## GENERAL NOTES:

1. ALL ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) WHICH IS 1.652 FEET BELOW THE BOROUGH OF MANHATTAN VERTICAL DATUM. SEE NOTE 2.
2. THE BOROUGH OF MANHATTAN VERTICAL DATUM IS 2.752 FEET ABOVE U.S.C. AND THE NATIONAL GEODETIC SURVEY VERTICAL DATUM OF 1929 (NGVD29), MEAN SEA LEVEL, SANDY HOOK, NEW JERSEY.
3. THE NYCTA ELEVATION IS 1.553 FEET ABOVE THE NAVD88 + 100.0' FOR NEW YORK CITY TRANSIT AUTHORITY COORDINATION (EXAMPLE, NAVD88 EL. 65.0' = NYCTA 163.447')
4. PROPOSED FINISHED FIRST FLOOR ELEVATION IS **NAVD88 EL 39.85'.**
5. BASE PLANS AND SECTIONS ARE DEVELOPED FROM:
   - 5.1. STRUCTURAL AND FOUNDATION DRAWINGS BY WSP GROUP OF NEW YORK, NY, DATED 04.29.2016.
   - 5.2. SURVEY DRAWING BY LANGAN OF NEW YORK, NY, DATED 03.03.2015.
   - 5.3. BORING LOCATION PLAN BY LANGAN OF NEW YORK, NY DATED 05.18.2015.
6. SOIL DATA OBTAINED FROM:
   - GEOTECHNICAL REPORT BY LANGAN OF NEW YORK, NY DATED 05.18.2015
   - 6.1. INCLUDING BORINGS AND TEST PITS.
7. LOCATION OF EXISTING AND PROPOSED CONDITIONS INCLUDING BUT NOT LIMITED TO FOUNDATION WALL, FOOTINGS AND SLAB LOCATIONS AND ELEVATIONS WERE TAKEN FROM DRAWINGS AND INFORMATION REFERENCE ABOVE.
8. LOCATIONS AND ELEVATIONS OF ALL STRUCTURAL BUILDING ELEMENTS SHOWN ON THIS DRAWING MAY BE APPROXIMATE AND SHALL BE SUPERSEDED BY FINAL STRUCTURAL AND ARCHITECTURAL DRAWINGS.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITIES AND BELOW GROUND STRUCTURES IN THE AREA OF PRIOR TO COMMENCEMENT OF WORK.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL DIMENSIONS IN THE FIELD. IF CONDITIONS OBSERVED IN THE FIELD DIFFER FROM THESE DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO EVALUATE THE CONDITION. MODIFICATIONS TO THESE DRAWINGS MAY BE NECESSARY.
11. THESE DRAWINGS DO NOT ADDRESS SAFETY ISSUES RELATED TO THE EXCAVATION AND SHORING WORK. OTHERS SHALL BE RESPONSIBLE FOR SITE SAFETY AND PROVIDE A SAFETY PLAN CONFORMING TO OSHA AND ALL APPLICABLE LAWS.
12. BARRIERS AND FENCING AROUND SITE MUST BE PROVIDED BY CONTRACTOR IN ACCORDANCE WITH NEW YORK CITY DEPARTMENT OF BUILDINGS AND ALL APPLICABLE LAWS.
13. IF THE CONDITIONS OBSERVED AS THE EXCAVATION ADVANCES ARE DIFFERENT THAN THE CONDITIONS SHOWN ON THE DESIGN DRAWINGS, THE CONTRACTOR SHALL STOP WORK AND NOTIFY THE CONSTRUCTION MANAGER AND ENGINEER TO ADDRESS FIELD CONDITIONS.
14. OBSERVED MOVEMENTS OF THE SUPPORT OF EXCAVATION OR OTHER STRUCTURES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER.
15. LOOSE AREAS OF FOUNDATION WALL OR FOOTINGS THAT ARE DAMAGED OR LOOSE SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR EVALUATION AND REMEDIAL MEASURES BY THIS OFFICE OR AT DIRECTION OF FIELD PROFESSIONAL ENGINEER.
16. PINS, WIRE MESH, AND PARGING MAY BE REQUIRED TO STABILIZE THE FOUNDATION WALL OR FOOTINGS NOT INDICATED IN THESE DRAWINGS.
17. ALL EXPOSED ADJACENT FOUNDATION WALLS OF BRICK, MASONRY, RUBBLE, OR THE LIKE SHALL BE CEMENT PARGED TO SEAL AND WEATHERPROOF. CEMENT PARGE MAY BE INSTALLED BY TROWEL, SHOTCRETE, OR OTHER SUITABLE METHOD BY CONTRACTOR.
18. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1 USING E-70 ELECTRODES.
19. ALL STRUCTURAL STEEL SHALL BE GRADE 50, ASTM A-572.
20. ALL PLATES OR MISCELLANEOUS STEEL SHALL BE GRADE 36, ASTM A36.
21. 1-BAG MIX SHALL CONSIST OF 1-94 LB. BAG OF CEMENT TO 1 CY OF SAND. QUANTITY OF WATER SHALL BE ADEQUATE TO ALLOW THE MIX TO FLOW.
22. THE DESIGNS ON THESE DRAWINGS ARE INTENDED FOR TEMPORARY SUPPORT OF EXCAVATION ONLY.
23. NOTIFY DOB 24 TO 48 HOURS PRIOR TO EXCAVATION (RULE 52).

## TIE BACKS AND STRESSED ANCHORAGES:

1. CONTRACTOR IS FULLY RESPONSIBLE FOR THE VERIFICATION OF EXISTING UTILITIES AND OTHER EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF DRILLING OPERATIONS.
2. STRESSED/LOADED TIE BACK ANCHORAGES SHALL BE GRADE 150KSI, ASTM A722 THREADED BARS SUPPLIED BY STRESSBAR SYSTEMS INTERNATIONAL (SSI), OR APPROVED EQUIVALENT. ALTERNATE HOLLOW CORE, SELF DRILLING ANCHORS ARE ALSO INDICATED IN THESE DRAWINGS, AS SUPPLIED BY SSI, OR APPROVED EQUIVALENT.
3. BAR DIAMETERS INDICATED IN THESE DRAWINGS SHALL BE THE MINIMUM SIZE USED. LARGER DIAMETERS MAY BE SUBSTITUTED WITHOUT PRIOR APPROVAL OF ENGINEER.
4. DRILL HOLES INDICATED IN THESE DRAWINGS SHALL BE THE MINIMUM PROVIDED. A CHANGE IN DRILL HOLE DIAMETER WILL EFFECT THE REQUIRED BOND LENGTHS INDICATED.
5. BOND LENGTHS INDICATED IN THESE DRAWINGS SHALL BE MINIMUM, AND MAY BE SUBJECT TO CHANGE AND/OR VERIFICATION AT DIRECTION OF FIELD PROFESSIONAL ENGINEER.
6. THE FIRST TIE-BACK INSTALLED, AND 1% REMAINING ANCHORS SHALL BE SUBJECT TO PERFORMANCE TESTING, UNDER LATEST POST TENSIONING INSTITUTE (PTI) RECOMMENDATIONS FOR SOIL AND ROCK ANCHORS.
7. THE BALANCE OF INSTALLED TIE-BACKS SHALL BE PROOF-TESTED TO LOAD VALUES INDICATED ON THESE DRAWINGS.
8. ANCHORAGES SUPPORTING THE EXISTING FOUNDATION WALL MAY BE EXEMPT FROM TESTING TO AVOID UNNECESSARY OVERSTRESSING OF THE EXISTING WALL CONSTRUCTION, AT DIRECTION OF FIELD ENGINEER. THESE ANCHORAGES SHALL BE INSTALLED, AND STRESSED TO LOCK-OFF LOADING INDICATED.
9. ALL ANCHORAGE STRESSING SHALL BE CONDUCTED USING A CALIBRATED CENTER HOLE HYDRAULIC JACK CAPABLE OF EXCEEDING MAXIMUM TESTING LOADS INDICATED IN THESE DRAWINGS.
10. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING SAFE ENVIRONMENT DURING TESTING, AND ALSO PROVIDING REQUIRED EQUIPMENT (INCLUDING, BUT NOT LIMITED TO, HYDRAULIC JACK, STEEL JACK CHAIRS, DIAL INDICATORS, INDEPENDENT TRI PODS) AS REQUIRED FOR FIELD MEASUREMENTS/VERIFICATION DURING TESTING.
11. IF IN THE EVENT A TIE-BACK ANCHOR DOES NOT PASS TESTING, AT THE OPINION OF THE FIELD ENGINEER, ADDITIONAL ANCHORAGES MAY BE REQUIRED TO BE INSTALLED AT LARGER DIAMETERS, LARGER DRILL DIAMETERS, AND/OR LONGER LENGTHS AS REQUIRED TO PROVIDE ADEQUATE CAPACITY TO COMPENSATE FOR THE LOST ANCHORS.
12. CONTRACTOR SHALL PROVIDE BOND-BREAK MATERIAL ALONG THE "FREE STRESSING LENGTH" AS INDICATED IN THESE DRAWINGS, UNLESS OTHERWISE INDICATED FOR A "FULL LENGTH BOND" ANCHOR, WHICH CASE THE THREADED BAR SHALL BE CONTINUOUSLY GROUTED ALONG FULL LENGTH.
13. FOR SOLID, GRADE 150KSI THREADED BARS:
    - 13.1. INSTALLATION SHALL BE VIA CASE DRILLING TO AVOID ANY LOSS OF SOILS.
    - 13.2. DRILL FULL LENGTH AS INDICATED ON THESE DRAWINGS, MINIMALLY, UNLESS OTHERWISE DIRECTED BY FIELD ENGINEER.
    - 13.3. INSERT BAR INTO PRE-DRILLED CASING.
    - 13.4. PUMP CASING WITH GROUT. AS OF COMMON DRILLING PRACTICE, CONTINUE TO "PRESSURE GROUT" WHILE EXTRACTING CASING, AND CYCLE CASING REMOVAL IN-AND-OUT TO CREATE "GROUT BULBS", THIS WILL ENSURE BETTER ANCHOR PERFORMANCE (APPLICABLE TO SOIL BONDED ANCHORS, NEGLECT FOR ROCK BONDED ANCHORS)
    - 13.5. ALLOW ADEQUATE GROUT CURE PRIOR TO TESTING. 5,000PSI GROUT MIX (TYPICAL, 28-DAY) FOR ANCHORS SHALL CONSIST OF:
      - 13.5.1. 1 BAG CEMENT, TYPE 1, 2, OR 3
        5 GALLONS POTABLE WATER
      - 13.5.2. TESTING TYPICALLY CAN OCCUR WITHIN 3 DAYS OF INSTALLATION, OR AT DIRECTION OF FIELD ENGINEER.
14. UPON TESTING OF ALL REQUIRED ANCHORS, A LIFT-OFF TEST MAY BE PERFORMED AT DIRECTION OF FIELD ENGINEER IN ORDER TO VERIFY PROPER LOAD TRANSFER AND TO COMPENSATE FOR ANY SEATING LOSSES. FINAL LOCK-OFF VALUE IS TO BE AT DIRECTION OF FIELD ENGINEER.

## SUPPORT OF EXCAVATION NOTES:

1. THE TEMPORARY SHEETING WALL (SUPPORT OF EXCAVATION) IS DESIGNED WITH AN ADDED ALLOWABLE SURCHARGE LOADING AT SIDEWALK GRADE AT A VALUE OF 600 POUNDS PER SQUARE FOOT (PSF). HEAVY EQUIPMENT OR MATERIAL STORAGE ANTICIPATED SHALL BE PLACED WITHIN A DISTANCE TO THE SHEETING WALL EQUAL TO THE EXCAVATION DEPTH, MUST BE EVALUATED BY THIS OFFICE FOR ACCEPTANCE PRIOR TO PLACING SAID HEAVY EQUIPMENT.
2. STRUCTURAL CONCRETE FOR UNDERPINNING PIERS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000-PSI AT 28 DAYS.
3. CONCRETE PIERS AND DRY PACK SHALL BE ALLOWED TO CURE PRIOR TO EXCAVATING ADJACENT PIT, OR ADVANCING THE EXCAVATION IN FRONT OF THE PIT.
4. DRY PACK SHALL CONSIST OF ONE PART CEMENT TO TWO PARTS SAND BY VOLUME. WATER SHALL BE ADDED TO PRODUCE A MIXTURE WHICH HOLDS ITS SHAPE WHEN FORMED INTO A BALL BY HAND.
5. GROUTING TO STABILIZE SOIL AT UNDERPINNING PITS SHALL BE PERFORMED USING SODIUM SILICATE OR MICROFINE CEMENT. GROUT MIX DESIGN, EQUIPMENT, DRILLING PROCEDURE, AND SEQUENCE SHALL BE PERFORMED BY THE CONTRACTOR AND SUBMITTED FOR REVIEW.
6. TIMBER LAGGING SHALL BE ROUGH CUT, FULL SIZE CONSTRUCTION GRADE, WITH A MINIMUM ALLOWABLE BENDING STRESS OF 1900-PSI FOR 3" & 4", 1950-PSI FOR 5". TIMBER SIZES SHOWN ARE ACTUAL SIZES.
7. DEPTH OF EXCAVATION BELOW FOOTING AND PREVIOUSLY INSTALLED LAGGING BOARDS SHALL NOT EXCEED 36 INCHES, OR AT DIRECTION FIELD PROFESSIONAL ENGINEER. MAINTAIN TIGHT CONTACT BETWEEN SOIL AND LAGGING BOARDS. IF MATERIAL IS CAVING INTO EXCAVATION, DECREASE THE UNBRACED EXCAVATION DEPTH AND/OR GROUT THE MATERIAL TO MINIMIZE LOSS.
8. IF MATERIAL BEHIND LAGGING HAS BEEN LOST OR DISTURBED, LEAVE A 1 TO 1 1/2-INCH SPACE BETWEEN LAGGING BOARDS TO IMMEDIATELY BACKFILL OR GROUT.
9. EXCAVATION FOR UNDERPINNING PIERS MUST BE PERFORMED IN DRY CONDITIONS. DEWATERING MAY BE NECESSARY PRIOR TO EXCAVATION TO MAINTAIN WATER LEVELS A MINIMUM OF 1 FOOT BELOW THE PROPOSED SUBGRADE LEVEL OF THE PIER. HAY OR FILTER FABRIC SHALL BE USED TO MINIMIZE MIGRATION OF FINES INTO THE EXCAVATION.
10. UNDERPINNING PIER SUBGRADE BEARING MATERIAL SHALL BE EQUAL OR BETTER CLASS THAN THE ORIGINAL BEARING MATERIAL.
11. MAXIMUM PIT WIDTH IS 4 FEET UNLESS OTHERWISE NOTED ON THE DRAWINGS.
12. APPROACH PITS FOR UNDERPINNING PITS SHOULD CAUSE MINIMAL DISTURBANCE TO SOIL SUBGRADE BELOW THE FOOTING. IT IS THE CONTRACTORS RESPONSIBILITY TO DESIGN THE APPROACH PITS AND EXCAVATE PITS FOLLOWING OSHA AND LOCAL LAWS.
13. EXCAVATE PITS SUCH THAT A MINIMUM OF 12 FEET OF UNDISTURBED SOIL OR CURED UNDERPINNING PIER IS MAINTAINED BETWEEN OPEN PITS UNTIL ALL UNDERPINNING IS COMPLETE.
14. DO NOT LEAVE PITS OPEN OVERNIGHT OR DURING WEEKENDS OR HOLIDAYS.
15. DO NOT START UNDERPINNING WITH A CORNER OR END UNDERPINNING PIER.
16. TOP OF UNDERPINNING PIER SHALL MATCH EXISTING FOOTING THICKNESS OR 3'-0" MAX., AND BASE OF UNDERPINNING PIER THICKNESS SHALL BE 3'-0" MIN. IF FIELD CONDITIONS DO NOT ALLOW TO MEET THESE DIMENSIONS CONTACT FNA OFFICE.
17. UNDERPINNING SHALL BE CONSTRUCTED IN ONE VERTICAL LIFT, NO COLD JOINTS.
18. ROCK BOLTS MAY BE REQUIRED BASED ON ROCK FACE OBSERVATIONS AT DIRECTION OF FIELD PROFESSIONAL ENGINEER.
19. CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH NEW YORK CITY BUILDINGS BULLETIN #2009-11, AS APPLICABLE, FOR ONE FACE FORMS AND NEW FOUNDATION WALL POURS AGAINST ADJACENT FOUNDATION WALLS.

## DRILLED PIPE SOLDIER PILES & LAGGING:

1. SOLDIER PILE CASING SHALL BE INSTALLED USING INTERNAL FLUSH DUPLEX DRILLING METHOD. CONTRACTOR SHALL ADJUST DRILLING PROCEDURE AS REQUIRED TO PREVENT LOSS OF GROUND, SETTLEMENT AND/OR LATERAL MOVEMENT OF BUILDINGS, UTILITIES, AND OTHER STRUCTURES.
2. NO LOSS OF MATERIAL FROM THE OUTSIDE OF THE SOLDIER PILE WILL BE PERMITTED. THE CONTRACTOR SHALL ADOPT THE NECESSARY DRILLING PROCEDURES TO PREVENT LOSS OF MATERIAL FROM AROUND THE OUTSIDE OF THE SOLDIER PILE.
3. STEEL CASING SHALL HAVE A MINIMUM WALL THICKNESS OF 0.50-INCHES. SPLICES IN THE CASING SHALL BE THREADED AND FULLY WELDED (ADDITIONAL INTERNAL REINFORCEMENT MAY BE REQUIRED IF SEAMS ARE NOT WELDED.)
4. THE BOTTOM OF EACH DRILLED SOLDIER PILE SHALL BE PROTECTED BY A HIGH-STRENGTH CUTTING SHOE WITH HARDENED CUTTING EDGE.
5. NO CONCRETE OR GROUT SHALL BE PLACED AT ANY SOLDIER PILE LOCATION UNTIL TIP ELEVATION HAS BEEN CONFIRMED, CLEANED OF MUD AND ANY EXTRANEOUS MATERIAL, AND INSPECTED AND APPROVED BY THE FIELD ENGINEER.
6. CONCRETE OR GROUT SHALL BE PLACED CONTINUOUSLY FOR THE FULL DEPTH OF THE SOLDIER PILE STARTING AT THE BOTTOM. NO COLD JOINT IS ALLOWED.
7. FINAL DETERMINATION OF THE ELEVATION OF THE SOLDIER PILE TIP WILL BE DETERMINED BY THE FIELD ENGINEER.
8. THE ENGINEER MAY DIRECT AN INCREASE IN SOLDIER PILE DEPTH FROM THAT SPECIFIED HEREIN OR AS SHOWN ON THE DRAWINGS IF INFERIOR SOIL IS ENCOUNTERED ABOVE THE ORIGINAL MINIMUM TIP ELEVATION.
9. NO SOLDIER PILE SHALL BE OUT OF PLUMB MORE THAN ONE PERCENT (1%) OF ITS EMBEDDED LENGTH.
10. BEFORE BRACING IS INSTALLED, MAXIMUM EXCAVATION BELOW BRACING LEVEL IS 2-FT FOR WALERS AND RAKERS UNLESS NOTED ON DRAWING OR AT DIRECTION OF FIELD ENGINEER.
11. LAGGING SHALL BE INSTALLED AS THE EXCAVATION ADVANCES WITH A MAXIMUM DEPTH OF 2-FT PRIOR TO LAGGING INSTALLATION. THE MAXIMUM DEPTH EXPOSURE MAY BE ADJUSTED DEPENDENT ON OBSERVED SOIL CONDITIONS UNDER THE REVIEW OF THE SPECIAL INSPECTOR. NO PERSON SHALL ENTER ADJACENT TO AN UNSHORED VERTICAL SOIL CUT EXCEEDING 5'-0".
12. IF MATERIAL BEHIND LAGGING HAS BEEN LOST OR DISTURBED, LEAVE A 1- TO 1-1/2 INCH SPACE BETWEEN LAGGING BOARDS TO IMMEDIATELY BACKFILL OR GROUT.
13. HAY OR FILTER FABRIC SHALL BE USED TO MINIMIZE MIGRATION OF FINES INTO THE EXCAVATION.

## MINIPILE INSTALLATION NOTES:

1. ALL PILES SHALL BE INSTALLED AT LOCATIONS AS SHOWN ON CONTRACT DRAWINGS.
2. LAYOUT OF PILE LOCATIONS BY G.C. (SURVEYED IN PLACE).
3. UTILITY IDENTIFICATION AND EXPLORATION AS NECESSARY BY G.C.
4. THE DIAMETER OF THE CUTTING SHOE OF THE CASING SHALL NOT EXCEED THE OUTER DIAMETER OF THE CASING BY 1/4-INCH.
5. "GROUT" TO MIXTURE OF SAND AND CEMENT-GROUT TO ATTAIN SPECIFIED STRENGTH.
6. A SET OF SIX 2-INCH BY 2-INCH CUBES OF GROUT SHALL BE TAKEN EACH DAY DURING WHICH MINIPILES ARE GROUTED. CUBES SHALL BE THEN TESTED BY AN INDEPENDENT TESTING LABORATORY IN ACCORDANCE WITH THE CONTRACT SPECS.

## MINIPILE INSTALLATION PROCEDURE:

1. MOBILIZATION TO SITE.
2. SET UP RIG ON PROPER LOCATION AND PLUMB MAST.
3. DRILL PILES USING DUPLEX DRILLING METHODS. FLUSH WATER ONLY.
   NOTE: WHEN CLEANING THE INSIDE CASING, 2-DIAMETERS OR TWO FOOT SHOULD BE MAINTAINED BEHIND THE TIP OF THE OUTER CASING.
4. CASING IS DRILLED-IN TO THE BOTTOM OF THE GROUT (BOND) ZONE AS INDICATED ON DRAWINGS.
5. FLUSH HOLE CLEAN OF SPOILS. IF PILE TIP IS BELOW GWT, FLUID LEVEL INSIDE CASING, AND GROUT THE PILE FROM THE BOTTOM TO DISPLACE THE DRILLING FLUID. CONTINUE GROUTING UNTIL GOOD GROUT FLOWS OUT THE TOP OF THE PILE.
6. INTRODUCE REINFORCING THREADED BAR WITH SPACERS, AND PUSH TO THE BOTTOM OF THE PILE.
7. START PULLING THE CASING IN 5-FOOT INCREMENTS WHILE PUMPING GROUT AND MAINTAINING 75 PSI GROUT PRESSURE BUT NOT EXCEEDING 100 PSI.
   NOTE: GROUTING OF THE BOND ZONE WILL CEASE IF OVER 150% OF ITS THEORETICAL VOLUME IS PUMPED IN. ACTUAL VOLUME TO BE SPECIFIED BY CONTRACTOR.
8. WHEN CASING REACHES THE ELEVATION REQUIRED BY THE INFLUENCE LINE IT SHALL BE PUSHED BACK DOWN 5-FEET.
9. CUT THREADED BAR TO PROPER ELEVATION AS SHOWN ON CONTRACT DRAWINGS.
10. THE INSTALLATION OF ADDITIONAL PILES IN THE SAME CAP SHALL NOT BE INSTALLED UNTIL GROUT HAS CURED FOR AT LEAST 24 HOURS.

## SURVEY AND MONITORING NOTES:

1. A PRE-CONSTRUCTION (PRE-CONDITION) SURVEY OF THE ADJACENT STRUCTURES SHALL BE COMPLETED PRIOR TO CONSTRUCTION COMMENCEMENT. THE CONTRACTOR SHALL REVIEW AND FAMILIARIZE HIMSELF WITH THE RESULTS OF THE SURVEY. THE CONTRACTOR SHALL MAKE A VISUAL INSPECTION OF THE ADJACENT STRUCTURES (INSIDE AND OUT) PRIOR TO STARTING THE WORK.
2. MONITOR THE ADJACENT BUILDINGS AT 50-FT INTERVALS FOR VERTICAL AND LATERAL MOVEMENT.
3. OBTAIN BASELINE READINGS OF THE MONITORING POINTS PRIOR TO AND DURING EXCAVATION AND NEW CONSTRUCTION. BASELINE SURVEY SHALL INCLUDE ESTABLISHING VERTICAL AND HORIZONTAL BENCHMARKS OF ALL ADJACENT BUILDINGS. IN ADDITION TO BENCHMARKS, "TELL-TALES" SHALL BE INSTALLED ON ANY OBSERVED EXISTING CRACKS AND OTHER CRITICAL/SENSITIVE AREAS.
4. FREQUENCY OF MONITORING WILL VARY DURING PROGRESS OF WORK. PERFORM OPTICAL SURVEYS (BY OTHERS) AT LEAST ONCE PER DAY DURING INITIAL/CRITICAL EXCAVATIONS AND UNDERPINNING. DURING GENERAL EXCAVATIONS, FREQUENCY SHALL BE AT LEAST ONCE PER WEEK. IF MOVEMENTS OCCUR, INCREASE THE FREQUENCY OF THE READINGS AS DIRECTED BY THE ENGINEER. ALL SURVEY/MONITORING REPORTS SHALL BE PROVIDED TO THIS OFFICE DAILY OR UPON COMPLETION OF THAT DAY'S READINGS.
5. VIBRATION MONITORS (SEISMOGRAPHS-BY OTHERS) SHALL BE PLACED ADJACENT TO AREAS WHERE WORK IS BEING PERFORMED. NOTE THAT SEISMOGRAPH LOCATIONS ARE NOT SHOWN ON THE SUPPORT OF EXCAVATION PLAN FOR CLARITY (NYCTA MONITORING BY OTHERS)
6. BUILDING MOVEMENT AND VIBRATION CRITERIA:
   (NOTE: THE FOLLOWING DOES NOT APPLY TO LANDMARK STRUCTURES, REFER TO OTHER NOTES)
   - A. IF THE VERTICAL OR LATERAL BUILDING MOVEMENT REACHES 1/4-INCH IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER AND ENGINEER.
   - B. IF THE BUILDING EXCEEDS 1/4-INCH, IMMEDIATELY INFORM THE CONSTRUCTION MANAGER AND ENGINEER AND STOP WORK. THE WORK SHALL RESUME UPON APPROVAL BY THE CONSTRUCTION MANAGER AND APPROVED REMEDIAL MEASURES AND/OR MODIFIED CONSTRUCTION PROCEDURES BY THE ENGINEER.
   - C. IF THE VIBRATIONS REACH 1-INCHES PER SECOND (IPS) THE CONSTRUCTION MANAGER AND ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
   - D. IF THE VIBRATIONS EXCEED 2-IPS, IMMEDIATELY INFORM THE CONSTRUCTION MANAGER AND ENGINEER AND STOP WORK. THE WORK SHALL RESUME UPON APPROVAL BY THE CONSTRUCTION MANAGER AND APPROVED REMEDIAL MEASURES AND/OR MODIFIED CONSTRUCTION PROCEDURES BY THE ENGINEER.
7. VIBRATION MONITORS SHALL TAKE REAL TIME READINGS UNDER DIRECTION OF VIBRATION CONTRACTOR/CONSULTANT.
8. ALL MONITORING DATA SHALL BE PRESENTED TO THE CONSTRUCTION MANAGER AND ENGINEER AT THE END OF EACH DAY AS APPLICABLE.
9. LOCATIONS OF ALL SURVEY POINTS AND VIBRATION STATIONS ARE NOT SPECIFIED UNDER THESE DRAWINGS AND SHALL BE BY SURVEYOR/MONITORING CONTRACTOR.

## LANDMARK STRUCTURE NOTES:

1. LANDMARK STRUCTURES ARE WITHIN 90'-0" OF THE CONSTRUCTION SITE.
2. AS SUCH, THE RULES OF TECHNICAL POLICY AND PROCEDURE (TPPL) NOTICE #10/88 SHALL BE ADHERED TO AND GOVERN.
3. CONTRACTOR MUST TAKE CARE AND PRECAUTION DURING EXCAVATION IMMEDIATELY ADJACENT TO LANDMARK STRUCTURES. MEANS AND METHODS IMPLEMENTED MUST ENSURE MINIMAL VIBRATIONS ARE TRANSFERRED TO THESE STRUCTURES.
4. MINIMALLY LINE DRILLING OPERATIONS MUST BE PERFORMED FOR ROCK REMOVAL. IF ROCK IS FOUND TO BE VERY HARD, CHANNEL DRILLING MAY BE REQUIRED TO BE IMPLEMENTED TO AVOID EXCESSIVE CHOPPING OF ROCK FACE.
5. VIBRATION MONITORS/SEISMOGRAPHS SHALL BE INSTALLED ADJACENT TO AREAS WHERE WORK IS TO BE PERFORMED. LANDMARK STRUCTURES SHALL BE.
   - 5.1. THE MAXIMUM PERMISSIBLE PEAK PARTICLE VELOCITY (PPV) SHALL BE 0.5 IN/SEC. SENSITIVITY OF SEISMOGRAPHS SHALL BE SET TO 0.4 IN/SEC FOR NOTIFICATION IN ORDER TO PROPERLY ADDRESS OR MODIFY MEANS AND METHODS AS NECESSARY.
   - 5.2. MAX PPV MAY BE REDUCED IF MOVEMENTS AND/OR CRACKING IS DETECTED IN ADJ. BUILDING.
6. IF THE MOVEMENT OF THE BUILDING IN ANY OF THE 3-AXIS REACHES 3/16 INCH, NOTIFY THE CONSTRUCTION MANAGER AND ENGINEER (REGULAR SURVEY MONITORING DATA SHALL BE AVAILABLE TO DESIGN TEAM REGULARLY). LICENSED SURVEYOR MUST DETERMINE IF MEASURED MOVEMENT IS NOT ATTRIBUTED TO SURVEYING TOLERANCES PRIOR TO ALERT NOTIFICATIONS.
   - 6.1. THE MAXIMUM PERMISSIBLE MOVEMENT IN ANY OF 3-AXIS SHALL BE 1/4 INCH.
7. FREQUENCY OF MONITORING WILL VARY DURING PROGRESS OF WORK, HOWEVER SURVEY MEASURES ON LANDMARK STRUCTURES SHALL BE MADE AT MINIMUM TWO (2) TIMES PER WEEK.

