN WIRING SCHEMATIC

NOTE:

1. REFER TO DRAWING E-113 FOR EXACT LOCATION OF BREAKGLASS SWITCHES, BOILER CONTACTOR, BOILERS, AND PUMPS.
2. DEVICES INSTALLED IN WET OR DAMP LOCATION SHALL BE NEMA 3R.
3. ACTIVATION OF A CARBON MONOXIDE DETECTOR OR BREAKGLASS STATION, SHALL SHUT DOWN BOILER.

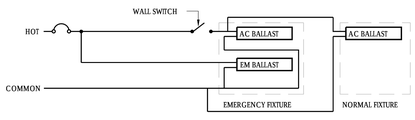


NOTES:

1. IN LIEU OF CONCRETE ENCASEMENT OR 2 HR RATED ENCLOSURE, THE CONTRACTOR SHALL INSTALL APPROVED MI CABLE.
2. THE ABOVE REQUIREMENT SHALL BE INSTALLED FROM THE SERVICE SWITCH TO THE LINE SIDE OF THE FIRE PUMP CONTROLLER.

D FIRE PUMP CONDUIT INSTALLATION

NOT TO SCALE

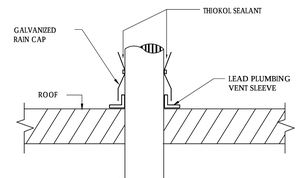


NOTES:

1. INVERTER BALLAST SHALL BE BODINE CAT. #B-50.
2. FOR EMERGENCY FIXTURE OPERATION, PROVIDE AN ADDITIONAL HOT LEG WIRE AHEAD OF LIGHTING CIRCUIT CONTROL SWITCH.

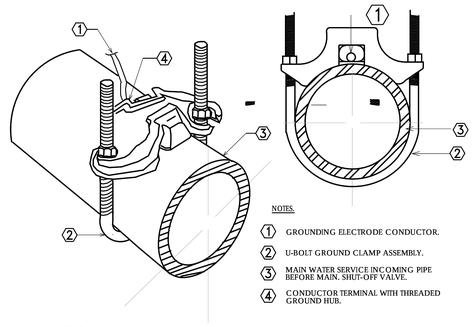
E WIRING DIAGRAM FOR SWITCHED EMERGENCY LIGHTING FIXTURES

NOT TO SCALE



G TYPICAL ELECTRICAL ROOF PENETRATION DETAIL

NOT TO SCALE

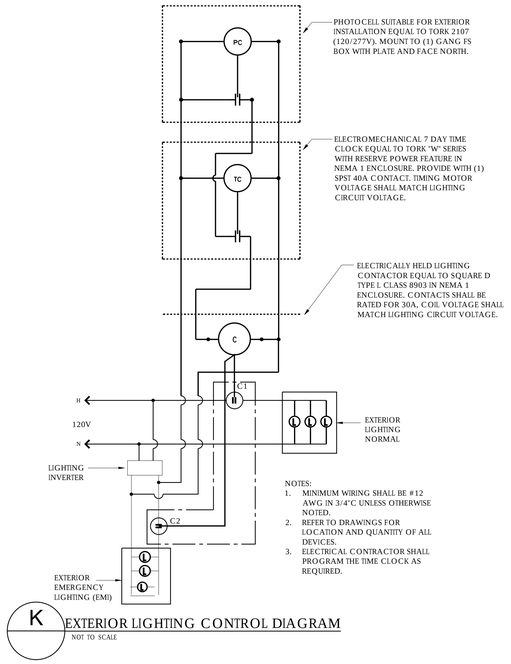


NOTES.

1. GROUNDING ELECTRODE CONDUCTOR.
2. U-BOLT GROUND CLAMP ASSEMBLY.
3. MAIN WATER SERVICE INCOMING PIPE BEFORE MAIN. SHUT-OFF VALVE.
4. CONDUCTOR TERMINAL WITH THREADED GROUND HUB.

H MAIN WATER PIPE ELECTRODE CONNECTION

NOT TO SCALE

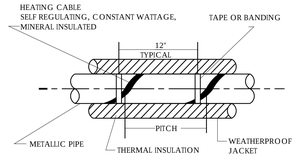


NOTES:

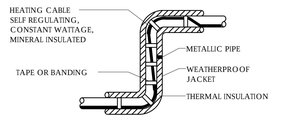
1. MINIMUM WIRING SHALL BE #12 AWG IN 3/4"C UNLESS OTHERWISE NOTED.
2. REFER TO DRAWINGS FOR LOCATION AND QUANTITY OF ALL DEVICES.
3. ELECTRICAL CONTRACTOR SHALL PROGRAM THE TIME CLOCK AS REQUIRED.

K EXTERIOR LIGHTING CONTROL DIAGRAM

NOT TO SCALE



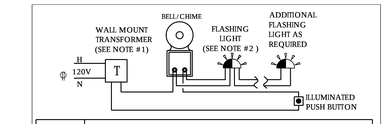
TYPICAL HEAT TRACING DETAIL



J HEAT TRACING WIRING DIAGRAM

GENERAL NOTES:

1. DO NOT SPIRAL IF RATIO OF HEATER LENGTH TO PIPE LENGTH IS GREATER THAN 1.5. INSTEAD, USE TWO CABLES OR CHOOSE A HIGHER WATTAGE HEATER.
2. INSTALL AS PER MANUFACTURER INSTALLATION WIRING DIAGRAM.
3. HEAT TRACE ALL PIPING IN THE CEILING. FOR EXACT PIPE SIZE & LENGTH OF PIPING TO BE HEAT TRACED COORDINATE WITH PLUMBING/MECHANICAL CONTRACTOR.
4. PROVIDE ALL POWER CONNECTION, SPLICE KIT, END SEALS THERMOSTAT,CONTACTOR,PIPE STRAPS, TAPES MOUNTING BRACKETS, CLAMPS, TAPES, ETC.
5. HEATING CABLE IS APPLIED TO THE OUTSIDE (LONG) RADIUS OF THE PIPE ELBOW.
6. WHEN THE INSTALLATION & THE WATERPROOFING IS COMPLETE, ATTACH "ELECTRIC TRACED LABEL ON THE OUTSIDE OF THE INSULATION.
7. PERFORM MEGGER TEST ON THE CIRCUIT IMMEDIATELY AFTER THE THERMAL INSULATION TO DETECT IF ANY MECHANICAL DAMAGE MAY HAVE OCCURRED.

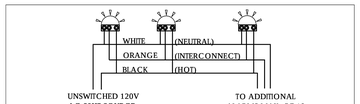


CHIME	BELL/CHIME
	DOME LIGHT FOR DOOR BELL (ALPHA COMMUNICATION 14404B)
	DOME LIGHT FOR INTERCOM (ALPHA COMMUNICATION 14404B)

NOTES:

1. PLUG-IN 120 VOLT TRANSFORMER. PROVIDE TRANSFORMER AND 120VAC DUPLEX RECEPTACLE TRANSFORMER TO BE MANUFACTURED BY ALPHA COMMUNICATION MODEL# SS105B . TRANSFORMER TO BE SCREWED IN PLACE AFTER INSTALLATION.
2. INSTALL LIGHT ADJACENT TO CHIME & AS LOCATED ON PLANS.
3. ACTIVATION OF DOOR BELL OUTSIDE HEARING /VISUALLY IMPAIRED APARTMENTS WILL CAUSE THE CHIME TO RING & ACTIVATE FLASHING LIGHT MOUNTED ADJACENT TO CHIME. 14.
4. PROVIDE ALL REQUIRED POWER, CONTROL WIRING, TRANSFORMERS, ETC. BETWEEN DOORBELL PUSHBUTTON, REMOTE FLASHING LIGHT AND DOOR BELL/CHIME FOR HEARING/VISUALLY IMPAIRED UNITS.
5. ACTIVATION OF INTERCOM SYSTEM IN HEARING/VISUALLY IMPAIRED APARTMENTS WILL CAUSE THE TONE TO RING AND ACTIVATE FLASHING LIGHT MOUNTED ABOVE INTERCOM STATION. CONTACTOR TO COORDINATE WIRING OF LIGHT WITH INTERCOM EQUIPMENT VENDOR PRIOR TO ORDERING AND INSTALLATION OF LIGHT.

F HEARING/VISUALLY IMPAIRED DOOR BELL AND INTERCOM SYSTEM SCHEMATIC DIAGRAM DETAIL



	BRK ELECTRONICS #SL177 120 VOLT HARDWIRED STROBE LIGHT FOR HEARING IMPAIRED. WIRED IN TANDEM TO A MAXIMUM OF 18 DEVICES. WIRE WITH BRK SMOKE OR CO DETECTORS ONLY. INSTALL ONE DEVICE IN EACH BEDROOM, EACH BATHROOM, AND MINIMUM ONE (1) IN LIVING ROOM.

NOTES:

1. ACTIVATION OF A SMOKE/CARBON MONOXIDE DETECTOR WITHIN A HEARING/VISUALLY IMPAIRED UNIT SHALL ACTIVATE ALL CARBON MONOXIDE SMOKE DETECTORS AND STROBES WITHIN THAT HEARING/VISUALLY IMPAIRED UNIT AS WELL AS THE STROBE LOCATED DIRECTLY OUTSIDE THAT HEARING/VISUALLY IMPAIRED UNIT AND THE STROBES LOCATED AT THE EXITS. THE INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE UNIFORM FEDERAL ACCESSIBILITY STANDARDS (UFAS) 4.28.2 AND 4.28.3. INCLUDING FEDERAL REGISTER REGULATION # 41.

I HEARING IMPAIRED CARBON/SMOKE DETECTOR/ STROBE LIGHT WIRING DETAIL

think!
architecture and design pllc

ARCHITECT
think! architecture and design pllc
1 METROTECH CENTER NORTH, 6TH FLOOR
BROOKLYN, NY 11201
P 646.688.5898

CLIENT
LEMLE & WOLFF COMPANIES
5925 BROADWAY
BRONX, NY 10463
P 718.884.7676

STRUCTURAL
CUONO ENGINEERING PLLC
42 NORTH MAIN STREET
PORT CHESTER, NY 10573
P 914.305.5679

MEP
RODKIN CARDINALE A DIVISION OF SKYLINE ENGINEERING
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

ELECTRICAL
DETAILS

SEAL & SIGNATURE

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	I.F.
CHECKED BY:	B.B.
DWG NO:	E-400.00
NYC DOB NUMBER:	

PART 1 - GENERAL

1.1 RELATED WORK

A. DESIGN, FURNISH AND INSTALL FIRE DEPARTMENT IN-BUILDING AUXILIARY RADIO COMMUNICATION SYSTEM, INCLUDING ALL EQUIPMENT AND ACCESSORIES AS SPECIFIED HEREIN AND AS REQUIRED BY THE CODE AS INDICATED ON AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

B. SECTION INCLUDES:
1. POWER SUPPLY
2. DEDICATED RADIO CONSOLE (DRC)
3. RADIO AMPLIFICATION UNIT (RAU)
4. CABLING AND ANTENNA PLANT (CAP)
5. UPLINK RADIO PROPAGATION
6. DOWNLINK RADIO PROPAGATION
7. SYSTEM MONITORING

1.2 REFERENCES

A. THE COMPLETE IN-BUILDING AUXILIARY RADIO COMMUNICATION SYSTEM AND ALL COMPONENTS SHALL BE DESIGNED, MANUFACTURED, TESTED, AND INSTALLED IN ACCORDANCE WITH THE LATEST APPLICABLE CODES AND REFERENCE STANDARDS INCLUDING THE FOLLOWING:
1. CODES: PERFORM ALL WORK IN ACCORDANCE WITH THE LATEST APPLICABLE CODES AND STANDARDS FOR THE CITY OF NEW YORK.
a. BCCNY: BUILDING CODE OF THE CITY OF NEW YORK.
b. FDNY: NEW YORK FIRE DEPARTMENT
c. NFPA 72: NATIONAL FIRE ALARM CODE WITH BCCNY AMENDMENTS.
d. NFPA 101: LIFE SAFETY CODE.
e. NYCEC: NEW YORK CITY ELECTRICAL CODE
f. NYCFC: NEW YORK CITY FIRE CODE.
g. TECHNOLOGY MANAGEMENT BULLETIN #01/2011
h. FCC PART 90

B. THE SYSTEM COMPONENTS SHALL BE UL LISTED. THE EQUIPMENT AND INSTALLATION SHALL COMPLY WITH ALL LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, INCLUDING, BUT NOT LIMITED TO NEW YORK CITY BUILDING CODE, NEW YORK CITY ELECTRICAL CODE AND THE NEW YORK CITY FIRE CODE. WHERE THE LOCAL STANDARDS VARY FROM UL AND NFPA STANDARDS PREVIOUSLY REFERENCED, THE LOCAL STANDARD TAKES PRECEDENCE.

C. WHERE FEDERAL STANDARDS VARY FROM UL AND NFPA AND LOCAL STANDARDS, THE FEDERAL STANDARDS SHALL TAKE PRECEDENCE.

1.3 QUALITY ASSURANCE

A. THIS SYSTEM SHALL BE PROVIDED AS PART OF THE FIRE ALARM AND DETECTION SYSTEM. THE FIRE ALARM AND DETECTION SYSTEM VENDOR SHALL SUBCONTRACT THIS VENDOR AND PROVIDE ALL OVERSIGHT, COORDINATION, ETC.

B. ALL PRODUCTS AND COMPONENTS USED ON THIS SPECIFICATION SHALL BE:
1. NEW AND FREE OF MANUFACTURING DEFECTS.
2. IN COMPLIANCE WITH THE FCC PART 90 PUBLIC SAFETY LMR REGULATIONS, INCLUDING THE 2013 FCC NARROWBANDING MANDATE.
3. FREE OF STORAGE AND HANDLING DAMAGE.
4. CLEARLY AND PERMANENTLY LABELED "FDNY COMMUNICATIONS USE," OR "AUXILIARY RADIO COMMUNICAION SYSTEM"
5. ELECTRICAL COMPONENTS SHALL BE RATED TO OPERATE AT +20% AND -10% OF RATED VOLTAGE, UNLESS OTHERWISE SPECIFIED.

B. THE ABSENCE OF ANY DETAILS IN THIS SPECIFICATION IMPLIES THAT THE BEST GENERAL PRACTICE SHALL PREVAIL AND FIRST-QUALITY MATERIAL AND WORKMANSHIP SHALL BE EMPLOYED THROUGHOUT. INCLUDING COMPLIANCE WITH FEDERAL AND LOCAL LAWS AND POLICY.

C. ALL EQUIPMENT AND MATERIAL TO BE FURNISHED AND INSTALLED ON THIS PROJECT SHALL BE THE PRODUCT OF A MANUFACTURER(S) WHICH CONTACTOR IS AN AUTHORIZED RESELLER AND SUITABLE FOR ITS INTENDED USE ON THIS PROJECT.

D. BEFORE COMMENCING WORK, SUBMIT DATA SHOWING THAT THE CONTRACTOR HAS SUCCESSFULLY INSTALLED SYSTEMS OF THE SAME SCOPE, TYPE AND DESIGN AS SPECIFIED. INCLUDE THE NAMES AND LOCATIONS OF AT LEAST THREE (3) INSTALLATIONS WHERE SUCH SYSTEMS HAVE PERFORMED SATISFACTORILY FOR THE PRECEDING EIGHTEEN (18) MONTHS.

E. THE CONTRACTOR IS TO BE CERTIFIED AND EXPERIENCED IN THE INSTALLATION AND OPERATION OF THE TYPE OF SYSTEM PROVIDED. THE CONTRACTOR SHALL HAVE TECHNICAL PERSONAL WHO ARE CERTIFIED TO SUPERVISE INSTALLATION, SOFTWARE PROGRAMMING, SOFTWARE DOCUMENTATION, ADJUSTMENTS, PRELIMINARY TESTING AND PROVIDE OPERATION INSTRUCTION TO THE OWNER'S PERSONNEL. INSTRUCTION SHALL INCLUDE SYSTEM OPERATION, MAINTENANCE, AND PROGRAMMING AND ACTIVATION PROCEDURES.

F. THE EQUIPMENT MANUFACTURER SHALL HAVE BEEN ENGAGED IN THE PRODUCTION OF THIS TYPE OF EQUIPMENT FOR AT LEAST TEN (10) YEARS AND HAVE FULLY EQUIPPED SERVICE ORGANIZATION CAPABLE OF RESPONDING TO THE PROJECT SITE WITHIN FOUR (4) HOURS FROM THE INITIAL CONTRACT FOR WARRANTY OR REGULAR SERVICE WORK. EMERGENCY AND/OR OFF-HOURS CALLS SHALL BE RESPONDED TO WITHIN FOUR (4) HOURS OF INITIAL CONTACT SEVEN (7) DAYS A WEEK.

1.4 SUBMITTALS

A. PROVIDE THE FOLLOWING SUBMITTAL DATA ACCORDING TO THE CONDITIONS OF THE BASE DOCUMENT SPECIFICATION AND DESCRIBE THE PROPOSED SYSTEM AND ITS EQUIPMENT. THE COMPLETE SUBMITTAL SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL THE FOLLOWING MATERIAL:
1. PROPOSED SYSTEM NARRATIVE DESCRIPTION:
a. ACTIVE OR PASSIVE CABLING AND ANTENNA PLANT
b. PROPOSED RADIO AMPLIFIER UNIT (RAU) FEATURES AND FUNCTIONALITY
c. PROPOSED DEDICATED RADIO CONSOLE (DRC) FEATURES AND FUNCTIONALITY
d. AGENCY AND HOUSE RADIO SUPPORT AND FREQUENCY ALLOCATIONS
e. SITE SPECIFIC RADIO INTERMODULATION REPORT.
f. SAMPLE CERTIFICATION TEST RESULT, ACCEPTANCE TEST PROCEDURE (ATP) FOR THE FOLLOWING:
(i) RADIO AMPLIFICATION UNIT ATP
(ii) DEDICATED RADIO CONSOLE ATP
(ii) CABLING AND ANTENNA PLANT ATP
(ik) POWER SUPPLY ATP
g. POWER CALCULATIONS
(iii) BATTERY CAPACITY CALCULATIONS
(i) POWER REQUIREMENTS FOR ALL EQUIPMENT DURING COMMUNICATION OPERATION.
(ii) POWER SUPPLY RATING JUSTIFICATION SHOWING POWER REQUIREMENTS FOR EACH OF THE SYSTEM POWER SUPPLIES.
(iv) VOLTAGE DROP CALCULATIONS FOR WIRING RUNS DEMONSTRATING A WORST-CASE CONDITION.
(v) PANEL AMPERE LOADING, FOR THE SYSTEM CONTROL PANEL AND POWER SUPPLY DURING BOTH STANDBY AND TRANSMIT AND RECEIVE MODES WITH TIME CALCULATIONS TO SUBSTANTIATE COMPLIANCE WITH BATTERY BACK-UP POWER REQUIREMENTS.
2. FIRM BACKGROUND AND INFORMATION ABOUT PERSONNEL
a. DESCRIBE IN DETAIL YOUR FIRMS:
(i) HISTORY, INCLUDING PREDECESSOR FIRMS, MERGERS, AFFILIATIONS, AND CONTINUITY OF OWNERSHIP AND MANAGEMENT.
(ii) GROWTH AS MEASURED BY REVENUES, NUMBER OF EMPLOYEES, SIZE, AND COMPLEXITY OF PROJECTS AND CLIENTS, NUMBER AND SOPHISTICATION OF EMPLOYEES, ETC.
(iii) LINE(S) OF BUSINESS.
(iv) USE OF FILL-TIME/PART-TIME EMPLOYEES, INDEPENDENT CONTRACTOR, PROFESSIONAL EMPLOYEES.
(v) SUPPORT STAFF.
(vi) RELEVANT TECHNICAL EQUIPMENT.
(vii) ANY SIGNIFICANT CHANGES THE FIRM IS CURRENTLY EXPERIENCING OR ANTICIPATE MAY OCCUR IN THE NEAR FUTURE.
b. RELEVANT PROJECT REFERENCES:
(i) PROVIDE A LIST OF CLIENTS OF SIMILAR COMPLEXITY TO THIS PROJECT, PLEASE PROVIDE CONTACT INFORMATION FOR THOSE CLIENTS.
c. GENERAL INFORMATION ABOUT PERSONNEL
(i) PROVIDE A STAFFING PLAN FOR THE PROJECT WHICH IS TO INCLUDE JOB TITLES, WHETHER THE PERSONS HOLDING THE POSITIONS WILL BE: DEDICATED TO THE PROJECT, FULL, PART-TIME, OR CONTRACTING MEMBERS OF THE STAFF. PROVIDE AN ORGANIZATIONAL CHART CLEARLY SHOWING RESPONSIBILITIES, CHAIN OF COMMAND AND REPORTING RELATIONSHIPS.
d. COPIES OF CERTIFICATION OF SERVICE TECHNICIAN'S FORMAL TRAINING BY THE SYSTEM MANUFACTURER. AS A MINIMUM, CERTIFICATION DOCUMENTS SHALL INDICATE TRAINING DATES, SYSTEMS QUALIFIED, NAME OF INDIVIDUAL CERTIFIED AND CURRENT STATUS.
e. PROVIDE AND DETAIL YOUR RELATIONSHIP WITH MANUFACTURES, INTERMEDIARIES AND ANY SUBCONTRACTORS PLANNED TO USE ON THIS CONTRACT.
3. COMPLETE MANUFACTURER'S CATALOG DATA INCLUDING PHYSICAL DIMENSIONS, FINISH AND MOUNTING REQUIREMENTS.
4. ADDRESS, TELEPHONE NUMBER, AND CONTACT PERSON(S) OF THE CONTRACTOR'S LOCAL SERVICES FACILITY FOR NORMAL AND OFF-HOUR WARRANTY ISSUES.
5. SUBMIT A PARAGRAPH-BY-PARAGRAPH LETTER OF COMPLIANCE (OF THIS SPECIFICATION) IDENTIFYING COMPLIANCE OR NON-COMPLIANCE AND REASONS FOR NON-COMPLIANCE.
6. PROVIDE A SERVICE CONTRACT PROPOSAL, TO INCLUDE:
a. ARCS CERTIFICATION TESTING.
b. ARCS CERTIFICATION FILING AND ADMINISTRATIVE CHARGES.
c. QUARTERLY PREVENTATIVE MAINTENANCE.
d. ANNUAL MANUFACTURER TESTING AND RE-CERTIFICATION
e. COST INCLUSIVE OF FOUR (4) HOUR EMERGENCY RESPONSE AND CORRECTIVE ACTIONS FOR EMERGENCY REPAIRS.
f. PRICING OPTIONS PROVIDED IN TWELVE (12), THIRTY SIX (36) AND, SIXTY (60) MONTH OPTIONS.
7. ALL SUBMITTAL DATA SHALL BE IN BOUND FORM WITH THIS CONTRACTOR'S NAME AND PROJECT NAME.
8. NO MATTER HOW MINOR, ANY DEVIATIONS FROM THESE SPECIFICATIONS SHALL BE SUBMITTED IN WRITTEN FORM TO BE REVIEWED BY THE ENGINEER. COMPLETE DRAWINGS AND ITEMIZATIONS OF DEVIATIONS SHALL BE INCLUDED.
9. BID SUBMISSION MUST INCLUDE STATEMENT FROM THE PROPOSING FIRM'S INTENDED ENGINEER OF RECORD FOR THE SYSTEM.

1.5 UNIT PRICES

A. PROVIDE UNIT PRICES AS PART OF THE PROPOSAL IN ACCORDANCE WITH THE FOLLOWING SCHEDULE AND THE REQUIREMENTS OF SECTION 26 00 00.
1. ADDITIONAL ENGINEERING HOURS $_____/L.H.
2. ADDITIONAL DEDICATED RADIO CONSOLE (DRC)$_____/E.A.
3. ADDITIONAL RADIO AMPLIFICATION UNIT (RAU) $_____/E.A.
4. ADDITIONAL ARCS CERTIFICATION HOURS $_____/L.H.

1.6 WARRANTY, MAINTENANCE AND SERVICE CONTRACT

A. THE AWARDED CONTRACTOR MUST PROVIDE OWNERSHIP WITH THREE (3) TERM OPTIONS TO PURCHASE IN ADVANCE MAINTENANCE, SERVICE & WARRANTY COVERAGE; HEREIN REFERRED TO AS "MSW PACKAGE".

B. TERM OPTIONS PRESENTED TO OWNERSHIP MUST INCLUDE PACKAGES COVERING ONE (1), TWO (2) OR FIVE (5) YEARS TERMS FROM DATE OF INITIAL ACCEPTANCE.
1. THE MSW PACKAGE MUST INCLUDE THE FOLLOWING PREVENTATIVE MAINTENANCE:
a. SCHEDULED ACTIVITIES:
(i) ONE (1) YEAR MSW PACKAGE
1. FOUR (4) QUARTERLY INSPECTIONS
2. ONE (1) ANNUAL INSPECTION WITH MANUFACTURER CALIBRATION CERTIFICATE
(ii) TWO (2) YEAR MSW PACKAGE
1. EIGHT (8) QUARTERLY INSPECTIONS
2. TWO (2) ANNUAL INSPECTIONS WITH MANUFACTURER CALIBRATION CERTIFICATES
(iii) FIVE (5) YEAR MSW PACKAGE
1. TWENTY (20) QUARTERLY INSPECTIONS
2. FIVE (5) ANNUAL INSPECTIONS WITH MANUFACTURER CALIBRATION CERTIFICATES
3. ONE (1) AGENCY CERTIFICATION RENEWAL
b. QUARTERLY INSPECTIONS:
(i) VISUAL INSPECTION OF CABLING AND ANTENNA PLANT:
1. MAIN RISER, ANTENNAS AND ACCESSIBLE CONNECTORS.
(ii) POWER LEVEL TESTING AT TEST PORTS
(iii) RADIO AMPLIFICATION UNIT (RAU) SUBCOMPONENT MAINTENANCE
1. VISUAL INSPECTION OF NEMA CABINET FOR SIGNS OF TAMPERING OR ENVIRONMENTAL HAZARDS
2. CLEANING OF INTERNAL COMPONENTS OF DUST PARTICULATES
3. VERIFY ALL ELECTRONIC COMPONENTS ARE OPERATIONAL
4. BATTERY INSPECTION
5. INTERIOR COOLING FANS INSPECTION AND FILTER REPLACEMENT
(iv) INSPECTION OF DEDICATED RADIO CONSOLE (DRC)
1. PHONES AND CRADLES
2. PUSH-TO-TALK BUTTONS
3. SPEAKERPHONE SPEAKERS
4. MICROPHONES
5. LED/LCD DISPLAY
6. CONTROL CABLE INTEGRITY

b. ANNUAL INSPECTIONS:
(i) AWARDED CONTRACTOR MUST RENEW SYSTEM CALIBRATION AS PER MANUFACTURER SPECIFICATIONS AND PROVIDE OWNERSHIP WITH A MANUFACTURER'S CALIBRATION CERTIFICATE ANNUALLY FOR THE TERM OF MSW PACKAGE SELECTED.

c. AGENCY CERTIFICATION RENEWAL (FIFTH YEAR RENEWAL):
(i) AWARDED CONTRACTOR MUST PERFORM A COMPLETE WHOLE BUILDING WALKTHROUGH RETEST OF ARCS PROPAGATION; CAPTURING SYSTEM RSSI - RECEIVED SIGNAL STRENGTH INDICATION & DAQ - DELIVERED AUDIO QUALITY RESULTS ON ALL FLOORS IN ACCORDANCE WITH TECHNOLOGY MANAGEMENT BULLETIN 2011/01 AND CURRENT FDNY STANDARDS.
(ii) TRANSPOSE TEST RESULTS ONTO AS-BUILT FLOOR PLANS
(iii) PROFESSIONAL ENGINEER REVIEW AND SIGN OFF
(iv) NEW TM-1 FLING & EXPEDITING
(v) FIRE PREVENTION LETTER OF ACCEPTANCE

2. SERVICE

a. THE MSW PACKAGE MUST INCLUDE MATERIAL AND LABOR COSTS FOR THE REPLACEMENT OF ALL ARCS BACKUP BATTERIES EVERY SECOND YEAR OF CONTINUOUS MSW PACKAGE COVERAGE AFTER INITIAL COMMISSIONING.
(i) CLEAN OUT AND HAUL AWAY OF OLD BATTERIES
(ii) PREP AND CLEAN CONTACTS
(iii) INSTALLATION OF NEW BATTERIES
(iv) TEST AND VERIFICATION OF BATTERY INSTALLATION AND PERFORMANCE

b. THE MSW PACKAGE MUST INCLUDE AT NO ADDITIONAL COST TO OWNERSHIP:
(i) FOUR (4) HOUR RESPONSE TIME TO ANY SERVICE LEVEL I OR II OUTAGE AND CORRECTIVE ACTIONS FOR EMERGENCY REPAIRS.
(ii) SERVICE CALLS THAT ARE CAUSED BY NEGLECT, TAMPERING, VANDALISM OR ACTS OUTSIDE OF NORMAL USE.

