COAST AND GEODETIC SURVEY.

2. FOUNDATION BACKGROUNDS OBTAINED FROM DRAWING TITLED "FO-100.00

FOUNDATION (SUB-CELLAR 2) PLAN" PREPARED BY WSP, DATED

- 10 MARCH 2017. 3. ELEVATIONS ARE WITH RESPECT TO THE TRANSIT AUTHORITY (TA) DATUM AND THE NORTH AMERICAN VERTICAL DATUM (NAVD) 1988, WHICH IS 1.106 FT ABOVE MEAN SEA LEVEL AT SANDY HOOK, NJ ESTABLISHED BY U.S.
- 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING HIS WORK SUCH THAT NO DAMAGE OR ADVERSE IMPACT TO THE NEIGHBORING BUILDINGS AND STRUCTURES RESULT, AND FOR PERFORMING NEIGHBORING/BORDERING BUILDING AND STRUCTURE MONITORING DURING SOIL EXCAVATION AND EXCAVATION SUPPORT CONSTRUCTION TO KEEP HIMSELF CONTINUOUSLY INFORMED OF THEIR CONDITIONS.
- 5. A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK AND RETAINED DIRECTLY BY THE OWNER SHALL PERFORM SPECIAL INSPECTION OF THE EXCAVATION SUPPORT WORK IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 1704.19 OF THE NYC BUILDING CODE.
- 6. CONTRACTOR SHALL NOTIFY NYCDOB AND NEIGHBORING BUILDING OWNERS 24 TO 48 HOURS PRIOR TO COMMENCEMENT OF EXCAVATION WORK PER

OF THESE DRAWINGS AND ARE NOT ADDRESSED HEREIN.

- THE REQUIREMENTS OF THE LATEST NYC BUILDING CODE. 7. CONTRACTOR SITE SAFETY AND SITE LOGISTICS ARE BEYOND THE SCOPE
- 8. ON-SITE SUBSURFACE CONDITIONS INDICATED ON THE DRAWINGS ARE INFERRED BASED ON OBSERVATIONS FROM DRILLED BORINGS, TEST PITS, AND HISTORIC DRAWINGS. THE ACTUAL SUBSURFACE CONDITIONS MAY
- 9. THE MOST RECENT PROVISIONS OF THE NEW YORK CITY BUILDING CODE SHALL GOVERN THIS WORK.
- 10. THE WORK SHOWN IN THESE DRAWINGS SHALL BE EXECUTED IN CONJUNCTION WITH THOSE OF THE ARCHITECTURAL, STRUCTURAL MECHANICAL, SITE/CIVIL DRAWINGS AND DRAWINGS OF ALL OTHER DISCIPLINES, DISCREPANCIES BETWEEN THESE DRAWINGS AND THOSE OF OTHER DISCIPLINES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR CLARIFICATION PRIOR TO COMMENCING WORK.
- 11. SHOULD FIELD CONDITIONS CONFLICT WITH THOSE INDICATED ON THESE DRAWINGS, THE SOE DESIGNER SHALL BE IMMEDIATELY NOTIFIED TO DETERMINE IMPACTS TO THE DESIGN AND TO PROVIDE ANY REQUIRED DESIGN CHANGES.
- 12. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD PRIOR TO COMMENCING WORK. VERIFY ALL DIMENSIONS, FLEVATIONS, AND LOCATIONS OF EXISTING FOUNDATIONS AND UTILITIES AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACT DRAWINGS AND THE FIELD CONDITIONS TO THE ARCHITECT FOR CLARIFICATION PRIOR TO COMMENCING
- 13. EXISTING UTILITIES AND STRUCTURES TO REMAIN SHALL BE PROTECTED AS REQUIRED.
- 14. THE CONTRACTOR MUST NOTE THAT HISTORIC DRAWINGS SHOW FORMER FOUNDATION ELEMENTS. INCLUDING FOUNDATION WALLS, SLABS, PILES, PILE CAPS, CAISSONS, ETC. BURIED AT THE SITE. THE CONTRACTOR MUST ACCOUNT FOR THESE ELEMENTS IN THE SELECTION OF MEANS AND METHODS, AND SHALL BYPASS OR REMOVE AS NECESSARY TO INSTALL ALL WORK SHOWN IN THE CONTRACT DRAWINGS.
- 15. INFORMATION FOR ADJACENT BUILDINGS ARE PROVIDED AND INFERRED FROM AVAILABLE EXISTING HISTORIC DRAWINGS. THE SOE ENGINEER DOES NOT MAKE ANY CLAIMS AS TO THE ACCURACY OF THE INFORMATION.