## LANDMARK NOTES:

TO THE BEST OF OUR OFFICE'S KNOWLEDGE, THERE ARE TWO (2) DESIGNATED LANDMARK STRUCTURES THAT IS WITHIN 90 FEET OF THE EXTENTS OF THE PROJECT SITE LIMITS.

RECTORY OF THE CHURCH OF THE TRANSFIGURATION
ADDRESS: 1 EAST 29 STREET
BOROUGH: MNBLOCK: 859 LOT: 5
LP NUMBER: LP-00471
DESIGNATED: MAY 25, 1967
STATUS: DESIGNATED

CHURCH OF THE TRANSFIGURATION
ADDRESS: 3 EAST 29 STREET
BOROUGH: MNBLOCK: 859 LOT: 6
LP NUMBER: LP-00470
DESIGNATED: MAY 25, 1967
STATUS: DESIGNATED

## SPECIAL INSPECTIONS REQUIRED UNDER THESE DRAWINGS:

1. EXCAVATION: SHEETING, SHORING, BRACING (BC 1704.20.2)
2. UNDERPINNING (BC 1704.20.3, BC 1814)
3. STRUCTURAL STABILITY – EXISTING BUILDINGS (BC 1704.20.1)
4. CONCRETE TEST CYLINDERS (BC 1905.6, BC 1913.10)
5. CONCRETE DESIGN MIX (BC 1905.3, BC 1913.5)

## ENERGY CODE:

TO THE BEST OF THIS OFFICE'S KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, ALL WORK UNDER THIS APPLICATION IS IN COMPLIANCE WITH THE NYCECC 2010.

## COORDINATION NOTE:

ALL WORK TO BE PERFORMED SHALL BE COORDINATED BETWEEN THE CONTRACTOR AND APPLICABLE UTILITY COMPANIES AND/OR CITY DEPARTMENTS AS REQUIRED.

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

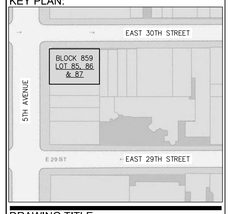
FNA associates, inc.
CONSULTING ENGINEERS
670 BERGEN BOULEVARD | SECOND FLOOR
RIDGEFIELD, NJ. 07657
O: 201-241-2444

# 281 5TH AVENUE
MANHATTAN | NEW YORK

| No: | Revision: | Date: |
|---|---|---|
| 7 | UPDATED DOB PAGES | 05/17/2016 |
| 6 | UPDATED FND 1 | 05/11/2016 |
| 5 | REVISED SOE AT SIDEWALK VAULT (RAMP) | 04/21/2016 |
| 4 | REVISED SOE AT SIDEWALK VAULT | 04/20/2016 |
| 3 | DOB SUBMISSION | 03/23/2016 |
| 2 | REVISED SOE | 03/14/2016 |
| 1 | PRELIM SOE | 03/07/2016 |

SCALE: AS NOTED

KEY PLAN:

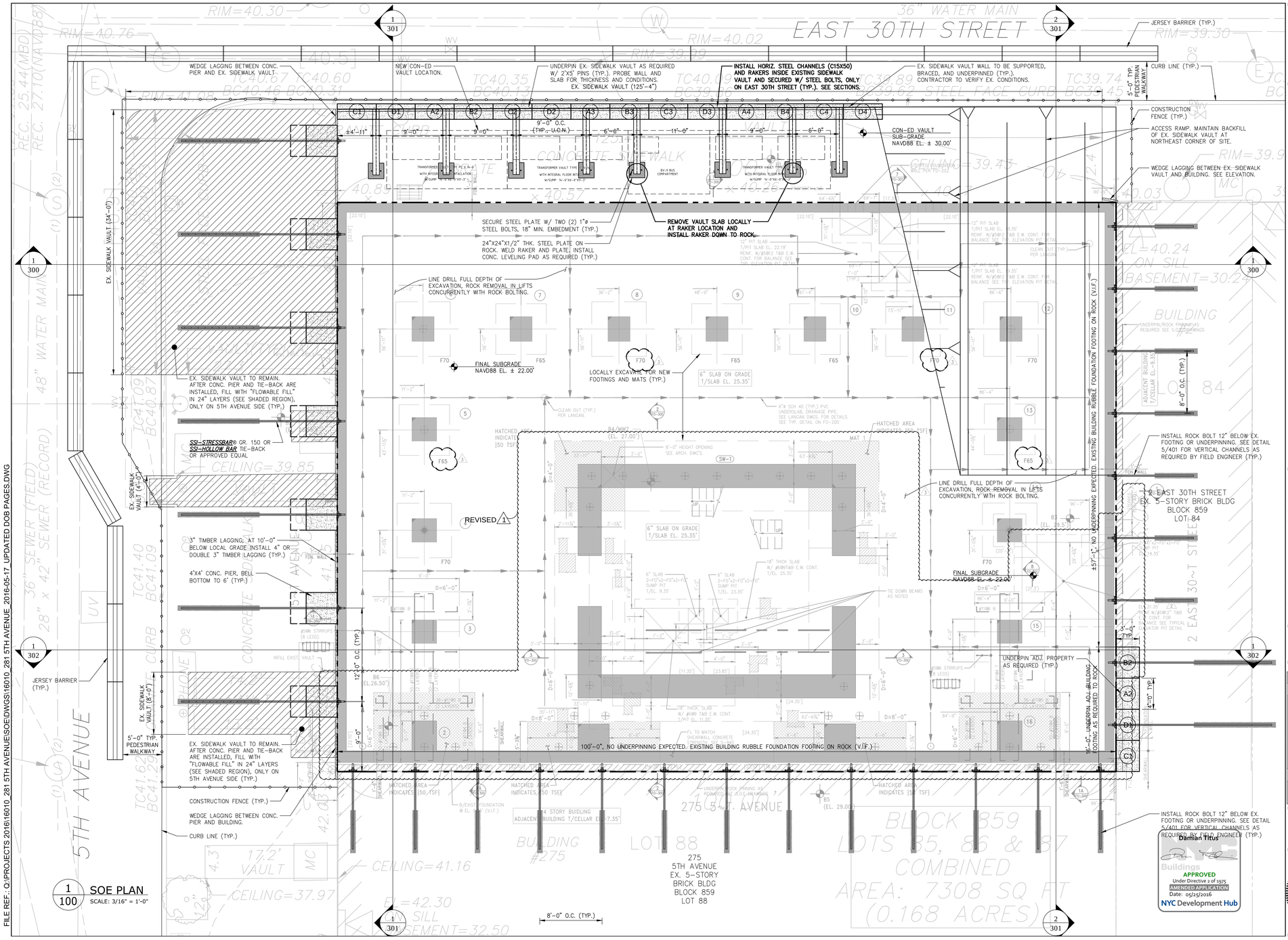



DRAWING TITLE:

## GENERAL NOTES

SEAL

Date: 03-07-2016
PROJECT No: 16010
Drawn By: PC
DWG. No: SOE-001.01
1 OF 8




FILE REF.: Q:\PROJECTS 2016\16010_281 5TH AVENUE\SOE\DWGS\16010_281 5TH AVENUE_2016-05-17_UPDATED DOB PAGES.DWG

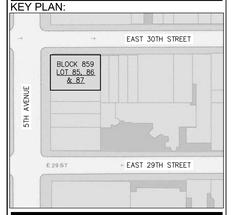
FNA associates, inc.
CONSULTING ENGINEERS
670 BERGEN BOULEVARD | SECOND FLOOR
RIDGEFIELD, NJ. 07657
O: 201-241-2444

# 281 5TH AVENUE
MANHATTAN | NEW YORK

| No: | Revision: | Date: |
|---|---|---|
| 7 | UPDATED DOB PAGES | 05/17/2016 |
| 6 | UPDATED FND 1 | 05/11/2016 |
| 5 | REVISED SOE AT SIDEWALK VAULT (RAMP) | 04/21/2016 |
| 4 | REVISED SOE AT SIDEWALK VAULT | 04/20/2016 |
| 3 | DOB SUBMISSION | 03/23/2016 |
| 2 | REVISED SOE | 03/14/2016 |
| 1 | PRELIM SOE | 03/07/2016 |

SCALE: AS NOTED

KEY PLAN:




DRAWING TITLE:

SOE PLAN

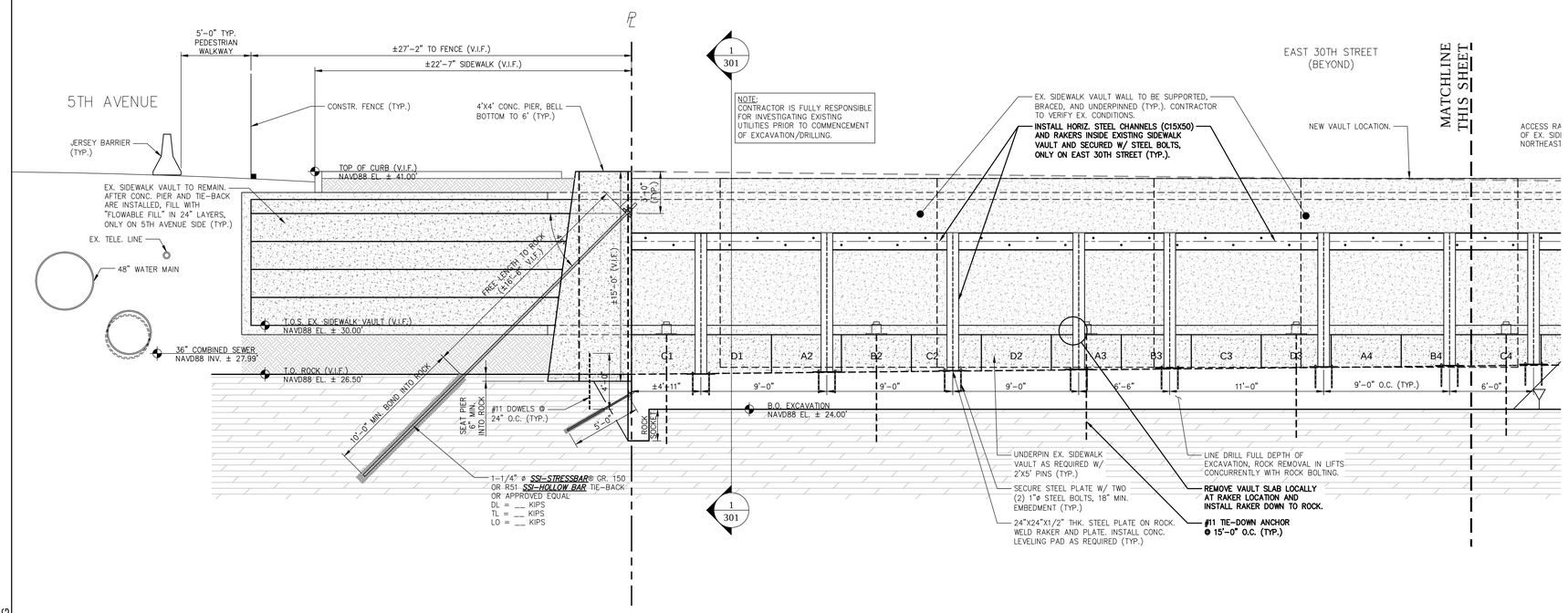
Damian Titus
NYC Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

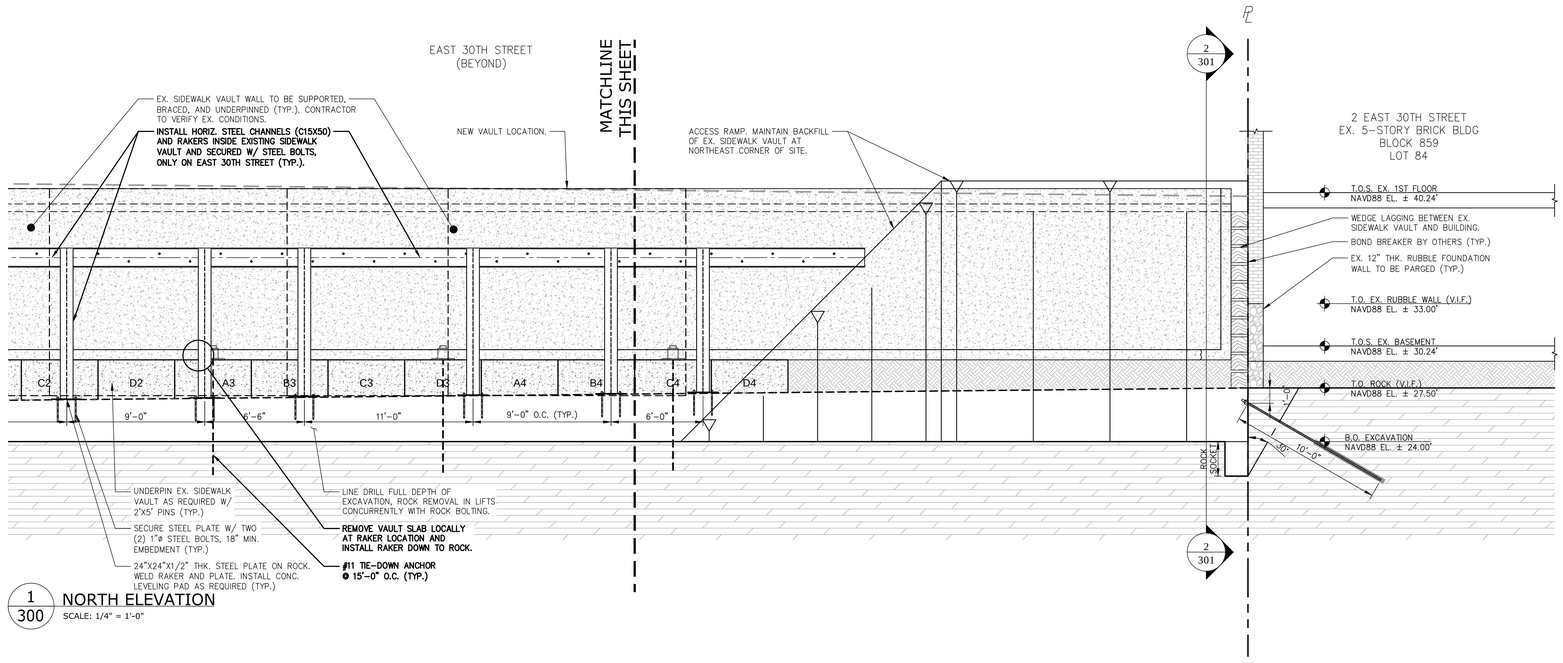
SEAL

STATE OF NEW YORK
DAMIAN TITUS
083855
LICENSED PROFESSIONAL ENGINEER

Date: 03-07-2016
PROJECT No: 16010
Drawn By: PC
DWG. No: SOE-100.01
2 OF 8

Superseded 6-8-2016




1/300 NORTH ELEVATION
SCALE: 1/4" = 1'-0"

FILE REF.: Q:\PROJECTS 2016\16010_281 5TH AVENUE\SOE\DWGS\16010_281 5TH AVENUE_2016-05-17_UPDATED DOB PAGES.DWG

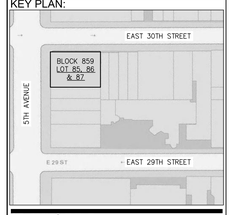
FNA associates, inc.
CONSULTING ENGINEERS
670 BERGEN BOULEVARD | SECOND FLOOR
RIDGEFIELD, NJ. 07657
O: 201-241-2444

# 281 5TH AVENUE
MANHATTAN | NEW YORK

| No: | Revision: | Date: |
|---|---|---|
| 7 | UPDATED DOB PAGES | 05/17/2016 |
| 6 | UPDATED FND | 05/11/2016 |
| 5 | REVISED SOE AT SIDEWALK VAULT (RAMP) | 04/21/2016 |
| 4 | REVISED SOE AT SIDEWALK VAULT | 04/20/2016 |
| 3 | DOB SUBMISSION | 03/23/2016 |
| 2 | REVISED SOE | 03/14/2016 |
| 1 | PRELIM SOE | 03/07/2016 |

SCALE: AS NOTED

KEY PLAN:



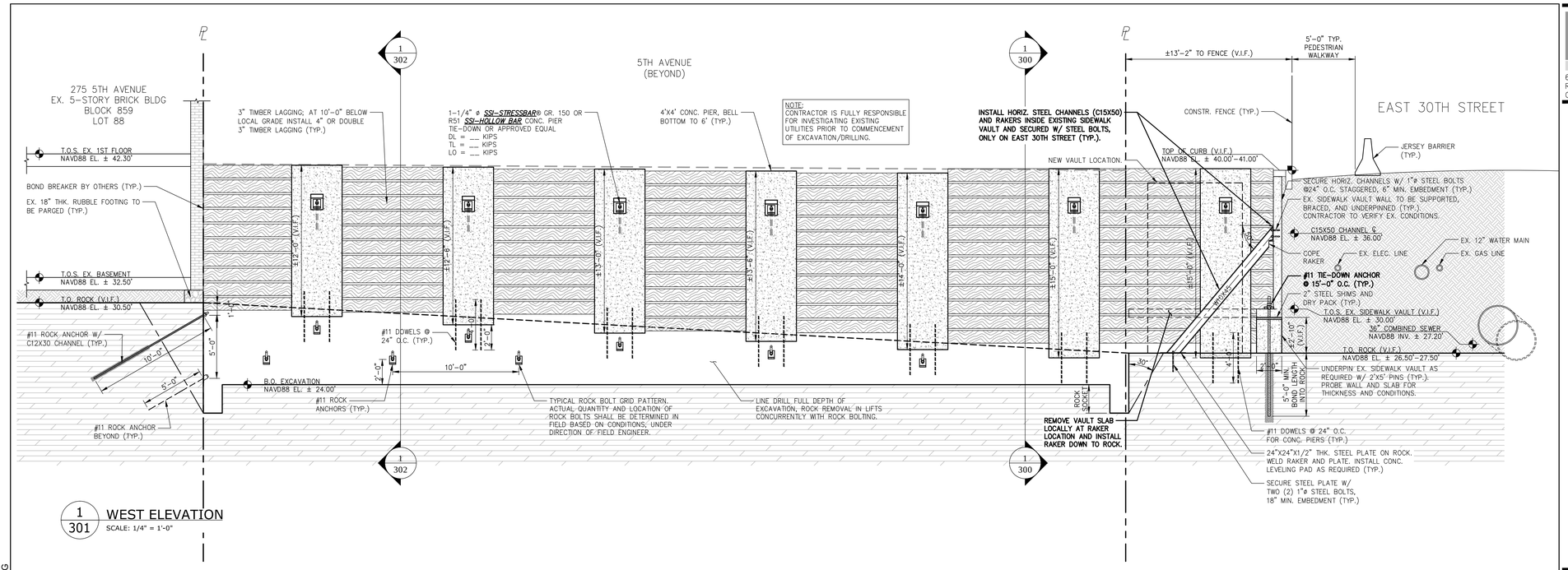

DRAWING TITLE:
NORTH ELEVATIONS

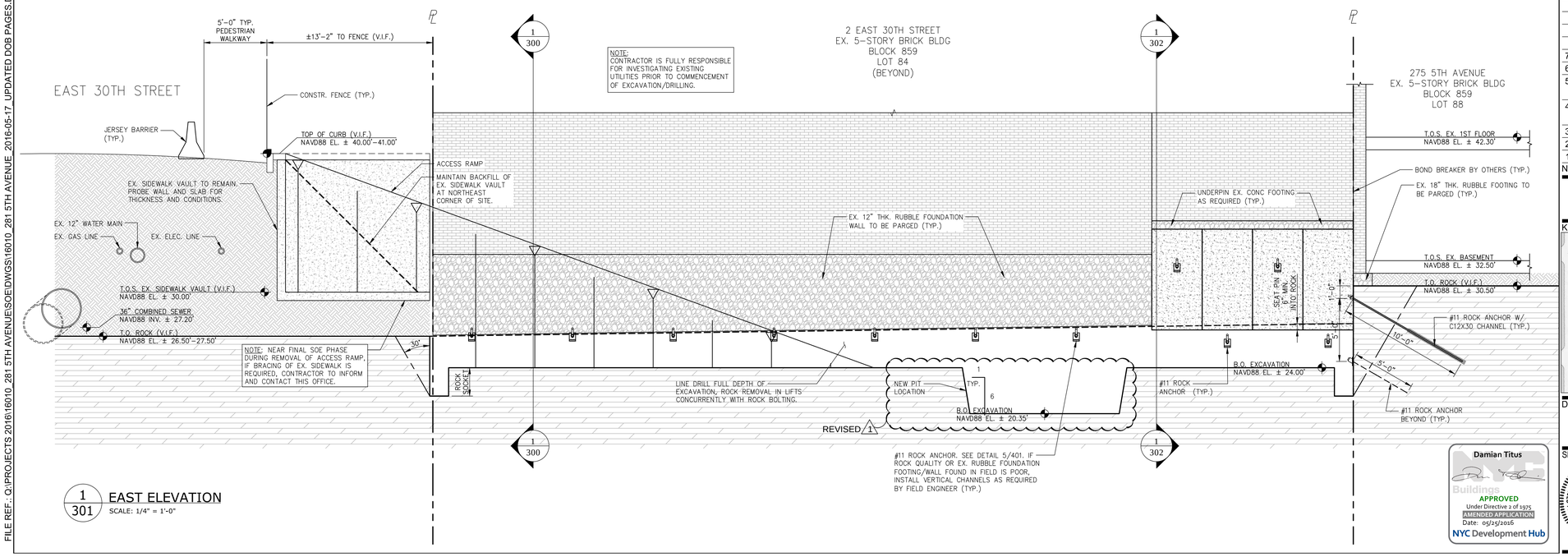
Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

SEAL

STATE OF NEW YORK — GERARD J. SHAKSHAFT — 090871 — PROFESSIONAL ENGINEER

Date: 03-07-2016
PROJECT No: 16010
Drawn By: PC
DWG. No: SOE-300.01
3 OF 8



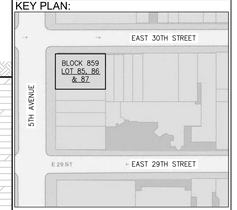

FNA associates, inc.
CONSULTING ENGINEERS
670 BERGEN BOULEVARD | SECOND FLOOR
RIDGEFIELD, NJ. 07657
O: 201-241-2444

# 281 5TH AVENUE
MANHATTAN | NEW YORK

| No: | Revision: | Date: |
|---|---|---|
| 7 | UPDATED DOB PAGES | 05/17/2016 |
| 6 | UPDATED FND 1 | 05/11/2016 |
| 5 | REVISED SOE AT SIDEWALK VAULT (RAMP) | 04/21/2016 |
| 4 | REVISED SOE AT SIDEWALK VAULT | 04/20/2016 |
| 3 | DOB SUBMISSION | 03/23/2016 |
| 2 | REVISED SOE | 03/14/2016 |
| 1 | PRELIM SOE | 03/07/2016 |

SCALE: AS NOTED

KEY PLAN:




DRAWING TITLE:
WEST AND EAST ELEVATIONS

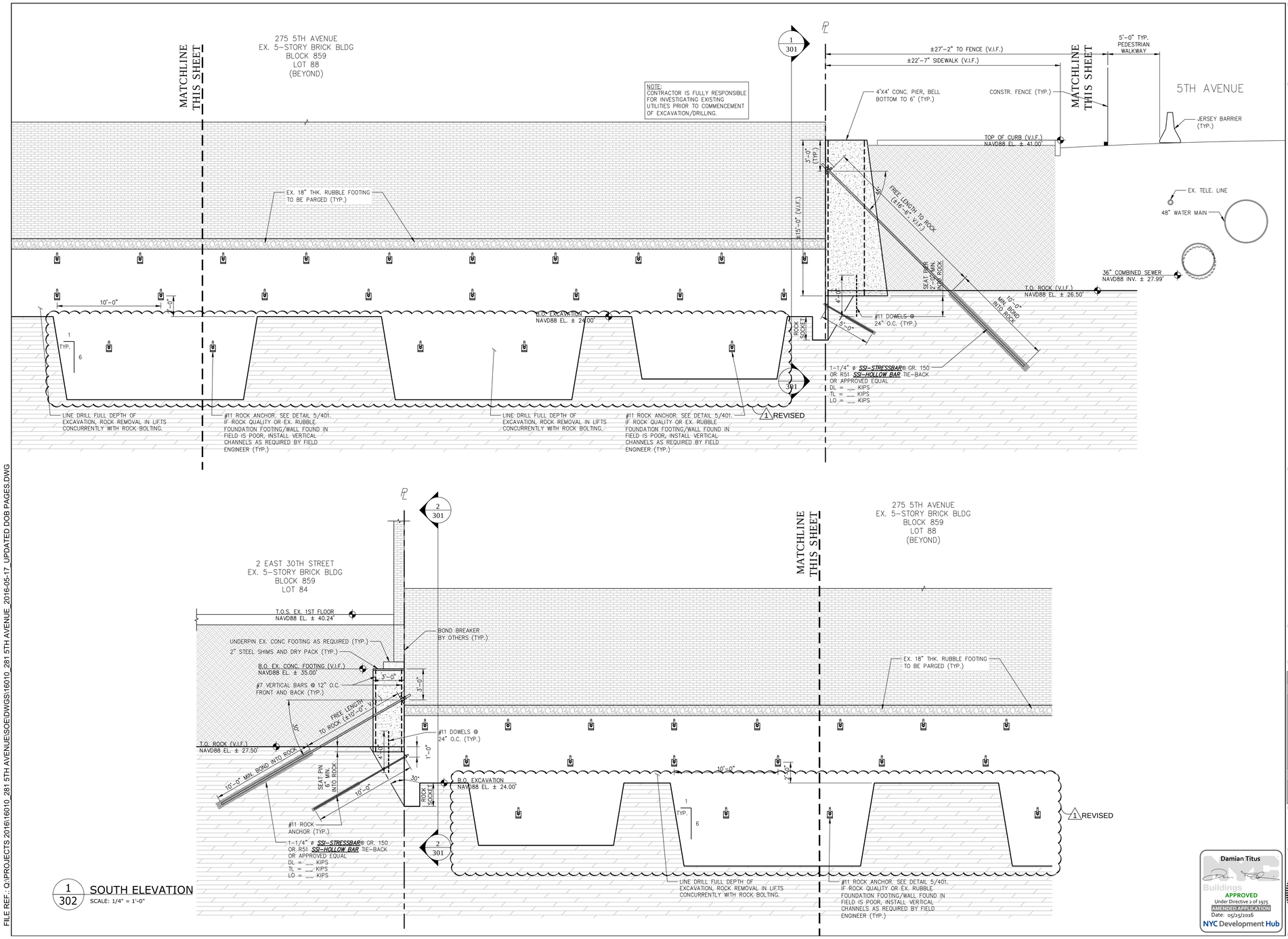
SEAL

Date: 03-07-2016
PROJECT No: 16010
Drawn By: PC
DWG. No: SOE-301.01
4 OF 8

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

FILE REF.: Q:\PROJECTS 2016\16010_281 5TH AVENUE\SOE\DWGS\16010_281 5TH AVENUE_2016-05-17_UPDATED DOB PAGES.DWG

Superseded 6-8-2016




1/302 SOUTH ELEVATION
SCALE: 1/4" = 1'-0"

FNA associates, inc.
CONSULTING ENGINEERS
670 BERGEN BOULEVARD | SECOND FLOOR
RIDGEFIELD, NJ. 07657
O: 201-241-2444

# 281 5TH AVENUE
MANHATTAN | NEW YORK

| No: | Revision: | Date: |
|---|---|---|
| 7 | UPDATED DOB PAGES | 05/17/2016 |
| 6 | UPDATED FND 1 | 05/11/2016 |
| 5 | REVISED SOE AT SIDEWALK VAULT (RAMP) | 04/21/2016 |
| 4 | REVISED SOE AT SIDEWALK VAULT | 04/20/2016 |
| 3 | DOB SUBMISSION | 03/23/2016 |
| 2 | REVISED SOE | 03/14/2016 |
| 1 | PRELIM SOE | 03/07/2016 |