3. WARRANTY

a. THE MSW PACKAGE MUST COVER ALL MATERIALS AND LABOR COSTS ASSOCIATED WITH MSW PACKAGE'S SCHEDULED MAINTENANCE, SERVICE CALLS AS WELL AS ANY LABOR AND MATERIAL COSTS RELATED TO THE REPAIR OR REPLACEMENT OF A WARRANTIED PARTS.
(i) WARRANTIED PARTS INCLUDES ALL COMPONENTS DEFINED IN THE BILL OF MATERIAL AS WELL SUBCOMPONENTS AND ACCESSORIES OF PURCHASED ARCS SYSTEM; THAT ARE USED IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.

A. PROVIDE A TRAINING COURSE FOR BUILDING OPERATORS OF THE SYSTEM, WITH PERSONAL ON-THE-JOB INSTRUCTION PROVIDED BY A MANUFACTURER CERTIFIED PERSON.

B. THE OPERATORS SHALL BE TRAINED IN THE OPERATION AND PREVENTIVE MAINTENANCE OF THE ENTIRE SYSTEM. THE OPERATORS SHALL BE TRAINED TO RECOGNIZE MALFUNCTIONS OF THE CONTROL CENTER BY OBSERVATIONS OF PRINTED COPY AND VISUAL AND AUDIBLE SIGNALS. THE INSTRUCTIONS FOR ACCOMPLISHING THIS AND THE INSTRUCTIONS FOR THE CORRESPONDING ACTION TO BE TAKEN SHALL BE INCLUDED IN THE OPERATOR'S MANUAL.

C. IN ADDITION TO THE ELECTRONIC MEDIA REQUIREMENT, PROVIDING FIVE (5) COMPLETE HARD COPY SETS OF THE FOLLOWING:
1. WRITTEN OPERATING AND MAINTENANCE INSTRUCTIONS.
2. SPECIFICATIONS, DATA SHEETS AND MAINTENANCE SCHEDULES.

E. WARRANT THE CONTINUOUS FUTURE AVAILABILITY OF SERVICE FOR THIS SYSTEM. THE SERVICING SHALL BE PROVIDED BY A FACTORY TRAINED SERVICE REPRESENTATIVE.

F. PROVIDE TECHNICAL INSTRUCTIONS ON TROUBLE-SHOOTING, MAINTENANCE AND ALL FDNY-REQUIRED DAILY AND YEARLY TESTING DURING THE TERM OF THE MSW PACKAGE. THIS INSTRUCTION SHALL TAKE PLACE DURING THE SCHEDULED PREVENTIVE MAINTENANCE PERIODS.

G. THE MSW PACKAGE TERM PERIOD SHALL TAKE EFFECT WITH OWNER'S ACCEPTANCE OF THE ARCS INSTALLATION.

H. SUBMIT A LETTER OF APPROVAL OF THE INSTALLATION FROM THE LOCAL CODE AUTHORITY BEFORE REQUESTING FINAL ACCEPTANCE OF THE SYSTEM.

1.7 TOOLS AND SPARE PARTS

A. ALL SPECIAL TOOLS AND SPARE PARTS REQUIRED FOR OPERATION AND MAINTENANCE OF EQUIPMENT SHALL BE FURNISHED AND DELIVERED TO THE OWNER OR HIS REPRESENTATIVES, AND A RECEIPT OBTAINED PRIOR TO OR AT THE TIME OF INSTRUCTIONS TO OPERATING PERSONNEL.

B. A LIST OF THE SPECIFIED TOOLS AND SPARE PARTS TO BE SUPPLIED SHALL BE DETAILED IN THE TECHNICAL PROPOSAL.

2 PRODUCTS AND SERVICES

2.1 ACCEPTABLE MANUFACTURERS

A. BRING LISTED HEREIN AS AN ACCEPTABLE MANUFACTURER DOES NOT PERMIT TO MANUFACTURER TO PROVIDE STANDARD MANUFACTURED EQUIPMENT WHICH DOES NOT COMPLY WITH THE PERFORMANCE AND/OR PHYSICAL CHARACTERISTIC REQUIREMENT OF THE CONTRACT DOCUMENTS.

B. ALL SUBSTITUTIONS MUST BE IDENTIFIED IN THE BASE BID AS A VOLUNTARY DEDUCT ALTERNATE, AND MUST BE ACCOMPANIED BY A LETTER OF EQUIVALENCY CERTIFYING THE PRODUCTS EQUIVALENCY IN ALL PERFORMANCE AND PHYSICAL CHARACTERISTICS TO THE PRODUCTS LISTED HEREIN. THE PROPOSED SUBSTITUTIONS SHALL BE INCLUSIVE OF ALL COST AND PHYSICAL IMPLICATIONS THROUGH THE PROJECT. UNDER NO CIRCUMSTANCES SHOULD THE SUBSTITUTION RESULT IN ADDED COST TO THE PROJECT. SHOULD THE SUBSTITUTION BE APPROVED NEITHER THE PROJECT SPECIFICATIONS NOR THE CONTRACT DOCUMENTS WILL BE REVISED TO REFLECT THE SUBSTITUTION.

C. IF IT COMPLIES WITH THE CONTRACT DOCUMENTS, A DEDICATED RADIO CONSOLE (DRC) FROM NAMSNET OR EQUIVALENT.

D. IF IT COMPLIES WITH THE CONTRACT DOCUMENTS, A RADIO AMPLIFICATION UNIT (RAU) FROM NAMSNET OR EQUIVALENT.

E. IF IT COMPLIES WITH THE CONTRACT DOCUMENTS, CABLING AND ANTENNA PLANT (CAP) COMPONENTS FROM THE FOLLOWING MANUFACTURERS WILL BE ACCEPTABLE:
1. NAMSNET
2. CELLULAR SPECIALTIES
3. COMMSCOPE/ANDREWS
4. COMTELCO
5. HANSEN
6. LAIRD/ANTENEX
7. MAXRAD/PCTEL
8. MECA
9. MICROLAB
10. RFS
11. TELEWAVE
12. TRILOGY COMMUNICATIONS

2.2 GENERAL

A. THIS CONTRACTOR DESIGN, FURNISH, INSTALL, CERTIFY AND PLACE IN OPERATING CONDITION A COMPLETE AUXILIARY RADIO COMMUNICATION SYSTEM. THE SYSTEM SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL CONTROL EQUIPMENT INCLUDING DEDICATED RADIO CONSOLE(S), RADIO AMPLIFICATION UNIT(S), ANTENNAE, COAXIAL CABLE, COMMUNICATIONS AND CONTROL CABLE, RADIATING COAXIAL CABLE, TERMINATIONS, RESISTIVE LOADS, POWER SUPPLIES, HARDWARE, SOFTWARE, CONDUIT, WIRE FITTINGS, AND ALL OTHER ACCESSORIES REQUIRED TO MEET CODE AND PROVIDE A COMPLETE AND OPERABLE SYSTEM WHETHER OR NOT SPECIFICALLY EXPRESSED HEREIN.

B. PROVIDE "ENGINEER OF RECORD" FOR SYSTEM ENGINEERING AND CERTIFICATION.

C. OBTAIN A COPY OF THE FDNY TECHNICAL DOCUMENTS FOR ITS SPECIFIC REQUIREMENTS AND INTEGRATE INTO THE DESIGN OF THE SYSTEM, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. FREQUENCIES REQUIRED
2. MAXIMUM TIME DOMAIN INTERFERENCE
3. UNIT ID AND EMERGENCY ALERT SIGNALING
4. DRC SPECIFICATIONS
5. INSTALLATION SPECIFICATIONS
6. TEST EQUIPMENT SPECIFICATIONS
7. OTHER SUPPORTING TECHNICAL INFORMATION NECESSARY TO DIRECT SYSTEM DESIGN

2.3 FILING

A. PREPARE AND FILE AS ENGINEER OF RECORD THE NYC DEPARTMENT OF BUILDINGS FORM "PW1" FOR JOB PERMIT APPLICATION.

B. PREPARE AND FILE AS ENGINEER OF RECORD THE NYC FIRE PREVENTION FORM "TM1" FOR SYSTEM REVIEW.

C. PREPARE AND FILE AS ENGINEER OF RECORD AN ADDITIONAL NYC FIRE PREVENTION FORM "TM1" FOR CERTIFICATION TEST RESULT REVIEW.

D. PREPARE AND FILE AS ENGINEER OF RECORD THE NYC DEPARTMENT OF BUILDINGS FORM "B45M" AND ANY ADDITIONAL FILINGS TO REQUEST FIRE PREVENTION INSPECTION OF INSTALLATION AND APPROVAL.

E. BUILDING OWNERSHIP IS TO BE PROVIDED WITH COPIES OF ALL FORMAL SUBMITTALS AND CORRESPONDENCE. INCLUDING BUT NOT LIMITED TO:
1. SYSTEM DESIGN NARRATIVE
2. DETAILED STATEMENT OF OPERATIONS
3. SHOP DRAWINGS FOR INSTALLATION
4. AS BUILT DRAWINGS
5. CERTIFICATION TEST REPORT(S)
6. CERTIFICATION TEST DRAWING(S)

2.4 POWER SUPPLY

A. SYSTEM POWER SUPPLIES SHALL BE PROVIDED, INCLUDING NECESSARY TRANSFORMER RECTIFIERS, REGULATORS, FILTERS AND SURGE PROTECTION TO RENDER THE SYSTEM IMPERVIOUS TO ANY VARIATION IN INPUT POWER QUALITY, INCLUDING SURGES, TRANSIENTS, UNDER VOLTAGE, LINE NOISE, HARMONICS, ETC., WHETHER ORIGINATING FROM THE BUILDING PRIMARY POWER OR GENERATOR POWER REQUIRED FOR SYSTEM OPERATION.

B. PRIMARY POWER SUPPLY: POWER SHALL BE DERIVED FROM THE SAME SOURCE AS THE FIRE ALARM AND DETECTION SYSTEM. THE COMPONENTS SHALL BE SIZED AS REQUIRED FOR THE FULL LOAD REQUIREMENT OF ALL SYSTEMS SEVERED FROM THIS SOURCE.

C. SIZE ALL WIRING BASED ON EXPECTED MAXIMUM LOAD SO AS NOT TO EXCEED THE MAXIMUM VOLTAGE DROP REQUIRED WITHIN THE NYCEC FOR FEEDERS AND BRANCH CIRCUITS.

D. SECONDARY POWER SUPPLY: WHEN A SECONDARY POWER SOURCE IS AVAILABLE, THE SYSTEM SHALL DERIVE POWER FROM THAT ADDITIONAL SOURCE. THE COMPONENTS SHALL BE SIZED AS REQUIRED FOR THE FULL LOAD REQUIREMENT OF ALL SYSTEMS SEVERED FROM THIS SOURCE.

E. LOCAL BATTERY BACKUP: PROVIDE LOCALIZED BATTERY BACKUP DERIVED, UTILIZING SEALED GELLED ELECTROLYTE BATTERIES. THE BATTERY SUPPLY SHALL BE SIZED TO PROVIDE CONTINUOUS, NORMAL, OPERATION FOR ALL SYSTEM COMPONENTS IN ACCORDANCE WITH SECTION 760.41 OF THE NEW YORK CITY ELECTRICAL CODE.

F. POWER SOURCE: ALL ARCS COMPONENTS SHALL SEAMLESSLY SWITCH FROM POWER SOURCE, WITH NO INTERRUPTION OR REDUCTION OF OPERATING CAPABILITES, ACCORDING TO THE FOLLOWING SOURCE PREFERENCE:
1. PRIMARY POWER SUPPLY
2. SECONDARY POWER SUPPLY
3. BATTERY BACKUP

G. RECHARGE CYCLE: THE BATTERY BACKUP POWER SUPPLY SHALL BE FULLY CHARGED WITHIN FORTY EIGHT (48) HOURS OF OPERATION.

2.5 DEDICATED RADIO CONSOLE

A. THE RADIO CONSOLE SHALL BE MOUNTED ADJACENT, OR IN CLOSE PROXIMITY TO, THE FIRE ALARM CONTROL PANEL AND SHALL SIMULTANEOUSLY CONTROL TWO (2) SETS OF FREQUENCIES FOR A REPEATING BASED SYSTEM AND HAVE SELECTABLE CONTROL OF AT LEAST TWO (2) SIMPLEX FREQUENCIES.

B. THE DEDICATED RADIO CONSOLE SHALL BE HARDWIRED TO WITH SUPERVISORY AND PRIORITY INTERRUPT CONTROL OF THE RADIO AMPLIFICATION UNITS.

C. THE DEDICATED RADIO CONSOLE SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES:
1. STANDBY
2. MONITORING, RECEIVING SIGNAL ONLY.
3. ACTIVE, TRANSMITTING AND RECEIVING SIGNAL, WITH SUPERVISORY CONTROL.

D. PROVIDE A 2642 KEYED CONTROL SWITCH, WHICH WILL BE UTILIZED FOR ENERGIZING THE ARCS SYSTEM.

E. DEDICATED RADIO CONSOLE SHALL PROVIDE ANNUNCIATION INDICATING OPERATING STATUS FOR THE FOLLOWING CONDITIONS:
1. NON-CRITICAL FAILURE
2. LOSS OF PRIMARY POWER SOURCE
3. CRITICAL FAILURE
4. LOW BATTERY
5. ANTENNA MALFUNCTION
6. SIGNAL AMPLIFICATION FAILURE
7. TAMPER SWITCH

2.6 RADIO AMPLIFICATION UNIT

A. THE FIRE DEPARTMENT IN-BUILDING AUXILIARY RADIO COMMUNICATION SYSTEM SHALL BE CAPABLE OF TRANSMITTING ALL FIRE DEPARTMENT FREQUENCIES ASSIGNED TO THE JURISDICTION AND BE CAPABLE OF USING ANY MODULATION TECHNOLOGY.

B. THE FDNY CHANNEL FREQUENCIES WILL BE PROVIDED UPON AGREEMENT TO INSTALL REPEATER.

C. THE REPEATER/SIMPLEX SYSTEM SHALL ONLY BE CAPABLE OF OPERATING IN 12.5 KHZ (ANALOG AND DIGITAL) OPERATIONS.

D. THE SYSTEM SHALL BE CAPABLE OF UPGRADE TO ALLOW FOR INSTANCES WHERE THE JURISDICTION CHANGES OR ADDS SYSTEM FREQUENCIES, IN ORDER TO MAINTAIN RADIO SYSTEM COVERAGE AS ORIGINALLY DESIGNED.

E. REPEATING (CH. 11 AND CH. 12)
1. SIGNALING TRANSMITTED BY THE PORTABLE RADIOS FOR ID AND EMERGENCY ALERT SIGNALS SHALL PASS THROUGH THE REPEATER AND REBROADCAST TO ALL RECEIVING RADIOS IN THE COVERAGE UMBRELLA OF THE BUILDING'S CAP.

G. NO AMPLIFICATION SYSTEM INSTALLED IN THE BUILDING SHALL CAUSE INTERFERENCE TO THE AUXILIARY RADIO COMMUNICATIONS SYSTEM. THE BUILDING OWNER SHALL SUSPEND OR CORRECT ANY OPERATIONS DETECTED TO CAUSE INTERFERENCE.

H. RADIO AMPLIFICATION UNIT SHALL BE FCC CERTIFIED PRIOR TO INSTALLATIONS.

I. ALL RADIO AMPLIFICATION UNIT SHALL HAVE BOTH DIGITAL AND ANALOG COMMUNICATIONS COMPATIBILITIES AT THE TIME OF INSTALLATION.

J. THE RADIO AMPLIFICATION UNIT SHALL NOT CAUSE PIM OR TDI INTERFERENCE.

K. THE RADIO AMPLIFICATION UNIT SHALL NOT INJECT POWER INTO THE CAP AT GREATER THAN 2W OR 33DBM.

2.7 CABLING AND ANTENNA PLANT (CAP)

A. BUILDING COVERAGE UMBRELLA: DEFINED AS THE FLOOR AREA AND EXTERIOR STREET LEVEL AREA WHERE FDNY RADIO SIGNAL COVERAGE GENERATED FROM THE BUILDING'S INSTALLED AUXILIARY RADIO COMMUNICATION SYSTEM EQUIPMENT A MINIMUM OF -95DBM SIGNAL STRENGTH REQUIREMENT.

B. CAP SHALL BE ENGINEERED TO LIMIT THE BUILDING COVERAGE UMBRELLA UP TO THE BUILDING PERIMETER WALLS.

C. CAP SHALL BE ENGINEERED TO PROVIDE THE FOLLOWING COVERAGE TO EACH BUILDING FLOOR.
1. RECEIVED SIGNAL STRENGTH INDICATION (RSSI) OF A MINIMUM OF -95DBM TO 95% OF GENERAL BUILDING AREAS.
2. DELIVERED AUDIO QUALITY (DAQ) OF GREATER THAN 3.4 THROUGHOUT THE COVERAGE AREA.

D. CAP SHALL BE ENGINEERED TO PROVIDE THE FOLLOWING COVERAGE TO BUILDING CRITICAL AREAS.
1. RECEIVED SIGNAL STRENGTH INDICATION (RSSI) OF A MINIMUM OF -95DBM TO 100% OF BUILDING CRITICAL AREAS.
2. DELIVERED AUDIO QUALITY (DAQ) OF GREATER THAN 3.4 THROUGHOUT THE COVERAGE AREA.

2.8 UPLINK/DOWNLINK RADIO PROPAGATION

A. UPLINK, THE FIRE FIGHTER PORTABLE RADIO TO THE RADIO AMPLIFICATION UNIT, SHALL BE GREATER THAN THE DOWNLINK, THE RADIO AMPLIFICATION UNIT TO THE FIRE FIGHTER PORTABLE RADIO.
1. THE PORTABLE RADIO IS EXPECTED TO TRANSMIT AT A MINIMUM OF 2W, OR 33DBM.
2. THE RADIO AMPLIFICATION UNIT MAY NOT GENERATE SIGNAL AT A LEVEL GREATER THAN 2W OR 33DBM.

2.9 SYSTEM MONITORING

A. THE ARCS SYSTEM SHALL BE CAPABLE OF MONITORING THE FOLLOWING CONDITIONS:
1. STANDBY MODE
2. MONITOR MODE
3. ACTIVE MODE
4. AC POWER
5. BATTERY BACKUP
6. LOW BATTERY
7. POWER SUPPLY FAULT
8. RAU FAULT
9. CAP FAULT
10. DOOR OPEN
11. HIGH TEMPERATURE
12. WATER DETECTED

B. STATUS REPORTS: UPON COMMAND FROM AN OPERATOR OF THE SYSTEM, A STATUS REPORT WILL BE GENERATED AND PRINTED, LISTING ALL SYSTEM STATUS.

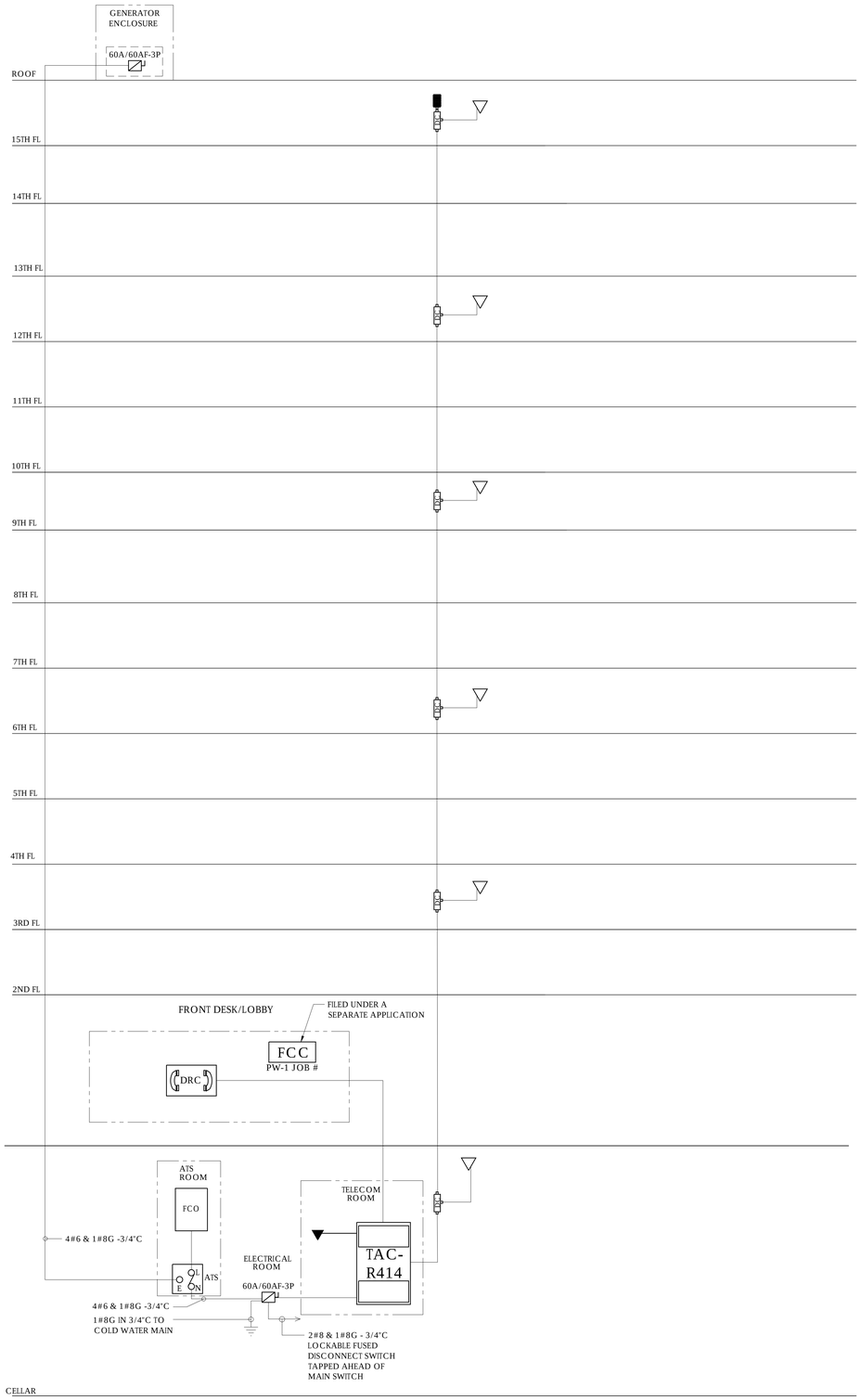
C. THE SYSTEM WILL AUTOMATICALLY POLL ITSELF DAILY, CAPABLE OF SENDING SMTP BASED ALERTING TO A DESIGNATED EMAIL ADDRESS.

D. THE ARCS SYSTEM SHALL BE CAPABLE OF TRANSMITTING SYSTEM STATUS TO A UL-LISTED CENTRAL STATION OR MANUFACTURER VIA INTERNET PROTOCOL.

2.10 CERTIFICATION TESTING

A. CONTRACTOR WILL PERFORM ALL TESTING REQUIRED BY FIRE PREVENTION TO CERTIFY THE BUILDING AS ARCS CERTIFIED.

B. PRIOR TO THE COMMENCEMENT OF THE CERTIFICATION TEST, CONTRACTOR WILL DEVELOP AND SUBMIT AN ACCEPTED TEST PROCEDURE (ATP) FOR EACH OF THE FOL



AUXILIARY RADIO COMMUNICATION SYSTEM

N.T.S.

SYMBOL LIST

DC	DIRECTIONAL COUPLER, VALUE TO BE DETERMINED
	RY012NQ, POLOMARCONI ANTENNA
2-WAY	EQUAL POWER DIVIDER
	RJ-45 ETHERNET CONNECTION TO WAN
FCO	FUSED CUT-OUT PANEL
ATS	AUTOMATIC TRANSFER SWITCH
FDS	FUSED DISCONNECT SWITCH
	TERMINATION LOAD
DRC	TowerIQ TAC-H514 DEDICATED RADIO CONSOLE
TAC-R414	TowerIQ TAC-R414 RADIO AMPLIFICATION UNIT
FCC	FIRE COMMAND CENTER

CHANNEL CHARACTERISTICS
REPEATING CHANNEL 11 483.0125 MHz DOWNLINK 486.0125 MHz UPNLINK BANDWIDTH 25 KHz
REPEATING CHANNEL 12 484.7625 MHz DOWNLINK 487.7625 MHz UPNLINK BANDWIDTH 25 KHz

NOTES:

1. FIRE ALARM SYSTEM IS FILED SEPARATELY UNDER PW-1 JOB # (WILL BE FILED SEPARATELY).
2. THE PROPOSED ARCS SYSTEM IS A STAND ALONE SYSTEM AND WILL NOT BE SHARED WITH OTHER COMMUNICATION SYSTEMS (HOUSE BUSINESS RADIO, WI-FI, CELLULAR COMMUNICATION ETC.)
3. TOTAL SQUARE FT. XXXXXX SF.
4. THE POWER, THE CONTROL CABLE AND ANTENNA RISER ALL NEED 2 HOURS RATED PROTECTION.

BASIC ELECTRICAL REQUIREMENTS

A. RISER CABLING:
   PRIMARY DISTRIBUTION CABLE FOR R/F POWER IS NOT EXCLUSIVELY INSTALLED VERTICALLY.
B. BRANCH CABLING:
   LAST LEG DISTRIBUTION CABLE FOR R/F POWER. TYPICALLY INSTALLED ON A SINGLE FLOOR AND FEEDS ANTENNAS.
C. CONTROL CABLING: 24PAIR CAT-5E

1. ALL CONTROL CABLING TO BE INSTALLED INSIDE A TWO HOUR RATED SHAFTWAYS.
2. DEDICATED RADIO CONSOLE BY NAMSNET MODEL TAC-H514 OR CURRENT MODEL MUST BE LOCATED IN IMMEDIATE PROXIMITY OF FIRE COMMAND CENTER.
3. ALL RISER CABLING IS ⅞" FOAM DIELECTRIC CABLE TO BE INSTALLED AND SECURED PER MANUFACTURER RECOMMENDATIONS.
4. INSTALLING CONTRACTOR TO DETERMINE FINAL DBM VALUES OF RF COMPONENTS.
5. WHERE RISER AND/OR BRANCH CABLING OS EXPOSED TO GENERAL PUBLIC, MUST BE MECHANICALLY PROTECTED AGAINST ACCIDENTAL AND INTENTIONAL DAMAGE.
6. ALL BRANCH CABLING IS ⅞" FOAM DIELECTRIC CABLE WITH PLENUM RATING TO BE INSTALLED AND SECURED PER MANUFACTURER RECOMMENDATIONS.
7. RADIO AMPLIFICATION UNIT BY NAMSNET MODEL TAC-R414 OR CURRENT MODEL. RAU MUST BE LOCATED IN 2 HOUR RATED ROOM.
8. ALL COAXIAL CONNECTORS ARE TO BE N-TYPE CONNECTORS.
9. WHERE ANY ELECTRIC AND R/F CONNECTION IS MADE, PHYSICAL ACCESS MUST BE AVAILABLE.
10. RAU REQUIRES A L5 30R ELECTRICAL CONNECTION TO FIRE ALARM , WITH A FIRE DEPARTMENT LABELED LOCKABLE FUSE DISCONNECT. PROVIDED BY OTHERS.
11. ALL INSTALLED CABLING AND COMPONENTS, WHERE PHYSICALLY ACCESSIBLE ARE TO BE LABELED "FDNY COMMUNICATIONS USE," AT A MINIMAL INTERVAL OF 6'.
12. RAU MUST BE PROVIDED WITH INTERNET CONNECTIVITY VIA RJ-45 RECEPTACLE. PROVIDED BY OTHERS.
13. INTERNET CONNECTIVITY IS NOT REQUIRED DURING OPERATIONAL USE OF SYSTEM.
14. REPEATER INSIDE TAC-R414 BY TAIT MODEL# P25 TB9100 WITH 12 HOURS OF LOCALIZED BATTERY BACKUP BUILT-IN.

SYSTEM SHALL BE IN COMPLIANCE WITH NYC BUILDIG CODE 2014
APPENDIX Q SECTION 24.5.2.5.5.3
ALL THE ARCS CABLES PROVIDED UNLESS IT FALLS UNDER THE EXCEPTION SHALL BE PROVIDED WITH THE REQUIRED 2 HOURS PROTECTION.