MATERIALS

CONCRETE NOTES

- CAST-IN-PLACE CONCRETE SHALL BE CONTROLLED CONCRETE AND SHALL HAVE A MINIMUM UNCONFINED COMPRESSIVE STRENGTH AT 28 DAYS (F'C) OF 5,000 PSI UNLESS OTHERWISE NOTED (U.O.N.).
- 2. MINIMUM CONCRETE COVER SHALL BE IN ACCORDANCE WITH THE MOST RECENT PROVISIONS OF ACI 318 AND THE BUILDING CODE.
- 3. TOLERANCES FOR CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MOST RECENT PROVISIONS OF ACI 117.
- 4. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED A MINIMUM OF 3/4 INCHES.
- 5. REFER TO DRAWINGS AND ASSOCIATED SPECIFICATIONS FOR CONCRETE REQUIREMENTS RELATED TO ALL OTHER WORK.
- STRUCTURAL STEEL NOTES
- CONCRETE REINFORCEMENT BARS SHALL BE PROVIDED AS NOTED. 2. MECHANICAL SPLICES SHALL DEVELOP THE FULL TENSILE CAPACITY OF THE
- PARENT REINFORCING BAR. 3. STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM
- A992, GRADE 80, UNLESS OTHERWISE NOTED.
- 4. FIELD WELDING SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.1-06.
- 5. WELDING ELECTRODES SHALL BE E70XX, UNLESS NOTED OTHERWISE. FILLET WELDS SHALL NOT BE LESS THAN 3/16-INCH.
- INSTALLATION AND EXCAVATION SEQUENCE NOTES
- 1. SEE DWGS SOE-201 AND SOE-202 FOR INSTALLATION AND EXCAVATION SEQUENCE NOTES.
- 2. ALL TEMPORARY BRACING SHALL REMAIN IN-PLACE UNTIL ADEQUATE SUPPORT IS PROVIDED BY PERMANENT STRUCTURAL ELEMENTS (I.E. FOUNDATION WALLS AND INTERMEDIATE FLOOR SLABS).

EXCAVATION SUPPORT AND SECANT NOTES

- 1. STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A992, GRADE 50, UNLESS OTHERWISE NOTED.
- 2. MISCELLANEOUS STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, UNLESS OTHERWISE NOTED.
- 3. ALL WELDING SHALL BE DONE BY AWS CERTIFIED WELDERS AND SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.1.
- 4. WELDING ELECTRODES SHALL BE E70XX, UNLESS NOTED OTHERWISE. FILLET WELDS SHALL NOT BE LESS THAN 3/16-INCH.
- 5. ALL CONCRETE SHALL BE NORMAL WEIGHT CONTROLLED CONCRETE, UNLESS OTHERWISE NOTED, AND COMPLY WITH THE A.C.I. 318 AND THE CURRENT N.Y.C. BUILDING CODE. MIX DESIGN FOR EACH TYPE AND STRENGTH SHALL BE PREPARED BY CONTRACTOR, BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL, AND TESTED BY INDEPENDENT TESTING
- 6. NORMAL WEIGHT AGGREGATE SHALL CONFORM TO THE REQUIREMENTS OF ASTM C33.
- 7. A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK SHALL PERFORM FULL TIME SPECIAL INSPECTION THROUGHOUT SECANT PILE WALL AND BRACING INSTALLATION.
- 8. SPECIAL INSPECTION OF CONCRETE AND WELDS SHALL BE PERFORMED BY OTHERS.
- 9. THE CONTRACTOR SHALL PREPARE THE FINAL LAY-OUT OF THE SECANT PILE WALL AND SUBMIT FOR REVIEW, INCLUDING DIMENSIONS, DETAILS, BRACING, AND NUMBERING.
- 10. THE CONTRACTOR SHALL SUBMIT TO THE OWNER'S ENGINEER A PILE INSTALLATION PROGRAM. THE PROPOSED SEQUENCE AND TIMING OF PILE INSTALLATION SHALL BE SUCH THAT THE INSTALLATION SHALL NOT CAUSE ANY DAMAGE TO ANY ADJACENT PILES OR STRUCTURES.
- 11. THE SECANT PILES SHALL BE INSTALLED USING GUIDE WALLS. THE DESIGN AND CONSTRUCTION OF GUIDE WALLS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL TAKE INTO ACCOUNT THE ACTUAL SITE AND GROUND CONDITIONS, INCLUDING FORMER BURIED FOUNDATIONS AND THE EQUIPMENT TO BE USED ON SITE TO ENSURE STABILITY, CONTROL TOLERANCES AND AVOID UNDERCUTTING AS APPROPRIATE. THE MINIMUM DEPTH OF GUIDE WALL DIMENSIONS ARE SHOWN IN SOE-301 AND SOE-302. LARGER SIZE GUIDE WALLS MAY BE REQUIRED IF THE SUBSOIL IS LOOSE OR SOFT TO PREVENT MOVEMENT OF THE GUIDE WALLS DURING CONSTRUCTION.
- 12. AT CUT-OFF LEVEL, THE MAXIMUM PERMITTED DEVIATION OF THE PILE CENTER FROM THE CENTER POINT SHOWN ON THE SETTING-OUT DRAWINGS SHALL BE 1 INCH IN ANY DIRECTION.
- 13. THE MAXIMUM PERMITTED DEVIATION OF THE FINISHED PILE FROM THE VERTICAL AT ANY LEVEL IS 300 OR 1.5 INCHES, WHICHEVER IS LESS. THE CONTRACTOR SHALL DEMONSTRATE TO THE SATISFACTION OF THE DESIGN ENGINEER THE PILE VERTICALITY IS WITHIN THE ALLOWABLE TOLERANCE.