SCALE: AS NOTED

KEY PLAN:


DRAWING TITLE:

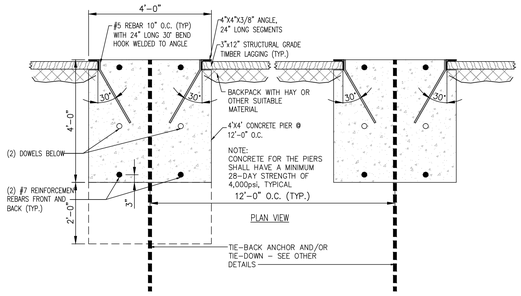
## SOUTH ELEVATIONS

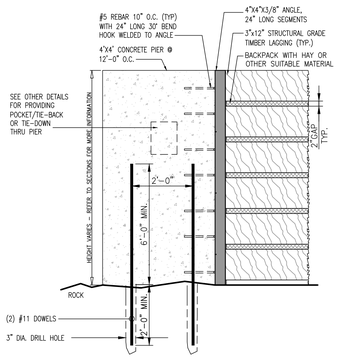
Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

SEAL

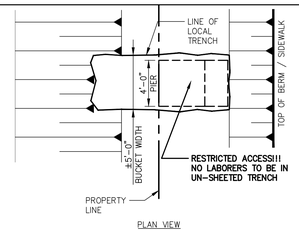
Date: 03-07-2016
PROJECT No: 16010
Drawn By: PC
DWG. No: SOE-302.01
5 OF 8

FILE REF.: Q:\PROJECTS 2016\16010_281 5TH AVENUE\SOE\DWGS\16010_281 5TH AVENUE_2016-05-17_UPDATED DOB PAGES.DWG



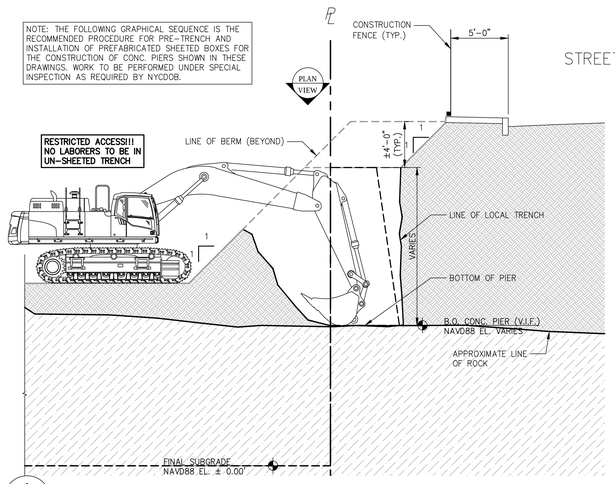




1/400 STANDARD CONCRETE "BUTTON" PIER DETAIL
SCALE: N.T.S

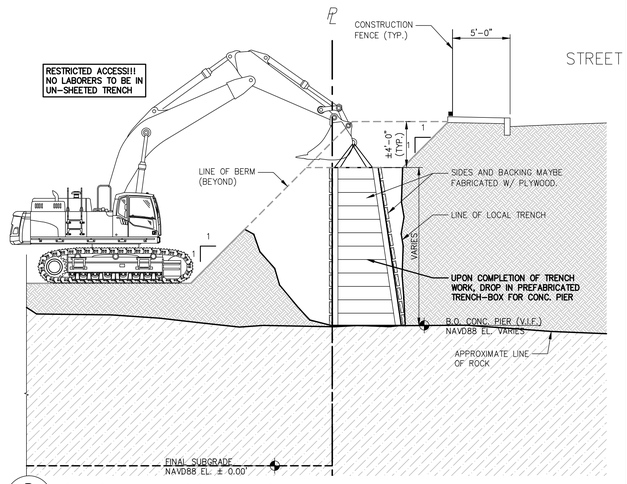



## TYPICAL CONCRETE PIER INSTALLATION SEQUENCE

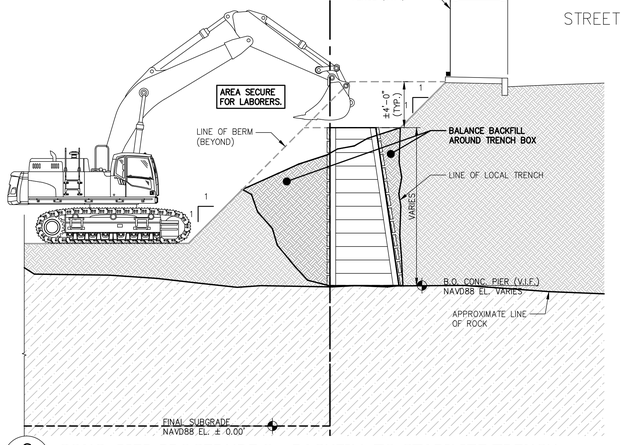
NOTE: THE FOLLOWING GRAPHICAL SEQUENCE IS THE RECOMMENDED PROCEDURE FOR PRE-TRENCH AND INSTALLATION OF PREFABRICATED SHEETED BOXES FOR THE CONSTRUCTION OF CONC. PIERS SHOWN IN THESE DRAWINGS. WORK TO BE PERFORMED UNDER SPECIAL INSPECTION AS REQUIRED BY NYCDOB.



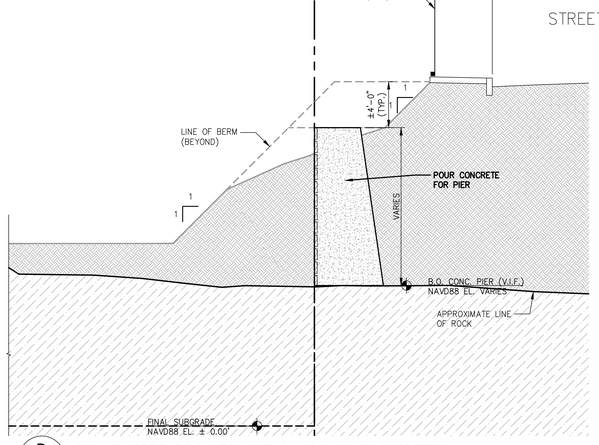

A/400 CONC. PIER PROCEDURE 1 - LOCAL EXCAVATION FOR EACH CONC. PIER
SCALE: 3/16" = 1'-0"



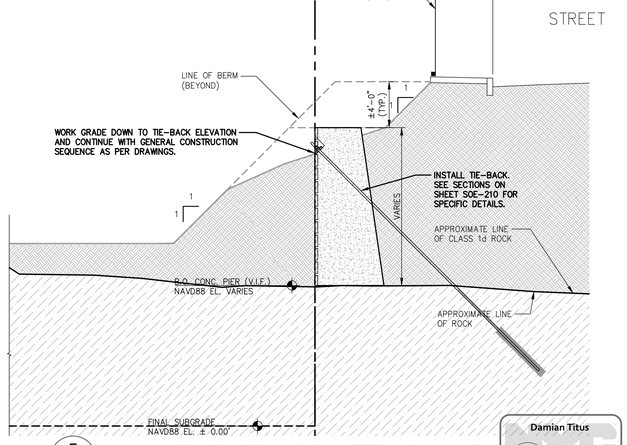

B/400 CONC. PIER PROCEDURE 2 - INSTALL PREFABRICATED TIMBER SHEETING BOX
SCALE: 3/16" = 1'-0"




C/400 CONC. PIER PROCEDURE 3 - BACKFILL TO STABILIZE TRENCH
SCALE: 3/16" = 1'-0"




D/400 CONC. PIER PROCEDURE 4 - POUR CONCRETE WITHIN TIMBER TRENCH BOX
SCALE: 3/16" = 1'-0"




E/400 CONC. PIER PROCEDURE 5 - AFTER MIN. 48 HR CURE, PROCEED W/ GEN. EXCAVATION TO TIE-BACK ELEVATION, CONTINUE WITH CONSTRUCTION SEQUENCE OPERATIONS AS PER DRAWINGS.
SCALE: 3/16" = 1'-0"



FNA associates, inc.
CONSULTING ENGINEERS
670 BERGEN BOULEVARD | SECOND FLOOR
RIDGEFIELD, NJ. 07657
O: 201-241-2444

# 281 5TH AVENUE
MANHATTAN | NEW YORK

| No: | Revision: | Date: |
|---|---|---|
| 7 | UPDATED DOB PAGES | 05/17/2016 |
| 6 | UPDATED FND | 05/11/2016 |
| 5 | REVISED SOE AT SIDEWALK VAULT (RAMP) | 04/21/2016 |
| 4 | REVISED SOE AT SIDEWALK VAULT | 04/20/2016 |
| 3 | DOB SUBMISSION | 03/23/2016 |
| 2 | REVISED SOE | 03/14/2016 |
| 1 | PRELIM SOE | 03/07/2016 |

SCALE: AS NOTED

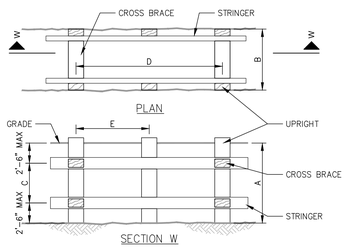
KEY PLAN:


DRAWING TITLE:

DETAILS

SEAL

Date: 03-07-2016
PROJECT No: 16010
Drawn By: PC
DWG. No: SOE-400.01




## NOTES:

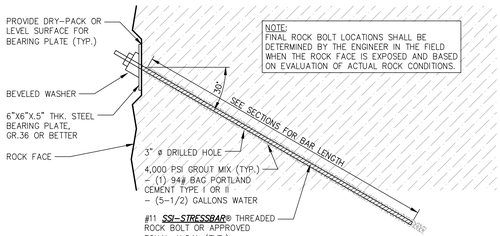
1. TRENCH JACKS, PIPE JACKS OR SCREW JACKS OF ADEQUATE CAPACITY MAY BE USED IN LIEU OF OR IN COMBINATION WITH TIMBER CROSS BRACES.
2. SHORING IS NOT REQUIRED IN SOLID ROCK, HARD SHALE OR HARD SLAG. INSPECTION REQUIRED FOR FROST DAMAGE OR OTHER SPLITTING IN THE ROCK SHELF BRACE OR SNORE SUSPECT AREAS.
3. WHERE DESIRABLE, STEEL SHEET PILING AND BRACING OF EQUAL STRENGTH MAY BE SUBSTITUTED FOR WOOD.
4. TIMBER USED SHALL BE SOUND AND FREE FROM LARGE OR LOOSE KNOTS.
5. SHORING MAY BE REQUIRED AT LESS THAN 5 FEET IF SOFT RUNNING SOIL CONDITIONS ARE DISCOVERED.

## TRENCH SHORING – MINIMUM REQUIREMENTS

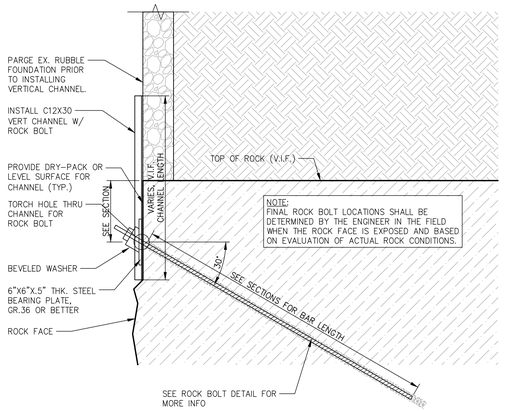
| DEPTH OF TRENCH "A" | KIND OR CONDITION OF EARTH | SIZE AND SPACING OF MEMBERS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UPRIGHTS (SHEETING) | | STRINGERS (RANGER) | | CROSS BRACES (SEE NOTE 1) | | | | | |
| | | MIN DIM | MAX SPACING "E" | MIN DIM | MAX SPACING "C" | WIDTH OF TRENCH "B" | | | | MAX SPACING | |
| | | | | | | UP TO 3 FT. | 3 TO 6 FT. | 6 TO 9 FT. | 9 TO 12 FT. | VERT. "C" | HORIZ. "D" |
| FEET | TYPE | INCHES | FEET | INCHES | FEET | INCHES | INCHES | INCHES | INCHES | FEET | FEET |
| 5 TO 10 | HARD, COMPACT | 3X4 OR 2X6 | 6 | --- | --- | 2 X 6 | 4 X 4 | 4 X 6 | 6 X 6 | 4 | 6 |
| | LIKELY TO CRACK | 3X4 OR 2X6 | 3 | 4 X 6 | 4 | 2 X 6 | 4 X 4 | 4 X 6 | 6 X 6 | 4 | 6 |
| | SOFT, SANDY OR FILLED | 3X4 OR 2X6 | CLOSE SHEETING | 4 X 6 | 4 | 4 X 4 | 4 X 6 | 6 X 6 | 6 X 8 | 4 | 6 |
| | HYDROSTATIC PRESSURE | 3X4 OR 2X6 | CLOSE SHEETING | 6 X 8 | 4 | 4 X 4 | 4 X 6 | 6 X 6 | 6 X 8 | 4 | 6 |
| 10 TO 15 | HARD | 3X4 OR 2X6 | 4 | 4 X 6 | 4 | 4 X 4 | 4 X 6 | 6 X 6 | 6 X 8 | 4 | 6 |
| | LIKELY TO CRACK | 3X4 OR 2X6 | 2 | 4 X 6 | 4 | 4 X 4 | 4 X 6 | 6 X 6 | 6 X 8 | 4 | 6 |
| | SOFT, SANDY OR FILLED | 3X4 OR 2X6 | CLOSE SHEETING | 4 X 6 | 4 | 4 X 6 | 6 X 6 | 6 X 8 | 8 X 8 | 4 | 6 |
| | HYDROSTATIC PRESSURE | 3 X 6 | CLOSE SHEETING | 8 X 10 | 4 | 4 X 6 | 6 X 6 | 6 X 8 | 8 X 8 | 4 | 6 |
| 15 TO 20 | ALL KINDS OF CONDITIONS | 3 X 6 | CLOSE SHEETING | 4 X 12 | 4 | 4 X 12 | 6 X 8 | 8 X 8 | 8 X 10 | 4 | 6 |

## 1/401 SHEETING DETAIL
SCALE: N.T.S.

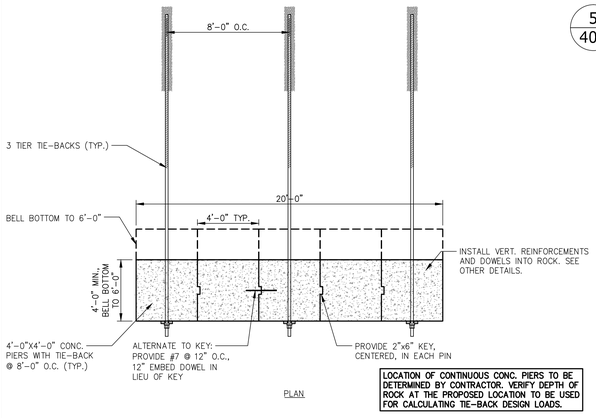
SHEETING FOR PITS AND TRENCHES



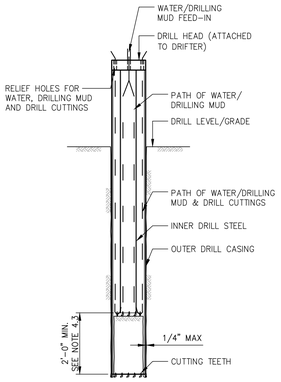

## 4/401 ROCK BOLT DETAIL
SCALE: N.T.S




## 5/401 VERTICAL CHANNEL DETAIL
SCALE: N.T.S



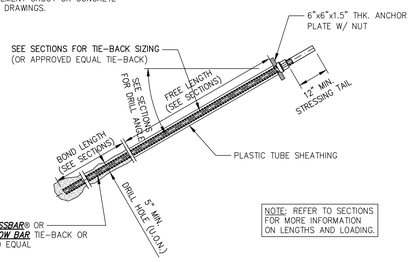

## 6/401 CONTINUOUS CONCRETE "BUTTON" PIER DETAIL
SCALE: N.T.S




## 2/401 DRILLING INSTALLATION DETAIL
SCALE: N.T.S.

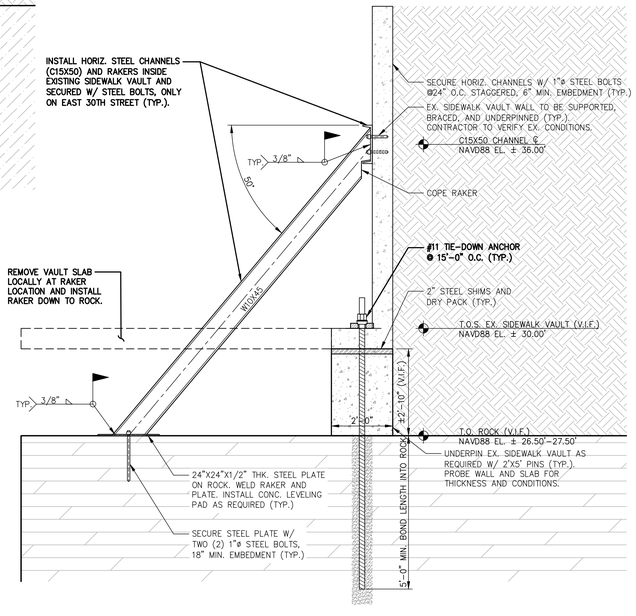
PIPE SOLDIER PILE (ALTERNATE) – DUPLEX DRILLING METHOD INSTALLATION NOTES:

1. ALL PILES SHALL BE INSTALLED IN THE LOCATION SHOWN ON THESE DRAWINGS.
2. PERFORM UTILITY IDENTIFICATION AND EXPLORATION AS NECESSARY PRIOR TO COMMENCEMENT OF WORK.
3. THE SOLDIER PILES SHALL BE 9.625"ø X .5" THK. WALL PIPE GR. 80, U.O.N. AND SHALL BE INSTALLED USING A CASING PREDRILLED AT EACH LOCATION. THE CASING USED FOR PILE INSTALLATION SHALL BE LARGE ENOUGH TO HOUSE THE PIPE 9.625".
4. INSTALLATION PROCEDURES:
   - 4.1. SET UP THE RIG ON PROPER LOCATION AND PLUMB THE MAST.
   - 4.2. INSTALL FIRST PIECE OF CASING WITH ATTACHED CARBIDE CUTTING TEETH.
   - 4.3. DRILL CASING DOWN AND MAINTAIN POSITIVE FLUID HEAD AT ALL TIMES. DRILLING TO BE PERFORMED USING INTERNAL FLUSH METHOD. OUTSIDE CASING SHALL REMAIN AHEAD OF THE INTERNAL FLUSHING BY A MINIMUM OF 2 FEET. IF OBSTRUCTIONS ARE ENCOUNTERED OR IF OUTSIDE CASING GETS STUCK, ADVANCE INNER CASING THROUGH OBSTRUCTION OR UNTIL OUTER CASING CAN REVOLVE, AND THEN RESUME STANDARD PROCEDURE OF 2 FOOT LEAD OF THE OUTSIDE CASING. IF EXISTING CONCRETE IS DISCOVERED DURING DRILLING PROCESS, FOLLOW TA GENERAL NOTE 15, PERTAINING TO THE USE DOWN-THE-HOLE-HAMMER.
   - 4.4. FOLLOW UP WITH ADDITIONAL CASING TO ELEVATION SHOWN ON THESE DRAWINGS.
   - 4.5. REMOVE INNER DRILLING ROD.
   - 4.6. FLUSH INSIDE OF CASING CLEAN OF SPOILS.
   - 4.7. FILL THE VOIDS WITHIN THE CASING USING CEMENT GROUT OR CONCRETE AND REINFORCEMENT AS DETAILED IN THESE DRAWINGS.

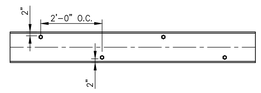



TYPICAL TIE-BACK DETAIL

## 3/401 TYPICAL TIE-BACK DETAIL
SCALE: N.T.S.




## 7/401 SIDEWALK VAULT BRACING DETAIL
SCALE: N.T.S




TYPICAL BOLT PATTERN DETAIL

Damian Titus
DMG Buildings
APPROVED
Under Directive 1 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

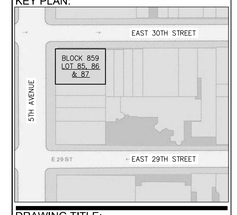
FNA associates, inc.
CONSULTING ENGINEERS
670 BERGEN BOULEVARD | SECOND FLOOR
RIDGEFIELD, NJ. 07657
O: 201-241-2444

# 281 5TH AVENUE
MANHATTAN | NEW YORK

| No: | Revision: | Date: |
|---|---|---|
| 7 | UPDATED DOB PAGES | 05/17/2016 |
| 6 | UPDATED FND 1 | 05/11/2016 |
| 5 | REVISED SOE AT SIDEWALK VAULT (RAMP) | 04/21/2016 |
| 4 | REVISED SOE AT SIDEWALK VAULT | 04/20/2016 |
| 3 | DOB SUBMISSION | 03/23/2016 |
| 2 | REVISED SOE | 03/14/2016 |
| 1 | PRELIM SOE | 03/07/2016 |

SCALE: AS NOTED

KEY PLAN:



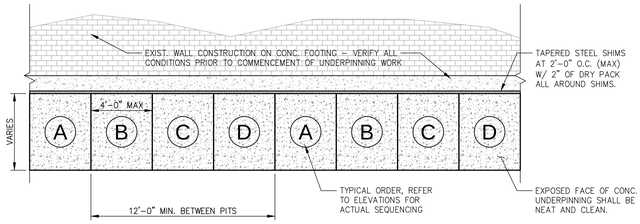

DRAWING TITLE:

DETAILS

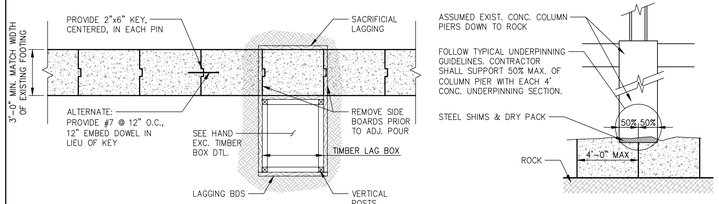
SEAL

STATE OF NEW YORK GRAHAM MATTHEW GEORGE 090287 LICENSED PROFESSIONAL ENGINEER

Date: 03-07-2016
PROJECT No: 16010
Drawn By: PC
DWG. No: SOE-401.01
7 OF 8




ELEVATION




PLAN

## TYPICAL UNDERPINNING DETAIL

SEE DWG SECTIONS AND ELEVATIONS FOR MORE SPECIFIC INFO




IF FOUND, COLUMN PIER IS REQUIRED TO BE UNDERPINNED. COLUMNS SHALL BE UNDERPINNED FIRST AND THEN "IN-FILL" U/P BETWEEN PIERS MAY COMMENCE AFTER. CONTACT THIS OFFICE FOR FURTHER DIRECTION.

## GENERIC COLUMN CONDITION DETAIL

## GENERAL UNDERPINNING NOTES:

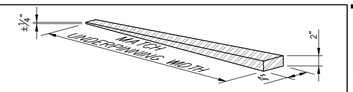
1. THE CONTRACTOR SHALL COMPLY WITH ALL RELEVANT PROVISIONS OF THE NYC BUILDING CODE.
2. ALL FOUNDATIONS AND EARTHWORK OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NYC BUILDING CODE. ALL LOTS, BUILDINGS AND SERVICES ADJOINING THE FOUNDATION AND EARTHWORK AREAS SHALL BE PROTECTED AND PROPERLY SUPPORTED.
3. ALL TEST PITS, BORINGS, EXCAVATION WORK AND UNDERPINNING OPERATIONS ARE SUBJECT TO CONTROLLED INSPECTIONS.
4. THE OWNER SHALL RETAIN A LICENSED SURVEYOR TO SURVEY ALL LOAD BEARING WALLS, PIERS AND COLUMNS TO BE UNDERPINNED (UNLESS CONTRACTUALLY DEFINED OTHERWISE). THE SURVEYOR SHALL CHECK THE DATUM OF SUCH STRUCTURAL ELEMENTS EVERY TWO WEEKS FOR THE DURATION OF THE WORK.
5. THERE SHALL BE A PRE-CONSTRUCTION MEETING WITH THE OWNER, ARCHITECT, ENGINEER OF RECORD, GENERAL CONTRACTOR AND FOUNDATION SUB-CONTRACTOR(S) PRIOR TO WORK COMMENCING.
6. ALL ADJACENT PROPERTIES, INCLUDING BUT NOT LIMITED TO EXTERIOR WALLS AND FOOTINGS ARE TO BE OBSERVED BY THE ENGINEER OF RECORD AND ENGINEER RESPONSIBLE FOR THE CONTROLLED INSPECTIONS PRIOR TO WORK COMMENCING.
7. THE CONTRACTOR SHALL REQUEST PERMISSION TO ENTER BUILDINGS DIRECTLY ADJACENT TO THE AREAS OF PROPOSED UNDERPINNING.
8. NO FOUNDATION OR EARTHWORK PERMIT SHALL BE ISSUED UNTIL AT LEAST FIVE DAYS AFTER A WRITTEN NOTICE OF THE PERMIT APPLICATION HAS BEEN PROVIDED BY THE APPLICANT TO THE OWNER OF ALL ADJOINING LOTS, BUILDINGS AND SERVICE FACILITIES, WHOM MAY BE AFFECTED BY THE PROPOSED FOUNDATION WORK OR EARTHWORK OPERATIONS.
9. THE UNDERPINNING FOUNDATIONS SHALL BEAR ON SUBGRADE HAVING A BEARING CAPACITY EQUAL TO OR GREATER THAN THE SUBGRADE OF THE EXISTING FOUNDATION. THE SUBGRADE AT THE LEVEL OF THE EXISTING FOUNDATION SHALL BE INSPECTED BY A LICENSED PROFESSIONAL ENGINEER RETAINED BY THE OWNER (UNLESS CONTRACTUALLY DEFINED OTHERWISE) TO VERIFY THE BEARING CAPACITY, AND DEFICIENCIES BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD.
10. DO NOT TRANSFER THE BUILDING LOAD ONTO NEW UNDERPINNING WALLS UNTIL ALL WALLS HAVE ATTAINED 50% OF THE CONCRETE DESIGN STRENGTH, AS CONFIRMED BY THE CYLINDER TESTS, OR 96 HOURS.
11. DO NOT PLACE BACKFILL AGAINST NEW UNDERPINNING WALLS UNTIL CONFIRMED BY THE CYLINDER TEST, OR 96 HOURS.
12. ALL CONCRETE SHALL BE NORMAL WEIGHT CONCRETE WITH A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.
13. ALL GROUT SHALL BE NONSHRINK WITH A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI.
14. ALL DRYPACK SHALL BE A MIXTURE OF 1 PART CEMENT AND 2 PARTS DAMP SAND, WITH 0-INCH SLUMP.
15. ALL UNDERPINNING SHEETING AND BRACING TO REMAIN SHALL BE PRESSURE TREATED LUMBER AND/OR OTHER APPROVED MATERIAL.
16. EXCAVATION BELOW THE WATER TABLE SHOULD BE AVOIDED, IF POSSIBLE. DEWATER THE SITE PRIOR TO EXCAVATION. EXCAVATION MAY ONLY PROCEED AFTER REVIEW BY THE ENGINEER OF RECORD.
17. IF WATER IS ENCOUNTERED IN THE PIT, PROVIDE LOCAL PUMPING TO REMOVE WATER FROM THE PIT.
18. ALL SIDES OR SLOPES OF EXCAVATIONS OR EMBANKMENTS SHALL BE INSPECTED AFTER RAINSTORMS.
19. THE UNDERPINNING SHALL BE CONSTRUCTED IN A MANNER SUCH THAT THE EXPOSED FACE OF THE CONCRETE IS VERTICAL (OR AS OTHERWISE SPECIFIED), CLEAN AND NEAT.
20. **UNDERPINNING PIERS SHALL NOT BE LEFT OPEN OVERNIGHT, UNLESS PREVIOUSLY APPROVED BY THIS OFFICE.**

## UNDERPINNING NOTES & PROCEDURES:

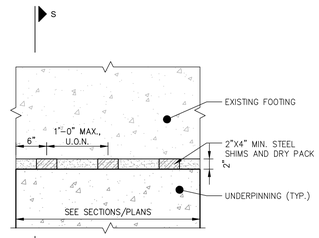
1. STARTING WITH SEGMENTS "A" ONLY, DIG PITS 4'-0" WIDE MAXIMUM, SIMULTANEOUSLY PLACING REQUIRED SHEETING AND BRACING ALL PITS TO BE SHEETED ON ALL FOUR SIDES. PACK VOIDS BETWEEN SHEETING AND SOIL WITH SOIL CEMENT, LEAVE A MINIMUM OF 12'-0" OF EXISTING SOIL BETWEEN PITS.
2. CLEAN BOTTOM OF EXISTING FOOTING AND RECOMPACT DISTURBED SOIL AT BOTTOM OF PIT WITH TAMPERS (APPLICABLE TO SOIL ONLY). COMPACT TO 95% OF MAXIMUM DENSITY OF SOIL. LOSS OF GROUND SHOULD BE KEPT TO A MINIMUM BY BACK FILLING BEHIND THE BOARDS WHERE AND WHEN POSSIBLE WITH GROUT PUMPED INTO VOIDS.
3. THE CONTRACTOR SHALL INSTALL ADEQUATE LATERAL BRACING SYSTEM(S) TO PREVENT MOVEMENT IN THE EXISTING STRUCTURE(S) AND IN THE NEW UNDERPINNING IF NECESSARY.
4. POUR NEW CONCRETE UNDERPINNING FOR SEGMENTS "A". AFTER CONCRETE ATTAINS 50% OF DESIGN STRENGTH, OR 96 HOURS, DRIVE 2"X4" TAPERED STEEL WEDGES AT 2'-0" ON CENTER MAXIMUM, THEN PACK SOLID WITH DRYPACK (MIXTURE 1 PART CEMENT, 2 PARTS DAMP SAND, WITH 0-INCH SLUMP) INTO SPACE BETWEEN TOP OF UNDERPINNING AND BOTTOM OF EXISTING FOOTING TO TRANSFER LOAD. ENSURE THAT THE BACK OF VOID IS FORMED SO THAT DRYPACK IS NOT LOST WHEN RAMMED INTO THE GAPS.