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ARCHITECT
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P 914.305.5679

MEP
RODKIN CARDINALE A DIVISION OF SKYLINE ENGINEERING
224 WEST 29TH STREET
NEW YORK, NY 10001
P 212.239.1892

KEY PLAN

NO.	DESIGN & CONSTRUCTION SUBMISSIONS	DATE
x		xx.xx.2017

NO.	REGULATORY SUBMISSIONS	DATE
1.	DD SUBMISSION	04.06.18

DOB APPROVAL

TRUE

PROJECT

BETANCES VI DEVELEOPMENT

472 - 474 WILLIS AVE. BRONX, NY

AUXILIARY RADIO COMMUNICATION SYSTEM SYMBOL LIST & RISER LINE DIAGRAM

SEAL & SIGNATURE

DATE:	06 APRIL, 2018
PROJECT NO:	RC 1730
SCALE:	AS NOTED
DRAWING BY:	I.F.
CHECKED BY:	B.B.
DWG NO:	ARCS-011.00
NYC DOB NUMBER:	

TOWERIQ
SIGNAL WHERE IT MATTERS

TAC-H514
FDNY Dedicated Radio Console



Key Features

- Simultaneous Control of FDNY Ch. 11 and Ch. 12
- Dedicated Control & Supervision of Each Channel
- Enabled via a 2642 Elevator Recall Key
- Supports Standby, Monitor and Active Operations
- Voice Override Control of Channels
- Continual Code Required Indication of System State
- Handset or Speakerphone Operation
- Parallel Operation with Multiple FCCs
- Swappable Components for Easy Maintenance
- Works with the TAC-R414 Radio Amplification Unit

A.R.C.S Compliant Solution

The TAC-H514 Dedicated Radio Console (DRC) is TowerIQ's code compliant interface solution for New York City's Auxiliary Radio Communication System (ARCS) high-rise building requirements.

The New York City Fire Department requires effective two-way radio communications in faculties under their jurisdiction. When utilized with a TAC-R414 Radio Amplification Unit the TAC-H514 Dedicated Radio Console provides New York City's First Responders with the communications and situational awareness required for a safe and effective response.

Point of Interface

The TAC-H514 Dedicated Radio Console is installed at the Fire Command Center to provide the incident commander with complete control and situational awareness of the facility's Auxiliary Radio Communication Systems (ARCS). As with a Fire Alarm Control Panel, the Dedicated Radio Console is a critical tool in insuring the continued safety of a facility's occupants by providing First Responders with a functional and healthy communications tool.

Drop-In Compliance

Designed to work in conjunction with the TowerIQ TAC-R414 Radio Amplification Unit (RAU), the TAC-H514 is a state-of-the art assembly that utilizes a single cable to provide all of its power and logic.

Secured and energized by the use of separate 2642 elevator recall keys, the system can simultaneously operate on FDNY Tactical Channels 11 & 12 with independent control, in either Monitor Mode, for interference hunting or Active Mode. The dual cradled phones with volume controllable handsets and PTT (push-to-talk) speakerphones allow the TAC-H514 to provide the incident commander with multiple means of use to best support life-safety operations.

Expandable Deployments

All Tactical Series components are engineered with expandability in mind and TAC-H514 is no exception. Should a second fire command center or remote annunciator position exist inside the building, additional TAC-H514 Dedicated Radio Consoles can be deployed to satisfy any regulatory requirements.

Continued Compliance

As new requirements are introduced to the relatively new ARCS requirement, TowerIQ is pleased to provide continued to technical support and software upgrades to its Tactical Series of equipment. Our software defined devices with LCD displays provide a simple upgrade path for any future requirements.

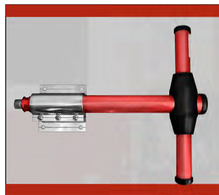
TOWERIQ
37-18 Northern Boulevard, Suite 421
Long Island City, NY 11101
Toll Free: (844) 626-7638

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Rev: 17-2.3

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Tactical Series Dipole Antenna

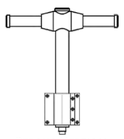


Key Features

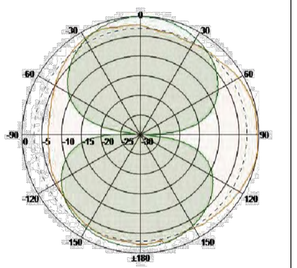
- Optimized for 450-512 MHz Frequencies
- Made for First Responders, Red, and Engraved Warnings
- Half-Wave Dipole, High Gain, Requires Less Antennas
- Includes Easy to Install Wall Bracket
- Sealed to Protect against Environmental Damage
- N-Female Connector for Easy Install



Strong Horizontal Coverage



Strong Vertical Coverage



Information contained herein is subject to change without notice. Please contact TowerIQ Inc. for latest information.

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Rev: 18-2.3

Product Data Sheet ICA12-50JPL

RFS

1/2" ClearFill®Line Plenum-Rated Air-Dielectric Coaxial Cable for In-Building Applications

Product Description

ClearFill®Line 1/2" low loss air dielectric cable, Plenum-rated, CMP

Application: Plenum In-Building



1/2" Plenum-Rated In-Building Cable

Features/Benefits

- **Supports Multiple RF Signals**
- **Complete Shielding**
  The solid outer conductor of the ClearFill®Line coaxial cable creates a continuous RFI/EMI shield that minimizes system interference.
- **Outstanding Intermodulation Performance**
  RFS coaxial cable?s solid inner and outer conductors virtually eliminate intermods. Intermodulation performance is also confirmed with state-of-the-art equipment at the RFS factory.
- **Wide Range of Applications**
  Typical areas of application are: feedlines for plenum-space installations within occupied buildings or structures.

Technical Features

Structure			
Inner conductor:	Copper-Clad Aluminum Wire	[mm (in)]	4.8 (0.19)
Dielectric:	Extruded Polyethylene	[mm (in)]	11.8 (0.464)
Outer conductor:	Corrugated Copper	[mm (in)]	13.8 (0.54)
Jacket:	Plenum Rated / color blue	[mm (in)]	15.93 (0.627)
Mechanical Properties			
Weight, approximately		[kg/m (lb/ft)]	0.37 (0.25)
Minimum bending radius, single bending		[mm (in)]	125 (5)
Minimum bending radius, repeated bending		[mm (in)]	254 (10)
Bending moment		[Nm (lb-ft)]	4.1 (3)
Max. tensile force		[N (lb)]	1112 (250)
Recommended / maximum clamp spacing		[m (ft)]	0.5 / 0.8 (1.8 / 3)
Electrical Properties			
Characteristic impedance		[Ω]	50 +/- 1
Relative propagation velocity		[%]	91
Capacitance		[pF/m (pF/ft)]	76 (23.2)
Inductance		[µH/m (µH/ft)]	0.19 (0.058)
Max. operating frequency		[GHz]	6
Jacket spark test RMS		[V]	8000
Peak power rating		[kW]	40
RF Peak voltage rating		[V]	2000
DC-resistance inner conductor		[Ω/km (Ω/1000ft)]	1.48 (0.45)
DC-resistance outer conductor		[Ω/km (Ω/1000ft)]	1.9 (0.58)
Recommended Temperature Range			
Storage temperature		[°C (°F)]	-40 to 85 (-40 to 185)
Installation temperature		[°C (°F)]	-20 to 60 (-4 to 140)
Operation temperature		[°C (°F)]	-40 to 85 (-40 to 185)
Other Characteristics			
Fire Performance:	Flame Retardant, Plenum Rated		
Regulatory Compliance:	NEC Article 800 Communication Circuits ETL Listed to UL444 Canadian CSA C.22.2#FT6		
VSWR Performance:	24.3 (1.13) @ 806-960 MHz+0z /+24.3 (1.13) @ 1700-2150 MHz	18 (1.228) in other specified bands	
Other Options:			

All information contained in the present datasheet is subject to confirmation at time of ordering

RFS The Clear Choice ® | **ICA12-50JPL** | **Rev: E / 17.Jun.2015**

Please visit us on the internet at http://www.rfsworld.com/ — Radio Frequency Systems

Microlab

Tappers, DN-x4FN series

Multi-Band, Lightweight, Unequal Splitters
350 - 5,850 MHz, N connectors
Rev. C

Now with coverage to 5,850 MHz

- Split ratios from 1000:1 to 2:1
- Tetra, PMR, Cellular, UMTS, WiFi & WiMAX
- Guaranteed Low PIM
- 500 W Avg Power Rating
- Minimal RF Insertion Loss
- RoHS compliant
- High Reliability, IP67



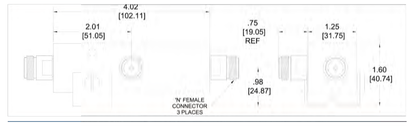
DN-44FN 3:1 Tapper

Microlab DN-x4FN series of Tappers unevenly split high power cellular signals in fixed ratios from 1000:1 to 2:1 with minimal reflections or loss over the key wireless bands in the range 350 - 5,850 MHz, (there is no coupling 1550 to 1650 MHz). The innovative asymmetric design ensures an excellent input VSWR and coupling flatness across the specified bands, even down to a 2:1 split.

The lightweight design allows easy attachment to a wall using the supplied bracket. Designed with only a few solder joints and an air dielectric, loss is minimized and reliability enhanced. See DN-x4FD and DN-x4FC series for similar Tappers with 7-16 and 4.1-9.5 DIN connectors. (07/14)

Frequency Bands:	Bands specified below
Dissipative Loss:	<0.1 dB (main line)
Power Rating:	500W avg., 3 kW peak
Impedance:	50Ω nominal
Intermod. (PIM):	<-153 dBc, (2 x 20W)
Environment:	IP67, -35°C to +75°C
Connectors:	N(f) trimetal
Housing Finish:	Passivated Aluminum
Weight, nom:	14 oz (380 g)
Mounting:	Bracket supplied

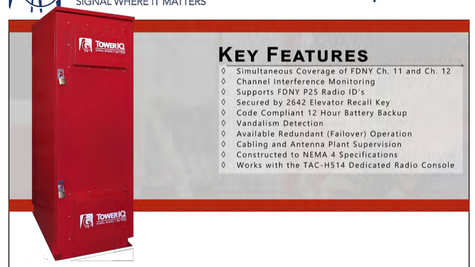
Model Number	Ratio, nom. (dB Inequality between Outputs)	Output Split Main/Branch dB	Branch Flatness ref. to Input Level, incl Loss, dB 350 - 380 MHz	380 - 698 - 520 MHz 960 MHz	1710 - 2700 MHz	3500 - 4500 MHz	4900 - 5850 MHz	Input VSWR max. 700 - 2500 MHz	350 - 5850 MHz
DN-34FN	2:1/3.0dB	-1.8/-4.8	+0/-1.3	+0.3/-1.0	± 0.3	± 0.3	+0/-1.5	± 0.4	1.3:1	1.4:1
DN-44FN	3:1/4.8dB	-1.3/-6.1	+0/-1.3	+0.3/- 0.8	± 0.3	± 0.3	+0/-1.5	± 0.4	1.2:1	1.3:1
DN-54FN	4:1/6.0dB	-1.0/-7.0	+0/-1.3	+0.3/-0.8	± 0.3	± 0.3	+0/-1.5	± 0.4	1.2:1	1.3:1
DN-64FN	6:1/8.0dB	-0.7/-8.6	+0/-1.3	+0.3/-0.5	± 0.3	± 0.3	+0/-1.5	± 0.4	1.2:1	1.3:1
DN-74FN	10:1/10dB	-0.4/-10.4	+0/-1.3	+0.3/-0.5	± 0.3	± 0.3	+0/-1.5	± 0.5	1.2:1	1.3:1
DN-84FN	20:1/13dB	-0.2/-13.2	± 1.0	± 0.5	± 0.4	± 0.4	± 0.5	± 0.5	1.2:1	1.3:1
DN-94FN	30:1/15dB	-0.1/-15.1	± 1.0	± 0.8	± 0.5	± 0.5	+0/-1.5	± 0.8	1.2:1	1.3:1
DN-04FN	100:1/20dB	-0.1/-20.1	± 1.0	± 1.0	± 0.8	± 0.5	+2/-0	+4/-0	1.2:1	1.2:1
DN-14FN	1000:1/30dB	-0.1/-30.1	± 1.0	± 1.5	± 0.8	± 0.5	+2/-1	+4/-0	1.2:1	1.2:1



Microlab, A Wireless Telecom Group Company, 25 Eastmans Road, Parsippany, NJ 07054
Tel: (973) 386-9696 • sales@microlab.fxr.com • www.microlab.fxr.com • Fax: (973) 386-9191

TOWERIQ
SIGNAL WHERE IT MATTERS

TAC-R414
FDNY Radio Amplification Unit



Key Features

- Simultaneous Coverage of FDNY Ch. 11 and Ch. 12
- Channel Interference Monitoring
- Supports FDNY P25 Radio ID's
- Secured by 2642 Elevator Recall Key
- Code Compliant 12 Hour Battery Backup
- Vandalism Detection
- Available Redundant (Failover) Operation
- Cabling and Antenna Plant Supervision
- Constructed to NEMA 4 Specifications
- Works with the TAC-H514 Dedicated Radio Console

A.R.C.S Compliant Solution

The TAC-R414 Radio Amplification Unit (RAU) is TowerIQ's code compliant base station solution for New York City's Auxiliary Radio Communication System (ARCS) high-rise building requirements.

The New York City Fire Department requires effective two-way radio communications in faculties under their jurisdiction. When utilized with a TAC-H514 Dedicated Radio Console the TAC-R414 Radio Amplification Unit provides New York City's First Responders with the communications and situational awareness required for a safe and effective response.

Reliable FDNY Coverage

As a key component to in-building life safety operations, the TAC-R414 Radio Amplification Unit (RAU) is constructed to NEMA 4 specifications and robustly designed for durability and survivability to provide continued operational use under the most extreme conditions.

Drop-In Compliance

The TAC-R414 provides for the simultaneous operation of FDNY High-Rise Tactical Channels 11 & 12. All system required logic, amplification, filtering and encryption come preconfigured with the TAC-414 and conveniently housed in a single, made for life-safety package. Complete with 12 hours of localized battery backup built-in, the RAU requires only a single power source (via fire alarm ATS) to power the entire ARCS system.

Expandable Deployments

The TAC Series is designed with expandability in mind, allowing a second TAC-R414 DRC for backup/automatic failover use.

Continued Compliance

As new requirements are introduced to the relatively new ARCS requirement, TowerIQ is pleased to provide continued to technical support and software upgrades to its Tactical Series of equipment. Our software defined devices provide a simple upgrade path for any future requirements.

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PRODUCT DATASHEET
NF-LCF12-D01

RADIO FREQUENCY SYSTEMS
The Clear Choice®

RFS

N Female Connector for 1/2" Coaxial Cable, OMNI FIT™ Premium, Straight, Polymer claw and compression sealing

OMNI FIT™ high performance connectors are designed for use with both CELLFLEX® (copper) and CELLFLEX® Lite (aluminium) cables. They are designed specifically to provide the highest quality connector-cable interface while simplifying and speeding up connector attachment. All RFS connectors are fully tested for mechanical and electrical compliance to industry specifications.
The 7-16 connector is the most rugged RF connection meeting all requirements even under the most severe environmental conditions. Sealing against outer conductor and jacket by means of the polymer claw and 360° compression fit. Multifunctional, self-lubricating HighTech polymer assembly locks on cable corrugation, avoids electrochemical potential differences and compression-fits to the jacket.



OMNI FIT™ Premium Connectors

FEATURES / BENEFITS

- Ultra high PIM performance i.e. reduced interference leading to high customer satisfaction
- Two-piece design i.e. visual inspection of interlocking leads to improved installation security
- OMNI FIT™ concept i.e. streamlined order management and reduced stock level
- Watertight sealing in mated and unmated condition, i.e. reduced efforts during installation and improved security during operation
- Unique NiTin plating i.e. extreme resistance against corrosion even under hardest climatic and environmental circumstances
- Multi-thread (Tristart) design i.e. simplified and accelerated tightening process
- RoHS (EU) and CRoHS (China) compliant i.e. can be used on a global basis

Technical Features

GENERAL SPECIFICATIONS		
Transmission Line Type		Coaxial Cable
Cable Size		1/2"
Cable Type		Foam Dielectric
Model Series		LCF12-50 Series
Connector Interface		N
Connector Type		OMNI FIT™ PREMIUM Straight
Sealing Method		Polymer claw + 360° Compression
Gender		Female
ELECTRICAL SPECIFICATIONS		
Nominal Impedance	Ohm	50
3rd Order IM Product @ 2x20 Watts	dBc	-156 ; typical -162
Maximum Frequency	GHz	6.0
VSWR, Return Loss	VSWR (dB)	0 < f ≤ 1.0 GHz: 1.02 (40.0) 1.0 < f ≤ 2.7 GHz: 1.03 (36.6) 2.7 < f ≤ 3.7 GHz: 1.06 (30.7)
MECHANICAL SPECIFICATIONS		
Plating Outer/Inner		NiTin/Silver
Length	mm (in)	57.1 (2.25)
Outer Diameter	mm (in)	29 (1.02)
Weight	kg (lb)	0.1 (0.22)
Inner Contact Attachment		Basket
Outer Contact Attachment		360° clamping
ACCESSORIES		
Wrench size front	mm (in)	27 (1-1/16)
Wrench size rear	mm (in)	27 (1-1/16)
Trimming Tool		TRIM-SET-L12-D01 TRIM-LCF12-D01-A
TESTING AND ENVIRONMENTAL		
Waterproof Level		IP68

NF-LCF12-D01 REV: F REV DATE: 29.Feb.2016 www.rfsworld.com

All information contained in the present datasheet is subject to confirmation at time of ordering

PRODUCT DATASHEET
NM-LCF12-D01

RADIO FREQUENCY SYSTEMS
The Clear Choice®

RFS

N Male Connector for 1/2" Coaxial Cable, OMNI FIT™ Premium, Straight, Polymer claw and compression sealing

OMNI FIT™ high performance connectors are designed for use with both CELLFLEX® (copper) and CELLFLEX® Lite (aluminium) cables. They are designed specifically to provide the highest quality connector-cable interface while simplifying and speeding up connector attachment. All RFS connectors are fully tested for mechanical and electrical compliance to industry specifications.
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OMNI FIT™ Premium Connectors

FEATURES / BENEFITS

Ultra high PIM performance i.e. reduced interference leading to high customer satisfaction

Technical Features

GENERAL SPECIFICATIONS		
Transmission Line Type		Coaxial Cable
Cable Size		1/2"
Cable Type		Foam Dielectric
Model Series		LCF12-50 Series
Connector Interface		N
Connector Type		OMNI FIT™ PREMIUM Straight
Sealing Method		Polymer claw + 360° Compression
Gender		Male
ELECTRICAL SPECIFICATIONS		
Nominal Impedance	Ohm	50
3rd Order IM Product @ 2x20 Watts	dBc	-156 ; typical -162
Maximum Frequency	GHz	6.0
VSWR, Return Loss	VSWR (dB)	0 < f ≤ 1.0 GHz: 1.02 (40.0) 1.0 < f ≤ 2.7 GHz: 1.03 (36.6) 2.7 < f ≤ 3.7 GHz: 1.06 (30.7)
MECHANICAL SPECIFICATIONS		
Plating Outer/Inner		NiTin/Silver
Length	mm (in)	64.05 (2.52)
Outer Diameter	mm (in)	29 (1.14)
Weight	kg (lb)	0.11 (0.24)
Inner Contact Attachment		Basket
Outer Contact Attachment		360° clamping
ACCESSORIES		
Wrench size front	mm (in)	18
Wrench size rear	mm (in)	26
Trimming Tool		TRIM-SET-L12-D01 TRIM-LCF12-D01-A
TESTING AND ENVIRONMENTAL		
Waterproof Level		IP68

NM-LCF12-D01 REV: F REV DATE: 29.Feb.2016 www.rfsworld.com

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Power Splitters, Dx-67FN series

2, 3 & 4 way in-line Wilkinson Dividers
Low Loss, 380 - 2,700 MHz , N type
Rev. A

$ Saver Product

- 380 - 2,700 MHz Multi-Band Frequency Range
- 5 & 10 W Power Rating
- Low RF Insertion Loss
- 20 dB Isolation
- RoHS compliant
- Low Cost N Design



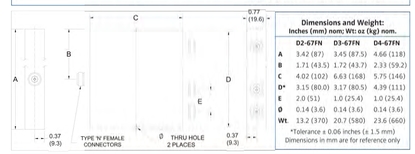
Microlab Model Dx-67FN series of Wilkinson style Power Dividers has been designed for low power applications where output isolation is preferable over lowest possible loss. The wide frequency range of this design allows use with multiband antennas and leaky cable systems.

Lower loss dividers which enhance receive sensitivity and preserve transmitted power are available in the reactive splitters such as Dx-88FN and Dx-88FD series. (01/13)

Bandwidth:	380 - 2,700 MHz
Impedance:	50Ω nominal
Environment:	-30 to +60°C, Indoor
Housing:	Passivated Aluminum
Connectors:	N (f) triplate

Model Number	No. of Ways	Split Loss	Output Isolation	Insertion Loss	Amplitude Balance	VSWR All Ports	Power Rating*
D2-67FN	2	3 dB	>20 dB	<0.8 dB	<0.3 dB	<1.30:1	10W avg.
D3-67FN	3	4.8 dB	>20 dB	<0.9 dB	<1.2 dB	<1.40:1	5W avg.
D4-67FN	4	6 dB	>19 dB	<1.3 dB	<0.6 dB	<1.30:1	10W avg.

*Used as divider into load(s) with VSWR <1.2:1



Dimensions and Weight:
Inches (mm) nom; Wt: oz (kg) nom.

	D2-67FN	D3-67FN	D4-67FN
A	3.42 (87)	3.45 (87.5)	4.66 (118)
B	1.71 (43.5)	1.72 (43.7)	2.33 (59.2)
C	4.02 (102)	6.63 (168)	5.75 (146)
D*	3.15 (80.0)	3.17 (80.5)	4.39 (111)
E	2.0 (51)	1.0 (25.4)	1.0 (25.4)
Ø	0.14 (3.6)	0.14 (3.6)	0.14 (3.6)
Wt.	13.2 (370)	20.7 (580)	23.6 (660)

*Tolerance ± 0.06 inches (± 1.5 mm)
Dimensions in mm are for reference only

Microlab, A Wireless Telecom Group Company, 25 Eastmans Road, Parsippany, NJ 07054
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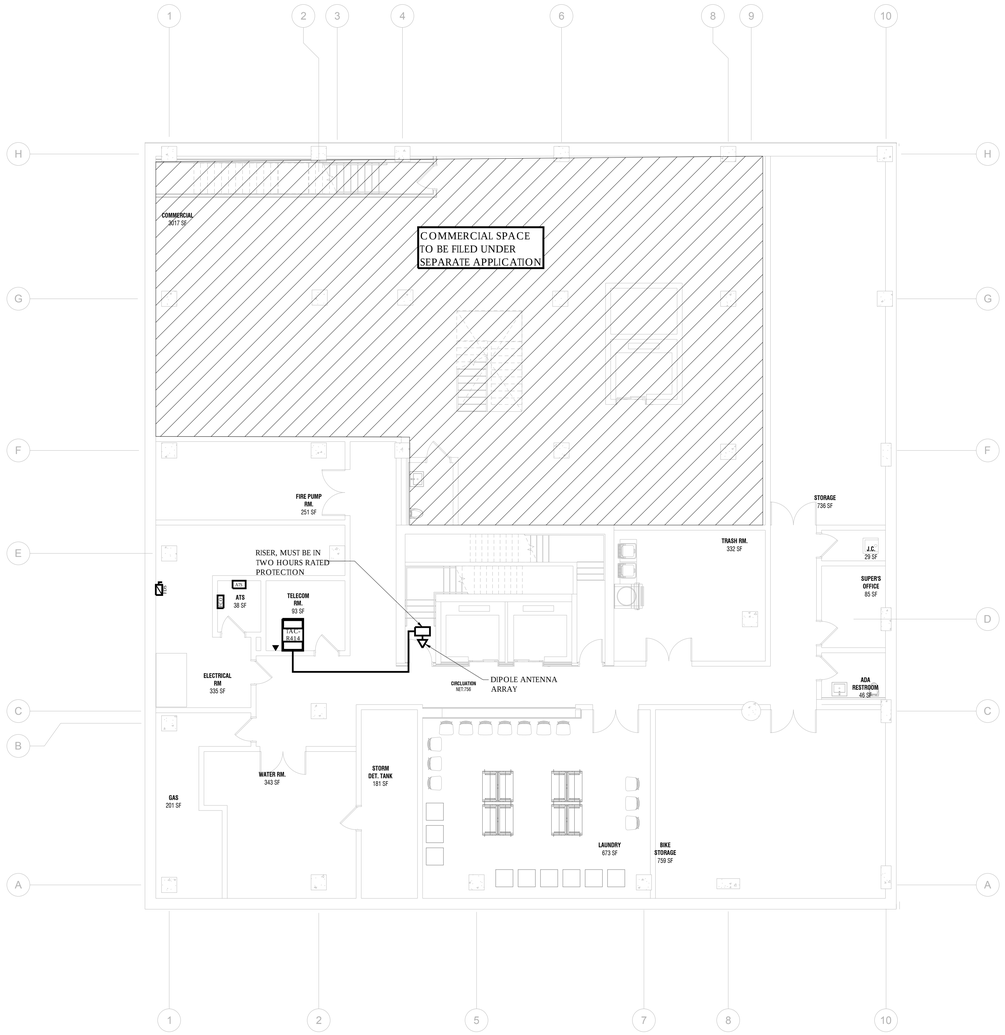
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AUXILIARY RADIO COMMUNICATION SYSTEM DETAILS

SEAL & SIGNATURE

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CELLAR PLAN

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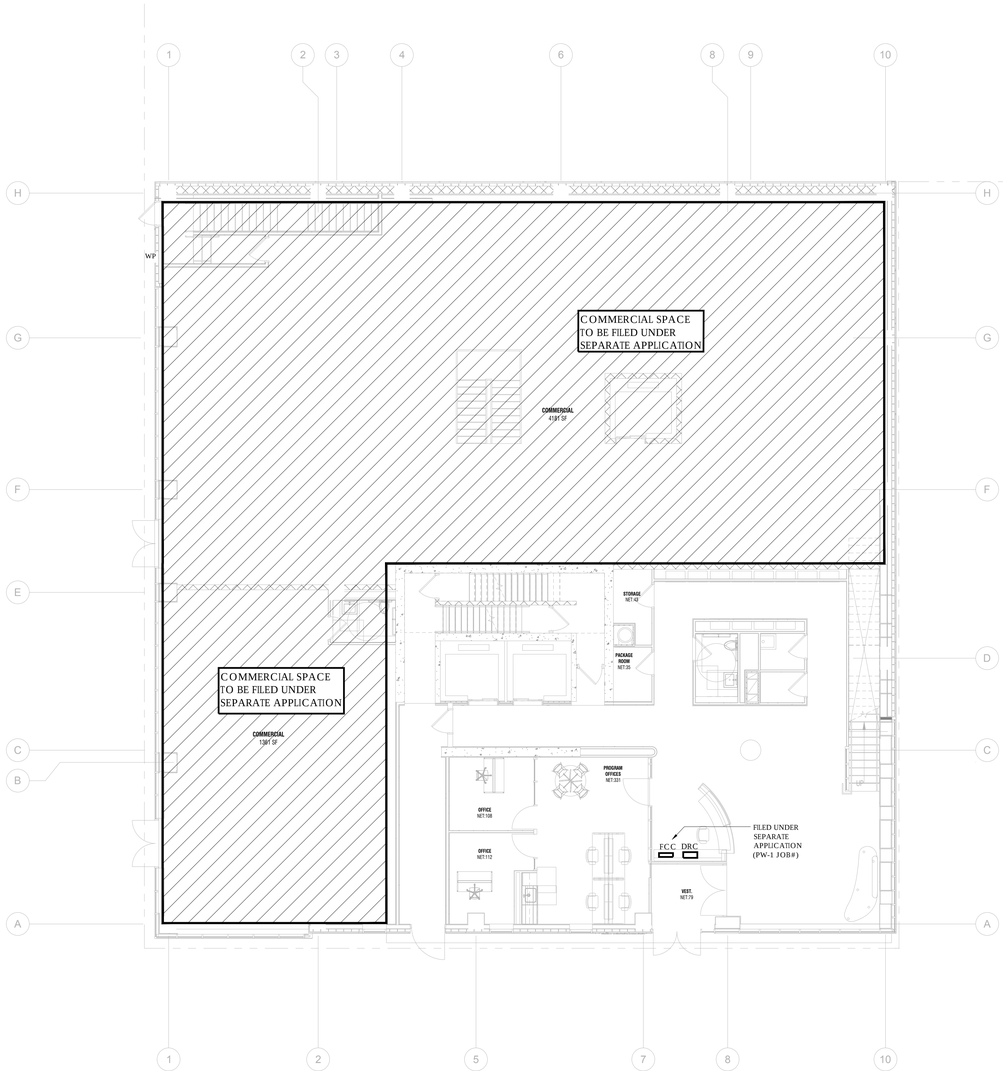
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AUXILIARY RADIO
COMMUNICATION SYSTEM
CELLAR PLAN