- SHOULD PILES BE INSTALLED OUTSIDE THESE TOLERANCES AFFECTING THE DESIGN AND/OR APPEARANCE OF THE STRUCTURE, THE CONTRACTOR SHALL PROPOSE AND CARRY OUT IMMEDIATE REMEDIAL MEASURE TO THE APPROVAL OF THE ENGINEER AT NO ADDITIONAL EXPENSE TO THE OWNER.
- 14. THE CONTRACTOR SHALL EMPLOY A NEW YORK STATE LICENSED SURVEYOR APPROVED BY THE OWNER'S ENGINEER WHO WILL SET UP THE POSITIONS OF ALL ELEMENTS AS SHOWN IN THE LAYOUT PLANS.

RELOCATED UTILITIES, MANHOLES, TRANSFORMER, WALES, STRUTS, VAULTS

AND SLAB CONNECTIONS TO SECANT PILES. USE ONLY SMALL HAND OPERATED CHIPPING EQUIPMENT TO PREVENT DAMAGE TO THE SECANT PILES ANY STAY BELOW VIBRATIONS THRESHOLD. 16. THE CONTRACTOR SHALL ARRANGE TO HAVE A TRIAL MIX IN THE PRESENCE OF THE ENGINEER PRIOR TO THE START OF FIELD WORK. THE TRIAL MIX SHALL BE CARRIED OUT IN ACCORDANCE TO THE DESIGN MIX

15. CHIP OUT PORTIONS OF CONCRETED PILES AS REQUIRED TO ACCOMMODATE

- SUBMITTED TO THE ENGINEER. SECANT PILES CONCRETE STRENGTH TESTS SHALL BE CARRIED OUT IN ACCORDANCE WITH CAST IN PLACE CONCRETE SPECIFICATIONS. 17. PILES SHALL NOT BE BORED NEXT TO OTHER PILES WHICH HAVE RECENTLY
- BEEN CAST (LESS THAN 24 HOURS) OR CONTAIN UNSET CONCRETE, WHICHEVER IS LONGER TO AVOID DAMAGE TO ANY OF THESE PILES. 18. TEMPORARY CASINGS SHALL BE EXTRACTED WHILE THE CONCRETE REMAINS
- SUFFICIENTLY WORKABLE TO ENSURE THAT THE CONCRETE IS NOT LIFTED AND THAT THE RESULTANT PILE IS CONTINUOUS AND OF FULL SECTION. 19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY

CRACKS, JOINTS, OR OTHER DEFECTS OF PILES, AND REMEDIATE ANY

- WATER LEAKS UNTIL THE END OF CONSTRUCTION. 20. CONTRACTOR MUST MEET MINIMUM CLEARANCE DIMENSIONS PER THE ARCHITECTURAL DRAWINGS. CORRECTIVE ACTION TO PROVIDE MINIMUM CLEARANCE WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AT NO
- ADDITIONAL COST TO THE OWNER. 21. NO NEW CONCRETE WILL BE PLACED AGAINST EXISTING STRUCTURES.
- 22. DEWATERING TO CREATE A WORKING WATER CUTOFF (BATHTUB) CONDITION IS ANTICIPATED.