4A. ALTERNATE TO #4: "HIGH-POUR METHOD" – POUR NEW CONCRETE UNDERPINNING FOR EACH SEGMENT UP TO THE BOTTOM OF EXISTING FOOTING OF THE BUILDING PERMITTED IN LIEU OF DRY PACK. STONE CONCRETE POURED MINIMUM STRENGTH 4,000 PSI AND VIBRATED UP TO THE BOTTOM OF EXISTING FOOTING OF THE BUILDING AT THE SAME TIME OF UNDERPINNING CONCRETE POURED TO REMOVE ALL VOIDS. OPTION 4A MUST ALSO INCLUDE SIKA CONTROL 40, OR OTHER EXPANSIVE ADDITIVE IN CONCRETE MIXTURE. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR MIXING QUANTITIES.

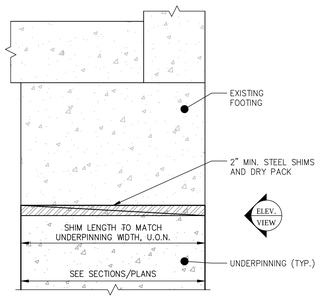
5. FOR SEGMENTS "B" ONLY, DIG PITS 4'-0", MAXIMUM WIDTH, WITH REQUIRED SHEETING AND BRACING.
6. FOR SEGMENTS "B" REPEAT CONCRETING, CLEANING, COMPACTION, STEEL WEDGES AND DRYPACKING AS DESCRIBED IN NOTES 2, 3 AND 4.
7. FOR SEGMENTS "C", DIG PITS 4'-0" MAXIMUM WIDE, WITH REQUIRED SHEETING AND BRACING, AS INDICATED ON DETAILS.
8. FOR SEGMENTS "C" REPEAT CONCRETING, CLEANING, COMPACTION, STEEL WEDGES AND DRYPACKING AS DESCRIBED IN NOTES 2, 3 AND 4.
9. FOR SEGMENTS "D", DIG OUT SOIL BETWEEN COMPLETED SEGMENTS C & A. PROVIDE SHEETING AND BRACING, AS INDICATED ON DETAILS.
10. FOR SEGMENTS "D" REPEAT CONCRETING, CLEANING, COMPACTION, STEEL WEDGES AND DRYPACKING AS DESCRIBED IN NOTES 2, 3 AND 4.
11. WHERE BOTTOM OF ADJACENT UNDERPINNING PITS ARE AT DIFFERENT ELEVATIONS, DEEPER PIT SHALL BE INSTALLED FIRST.
12. UNDERPINNING PITS CLOSER THAN 12 FEET APART SHALL NOT BE EXCAVATED AT THE SAME TIME.
13. WHEN UNDERPINNING ROCK MATERIAL, CONTRACTOR SHALL TAKE PRECAUTIONS SO AS NOT TO FRACTURE ROCK UNDER ADJOINING SECTION OR DAMAGE CONCRETE ALREADY POURED IN PLACE.




SHIM DIMENSIONS




ELEVATION



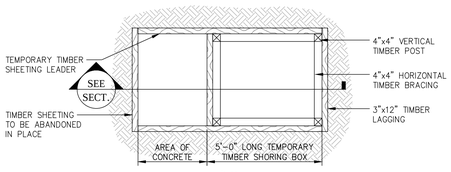

SECTION S-S

## 4/402 STEEL SHIMS DETAIL

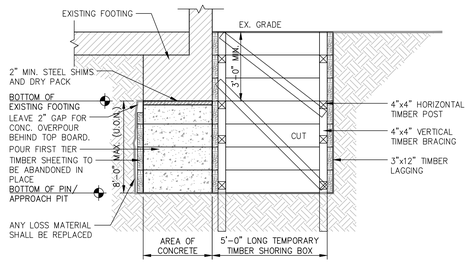
SCALE: N.T.S.

## 1/402 UNDERPINNING DETAIL

SCALE: N.T.S.



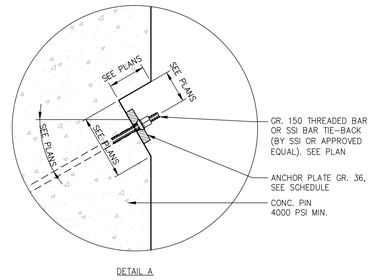

PLAN



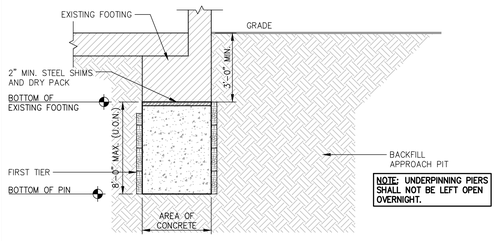

SECTION 1

APPROACH PIT

| GRADE 150 BARS (DIAM.) | PLATE A36 SIZE (INCH) |
|---|---|
| 3/4" | 6x 6x 3/8 |
| 1" | 5x 5x 1 1/4 |
| 1 1/4" | 5x 8x 1 1/2 |
| 1 3/8" | 7x 7 1/2x 1 3/4 |
| 1 5/8" | 8x 8x 2 |
| 1 7/8" | 9x 9x 2 1/4 |
| 2 1/2" | 10x 10x 2 1/2 |
| 3" | 16x 16x 3 1/2 |



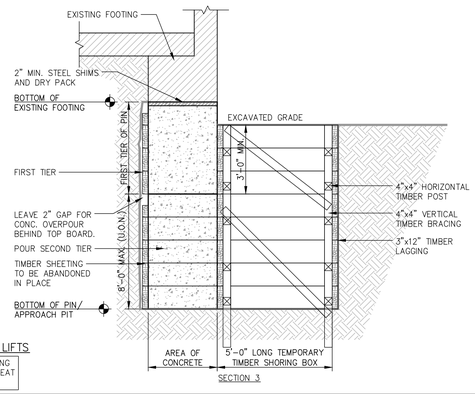

DETAIL A




SECTION 2

## 2/402 APPROACH PIT DETAIL

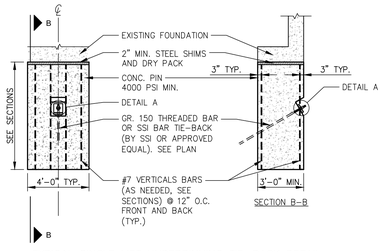
SCALE: N.T.S.




SECTION 3

APPROACH PIT W/ 2 LIFTS

NOTE: FOR UNDERPINNING WITH TRIPLE LIFTS, REPEAT SECTIONS 1, 2 AND 3.




TYPICAL SINGLE LIFT UNDERPINNING TIE-BACK DETAIL

## 3/402 TIE-BACK THRU UNDERPIN DETAIL

SCALE: N.T.S.

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

FNA associates, inc.
CONSULTING ENGINEERS
670 BERGEN BOULEVARD | SECOND FLOOR
RIDGEFIELD, NJ. 07657
O: 201-241-2444

# 281 5TH AVENUE
MANHATTAN | NEW YORK

| No: | Revision: | Date: |
|---|---|---|
| 7 | UPDATED DOB PAGES | 05/17/2016 |
| 6 | UPDATED FND 1 | 05/11/2016 |
| 5 | REVISED SOE AT SIDEWALK VAULT (RAMP) | 04/21/2016 |
| 4 | REVISED SOE AT SIDEWALK VAULT | 04/20/2016 |
| 3 | DOB SUBMISSION | 03/23/2016 |
| 2 | REVISED SOE | 03/14/2016 |
| 1 | PRELIM SOE | 03/07/2016 |

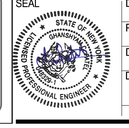
SCALE: AS NOTED

KEY PLAN:


DRAWING TITLE:

DETAILS

SEAL




Date: 03-07-2016
PROJECT No: 16010
Drawn By: PC
DWG. No: SOE-402.01
8 OF 8

FILE REF.: Q:\PROJECTS 2016\16010_281 5TH AVENUE\SOE\DWGS\16010_281 5TH AVENUE_2016-05-17_UPDATED DOB PAGES.DWG

Superseded 6-8-2016

## ABBREVIATIONS:

| | |
|---|---|
| AB | ANCHOR BOLT |
| ABV | ABOVE |
| AC | AIR CONDITIONER |
| ACI | AMERICAN CONCRETE INSTITUTE |
| ADD'L | ADDITIONAL |
| ADJ | ADJACENT |
| AFF | ABOVE FINISHED FLOOR |
| AISC | AMERICAN INSTITUTE OF STEEL CONSTRUCTION |
| ALT | ALTERNATE ALUM ALUMINUM |
| ANCH | ANCHOR |
| ANG | ANGLE |
| APPD | APPROVED |
| APPROX | APPROXIMATE |
| ARCH | ARCHITECTURAL |
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS |
| AVG | AVERAGE |
| AWS | AMERICAN WELDING SOCIETY |
| B | BASE, BOTTOM |
| BETW | BETWEEN |
| BF | BRACE FRAME |
| BKT | BRACKET |
| BL | BUILDING LINE |
| BLDG | BUILDING |
| BM | BEAM |
| BOTT | BOTTOM |
| BRK | BRICK |
| B/STL | BOTTOM OF STEEL |
| BS | BOTH SIDES |
| CANT | CANTILEVER |
| CF | CUBIC FOOT |
| CG | CENTER OF GRAVITY |
| CIP | CAST IN PLACE |
| C.JT | CONCRETE JOINT |
| CL | CENTER LINE |
| CLG | CEILING |
| CLR | CLEAR |
| CM | CONSTRUCTION MANAGER |
| CMU | CONCRETE MASONRY UNITS |
| COL | COLUMN |
| CONC | CONCRETE |
| COND | CONDITIONS |
| CONN | CONNECTION |
| CONST | CONSTRUCTIONS |
| CONT | CONTINUOUS |
| CONTR | CONTRACTOR |
| COORD | COORDINATE |
| CORR | CORRUGATED |
| CY | CUBIC YARD |
| DEMO | DEMOLITION |
| DEPT | DEPARTMENT |
| DET | DETAIL |
| DIA | DIAMETER |
| DIM | DIMENSION |
| DIR | DIRECTION |
| DN | DOWN |
| DWL | DOWEL |
| DWG | DRAWING |
| E | EAST |
| EA | EACH |
| EF | EACH FACE |
| EL | ELEVATION |
| ELEC | ELECTRIC |
| ELEV | ELEVATOR |
| EMBD | EMBEDMENT |
| ENCL | ENCLOSURE |
| EOR | ENGINEER OF RECORD |
| EOS | EDGE OF SLAB |
| EP | EMBEDDED PLATE |
| EQ | EQUAL |
| EQUIP | EQUIPMENT |
| ETC | ETCETERA |
| EW | EACH WAY |
| E-W | EAST WEST |
| EXIST | EXISTING |
| EXP | EXPANSION |
| EXP JT | EXPANSION JOINT |
| EXT | EXTENSION |
| EXTR | EXTERIOR |
| FL | FLOOR |
| FND | FOUNDATION |
| FOB | FACE OF BUILDING |
| FP | FIRE PROOFING |
| FT | FOOT |
| FTG | FOOTING |
| GA | GAUGE |
| GALV | GALVANIZED |
| GC | GENERAL CONTRACTOR |
| GB | GRADE BEAM |
| GRTG | GRATING |
| GYP. BD | GYPSUM BOARD |
| H | HIGH |
| HDR | HEADER |
| HGT | HEIGHT |
| HORIZ | HORIZONTAL |
| HP | HIGH POINT |
| HR | HOUR |
| HS | HIGH STRENGTH |
| HVAC | HEAT, VENTILATION & AIR CONDITIONING |
| ID | INSIDE DIAMETER |
| IF | INTERIOR FACE |
| IN | INCH |
| INCL | INCLUDING |
| INFO | INFORMATION |
| INSUL | INSULATION |
| JT | JOINT |
| K | KIP (1000 POUNDS) |
| KPF | KIPS PER SQUARE FOOT |
| KSI | KIPS PER SQUARE INCH |
| L | LOW |
| LB | LINK BEAM |
| LBS | POUNDS |
| LB/FT | POUNDS PER FOOT |
| Ld | DEVELOPMENT LENGTH |
| LG | LONG |
| LL | LIVE LOAD |
| LLRS | LATERAL LOAD RESISTING SYSTEM |
| LLV | LONG LEG VERTICAL |
| LP | LOW POINT |
| LRFD | LOAD RESISTANCE FACTOR DESIGN |
| LT | LIGHT |
| LW | LIGHT WEIGHT |
| L.W. | LONG WAY |
| MAX | MAXIMUM |
| MAS | MASONRY |
| MATER | MATERIAL |
| MAX | MAXIMUM |
| MC | MOMENT CONNECTION |
| MD | METAL DECK |
| MECH | MECHANICAL |
| MEP | MECHANICAL ELECTRICAL AND PLUMBING |
| MEZZ | MEZZANINE |
| MF | MOMENT FRAME |
| MFG | MANUFACTURER |
| MIN | MINIMUM |
| MISC | MISCELLANEOUS |
| N | NORTH |
| NA | NOT APPLICABLE |
| NIC | NOT IN CONTRACT |
| NO | NUMBER |
| N-S | NORTH-SOUTH |
| NTS | NOT TO SCALE |
| NW | NORMAL WEIGHT |
| O/C | ON CENTER |
| OPNG | OPENING |
| OPP | OPPOSITE |
| PC | PILE CAP |
| PCF | POUNDS PER CUBIC FEET |
| PL | PLATE |
| PLF | POUNDS PER LINEAR FOOT |
| PSF | POUNDS PER SQUARE FOOT |
| PSI | POUNDS PER SQUARE INCH |
| PT | POST TENSION |
| RC | REINFORCED CONCRETE |
| RD | ROOF DRAIN |
| REF | REFERENCE |
| REINF | REINFORCEMENT |
| REQ'D | REQUIRED |
| RFI | REQUEST FOR INFORMATION |
| S | SOUTH |
| SB | SPANDREL BEAM |
| SCHED | SCHEDULE |
| SECT | SECTION |
| SF | SQUARE FOOT |
| SHT | SHEET |
| SL | SLAB |
| SPA | SPACING |
| SPEC | SPECIFICATIONS |
| SQ | SQUARE |
| STD | STANDARD |
| STIFF | STIFFENER |
| STL | STEEL |
| STRUCT | STRUCTURAL |
| E.W. | EACH WAY |
| SW | SHEARWALL |
| S.W. | SHORT WAY |
| SIM | SIMILAR |
| T&B | TOP AND BOTTOM |
| THK | THICK |
| T/ | TOP OF |
| TBD | TO BE DETERMINED |
| TEMP | TEMPORARY |
| TSF | TONS PER SQUARE FOOT |
| TYP | TYPICAL |
| UON | UNLESS OTHERWISE NOTED |
| U | UPTURNED BEAM |
| VERT | VERTICAL |
| VIF | VERIFY IN FIELD |
| W | WEST |
| W/ | WITH |
| W/O | WITH OUT |
| WF | WIDE FLANGE |
| WP | WORKING POINT |
| WPG | WATER PROOFING |
| WS | WATER STOP |
| WT | WIND TRUSS |
| WWF | WELDED WIRE FABRIC |
| ℄ | CENTERLINE |
| PL | PLATE |
| ∠ | ANGLE |
| & | AND |
| ø | DIAMETER |
| @ | AT |

## GENERAL NOTES:

1. ALL WORK TO BE PERFORMED IN COMPLIANCE WITH THE NEW YORK CITY BUILDING CODE, LATEST EDITION AND ALL SUPPLEMENTS.
2. CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS IN THE FIELD AND BE RESPONSIBLE FOR ACCURATE COORDINATION WHERE POSSIBLE. EXISTING FRAMING DIMENSIONS WAS TAKEN FROM EXISTING DWGS. AND SHALL BE VERIFIED ON SITE. DISCREPANCIES SHALL BE REPORTED TO ARCH. AND ENGINEER BEFORE PROCEEDING.
3. TEMPORARY SHORING IS REQUIRED AT ALL LOCATIONS WHERE PARTIAL REMOVAL OF BEAMS IS REQUIRED. CONTRACTOR IS RESPONSIBLE FOR ENGINEERING AND CONTROLLED INSPECTION OF TEMPORARY SYSTEMS.
4. THE CONTRACTOR SHALL USE THESE DRAWINGS IN CONJUNCTION WITH THE ARCHITECTURAL AND MECHANICAL DEMOLITION DRAWINGS. IN THE EVENT OF CONFLICTS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND THE ENGINEER.
5. ALL UNDERPINNING, SHEETING, SHORING OR OTHER CONSTRUCTION REQUIRED FOR THE SUPPORT OF ADJACENT PROPERTIES, BUILDINGS, SIDEWALKS, UTILITIES, ETC., SHALL BE SUBJECT TO SPECIAL INSPECTION AS REQUIRED BY THE CODE. THE CONTRACTOR SHALL RETAIN A LICENSED PROFESSIONAL ENGINEER ACCEPTABLE TO THE ENGINEER OF RECORD TO PROVIDE THE NECESSARY DESIGN. THE CONTRACTOR'S PROFESSIONAL ENGINEER SHALL PREPARE AND FILE THE REQUIRED FORMS FOR THE WORK WITH THE BUILDING DEPARTMENT. 1 1

## FOUNDATION NOTES:

### A. EXCAVATION

1. ALL SPREAD FOOTINGS AND FOUNDATION WALLS SHALL BEAR ON 40 TSF ROCK NYCBC CLASS 1b OR BETTER, U.O.N ON PLAN
2. WHERE THE REQUIRED BEARING MATERIAL IS NOT FOUND AT THE ANTICIPATED ELEVATION SHOWN (ELEVATION BASED ON BORING INTERPOLATED DATA) THE FOOTINGS SHALL BE LOWERED TO A DEPTH AT WHICH THE REQUIRED BEARING CAPACITY IS FOUND.
3. WHERE EXISTING FOOTING OR FOUNDATIONS OF ADJACENT PROPERTY IS LOWER THAN ELEVATIONS SHOWN, NEW FOUNDATIONS ARE TO BE LOWERED TO SAME ELEVATION. WHERE NEW FOUNDATION IS LOWER THAN EXISTING FOUNDATIONS CONTRACTOR IS TO UNDERPIN EXISTING FOUNDATION. CONTRACTOR IS TO ESTABLISH EXISTING CONDITIONS BEFORE COMMENCING WORK AND NOTIFY THE ENGINEER.
4. ALL UNDERPINNING, SHEETING, SHORING OR OTHER CONSTRUCTION REQUIRED FOR THE SUPPORT OF ADJACENT PROPERTIES, BUILDINGS, SIDEWALKS, UTILITIES, ETC., SHALL BE SUBJECT TO SPECIAL INSPECTION AS REQUIRED BY THE CODE. THE CONTRACTOR SHALL RETAIN A LICENSED PROFESSIONAL ENGINEER ACCEPTABLE TO THE ENGINEER OF RECORD TO PROVIDE THE NECESSARY DESIGN. THE CONTRACTOR'S PROFESSIONAL ENGINEER SHALL PREPARE AND FILE THE REQUIRED FORMS FOR THE WORK WITH THE BUILDING DEPARTMENT. 1

### B. CONCRETE AND STEEL REINFORCEMENT

1. NO CONCRETE FOOTING OR FOUNDATION WALL SHALL BE POURED UNTIL SUBGRADE FOR SAME HAS BEEN APPROVED BY A LICENSED PROFESSIONAL ENGINEER.
2. ALL CONCRETE SHALL BE NORMAL WEIGHT CONTROLLED CONCRETE, U.O.N., AND COMPLY WITH A.C.I. BUILDING CODE AND THE CURRENT NEW YORK CITY BUILDING CODE.
3. CONCRETE STRENGTH SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED: 8000 PSI.

| | |
|---|---|
| –FOUNDATION FOR COLUMNS/WALLS | 7000 PSI. |
| –BUTTRESSES, FOUNDATION WALLS | 7000 PSI. |
| –FOOTING SEALERS/ MUD SLAB | 3000 PSI. |
| –SLAB ON GROUND• | 4000 PSI. |

•IF SLAB ON GROUND IS POURED BEFORE THE COLUMNS ABOVE AND THE COLUMN STRENGTH IS 5000 PSI OR GREATER, THE SLAB ON GROUND STRENGTH IS TO BE ACCORDING TO THE "DETAIL OF BEAM AND SLAB CONCRETE PLACEMENT AT HIGH STRENGTH COLUMN." IN ADDITION THE DOWELS EXTENDING ABOVE THE FOOTINGS, PIERS OR WALLS ARE TO BE LENGTHENED A MIN. 12", BEYOND THAT SHOWN OR CALLED FOR IN DETAILS.

4. ALL STEEL REINFORCEMENT SHALL HAVE AN ULTIMATE TENSILE STRENGTH OF 90,000 PSI AS PER A.S.T.M. A615–83 GRADE 60. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL THE NECESSARY CHAIRS, REBARS, TIES, SPACERS, ETC., TO SECURE AND SUPPORT THE REINFORCING WHILE PLACING THE CONCRETE. ALL #14 AND LARGER DIAMETER REBAR MUST TO BE GRADE 97 REINFORCEMENT. NOTES FOR GRADE 97 REINFORCEMENT (#14, #18, #20, & #24 BARS):
   a. ALL 97 ksi REINFORCING SHALL MEET THE NYC BUILDING DEPARTMENT BULLETION 2010–003 FOR MATERIAL AND SPECIAL INSPECTION REQUIREMENTS.
   b. THE YIELD STRENGTH OF 97 ksi REBAR SHALL BE TAKEN AS THE STRESS CORRESPONDING TO A STRAIN OF 0.35% AS EVALUATED BY ASTM A370.
   c. MINIMUM REINFORCEMENT ELONGATION SHALL NOT BE LESS THAN 6% PER ASTM A370.
   d. MECHANICAL COUPLERS SHALL BE PROVIDED THAT CONFORM TO SECTION 3.5 OF AC 237 AND CH. 12 OF ACI 318. ADDITIONALLY, MECHANICAL COUPLERS SHALL COMPLY WITH AC 133. SPLICES SHALL BE STAGGERED SUCH THAT NO MORE THAN HALF OF THE TOTAL REINFORCEMENTIS SPLICED WITHIN 36 INCHES. ALTERNATE COUPLERS LOCATION AT EVERY OTHER BAR PER REQUIREMENTS OF THIS NOTE IN SHEARWALLS AND CONCRETE COLUMNS.
5. ALL BARS MARKED CONTINUOUS, SHALL BE LAPPED ACCORDING TO TABLES ON FO–203 AT SPLICES AND CORNERS EXCEPT AS OTHERWISE SHOWN ON PLANS. LAP CONTINUOUS TOP BARS AT CENTER BETWEEN SUPPORTS AND BOTTOM BARS AT SUPPORTS. HOOK TOP BARS AT DISCONTINUOUS ENDS.
6. VERTICAL CONSTRUCTION JOINTS IN ALL WALLS SHALL BE USED ONLY IF UNAVOIDABLE, OR UNLESS OTHERWISE NOTED, AND TO BE LOCATED AT LEAST 4'-0" FROM ANY SUPPORTING COLUMN OR WALL OPENING. DISTANCE BETWEEN JOINTS IN WALL SHALL BE ALLOWED AS PER SPECIFICATIONS. NO HORIZONTAL CONSTRUCTION JOINTS WILL BE ALLOWED IN STRAP BEAMS.
7. IN NO CASE SHALL TRUCKS, BULLDOZERS, OR OTHER HEAVY EQUIPMENT BE PERMITTED CLOSER THAN 8'-0" FROM ANY FOUNDATION WALL UNLESS THE WALL IS BRACED BY THE CONTRACTOR.
8. TEMPORARY BRACING SHALL BE PROVIDED FOR ALL BUTTRESSES. WHERE BUTTRESSES DO NOT EXIST OR SPACING BETWEEN BUTTRESSES EXCEED 25 FEET, AND WHERE THE DIFFERENCE IN LEVEL BETWEEN INSIDE AND OUTSIDE GRADE IS MORE THAN 4'-0", INTERMEDIATE BRACING SHALL BE PROVIDED. WHERE RAMPS OCCUR, THE GRADE ELEVATION OUTSIDE OF RAMP WALLS SHALL BE USED IN FIGURING THE DIFFERENCE IN LEVEL. CORNER BUTTRESSES NEED NOT BE BRACED. NO BACKFILLING IS TO BE DONE BEFORE ALL SLABS BRACING WALLS ARE IN PLACE UNLESS APPROVED BY THE ENGINEER.
9. CONTRACTOR TO INSTALL ALL PIPE SLEEVES, BOXED OPENINGS, ANCHOR BOLTS, ETC., AS REQUIRED FOR THE VARIOUS TRADES. WALL POCKETS TO RECEIVE BEAMS AND SLABS SHALL BE PROVIDED AS REQUIRED FOR THE SUPERSTRUCTURE. SHOP DRAWINGS SHOWING THE POSITION OF OPENINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER PRIOR TO PLACING CONCRETE.
10. MINIMUM COVER FOR REINFORCING STEEL SHALL BE ¾" FOR INTERIOR SLABS AND INTERIOR WALL SURFACES; 1½" FOR BEAMS, GIRDERS, AND COLUMNS (TIES, STIRRUPS OR PRIMARY REINFORCEMENT). FOR ALL CONCRETE EXPOSED TO WEATHER AND EARTH FILL, COVER SHALL BE 2" (1½" FOR STIRRUPS). FOR CONCRETE PLACED AGAINST EARTH, MINIMUM COVER SHALL BE 3".
11. FOR PIER SIZES SEE STRUCTURAL DRAWINGS. WHERE PIER IS REQUIRED BUT NOT SHOWN ON PLANS THE SIZE OF THE PIER SHOULD BE AS SHOWN IN TYP. DETAIL ON FO–201.
12. WHERE A PIER IS INDICATED ON THE FOUNDATION PLAN BUT ELIMINATED IN THE FIELD (GOOD MATERIAL HIGHER THAN ASSUMED) THE ENGINEER SHALL BE NOTIFIED AS DEPTH OF FOOTING MAY NEED TO BE INCREASED.
13. THE CONTRACTOR MUST SUBMIT REINFORCING SHOP DRAWINGS TO THE STRUCTURAL ENGINEER FOR REVIEW. NO CONSTRUCTION IS TO BE STARTED UNTIL THE SHOP DRAWINGS ARE REVIEWED BY THE ENGINEER.
14. THE STRUCTURAL ENGINEER OR HIS FIELD QUALIFIED REPRESENTATIVE MUST CHECK AND APPROVE ALL STEEL REINFORCING PRIOR TO CONCRETE PLACEMENT.

### C. CODES AND TESTS

1. THIS STRUCTURE HAS BEEN DESIGNED UNDER THE PROVISIONS OF THE NEW YORK CITY BUILDING CODE AS AMENDED AND A.C.I. 318.
2. ALL CONTROLLED CONCRETE SHALL COMPLY WITH THE A.C.I. 318 BUILDING CODE. APPLICATION FOR CONTROLLED CONCRETE WITH CONCRETE TESTS AND CURVES OF TESTS FOR THE PRELIMINARY DESIGN MIX PREPARED BY AN APPROVED LABORATORY MUST BE SUBMITTED TO THE ENGINEER FOR FILING WITH THE BUILDING DEPARTMENT. NO CONCRETE SHALL BE PLACED WITHOUT THE DESIGN MIX BEING APPROVED BY THE BUILDING DEPARTMENT.
3. DESIGN AND CONSTRUCTION OF FORMWORK IS TO COMPLY WITH THE A.C.I. 318 BUILDING CODE AND NEW YORK CITY BUILDING CODE AS AMENDED.
4. THE DESIGN DETAILS AND NOTES INCLUDED HEREIN ARE IN COMPLIANCE WITH LOCAL LAW 17/95.