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1ST FLOOR PLAN

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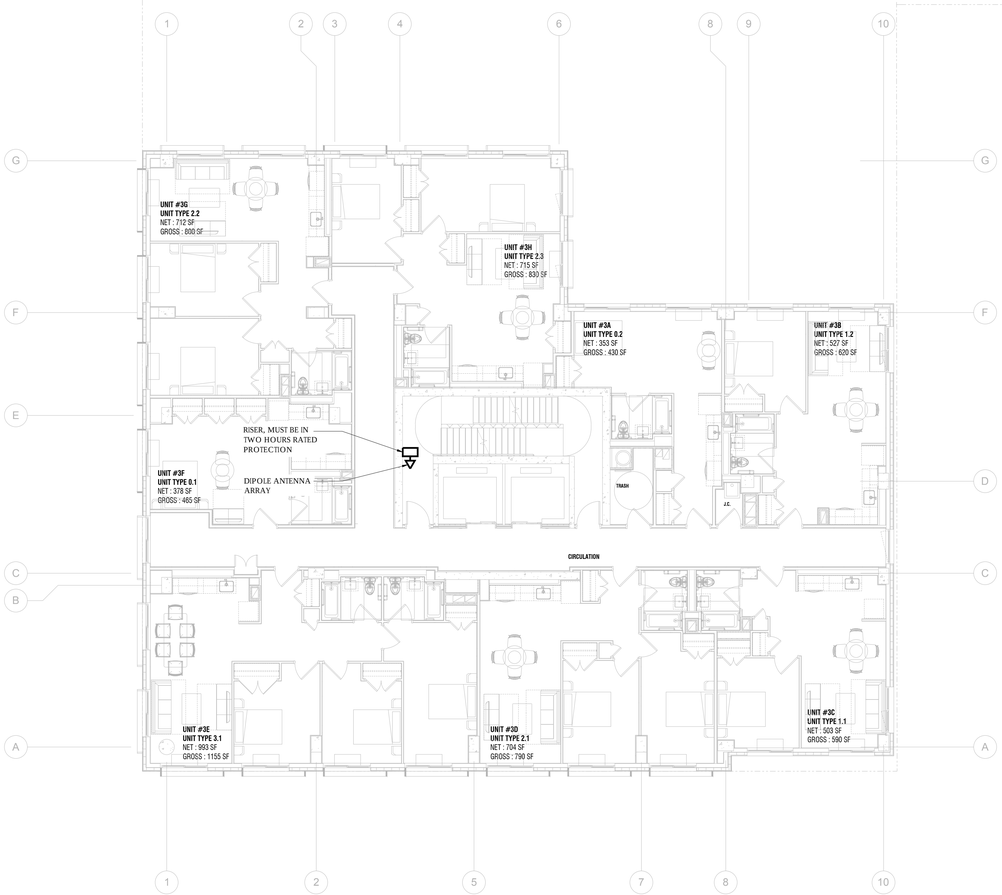
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1ST FLOOR PLAN

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3RD FLOOR PLAN

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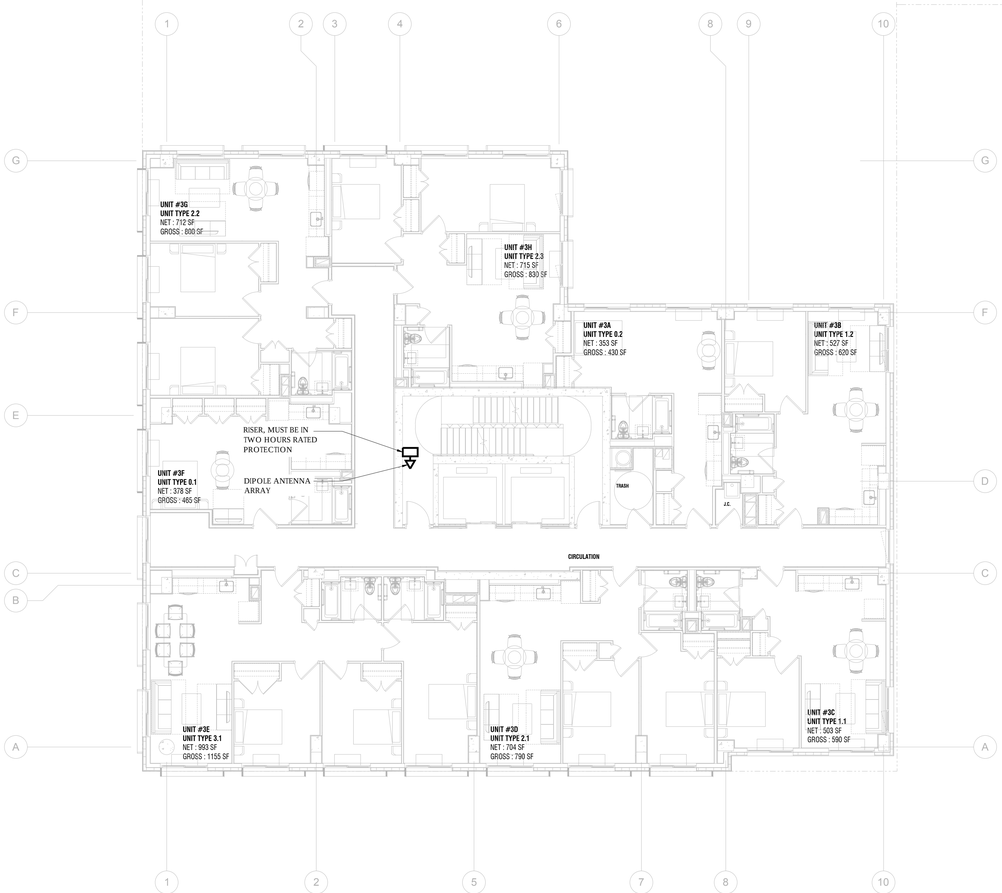
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AUXILIARY RADIO COMMUNICATION SYSTEM 3RD FLOOR PLAN

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6TH FLOOR PLAN

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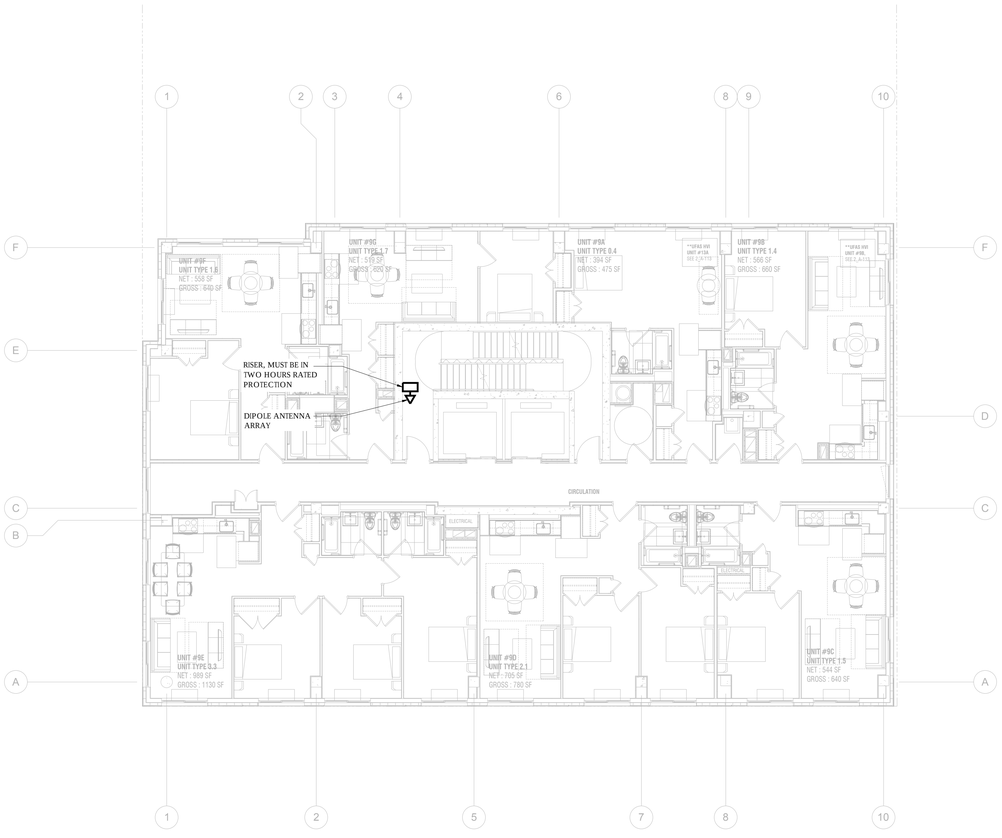
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6TH FLOOR PLAN

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9TH FLOOR PLAN

SCALE: 1/8" = 1'-0"

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9TH FLOOR PLAN

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12TH FLOOR PLAN

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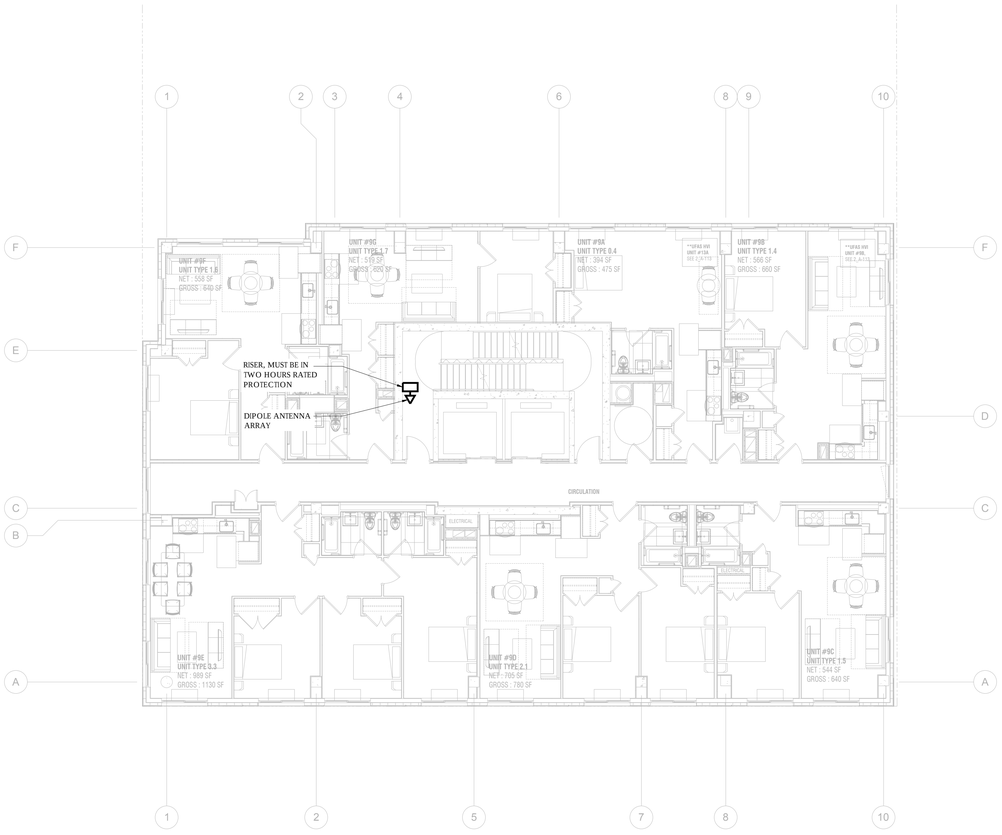
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COMMUNICATION SYSTEM
12TH FLOOR PLAN

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15TH FLOOR PLAN

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AUXILIARY RADIO
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APPENDIX D

Construction Health and Safety Plan

WCD GROUP

A GALLAGHER BASSETT COMPANY

CONSTRUCTION HEALTH AND SAFETY PLAN

FOR SITE REMEDIATION

Betances Houses VI

472-474 Willis Avenue

Borough of Bronx

New York City, New York

September 2020

WCD File: BB17076

Environmental & Construction Risk Management

24 Davis Ave., Poughkeepsie, NY 12603 T: 845-452-1658 F: 845-485-7083 wcdgroup.com

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- Fieldwork Map

1.0 INTRODUCTION

1.1 Purpose

This Construction Health and Safety Plan for Site Remediation (CHASP) has been developed to provide the requirements and general procedures to be followed by WCD Group (WCD) and on-site subcontractors while performing remedial services at the property located at 472-474 Willis Avenue in Bronx, New York.

This CHASP incorporates policies, guidelines and procedures that have the objective of protecting the public health of the community during the performance of fieldwork activities, and therefore serves as a Community Health and Safety Plan. The objectives of the CHASP are met by establishing guidelines to minimize community exposure to hazards during fieldwork, and by planning for and responding to emergencies affecting the public.

This CHASP describes the responsibilities, training requirements, protective equipment and standard operating procedures to be utilized by all personnel while on the Site. All on-site personnel and visitors shall follow the guidelines, rules, and procedures contained in this safety plan. The Project Manager or Site Health and Safety Officer (SHSO) may impose any other procedures or prohibitions believed to be necessary for safe operations. This CHASP incorporates by reference the applicable Occupational Safety and Health Administration (OSHA) requirements in 29 CFR 1910 and 29 CFR 1926.

The requirements and guidelines in this CHASP are based on a review of available information and evaluation of potential on-site hazards. This CHASP will be discussed with Site personnel and will be available on-site for review while work is underway. On-site personnel will report to the Site Health and Safety Officer (SHSO) in matters of health and safety. The on-site project supervisor(s) are responsible for enforcement and implementation of this CHASP, which is applicable to all field personnel, including contractors and subcontractors.

This CHASP is specifically intended for the conduct of activities within the defined scope of work in specified areas of the Site. Changes in site conditions and future actions that may be conducted at the Site may necessitate the modification of the requirements of the CHASP. Although this CHASP can be made available to interested persons for informational purposes,

WCD has no responsibility over the interpretations or activities of any other persons or entities other than employees of WCD or WCD's subcontractors.

1.2 Site Location and Description

The Site as defined in this CHASP is the property located at 472-474 Willis Avenue, Borough of Bronx, New York City, New York. The Site is fully occupied by a vacant one-story building containing several commercial spaces and a former New York City Housing Authority (NYCHA) maintenance garage. A Proposed Fieldwork Map (illustrating the configuration of the Site as well as the areas of proposed fieldwork activities) is included as an Attachment to this CHASP.

1.3 Work Activities

Environmental remedial activities are provided in a Remedial Action Work Plan (RAWP, September 2020). The tasks detailed in the RAWP are wholly incorporated by reference into this CHASP. The RAWP was prepared to remediate current subsurface contamination present in on-site soils.

An open NYSDEC spill file (No. 9813188) is reported for the Site and field evidence of contamination is present in sub-slab soils located beneath the NYCHA garage. Soils beneath the building foundation also contain elevated levels of semi-volatile organic compounds, metals and pesticides, and groundwater at and near the property contains elevated levels of metals. Soil vapor does not appear to be significantly impacted by site conditions. The remedial actions proposed in the RAWP consist of the removal of on-site soils to approximately 12 feet below grade throughout the Site for site development, and additional excavation (as warranted) of contaminated soils (some of which may be present below the water table).

2.0 HEALTH AND SAFETY HAZARDS

2.1 Hazard Overview for On-Site Personnel

The potential exists for the presence of elevated levels of organic compounds and metals in on-site soils and groundwater, and organic compounds in soil vapor. The possibility exists for on-site personnel to have contact with contaminated soils, groundwater and/or vapor during site remediation work. Contact with contaminated substances may present a skin contact,

inhalation and/or ingestion hazard. These potential hazards are addressed in Sections 3.0 through 11.0, below.

2.2 Potential Hazards to the Public from Fieldwork Activities

The potential exists for the public to be exposed to contaminated soils, groundwater and/or vapor, which may present a skin contact, inhalation and/or ingestion hazard. Additional potential hazards to the public that are associated with fieldwork activities include mechanical/physical hazards, traffic hazards from fieldwork vehicles, and noise impacts associated with operation of mechanical equipment.

Impacts to public health and safety are expected to be limited to hazards that could directly affect on-site visitors and/or trespassers. These effects will be mitigated through site access and control measures (see Section 6.0, below). Specific actions taken to protect the public health (presented in Sections 3.0 through 11, below) are anticipated to minimize any potential off-site impacts from contaminant migration, noise and traffic hazards.

3.0 PERSONAL PROTECTIVE EQUIPMENT

The levels of protection identified for the services specified in the RAWP represent a best estimate of exposure potential and protective equipment needed for that exposure. Determination of levels was based on data provided by previous studies of the Site and information reviewed on current and past Site usage. The SHSO may recommend revisions to these levels based on an assessment of actual exposures and may at any time require Site workers, supervisors and/or visitors to use specific safety equipment.

The level of protective clothing and equipment selected for this project is Level D. Level D PPE provides minimal skin protection and no respiratory protection, and is used when the atmosphere contains no known hazard, oxygen concentrations are not less than 19.5%, and work activities exclude splashes, immersion or the potential for unexpected inhalation or contact with hazardous levels of chemicals. Workers will wear Level D protective clothing including, but not limited to, a hard hat, steel-toed boots, nitrile gloves (when handling soils and/or groundwater), hearing protection (foam ear plugs or ear muffs, as required), and safety goggles (in areas of exposed groundwater and when decontaminating equipment). Personal protective equipment (PPE) will be worn at all times, as designated by this CHASP.

Disposable gloves will be changed immediately following the handling of contaminated soils, water, or equipment. Tyvek suits will be worn during activities likely to excessively expose work clothing to contaminated dust or soil (chemically-resistant over garments will be required in situations where exposures could lead to penetration of clothing and direct dermal contact by contaminants).

The requirement for the use of PPE by official on-site visitors shall be determined by the SHSO, based on the most restrictive PPE requirement for a particular Work Zones (see Section 6 for Work Zone definitions). All on-site visitors shall, at a minimum, be required to wear an approved hardhat and be provided with appropriate hearing protection as necessary.

The need for an upgrade in PPE will be determined based upon encountered Site conditions, including measurements taken in the breathing zone of the work area using a photo-ionization detector (PID). An upgrade to a higher level of protection (Level C) will begin when specific action levels are reached (see Section 5.0, below), or as otherwise required by the SHSO. Level C PPE includes a full-face or half-mask air-purifying respirator (NIOSH approved for the compound[s] of concern), hooded chemical-resistant clothing, outer and inner chemical-resistant gloves, and (as needed) coveralls, outer boots/boot covers, escape mask, and face shield. Level C PPE may be used only when: oxygen concentrations are not less than 19.5%; contaminant contact will not adversely affect any exposed skin; types of air contaminants have been identified, concentrations measured, and a cartridge or canister is available that can remove the contaminant; atmospheric contaminant concentrations do not exceed immediately dangerous to life or health (IDLH) levels; and job functions do not require self-contained breathing apparatus (SCBAs). The need for Level B or Level A PPE is not anticipated for the planned remedial activities at this Site.

If any equipment fails and/or any employee experiences a failure or other alteration of their protective equipment that may affect its protective ability, that person will immediately leave the work area. The Project Manager and the SHSO will be notified and, after reviewing the situation, determine the effect of the failure on the continuation of on-going operations. If the failure affects the safety of personnel, the work site, or the surrounding environment, personnel will be evacuated until appropriate corrective actions have been taken.

4.0 CONTAMINANT CONTROL

Precautions will be taken during dry weather (e.g., wetting or covering exposed soils) to avoid generating and breathing dust-generated from soils. A PID (or equivalent equipment) will be used to monitor potential contaminant levels. Response to the monitoring will be in accordance with the action levels provided in Section 5.0.

5.0 MONITORING AND ACTION LEVELS

Concentrations of petroleum compounds in the air are expected to be below the OSHA Permissible Exposure Limits (PELs). Air monitoring will be conducted for VOCs and dust according to the NYSDOH Generic Community Air Monitoring Plan (CAMP). Monitoring will be conducted at all times that fieldwork activities which are likely to generate emissions are occurring. PID and dust readings consistently in excess of CAMP limits will be used as an indication of the need to initiate personnel monitoring, increase worker protective measures, and/or modify or cease on-site operations in order to mitigate off-site community exposure.

PID readings that consistently exceed background in the breathing zone (during any of the proposed tasks) will necessitate moving away from the source or implementing a higher PPE level.

6.0 SITE CONTROL/WORK ZONES

Site control procedures will be established to reduce the possibility of worker/visitor contact with compounds present in the soil, to protect the public in the area surrounding the Site and to limit access to the Site to only those persons required to be in the work zone. Notices will be placed near the Site warning the public not to enter fieldwork areas and directing visitors to report to the Project Manager or SHSO. Measures will be taken to limit the entry of unauthorized personnel into the specific areas of field activity and to safely direct and control all vehicular traffic in and near the Site (e.g., placement of traffic cones and warning tape).

The following Work Zone will be established:

Exclusion Zone ("Hot Zone") - The exclusion zone will be that area immediately surrounding the work being performed for remediation purposes (i.e. the area where contaminated media are being handled). It is anticipated that much of the work will be accomplished with heavy

equipment in the exclusion zone. Only individuals with appropriate PPE and training are allowed into this zone. It is the responsibility of the Site Health and Safety Officer to prevent unauthorized personnel from entering the exclusion zone. When necessary, such as in high traffic areas, the exclusion zone will be delineated with barricade tape, cones and/or barricades.

Decontamination Area - A decontamination area for personnel and equipment is not anticipated being required during completion of the RAWP; however, care will be taken to remove gloves, excess soil from boots, and soiled clothing (if necessary) before entering the Intermediate Zone.

Contamination Reduction Zone and Support Zone - Not anticipated being required during the completion of the RAWP.

Intermediate Zone (Decontamination Zone) - The intermediate zone, also known as the decontamination zone, is where patient decontamination should take place, if necessary. A degree of contamination still is found in this zone; thus, some PPE is required, although it is usually of a lesser degree than that required for the hot zone.

Command Zone - The command zone is located outside the decontamination zone. All exposed individuals and equipment from the "hot zone" and decontamination zone should be decontaminated before entering the command zone. Access to all zones must be controlled. Keeping the media and onlookers well away from the Site is critical and will be the responsibility of both the SHSO and the Project Manager, and other Site personnel as appropriate.

7.0 NOISE CONTROL

All fieldwork activities will be conducted in a manner designed to reduce unnecessary noise generation, and to minimize the potential for both on-site and off-site harmful noise levels. The Project Manager and SHSO will establish noise reduction procedures (as appropriate to the Site and the work) to meet these requirements.

8.0 PERSONNEL TRAINING

Work zones that will accomplish the general objective stated above will be established by the Project Manager and the SHSO. Site access will be monitored by the SHSO, who will maintain a log-in sheet for personnel that will include, at the minimum, personnel on the Site, their arrival

and departure times and their destination on the Site. All workers will be properly trained in accordance with OSHA requirements (29 CFR 1910). Personnel exiting the work zone(s) will be decontaminated prior to exiting the Site.

Site-specific training will be provided to each employee. Personnel will be briefed by the SHSO as to the potential hazards to be encountered. Topics will include:

- Availability of this CHASP;
- General site hazards and specific hazards in the work areas, including those attributable to known of suspect on-site contaminants;
- Selection, use, testing, and care of the body, eye, hand, and foot protection being worn, with the limitations of each;
- Decontamination procedures for personnel, their personal protective equipment, and other equipment used on the Site;
- Emergency response procedures and requirements;
- Emergency alarm systems and other forms of notification, and evacuation routes to be followed; and,
- Methods to obtain emergency assistance and medical attention.

9.0 DECONTAMINATION

The SHSO will establish a decontamination system and decontamination procedures (appropriate to the Site and the work) that will prevent potentially hazardous materials from leaving the Site. Trucks will be brushed to remove materials adhering to their surfaces. Sampling equipment will be segregated and, after decontamination, stored separately from splash protection equipment. Decontaminated or clean sampling equipment not in use will be covered with plastic and stored in a designated storage area in the work zone.

10.0 EMERGENCY RESPONSE

10.1 Notification of Site Emergencies

In the event of an emergency, the SHSO will be immediately notified of the nature and extent of the emergency (the names and contact information for key site safety and management personnel, as well as other site safety contact telephone numbers, shall be posted at the Site).

Table 1 in this CHASP contains Emergency Response Telephone Numbers, and immediately following is a map detailing the directions to the nearest hospital emergency room. This information will be maintained at the work Site by the SHSO. The location of the nearest telephone will be determined prior to the initiation of on-site activities. In addition to any permanent phone lines, a cellular phone will be in the possession of the SHSO, or an authorized designee, at all times.

10.2 Responsibilities

Prior to the initiation of on-site work activities, the SHSO will:

- Notify individuals, authorities and/or health care facilities of the potentially hazardous activities and potential wastes that may develop as a result of the remedial activities;
- Confirm that first aid supplies and a fire extinguisher are available on-site;
- Have a working knowledge of available safety equipment; and,
- Confirm that a map detailing the most direct route to the hospital is prominently posted with the emergency telephone numbers.

The SHSO will be responsible for directing notification, response and follow-up actions and for contacting outside response personnel (ambulance, fire department, or others). In the case of an evacuation, the SHSO will account for personnel. A log of individuals entering and leaving the Site will be kept so that everyone can be accounted for in an emergency.

Upon notification of an exposure incident, the SHSO will contact the appropriate emergency response personnel for recommended medical diagnosis and, if necessary, treatment. The SHSO will determine whether and at what levels exposure actually occurred, the cause of such exposure, and the means to prevent similar incidents from occurring.

10.3 Accidents and Injuries

In the event of an accident or injury, measures will be taken to assist those who have been injured or exposed and to protect others from hazards. If an individual is transported to a hospital or doctor, a copy of the CHASP will accompany the individual.

The SHSO will be notified and will respond according to the severity of the incident. The SHSO will perform an investigation of the incident and prepare a signed and dated report documenting the investigation. An exposure-incident report will also be completed by the SHSO and the exposed individual. The form will be filed with the employee's medical and safety records to serve as documentation of the incident and the actions taken.

10.4 Communication

No special hand signals will be utilized within the work zone. Field personnel will utilize standard hand signals during the operation of heavy equipment.

10.5 Safe Refuge

Vehicles and on-site structures will serve as the immediate place of refuge in the event of an emergency. If evacuation from the area is necessary, project vehicles will be used to transport on-site personnel to safety.

10.6 Site Security and Control

Site security and control during emergencies, accidents and incidents will be monitored by the SHSO. The SHSO is responsible for limiting access to the Site to authorized personnel and for oversight of reaction activities.

10.7 Emergency Evacuation

In case of an emergency, personnel will evacuate to the safe refuge identified by the SHSO, both for their personal safety and to prevent the hampering of response/rescue efforts.

10.8 Resuming Work

A determination that it is safe to return to work will be made by the SHSO and/or any personnel assisting in the emergency, e.g., fire department, police department, utility company, etc. No

personnel will be allowed to return to the work areas until a full determination has been made by the above-identified personnel that all field activities can continue unobstructed. Such a determination will depend upon the nature of the emergency (e.g., downed power lines -- removal of all lines from the property; fire -- extinguished fire; injury -- safe transport of the injured party to a medical facility with either assurance of acceptable medical care present or completion of medical care; etc.). Before on-site work is resumed following an emergency, necessary emergency equipment will be recharged, refilled or replaced. Government agencies will be notified as appropriate. An Incident Report Form will be filed.

10.9 Fire Fighting Procedures

A fire extinguisher will be available in the work zone during on-site activities. This extinguisher is intended for small fires. When a fire cannot be controlled with the extinguisher, the area will be evacuated immediately. The SHSO will be responsible for directing notification, response and follow-up actions and for contacting ambulance and fire department personnel.

10.10 Emergency Decontamination Procedure

The extent of emergency decontamination depends on the severity of the injury or illness and the nature of the contamination. Whenever possible, minimum decontamination will consist of washing, rinsing and/or removal of contaminated outer clothing and equipment. If time does not permit decontamination, the person will be given first aid treatment and then wrapped in plastic or a blanket prior to transport.

10.11 Emergency Equipment

The following on-site equipment for safety and emergency response will be maintained in the on-site vehicle of the SHSO:

- Fire extinguisher;
- First-aid kit; and,
- Extra copy of this Health and Safety Plan.