23. WATER RUN OFF WILL BE CONTROLLED WITH SUMP PUMPS.

24. GROUNDWATER SEEPAGE THROUGH SECANT PILES MAY RESULT FROM VOIDS OR INSUFFICIENT OVERLAP BETWEEN PILES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL GROUTING REQUIRED TO SEAL INTERFACES IN INSTANCES OF GROUNDWATER SEEPAGE.

SECANT INSTALLATION

- 1. INSTALL SECANT GUIDE WALL
- 2. SET UP DRILL EQUIPMENT ON PROPER LOCATION AND PLUMB THE MAST.
- 3. INSTALL FIRST PIECE OF TEMPORARY CASING WITH CARBIDE CUTTING TEETH.
- 4. DRILL CASING DOWN WITH WATER AND POLYMER DRILLING MUD. BENTONITE SLURRY OR LEAN CEMENT GROUT, MAINTAINING INTERNAL FLUSH AND POSITIVE FLUID HEAD AT ALL TIMES.
- 5. CONTINUE DRILLING DOWN TO ROCK AND SEAT CASING FIRMLY 12" MINIMUM INTO ROCK.
- INSTALL DOWN-THE-HOLE HAMMER
- 7. DRILL SOCKET AS SHOWN IN DETAILS.
- 8. REMOVE HAMMER AND INNER RODS, AND FLUSH HOLE CLEAN.
- 9. INSPECT CLEANED HOLE USING A DOWN-THE-HOLE CAMERA PROVIDED BY THE CONTRACTOR.
- 10. PUMP CONCRETE/GROUT THROUGH TREMIE PIPE UNTIL GOOD CONCRETE/GROUT FLOWS OUT OF THE TOP OF THE CAISSON.
- 11. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR USING MEANS AND METHODS TO INSTALL THE CAISSONS WITHOUT ADVERSELY AFFECTING THE ADJACENT AND SURROUNDING STRUCTURES, BUILDINGS, STREETS, AND UTILITIES.
- 12. MONITOR ADJACENT STRUCTURES DURING CONSTRUCTION. (SEE MONITORING

GROUTING NOTES

1. THE CONTRACTOR WILL GROUT ALL LOCATIONS ALONG THE SECANT WALL WITH VISIBLE SIGNS OF GROUNDWATER PENETRATION OBSERVED DURING EXCAVATION.

SHEETPILE NOTES

- 1. SHEETPILES SHALL BE HYDRAULICALLY PUSHED OR INSTALLED USING A VARIABLE MOMENT HAMMER.
- 2. STEEL SHEETPILES SHALL CONFORM TO ASTM A-572 GRADE 50. SHEETPILES SHALL BE AS INDICATED ON PLANS.
- 3. INSTALLATION PROCEDURE:
- A. SET PILE RIG AT DESIRED LOCATION AND PLUMB THE SHEETING PRIOR TO INSTALLATION. INSTALL THE SHEETPILE TO REQUIRED DEPTHS.
- THE TOP OF ALL SHEETPILES SHALL EXTEND A MINIMUM OF 6 INCHES ABOVE THE GROUND SURFACE. D. ALL SHEETS SHALL BE INTERLOCKED