## SUPERSTRUCTURE CONCRETE NOTES

### A. CONCRETE

1. ALL CONCRETE SHALL BE NORMAL WEIGHT CONTROLLED CONCRETE, U.O.N., AND COMPLY WITH THE A.C.I. BUILDING CODE AND THE CURRENT NEW YORK CITY BUILDING CODE. 1
2. CONCRETE STRENGTH SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:

| | |
|---|---|
| SLABS AND BEAMS U.O.N. ON PLANS | 8600 PSI FROM 1ST TO 19TH FL. |
| SLABS AND BEAMS U.O.N. ON PLANS | 7200 PSI FROM 20TH TO UP |
| SHEAR WALLS & COLUMNS | SEE COLUMN SCHEDULE |
| LINK BEAMS | SAME AS SHEARWALL STRUCTURE |

3. NO CONCRETE SHALL BE PLACED UNTIL THE CONTRACTOR HAS INSTALLED ALL THE INSERTS AND DOVETAILS NECESSARY TO PROVIDE SUPPORT FOR MULLIONS, APPLIED FINISHES, PARTITIONS, PIPES, DUCTS, EQUIPMENT, ETC., AS REQUIRED IN ARCHITECTURAL, H.V.A.C. AND STRUCTURAL DRAWINGS. WHERE BRICK VENEER EXCEEDS 18" IN HEIGHT, PROVIDE DOVETAIL TYPE MASONRY ANCHORS SPACED AT 24" O/C IN ALL BACK UP VERTICAL CONCRETE SURFACES.
4. CONTRACTOR SHALL VERIFY LOCATIONS AND DIMENSIONS OF ALL SLOTS, PIPEDE SLEEVES, DUCTS AND ANY OTHER CONCRETE PENETRATIONS AS REQUIRED FOR VARIOUS TRADES BEFORE CONCRETE IS PLACED.

SHOP DRAWINGS SHOWING COMPOSITE LAYOUT OF ALL PENETRATIONS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

5. ALL PLUMBING AND ELECTRICAL SLOTS SHALL BE FILLED WITH CONCRETE TO THE SAME DEPTH AS FLOOR AFTER CONDUITS AND/OR PIPES ARE INSTALLED.
6. NO PIPES OR CONDUITS EXCEEDING 1/3 SLAB THICKNESS IN OUTSIDE DIAMETER NOR OVER NOMINAL 2" INSIDE DIAMETER SHALL BE EMBEDDED SHOULD BE PLACED CLOSER THAN 3 DIAMETER ON CENTER NOR PASS WITHIN 24" OF COLUMN FACE, U.O.N. JUNCTION BOXES MAY BE PLACED IN STRUCTURAL CONCRETE SLAB BUT SHALL NOT EXCEED 4½"x4½"x3½" IN DEPTH AND SHALL BE SEPARATED FROM OTHER JUNCTION BOXES BY NOT LESS THAN 8" OF CONCRETE.
7. ALL MEMBERS IN THE FLOOR SYSTEM INCLUDING BEAMS, BRACKETS, COLUMN CAPITALS AND HAUNCHES SHALL BE PLACED MONOLITHICALLY. VERTICAL CONSTRUCTION JOINTS NECESSARY MAY BE MADE AT CENTER OF BEAM OR SLAB USING APPROVED BULKHEADS AND ADDITIONAL REINFORCING AS SHOWN ON DETAILS.
8. NO CONCRETE FLOOR SYSTEM IS TO BE INSTALLED UNTIL AT LEAST TWO HOURS HAVE PASSED AFTER THE SUPPORTING COLUMNS AND WALLS ARE PLACED.
9. WHEN PLACING CONCRETE AGAINST AN ADJACENT BUILDING OR AT EXPANSION JOINT, AT LEAST 1" (U.O.N.) OF HIGH DENSITY STYROFOAM SHALL BE PLACED AT THE INTERFACE BETWEEN THE EXISTING AND NEW CONCRETE. IN ADDITION, THE CONTRACTOR MUST TAKE ALL THE NECESSARY MEASURES SO AS NOT TO CREATE ANY DAMAGE TO THE EXISTING CONSTRUCTION WHILE PLACING THE NEW CONCRETE.
10. TEMPORARY SHORING AND RESHORING SHALL REMAIN IN PLACE AT LEAST 28 DAYS AFTER PLACEMENT OF CONCRETE.
11. NO DEVIATION FROM THE STRUCTURAL PLANS SHALL BE PERMITTED WITHOUT THE EXPRESS WRITTEN CONSENT OF THE STRUCTURAL ENGINEER.

### B. REINFORCEMENT

1. ALL STEEL REINFORCEMENT (STIRRUPS AND TIES INCLUSIVE) SHALL HAVE AN ULTIMATE TENSILE STRENGTH OF 90,000 PSI AS PER A.S.T.M. A615 GRADE 60. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL THE CHAIRS, REBARS, TIES, SPACERS, ETC., TO SECURE AND SUPPORT THE REINFORCING WHILE PLACING THE CONCRETE.
2. ALL #14 AND LARGER DIAMETER REBAR MUST TO BE GRADE 97 REINFORCEMENT. NOTES FOR GRADE 97 REINFORCEMENT (#14, #18, #20, & #24 BARS):
   a. ALL 97 ksi REINFORCING SHALL MEET THE NYC BUILDING DEPARTMENT BULLETION 2010–003 FOR MATERIAL AND SPECIAL INSPECTION REQUIREMENTS.
   b. THE YIELD STRENGTH OF 97 ksi REBAR SHALL BE TAKEN AS THE STRESS CORRESPONDING TO A STRAIN OF 0.35% AS EVALUATED BY ASTM A370.
   c. MINIMUM REINFORCEMENT ELONGATION SHALL NOT BE LESS THAN 6% PER ASTM A370.
   d. MECHANICAL COUPLERS SHALL BE PROVIDED THAT CONFORM TO SECTION 3.5 OF AC 237 AND CH. 12 OF ACI 318. ADDITIONALLY, MECHANICAL COUPLERS SHALL COMPLY WITH AC 133. SPLICES SHALL BE STAGGERED SUCH THAT NO MORE THAN HALF OF THE TOTAL REINFORCEMENTIS SPLICED WITHIN 36 INCHES. ALTERNATE COUPLERS LOCATION AT EVERY OTHER BAR PER REQUIREMENTS OF THIS NOTE IN SHEARWALLS AND CONCRETE COLUMNS.
3. THE CONTRACTOR MUST SUBMIT REINFORCING SHOP DRAWINGS TO THE STRUCTURAL ENGINEER FOR REVIEW. NO CONSTRUCTION IS TO BE STARTED UNTIL THE SHOP DRAWINGS ARE REVIEWED BY THE ENGINEER.
4. THE STRUCTURAL ENGINEER OR HIS FIELD QUALIFIED REPRESENTATIVE MUST CHECK AND APPROVE ALL STEEL REINFORCEMENT PRIOR TO CONCRETE PLACEMENT.
5. ALL REINFORCING BARS MARKED CONTINUOUS SHALL BE LAPPED AT SPLICES AND CORNERS IN CONFORMANCE WITH LAP SPLICE TABLES IN TYPICAL DETAILS UNLESS OTHERWISE NOTED. LAP CONTINUOUS TOP BARS AT CENTER BETWEEN SUPPORTS AS REQUIRED. TERMIN– ATE CONTINUOUS BARS AT END SUPPORTS WITH STANDARD HOOKS, U.O.N.
6. MINIMUM COVER FOR REINFORCING STEEL SHALL BE ¾" FOR INTERIOR SLABS AND INTERIOR WALL SURFACES; 1½" FOR BEAMS, GIRDERS AND COLUMNS (TIES, STIRRUPS OR PRIMARY REINFORCEMENT). FOR ALL CONCRETE EXPOSED TO WEATHER AND EARTH FILL, COVER SHALL BE 2" (1½" FOR STIRRUPS). FOR CONCRETE PLACED AGAINST EARTH, MINIMUM COVER SHALL BE 3".

### C. CODES AND TESTS

1. THIS STRUCTURE HAS BEEN DESIGNED UNDER THE PROVISIONS OF THE NEW YORK CITY BUILDING CODE AS AMENDED AND A.C.I. 318.
2. ALL CONTROLLED CONCRETE SHALL COMPLY WITH THE A.C.I. 318 BUILDING CODE AND THE NEW YORK CITY BUILDING CODE. A SPECIAL AMENDMENT FORM FOR CONTROLLED CONCRETE WITH CONCRETE TESTS AND CURVES OF TESTS FOR THE PRELIMINARY DESIGN MIX PREPARED BY AN APPROVED LABORATORY MUST BE SUBMITTED TO THE ENGINEER FOR FILING WITH THE BUILDING DEPARTMENT. NO CONCRETE IS TO BE PLACED BEFORE SUCH AN AMENDMENT IS APPROVED BY THE BUILDING DEPARTMENT.
3. DESIGN AND CONSTRUCTION OF FORMWORK IS TO COMPLY WITH THE A.C.I. 318 BUILDING CODE AND THE NEW YORK CITY BUILDING CODE AS AMENDED.
4. TRANSPORTING, PLACING, CURING AND DEPOSITING OF CONCRETE SHALL COMPLY WITH THE A.C.I. BUILDING CODE.
5. ALL REINFORCING BARS SHALL BE DEFORMED BARS CONFORMING TO "SPECIFICATIONS FOR DEFORMED BILLET–STEEL BARS FOR CONCRETE REINFORCEMENT" A.S.T.M. A615 GRADE 60. THE STEEL SUPPLIER SHALL PROVIDE THE ENGINEER WITH AN AFFIDAVIT OF THE PRODUCER OF STEEL CERTIFYING THAT THE STEEL MEETS THE REQUIREMENTS OF THE A.S.T.M.
6. ALL STRUCTURAL STEEL (LINTELS, DUNNAGE BEAMS, ETC.) SHALL CONFORM TO A.S.T.M. A–36, U.O.N.

### D. SEISMIC AND WIND CRITERIA

1. THE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE LATEST NEW YORK CITY BUILDING CODE (NYCBC 2014).
2. WIND DESIGN DATA:
   PER WIND TUNNEL LAB REPORT BY BLWT DATED NOVEMBER 24, 2015 1
3. EARTHQUAKE DESIGN DATA:
   AS PER GEOTECHNICAL REPORT BY LANGAN DATED MARCH 6, 2015
   – SEISMIC IMPORTANCE FACTOR = 1
   – $S_S$ = 0.281, $S_1$ = 0.073
   – SITE CLASS B
   – SEISMIC DESIGN CATEGORY = B
   – SEISMIC FORCE RESISTING SYSTEM = ORDINARY REINFORCED CONCRETE SHEARWALLS
   – RESPONSE MODIFICATION FACTORS: R = 5
   – ANALYSIS PROCEDURE USED = EQUIVALENT STATIC METHOD
   – DEFLECTION AMPLIFICATION FACTOR $C_D$ = 4.5
   – DESIGN BASE SHEAR (V) : E/W = 875 kips
   N/S = 875 kips
   – SEISMIC RESPONSE COEFFICIENT (C) : E/W = 0.0082
   N/S = 0.0082
4. STRUCTURAL SEPARATIONS (NYCBC–1613.7.): ALL STRUCTURES SHALL BE SEPARATED FROM ADJACENT STRUCTURES. WHEN A STRUCTURE ADJOINS A PROPERTY LINE NOT COMMON TO A PUBLIC WAY (TYPICALLY SIDE OR REAR LOT LINES), THAT STRUCTURE SHALL ALSO BE SET BACK FROM THE PROPERTY LINE BY AT LEAST 1 INCH FOR EACH 50 FEET OF HEIGHT AND A MINIMUM OF 1 INCH FOR STRUCTURE WITH HEIGHTS LESS THAT 50 FEET.

## NON–STRUCTURAL ITEMS SHOWN ON THE STRUCTURAL/FOUNDATION DRAWINGS

1. THE FOLLOWING NON–STRUCTURAL ITEMS MAY BE SHOWN ON THE STRUCTURAL AND/OR FOUNDATION DRAWINGS FOR THE PURPOSE OF CLARITY IN INTERFACE WITH STRUCTURAL AND/OR FOUNDATION WORK. ITEMS BELOW MAY NOT BE FULLY DEFINED ON THE STRUCTURAL/FOUNDATION DRAWINGS. THE INFORMATION FOR NON–STRUCTURAL ELEMENTS IS FURNISHED BY OTHER CONSULTANTS AS LISTED BELOW. ALL RFI AND SHOP DRAWINGS RELATED TO THESE NON–STRUCTURAL ITEMS SHALL BE SUBMITTED TO THE CONSULTANTS LISTED BELOW FOR THEIR REVIEW AND APPROVAL.

GEOTECHNICAL ENGINEER:
– FOUNDATION/UNDERSLAB WATERPROOFING, DAMPPROOFING SYSTEMS
– WALL AND UNDERSLAB DRAINAGE SYSTEM, INCLUDING SUMP PITS, GRAVEL & PIPING, CLEANOUTS
– ROCK ANCHORS

ARCHITECT OF RECORD:
– SUMP PITS
– WATERPROOFING/DAMPPROOFING APPLIED TO EXPOSED SURFACES, ELEVATOR OR SUMP PIT INTERIOR SURFACES
– PAINT
– FIREPROOFING
– CONCRETE CURBS: HEIGHT, WIDTH, EXTENT, LOCATION
– BRICK, BLOCK, TILE MASONRY, METAL PANELS, PRECAST FACADE PANELS, CURTAIN WALLS AND ALL OTHER FACADE SYSTEMS
– ROOFING SYSTEMS, DRAIN LOCATIONS, SLOPES TO DRAINS
FILLS, INSULATION, PAVERS OR GRAVEL
– FLOATING/SECONDARY SLABS

## CONTROLLED INSPECTIONS

| (TERMINOLOGY PER CURRENT TR–1) SPECIAL INSPECTION | CURRENT CODE REFERENCES |
|---|---|
| CONCRETE – CAST IN PLACE | 1704.4 |
| CONCRETE TEST CYLINDERS* (TR2) | 1905.6 |
| CONCRETE DESIGN MIX* (TR3) | 1905.3 |
| MASONRY | 1704.5 |
| SOILS – SITE PREPARATION | 1704.7.1 |
| SOILS – FILL PLACEMENT & IN–PLACE DENSITY | 1704.7.2 1704.7.3 |
| SOILS – INVESTIGATIONS (BORINGS/TEST PITS) (TR4) | 1704.7.4 |
| | |
| UNDERPINNING | 1704.20.3 |
| WALL PANELS, CURTAIN WALLS AND VENEERS (ATTACHMENT TO BUILDING) | 1704.10 |
| SPRAYED FIRE RESISTANT MATERIALS | 1704.11 |
| STRUCTURAL SAFETY – STRUCTURAL STABILITY | 1704.20 |
| EXCAVATION – SHEETING, SHORING AND BRACING | 1704.20 & 3304.4.1 |
| FIRESTOP, DRAFTSTOP AND FIREBLOCK SYSTEMS | 1704.27 |
| **PROGRESS INSPECTION** | |
| FOOTING AND FOUNDATION | 109.3.1 |
| FINAL | 28–116.2.4.2 & 109.5 AND DIRECTIVE 14–(1975) |

* THESE TEST MUST BE PERFORMED BY A LICENSED CONCRETE TESTING LAB.

## LOADING SCHEDULE

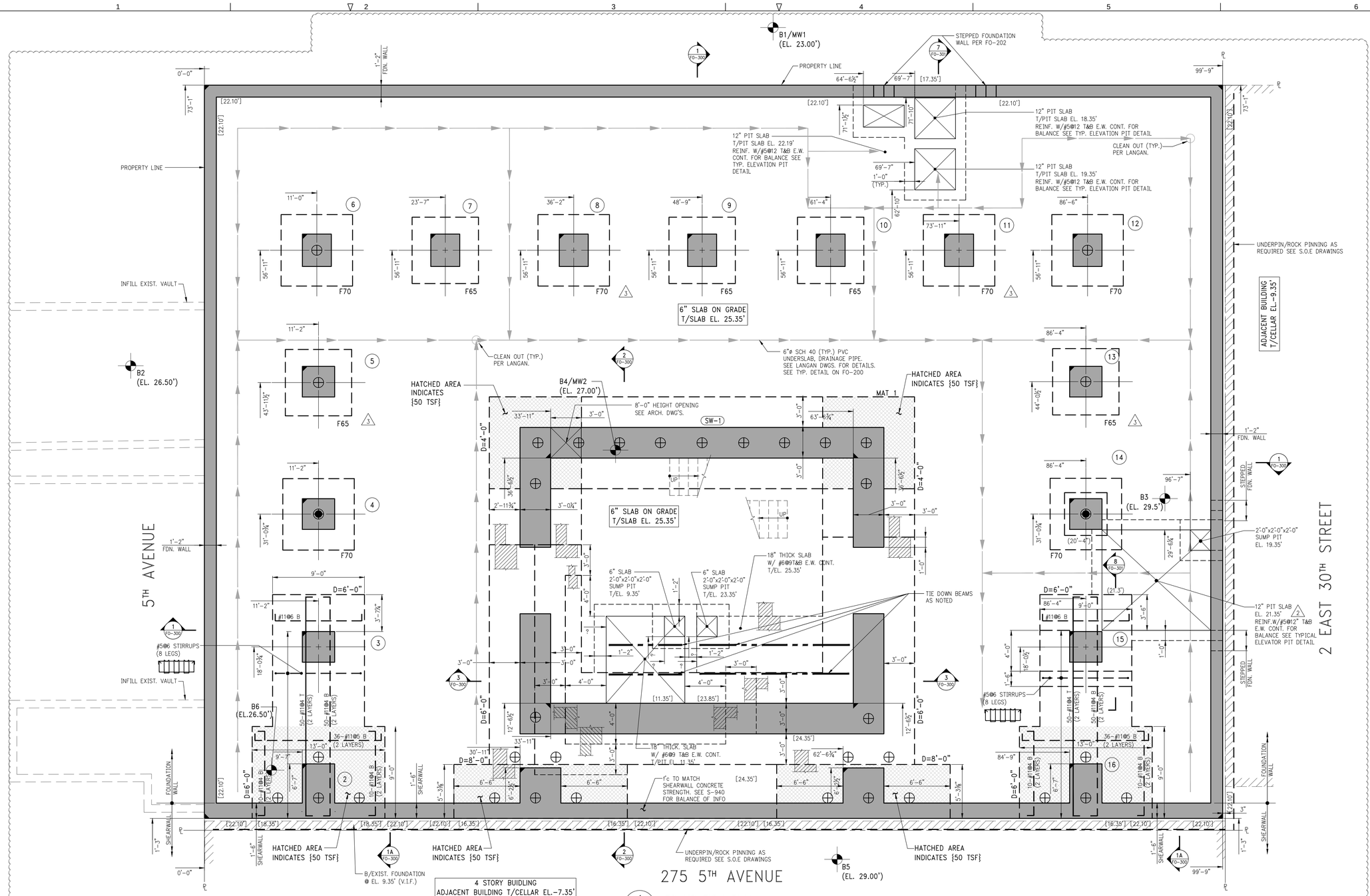
| OCCUPANCY | PARTITION/FILL &/OR FINISHES (PSF) | CEIL. & MECH. (PSF) | LIVE LOAD |
|---|---|---|---|
| ROOF | 30 | 5 | 100 |
| STAIRS | – | 5 | 100 |
| CORRIDORS | 30 | 5 | 100 |
| RESIDENTIAL | 12 | 3 | 40 |
| MECHANICAL ROOMS | 20 | 5 | 75 |
| PRIVATE TERRACE | 30 | 5 | 60 |
| LOBBIES/PUBLIC TERRACE/RETAIL | 30 | 5 | 100 |

## LEGEND:

1. * INDICATES ADDITIONAL WIND BARS
2. [...] INDICATES THE BOTTOM OF FOUNDATION WALL ELEVATION
3. <...> INDICATES THE TOP OF FOUNDATION WALL ELEVATION
4. (...) INDICATES BOTTOM OF PILE CAP ELEVATION
5. Fxxxx INDICATES FOOTING MARK
6. XXxXX INDICATES SIZE OF PIER IN INCHES, FIRST DIMENSION SHOWN IS IN THE EAST–WEST DIRECTION.
7. INDICATES ROCK ANCHOR.
8. INDICATES UNDERSLAB DRAINAGE PIPE
9. INDICATES CLEANOUT
10. INDICATES ADDITIONAL TOP REINFORCEMENT AT SUPPORTS
11. INDICATES ADD'L BOTTOM REINFORCING AT SUPPORTS
12. INDICATES ADDITIONAL TOP REINFORCEMENT CONTINUOUS BETWEEN SUPPORTS
13. INDICATES ADDITIONAL BOTTOM REINFORCEMENT CONTINUOUS BETWEEN SUPPORTS
14. INDICATES WALKING COLUMN MID–DEPTH SLAB REINFORCEMENT
15. INDICATES D6 LENTON TERMINATOR
16. INDICATES MOMENT CONNECTION
17. INDICATES CAMBERS
18. INDICATES STRUCTURAL STEEL BEAMS
19. 1ST & 4TH LAYERS; 2ND & 3RD LAYERS — INDICATES ORDER OF BAR PLACEMENT AS SHOWN ON PLAN.
20. INDICATES CHANGE IN ELEVATION
21. INDICATES CONCRETE COLUMN/SHEARWALL/FOUNDATION WALL
22. INDICATES CONCRETE COLUMN/SHEARWALL BELOW
23. INDICATES CONCRETE WALL
    INDICATES SLAB OPENING (FIRST DIMENSION IS IN EAST–WEST DIRECTION)
24. INDICATES COLUMN ABOVE OR BELOW
25. XX INDICATES COLUMN DESIGNATION
26. P INDICATES POST DESIGNATION
27. SW–X INDICATES SHEARWALL DESIGNATION

## POST SCHEDULE: 1

- P1 INDICATES HSS 10x8x½ STEEL TU




1 FO-100 FOUNDATION PLAN
SCALE: ¼"= 1'-0"

| 40 TON FOOTING SCHEDULE (f'c= 7ksi) | | | | |
|---|---|---|---|---|
| MARK | SIZE | DEPTH (MIN) | BOTTOM REINF. EA. WAY (HOOKED) | REMARKS |
| | | | L.W. S.W. | |
| F65 | 6'-6"x6'-6" | 3'-6" | 12-#10 12-#10 | |
| F70 | 7'-0"x7'-0" | 3'-6" | 14-#10 14-#10 | |

NOTES:

1. TOP OF SLAB ELEVATION INDICATED THUS (.....) ON PLAN. ALL ELEVATIONS ON THIS PLAN ARE BASED ON NAVD88 CONVENTION.
2. SLAB ON GRADE SHALL BE 6" (U.O.N. ON PLAN) THICK NORMAL WEIGHT CONCRETE ON 9" COMPACTED GRAVEL BASE REINFORCED WITH 6X6-W2.9XW2.9 W.W.F. TOP. SLAB ON GRADE SHALL BEAR ON MIN. 1T/SF SOIL.
3. TOP OF FOOTING ELEVATION TO BE 1'-0" BELOW TOP OF SLAB, U.O.N. THUS (.....) PLAN. ALL FOOTINGS TO BE CENTERED OVER THE SUPPORTED COLUMNS U.O.N.
4. BOTTOM OF FOOTINGS AND MAT TO BEAR ON 40 TSF ROCK – NYCBC CLASS 1b. U.O.N. THUS {XX TSF} ON PLAN. AS INDICATED ON PLAN WITH HATCH –
5. FOR TOP OF DESIGN WATER LEVEL SEE GEOTECHNICAL REPORT
6. BOTTOM OF FOUNDATION WALL ELEVATION TO BE 2'-9" BELOW BOTTOM OF SLAB ON GRADE, U.O.N. TOP OF FOUNDATION WALL ELEVATION TO BE 0'-6" BELOW BOTTOM OF SLAB EL. U.O.N.
7. PROVIDE CONCRETE HOUSEKEEPING AND LAUNDRY ROOM PADS REINFORCED WITH 6X6-W1.4XW1.4 W.W.F. BENEATH MECHANICAL ELECTRICAL, TELEPHONE & ELEVATOR EQUIPMENT AS REQUIRED. COORDINATE SIZE THICKNESS AND LOCATION WITH ARCH. AND MECH. DWGS.
8. ALL FLOOR DRAINS TO BE 2" BELOW LEVEL OF TOP OF SLAB.
9. ALL UTILITY SLEEVES AND BOXES TO BE CONFIRMED W/UTILITY PRIOR TO INSTALLATION.
10. FOR EXACT LOCATION & ELEVATION OF SLEEVES SEE MECH. DWGS. MINIMUM CONC. COVER ABOVE OR BELOW SLEEVE TO BE 1'-3".
11. FOR LOCATION AND QUANTITIES OF ELECTRICAL CONDUITS TO BE BURIED UNDER SLAB ON GRADE, SE ELECTRICAL DRAWINGS. SEE TYPICAL CONDUIT ENCASEMENT DETAIL ON FO-200 SERIES DWGS.
12. FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND SEE DRAWING FO-001.
13. FOR SHEARWALL FOUNDATION MAT REINFORCEMENT SEE DRAWING FO-110.
14. FOR TYPICAL FOUNDATION DETAILS SEE FO-200 SERIES DRAWINGS.
15. FOR FOUNDATION SECTIONS, SEE FO-300 SERIES DRAWINGS.
16. FOR LINK BEAM SCHEDULE, AND SHEARWALL REINFORCEMENT DETAILS SEE S-940 SERIES DRAWINGS.
17. FOR COLUMN AND BUTTRESS SIZES SEE COLUMN SCHEDULE ON DWG. S-950.
18. FOR LOCATION AND SIZE OF CONC. CURBS SEE ARCH. DWG'S. FOR REINF. SEE TYPICAL DETAILS ON S-960 SERIES DWGS.

LEGEND:

a. 8xx (EL. xx'-xx") — INDICATES BORING LOCATION. SEE GEOTECHNICAL REPORT. ELEVATION INDICATES APPROXIMATE TOP OF ROCK ELEVATION AT BORING LOCATION

b. INDICATES 616* TENSION CAPACITY – 3"ø ROCK ANCHOR

c. INDICATES 246* TENSION CAPACITY – 1⅜"ø ROCK ANCHOR

d. INDICATES THE MAT TO BEAR ON {50 TSF} ROCK–NYCBC CLASS 1b OR BETTER. SURROUNDING ROCK SHALL BE AT LEAST 4'-0" ABOVE ROCK SUBGRADE FOR THIS MAT. OTHERWISE, LOWER MAT SUBGRADE TO MEET THIS REQUIREMENT.