11.0 SPECIAL PRECAUTIONS AND PROCEDURES

The activities associated with this remediation may involve potential risks of exposure to both chemical and physical hazards. The potential for chemical exposure to hazardous or regulated substances will be significantly reduced through the use of monitoring, personal protective clothing, engineering controls, and implementation of safe work practices.

11.1 Heat/Cold Stress

Training in prevention of heat/cold stress will be provided as part of the site-specific training. The timing of this project is such that heat/cold stress may pose a threat to the health and safety of personnel. Work/rest regimens will be employed, as necessary, so that personnel do not suffer adverse effects from heat/cold stress. Special clothing and appropriate diet and fluid intake regimens will be recommended to personnel to further reduce this temperature-related hazard. Rest periods will be recommended in the event of high/low temperatures and/or humidity to counter the negative effects of heat/cold stress.

11.2 Heavy Equipment

Working in the vicinity of heavy equipment is the primary safety hazard at the Site. Physical hazards in working near heavy construction equipment include the following: overhead hazards, slips/trip/falls, hand and foot injuries, moving part hazards, improper lifting/back injuries and noise. All workers will be properly trained in accordance with OSHA requirements (29 CFR 1910). No workers will be permitted within any excavated areas without proper personal protective equipment (PPE), including, as warranted, any necessary Level C equipment (e.g., respirators and protective suits). Air monitoring in excavation areas will be conducted for VOCs in accordance with Section 5.0.

11.3 Additional Safety Practices

The following are important safety precautions which will be enforced during the remedial activities:

- Medicine and alcohol can aggravate the effect of exposure to certain compounds. Controlled substances and alcoholic beverages will not be consumed during remedial

activities. Consumption of prescribed drugs will only be at the discretion of a physician familiar with the person's work;

- Eating, drinking, chewing gum or tobacco, smoking, or other practices that increase the probability of hand-to-mouth transfer and ingestion of material is prohibited except in areas designated by the SHSO;
- Contact with potentially contaminated surfaces will be avoided whenever possible. Workers will not unnecessarily walk through puddles, mud or other discolored surfaces; kneel on the ground; or lean, sit, or place equipment on drums, containers, vehicles, or the ground;
- Personnel and equipment in the work areas will be minimized, consistent with effective site operations;
- Unsafe equipment left unattended will be identified by a "DANGER, DO NOT OPERATE" tag; and,
- Work areas for various operational activities will be established.

11.4 Daily Log Contents

The SHSO will establish a system appropriate to the Site, the work and the work zones that will record, at a minimum, the following information:

- Personnel on the Site, their arrival and departure times and their destination on the Site;
- Incidents and unusual activities that occur on the Site such as, but not limited to, accidents, spills, breaches of security, injuries, equipment failures and weather-related problems;
- Changes to the CHASP; and,
- Daily information generated such as: changes to work and health and safety plans; work accomplished and the current Site status; and monitoring results.

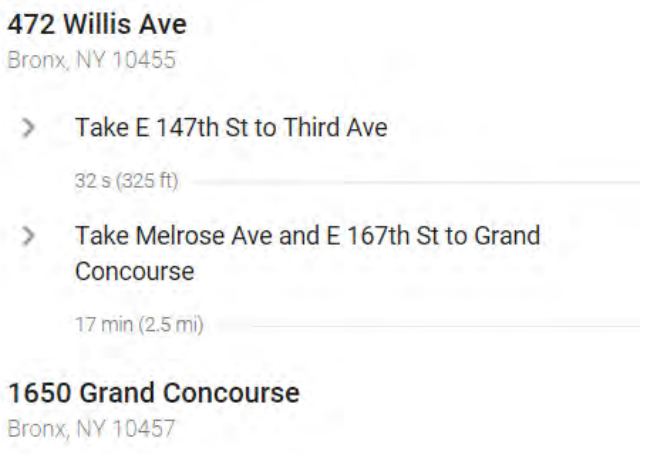
12.0 TABLE AND FIGURES

12.1 Emergency Contact Information

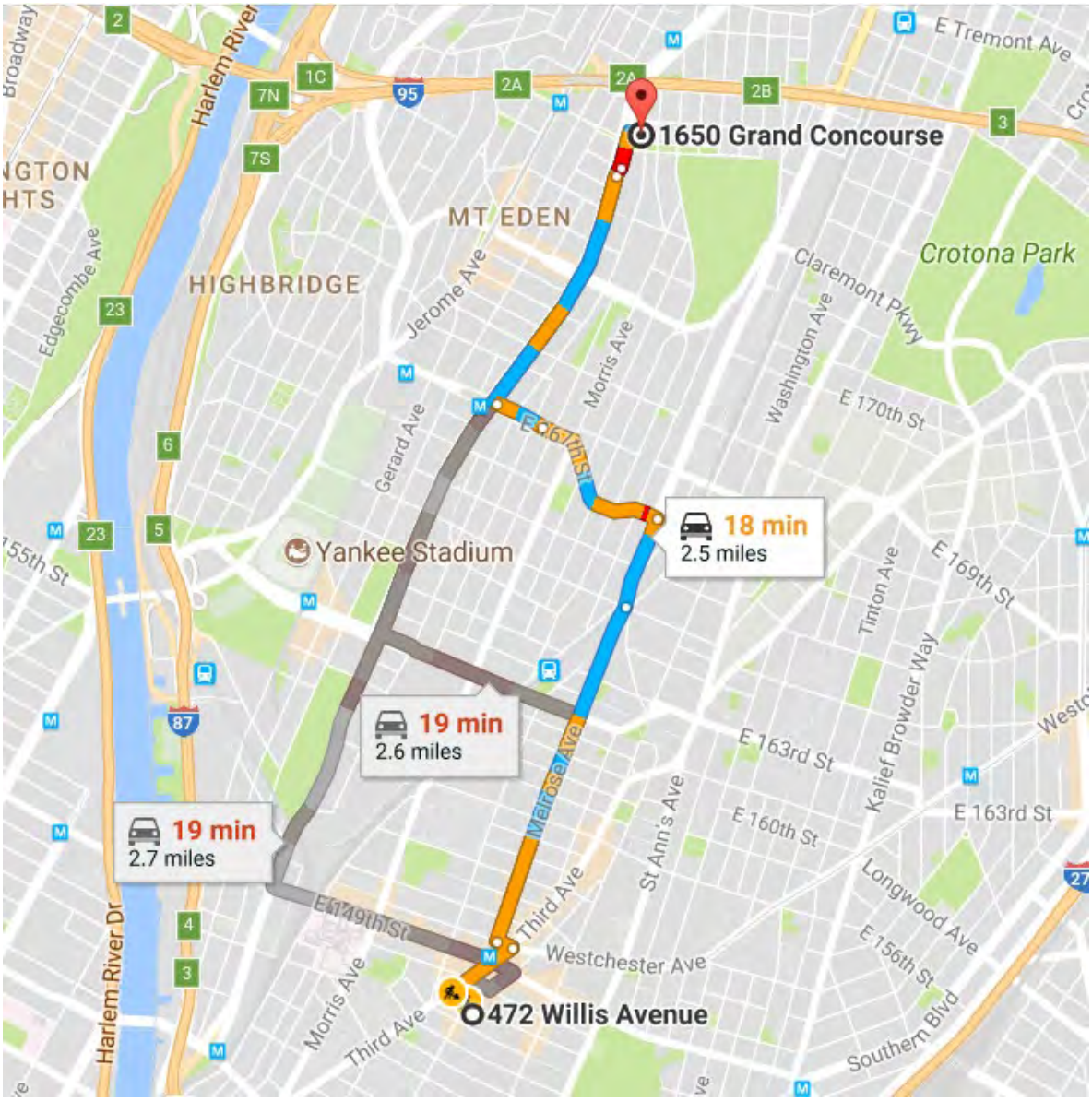
Emergency Agencies	Phone Numbers
EMERGENCY	**911**
Bronx-Lebanon Hospital Center 1650 Grand Concourse	(718) 590-1800 or 911
NYC Police Department 48th Precinct 450 Cross Bronx Expressway	(718) 299-3900 or 911
NYC Fire Department	911
City Hall	(212) 788-3000
Main Water and Sewer	(718) 579-6981
Site Health and Safety Officer, Richard Hooker, WCD	(845) 452-1658

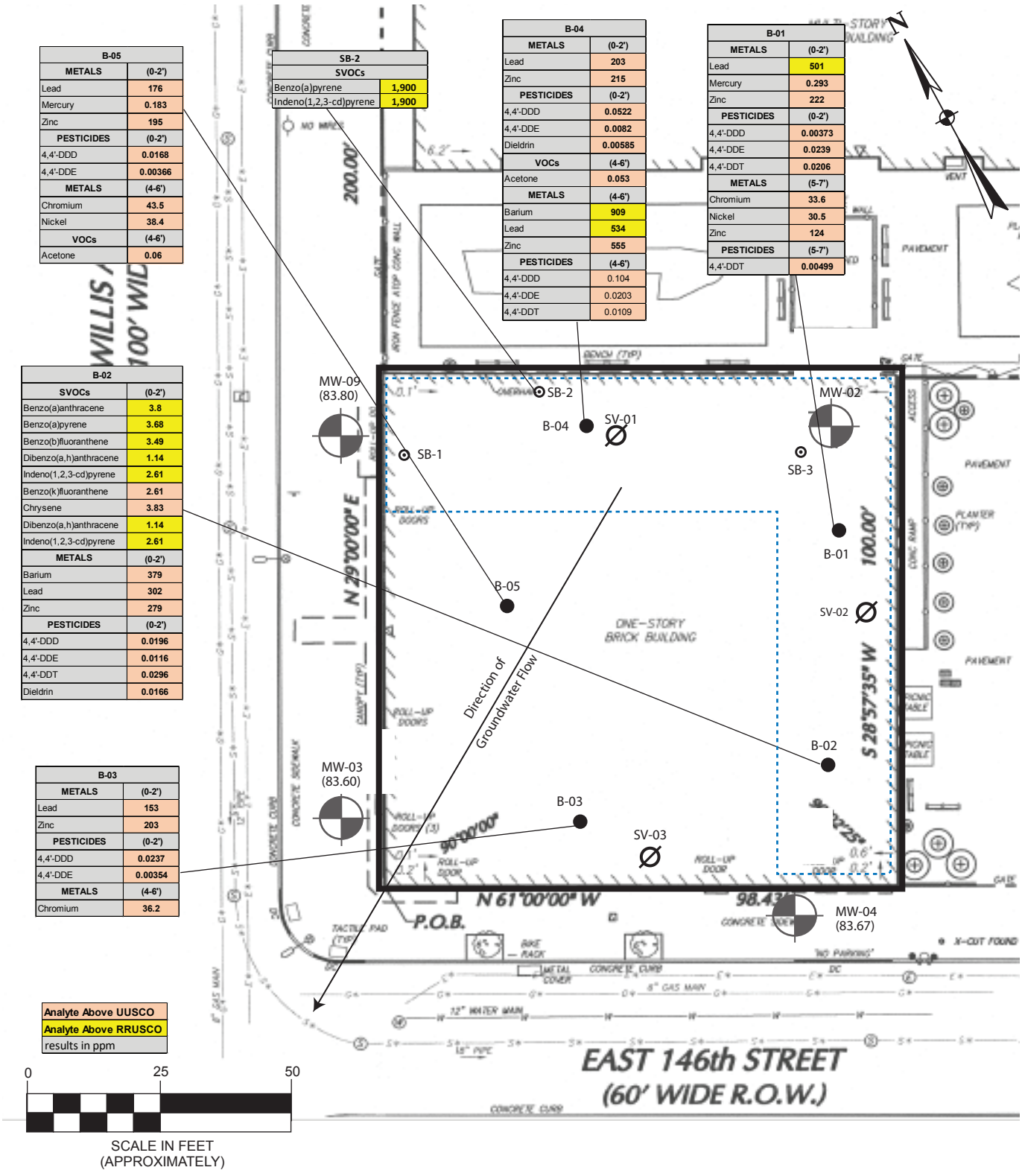
12.2 Directions to Hospital

Bronx-Lebanon Hospital Center, 1650 Grand Concourse (approximately 18 minutes travel time)



12.3 Map to Hospital





All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Fieldwork Map

472-474 Willis Avenue
Borough of Bronx, New York

Legend:

- subject property border
- NYCHA garage area
- monitoring well location
- American Environmental boring location - 2017
- boring location
- soil vapor location

WCD File: BB17076.40

September 2020

Scale as shown

Attachment

APPENDIX E

Sample of Non-Hazardous Soil Disposal Manifest(s)

CLEANEARTH

Manifest # 1295962

GLOBAL JOB NUMBER: _____ **FACILITY APPROVAL NUMBER:** _____

Please Check One:

☐ Clean Earth of Carteret
24 Middlesex Avenue
Carteret, NJ 07008
Ph: 732-541-8909

☐ Clean Earth of Maryland
1469 Oak Ridge Place
Hagerstown, MD 21740
Ph: 301-791-6220

☐ Clean Earth of New Castle
94 Pyles Lane
New Castle, DE 19720
Ph: 302-427-6633

☐ Clean Earth of Greater Washington
6250 Dower House Road
Upper Marlboro, MD 20772
Ph: 301-599-0939

☐ Clean Earth of Philadelphia
3201 S. 61st Street
Philadelphia, PA 19153
Ph: 215-724-5520

☐ Clean Earth of North Jersey
115 Jacobus Avenue
Kearny, NJ 07032
Ph: 973-344-4004

☐ Clean Earth of Southeast Pennsylvania
7 Steel Road East
Morrisville, PA 19067
Ph: 215-428-1700

☐ Other _____

Non-Hazardous Material Manifest

(Type or Print Clearly)

GENERATOR'S NAME & SITE ADDRESS:	GROSS WEIGHT: ☐Tons ☐Yards	
	TARE WEIGHT: ☐Tons ☐Yards	
GENERATOR'S PHONE: _____	NET WEIGHT: ☐Tons ☐Yards	

DESCRIPTION OF MATERIAL/SAMPLE ID AND LOCATION

GENERATOR'S CERTIFICATION – Incomplete and/or unsigned manifests will cause the load to be delayed and/or rejected.

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, is not a DOT hazardous substance as defined by 49 CFR Part 172 or any applicable state law, has been fully and accurately described above, classified, packaged and is in proper condition for transportation according to all applicable state and federal regulations.

Name: _____ Title: _____

Signature: _____ Date and Time: _____

TRANSPORTER

Company: _____ Phone Number: _____

Address: _____ Truck # and License Plate: _____

Driver: _____ SW Haulers Permit #: _____

(Type or Print Clearly) (applicable state permit #)

I hereby certify that the above named material was picked up at the site listed above.

Driver Signature: _____ Date and Time: _____

DESTINATION

I hereby certify that the above named material was delivered without incident to the facility noted above.

Driver Signature: _____ Date and Time: _____

I hereby certify that the above named material has been accepted at the above referenced facility.

Authorized Signature: _____ Date and Time: _____

FACILITY

APPENDIX F

Citizen Participation Plan
(to be provided)

APPENDIX G

Cost Estimates

Betances VI - Preliminary Remediation Cost Estimate # Track 1
472-474 Willis Avenue, Bronx, New York
WCD File: BB17076.50
September 10, 2020

	Total Costs
Task 1: Soil Removal	
Professional Oversight	$15,000
PCS Excavation and T&D (500 tons @ $90/ton)	$45,000
Urban Fill Excavation and T&D (1,500 tons @ $65/ton)	$97,500
Laboratory (waste characterization)	$8,000
Laboratory (post-excavation soil samples)	$5,000
Laboratory (post-excavation vapor samples)	$3,000
Materials/disbursement	$2,000
Community Air Monitoring Equipment	$20,000
Task Subtotal	**$195,500**
Task 2: Groundwater Monitoring for PFOAS	
Well sampling (1 round)	
Field tech (1 day)	$1,000
Equipment	$1,000
Laboratory	$3,000
Monitoring Reports (reports)	$3,000
Task Subtotal	**$8,000**
Task 3: Administrative Services	
Status Reports/Communications	$15,000
Final Engineering Report	$15,000
Meetings	$5,000
Inspections	$5,000
Task Subtotal	**$40,000**
BASE TOTAL	**$243,500**
Other related construction costs	
Demo & Asbestos Abatement	**$450,000**
SOE Installation (estimate)	**$500,000**
Dewatering (contingency)	**$500,000**
TOTAL with Dewatering	**$1,693,500**

Betances VI - Preliminary Remediation Cost Estimate # Track 4
472-274 Willis Avenue, Bronx, New York
WCD File: BB17076.50
September 10, 2020

	Total Costs
Task 1: Soil Removal	
Professional Oversight	$20,000
Urban Fill Excavation and T&D (5,250 tons @ $65/ton)	$341,250
Laboratory (waste characterization)	$8,000
Laboratory (post-excavation soil samples)	$5,000
Laboratory (post-excavation vapor samples)	$3,000
Materials/disbursement	$2,000
Community Air Monitoring Equipment	$20,000
Task Subtotal	**$399,250**
Task 2: Design/Installation of Vapor Barrier	
Design/approval	$3,000
Vapor Barrier Material	$60,000
Installation	$6,500
Engineer (2 days)	$2,500
Task Subtotal	**$72,000**
Task 3: Administrative Services	
Status Reports/Communications	$15,000
Remedial Completion Report	$15,000
Site Management Plan	$10,000
Meetings	$5,000
Inspections	$5,000
Task Subtotal	**$50,000**
BASE TOTAL	**$521,250**

APPENDIX H

Resumes

AMC Engineering PLLC
18-36 42nd Street
Astoria, NY 11105
Phone: (516) 417-8588

ARIEL CZEMERINSKI, P.E.
Email: Ariel@AMC-Engineering.com

SUMMARY:

New York State Professional Engineer. Chemical and Environmental Engineer, with 30 years of experience in the chemical and environmental areas. Areas of expertise include inspections and sign off on Large Scale Vapor Barrier Installations at Various NYC schools, Design and inspections of Sub Slab Depressurization Systems, wastewater treatment systems, Large scale dewatering system design for construction, process control and automation, process optimization, productivity improvement, quality systems, environmental compliance, Phase I Environmental Site Assessments, Phase II Environmental Investigations, Phase III: Remedial Activities, process and plant safety, and management of a production facility. Special Inspector with New York City Department of Buildings. Registered PE in NY.

Professional Experience:

AMC: 19 Years
Prior: 11 years

Education

Master of Science in Chemical Engineering, Columbia University, New York, NY, Feb. 1990.
Bachelor of Science in Chemical Engineering, University Of Buenos Aires, Buenos Aires, Argentina, May 1987

Areas of Expertise

- Vapor Intrusion - Barrier and Sub Slab Venting System Design
- Environmental Assessment Statements and Environmental Impact Assessments
- Remedial Program Design and Management
- Environmental Compliance, Clean Water Act, Clean Air Act, Hazardous Materials
- Dewatering & Treatment System Design
- SWPPP design and implementation. Preparation and Submittal of NOIs.
- NYCDEP Sewer Discharge Permitting
- Transfer Station Permitting and Compliance
- Chemical Process Design and Optimization
- Wastewater Treatment Systems and Permitting, SPDES, LI Well permit, Water Withdrawal Permit. Obtain permits from NYCDEP and NYSDEC.
- Air Permits and Registration
- Zoning Regulations and Permitting
- Safety and Environmental Training
- Waste Management Plans
- Professional Certifications
- OSHA 40-hr HAZWOPER
- OSHA 10-hr Construction Safety and Health

AMC Engineering PLLC
18-36 42nd Street
Astoria, NY 11105
Phone: (516) 417-8588

Project Experience

Project: Bergen Basin Sewer - CS-JA-BBS -Queens, NY
Project Description: NYC infrastructure (sewer, water) upgrade, drainage channel installation. Dewatering Design. Permits with NYCDEP and NYSDEC. Soil contaminated with petroleum requiring excavation, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan. SWPPP design and implementation.
Client: JR Cruz - NYCDDC
Regulatory Authority: NYSDEC, NYCDEP
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: SER002326- Storm and Sanitary Sewers in Wardwell Avenue, Staten Island, New York
Project Description: NYC infrastructure (sewer, water) upgrade.
Dewatering Design. Permits with NYCDEP and NYSDEC. SWPPP design and implementation.
Client: E.E. Cruz - NYCDDC
Regulatory Authority: NYSDEC, NYCDEP
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: HED568-Installation of New 20" Subaqueous water main extension, and new 12" sub-aqueous high pressure gas main from the Bronx to Randall's Island, New York
Project Description: NYC infrastructure (gas, water) upgrade.
Soil contaminated with petroleum requiring excavation, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan. Dewatering Design. Permits with NYCDEP and NYSDEC.
Client: E.E. Cruz - NYCDDC
Regulatory Authority: NYSDEC, NYCDEP
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: Domsey Fiber Corp. - 431 Kent Avenue, Brooklyn NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: Express Builders
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: SE-807 –Construction of Storm and Sanitary Sewers and Water Main in 20th Ave between 126th St and US Bilkhead Line Area, College Point, Queens, NY
Project Description: NYC Residential infrastructure (sewer, water) upgrade, outfall reconstruction, Soil characterization, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan and Community Air Monitoring Plan. SWPPP design and implementation, Public Participation Plan, Marine HASP, Dewatering Design and permit application.

AMC Engineering PLLC
18-36 42nd Street
Astoria, NY 11105
Phone: (516) 417-8588

Client: EIC Associates
Regulatory Authority: NYCDDC
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: Springfield Gardens Residential Area BMP - Springfield Gardens, Queens, NY
Project Description: NYC Residential infrastructure (sewer, gas, water) upgrade, drainage channel installation and pond restoration. Soil contaminated with, petroleum and heavy metals requiring excavation, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: EIC Associates - NYCEDC
Regulatory Authority: NYSDEC, NYCParks
Role: Mr. Czemerinski served as the Environmental Consultant for the project.

Project: Former Domino Sugar Site - Kent Avenue, Brooklyn NY
Project Description: NYC E-Designation. Soil contaminated with semi-volatile organic compounds and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: Two Trees Management
Regulatory Authority: NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former Uniforms For Industry Site - Jamaica Avenue, Queens NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum, mop oil and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: The Arker Companies
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project

Project: Former Sunbelt Equipment Site – 25 Kent Avenue, Brooklyn, NY
Project Description: NYS Brownfield cleanup project. Soil contaminated with petroleum, and heavy metals and coal tar, requiring deep excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan, Dewatering Design and implementation, SWPPP design and implementation
Client: 19 Kent Acquisition LLC
Regulatory Authority: NYSDEC
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

AMC Engineering PLLC
18-36 42nd Street
Astoria, NY 11105
Phone: (516) 417-8588

Project Experience

Project: Former Charles Pfizer & Co. Site - 407 Marcy Avenue, Brooklyn, NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: The Rabsky Group
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former East Coast Industrial Uniforms Site - 39 Skillman Street, Brooklyn, NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: Riverside Builders
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former BP Amoco Service Station Site - 1800 Southern Boulevard, Bronx, NY
Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: SoBro, Joy Construction
Regulatory Authority: NYSDEC, NYCOER
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former Dico G Auto & Truck Repair Site - 3035 White Plains Road, Bronx, NY
Project Description: NYS Brownfield cleanup project. Soil contaminated with petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan
Client: The Arker Companies
Regulatory Authority: NYSDEC
Role: Mr. Czemerinski served as the Remedial Engineer for the project.

RICHARD HOOKER

Current Position:
Senior Project Manager

Education:
Ph.D., University of St. Andrews, Scotland
BA, Staffordshire University, England

Registrations/ Certifications:

- OSHA-40 Hazwoper
- OSHA-10 Construction
- OSHA Hazardous Waste Site Operations
- OSHA Emergency Response Training
- OER TurboTraining Bronze Certified Professional

PROFESSIONAL SUMMARY

Richard Hooker serves as Senior Project Manager for investigative and remedial projects including NYSDEC and OER Brownfields sites, Phase II investigations, tank removals, and environmental management of construction projects. He also prepares and evaluates interdisciplinary, comprehensive environmental impact assessment reviews (NEPA, SEQR and CEQR). Mr. Hooker develops investigative and remedial work plans, health and safety plans, performs fieldwork, and prepares technical reports. He works with regulatory authorities and subcontractors including construction personnel, waste repositories and haulage contractors, laboratories and drillers. His responsibilities include: investigating site histories, document reviews, cost benefit analysis of remedial alternatives, overseeing excavations and in situ remediation, sampling, sample data evaluation, report preparation, and obtaining regulatory closure. He has extensive experience of sampling and sample collection protocols for soil, vapor, indoor air, sediment, and groundwater and has worked to remediate a wide range of environmental contaminants including petroleum, heavy metals, PCBs, and solvents.

Mr. Hooker holds a Ph.D. from the University of St. Andrews, St. Andrews, Scotland and a BA from Staffordshire University, Stoke-on-Trent, England. Prior to relocating to the Hudson Valley, he served as an Assistant Professor at the University of Glasgow, Scotland.

PROFESSIONAL EXPERIENCE

3475 Third Avenue, Bronx, NY - Investigated and remediated this former manufacturing facility to NYSDEC Brownfields to Track 1 cleanup standards. This site was the first project in the OER Jumpstart program established to assist cleanup on government-supported affordable and supportive housing projects in NYC. Under this program OER sponsored enrollment in the NYS Brownfield Cleanup Program. Work on this trailblazing project required liaising with OER and NYSDEC Region 2 to ensure documentation met the requirements of both agencies. Certificate of Completion secured in 2016.

Former A.C. Dutton Lumber Yard, Dutchess County, NY – Documented hazardous concentrations of arsenic and chromium in soils and concrete surfaces at this NYSDEC Brownfields site contaminated by the historical pressure treatment of lumber. Developed a Workplan for site remediation and directed environmental restoration activities, including: characterization, excavation and removal of hazardous soils, scarification concrete warehouse floors, removal aboveground and underground chemical and petroleum storage tanks.

Lincoln Place, Brooklyn, NY – performed CEQR, SEQR and NEPA reviews including shadow and noise studies for this site prior to development. Prepared Remedial Workplan and oversaw remediation of metals-contaminated soils during construction and implemented remedy for the site including SSDS system installation, vapor barrier, and installation of composite cover system. Prepared FER and obtained NYCHPD and NYCDEP closeout for the site.

Grace Terrace, Mount Vernon, NY – oversaw remediation and obtained NTSDEC Spill file closure after a previously unknown UST and associated petroleum contaminated soil were encountered during construction excavations. Coordinated with the GC to ensure appropriate cleanup was performed without delaying the construction schedule. Remedial actions included characterization and appropriate off-site disposition of petroleum contaminated soil and groundwater, application of chemical oxidation treatment, installation vapor barrier and active SSDS system.

Former Fur Processing Facility, Bronx, NY - Documented the presence of chlorinated hydrocarbon, petroleum, and metals contamination beneath and/or near a former industrial structure. Coordinated the sampling and removal of multiple drums of hazardous and non-hazardous material from the structure and secured NYCDEP approval. Developed a Workplan for site remediation and directed environmental restoration activities, including: excavation and removal of both aboveground and underground storage tanks, removal of contaminated soils, installation of a barrier layer soil cap, and pre-demolition removal of asbestos materials.

Jamaica Hospital Medical Center, Queens, NY - Coordinated and supervised the removal of two, large underground storage tanks and documented site conditions through soil and groundwater sampling. Secured NYSDEC approval of PBS tank closure and registration requirements.

SCOTT SPITZER

Current Position:
Director of Environmental Investigations

Education:
BS, Biology, SUNY at Stony Brook, NY
Extensive Studies in Environmental Science

Registrations/ Certifications:

- OSHA, 40-hr. Hazardous Waste Operations & Emergency Response Health & Safety Certification
- OSHA, 10-hr. General Construction Industry Training and Certification

PROFESSIONAL SUMMARY

Scott Spitzer serves as Director of Environmental Investigations, overseeing the technical elements of Phase I and Phase II technical environmental investigations and remedial projects, including Brownfield sites. Mr. Spitzer supervises all WCD field staff and reviews all documents prepared by WCD to ensure consistency and technical accuracy.

His responsibilities associated with the preparation of site assessments include: investigating site histories, conducting facility inspections, reviewing regulatory agency records, documenting facility compliance with relevant State and Federal regulations, and preparing reports. As project manager for complex technical environmental investigations (including sites currently on the NYSDEC Registry of Inactive Hazardous Waste Sites), Mr. Spitzer is involved with: coordinating subcontractors; overseeing fieldwork; designing and implementing material, soil, and water sampling plans, preparing technical reports and interfacing with regulatory agency personnel.

Mr. Spitzer has 11 years' experience in the preparation of Phase I and II investigations and in the management of complex remediation projects. He is knowledgeable in both New York State and Federal environmental regulations and has an understanding of a broad range remedial technologies. Mr. Spitzer studied environmental science at SUNY Purchase and holds a BS in Biology from SUNY at Stony Brook, Stony Brook, New York.