CAISSON NOTES

GENERAL

- 1. ALL CAISSONS SHALL BE INSTALLED AT THE LOCATIONS SHOWN ON THE CONTRACT DRAWINGS.
- STEEL TEMPORARY CASING
- 1. ALL CASING SHALL BE ASTM A252 GRADE 3 STEEL (Fy,min=45 KSI) OR APPROVED EQUAL.
- REINFORCEMENT
- 1. ALL CAISSONS SHALL BE REINFORCED WITH STEEL MEMBERS AS SHOWN.
- 2. ALL REINFORCEMENT STEEL SHALL CONFORM TO ASTM A615 GRADE 75 (Fv.min=75 KSI) OR APPROVED EQUAL.
- 3. REFER TO STRUCTURAL DRAWINGS FOR CAISSON TO SLAB CONNECTION DETAILS. CONCRETE
- 1. CONCRETE SHALL BE PLACED UP TO THE CUT-OFF ELEVATION AS SHOWN IN PLANS SO THAT IT COMPLETELY FILLS THE SHELL, THE SOCKET, AND THE SPACE BETWEEN THE STEEL CORE AND SHELL, AND IN A MANNER THAT WILL PRECLUDE SEPARATION OF THE INGREDIENTS.
- 2. CONCRETE SHALL CONSIST OF PORTLAND CEMENT TYPE III. POTABLE WATER, AND SAND THAT WILL YIELD AT LEAST 10,000 PSI IN 28 DAYS.
- 3. CONCRETE SHALL BE TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 03 30 00 - CAST-IN-PLACE CONCRETE INSTALLATION
- SET UP DRILL EQUIPMENT ON PROPER LOCATION AND PLUMB THE MAST. 2. INSTALL FIRST PIECE OF CASING WITH CARBIDE CUTTING TEETH.
- 3. DRILL CASING DOWN WITH WATER AND POLYMER DRILLING MUD. BENTONITE SLURRY OR LEAN CEMENT GROUT, MAINTAINING INTERNAL FLUSH AND POSITIVE FLUID HEAD AT ALL TIMES.
- 4. CONTINUE DRILLING DOWN TO ROCK AND SEAT CASING FIRMLY 12" MINIMUM INTO ROCK.
- 5. INSTALL DOWN-THE-HOLE HAMMER.
- DRILL SOCKET AS SHOWN IN DETAILS
- 7. REMOVE HAMMER AND INNER RODS, AND FLUSH HOLE CLEAN.
- 8. INSPECT CLEANED HOLE USING A DOWN-THE-HOLE CAMERA PROVIDED BY THE CONTRACTOR.
- INSTALL CAISSON REINFORCEMENT.
- 10. PUMP CONCRETE/GROUT THROUGH TREMIE PIPE UNTIL GOOD CONCRETE/GROUT FLOWS OUT OF THE TOP OF THE CAISSON.
- 11. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR USING MEANS AND METHODS TO INSTALL THE CAISSONS WITHOUT ADVERSELY AFFECTING THE ADJACENT AND SURROUNDING STRUCTURES, BUILDINGS, STREETS, AND
- 12. MONITOR ADJACENT STRUCTURES DURING CONSTRUCTION.