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

STATE OF NEW YORK
SILVINA L. MARQUEZ
057139
LICENSED PROFESSIONAL ENGINEER

# 281
## Fifth Avenue
NEW YORK, NY

OWNER:
VICTOR NOMAD LLC

CONSTRUCTION MANAGER:
LEND LEASE
200 PARK AVENUE, 9TH FLOOR
NEW YORK, NY 10166
TEL: 212 592 6700

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
WSP GROUP
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
TEL: 212 687 9888

MEP/FP/IT ENGINEER:
MGE ENGINEERING
116 WEST 32ND STREET, 12TH FLOOR
NEW YORK, NY, 10001
TEL: 212 643 9055

GEOTECH CIVIL ENGINEER:
LANGAN ENGINEERING
300 KIMBALL DRIVE, 4TH FLOOR
PARSIPPANY, NJ, 07054
TEL: 973 560 4900

VERTICAL TRANSPORT. CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ, 07936
TEL: 973 994 9220

ENCLOSURE CONSULTANT:
VIDARIS, INC.
360 PARK AVENUE SOUTH, 15TH FLOOR
NEW YORK, NY, 10010
TEL: 212 689 5389

FACADE MAINTENANCE CONSULTANT:
ENTEK ENGINEERING LLC
166 AMES STREET
HACKENSACK, NJ, 07601
TEL: 201 820 2801

ACOUSTICAL CONSULTANT:
CERAMI & ASSOCIATES
404 FIFTH AVENUE
NEW YORK, NY, 10018
TEL: 212 616 4179

LIGHTING CONSULTANT:
ONE LUX STUDIO
158 WEST 29TH STREET, 10TH FLOOR
NEW YORK, NY, 10001
TEL: 212 201 5790

SPECIFICATIONS CONSULTANT:
ROBERT SCHWARTZ & ASSOCIATES
589 EIGHTH AVENUE, 17TH FLOOR
NEW YORK, NY, 10018
TEL: 212 691 3248

ENERGY MODELING CONSULTANT:
STEVEN WINTER ASSOCIATES, INC
307 SEVENTH AVENUE, SUITE 1701
NEW YORK, NY, 10001
TEL: 212 564 5800

INTERIOR DESIGN CONSULTANT:
JEFFREY BEERS INTERNATIONAL
156 5TH AVENUE, PENTHOUSE 2
NEW YORK, NY, 10010
TEL: 212 352 2020

DESIGN DEVELOPMENT
NYC DEPT. OF BUILDINGS SUBMITTAL

ARCHITECT'S SEAL

| ISSUE NO. | ISSUE DATE | DESCRIPTION |
|---|---|---|
| 1 | 04/29/2016 | DOB FOUNDATION PAA #1 |
| 1 | 04/08/2016 | DOB SUBMITTAL |
| 1 | 04/08/2016 | SUPERSTRUCTURE EARLY BID |
| 1 | 03/25/2016 | DOB FOUNDATION POST APPROVAL AMENDMENT |
| 1 | 01/27/2016 | FOUNDATION BID ADD. #1 |
| 1 | 01/18/2016 | FOUNDATION BID |
| 1 | 12/23/2015 | SCHEMATIC DESIGN |
| 1 | 04/15/2015 | DOB SUBMITTAL |
| 1 | 04/01/2015 | FOUNDATION BID |
| 1 | 02/28/2015 | SCHEMATIC DESIGN |


KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 42" X 30" IT IS A REDUCED PRINT; REFER TO GRAPHIC SCALE

0 1 2

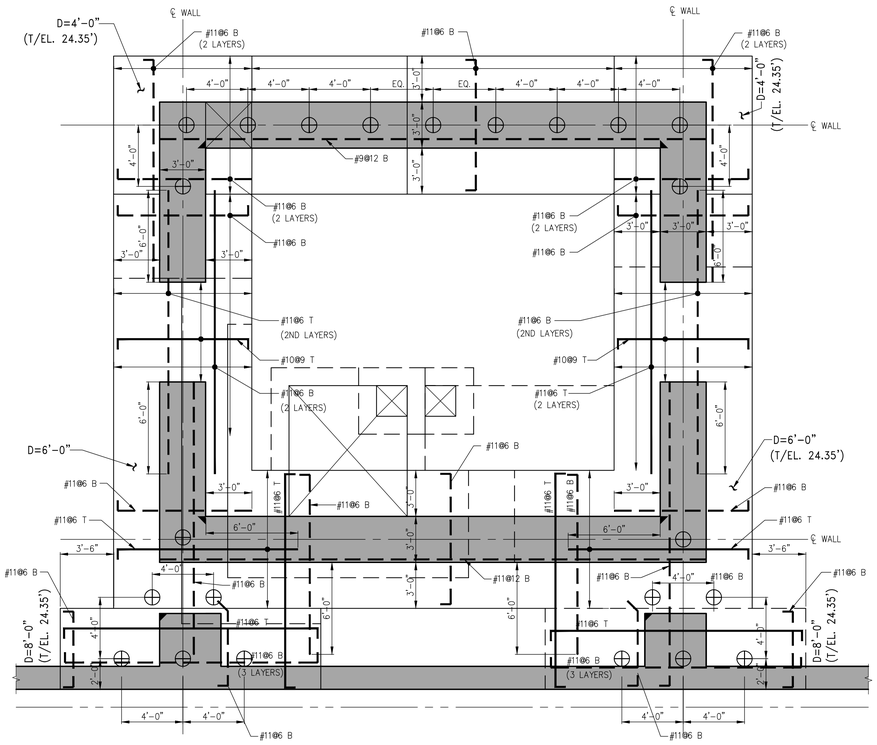
SCALE 1/4" = 1'-0"

FOUNDATION PLAN

SHEET TITLE :

FO-100.01

SHEET NUMBER :




1 / FO-110 MAT FOUNDATION PLAN

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

NOTES:

1. TOP OF SLAB TO BE -15'-6" U.O.N. ON PLAN
2. MAT THICKNESS TO BE 6'-0" THICK U.O.N.

LEGEND:

a. ⊕ INDICATES 616* CAPACITY - 3"ø ROCK ANCHOR

# 281
## Fifth Avenue

NEW YORK, NY

OWNER:
VICTOR NOMAD LLC

CONSTRUCTION MANAGER:
LEND LEASE
200 PARK AVENUE, 9TH FLOOR
NEW YORK, NY 10166
TEL: 212 592 6700

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
WSP GROUP
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
TEL: 212 687 9888

MEP/FP/IT ENGINEER:
MGE ENGINEERING
116 WEST 32ND STREET, 12TH FLOOR
NEW YORK, NY 10001
TEL: 212 643 9055

GEOTECH CIVIL ENGINEER:
LANGAN ENGINEERING
300 KIMBALL DRIVE, 4TH FLOOR
PARSIPPANY, NJ, 07054
TEL: 973 560 4900

VERTICAL TRANSPORT. CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ, 07936
TEL: 973 994 9220

ENCLOSURE CONSULTANT:
VIDARIS, INC.
360 PARK AVENUE SOUTH, 15TH FLOOR
NEW YORK, NY, 10010
TEL: 212 689 5389

FACADE MAINTENANCE CONSULTANT:
ENTEK ENGINEERING LLC
166 AMES STREET
HACKENSACK, NJ, 07601
TEL: 201 820 2801

ACOUSTICAL CONSULTANT:
CERAMI & ASSOCIATES
404 FIFTH AVENUE
NEW YORK, NY, 10018
TEL: 212 616 4179

LIGHTING CONSULTANT:
ONE LUX STUDIO
158 WEST 29TH STREET, 10TH FLOOR
NEW YORK, NY, 10001
TEL: 212 201 5790

SPECIFICATIONS CONSULTANT:
ROBERT SCHWARTZ & ASSOCIATES
589 EIGHTH AVENUE, 17TH FLOOR
NEW YORK, NY, 10018
TEL: 212 691 3248

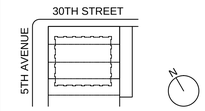
ENERGY MODELING CONSULTANT:
STEVEN WINTER ASSOCIATES, INC
307 SEVENTH AVENUE, SUITE 1701
NEW YORK, NY, 10001
TEL: 212 564 5800

INTERIOR DESIGN CONSULTANT:
JEFFREY BEERS INTERNATIONAL
156 5TH AVENUE, PENTHOUSE 2
NEW YORK, NY, 10010
TEL: 212 352 2020

DESIGN DEVELOPMENT
NYC DEPT. OF BUILDINGS SUBMITTAL

ARCHITECT'S SEAL

| ISSUE NO. | ISSUE DATE | DESCRIPTION |
|---|---|---|
| 7 | 04/29/2016 | DOB FOUNDATION PAA #1 |
| 6 | 04/08/2016 | DOB SUBMITTAL |
| 5 | 04/08/2016 | SUPERSTRUCTURE EARLY BID |
| 4 | 03/25/2016 | DOB FOUNDATION POST APPROVAL AMENDMENT |
| 3 | 01/27/2016 | FOUNDATION BID ADD. #1 |
| 2 | 01/18/2016 | FOUNDATION BID |




KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 42" X 30" IT IS A REDUCED PRINT;
REFER TO GRAPHIC SCALE

0 1 2

SCALE 1/4" = 1'-0"

MAT FOUNDATION PLAN

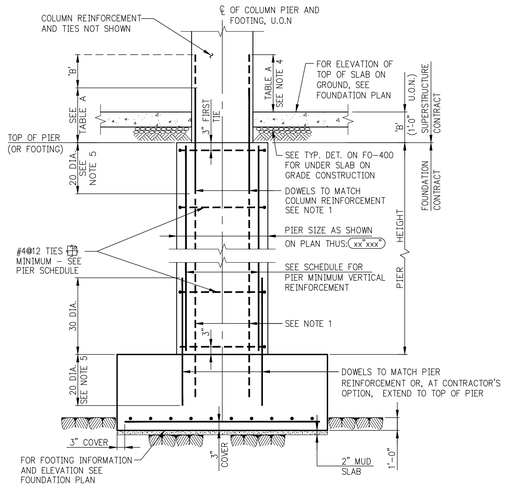
SHEET TITLE :

FO-110.01

SHEET NUMBER :

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

STATE OF NEW YORK
JULIAN L. MARSH
057539
REGISTERED PROFESSIONAL ENGINEER




| PIER: MINIMUM VERTICAL REINFORCEMENT | |
|---|---|
| PIER SIZE (OR EQUIVALENT) | VERTICAL REINF. |
| UP TO 36x36 | 8–#6 |
| 37x37 TO 48x48 | 12–#6 |
| 49x49 TO 54x54 | 12–#7 |
| 55x55 TO 66x66 | 16–#7 |
| 67x67 TO 84x84 | 16–#8 |
| OVER 84 TO BE SUPPLIED IN PIER SCHEDULE | |

NOTE:
THE PIER SCHEDULE MAY REQUIRE A GREATER AMOUNT OF REINFORCEMENT, BUT NOT LESS.

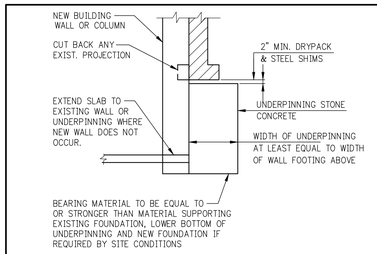
| TABLE A | | |
|---|---|---|
| COMPRESSION LAP SPLICE LENGTH | | |
| BAR SIZE | fy=60 KSI | fy=75 KSI |
| #5 TO #11 | 30 DIA. | 44 DIA. |
| #14 & #18 | 45"–#11 DOWELS | 60"–#11 DOWELS |

## INTERIOR FOOTING AND PIER AT CONCRETE COLUMN

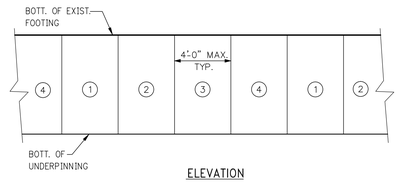
THIS DETAIL DOES NOT APPLY WHERE COLUMN REINFORCEMENT IS IN TENSION.

NOTES:

1. WHERE PIER HEIGHT IS LESS THAN EMBEDMENT LENGTH OF COLUMN DOWELS, EMBED DOWELS IN FOOTING AND EXTEND THROUGH PIER INTO COLUMN ABOVE.
2. AT CONTRACTOR'S OPTION, A SHORT PIER MAY BE ELIMINATED BY THICKENING THE COLUMN FOOTING TO THE TOP OF PIER ELEVATION.
3. MAXIMUM PIER HEIGHT TO BE EIGHT TIMES THE LEAST PIER DIMENSION. INCREASE PIER SIZE AS REQUIRED TO MAINTAIN THIS RATIO.
4. WHEN SLAB ON GROUND IS POURED BEFORE COLUMN, INCREASE LENGTH OF DOWELS BY DIMENSION 'B' (FROM TOP OF PIER TO TOP OF SLAB.) IN ADDITION, IF COLUMN CONCRETE STRENGTH IS GREATER THAN 1.4 TIMES SLAB CONCRETE STRENGTH, THE SLAB CONCRETE STRENGTH MUST BE INCREASED LOCALLY TO MATCH COLUMN CONCRETE STRENGTH FOR A DISTANCE OF 2 FEET IN ALL DIRECTIONS FROM COLUMN FACES.
5. IF GRADE 75 COLUMN REINFORCEMENT IS USED, INCREASE DOWEL EMBEDMENT LENGTH TO 24 DIAMETERS.
6. MINIMUM CONCRETE STRENGTH OF f'c=4,000 PSI IS REQUIRED FOR PIER AND FOOTING. SEE PLANS AND NOTES FOR GREATER STRENGTH REQUIREMENTS.




SECTION




ELEVATION

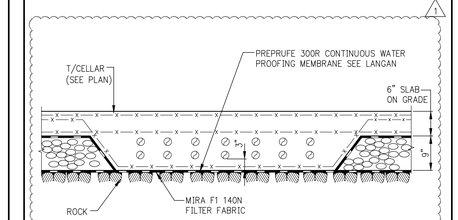
NOTES:

1. EXCAVATE & PLACE PANELS IN ORDER SHOWN.
2. MINIMUM CLEAR DISTANCE BETWEEN SIMULT. CUTS TO BE 12'-0"
3. CONCRETE FOR UNDERPINNING TO BE CONTROLLED STONE CONCRETE 3000 P.S.I.

## SUGGESTED UNDERPINNING DETAIL

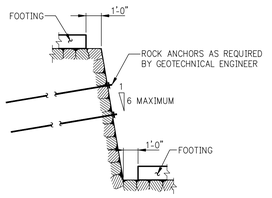
NOTES:

1. THIS DETAIL IS REPRESENTATIVE OF ONE METHOD OF UNDERPINNING UNDER PARTICULAR CIRCUMSTANCES. THE CONTRACTOR MUST EVALUATE THIS PROJECT AND DETERMINE EXACT METHODS AND PROCEDURES TO BE FOLLOWED.
2. CONTRACTOR'S UNDERPINNING DESIGN ENGINEER SHALL BE A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NEW YORK AND SHALL REVIEW ALL AVAILABLE BORING DATA AND EXISTING CONDITIONS TO DETERMINE THE NECESSITY OF PRELOADING AND/OR JACKPILING TO PROTECT ADJACENT STRUCTURES PRIOR TO COMMENCEMENT OF UNDERPINNING OPERATIONS.
3. THE CONTRACTOR'S PROFESSIONAL ENGINEER SHALL FILE WITH THE BUILDING DEPARTMENT THE SELECTED PROCEDURE.




## UNDER SLAB ON GRADE ELECT. CONDUITS TYPICAL DETAIL

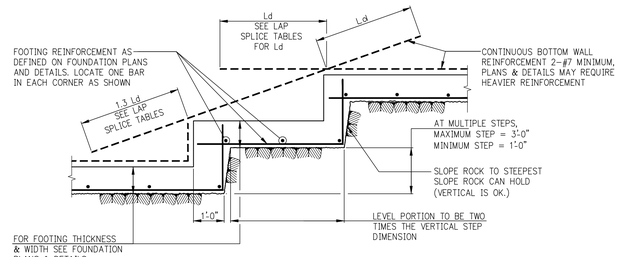
NOTE:
1. SEE ELECTRICAL DWG'S FOR LOCATION AND DETAILS




## ADJACENT FOOTINGS ON ROCK AT DIFFERENT ELEVATIONS

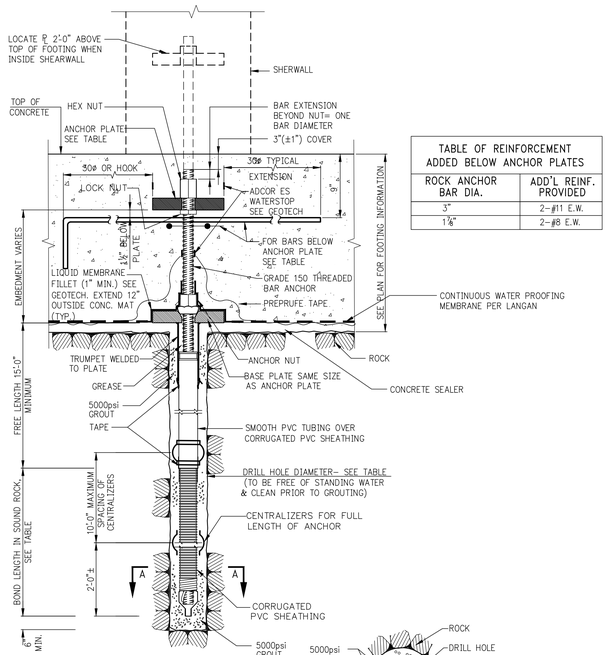
FOR ROCK CAPACITY = 20 TONS PER SQ. FT. OR HIGHER.

NOTE:
THIS DETAIL IS SUBJECT TO THE INTEGRITY OF THE ROCK AND PITCH OF ROCK SEAMS AND MAY BE MODIFIED DUE TO SITE CONDITIONS. MAXIMUM HEIGHT DIFFERENTIAL TO BE DETERMINED BY GEOTECHNICAL ENGINEER WHEN ACTUAL ROCK CONDITION IS OBSERVED.




## STEPPED FOUNDATION WALL FOOTING ON ROCK

(DOES NOT APPLY TO SHEARWALLS)




| TABLE OF REINFORCEMENT ADDED BELOW ANCHOR PLATES | |
|---|---|
| ROCK ANCHOR BAR DIA. | ADD'L REINF. PROVIDED |
| 3" | 2–#11 E.W. |
| 1⅛" | 2–#8 E.W. |

## ROCK ANCHOR DETAIL

NOTE:
FOR ROCK ANCHOR GENERAL NOTES SEE PROJECT SPECIFICATION FOR ANCHOR INSTALLATION AND TESTING REQUIREMENTS.

## SECTION A–A

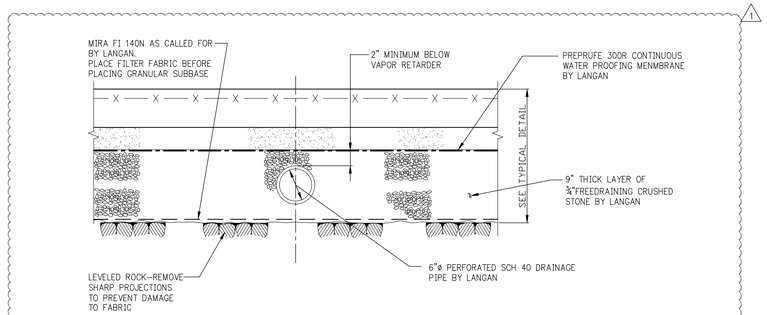
RECOMMENDED GROUT MIX
1 BAG – PORTLAND CEMENT TYPE III
5 GALLONS – POTABLE WATER
1/2 LB. SIKA ENTRAPLAST "N"

## TABLE FOR DOUBLE CORROSION PROTECTION ROCK ANCHORS

| THREADED BAR DIAMETER | DESIGN LOAD (KIPS) | ANCHOR PLATE (Fy=50 ksi) | MINIMUM DRILL HOLE DIAMETER SEE NOTE 1 | MINIMUM BOND LENGTH SEE NOTE 2 | MINIMUM EMBEDMENT IN FOOTING 'h' | MAXIMUM OFFSET 'F' OR 'G' SEE NOTE 4 | MINIMUM EDGE DISTANCE 'E' |
|---|---|---|---|---|---|---|---|
| 3" | 616* | 16"x16"x3½" | 8" | 35'-0" | 4'-6" | 2'-0" | 2'-0" |
| 1⅞" | 246* | 9"x9"x2¼" | 5" | 20'-0" | 3'-6" | 2'-0" | 2'-0" |

NOTES FOR CORROSION PROTECTION TABLE:

1. MINIMUM DRILL HOLE DIAMETER ASSUMES COUPLERS ARE NOT REQUIRED. HOLE DIAMETER MAY INCREASE DUE TO USE OF COUPLERS OR ROCK CONDITION.
2. ACTUAL BOND LENGTH TO BE DETERMINED BY GEOTECHNICAL CONSULTANT FROM BORINGS AND ROCK SAMPLES. GROUP ACTION EFFECTS ARE TO BE CONSIDERED.
3. PLATES FOR LARGE DIAMETER BARS TO BE SUPPLIED BY MANUFACTURER, SUBJECT TO ENGINEER'S APPROVAL. GRADE 50 MAY BE USED AT MANUFACTURER'S OPTION.
4. MAXIMUM OFFSET 'F' OR 'G' MAY BE INCREASED IF MINIMUM EMBEDMENT 'h' IS ALSO INCREASED BY AT LEAST THE SAME AMOUNT. PROJECT DESIGNER IS TO ESTABLISH NEW DIMENSIONS.




## UNDER SLAB DRAIN

NOTE:
THIS DETAIL IS INTENDED SOLELY TO SHOW TRENCHING IN SUBGRADE WHERE DRAINS ARE CALLED FOR BY GEOTECHNICAL CONSULTANT.

# 281
## Fifth Avenue
NEW YORK, NY

OWNER:
VICTOR NOMAD LLC

CONSTRUCTION MANAGER:
LEND LEASE
200 PARK AVENUE, 9TH FLOOR
NEW YORK, NY 10166
TEL: 212 592 6700

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
WSP GROUP
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
TEL: 212 687 9888

MEP/FP/IT ENGINEER:
MGE ENGINEERING
116 WEST 32ND STREET, 12TH FLOOR
NEW YORK, NY, 10001
TEL: 212 643 9055

GEOTECH CIVIL ENGINEER:
LANGAN ENGINEERING
300 KIMBALL DRIVE, 4TH FLOOR
PARSIPPANY, NJ, 07054
TEL: 973 560 4900

VERTICAL TRANSPORT. CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ, 07936
TEL: 973 994 9220

ENCLOSURE CONSULTANT:
VIDARIS, INC.
360 PARK AVENUE SOUTH, 15TH FLOOR
NEW YORK, NY, 10010
TEL: 212 689 5389

FACADE MAINTENANCE CONSULTANT:
ENTEK ENGINEERING LLC
166 AMES STREET
HACKENSACK, NJ, 07601
TEL: 201 820 2801

ACOUSTICAL CONSULTANT:
CERAMI & ASSOCIATES
404 FIFTH AVENUE
NEW YORK, NY, 10018
TEL: 212 616 4179

LIGHTING CONSULTANT:
ONE LUX STUDIO
158 WEST 29TH STREET, 10TH FLOOR
NEW YORK, NY, 10001
TEL: 212 201 5790

SPECIFICATIONS CONSULTANT:
ROBERT SCHWARTZ & ASSOCIATES
589 EIGHTH AVENUE, 17TH FLOOR
NEW YORK, NY, 10018
TEL: 212 691 3248

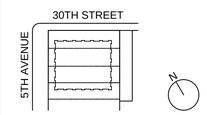
ENERGY MODELING CONSULTANT:
STEVEN WINTER ASSOCIATES, INC
307 SEVENTH AVENUE, SUITE 1701
NEW YORK, NY, 10001
TEL: 212 564 5800

INTERIOR DESIGN CONSULTANT:
JEFFREY BEERS INTERNATIONAL
156 5TH AVENUE, PENTHOUSE 2
NEW YORK, NY, 10010
TEL: 212 352 2020

DESIGN DEVELOPMENT
NYC DEPT. OF BUILDINGS SUBMITTAL

ARCHITECT'S SEAL

| ISSUE NO. | ISSUE DATE | DESCRIPTION |
|---|---|---|
| 1 | 04/29/2016 | DOB FOUNDATION PAA #1 |
| A | 04/08/2016 | DOB SUBMITTAL |
| A | 04/08/2016 | SUPERSTRUCTURE EARLY BID |
| A | 03/25/2016 | DOB FOUNDATION POST APPROVAL AMENDMENT |
| A | 01/27/2016 | FOUNDATION BID ADD. #1 |
| A | 01/18/2016 | FOUNDATION BID |
| A | 12/23/2015 | SCHEMATIC DESIGN |
| A | 04/15/2015 | DOB SUBMITTAL |
| A | 04/01/2015 | FOUNDATION BID |
| A | 02/28/2015 | SCHEMATIC DESIGN |




KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 42" X 30" IT IS A REDUCED PRINT:
REFER TO GRAPHIC SCALE
0 1 2

SCALE N.T.S

TYPICAL FOUNDATION DETAILS 1

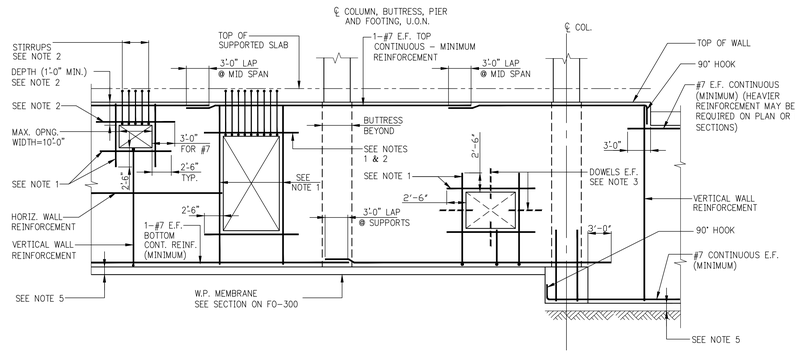
SHEET TITLE :

FO-200.01

SHEET NUMBER :

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

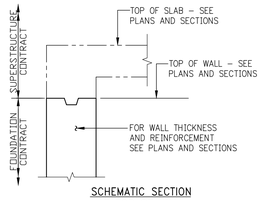
STATE OF NEW YORK
SUJAN L. MARSH
052130
LICENSED PROFESSIONAL ENGINEER



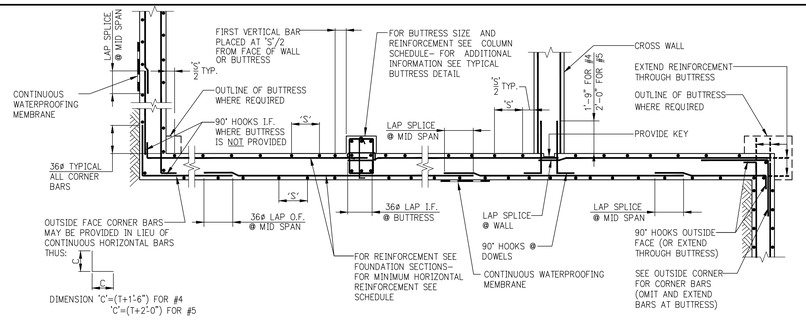

## FOUNDATION WALL ELEVATION SHOWING REINFORCEMENT AT OPENINGS AND MISCELLANEOUS DETAILS

NOTES:

1. ADD #5 BARS (HORIZ. & VERT.) AT ALL FOUR EDGES OF OPENINGS. AREA OF ADDED BARS AT EACH EDGE TO BE EQUAL TO ONE HALF OF AREA OF INTERRUPTED BARS IN THE CORRESPONDING DIRECTION. PROVIDE A MINIMUM OF 1-#5 E.F.
2. WHERE TOP EDGE OF OPENING IS LESS THEN 2'-6" FROM TOP OF WALL ADD 1-#7 E.F. (IN LIEU OF #5) OVER OPENING. PROVIDE #4 ☐ STIRRUPS @ 8" - EXTEND INTO SLAB WITH 2" COVER AT TOP OF STIRRUPS.
3. AT UTILITY ACCESS OPENINGS WHICH ARE TO BE FILLED IN WITH CONCRETE, PROVIDE DOWELS PROJECTING 1'-0" INTO OPENING. EITHER EXTEND HORIZONTAL AND VERTICAL WALL REINFORCEMENT, OR ADD # 4@12± E.F. DOWELS x2'-6" LONG.
4. FOR ACTUAL OPENING SIZES AND LOCATIONS, SEE PLANS, SECTIONS, ARCHITECTURAL DWGS., AND MEP DWGS. SUBMIT SHOP DRAWINGS WITH WALL ELEVATIONS SHOWING ALL OPENINGS AND REINFORCEMENT.
5. PROVIDE FOOTING OR CONCRETE MUD SLAB TO SUPPORT WALL FORMS AND WET CONCRETE. SEE FOUNDATION SECTIONS ON FO-300 SERIES DRAWINGS FOR ADDITIONAL DETAILS.