PROFESSIONAL EXPERIENCE

Former NuHart Plastics Manufacturing Site, Brooklyn, NY - WCD conducted a complex remedial investigation of a NYSDEC Class 2 Inactive Hazardous Waste Disposal ("Superfund") site, where a plume of liquid phthalates and chlorinated solvents had impacted groundwater. Extensive sampling was conducted of both on- and off-site soil, soil vapor and groundwater, and phthalates were removed from recovery wells as an interim remedial measure. A Remedial Investigation Report was completed, allowing the site owner to move create a Remedial Design Document.

Scenic Hudson Land Trust, Inc., Beacon Waterfront Project, Beacon, NY - WCD conducted soil and groundwater investigations on a former MOSF and adjacent scrap yard. Projects involved soil remediation of both petroleum and PCB-contaminated soils and long-term groundwater monitoring. Both projects were classified as Voluntary Clean-Up projects by the NYSDEC and closure status was attained.

Sakmann Restaurant Corporation Site, Fort Montgomery, NY - Conducted Phase I Environmental Site Assessment and Phase II Subsurface Investigations for former filling station and automotive repair garage contaminated by solvent and waste-oil discharges to an on-site drywell. Designed and implemented a sampling plan for soils impacted by chlorinated hydrocarbons, petroleum, and metals. Created Workplan (in coordination with the NYSDEC Voluntary Cleanup Program) for remediation of on-site contamination and long-term sampling of on-site groundwater monitoring wells.

Staten Island Marina Site, Staten Island, NY - Conducted Phase I Environmental Site Assessment and Phase II Subsurface Investigation for an active marine facility engaged in boat painting and engine maintenance activities. Coordinated the delineation of metals contamination over a three-acre area and analyzed potential impacts from on-site fill materials. Submitted remedial and budgetary analysis in support of regulatory agency approval for conversion of boatyard into a public park.

Octagon House Development Site, Roosevelt Island, NY: Conducted Phase I Environmental Site Assessment and Phase II Subsurface Investigations at the former site of a large, urban hospital. Interpreted the results of geotechnical studies, extended test pits, and conducted extensive soil sampling, to document subsurface soil conditions in support of client's application to the U.S. Housing and Urban Development Agency (HUD). Created Workplan (in coordination with the NYCDEP Office of Environmental Planning and Assessment) for site-wide remediation of contaminated soils and secured NYCDEP approval for site remediation as required by HUD.

Camp Glen Gray Boy Scout Facility, Mahwah, NJ: Conducted Phase I Environmental Site Assessment and Phase II Subsurface Investigations at an approximately 800-acre campground containing numerous structures. Documented subsurface soil conditions at the locations of aboveground and underground storage tanks, and delineated lead contamination at a former firing range. Assisted in design and implementation of remediation plans for removal of petroleum and lead contaminated soils, and obtained NJDEP approvals.

APPENDIX I

QAPP

WCD GROUP

A GALLAGHER BASSETT COMPANY

QUALITY ASSURANCE PROJECT PLAN

FOR SITE REMEDIATION

Betances Houses VI

472-474 Willis Avenue

Borough of Bronx

New York City, New York

November 2019

WCD File: BB17076

Environmental & Construction Risk Management

24 Davis Ave., Poughkeepsie, NY 12603 T: 845-452-1658 F: 845-485-7083 wcdgroup.com

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1.0 PROJECT MANAGEMENT

1.1 Project/Task Organization

The following individuals are major participants in the project. Following each project participant is their specific responsibilities and authorities for the project. Resumes are included as Attachment F.

Project Manager, Steven Wu, New York State Department of Environmental Conservation (NYSDEC)

The NYSDEC Project Manager is responsible for review and approval of all project submittals.

Andrew Bellucci, P.E., Core Down Drilling LLC

Andrew Bellucci will be the Remedial Engineer, responsible for preparing and implementing the Remedial Action Work Plan (RAWP), Final Engineering Report (FER), Site Management Plan (SMP) and all certifications, with general oversight for all project activities.

Richard Hooker, Senior Project Manager, WCD Group (WCD)

Richard Hooker, will be responsible for overview of all project activities, including overall project management and allocation of staff and other resources required to complete the project within the specified schedule and budget.

Eric Salazar, Project Manager, WCD

Eric Salazar will act as Project Manager on behalf of the Volunteer, and will be responsible for managing all project activities in consultation with the Remedial Engineer. Mr. Salazar will review all project documents and ensure that project plans are followed, manage day-to-day project operations and administrative aspects, and will function as the client and regulatory contact for the project. Mr. Salazar has authority to direct the activities of the field team (OSC and drilling subcontractor).

James Blaney, WCD, Quality Assurance Officer, WCD

James Blaney will be responsible for reviewing all sampling procedures and certifying that the data was collected and analyzed using the appropriate procedures and will act in conjunction with the Project Manager in the development of the sampling and analytical portion of a site-specific quality assurance project plan (QAPP).

WCD Staff (TBD), On-Site Coordinator (OSC)

The OSC will be responsible for the completion of all on-site fieldwork, collection of all samples, completion of the field log, and chains of custody. The OSC will have authority over all on-site subcontractors.

Laboratory Subcontractor, York Analytical Laboratories, Inc.

York Analytical Laboratories will be responsible for analysis of samples and is NYSDOH ELAP certified in the appropriate categories, including PFOA and PFOS in drinking water by USEPA Method 537.1 or ISO 25101.

Data Validator (TBD)

An independent, third-party data validator will be responsible for reviewing and evaluating all analytical data packages and preparing Data Usability Reports in accordance with DER-10. A current resume outlining education and experience of the data validator will be provided to DER for review and approval (once the data validator has been selected).

1.2 Principal Data Users

The principal users of the generated data in this project are listed below.

- Residents of Bronx Borough, City of New York, especially those residing in the vicinity of the Site
- Betances VI Partners LLC (Volunteer)
- NYSDEC and NYSDOH

1.3 Problem Definition/Background

The Site is a 0.23-acre property located at 472-474 Willis Avenue, Borough of Bronx, New York City, New York. The Site is fully occupied by a vacant one-story building containing several commercial spaces and a former New York City Housing Authority (NYCHA) maintenance garage.

Environmental remedial activities are provided in a Remedial Action Work Plan (RAWP, February 2019), submitted in conjunction with an application to the NYSDEC Brownfields Cleanup Program (BCP). The tasks detailed in the RAWP are wholly incorporated by reference into this QAPP. The RAWP was prepared to remediate current subsurface contamination present in on-site soils.

An open NYSDEC spill file (No. 9813188) is reported for the Site and field evidence of contamination is present in sub-slab soils located beneath the NYCHA garage. Soils beneath the building foundation also contain elevated levels of semi-volatile organic compounds, metals and pesticides, and groundwater at and near the property contains elevated levels of metals. Soil vapor does not appear to be significantly impacted by site conditions. The remedial actions proposed in the RAWP consist of the removal of on-site soils to approximately 12 feet below grade throughout the Site for site development, and additional excavation (as warranted) of contaminated soils (some of which may be present below the water table).

1.4 Project/Task Description

The project will meet its objective through the following actions:

- Compliance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 3, 2010; and,
- Compliance with the Remedial Action Work Plan.

1.5 Quality Objectives and Criteria

The data collected in this project will be used to characterize contaminated media prior to off-site disposal, provide confirmatory data indicating effective remedial actions and document (as required) the integrity of any materials imported to the Site.

In order to meet the data quality objectives of precision, accuracy, representation, comparability and completeness the following actions will be taken:

- Duplicate samples will be collected and analyzed in order to determine the degree to which measurements obtained under the same protocols are consistent and reproducible.
- Matrix spike samples will be collected and analyzed in order to determine accuracy for the samples.
- A trip blank sample will also be analyzed in order to detect potential contamination during sample transport of VOC samples
- A rinse blank will be prepared and analyzed for each non-dedicated piece of sampling equipment, as applicable.

Data generated during the completion of the RAWP will be submitted for review by a third, independent party.

Prior to fieldwork, the Project Manager and OSC will review the RAWP to ensure that the data quality objectives of precision, accuracy, representation, comparability and completeness will be met. The Project Manager will review logs and chains of custody to ensure that field activities met the intent of the RAWP. If a problem is identified, Mr. James Blaney and the Project Manager, will meet to determine corrective measures necessary to meet data quality objectives.

1.6 Documents and Records

Electronic and paper copies of all measurements will be retained by WCD. Documentation of sufficient quality and quantity to represent environmental conditions at the Site will be provided to the NYSDEC in the Final Engineering Report (FER), which will document all findings and results of the implementation of the RAWP.

2.0 SAMPLING AND ANALYSIS PLAN

This section of the QAPP details sampling and analysis of all field parameters and media (soil, groundwater and soil vapor samples), and identifies methods for sample collection and handling. Section 2.6 of this QAPP describes specific procedures and sampling protocols for emerging Contaminants. A proposed sampling location map is provided in Attachment A.

2.1 Sampling Overview

Sampling will be conducted to document the integrity of remaining soils at the bases of the final excavation areas, only (excavations are intended to extend to the full lateral extent of the BCP Site until only off-site soils are exposed). Given the areal extent of the planned excavation area (10,000 square feet), twelve (12) base samples will be collected (see Section 2.3.2). Sampling will include laboratory analysis for 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS).

2.2 Sampling Methods

2.2.1 General Methodology

Material selected for sampling will be obtained in a manner consistent with NYSDEC sample collection protocols. All samples will be properly characterized and field screened, and findings will be recorded in logbooks. Field parameters will be measured at sampling locations (screening for volatile vapors with a PID) and at monitoring wells (vapor screening and water quality parameters during sampling) using properly calibrated precision instruments operated according to manufacturer's instructions.

Samples will be collected into appropriately-sized and preserved laboratory-supplied containers, using either dedicated disposable or properly decontaminated sampling equipment. The field technician will wear a new pair of disposable gloves during the collection of each sample, and will handle samples such that the potential for cross-contamination, and contamination of exterior surfaces of collection containers, is minimized (placement of media into containers will take place in a clean area remote from contaminant sources, as possible). PPE and sampling equipment will be decontaminated (as warranted) between sampling locations.

Sample collection and laboratory analysis for PFAS and 1,4-dioxane will comply with NYSDEC guidance (Sampling for 1,4-Dioxane and Per- and Polyfluoroalkyl Substances Under DEC's Part 375 Remedial Programs, June 2017), provided in Attachment B, which includes a target list of PFAS compounds and required laboratory reporting limits.

Guidelines for sampling of soil and/or groundwater for PFAS include the following (additional information, including prohibited behaviors and materials, are provided Attachment C):

- Sampling for PFAS will be conducted prior to sampling for other analytes, as practicable, to minimize cross contamination from sample containers utilized for other methods;
- Sampling personnel will comply with specific prohibitions in regards to field equipment, PPE, rain gear, personal clothing and body-care, food, etc.;
- Sample coolers will be held at low temperature using only water ice (plastic freezer packs are prohibited);
- Decontamination protocols specific to PFAS will be followed, including use of "PFAS free" water and approved cleaning agents; and,
- Compliance with laboratory requirements for sampling containers, field blanks, etc. (laboratory SOPs for PFAS are included in Attachment D).

Any non-dedicated sampling equipment will be decontaminated prior to the initiation of fieldwork, before each new sample location, and prior to be stored at the end of the work day. Decontamination procedures will consist of the following steps:

1. Wash all sampling equipment with non-phosphate, laboratory grade detergent (e.g., Alconox [NYSDEC guidance prohibits Liquinox]) and tap water (for PFA sampling, PFA-free water as provided by the laboratory will be used instead of tap water). Sampling equipment can be scrubbed using polyethylene or polyvinylchloride (PVC) brush to remove particulates.
2. Triple rinse all equipment with fresh tap water (for PFA sampling, a PFA-free water rinse will be utilized).
3. Rinse with isopropyl alcohol, or if samples are visibly contaminated with petroleum use a solvent, such as hexane.
4. Triple rinse with analyte-free water.

2.2.2 Collection of Soil

Site soil samples will be collected directly from exposed excavation areas or from material in the excavator bucket if access to an excavation area is considered impracticable or dangerous. Soil samples will be collected using properly decontaminated stainless steel instruments, or may be manually collected directly from exposed soil or the sampling instrument using dedicated disposable latex gloves.

Soil sampling for VOC analysis will be conducted following USEPA Method 5035 protocols, using disposable 5-gram Terra Core samplers (or similar equipment) to place material into laboratory-supplied glass vials with appropriate preservatives and stir bars.

2.2.3 Collection of Groundwater

Site groundwater samples will be collected from each monitoring well. Groundwater samples will be collected using a properly decontaminated mechanical pump and/or dedicated HDPE tubing. During the sampling procedure, samples will be stored in a cooler prior to transport to the approved laboratory.

2.2.4 Other Materials

Any non-soil solid materials requiring laboratory analysis will be placed into laboratory supplied glassware when possible, or will alternatively be placed into double locking plastic bags and then boxed in order to prevent a tear or other breach in the bags. Samples to be collected from liquids present in excavations, collection pits, or drums/tanks, etc., will be sampled using a dedicated disposal sampling device.

2.3 Sample Handling and Custody

2.3.1 Sample Containers

The following laboratory-supplied containers will be used for sample collection (as applicable):

Media Sample	Collection Container
Soil – VOCs	USEPA 5035 VOA kit (4, 40-ml glass vials)
Soil – all other analyses (metals and SVOCs)	1, 8-oz glass jar
Soil – duplicate	1 additional 8-oz glass jar
Groundwater – PFAS	Modified USEPA 537 ([2] 250-ml containers [HDPE or Polypropylene] with unlined screw caps)
Groundwater – 1-4 Dioxane (low detection limit)	USEPA 8270 SIM (2, amber liter jars)
Water – equipment rinse blank	3, 40-ml prepared glass vials (HCl) – VOCs 1, 1-liter glass – SVOCs, TPH-DRO
Water – trip blank	3, 40-ml prepared glass vials (HCl)

2.3.2 Sampling Frequency

End-point sampling will be performed throughout the base of the excavation, which is planned to cover the entire BCP Site (10,000 square feet), in accordance with DER-10, Section 4.4, sample frequency requirements. Discreet grab samples will be collected from the excavation base at a frequency of one sample for every 900 square feet of floor area (unless otherwise modified with the consent of the NYSDEC Project Manager). Excavation side walls, which will be comprised of off-site materials, are not anticipated to require sampling (should sidewalls be

located within the BCP boundary, discreet sampling will be conducted at a rate of one sample per 30 linear feet). End-point samples will be biased towards the potentially highest contaminated location determined by fieldwork observations and/or previous sampling data.

At a minimum, all samples will be submitted for laboratory analysis of NYSDEC CP-51 Petroleum List compounds. A subset of confirmatory endpoint samples will be analyzed for all parameters: TCL VOCs, TCL SVOCs, pesticides/PCBs and TAL metals (the number of samples to be determined in consultation with the NYSDEC Project Manager). Delineation and/or waste characterization sampling may be conducted prior to excavation activities; the results from such sampling will be provided to NYSDEC.

An estimated twelve (12) base samples will be collected, each representing at least a minimum of 900 square feet of excavation floor area (actual number of samples per area of investigation and excavation to be determined based on encountered conditions and guidance form NYSDEC). In addition, four (4) groundwater samples will be collected, one from each monitoring well.

Media / QC Parameter	Number of Collection Points (Number of Samples)	Analyte(s)
Soil Endpoint (excavation base)	4 (12)	VOCs and SVOCs (CP-51 Petroleum List, 8260/8270)
Soil Endpoint (excavation base)	To be determined	VOCs and SVOCs (TCL, 8260/8270), metals (TAL, 6010C and 7471A), pesticides/PCBs (8081/8082)
Groundwater	4 (4)	PFAS (527 modified)
Groundwater	4 (4)	1,4 Dioxane (522/8270 SIM)
Trip Blank	One per sample cooler per day (when samples are collected)	VOCs (TCL, 8260)
Rinse/Equipment Blank	One per 20 samples collected (non-dedicated equipment)	As per the analyte list(s) for the sample type (PFAS / 1,4-dioxane: Min. 1/day/matrix)
Duplicates	One per 20 samples collected (minimum one/week)	As per the analyte list(s) for the sample type
PFAS will be analyzed by LC-MS/MS for PFAS using methodologies based on EPA Method 537; additional methods may include SPLP (EPA Method 1312), and/or Total Oxidizable Precursor (TOP) Assay.		

2.3.3 Sample Custody

Samples will be handled by the OSC. All soil and groundwater samples will be placed in a sample cooler that is maintained at 4 (+/-2) °C. All soil vapor sampling canisters will be kept in a cool, dry environment.

For each sampling day, sampling personnel will be required to complete a sampling custody worksheet indicating all pertinent information about the samples collected, handling methods, name of the collector, and chain of custody (which will require a Category B Data Deliverable). Upon the completion of each day of sample collection activities, all samples will be shipped via either courier or overnight delivery (per laboratory requirements) to a NYSDOH ELAP certified laboratory. Laboratory personnel will record the cooler temperature upon receipt and analyze the samples prior to the expiration of the hold times as specified in the NYSDEC Analytical Service Protocol.

2.4 Analytical Methods

Media samples will be analyzed as indicated in Section 2.3.2, above. Analytical methods for the samples will be implemented as follows (as applicable):

Matrix	Sample Analysis (Holding Time)	Analytical Method	Recommended Container(s) Per Sample	Preservation
Soil	VOCs (48 hours to freeze; 14 days to analysis)	8260C	4, 40-ml vials (laboratory 5035 VOA kit)	Preserved per Method 5035
Soil	SVOCs (14 days)	8270B	1, 8 oz. glass jar**	4° C
Soil	TAL metals (6 months; mercury: 28 days)	6010C/7471B	1, 8 oz. glass jar**	4° C
Soil	Pesticides/PCBs (14 days)	8081/8082	1, 8 oz. glass jar**	4° C
Water	VOCs (14 days)	8260C	3, 40-ml VOA vials	4° C, HCl
Water	1, 4 Dioxane (Method 8270 SIM: 7 days)	8270 SIM (RL 0.35 µg/L)	2, 1-L amber jars	4° C
Water	PFAS## (14 days)	537 modified (RL 2 ng/L)	2, 250-ml HDPE bottles	4° C

** Soil for SVOC, metals and pesticides/PCBs may be combined into a single 8 oz. jar, or collected separately in 4 oz. jars.

Groundwater will be analyzed for the NYSDEC target list of PFAS compounds presented in NYSDEC guidance documents in Attachment C. Laboratory standard operating procedures for PFAS analysis are provided in Attachment D. Laboratory MCLs are provided as Attachment E.

2.5 Quality Control

Accuracy and precision will be determined by repeated analysis of laboratory standards, and matrix effects and recovery will be determined through use of spiked samples. With each sample run, standards, blanks and spiked samples will be run.

One duplicate sample will be collected for every 20 matrix samples (or one per week). One in 20 samples will also be submitted for Matrix spike (MS) and Matrix Spike Duplicate (MSD) analysis. One rinse blank will be prepared for each non-dedicated piece of sampling equipment for every 20 analytical samples collected using that piece of equipment. For each day of sampling, a trip blank will be included with each sample cooler (analyzed for VOCs, only). Equipment blanks and duplicate samples will be analyzed for all parameters.

Samples will be identified using a unique ID number. This ID will be recorded on the sampling log and/or field record and the sampling container. Samples will be assigned to a Sample Delivery Group (SDG) for the fieldwork day and will be shipped via either courier or overnight delivery to the laboratory following proper chain of custody procedure, as described above.

3.0 QUALITY ASSURANCE

3.1 Instrument/Equipment, Testing, Inspection, and Maintenance

Field measurements will be conducted using monitoring equipment specialized for each task, including use of a PID during all fieldwork events to screen for volatile organic vapors. All instruments will be stored at ESI offices when not in use. All instruments will be calibrated (as warranted) in accordance with the manufacturer's instructions. Instrument malfunction is normally apparent during calibration. In the event of malfunction, equipment will be cleaned and tested. Equipment testing, inspection and maintenance will be the responsibility of the Project Manager and OSC for the project. Any other equipment selected for field measurements will be similarly managed.

3.2 Inspection/Acceptance of Supplies and Consumables

All supplies and consumables will be inspected and tested (if needed) by the Project Manager or the OSC upon receipt. The following supplies and consumables will be used (as applicable):

- Soil samples: Four 40-ml vials (laboratory-supplied 5035 VOA kits) will be used for each sample collected for analysis of VOCs and one 8-oz clear glass jar will be used for each sample collected for analysis of SVOCs, metals and/or pesticides/PCBs. Duplicate samples will each require one additional sample volume.
- Disposable gloves (nitrile or equivalent).
- Distilled water (for decontamination and the preparation of blanks).

3.3 Data Management

For the purpose of data management, the data can be divided into field and laboratory data. Field data will be recorded at the time of measurement on written field logs. Laboratory data will be reviewed upon receipt and summarized in data summary tables.

4.0 DATA VALIDATION AND USABILITY

4.1 Data Review, Verification and Validation

Data generated by this project will be reviewed, verified and validated as follows:

4.1.1 Field Measurements

If field instruments are determined to be functioning correctly through calibration and measurements of standards, and if there are no inconsistencies between written records and data recorded in the meters, the data will be assumed to be valid and will be accepted as an indication of field conditions. If instruments malfunction prior to field measurement, they will be restored to proper function prior to re-use. If they malfunction immediately after field measurements are taken, the measurements will be retaken as soon as possible. Inconsistencies between written records and recorded meter data will be resolved by re-testing the material, if possible. If re-testing is not possible, (e.g., a sample has been shipped to the laboratory), the inconsistency will be described in the FER and the laboratory analysis will be utilized to classify the material. In addition, all field data will be reviewed by the Project Manager for consistency and plausibility.

4.1.2 Laboratory Analysis

The NYSDOH ELAP-certified laboratory will provide a NYSDEC ASP Category B data package for the determinative sample analyses, as required by Section 2 of DER-10.

4.1.3 Soil Cleanup Objectives (SCOs)

The SCOs for this BCP Site are provided in 6 NYCRR Subpart 375, Table 375-6.8(a) Unrestricted Use SCOs and Table 375-6.8(b) Restricted-Residential Use SCOs, and in Supplemental SCOs and Soil Cleanup Levels presented in NYSDEC CP-51 (Soil Cleanup Guidance, October 2010), Tables 1 through 3. Copies of these tables are provided as Attachment B.

Soil imported to a site for use in a soil cap, soil cover, or as backfill must be tested for 1,4-dioxane and PFAS contamination in general conformance with DER-10, Section 5.4(e). Soil samples must be analyzed for 1,4-dioxane using EPA Method 8270, as well as the full list of PFAS compounds (currently 21) using EPA Method 537.1 (modified).

Soil exceeding the Unrestricted SCO of 0.1 ppm for 1,4-dioxane will be rejected. If PFOA or PFOS is detected in any sample at or above 1 ppb, then a soil sample must be tested by the Synthetic Precipitation Leaching Procedure (SPLP) and the leachate analyzed. If the SPLP results exceed 70 ppt combined PFOA/S, then the source of backfill must be rejected. Samples may be analyzed concurrently for both PFAS in soil and in the SPLP leachate to minimize project delays.

4.2 Verification and Validation Methods

4.2.1 Verification Method

Once collected, all data will go to the Project Manager for review and verification. Review will involve determining that all data has been collected at the proper locations by the proper persons and that all field and laboratory logs are complete. In addition, a Data Usability Summary Report (DUSR) in accordance with DER-10, Appendix 2B, will be prepared by a third, independent party, which maintains NYSDOH ELAP CLP Certification (the DUSR will also include a current resume for the person who prepared it).

4.2.2 Authority for Verification

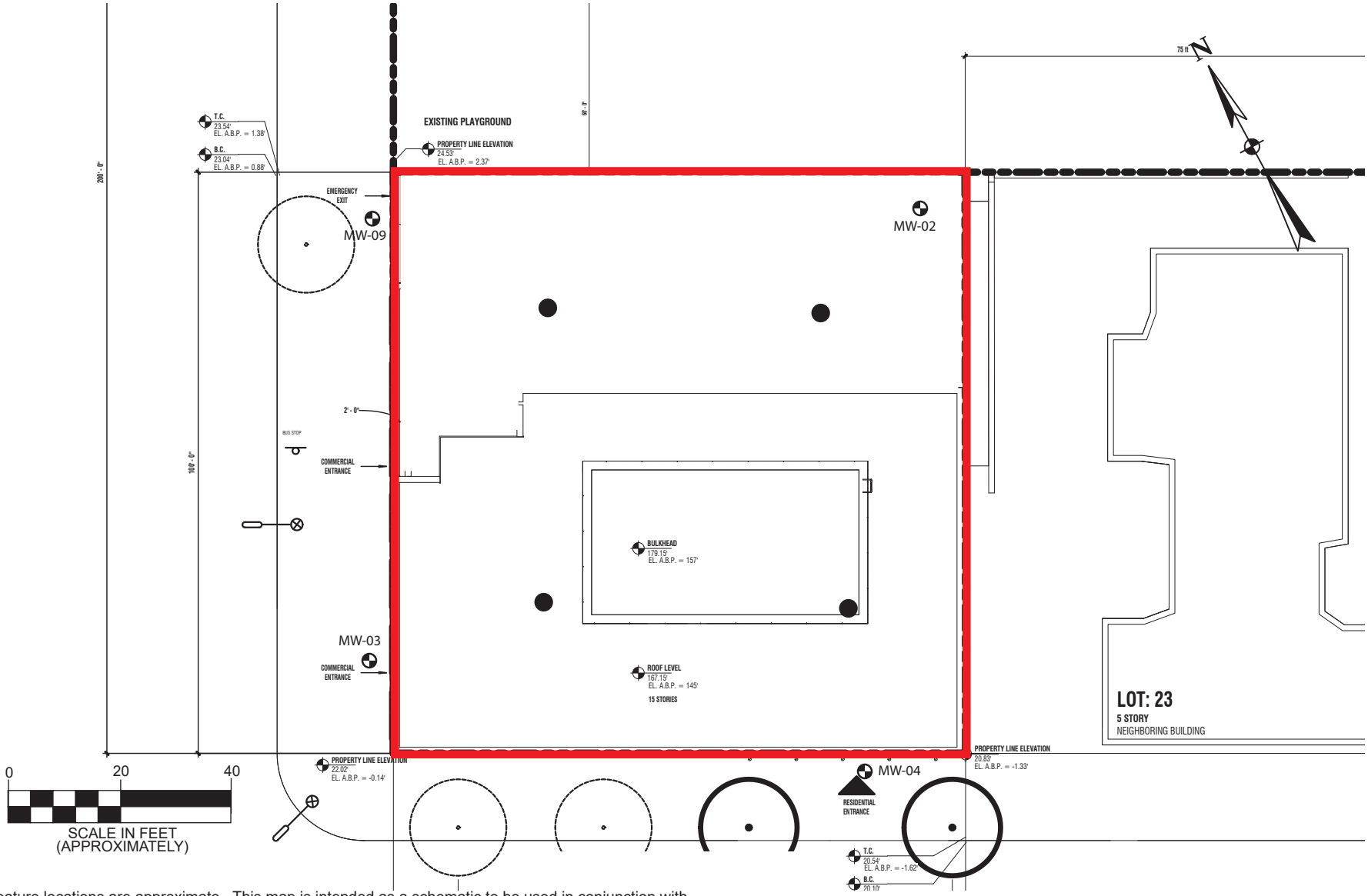
Authority for verification, validation and resolution of data issues will be distributed among the investigators. Authority to resolve issues regarding verification of field measurements will rest with the Remedial Engineer, Project Manager and Mr. James Blaney.

4.2.3 Project Reports

Following review, validation and verification, all data will be conveyed to users via the FER, which will document the findings and results of the implementation of the RAWP. This report will include the following:

- All laboratory analytical results obtained from the sampling event(s), summarized in tables and provided in NYSDEC EDD format (EQuIS).
- A detailed account of any deviations from field procedures specified in the RAWP.
- A complete set of field notes and/or Field Observation Tables.
- Results of the DUSR review of all laboratory results.

Attachment A – Proposed Sampling Locations



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Proposed Sampling Locations

472-474 Willis Avenue
Borough of Bronx, New York

Legend:

- subject property border
- monitoring well location
- proposed end-point sample location

WCD File: BB17076.50

November 2019

Scale as shown

Attachment A

Attachment B – NYSDEC SCOs

Department of Environmental Conservation

Division of Environmental Remediation

6 NYCRR PART 375

Environmental Remediation Programs

Subparts 375-1 to 375- 4 & 375-6

Effective December 14, 2006

New York State Department of Environmental Conservation

375-6.8 Soil cleanup objective tables.