- MONITORING NOTES
- 1. MONITORING SHALL CONFORM TO SECTION 31 09 01 OF THE PROJECT SPECIFICATIONS AND THE REQUIREMENTS PRESENTED HEREIN.
- 2. THE 25 BROAD STREET PROPERTY IS A DESIGNATED LANDMARK BUILDING WHICH IS WITHIN 90 FEET OF THE NORTHEAST CORNER OF THE SITE. MONITORING OF 25 BROAD STREET DURING CONSTRUCTION MUST BE DONE IN ACCORDANCE WITH THE TPPN 10/88 REQUIREMENTS.
- 3. THE STREET PLAN OF NEW AMSTERDAM AND COLONIAL NEW YORK, WHICH INCLUDES THE SECTION OF BROAD STREET DIRECTLY WEST OF THE SITE. IS A DESIGNATED LANDMARK. MONITORING OF BROAD STREET DURING CONSTRUCITON MUST BE DONE IN ACCORDANCE WITH THE TPPN 10/88 REQUIREMENTS.
- 4. THE NYCT JAND Z SUBWAY LINE BELOW BROAD STREET MUST BE MONITORED AS PER NYCT NOTES ON SOE-002.
- 5. SURVEY MONITORING POINTS SHALL BE INSTALLED AT LOCATIONS DETERMINED IN CONSULTATION WITH THE OWNER'S ENGINEER AND AGENCIES HAVING JURISDICTION.
- 6. ALL INSTRUMENTS SHALL BE INSTALLED AT LOCATIONS DETERMINED IN CONSULTATION WITH THE OWNER'S ENGINEER AND AGENCIES HAVING JURISDICTION.
- 7. AT A MINIMUM, SURVEY MONITORING POINTS SHALL BE INSTALLED AT THE TOP OF THE PROPOSED SECANT WALL AS SHOWN ON THE SOE DRAWINGS. INSTALL SURVEY MONITORING POINTS VERTICALLY IN 15 FEET MAXIMUM INTERVALS BEGINNING AT THE TOP OF WALL.
- 8. INSTALL SURVEY MONITORING POINTS ON EXISTING BUILDINGS AND SUBSURFACE STRUCTURES AT MAXIMUM HORIZONTAL INTERVALS OF 25 FEET, BUT NOT LESS THAN TWO POINTS PER WALL.
- 9. SURVEY MONITORING SHALL BE PERFORMED A MINIMUM OF 2 TIMES A WEEK DURING EXCAVATION. MONITORING INTERVALS SHALL BE INCREASED. TO DAILY WHERE MOVEMENTS ARE FOUND TO EXCEED THE PRESCRIBED ALERT LEVELS. SURVEY MONITORING OF NYCT SUBWAY STRUCTURES SHALL BE PERFORMED DAILY DURING EXCAVATION.
- 10. IN THE EVENT THAT MONITORING INDICATES LATERAL MOVEMENT EXCEEDS THE ACTION LEVELS DEFINED HEREIN, THE CONTRACTOR SHALL CEASE CONSTRUCTION ACTIVITIES. WHERE REQUIRED, THE CONTRACTOR SHALL PROVIDE STABILIZATION OF THE EXCAVATION SUPPORT SYSTEM VIA INSTALLATION OF TEMPORARY EARTHEN BERMS AND/OR ADDITIONAL BRACING. ADDITIONAL EXCAVATION ACTIVITIES SHALL NOT PROCEED WITHOUT THE AUTHORIZATION OF THE OWNER'S ENGINEER AND ANY AGENCIES HAVING JURISDICTION.
- 11. ALL SURVEY MONITORING POINTS SHALL BEAR A UNIQUE IDENTIFICATION. AS-BUILT PLANS SHALL BE PREPARED FOR ALL SURVEY MONITORING POINTS INSTALLED. PLANS SHALL BE AMENDED AS REQUIRED DURING CONSTRUCTION FOR THE ABANDONMENT, REPLACEMENT, OR ADDITION OF NEW SURVEY MONITORING LOCATIONS. ALL MONITORING RESULTS SHALL BE PROVIDED TO THE CONSTRUCTION MANAGER AND OWNER'S ENGINEER WITHIN 24 HOURS OF TAKING READINGS.
- 12. BASELINE REFERENCE POINTS SHALL BE INSTALLED PRIOR TO THE START OF SOE INSTALLATION, AND MONITORING SHALL CONTINUE DURING EXCAVATION. READINGS SHALL BE TAKEN TO THE NEAREST 0.005 FT. WRITTEN REPORTS WITH DATES, BASELINE ELEVATIONS, AND ACTUAL ELEVATIONS AT EACH REFERENCE POINT SHALL BE SUBMITTED IMMEDIATELY BY THE CONTRACTOR'S PROFESSIONAL ENGINEER FOR REVIEW BY THE OWNER'S STRUCTURAL AND GEOTECHNICAL ENGINEERS.
- 13. BASELINE GROUNDWATER LEVEL SHALL BE ESTABLISHED BY MONITORING GROUNDWATER OBSERVATION WELLS DAILY FOR AT LEAST 2 WEEKS PRIOR TO CONSTRUCTION. THE BASELINE GROUNDWATER LEVEL SHALL BE THE LOWEST GROUNDWATER OBSERVED DURING THESE 2 WEEKS. GROUNDWATER SHALL BE MONITORED CONTINUOUSLY DURING SITE DEWATERING.
- 14. ALERT LEVELS: SHOULD ANY OF THE FOLLOWING MAGNITUDES OF MOVEMENT BE DETECTED. THE CONTRACTOR SHALL IMMEDIATELY TAKE
- REMEDIAL ACTION AND ADVISE THE ENGINEER: A. MONITORING POINTS AND ADJACENT BUILDINGS: 0.250-INCHES, OR
- TWO CONSECUTIVE READINGS OF 0.125-INCHES. TOTAL LATERAL MOVEMENT AND VERTICAL MOVEMENT. VIBRATIONS: PEAK PARTICLE VELOCITIES EXCEEDING 1.0-INCHES PER SECOND AS MEASURED AT THE NEAREST OCCUPIED BUILDING WALL. THE ALERT LEVELS SHALL BE CALCULATED AS THE PEAK VECTOR SUM OF VELOCITY MEASUREMENTS TAKEN IN THREE ORTHOGONAL
- C. GROUNDWATER: OBSERVATION WELL READING GREATER THAN 2 FEET BELOW ESTABLISHED BASELINE GROUNDWATER. 15. ACTION LEVELS: SHOULD ANY OF THE FOLLOWING MAGNITUDES OF
- MOVEMENT BE DETECTED. THE CONTRACTOR SHALL IMMEDIATELY STOP HIS ACTIVITIES AND CONTACT THE ENGINEER. THE CONTRACTOR SHALL NOT CONTINUE ACTIVITIES UNTIL REMEDIAL ACTIONS ARE TAKEN: A. MONITORING POINTS AND ADJACENT BUILDINGS: 0.375-INCHES TOTAL