SCHEMATIC SECTION AT TOP OF WALL



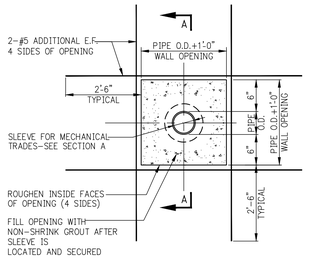

OUTSIDE CORNER | BUTTRESS | CROSS-WALL | RE-ENTRANT CORNER

## HORIZONTAL SECTION SHOWING PLACEMENT OF FOUNDATION WALL REINFORCEMENT

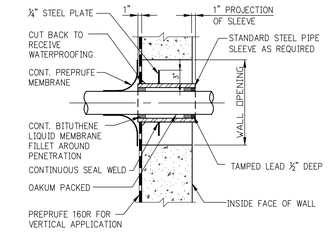
NOTE:
VERTICAL CONSTRUCTION JOINT IN WALL IS NOT SHOWN HERE - SEE TYPICAL CONSTRUCTION JOINT DETAIL

MINIMUM HORIZONTAL WALL REINFORCEMENT REQUIRED AT EACH FACE

| T = WALL THICKNESS | HORIZONTAL REINFORCEMENT |
|---|---|
| UP TO 10" | #4@18 E.F. |
| 11" TO 12" | #4@16 E.F. |
| 13" TO 16" | #4@12 E.F. |
| 17" TO 20" | #4@10 OR #5@15 E.F. |
| 21" TO 22" | #4@9 OR #5@12 E.F. |
| 23" TO 24" | #4@8 OR #5@12 E.F. |
| OVER 24" | SEE PLANS AND SECTIONS |

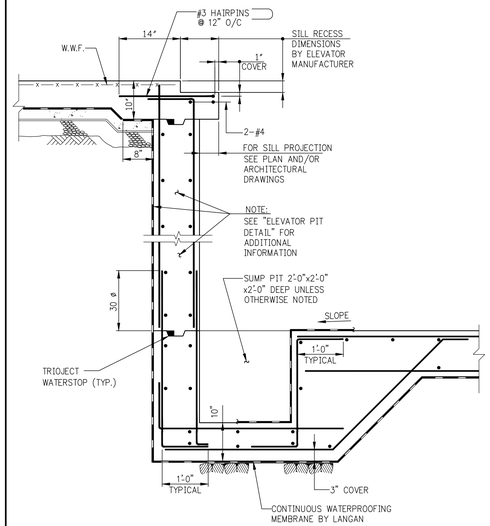



BOX-OUT OPENING THROUGH FOUNDATION WALL

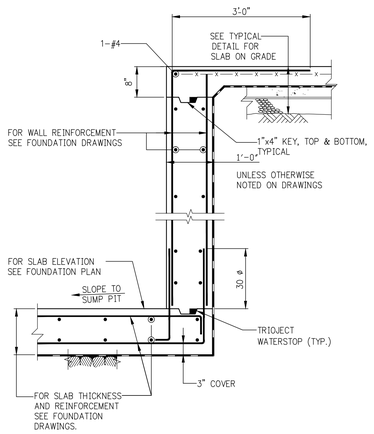



SECTION A-A

## WATERPROOFED SLEEVE THROUGH WALL WITH WATERPROOFING

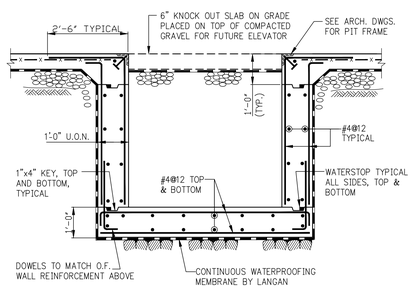



ELEVATOR PIT SILL AND SUMP PIT

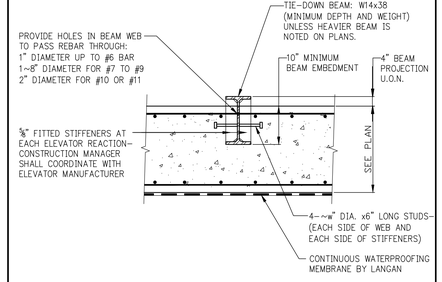



ELEVATOR PIT

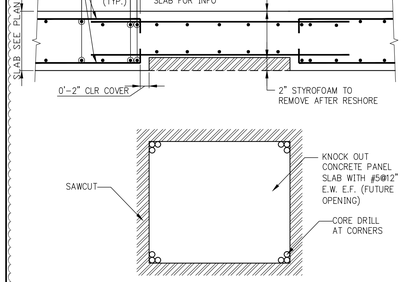
NOTE:
PROVIDE ELEVATOR TIE-DOWN BEAM AS REQUIRED. SEE PLAN AND "ELEVATOR TIE-DOWN BEAM" DETAIL.



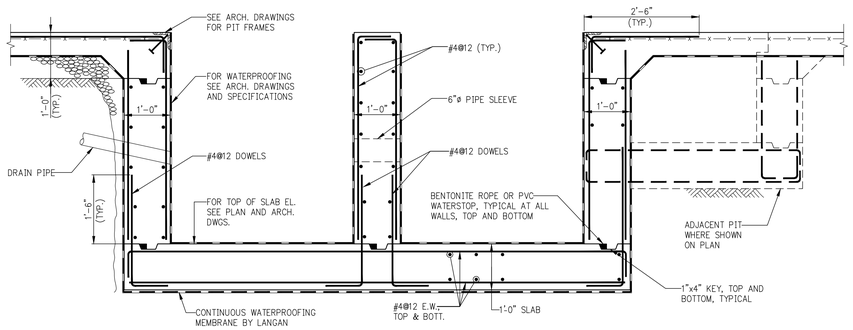

TYPICAL PIT



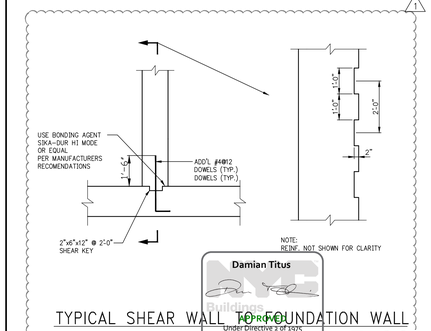

ELEVATOR TIE-DOWN BEAM




TYPICAL DETAIL OF EDGE SUPPORT FOR KNOCK-OUT PANES




TYPICAL DOUBLE PIT




TYPICAL SHEAR WALL TO FOUNDATION WALL COSTRUCTION DETAIL

Damian Titus
Approved
Under Directive 2 of 1975
AMENDED APPLICATION
Dec 12, 2016
NYC Development Hub

# 281
## Fifth Avenue
NEW YORK, NY

OWNER:
VICTOR NOMAD LLC

CONSTRUCTION MANAGER:
LEND LEASE
200 PARK AVENUE, 9TH FLOOR
NEW YORK, NY 10166
TEL: 212 592 6700

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
WSP GROUP
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
TEL: 212 687 9888

MEP/FP/IT ENGINEER:
MGE ENGINEERING
116 WEST 32ND STREET, 12TH FLOOR
NEW YORK, NY 10001
TEL: 212 643 9055

GEOTECH CIVIL ENGINEER:
LANGAN ENGINEERING
300 KIMBALL DRIVE, 4TH FLOOR
PARSIPPANY, NJ, 07054
TEL: 973 560 4900

VERTICAL TRANSPORT. CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ, 07936
TEL: 973 994 9220

ENCLOSURE CONSULTANT:
VIDARIS, INC.
360 PARK AVENUE SOUTH, 15TH FLOOR
NEW YORK, NY, 10010
TEL: 212 689 5389

FACADE MAINTENANCE CONSULTANT:
ENTEK ENGINEERING LLC
166 AMES STREET
HACKENSACK, NJ, 07601
TEL: 201 820 2801

ACOUSTICAL CONSULTANT:
CERAMI & ASSOCIATES
404 FIFTH AVENUE
NEW YORK, NY, 10018
TEL: 212 616 4179

LIGHTING CONSULTANT:
ONE LUX STUDIO
158 WEST 29TH STREET, 10TH FLOOR
NEW YORK, NY, 10001
TEL: 212 201 5790

SPECIFICATIONS CONSULTANT:
ROBERT SCHWARTZ & ASSOCIATES
589 EIGHTH AVENUE, 17TH FLOOR
NEW YORK, NY, 10018
TEL: 212 691 3248

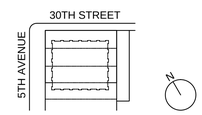
ENERGY MODELING CONSULTANT:
STEVEN WINTER ASSOCIATES, INC
307 SEVENTH AVENUE, SUITE 1701
NEW YORK, NY, 10001
TEL: 212 564 5800

INTERIOR DESIGN CONSULTANT:
JEFFREY BEERS INTERNATIONAL
156 5TH AVENUE, PENTHOUSE 2
NEW YORK, NY, 10010
TEL: 212 352 2020

DESIGN DEVELOPMENT
NYC DEPT. OF BUILDINGS SUBMITTAL

ARCHITECT'S SEAL

| ISSUE NO. | ISSUE DATE | DESCRIPTION |
|---|---|---|
| 1 | 04/29/2016 | DOB FOUNDATION PAA #1 |
| A | 04/08/2016 | DOB SUBMITTAL |
| A | 04/08/2016 | SUPERSTRUCTURE EARLY BID |
| A | 03/25/2016 | DOB FOUNDATION POST APPROVAL AMENDMENT |
| A | 01/27/2016 | FOUNDATION BID ADD. #1 |
| A | 01/18/2016 | FOUNDATION BID |
| A | 12/23/2015 | SCHEMATIC DESIGN |
| A | 04/15/2015 | DOB SUBMITTAL |
| A | 04/01/2015 | FOUNDATION BID |
| A | 02/28/2015 | SCHEMATIC DESIGN |




KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 42" X 30" IT IS A REDUCED PRINT:
REFER TO GRAPHIC SCALE
0 1 2

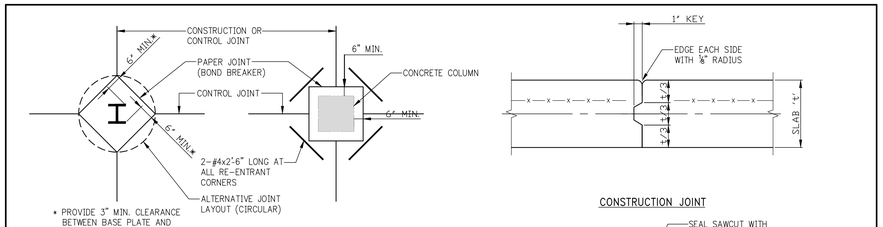
SCALE N.T.S

TYPICAL FOUNDATION DETAILS 2

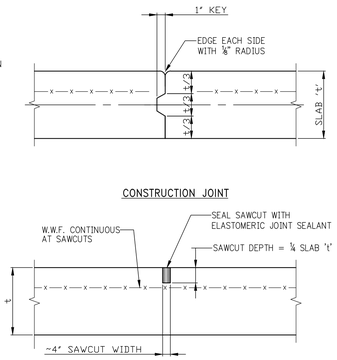
SHEET TITLE :

FO-201.01

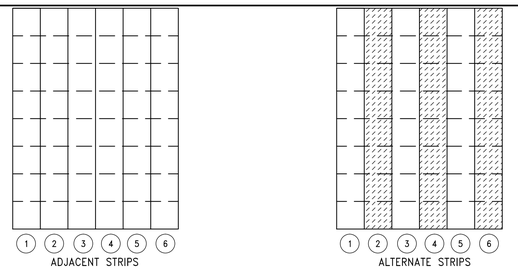
SHEET NUMBER :




CONTROL JOINT LAYOUT AT COLUMNS




# SLAB ON GROUND JOINT DETAILS



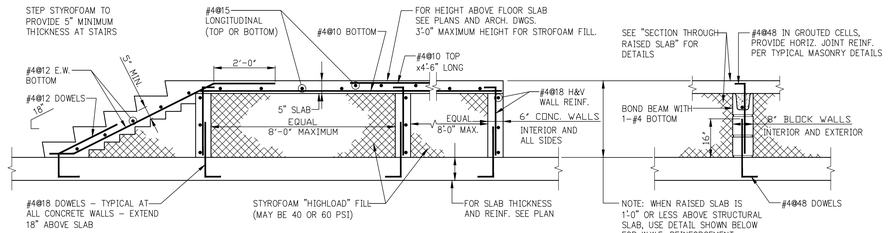

## SUGGESTED SEQUENCE OF CASTING STRIPS

SLAB ON GROUND NOTES:

1. SLAB ON GROUND SHALL BE PLACED IN STRIPS, AS SHOWN IN "SUGGESTED SEQUENCE OF CASTING STRIPS".
2. CONTROL JOINTS SHALL BE SAWCUT AS SOON AS CONCRETE IS HARD ENOUGH NOT TO BE TORN OR DAMAGED BY THE BLADE, AND BEFORE THE CONCRETE STARTS TO COOL. TYPICALLY JOINTS SHOULD BE CUT 4 TO 12 HOURS AFTER THE SLAB HAS BEEN FINISHED, DEPENDING UPON WEATHER AND JOB CONDITIONS.
3. SPACING OF SAWCUT CONTROL JOINTS (IN FEET) TO BE APPROXIMATELY THREE TIMES THE SLAB THICKNESS IN INCHES, WITH A MAXIMUM OF TWENTY (20) FEET.
4. A MAXIMUM RATIO OF 1.5 SHALL BE MAINTAINED BETWEEN LONG AND SHORT DIMENSIONS OF PANELS FORMED BY CONSTRUCTION AND CONTROL JOINTS.

LEGEND:

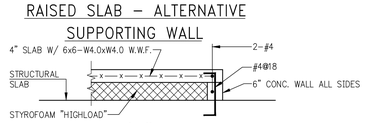
- STRIPS CAST FIRST
- INFILL STRIPS
- FORMED JOINTS
- SAWCUT JOINTS




## SECTION THROUGH RAISED SLAB FORMED WITH STYROFOAM

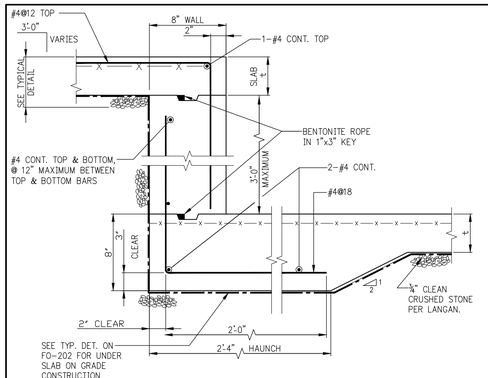
NOTES:

1. FOR STAIR TREADS, RISERS, AND WIDTH SEE ARCH. DWGS.
2. WHEN REQUIRED HEIGHT OF RAISED SLAB EXCEEDS 3'-0" USE STEEL DECK FORMS ALTERNATIVE. (STEEL DECK FORMED SLABS HAVE NO HEIGHT RESTICTIONS, MINIMUM OR MAXIMUM)

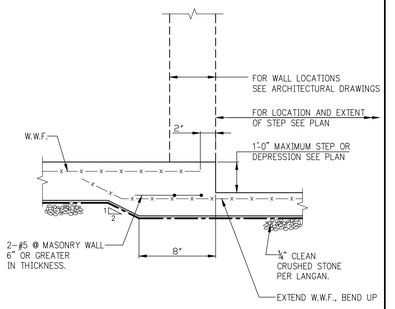



## RAISED SLAB – ALTERNATIVE SUPPORTING WALL

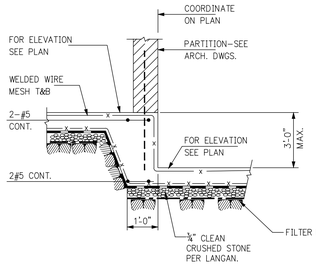
## RAISED SLAB – 1'-0" OR LESS IN HEIGHT ABOVE STRUCTURAL SLAB



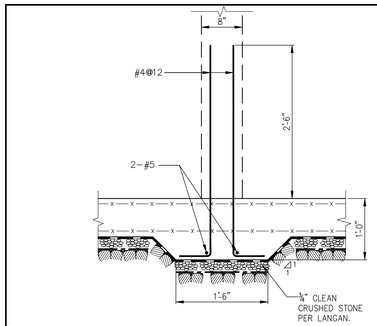

## SLAB ON GROUND STEP OR DEPRESSION GREATER THAN 1'-0"



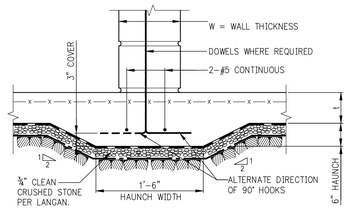

## SLAB ON GROUND STEP OR DEPRESSION 1'-0" OR LESS



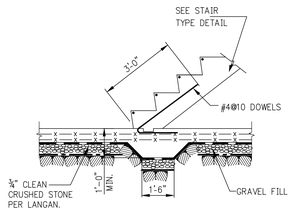

## TYPICAL STEPPED SLAB




## TYP. DETAIL @ STAIR KNEE WALL SUPPORT ON SLAB ON GRADE

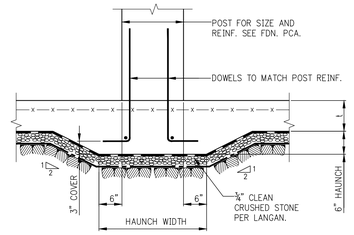



## THICKENED SLAB AT MASONRY WALLS 6" THICK OR GREATER




## DETAIL AT START OF STAIR ON SLAB

NOTE: FOR LOCATIONS SEE FO-100




## THICKENED SLAB AT POST


# 281
Fifth Avenue
NEW YORK, NY

OWNER:
VICTOR NOMAD LLC

CONSTRUCTION MANAGER:
LEND LEASE
200 PARK AVENUE, 9TH FLOOR
NEW YORK, NY 10166
TEL: 212 592 6700

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
WSP GROUP
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
TEL: 212 687 9888

MEP/FP/IT ENGINEER:
MGE ENGINEERING
116 WEST 32ND STREET, 12TH FLOOR
NEW YORK, NY 10001
TEL: 212 643 9055

GEOTECH CIVIL ENGINEER:
LANGAN ENGINEERING
300 KIMBALL DRIVE, 4TH FLOOR
PARSIPPANY, NJ, 07054
TEL: 973 560 4900

VERTICAL TRANSPORT. CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ, 07936
TEL: 973 994 9220

ENCLOSURE CONSULTANT:
VIDARIS, INC.
360 PARK AVENUE SOUTH, 15TH FLOOR
NEW YORK, NY, 10010
TEL: 212 689 5389

FACADE MAINTENANCE CONSULTANT:
ENTEK ENGINEERING LLC
166 AMES STREET
HACKENSACK, NJ, 07601
TEL: 201 820 2801

ACOUSTICAL CONSULTANT:
CERAMI & ASSOCIATES
404 FIFTH AVENUE
NEW YORK, NY, 10018
TEL: 212 616 4179

LIGHTING CONSULTANT:
ONE LUX STUDIO
158 WEST 29TH STREET, 10TH FLOOR
NEW YORK, NY, 10001
TEL: 212 201 5790

SPECIFICATIONS CONSULTANT:
ROBERT SCHWARTZ & ASSOCIATES
589 EIGHTH AVENUE, 17TH FLOOR
NEW YORK, NY, 10018
TEL: 212 691 3248

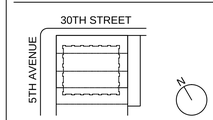
ENERGY MODELING CONSULTANT:
STEVEN WINTER ASSOCIATES, INC
307 SEVENTH AVENUE, SUITE 1701
NEW YORK, NY, 10001
TEL: 212 564 5800

INTERIOR DESIGN CONSULTANT:
JEFFREY BEERS INTERNATIONAL
156 5TH AVENUE, PENTHOUSE 2
NEW YORK, NY, 10010
TEL: 212 352 2020


DESIGN DEVELOPMENT
NYC DEPT. OF BUILDINGS SUBMITTAL

ARCHITECT'S SEAL

| ISSUE NO. | ISSUE DATE | DESCRIPTION |
|---|---|---|
| 1 | 04/29/2016 | DOB FOUNDATION PAA #1 |
| 1 | 04/08/2016 | DOB SUBMITTAL |
| 1 | 04/08/2016 | SUPERSTRUCTURE EARLY BID |
| 1 | 03/25/2016 | DOB FOUNDATION POST APPROVAL AMENDMENT |
| 1 | 01/27/2016 | FOUNDATION BID ADD. #1 |
| 1 | 01/18/2016 | FOUNDATION BID |
| 1 | 12/23/2015 | SCHEMATIC DESIGN |
| 1 | 04/15/2015 | DOB SUBMITTAL |
| 1 | 04/01/2015 | FOUNDATION BID |
| 1 | 02/28/2015 | SCHEMATIC DESIGN |




KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 42" X 30" IT IS A REDUCED PRINT:
REFER TO GRAPHIC SCALE

0 1 2

SCALE N.T.S

TYPICAL FOUNDATION DETAILS 3

SHEET TITLE :

FO-202.01

SHEET NUMBER :

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

STATE OF NEW YORK
JULIAN L. MARSH
051730
LICENSED PROFESSIONAL ENGINEER

## TABLE #1:
### TENSION LAP SPLICE LENGTHS (CLASS B MINIMUM)

**TABLE 1.A: ¾" COVER** TO OUTER LAYER BARS
OUTER LAYER LAP LENGTHS (IN INCHES)

| BAR \ f'c | 3,000 | 4,000 | 5,000 | 6,000 | 7,000 | 8,000 | 9,000 | 10,000+ |
|---|---|---|---|---|---|---|---|---|
| #3 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| #4 | 21 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| #5 | 31 | 27 | 24 | 24 | 24 | 24 | 24 | 24 |
| #6 | 43 | 37 | 33 | 30 | 29 | 29 | 29 | 29 |
| #7 | 69 | 60 | 53 | 49 | 45 | 42 | 40 | 38 |
| #8 | 85 | 74 | 66 | 60 | 56 | 52 | 49 | 47 |
| #9 | 103 | 89 | 80 | 73 | 67 | 63 | 59 | 56 |
| #10 | 121 | 105 | 94 | 86 | 79 | 74 | 70 | 66 |
| #11 | 140 | 122 | 109 | 99 | 92 | 86 | 81 | 77 |

**TABLE 1.C: 1½" COVER** TO OUTER LAYER BARS
OUTER LAYER LAP LENGTHS (IN INCHES)

NOTE: USE TABLE 1.A IF BAR SPACING IS LESS THAN 4" O/C UP TO #8, 5" O/C FOR #9, #10, #11

| BAR \ f'c | 3,000 | 4,000 | 5,000 | 6,000 | 7,000 | 8,000 | 9,000 | 10,000+ |
|---|---|---|---|---|---|---|---|---|
| #3 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| #4 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| #5 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| #6 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |
| #7 | 42 | 37 | 34 | 34 | 34 | 34 | 34 | 34 |
| #8 | 53 | 46 | 41 | 39 | 39 | 39 | 39 | 39 |
| #9 | 66 | 57 | 51 | 46 | 44 | 44 | 44 | 44 |
| #10 | 79 | 68 | 61 | 56 | 51 | 49 | 49 | 49 |
| #11 | 92 | 80 | 72 | 65 | 60 | 57 | 54 | 54 |

**TABLE 1.B: ¾" COVER** TO OUTER LAYER BARS
INNER LAYER LAP LENGTHS (IN INCHES)

NOTE: USE TABLE 1.A IF BAR SPACING IS LESS THAN 4" O/C UP TO #8, 5" O/C FOR #9, #10, #11

| BAR \ f'c | 3,000 | 4,000 | 5,000 | 6,000 | 7,000 | 8,000 | 9,000 | 10,000+ |
|---|---|---|---|---|---|---|---|---|
| #3 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| #4 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| #5 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| #6 | 30 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |
| #7 | 48 | 42 | 38 | 34 | 34 | 34 | 34 | 34 |
| #8 | 61 | 53 | 47 | 43 | 40 | 39 | 39 | 39 |
| #9 | 75 | 65 | 58 | 53 | 49 | 46 | 44 | 44 |
| #10 | 89 | 77 | 69 | 63 | 58 | 55 | 51 | 49 |
| #11 | 104 | 90 | 81 | 74 | 68 | 64 | 60 | 57 |

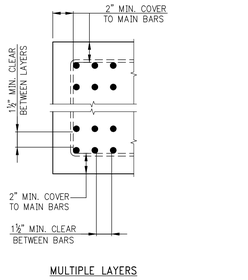
**TABLE 1.D: 1½" COVER** TO OUTER LAYER BARS
INNER LAYER LAP LENGTHS (IN INCHES)

NOTE: USE TABLE 1.A IF BAR SPACING IS LESS THAN 5" O/C UP TO #8, 6" O/C FOR #9, #10, #11

| BAR \ f'c | 3,000 | 4,000 | 5,000 | 6,000 | 7,000 | 8,000 | 9,000 | 10,000+ |
|---|---|---|---|---|---|---|---|---|
| #3 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| #4 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| #5 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| #6 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |
| #7 | 37 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| #8 | 43 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| #9 | 53 | 46 | 44 | 44 | 44 | 44 | 44 | 44 |
| #10 | 64 | 55 | 49 | 49 | 49 | 49 | 49 | 49 |
| #11 | 75 | 65 | 58 | 54 | 54 | 54 | 54 | 54 |

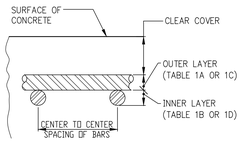
NOTES FOR TENSION LAP SPLICES

1. REINFORCEMENT IS UNCOATED, WITH Fy=60,000 PSI.
2. CONCRETE IS NORMAL WEIGHT (144–150#/C.F.).
3. FOR "TOP" BAR SPLICE LENGTHS ("TOP" IS DEFINED BY ACI 318 AS HAVING MORE THAN 12 INCHES OF FRESH CONCRETE CAST BELOW THE BAR), TABULATED LENGTHS MUST BE MULTIPLIED BY 1.3.
4. LENGTHS TABULATED MUST BE MULTIPLIED BY THE FOLLOWING MODIFICATION FACTORS:
   a. LIGHTWEIGHT CONCRETE .....1.3
   b. EPOXY–COATED BARS:
      1.) BARS WITH COVER < 3db, OR WITH CLEAR SPACING < 6db ...1.5 FOR BOTTOM & VERTICAL BARS, 1.3 FOR "TOP" BARS *
      2.) ALL OTHER CONDITIONS .....1.2
   * FOR EPOXY–COATED "TOP" BARS THE MAXIMUM FOR COMBINED FACTORS = 1.7
5. WHERE TENSION DEVELOPMENT LENGTH (Ld) IS REQUIRED ON PLANS OR IN DETAILS, SEE TENSION DEVELOPMENT LENGTH TABLES.
6. CLASS A LAP SPLICE LENGTHS ARE EQUAL TO TENSION DEVELOPMENT LENGTHS. SEE TABLES FOR TENSION DEVELOPMENT LENGTHS (Ld). APPLY APPROPRIATE MODIFICATION FACTORS TO CLASS A SPLICE LENGTHS. 1
7. ALL #11 BARS TO BE 75ksi. TABULATED LENGTH MUST BE MULTIPLIED BY 1.25.




MULTIPLE LAYERS

PROVIDE MINIMUM COVER AND CLEARANCES SHOWN, USE TABLE 1.A FOR LAP SPLICE LENGTHS.




## TABLE #2:
### TENSION DEVELOPMENT LENGTHS (Ld) (IN INCHES)

**TABLE 2.A: ¾" COVER** TO OUTER LAYER BARS
OUTER LAYER DEVELOPMENT LENGTHS

| BAR \ f'c | 3,000 | 4,000 | 5,000 | 6,000 | 7,000 | 8,000 | 9,000 | 10,000+ |
|---|---|---|---|---|---|---|---|---|
| #3 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| #4 | 16 | 14 | 13 | 12 | 12 | 12 | 12 | 12 |
| #5 | 24 | 21 | 19 | 17 | 16 | 15 | 14 | 13 |
| #6 | 33 | 28 | 25 | 23 | 22 | 20 | 19 | 18 |
| #7 | 53 | 46 | 41 | 37 | 35 | 32 | 31 | 29 |
| #8 | 66 | 57 | 51 | 46 | 43 | 40 | 38 | 36 |
| #9 | 79 | 69 | 61 | 56 | 52 | 49 | 46 | 43 |
| #10 | 93 | 81 | 72 | 66 | 61 | 57 | 54 | 51 |
| #11 | 108 | 94 | 84 | 76 | 71 | 66 | 62 | 59 |

**TABLE 2.C: 1½" COVER** TO OUTER LAYER BARS
OUTER LAYER DEVELOPMENT LENGTHS

| BAR \ f'c | 3,000 | 4,000 | 5,000 | 6,000 | 7,000 | 8,000 | 9,000 | 10,000+ |
|---|---|---|---|---|---|---|---|---|
| #3 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| #4 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| #5 | 16 | 14 | 13 | 13 | 13 | 13 | 13 | 13 |
| #6 | 20 | 17 | 15 | 15 | 15 | 15 | 15 | 15 |
| #7 | 32 | 28 | 25 | 23 | 21 | 20 | 19 | 18 |
| #8 | 41 | 36 | 32 | 29 | 27 | 25 | 24 | 23 |
| #9 | 50 | 44 | 39 | 36 | 33 | 31 | 29 | 28 |
| #10 | 60 | 52 | 47 | 43 | 40 | 37 | 35 | 33 |
| #11 | 71 | 61 | 55 | 50 | 46 | 43 | 41 | 39 |

**TABLE 2.B: ¾" COVER** TO OUTER LAYER BARS
INNER LAYER DEVELOPMENT LENGTHS

| BAR \ f'c | 3,000 | 4,000 | 5,000 | 6,000 | 7,000 | 8,000 | 9,000 | 10,000+ |
|---|---|---|---|---|---|---|---|---|
| #3 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| #4 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| #5 | 16 | 14 | 13 | 13 | 13 | 13 | 13 | 13 |
| #6 | 23 | 20 | 18 | 16 | 15 | 15 | 15 | 15 |
| #7 | 37 | 32 | 29 | 26 | 24 | 23 | 22 | 20 |
| #8 | 47 | 41 | 36 | 33 | 31 | 29 | 27 | 26 |
| #9 | 57 | 50 | 44 | 41 | 38 | 35 | 33 | 31 |
| #10 | 68 | 59 | 53 | 48 | 45 | 42 | 40 | 38 |
| #11 | 80 | 69 | 62 | 57 | 52 | 49 | 46 | 44 |

**TABLE 2.D: 1½" COVER** TO OUTER LAYER BARS
INNER LAYER DEVELOPMENT LENGTHS

| BAR \ f'c | 3,000 | 4,000 | 5,000 | 6,000 | 7,000 | 8,000 | 9,000 | 10,000+ |
|---|---|---|---|---|---|---|---|---|
| #3 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| #4 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| #5 | 16 | 14 | 13 | 13 | 13 | 13 | 13 | 13 |
| #6 | 20 | 17 | 15 | 15 | 15 | 15 | 15 | 15 |
| #7 | 29 | 25 | 22 | 20 | 19 | 18 | 18 | 18 |
| #8 | 33 | 28 | 25 | 23 | 22 | 20 | 20 | 20 |
| #9 | 41 | 35 | 31 | 29 | 27 | 25 | 23 | 23 |
| #10 | 49 | 42 | 38 | 35 | 32 | 30 | 28 | 27 |
| #11 | 58 | 50 | 45 | 41 | 38 | 35 | 33 | 32 |

NOTES FOR TENSION DEVELOPMENT LENGTHS (Ld)

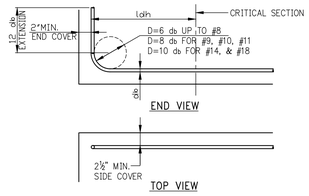
1. REINFORCEMENT IS UNCOATED, WITH Fy=60,000 PSI.
2. CONCRETE IS NORMAL WEIGHT (144–150#/C.F.).
3. FOR "TOP" BAR DEVELOPMENT LENGTHS ("TOP" IS DEFINED BY ACI 318 AS HAVING MORE THAN 12 INCHES OF FRESH CONCRETE CAST BELOW THE BAR), TABULATED LENGTHS MUST BE MULTIPLIED BY 1.3.
4. LENGTHS TABULATED MUST BE MULTIPLIED BY THE FOLLOWING MODIFICATION FACTORS:
   a. LIGHTWEIGHT CONCRETE .....1.3
   b. EPOXY–COATED BARS:
      1.) BARS WITH COVER < 3db, OR WITH CLEAR SPACING < 6db ...1.5 FOR BOTTOM & VERTICAL BARS,
      2.) ALL OTHER CONDITIONS .....**1.3** FOR "TOP" BARS *
   * FOR EPOXY–COATED "TOP" BARS THE MAXIMUM FOR COMBINED FACTORS = 1.7
5. WHERE TENSION DEVELOPMENT LENGTH (Ld) IS REQUIRED ON PLANS OR IN DETAILS, SEE TENSION DEVELOPMENT LENGTH TABLES.
6. CLASS A LAP SPLICE LENGTHS ARE EQUAL TO TENSION DEVELOPMENT LENGTHS. SEE TABLES FOR TENSION DEVELOPMENT LENGTHS (Ld). APPLY APPROPRIATE MODIFICATION FACTORS TO CLASS A SPLICE LENGTHS.