(a) Unrestricted use soil cleanup objectives.

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
Metals		
Arsenic	7440-38-2	13 [c]
Barium	7440-39-3	350 [c]
Beryllium	7440-41-7	7.2
Cadmium	7440-43-9	2.5 [c]
Chromium, hexavalent [e]	18540-29-9	1[b]
Chromium, trivalent [e]	16065-83-1	30 [c]
Copper	7440-50-8	50
Total Cyanide [e, f]		27
Lead	7439-92-1	63 [c]
Manganese	7439-96-5	1600 [c]
Total Mercury		0.18 [c]
Nickel	7440-02-0	30
Selenium	7782-49-2	3.9[c]
Silver	7440-22-4	2
Zinc	7440-66-6	109 [c]
PCBs/Pesticides		
2,4,5-TP Acid (Silvex) [f]	93-72-1	3.8
4,4'-DDE	72-55-9	0.0033 [b]
4,4'-DDT	50-29-3	0.0033 [b]
4,4'-DDD	72-54-8	0.0033 [b]
Aldrin	309-00-2	0.005 [c]
alpha-BHC	319-84-6	0.02
beta-BHC	319-85-7	0.036
Chlordane (alpha)	5103-71-9	0.094

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
delta-BHC [g]	319-86-8	0.04
Dibenzofuran [f]	132-64-9	7
Dieldrin	60-57-1	0.005 [c]
Endosulfan I [d, f]	959-98-8	2.4
Endosulfan II [d, f]	33213-65-9	2.4
Endosulfan sulfate [d, f]	1031-07-8	2.4
Endrin	72-20-8	0.014
Heptachlor	76-44-8	0.042
Lindane	58-89-9	0.1
Polychlorinated biphenyls	1336-36-3	0.1
Semivolatile organic compounds		
Acenaphthene	83-32-9	20
Acenapthylene [f]	208-96-8	100 [a]
Anthracene [f]	120-12-7	100 [a]
Benz(a)anthracene [f]	56-55-3	1 [c]
Benzo(a)pyrene	50-32-8	1 [c]
Benzo(b)fluoranthene [f]	205-99-2	1 [c]
Benzo(g,h,i)perylene [f]	191-24-2	100
Benzo(k)fluoranthene [f]	207-08-9	0.8 [c]
Chrysene [f]	218-01-9	1 [c]
Dibenz(a,h)anthracene [f]	53-70-3	0.33 [b]
Fluoranthene [f]	206-44-0	100 [a]
Fluorene	86-73-7	30
Indeno(1,2,3-cd)pyrene [f]	193-39-5	0.5 [c]
m-Cresol [f]	108-39-4	0.33 [b]
Naphthalene [f]	91-20-3	12
o-Cresol [f]	95-48-7	0.33 [b]

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
p-Cresol [f]	106-44-5	0.33 [b]
Pentachlorophenol	87-86-5	0.8 [b]
Phenanthrene [f]	85-01-8	100
Phenol	108-95-2	0.33 [b]
Pyrene [f]	129-00-0	100
Volatile organic compounds		
1,1,1-Trichloroethane [f]	71-55-6	0.68
1,1-Dichloroethane [f]	75-34-3	0.27
1,1-Dichloroethene [f]	75-35-4	0.33
1,2-Dichlorobenzene [f]	95-50-1	1.1
1,2-Dichloroethane	107-06-2	0.02 [c]
cis -1,2-Dichloroethene [f]	156-59-2	0.25
trans-1,2-Dichloroethene [f]	156-60-5	0.19
1,3-Dichlorobenzene [f]	541-73-1	2.4
1,4-Dichlorobenzene	106-46-7	1.8
1,4-Dioxane	123-91-1	0.1 [b]
Acetone	67-64-1	0.05
Benzene	71-43-2	0.06
n-Butylbenzene [f]	104-51-8	12
Carbon tetrachloride [f]	56-23-5	0.76
Chlorobenzene	108-90-7	1.1
Chloroform	67-66-3	0.37
Ethylbenzene [f]	100-41-4	1
Hexachlorobenzene [f]	118-74-1	0.33[b]
Methyl ethyl ketone	78-93-3	0.12
Methyl tert-butyl ether [f]	1634-04-4	0.93
Methylene chloride	75-09-2	0.05

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
n - Propylbenzene [f]	103-65-1	3.9
sec-Butylbenzene [f]	135-98-8	11
tert-Butylbenzene [f]	98-06-6	5.9
Tetrachloroethene	127-18-4	1.3
Toluene	108-88-3	0.7
Trichloroethene	79-01-6	0.47
1,2,4-Trimethylbenzene [f]	95-63-6	3.6
1,3,5-Trimethylbenzene[f]	108-67-8	8.4
Vinyl chloride[f]	75-01-4	0.02
Xylene (mixed)	1330-20-7	0.26

All soil cleanup objectives (SCOs) are in parts per million (ppm).

Footnotes

[a] The SCOs for unrestricted use were capped at a maximum value of 100 ppm. See Technical Support Document (TSD), section 9.3.

[b] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.

[c] For constituents where the calculated SCO was lower than the rural soil background concentration, as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 1 SCO value for this use of the site.

[d] SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.

[e] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[f] Protection of ecological resources SCOs were not developed for contaminants identified in Table 375-6.8(b) with “NS”. Where such contaminants appear in Table 375-6.8(a), the applicant may be required by the Department to calculate a protection of ecological resources SCO according to the TSD.

(b) Restricted use soil cleanup objectives.

Table 375-6.8(b): Restricted Use 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
PCBs/Pesticides							
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

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
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
Semivolatiles							
Acenaphthene	83-32-9	100[a]	100[a]	500[b]	1,000[c]	20	98
Acenapthylene	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

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
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]
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[f]
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

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

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

[f] For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

[g] This SCO is derived from data on mixed isomers of BHC.

[h] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[i] This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

[j] This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts). See TSD Table 5.6-1.

CP-51 / Soil Cleanup Guidance

New York State Department of Environmental Conservation

DEC Policy

Issuing Authority: Alexander B. Grannis, Commissioner

Date Issued: October 21, 2010	**Latest Date Revised:**

I. Summary

This policy provides the framework and procedures for the selection of soil cleanup levels appropriate for each of the remedial programs in the New York State Department of Environmental Conservation (DEC) Division of Environmental Remediation (DER). This policy applies to the Inactive Hazardous Waste Disposal Site Remedial Program, known as the State Superfund Program (SSF); Brownfield Cleanup Program (BCP); Voluntary Cleanup Program (VCP); Environmental Restoration Program (ERP); Spill Response Program - Navigation Law (NL) section 176 (SRP); and the Resource Conservation and Recovery Act (RCRA) Corrective Action Program. It replaces *Technical and Administrative Guidance Memorandum (TAGM) 4046: Determination of Soil Cleanup Objectives and Cleanup Levels* (January 24, 1994); the *Petroleum Site Inactivation and Closure Memorandum* (February 23, 1998); and Sections III and IV of *Spill Technology and Remediation Series (STARS) #1* (August 1992).

This document is used in conjunction with the applicable statutes, regulations and guidance. Site-specific soil cleanup levels, determined in accordance with this guidance, are only applied after:

- the site, or area of concern, is fully investigated to determine the nature and extent of contamination;
- all sources of contamination are addressed consistent with the hierarchy provided in 6 NYCRR 375-1.8(c) or consistent with the RCRA Corrective Action Program (as appropriate);
- groundwater, if contaminated, has been evaluated for appropriate remedial actions consistent with 6 NYCRR 375-1.8(d) or consistent with the RCRA Corrective Action Program (as appropriate); and
- impacts on adjacent residential properties, surface water, aquatic ecological resources are evaluated, as well as indoor air, soil vapor, vapor intrusion and other appropriate media.

II. Policy

It is DEC's policy, consistent with applicable statutes and regulations, that all remedies will be protective of public health and the environment. DEC's preference is that remedial programs, including the selection of soil cleanup levels, be designed such that the performance standard results in the implementation of a permanent remedy resulting in no future land use restrictions. However, some of

Table 1

Supplemental Soil Cleanup Objectives
(ppm)

Contaminant	CAS Number	Residential	Restricted Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Ground-water
METALS							
Aluminum	7429-90-5					10,000 [a,b]	
Antimony	7440-36-0					12[c]	
Boron	7440-42-8					0.5	
Calcium	7440-70-2					10,000 [a,b]	
Cobalt	7440-48-4	30				20	
Iron	7439-89-6	2,000					
Lithium	7439-93-2					2	
Molybdenum	7439-98-7					2	
Technetium	7440-26-8					0.2	
Thallium	7440-28-0					5[c]	
Tin	7440-31-5					50	
Uranium	7440-61-1					5	
Vanadium	7440-62-2	100[a]				39[b]	
PESTICIDES							
Biphenyl	92-52-4					60	
Chlordecone (Kepone)	143-50-0					0.06	
Dibenzofuran	132-64-9						6.2
2,4-D (2,4-Dichloro-phenoxyacetic acid)	94-75-7	100[a]					0.5
Furan	110-00-9					600	
Gamma Chlordane	5103-74-2	0.54					14
Heptachlor Epoxide	1024-57-3	0.077					0.02
Methoxychlor	72-43-5	100[a]				1.2	900

Contaminant	CAS Number	Residential	Restricted Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Ground-water
Parathion	56-38-2	100 [a]					1.2
2,4,5-T	93-76-5	100 [a]					1.9
2,3,7,8-TCDD	1746-01-6					0.000001	
2,3,7,8-TCDF	51207-31-9					0.000001	
SEMIVOLATILE ORGANIC COMPOUNDS							
Aniline	62-53-3	48	100[a]	500[a]	1000[a]		0.33[b]
Bis(2-ethylhexyl) phthalate	117-81-7	50				239	435
Benzoic Acid	65-85-0	100[a]					2.7
Butylbenzyl-phthalate	85-68-7	100 [a]					122
4-Chloroaniline	106-47-8	100 [a]					0.22
Chloroethane	75-00-3						1.9
2-Chlorophenol	95-57-8	100 [a]				0.8	
3-Chloroaniline	108-42-9					20	
3-Chlorophenol	108-43-0					7	
Di-n-butyl-phthalate	84-74-2	100 [a]				0.014	8.1
2,4-Dichlorophenol	120-83-2	100 [a]				20	0.40
3,4-Dichlorophenol	95-77-2					20	
Diethylphthalate	84-66-2	100 [a]				100	7.1
Di-*n*-hexyl-phthalate	84-75-3					0.91	
2,4-Dinitrophenol	51-28-5	100 [a]				20	0.2
Dimethylphthlate	131-11-3	100 [a]				200	27
Di-n-octylphthlate	117-84-0	100 [a]					120
1,2,3,6,7,8-HCDF	57117-44-9					0.00021	
Hexachloro-benzene	118-74-1	0.41					1.4
2,6-Dinitrotoluene	606-20-2	1.03					1.0
Isophorone	78-59-1	100 [a]					4.4

Contaminant	CAS Number	Residential	Restricted Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Ground-water
4-methyl-2-pentanone	108-10-1						1.0
2-methyl-naphthalene	91-57-6	0.41					36.4
2-Nitroaniline	88-74-4						0.4
3-Nitroaniline	99-09-2						0.5
Nitrobenzene	98-95-3	3.7	15	69	140	40	0.17[b]
2-Nitrophenol	88-75-5					7	0.3
4-Nitrophenol	100-02-7					7	0.1
Pentachloroaniline	527-20-8					100	
2,3,5,6-Tetrachloroaniline	3481-20-7					20	
2,3,4,5-Tetrachlorophenol	4901-51-3					20	
2,4,5-Trichloroaniline	636-30-6					20	
2,4,5-Trichlorophenol	95-95-4	100[a]				4	0.1
2,4,6-Trichlorophenol	88-06-2					10	
VOLATILE ORGANIC COMPOUNDS							
2-Butanone	78-93-3	100[a]					0.3
Carbon Disulfide	75-15-0	100[a]					2.7
Chloroacetamide	79-07-2					2	
Dibromochloro-methane	124-48-1					10	
2,4-Dichloro aniline	554-00-7					100	
3,4-Dichloroaniline	95-76-1					20	
1,2-Dichloropropane	78-87-5					700	
1,3-Dichloropropane	142-28-9						0.3
2,6-Dinitrotoluene	606-20-2	1.03					0.17[b]
Ethylacetate	141-78-6					48	

Contaminant	CAS Number	Residential	Restricted Residential	Commercial	Industrial	Protection of Ecological Resources	Protection of Ground-water
4-methyl-2-pentanone	108-10-1						1.0
113 Freon (1,1,2- TFE)	76-13-1	100 [a]					6
isopropylbenzene	98-82-8	100 [a]					2.3
p-isopropyltoluene	99-87-6						10
Hexachlorocyclo-pentadiene	77-47-4					10	
Methanol	67-56-1					6.5	
N-nitrosodiphenyl-amine	86-30-6					20	
Pentachloro-benzene	608-93-5					20	
Pentachloronitro-benzene	82-68-8					10	
Styrene	100-42-5					300	
1,2,3,4-Tetrachlorobenzene	634-66-2					10	
1,1,2,2-Tetrachloroethane	79-34-5	35					0.6
1,1,2,2-Tetrachloroethylene	127-18-4					2	
1,2,3-Trichlorobenzene	87-61-6					20	
1,2,4-Trichlorobenzene	120-82-1					20	3.4
1,2,3-Trichloropropane	96-18-4	80					0.34

[a] SCOs for organic contaminants (volatile organic compounds, semivolatile organic compounds, and pesticides) are capped at 100 ppm for residential use, 500 ppm for commercial use, 1000 ppm for industrial use. SCOs for metals are capped at 10,000 ppm.

[b] Based on rural background study

[c] SCO limited by contract required quantitation limit.

Table 2

Soil Cleanup Levels for Gasoline Contaminated Soils

Contaminant	CAS Registry Number	Soil Cleanup Level (ppm)
Benzene	71-43-2	0.06
n-Butylbenzene	104-51-8	12.0
sec-Butylbenzene	135-98-8	11.0
Ethylbenzene	100-41-4	1.0
Isopropylbenzene	98-82-8	2.3
p-Isopropyltoluene	99-87-6	10.0
Methyl-Tert-Butyl-Ether	1634-04-4	0.93
Naphthalene	91-20-3	12.0
n-Propylbenzene	103-65-1	3.9
Tert-Butylbenzene	98-06-6	5.9
Toluene	108-88-3	0.7
1,2,4-Trimethylbenzene	95-63-6	3.6
1,3,5-Trimethylbenzene	108-67-8	8.4
Xylene (Mixed)	1330-20-7	0.26

Table 3

Soil Cleanup Levels for Fuel Oil Contaminated Soil

Contaminant	CAS Registry Number	Soil Cleanup Level (ppm)
Acenaphthene	83-32-9	20
Acenaphthylene	208-96-8	100
Anthracene	120-12-7	100
Benz(a)Anthracene	56-55-3	1.0
Dibenzo(a,h)Anthracene	53-70-3	0.33
Benzene	71-43-2	0.06
n-Butylbenzene	104-51-8	12.0
sec-Butylbenzene	135-98-8	11.0
Tert-Butylbenzene	98-06-6	5.9
Chrysene	218-01-9	1.0
Ethylbenzene	100-41-4	1.0
Fluoranthene	206-44-0	100
Benzo(b)Fluoranthene	205-99-2	1.0
Benzo(k)Fluoranthene	207-08-9	0.8
Fluorene	86-73-7	30
Isopropylbenzene	98-82-8	2.3
p-Isopropyltoluene	99-87-6	10.0
Naphthalene	91-20-3	12.0
n-Propylbenzene	103-65-1	3.9
Benzo(g,h,i)Perylene	191-24-2	100
Phenanthrene	85-01-8	100
Pyrene	129-00-0	100
Benzo(a)Pyrene	50-32-8	1.0
Indeno(1,2,3-cd)Pyrene	193-39-5	0.5
1,2,4-Trimethylbenzene	95-63-6	3.6
1,3,5-Trimethylbenzene	108-67-8	8.4
Toluene	108-88-3	0.7
Xylene (Mixed)	1330-20-7	0.26

Attachment C – PFAS Sampling Guidance

June 2019

Sampling for 1,4-Dioxane and Per- and Polyfluoroalkyl Substances (PFAS) Under DEC's Part 375 Remedial Programs

Objective

The Department of Environmental Conservation (DEC) is requiring sampling of all environmental media and subsequent analysis for the emerging contaminants 1,4-Dioxane and PFAS as part of all remedial programs implemented under 6 NYCRR Part 375, as further described in the guidance below.

Sample Planning

The number of samples required for emerging contaminant analyses is to be the same number of samples where "full TAL/TCL sampling" would typically be required in an investigation or remedial action compliance program.

Sampling of all media for ECs is required at all sites coming into or already in an investigative phase of any DER program. In other words, if the sampling outlined in the guidance hasn't already been done or isn't part of an existing work plan to be sampled for in the future, it will be necessary to go back out and perform the sampling prior to approving a SC report or issuing a decision document.

PFAS and 1,4-dioxane shall be incorporated into the investigation of potentially affected media, including soil, groundwater, surface water, and sediment as an addition to the standard "full TAL/TCL sampling." Biota sampling may be necessary based upon the potential for biota to be affected as determined pursuant to a Fish and Wildlife Impact analysis. Soil vapor sampling for PFAS and 1,4-dioxane is not required.

Upon an emerging contaminant being identified as a contaminant of concern (COC) for a site, those compounds must be assessed as part of the remedy selection process in accordance with Part 375 and DER-10 and included as part of the monitoring program upon entering the site management phase.

Special Testing Requirements for Import or Reuse of Soil: Soil imported to a site for use in a soil cap, soil cover, or as backfill must be tested for 1,4-dioxane and PFAS contamination in general conformance with DER-10, Section 5.4(e). Soil samples must be analyzed for 1,4-dioxane using EPA Method 8270, as well as the full list of PFAS compounds (currently 21) using EPA Method 537.1 (modified).

For 1,4-dioxane, soil exceeding the Unrestricted SCO of 0.1 ppm must be rejected per DER 10: Appendix 5 - Allowable Constituent Levels for Imported Fill or Soil, Subdivision 5.4(e).

If PFOA or PFOS is detected in any sample at or above 1 ppb, then a soil sample must be tested by the Synthetic Precipitation Leaching Procedure (SPLP) and the leachate analyzed. If the SPLP results exceed 70 ppt combined PFOA/S, then the source of backfill must be rejected. Remedial parties have the option of analyzing samples concurrently for both PFAS in soil and in the SPLP leachate to minimize project delays.

The work plan should explicitly describe analysis and reporting requirements, including laboratory analytical procedures for modified methods discussed below.

Analysis and Reporting

Labs should provide a full category B deliverable, and a DUSR should be prepared by an independent 3rd party data validator. QA/QC samples should be collected as required in DER-10, Section 2.3(c). The electronic data submission should meet the requirements provided at: https://www.dec.ny.gov/chemical/62440.html.

PFAS analysis and reporting: DEC has developed a *PFAS Analyte List* (below) for remedial programs. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. If lab and/or matrix specific issues are encountered for any compounds, the DEC project manager, in consultation with the DEC remedial program chemist, will make case-by-case decisions as to whether certain analytes may be temporarily or permanently discontinued from analysis at each site.

Currently, ELAP does not offer certification for PFAS compounds in matrices other than finished drinking water. However, laboratories analyzing environmental samples (e.g., soil, sediments, and groundwater) are required by DER to hold ELAP certification for PFOA and PFOS in drinking water by EPA Method 537 or ISO 25101. Labs must also adhere to the requirements and criteria set forth in the Laboratory Guidance for Analysis of PFAS in Non-Potable Water and Solids.

Modified EPA Method 537 is the preferred method to use for environmental samples due to its ability to achieve very low detection limits. Reporting limits for PFAS in groundwater and soil are to be 2 ng/L (ppt) and 1 ug/kg (ppb), respectively. If contract labs or work plans submitted by responsible parties indicate that they are not able to achieve these reporting limits for the entire list of 21 PFAS, site-specific decisions will need to be made by the DEC project manager in consultation with the DEC remedial program chemist. Note: Reporting limits for PFOA and PFOS in groundwater should not exceed 2 ng/L.

Additional laboratory methods for analysis of PFAS may be warranted at a site. These methods include Synthetic Precipitation Leaching Procedure (SPLP) by EPA Method 1312 and Total Oxidizable Precursor Assay (TOP Assay).

SPLP is a technique for determining the potential for chemicals in soil to leach to groundwater and may be helpful in determining the need for addressing PFAS-containing soils or other solid material as part of the remedy. SPLP sampling need not be considered if there are no elevated PFAS levels in groundwater. If elevated levels of PFAS are detected in water, and PFAS are also seen in soil, then an SPLP test should be considered to better understand the relationship between the PFAS in the two media.

The TOP Assay can assist in determining the potential PFAS risk at a site. For example, some polyfluoroalkyl substances may transform to form perfluoroalkyl substances, resulting in an increase in perfluoroalkyl substance concentrations as contaminated groundwater moves away from the site. To conceptualize the amount and type of oxidizable perfluoroalkyl substances which could be liberated in the environment, a “TOP Assay” analysis can be performed, which approximates the maximum concentration of perfluoroalkyl substances that could be generated if all polyfluoroalkyl substances were oxidized.

PFAS-containing materials can be made up of per- and polyfluoroalkyl substances that are not analyzable by routine analytical methodology (LC-MS/MS). The TOP assay converts, through oxidation, polyfluoroalkyl substances (precursors) into perfluoroalkyl substances that can be detected by current

analytical methodology. Please note that analysis of highly contaminated samples, such as those from an AFFF site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances. Please consult with a DEC remedial program chemist for assistance interpreting the results.

1,4-Dioxane analysis and reporting: The reporting limit for 1,4-dioxane in groundwater should be no higher than 0.35 µg/L (ppb) and no higher than 0.1 mg/kg (ppm) in soil. Although ELAP offers certification for both EPA Method 8260 and EPA Method 8270 for 1,4-dioxane, DER is advising the use of Method 8270 SIM for water samples and EPA Method 8270 for soil samples. EPA Method 8270 SIM is not necessary for soils if the lab can achieve the required reporting limits without the use of SIM. Note: 1,4-dioxane is currently listed as a VOC in the Part 375 SCO tables but will be moved to the SVOC table with the next update to Part 375.

Refinement of sample analyses: As with other contaminants that are analyzed for at a site, the emerging contaminant analyte list may be refined for future sampling events based on investigative findings. Initially, however, sampling using this PFAS Analyte List and 1,4-dioxane is needed to understand the nature of contamination.

PFAS Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonates	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluoroalkyl carboxylates	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUA/PFUdA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTriA/PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTA/PFTeDA	376-06-7
Fluorinated Telomer Sulfonates	6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
	8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Perfluorooctane-sulfonamides	Perfluroroctanesulfonamide	FOSA	754-91-6
Perfluorooctane-sulfonamidoacetic acids	N-methyl perfluorooctanesulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethyl perfluorooctanesulfonamidoacetic acid	N-EtFOSAA	2991-50-6

Michigan Department of Environmental Quality

MDEQ PFAS Sampling Quick Reference Field Guide[1]

All Items Used During Sampling Event

● Prohibited
• Items or materials that contain fluoropolymers such as o Polytetrafluoroethylene (PTFE), that includes the trademarks Teflon® and Hostaflon® o Polyvinylidene fluoride (PVDF), that includes the trademark Kynar® o Polycholotrifluoroethylene (PCTFE), that includes the trademark Neoflon ® o Ethylene-tetrafluoro-ethylene (ETFE), that includes the trademark Tefzel® o Fluorinated ethylene propylene (FEP), that includes the trademarks Teflon® FEP and Hostaflon® FEP • Items or materials that contain any other fluoropolymer

Pumps, Tubing, and Sampling Equipment

● Prohibited	■ Allowable	▲Needs Screening[2]
• Items or materials containing any fluoropolymer (potential items include tubing, valves, or pipe thread seal tape)	• High-density polyethylene (HDPE) • Low-density polyethylene (LDPE) tubing • Polypropylene • Silicone • Stainless-steel • Any items used to secure sampling bottles made from: o Natural rubber o Nylon (cable ties) o Uncoated metal springs o Polyethylene	• Any items or materials that will come into direct contact with the sample that have **not** been verified to be PFAS-free o Do not assume that any sampling items or materials are PFAS-free based on composition alone

Sample Storage and Preservation

● Prohibited	■ Allowable	▲Needs Screening[2]
• Polytetrafluoroethylene (PTFE): Teflon® lined bottles or caps	• Glass jars[4] • Laboratory-provided PFAS-Free bottles: o HDPE or polypropylene • Regular wet ice • Thin HDPE sheeting • LDPE resealable storage bags (i.e. Ziploc®) that will not contact the sample media[6]	• Aluminium foil[4] • Chemical or blue ice[5] • Plastic storage bags other than those listed as ■ Allowable • Low-density polyethylene (LDPE) bottles

Field Documentation

● Prohibited	■ Allowable	▲Needs Screening[2]
• Clipboards coated with PFAS • Notebooks made with PFAS treated paper • PFAS treated loose paper • PFAS treated adhesive paper products	• Loose paper (non-waterproof, non-recycled) • Rite in the Rain® notebooks • Aluminium, polypropylene, or Masonite field clipboards • Ballpoint pens, pencils, and Fine or Ultra-Fine Point Sharpie® markers	• Plastic clipboards, binders, or spiral hard cover notebooks • All markers not listed as ■ Allowable • Post-It® Notes or other adhesive paper products • Waterproof field books

Decontamination

● Prohibited	■ Allowable	▲Needs Screening[2]
• Decon 90® • PFAS treated paper towel	• Alconox®, Liquinox®, or Citranox® • Triple rinse with PFAS-free deionized water • Cotton cloth or untreated paper towel	• Municipal water • Recycled paper towels or chemically treated paper towels

Clothing, Boots, Rain Gear, and PPE

● Prohibited	■ Allowable	▲Needs Screening[2]
• New or unwashed clothing • Anything made of or with: o Gore-Tex™ or other water-resistant synthetics • Anything applied with or recently washed with: o Fabric softeners o Fabric protectors, including UV protection o Insect resistant chemicals o Water, dirt, and/or stain resistant chemicals	• Powderless nitrile gloves • Well-laundered synthetic or 100% cotton clothing, with most recent launderings not using fabric softeners • Made of or with: o Polyurethane o Polyvinyl chloride (PVC) o Wax coated fabrics o Rubber / Neoprene o Uncoated Tyvek®	• Latex gloves • Water and/or dirt resistant leather gloves • Any special gloves required by a HASP • Tyvek® suits, clothing that contains Tyvek®, or coated Tyvek®

Food and Beverages

● Prohibited	■ Allowable
• No food should be consumed in the staging or sampling areas, including pre-packaged food or snacks. ■ If consuming food on-site becomes necessary, move to the staging area and remove PPE. After eating, wash hands thoroughly and put on new PPE.	• Brought and consumed only outside the vicinity of the sampling area: o Bottled water o Hydration drinks (i.e. Gatorade®, Powerade®)

Personal Care Products (PCPs) - for day of sample collection[6]

● Prohibited	■ Allowable	▲Needs Screening[2]
• Any PCPs[6], sunscreen, and insect repellent applied in the sampling area.	PCPs[6], sunscreens, and insect repellents applied in the staging area, away from sampling bottles and equipment followed by thoroughly washing hands: **PCPs[6]:** • Cosmetics, deodorants/antiperspirants, moisturizers, hand creams, and other PCPs[6] **Sunscreens:** • Banana Boat® for Men Triple Defense Continuous Spray Sunscreen SPF 30 • Banana Boat® Sport Performance Coolzone Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Lotion Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Stick SPF 50 • Coppertone® Sunscreen Lotion Ultra Guard Broad Spectrum SPF 50 • Coppertone® Sport High Performance AccuSpray Sunscreen SPF 30 • Coppertone® Sunscreen Stick Kids SPF 55 • L'Oréal® Silky Sheer Face Lotion 50 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 50 • Meijer® Sunscreen Continuous Spray Broad Spectrum SPF 30 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 15, 30 and 50 • Meijer® Wet Skin Kids Sunscreen Continuous Spray Broad Spectrum SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Lotion SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Spray Broad Spectrum SPF 30 • Neutrogena® Pure & Free Baby Sunscreen Broad Spectrum SPF 60+ • Neutrogena® UltraSheer Dry-Touch Sunscreen Broad Spectrum SPF 30 **Insect Repellents:** • OFF® Deep Woods • Sawyer® Permethrin	• Products other than those listed as ■Allowable

[1] This table is not considered to be a complete listing of prohibited or allowable materials. All materials should be evaluated prior to use during sampling. The manufacturers of various products should be contacted in order to determine if PFAS was used in the production of any particular product.