## TABLE #3
### TENSION DEVELOPMENT LENGTHS FOR STANDARD END HOOKS (ldh)
(LENGTHS IN INCHES)

| BAR SIZE | CONCRETE STRENGTH (PSI) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 3,000 | 4,000 | 5,000 | 6,000 | 7,000 | 8,000 | 9,000 | 10,000+ |
| #3 | 9 | 7 | 7 | 6 | 6 | 6 | 6 | 6 |
| #4 | 11 | 10 | 9 | 8 | 7 | 7 | 7 | 6 |
| #5 | 14 | 12 | 11 | 10 | 9 | 9 | 8 | 8 |
| #6 | 17 | 15 | 13 | 12 | 11 | 10 | 10 | 9 |
| #7 | 19 | 17 | 15 | 14 | 13 | 12 | 11 | 11 |
| #8 | 22 | 19 | 17 | 16 | 15 | 14 | 13 | 12 |
| #9 | 25 | 22 | 19 | 18 | 16 | 15 | 15 | 14 |
| #10 | 28 | 24 | 22 | 20 | 19 | 17 | 16 | 16 |
| #11 | 31 | 27 | 24 | 22 | 21 | 19 | 18 | 17 |
| #14 | 37 | 32 | 29 | 27 | 25 | 23 | 22 | 21 |
| #18 | 50 | 43 | 39 | 35 | 33 | 31 | 29 | 27 |

NOTES:

1. TABLE 3 CONFORMS TO ACI 318–2002 (AND 2005). TABULATED VALUES ARE BASED UPON ACI 12.5.2 , ASSUMING GRADE 60 REINFORCEMENT AND NORMALWEIGHT CONCRETE.
2. PER ACI 12.5.3 a), FOR #11 AND SMALLER BARS, IF COVER TO BAR IS 2½ INCHES OR MORE, AND FOR 90 DEGREE HOOK WITH COVER ON BAR EXTENSION BEYOND HOOK NOT LESS THAN 2 INCHES, A MODIFICATION FACTOR OF 0.7 MAY BE APPLIED. MINIMUM ldh SHALL NOT BE LESS THAN 8db NOR 6 INCHES.




## TABLE #4
### COMPRESSION LAP SPLICES
(LENGTHS IN INCHES)

| BAR SIZE | GRADE OF REINFORCEMENT | | |
|---|---|---|---|
| | 60 KSI (30 DIA.) | 75 KSI (44 DIA.) | 80 KSI (48 DIA.) |
| #3 | 12 | 17 | 18 |
| #4 | 15 | 22 | 24 |
| #5 | 19 | 28 | 30 |
| #6 | 23 | 33 | 36 |
| #7 | 27 | 39 | 42 |
| #8 | 30 | 44 | 48 |
| #9 | 34 | 50 | 54 |
| #10 | 38 | 56 | 61 |
| #11 | 43 | 62 | 68 |
| #14 AND #18 | 1. LAP SPLICES ARE NOT PERMITTED USE MECHANICAL CONNECTIONS OR WELDED SPLICES FOR #14 AND #18, PER ACI 318 (12.14.3).<br>2. LAP SPLICES OF #14 AND #18 BARS TO #11 AND SMALLER BARS ARE PERMITTED PER ACI 318 (12.16.2). | | |

3. FOR BARS OF DIFFERENT SIZE, USE LARGER OF: SPLICE LENGTH OF SMALLER BAR (TABLE #4) OR DEVELOPMENT LENGTH OF LARGER BAR (FROM TABLE #5) PER ACI 318 (12.16.2).

NOTE:

TABLE #4 APPLIES FOR NORMALWEIGHT CONCRETE WITH f'c = 3,000 PSI OR GREATER.

## TABLE #5
### DEVELOPMENT LENGTHS FOR BARS IN COMPRESSION
(LENGTHS IN INCHES)

| BAR SIZE | fy = 60,000 PSI | | | fy = 75,000 PSI | | | fy = 80,000 PSI | | |
|---|---|---|---|---|---|---|---|---|---|
| | CONC. f'c (IN PSI) | | | CONC. f'c (IN PSI) | | | CONC. f'c (IN PSI) | | |
| | 3,000 | 4,000 | 5,000 OR MORE | 3,000 | 4,000 | 5,000 OR MORE | 3,000 | 4,000 | 5,000 OR MORE |
| #3 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| #4 | 12 | 12 | 12 | 14 | 12 | 12 | 15 | 13 | 12 |
| #5 | 14 | 12 | 12 | 17 | 15 | 14 | 18 | 16 | 15 |
| #6 | 17 | 15 | 14 | 21 | 18 | 17 | 22 | 19 | 18 |
| #7 | 19 | 17 | 16 | 24 | 21 | 20 | 26 | 22 | 21 |
| #8 | 22 | 19 | 18 | 28 | 24 | 23 | 29 | 25 | 24 |
| #9 | 25 | 22 | 21 | 31 | 27 | 25 | 33 | 28 | 27 |
| #10 | 28 | 24 | 23 | 34 | 30 | 28 | 36 | 31 | 30 |
| #11 | 31 | 27 | 26 | 38 | 33 | 31 | 40 | 34 | 33 |
| #14 | 37 | 32 | 31 | 48 | 42 | 39 | 51 | 44 | 42 |
| #18 | 50 | 43 | 41 | 62 | 54 | 51 | 65 | 56 | 54 |

# 281
## Fifth Avenue
NEW YORK, NY

OWNER:
VICTOR NOMAD LLC

CONSTRUCTION MANAGER:
LEND LEASE
200 PARK AVENUE, 9TH FLOOR
NEW YORK, NY 10166
TEL: 212 592 6700

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
WSP GROUP
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
TEL: 212 687 9888

MEP/FP/IT ENGINEER:
MGE ENGINEERING
116 WEST 32ND STREET, 12TH FLOOR
NEW YORK, NY 10001
TEL: 212 643 9055

GEOTECH CIVIL ENGINEER:
LANGAN ENGINEERING
300 KIMBALL DRIVE, 4TH FLOOR
PARSIPPANY, NJ. 07054
TEL: 973 560 4900

VERTICAL TRANSPORT. CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ, 07936
TEL: 973 994 9220

ENCLOSURE CONSULTANT:
VIDARIS, INC.
360 PARK AVENUE SOUTH, 15TH FLOOR
NEW YORK, NY, 10010
TEL: 212 689 5389

FACADE MAINTENANCE CONSULTANT:
ENTEK ENGINEERING LLC
166 AMES STREET
HACKENSACK, NJ. 07601
TEL: 201 820 2801

ACOUSTICAL CONSULTANT:
CERAMI & ASSOCIATES
404 FIFTH AVENUE
NEW YORK, NY, 10018
TEL: 212 616 4179

LIGHTING CONSULTANT:
ONE LUX STUDIO
158 WEST 29TH STREET, 10TH FLOOR
NEW YORK, NY. 10001
TEL: 212 201 5790

SPECIFICATIONS CONSULTANT:
ROBERT SCHWARTZ & ASSOCIATES
589 EIGHTH AVENUE, 17TH FLOOR
NEW YORK, NY. 10018
TEL: 212 691 3248

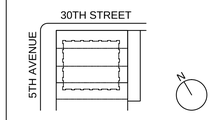
ENERGY MODELING CONSULTANT:
STEVEN WINTER ASSOCIATES, INC
307 SEVENTH AVENUE, SUITE 1701
NEW YORK, NY, 10001
TEL: 212 564 5800

INTERIOR DESIGN CONSULTANT:
JEFFREY BEERS INTERNATIONAL
156 5TH AVENUE, PENTHOUSE 2
NEW YORK, NY. 10010
TEL: 212 352 2020

DESIGN DEVELOPMENT
NYC DEPT. OF BUILDINGS SUBMITTAL

ARCHITECT'S SEAL

| ISSUE NO. | ISSUE DATE | DESCRIPTION |
|---|---|---|
| 1 | 04/29/2016 | DOB FOUNDATION PAA #1 |
| | 04/08/2016 | DOB SUBMITTAL |
| | 04/08/2016 | SUPERSTRUCTURE EARLY BID |
| | 03/25/2016 | DOB FOUNDATION POST APPROVAL AMENDMENT |
| | 01/27/2016 | FOUNDATION BID ADD. #1 |
| | 01/18/2016 | FOUNDATION BID |
| | 12/23/2015 | SCHEMATIC DESIGN |
| | 04/15/2015 | DOB SUBMITTAL |
| | 04/01/2015 | FOUNDATION BID |
| | 02/28/2015 | SCHEMATIC DESIGN |




KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 42" X 30" IT IS A REDUCED PRINT.
REFER TO GRAPHIC SCALE
0 1 2

SCALE N.T.S

TYPICAL FOUNDATION DETAILS 4

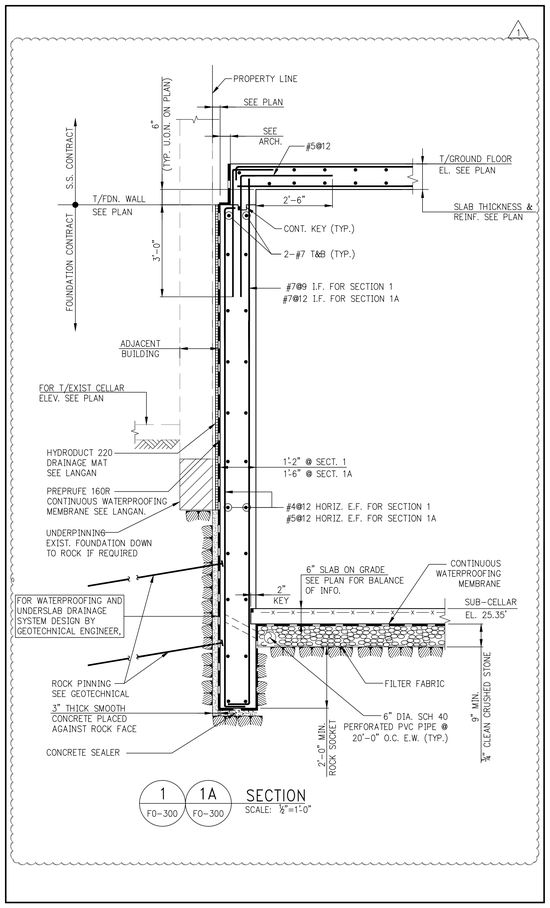
SHEET TITLE :

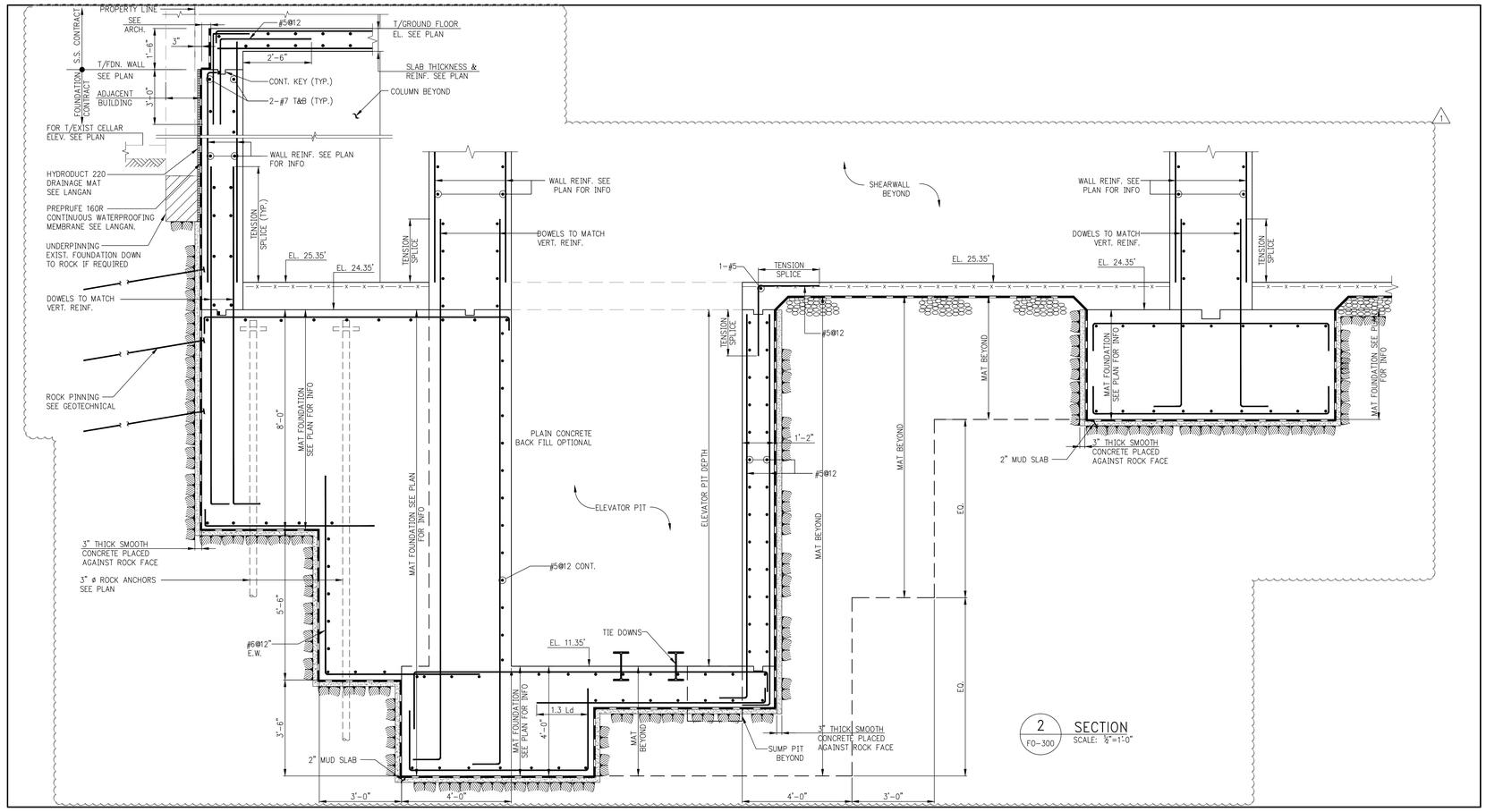
FO-203.01

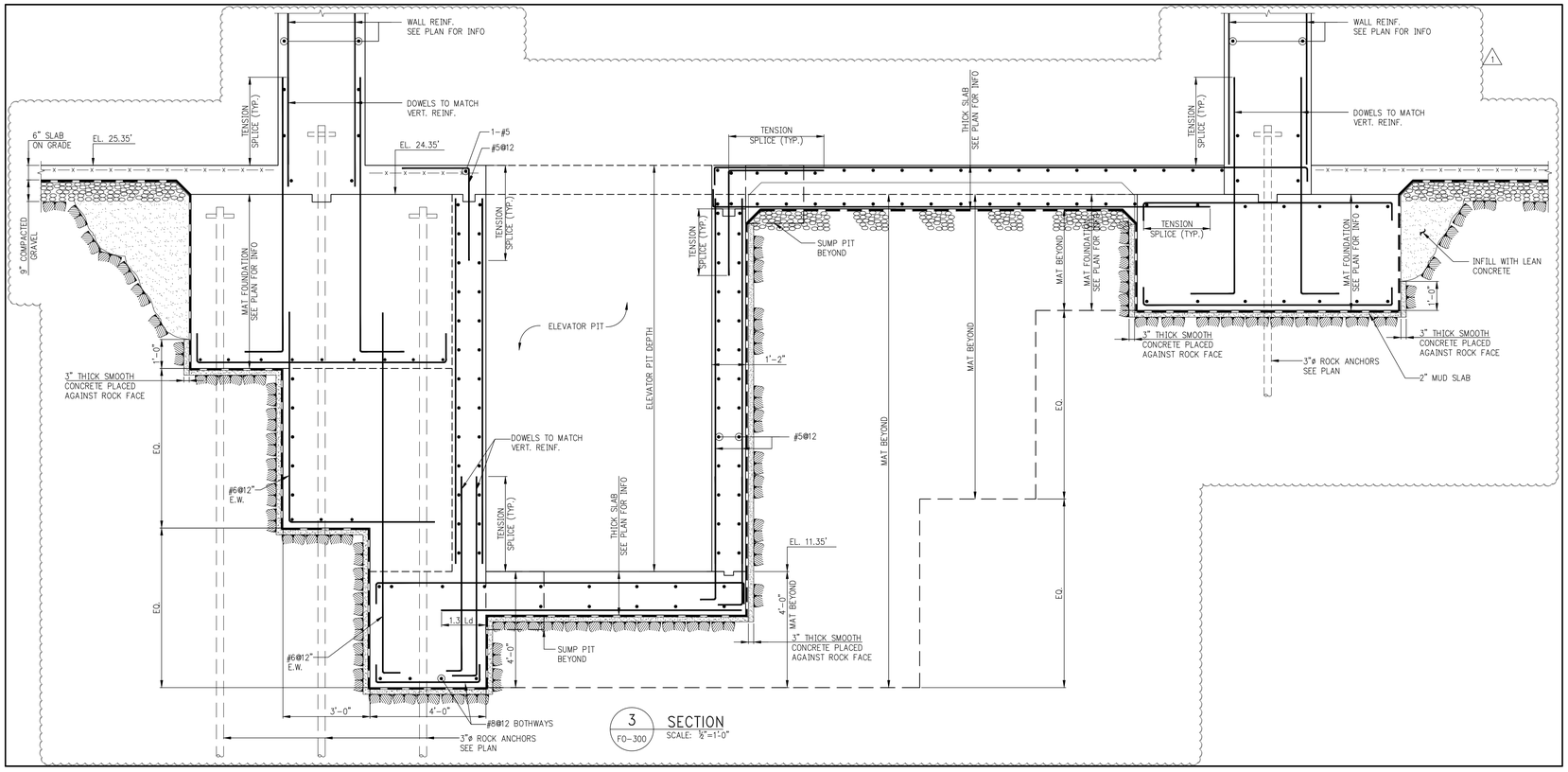
SHEET NUMBER :

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

STATE OF NEW YORK
JULIAN L. MARIAS
18 0 0 0 0 0
05/11/16
LICENSED PROFESSIONAL ENGINEER





# 281
## Fifth Avenue
NEW YORK, NY

OWNER:
VICTOR NOMAD LLC

CONSTRUCTION MANAGER:
LEND LEASE
200 PARK AVENUE, 9TH FLOOR
NEW YORK, NY 10166
TEL: 212 592 6700

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
WSP GROUP
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
TEL: 212 687 9888

MEP/FP/IT ENGINEER:
MGE ENGINEERING
116 WEST 32ND STREET, 12TH FLOOR
NEW YORK, NY 10001
TEL: 212 643 9055

GEOTECH CIVIL ENGINEER:
LANGAN ENGINEERING
300 KIMBALL DRIVE, 4TH FLOOR
PARSIPPANY, NJ, 07054
TEL: 973 560 4900

VERTICAL TRANSPORT. CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ, 07936
TEL: 973 994 9220

ENCLOSURE CONSULTANT:
VIDARIS, INC.
360 PARK AVENUE SOUTH, 15TH FLOOR
NEW YORK, NY, 10010
TEL: 212 689 5389

FACADE MAINTENANCE CONSULTANT:
ENTEK ENGINEERING LLC
166 AMES STREET
HACKENSACK, NJ, 07601
TEL: 201 820 2801

ACOUSTICAL CONSULTANT:
CERAMI & ASSOCIATES
404 FIFTH AVENUE
NEW YORK, NY, 10018
TEL: 212 616 4179

LIGHTING CONSULTANT:
ONE LUX STUDIO
158 WEST 29TH STREET, 10TH FLOOR
NEW YORK, NY, 10001
TEL: 212 201 5790

SPECIFICATIONS CONSULTANT:
ROBERT SCHWARTZ & ASSOCIATES
589 EIGHTH AVENUE, 17TH FLOOR
NEW YORK, NY, 10018
TEL: 212 691 3248

ENERGY MODELING CONSULTANT:
STEVEN WINTER ASSOCIATES, INC
307 SEVENTH AVENUE, SUITE 1701
NEW YORK, NY, 10001
TEL: 212 564 5800

INTERIOR DESIGN CONSULTANT:
JEFFREY BEERS INTERNATIONAL
156 5TH AVENUE, PENTHOUSE 2
NEW YORK, NY, 10010
TEL: 212 352 2020


DESIGN DEVELOPMENT
NYC DEPT. OF BUILDINGS SUBMITTAL

ARCHITECT'S SEAL

| ISSUE NO. | ISSUE DATE | DESCRIPTION |
|---|---|---|
| 1 | 04/29/2016 | DOB FOUNDATION PAA #1 |
| | 04/08/2016 | DOB SUBMITTAL |
| | 04/08/2016 | SUPERSTRUCTURE EARLY BID |
| | 03/25/2016 | DOB FOUNDATION POST APPROVAL AMENDMENT |
| | 01/27/2016 | FOUNDATION BID ADD. #1 |
| | 01/18/2016 | FOUNDATION BID |
| | 12/23/2015 | SCHEMATIC DESIGN |
| | 04/15/2015 | DOB SUBMITTAL |
| | 04/01/2015 | FOUNDATION BID |

30TH STREET
5TH AVENUE

KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 42" X 30" IT IS A REDUCED PRINT;
REFER TO GRAPHIC SCALE
0 1 2

SCALE AS SHOWN

FOUNDATION SECTIONS 1

SHEET TITLE :

FO-300.01

SHEET NUMBER :

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

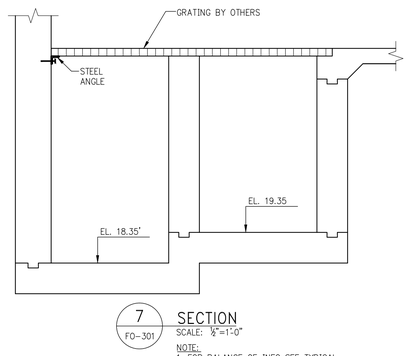
STATE OF NEW YORK
STEVEN L. MARGIS
052119
LICENSED PROFESSIONAL ENGINEER

1 2 3 4 5 6

NOT USED

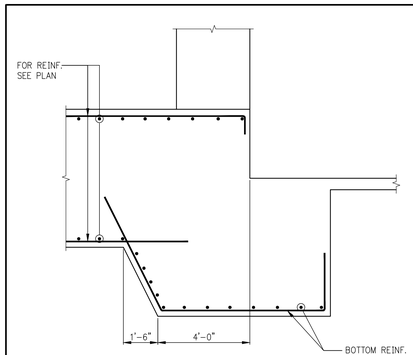
NOT USED

NOT USED




7 FO-301 SECTION
SCALE: ½"=1'-0"

NOTE:
1. FOR BALANCE OF INFO SEE TYPICAL DOUBLE PIT DETAIL ON FO-202




8 FO-301 SECTION
SCALE: ½"=1'-0"

# 281
## Fifth Avenue

NEW YORK, NY

OWNER:
VICTOR NOMAD LLC

CONSTRUCTION MANAGER:
LEND LEASE
200 PARK AVENUE, 9TH FLOOR
NEW YORK, NY 10166
TEL: 212 592 6700

ARCHITECT :
RAFAEL VIÑOLY ARCHITECTS PC
50 VANDAM STREET
NEW YORK, NY 10013
TEL: 212 924 5060 FAX: 212 924 5858

STRUCTURAL ENGINEER:
WSP GROUP
228 EAST 45TH STREET, 3RD FLOOR
NEW YORK, NY 10017
TEL: 212 687 9888

MEP/FP/IT ENGINEER:
MGE ENGINEERING
116 WEST 32ND STREET, 12TH FLOOR
NEW YORK, NY 10001
TEL: 212 643 9055

GEOTECH CIVIL ENGINEER:
LANGAN ENGINEERING
300 KIMBALL DRIVE, 4TH FLOOR
PARSIPPANY, NJ, 07054
TEL: 973 560 4900

VERTICAL TRANSPORT. CONSULTANT:
VAN DEUSEN & ASSOCIATES
120 EAGLE ROCK AVENUE, SUITE 310
EAST HANOVER, NJ, 07936
TEL: 973 994 9220

ENCLOSURE CONSULTANT:
VIDARIS, INC.
360 PARK AVENUE SOUTH, 15TH FLOOR
NEW YORK, NY, 10010
TEL: 212 689 5389

FACADE MAINTENANCE CONSULTANT:
ENTEK ENGINEERING LLC
166 AMES STREET
HACKENSACK, NJ, 07601
TEL: 201 820 2801

ACOUSTICAL CONSULTANT:
CERAMI & ASSOCIATES
404 FIFTH AVENUE
NEW YORK, NY, 10018
TEL: 212 616 4179

LIGHTING CONSULTANT:
ONE LUX STUDIO
158 WEST 29TH STREET, 10TH FLOOR
NEW YORK, NY, 10001
TEL: 212 201 5790

SPECIFICATIONS CONSULTANT:
ROBERT SCHWARTZ & ASSOCIATES
589 EIGHTH AVENUE, 17TH FLOOR
NEW YORK, NY, 10018
TEL: 212 691 3248

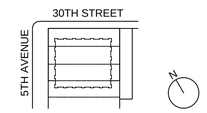
ENERGY MODELING CONSULTANT:
STEVEN WINTER ASSOCIATES, INC
307 SEVENTH AVENUE, SUITE 1701
NEW YORK, NY, 10001
TEL: 212 564 5800

INTERIOR DESIGN CONSULTANT:
JEFFREY BEERS INTERNATIONAL
156 5TH AVENUE, PENTHOUSE 2
NEW YORK, NY, 10010
TEL: 212 352 2020

DESIGN DEVELOPMENT
NYC DEPT. OF BUILDINGS SUBMITTAL

ARCHITECT'S SEAL

| ISSUE NO. | ISSUE DATE | DESCRIPTION |
|---|---|---|
| 8 | 04/29/2016 | DOB FOUNDATION PAA #1 |
| 7 | 04/08/2016 | DOB SUBMITTAL |
| 6 | 04/08/2016 | DOB SUPERSTRUCTURE EARLY BID |
| 5 | 03/25/2016 | DOB FOUNDATION POST APPROVAL AMENDMENT |
| 4 | 01/27/2016 | FOUNDATION BID ADD. #1 |
| 3 | 01/18/2016 | FOUNDATION BID |




KEY PLAN AND NORTH SIGN

IF THIS DRAWING IS NOT 42" X 30" IT IS A REDUCED PRINT:
REFER TO GRAPHIC SCALE

0 1 2

SCALE AS SHOWN

FOUNDATION SECTIONS 2

SHEET TITLE :

FO-301.01

SHEET NUMBER :

Damian Titus
Buildings
APPROVED
Under Directive 2 of 1975
AMENDED APPLICATION
Date: 05/25/2016
NYC Development Hub

STATE OF NEW YORK
JULIAN L. MARIAS
05713
LICENSED PROFESSIONAL ENGINEER