[2] Equipment blank samples should be taken to verify these products are PFAS-free prior to use during sampling.

[3] **For surface water foam samples:** LDPE storage bags may be used in the sampling of foam on surface waters. In this instance, it is allowable for the LDPE bag to come into direct contact with the sample media.

[4] **For fish and other wildlife samples:** Depending on the project objectives, glass jars and aluminum foil might be used for PFAS sampling. PFAS has been found to bind to glass and if the sample is stored in a glass jar, a rinse of the jar is required during the sample analysis. PFAS are sometimes used as a protective layer for some aluminum foils. An equipment blank sample should be collected prior to any aluminum foil use.

[5] Regular ice is recommended as there are concerns that chemical and blue ice may not cool and maintain the sample at or below 42.8˚F (6°C) (as determined by EPA 40 CFR 136 – NPDES) during collection and through transit to the laboratory.

[6] Based on evidence, avoidance of PCPs is considered to be precautionary because none have been documented as having cross-contaminated samples due to their use. However, if used, application of PCPs must be done at the staging area and away from sampling bottles and equipment, and hands must be thoroughly washed after the use of any PCPs prior to sampling.

●- Prohibited ■- Allowable ▲- Needs Screening

Attachment D – Laboratory SOP for PFAS Analysis

Standard Operating Procedure - Summary
PFAS in Groundwater, Surface water and Soils

1.0 Summary

Target PFAS compounds are prepared and analyzed using EPA Method 537.1 modified. Aqueous and Soil samples are fortified with isotopic surrogates of the target PFAS compounds, extracted and concentrated to a known volume. The extracts are then analyzed employing LC-MSMS techniques.

Each preparation batch (per matrix) includes a preparation blank, lab control sample (blank spike), sample matrix spike and matrix spike duplicate and up to 20 samples.

2.0 Sample Preparation

Sample preparation involves extraction/clean-up and final concentration to a known volume before analysis. Isotopic surrogates are added to all preparation batch samples/QC.

2.1 Aqueous Samples

A known volume of sample is spiked with isotopic surrogates and extracted using Solid Phase Extraction (SPE) techniques. The SPE tubes are eluted with solvent and the eluant is then concentrated using nitrogen evaporation to a final volume of 1.0 mL. The final concentrated extract is fortified with Internal Standard and analyzed by LC-MSMS.

2.2 Soil Samples

A known weight of sample is fortified with isotopic surrogates, mixed then extracted in methanolic potassium hydroxide employing vortex mixing, followed by orbital shaking and finally ultrasonic extraction.

The extract is centrifuged and the supernatant solvent is quantitatively poured off and a small volume of PFAS free water is added to the solvent. The solvent mixture is evaporated using nitrogen evaporation and the remaining aqueous extract is brought to a known volume with PFAS free water.

The aqueous extract is then pH adjusted to 6-8 using glacial acetic acid and the resulting aqueous solution is extracted using SPE techniques. The SPE tube is eluted with solvent and the eluant is then concentrated using nitrogen evaporation to a final volume of 2.0 mL. The final concentrated extract is fortified with Internal Standard and analyzed by LC-MSMS.

3.0 **Analysis**

Analysis is conducted utilizing an Agilent Infinity 1290 HPLC system interfaced to an Agilent 6470AAR LC-MSMS with an Agilent Jet Stream-ElectroSpray Ionization (AJS-ESI)interface. The system is operated in the dynamic MRM (multiple reaction monitoring) mode for specific PFAS target isotopes and native analogs.

Where possible, multiple MRM transitions are used for targets and isotopes. Some species only exhibit single MRM transitions. Precursors and product ions are used for Quantitative and Qualitative purposes respectively.

3.1 Initial Calibration

The LC-MSMS is calibrated with 7 standards of a total of 40 isotopes and analog target PFAS compounds. Calibration is conducted from 0.25 to 20 ng/mL. Calibration employs internal standard techniques and either average response factor or quadratic regression is used depending upon the best calibration model based upon accuracy across the calibration range.

3.2 Continuing Calibration Verification

Each analytical sequence includes an opening continuing calibration verification (CCV) and a CCV after every 10 injections and at the end of the analysis sequence.

The CCV acceptance criteria are $\pm$ 30% of the expected value. Internal Standard areas are acceptable when -50% to +50% of the average response in the initial calibration.

3.3 Isotopic Surrogates (Isotope Dilution Analytes (IDA)

18 IDAs are utilized for this procedure. These isotopes are used to correct for recovery of detected target analog PFAS compounds through the preparation/analysis processes. The recovery limits currently are 25-150 % recovery and these limits are adjusted based upon laboratory determined control limits when sufficent data points per matrix are available.

3.4 Method Blanks (MBLK)

Each preparation batch includes a laboratory method blank. Any result greater than the Reporting Limit or 2 ng/L (aqueous) or 0.5 ug/kG (soil) is "B" flagged according with the exception of any detection of PFOA, PFOS or PFNA above the RL will require re-extraction of the batch.

3.5 Blank Spike (LCS)

Each preparation batch includes and BS/LCS. Recoveries are calculated and based upon isotope dilution. Recovery acceptance limits are 50-150% with RPD of 30% for a BSD if performed.

3.6 Matrix Spike/Matrix Spike Duplicates (MS/MSD)

Each preparation batch includes and MS/MSD pair. Recoveries are calculated and based upon isotope dilution. Recovery acceptance limits are 25-150% with RPD of 35% for samples.

4.0 Data Review and Reporting

All quantitation reports and LIMS output files are generated using the Agilent Mass Hunter reporting programs. The Quant reports include all Quantitative data and MRM transition data which are reviewed. The LIMS output file is in a format that allows upload to Element LIMS.

Isotope Dilution calculations are performed using our custom PFAS.mdb program which automatically uploads to the LIMS output file for upload to Element LIMS.

Once uploaded to ELEMENT, any exceptions/outliers are noted, flagged and set to reviewed.

All data reported are isotopically corrected for all QC and samples.

5.0 Revision History

May 1, 2019 Revision 1.0 First Issue

6.0 Approvals:

Laboratory Director Ben Gulizia

Corp. Technical Director Robert Bradley

Corp. QA Officer Sarah Widomski

Attachment E – Laboratory MDLs for PFAs

York Analytical Laboratories, Inc.

10/30/2019

Analytical Method Information

PFAS Target compounds by LC/MS-MS

Dept.: PFAS

Analyte	MDL	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Matrix Spike RPD	Blank Spike / LCS %R	Blank Spike / LCS RPD
PFAS, NYSDEC Target List in Water (EPA 537m)					Units: ng/L			
Preservation: Cool 4°C						**Hold Time to Analysis** 28 days		
Container: 10_250mL Plastic Cool to 4° C		**Amount Required:** 250 mL				**Hold Time to Extr.** 14 days		
1H,1H,2H,2H-Perfluorodecanesulfonic aci	0.877	2.00 ng/L		30	25 - 150	35	50 - 130	30
1H,1H,2H,2H-Perfluorooctanesulfonic aci	1.16	5.00 ng/L		30	25 - 150	35	50 - 130	30
surr: d3-N-MeFOSAA			25 - 150					
surr: d5-N-EtFOSAA			25 - 150					
surr: M2-6:2 FTS			25 - 150					
surr: M2-8:2 FTS			25 - 150					
surr: M2PFTeDA			10 - 150					
surr: M3PFBS			25 - 150					
surr: M3PFHxS			25 - 150					
surr: M4PFHpA			25 - 150					
surr: M5PFHxA			25 - 150					
surr: M6PFDA			25 - 150					
surr: M7PFUdA			25 - 150					
surr: M9PFNA			25 - 150					
MPFOA		0.100 ng/L						
N-EtFOSAA	0.436	2.00 ng/L		30	25 - 150	35	50 - 130	30
N-MeFOSAA	0.364	2.00 ng/L		30	25 - 150	35	50 - 130	30
surr: Perfluoro-1-[13C8]octanesulfonamid			10 - 150					
surr: Perfluoro-1-[13C8]octanesulfonic aci			25 - 150					
Perfluoro-1-decanesulfonic acid (PFDS)	0.491	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.418	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluoro-1-octanesulfonamide (FOSA)	0.877	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorobutanesulfonic acid (PFBS)	0.436	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorodecanoic acid (PFDA)	0.493	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorododecanoic acid (PFDoA)	0.611	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluoroheptanoic acid (PFHpA)	0.447	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorohexanesulfonic acid (PFHxS)	0.494	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorohexanoic acid (PFHxA)	0.442	2.00 ng/L		30	25 - 150	35	50 - 130	30
surr: Perfluoro-n-[1,2-13C2]dodecanoic ac			25 - 150					
surr: Perfluoro-n-[13C4]butanoic acid (MF			25 - 150					
surr: Perfluoro-n-[13C5]pentanoic acid (M			25 - 150					
surr: Perfluoro-n-[13C8]octanoic acid (M8			25 - 150					
Perfluoro-n-butanoic acid (PFBA)	1.01	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorononanoic acid (PFNA)	0.361	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorooctanesulfonic acid (PFOS)	0.472	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorooctanoic acid (PFOA)	0.360	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluoropentanoic acid (PFPeA)	0.511	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorotetradecanoic acid (PFTA)	0.701	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluorotridecanoic acid (PFTrDA)	0.660	2.00 ng/L		30	25 - 150	35	50 - 130	30
Perfluoroundecanoic acid (PFUnA)	0.534	2.00 ng/L		30	25 - 150	35	50 - 130	30

York Analytical Laboratories, Inc.

10/30/2019

Analytical Method Information

PFAS Target compounds by LC/MS-MS

Dept.: PFAS

Analyte	MDL	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Matrix Spike RPD	Blank Spike / LCS %R	Blank Spike / LCS RPD
PFAS, NYSDEC Target List in Soil (EPA 537m)					Units: ug/kg			
Preservation: Cool 4°C						**Hold Time to Analysis** 28 days		
Container: 10_250mL Plastic Cool to 4° C		**Amount Required:** 250 mL				**Hold Time to Extr.** 14 days		
1H,1H,2H,2H-Perfluorodecanesulfonic aci	0.344	0.750 ug/kg		30	25 - 150	35	50 - 130	30
1H,1H,2H,2H-Perfluorooctanesulfonic aci	0.521	0.750 ug/kg		30	25 - 150	35	50 - 130	30
surr: d3-N-MeFOSAA			25 - 150					
surr: d5-N-EtFOSAA			25 - 150					
surr: M2-6:2 FTS			25 - 150					
surr: M2-8:2 FTS			25 - 150					
surr: M2PFTeDA			10 - 150					
surr: M3PFBS			25 - 150					
surr: M3PFHxS			25 - 150					
surr: M4PFHpA			25 - 150					
surr: M5PFHxA			25 - 150					
surr: M6PFDA			25 - 150					
surr: M7PFUdA			25 - 150					
surr: M9PFNA			25 - 150					
MPFOA								
N-EtFOSAA	0.109	0.750 ug/kg		30	25 - 150	35	50 - 130	30
N-MeFOSAA	0.0910	0.750 ug/kg		30	25 - 150	35	50 - 130	30
surr: Perfluoro-1-[13C8]octanesulfonamid			10 - 150					
surr: Perfluoro-1-[13C8]octanesulfonic aci			25 - 150					
Perfluoro-1-decanesulfonic acid (PFDS)	0.177	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.198	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluoro-1-octanesulfonamide (FOSA)	0.455	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorobutanesulfonic acid (PFBS)	0.109	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorodecanoic acid (PFDA)	0.123	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorododecanoic acid (PFDoA)	0.110	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluoroheptanoic acid (PFHpA)	0.112	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorohexanesulfonic acid (PFHxS)	0.106	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorohexanoic acid (PFHxA)	0.111	0.750 ug/kg		30	25 - 150	35	50 - 130	30
surr: Perfluoro-n-[1,2-13C2]dodecanoic ac			25 - 150					
surr: Perfluoro-n-[13C4]butanoic acid (MF			25 - 150					
surr: Perfluoro-n-[13C5]pentanoic acid (M			25 - 150					
surr: Perfluoro-n-[13C8]octanoic acid (M8			25 - 150					
Perfluoro-n-butanoic acid (PFBA)	0.278	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorononanoic acid (PFNA)	0.0900	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorooctanesulfonic acid (PFOS)	0.118	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorooctanoic acid (PFOA)	0.0900	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluoropentanoic acid (PFPeA)	0.211	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorotetradecanoic acid (PFTA)	0.192	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluorotridecanoic acid (PFTrDA)	0.132	0.750 ug/kg		30	25 - 150	35	50 - 130	30
Perfluoroundecanoic acid (PFUnA)	0.133	0.750 ug/kg		30	25 - 150	35	50 - 130	30

Attachment F – Resumes

ERICK SALAZAR

Current Position:
Assistant Project Manager

Education:
BS, Biology, State University at New Paltz, NY

Registrations/ Certifications:

- OSHA, 40-hr. Hazardous Waste Operations & Emergency Response Health & Safety Certification
- OSHA, 10-hr. General Construction Industry Training and Certification

PROFESSIONAL SUMMARY

Erick Salazar serves as Assistant Project Manager for environmental site assessments and Phase II technical environmental investigations. His responsibilities include: investigating site histories, conducting facility inspections, reviewing regulatory agency records, documenting facility compliance with relevant State and Federal regulations, and preparing reports. He assists with Phase II technical environmental investigations and fieldwork including implementation of community air monitoring plans (CAMP), collecting soil and water samples and tank removal oversight.

Mr. Salazar has experience in the implementation of CAMP monitoring, personal sampling for lead and dust of workers, coordinating pre-demolition C&D waste inventory as part of Sandy relief work on Staten Island, and providing oversight of site remedial activities on rural properties.

Mr. Salazar's experience with Health and Safety services include:

- Complete OSHA training and three years' experience of Sites handling regulated materials as well as hazardous and non-hazardous wastes.
- Preparation of Environmental Health & Safety Plan for (EHASP) for debris removal and soil sampling project in Ulster County, New York.
- Assistance in the preparation of EHASPs for NYSDEC sites in Dutchess and Westchester Counties.
- Implementation of CAMP at sites in Dutchess, Ulster, Bronx and Queens Counties, including preparation of status reports, preparation of incident reports, and communication with involved regulatory agencies.
- Collection/analysis of media samples (air, water and soil) per requirements of the EHASP and/or remedial work plans.

Mr. Salazar graduated from State University of New York at New Paltz where he completed a BS in Biology with specialization in Organism and Environmental Studies. Mr. Salazar is bilingual in Spanish and English.

JAMES BLANEY, CHMM

Current Position:
Operations Manager, Environmental

Education:
B.A., Environmental Studies, Ramapo College of New Jersey
M.S. Environmental Policy and Planning, New Jersey Institute of Technology

Registrations/ Certifications:

- Certified Hazardous Materials Manager (CHMM)
- 8-Hour OSHA HAZWOPER Supervisor, 2014
- 8-Hour OSHA HAZWOPER Refresher, 2018
- 10-Hour OSHA Construction Safety Training, 2016
- 40-Hour OSHA HAZWOPER, 1997
- 80-hour Hazardous Materials Technician Level 3, 2000
- Domestic Preparedness Hazardous Materials Technician, 2002
- USDJ CDP Chemical Ordnance Biological Radiological Technician, 2000

PROFESSIONAL SUMMARY

James Blaney is Environmental Services Division Manager and Operations Manager with more than 21 years of specialized technical and regulatory experience in managing large site remediation and redevelopment projects. As construction and remediation risk manager for multiple blighted sites in both the public and private sectors, Mr. Blaney has a deep understanding of New York Metro environmental regulations, employs strong project and site construction management skills, and uses his extensive technical knowledge to guide clients and foster expedient resolutions for many troubled sites. Mr. Blaney, and his team, are eminently qualified to run all phases of an environmental remediation and redevelopment project, either in a phased approach or in complete turnkey fashion.

As an environmental and remediation risk manager with WCD, Mr. Blaney manages projects for commercial, industrial, and institutional properties. He and his team are responsible for all phases of environmental remediation or restoration projects, including investigations, engineering, regulatory interface, plan development, estimating, scheduling, and project execution.

Mr. Blaney earned a Master of Science degree in Environmental Policy Studies from the New Jersey Institute of Technology, and a Bachelor of Arts degree in Environmental Studies from Ramapo College of New Jersey. He is a Certified Hazardous Materials Manager (CHHM) and holds many certifications and licenses, including 40 hour Hazardous Waste Operations & Emergency Response – 29 CFR 1910.12(e)(2); Hazardous Materials Incident Response Awareness and Operations; 80-hour Hazardous Materials Technician Level 3; Domestic Preparedness Hazardous Materials Technician; USDJ CDP Chemical Ordnance Biological Radiological; On-Scene Incident Commander; NJ Enhanced Radiological Response; Air Monitoring for Hazardous Materials.

Mr. Blaney is also a proud veteran of the United States Armed Services where he served as a Damage Control Technician and Machinists Mate in the United States Navy.

PROFESSIONAL EXPERIENCE

New York City Economic Development Corporation New York, NY – Served as Project Manager for the remediation of the former Manufactured Gas Plant site known as Site A Operable Unit 2 (AOU-2) located in the Hunts Point section of Bronx, NY. This heavily contaminated 7.5 acre site with mixed wastes required very detailed coordination between the Project Engineer (GEI), the owner (NYCEDC) and the Construction Manager at Risk (WCD). Working closely with these stakeholders during the Preconstruction Phase of the project, WCD created bidding documents and specifications to govern the remediation work. WCD led the bidding period phase including inviting pre-approved contractors, receiving bids, issuing addenda, performing detailed scope review meetings with bidders and subcontract documents development with the selected bidder. During implementation of the remedial action, it became evident due to substantially changed field conditions that a revision to the original remedy was necessary. WCD put forth a significant value engineering recommendation that was adopted by the stakeholder team, resulting in approximately $1MM of cost avoidance. The project has recently been completed substantially on time and the owner is pursuing design and construction of the new development planned for this site. The overall project value was $13.5MM.

Hudson County Chromium Cleanup Projects – Served as Construction Manager as Agent (CMAA) for the environmental remediation and site restoration of several Hudson County Chromium sites located in Jersey City, NJ. Specific responsibilities include preparation and implementation of construction management plans encompassing the specific processes for reporting, permitting, contractor coordination, health & safety, and communication requirements and procedures; cost and design requirements; site security; health and safety compliance; construction quality assurance/control testing and reporting; and recordkeeping for the project. Other responsibilities include development of a master construction schedules including regular updates; chairing pre-construction, regular construction progress, issue-specific and close-out meetings, including distribution of project record meeting minutes; constructability review of engineering designs, review of contractor-required submittals; review and approval of contractor applications for payment; review and approval of construction change order requests; construction close-out inspections and punch list development and resolution; and post-construction as-built documentation.

Statue of Liberty Harbor North – Jersey City, NJ – Served as Construction Manager, general contractor, and comprehensive remediation project manager for the pre-development remediation of this former manufacturing facility prior to its redevelopment as a 5-Star luxury hotel. The 2.7 acre property was formerly operated and occupied by an asbestos shingle manufacturer and is located north and west of Jersey City's Liberty Harbor Marina and the NYC Water Taxi - Liberty Harbor terminal. The property, after being abandoned by the shingle manufacture, became a dumping ground for construction and other wastes. The work involved historic fill/soil excavation with TPH and PCB contaminants, asbestos in soils, the placement of engineered backfill, installation of a TSCA liner followed by the construction of a NJDEP-approved cap and the installation of temporary soil erosion sediment control stabilization measures. WCD provided planning, preconstruction, and turnkey remediation services. All work was performed under a pay-for-performance contract.

Two Trees - 60 Water Street, Brooklyn, NY – Sr. Project Manager responsible for the development and implementation of a Remedial Action Work Plan during the redevelopment of the 46,000-square-foot NYC OER Voluntary Cleanup site. Work involves the oversight of the excavation and off-site disposal of approximately 33,000-cubic yards of historic fill and soil from the site, daily reporting to the NYC OER, collection of post-excavation end-point soil samples, removal of underground storage tanks, inspection during installation of a passive sub-slab depressurization system, and preparation of a Remedial Action Report.

Berry Lane Park, Jersey City, NJ – Served as Project Manager for comprehensive construction management services including field oversight and project management, as well as contractor and consultant coordination during the construction phase of a site remediation and development project on one of the worst brownfields in the country. The 17 acre project site consisted of multiple historic uses including residential, industrial, manufacturing, and rail yard with a portion of the site consisting of a previously backfilled canal. The site, which is located in Jersey City, NJ, was developed by the Jersey City Redevelopment Agency (JCRA) into a municipal park entitled Berry Lane Park. Over the years, the property was used as a dumping ground for a variety of municipal and industrials wastes. In addition, the former Morris Canal (which ran through the site) was backfilled with a hazardous Contaminated Chromium Processed Waste (CCPW) material.

Former Crucible Steel Site, Harrison, NJ - Provided environmental consulting services at this 80-acre Brownfield site along the Passaic River (opposite downtown Newark, NJ). Responsibilities included Phase I, Phase II Environmental Site Assessments as well as Remedial Investigations and Site restoration activities.

Current Position:
Senior Project Manager

Education:
Ph.D., University of St. Andrews, Scotland
BA, Staffordshire University, England

Registrations/ Certifications:

- OSHA-40 Hazwoper
- OSHA-10 Construction
- OSHA Hazardous Waste Site Operations
- OSHA Emergency Response Training
- OER TurboTraining Gold Certified Professional

RICHARD HOOKER, PH.D.

PROFESSIONAL SUMMARY

Richard Hooker serves as Senior Project Manager for investigative and remedial projects including NYSDEC and OER Brownfields sites, Phase II investigations, and environmental management of construction projects. He also prepares and evaluates interdisciplinary, comprehensive environmental impact assessment reviews (NEPA, SEQR and CEQR) and has a particular expertise in noise issues. Mr. Hooker develops investigative and remedial work plans, health and safety plans, performs fieldwork, and prepares technical reports. He works with regulatory authorities and subcontractors including construction personnel, waste repositories and haulage contractors, laboratories and drillers. His responsibilities include: designing noise studies, investigating site histories, document reviews, cost benefit analysis of remedial alternatives, overseeing excavations and in situ remediation, sampling, sample data evaluation, report preparation, and obtaining regulatory closure. He has extensive experience of sampling and sample collection protocols for soil, vapor, indoor air, sediment, and groundwater and has worked to remediate a wide range of environmental contaminants including petroleum, heavy metals, PCBs, and solvents.

Mr. Hooker holds a Ph.D. from the University of St. Andrews, St. Andrews, Scotland and a BA from Staffordshire University, Stoke-on-Trent, England. Prior to relocating to the Hudson Valley, he served as an Assistant Professor at the University of Glasgow, Scotland.

PROFESSIONAL EXPERIENCE

3475 Third Avenue, Bronx, NY—Investigated and remediated this former manufacturing facility to NYSDEC Brownfields to Track 1 cleanup standards. This site was the first project in the OER Jumpstart program established to assist cleanup on government-supported affordable and supportive housing projects in NYC. Under this program OER sponsored enrollment in the NYS Brownfield Cleanup Program. Work on this trailblazing project required liaising with OER and NYSDEC Region 2 to ensure documentation met the requirements of both agencies. Certificate of Completion secured in 2016.

Former A.C. Dutton Lumber Yard, Dutchess County, NY—Documented hazardous concentrations of arsenic and chromium in soils and concrete surfaces at this NYSDEC Brownfields site contaminated by the historical pressure treatment of lumber. Developed a Workplan for site remediation and directed environmental restoration activities, including: characterization, excavation and removal of hazardous soils, scarification concrete warehouse floors, removal aboveground and underground chemical and petroleum storage tanks.

Lincoln Place, Brooklyn, NY—performed CEQR, SEQR and NEPA reviews including shadow and noise studies for this site prior to development. Prepared Remedial Workplan and oversaw remediation of metals-contaminated soils during construction and implemented remedy for the site including SSDS system installation, vapor barrier, and installation of composite cover system. Prepared FER and obtained NYCHPD and NYCDEP closeout for the site.

Grace Terrace, Mount Vernon, NY—oversaw remediation and obtained NTSDEC Spill file closure after a previously unknown UST and associated petroleum contaminated soil were encountered during construction excavations. Coordinated with the GC to ensure appropriate cleanup was performed without delaying the construction schedule. Remedial actions included characterization and appropriate off-site disposition of petroleum contaminated soil and groundwater, application of chemical oxidation treatment, installation vapor barrier and active SSDS system.

Former Fur Processing Facility, Bronx, NY—Documented the presence of chlorinated hydrocarbon, petroleum, and metals contamination beneath and/or near a former industrial structure. Coordinated the sampling and removal of multiple drums of hazardous and non-hazardous material from the structure and secured NYCDEP approval. Developed a Workplan for site remediation and directed environmental restoration activities, including: excavation and removal of both aboveground and underground storage tanks, removal of contaminated soils, installation of a barrier layer soil cap, and pre-demolition removal of asbestos materials.

Jamaica Hospital Medical Center, Queens, NY—Coordinated and supervised the removal of two, large underground storage tanks and documented site conditions through soil and groundwater sampling. Secured NYSDEC approval of PBS tank closure and registration requirements.

Daniel A. Bellucci, P.E.
30 South Main Street, Unit 204 • Ipswich, Massachusetts 01938 • (845) 803-4347 • dan@coredowndrilling.com

Education & Certifications

B.S. Environmental Engineering University of New Hampshire 2011
Professional Engineer (Environmental) MA, NY, NH
40 Hour HAZWOPER Training Certification- 29 CFR 1910.120
Understanding the MCP Course – UMass Lowell (Spring 2019)
ASTM E 1527 Phase I Environmental Site Assessment (ESA) Training, 2012
National Groundwater Association - Certified Well Driller (CWD)
Dig Safe Certified Excavator in Safe Digging Practices, 2019-2024

Employment History

Owner/ Partner Bellucci Engineering, PLLC (November 2019)
Owner/ Partner Core Down Drilling LLC, Brewster, NY (January 2013 to present)
Environmental Engineer, P.E. EBI Consulting, Site Investigation and Remediation (SIR) Group, Burlington, MA (October 2012 to July 2019)

- Project Management including site investigation proposal preparation, management of junior field staff and client correspondence, project invoicing (fixed fee)
- Extensive field experience conducting hundreds of Phase II Subsurface Investigations throughout Eastern US
- Sub-slab depressurization system pilot testing, design, installation, system startup and ongoing operation, maintenance and sampling
- Field and project management experience associated with the following: soil, groundwater, soil vapor, and surface water sampling / monitoring, UST closure, monitoring well elevation surveys, monitoring well installation and abandonments, operation and maintenance of groundwater pump and treat systems; construction site air monitoring, soil management plans, site plan creation using AutoCAD
- Annual US Airforce base stormwater and wastewater sampling
- Broad spectrum of Real Estate Due Diligence projects including Phase I Environmental Site Assessments (ESAs), State File Reviews, Telecommunications ESAs, Environmental Protection Plans, Soil Management Plans, Release Abatement Measure Plans and Spill Prevention Control and Countermeasure Plans
- Experience with Massachusetts Contingency Plan including sampling protocol, RAM Plans, RAM Completion Reports, Permanent Solution Reports, LRA Reports, Downgradient Property Status Reports and RAM Status Reports and eDEP file submittals

Environmental Engineer HydroEnvironmental Solutions Inc., Somers, NY (November 2011 to October 2012)

- Oversight and project management of remediation projects including petroleum release sites, industrial redevelopment soil characterization and disposal, and construction dewatering discharge permitting
- Detailed field reporting, soil and water sampling and analysis of laboratory data
- Operator: Geoprobe® Direct Push macro core sampling drill rig
- Invoice review, cost estimates, spill closure report compilation, review and output
- O&M of pumps, carbon filtration units, and oil/water separators
- Spill Prevention, Control and Countermeasure Plan compilation and review

Field Technician Tri-State Environmental Services Inc., Hawthorne, NY (September 2011 to November 2011)

- Hazardous materials handling, transportation, and disposal procedures

Related Educational Experience

- Senior Research Presentation on Microbial Degradation of PCB's in the Hudson River
- Advanced Water Treatment Facility Full Scale Team Design
- Membrane filtration design to optimize pathogen removal prior to disinfection, decreasing disinfection byproducts

Engineering & Business Software Experience

AutoCAD, Win Log/ Strata Explorer, Microsoft Office, Sales Force/ Financial Force

References furnished upon request

APPENDIX J

CAMP

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required 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 might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required 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.

VOC Monitoring, Response Levels, and Actions

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

1. 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 must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. 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 must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can 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.

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

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should 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 must 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.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.