VIBRATIONS: PEAK PARTICLE VELOCITIES EXCEEDING 2.0-INCH PER

SECOND AS MEASURED AT THE NEAREST OCCUPIED BUILDING WALL.

THE MAXIMUM PERMISSIBLE [ACTION] LEVELS SHALL BE CALCULATED AS THE PEAK VECTOR SUM OF VELOCITY MEASUREMENTS TAKEN IN THREE ORTHOGONAL DIRECTIONS. C. GROUNDWATER: OBSERVATION WELL READING GREATER THAN 3 FEET

BELOW ESTABLISHED BASELINE GROUNDWATER. ROCK ANCHOR INSTALLATION AND TESTING NOTES

LATERAL MOVEMENT AND VERTICAL MOVEMENT.

- . ANCHOR TENDONS SHALL CONSIST OF DOUBLE-CORROSION PROTECTED STRAND TENDONS MANUFACTURED BY WILLIAM FORM ENGINEERING CORP. OR APPROVED EQUIVALENT. STRESSING LENGTH SHALL BE FULLY COATED WITH A CORROSION INHIBITING COMPOUND AND THEN ENCAPSULATED BY A GROUT FILLED SEAMLESS CORRUGATED SHEATING. BONDING LENGTH SHALL CONSIST OF A GROUT FILLED ENCAPSULATED CORRUGATED SHEATING. ANCHOR SHALL MEET ALL REQUIREMENTS FOR PTI CLASS I PROTECTION.
- 2. ALL ANCHOR TENDONS SHALL CONFORM TO ASTM A615 AND HAVE A MINIMUM YIELD STRENGTH OF 75 KSI AND AN ULTIMATE TENSILE STRENGTH
- OF 100 KSI. 3. PLATES AND OTHER MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36.

4. GROUT SHALL CONSIST OF A MIXTURE OF PORTLAND CEMENT (TYPE I, II,

- OR III) AND WATER. SUBMIT MIX DESIGN SUITABLE FOR ACHIEVING AN UNCONFINED COMPRESSIVE STRENGTH AT 28 DAYS (f'c) OF 5,000 PSI. 5. CENTRALIZERS, SPACERS, AND ANCHOR HEADS SHALL BE AS RECOMMENDED BY THE TIEDOWN/ANCHOR MANUFACTURER TO
- TIEDOWN/ANCHOR. 6. PROVIDE FREE STRESSING LENGTHS AS INDICATED HEREIN AND IN ACCORDANCE WITH PTI CLASS I PROTECTION STANDARDS.

ACCOMMODATE GROUTING OPERATIONS REQUIRED FOR EACH

- 7. THE TIEDOWN BOND ZONE SHALL HAVE A MINIMUM NOMINAL DIAMETER AS INDICATED HEREIN. 8. TIEBACKS SHALL BE INSTALLED USING TEMPORARY STEEL CASING EXTENDING TO BEDROCK.
- 9. CARE SHALL BE TAKEN NOT TO DAMAGE THE TIEDOWN/ANCHOR TENDONS. KEEP TIEDOWN/ANCHOR TENDONS FREE OF DIRT OR OTHER DELETERIOUS SUBSTANCES.
- 10. ANCHOR NUTS & COUPLER SHALL BE CAPABLE OF DEVELOPING 100% OF THE ULTIMATE STRENGTH OF STRESS STEEL. 11. WELDING SHALL NOT BE PERFORMED ON OR IN THE VICINITY OF ANCHOR
- TENDONS. ANCHOR TENDONS SHALL NOT BE USED AS A WELDING GROUND AND SHALL NOT BE EXCESSIVELY HEATED. CUTTING OF ANCHOR TENDONS SHALL BE PERFORMED WITH A METAL CUT-OFF SAW. TORCHES AND PLASMA CUTTERS SHALL NOT BE USED. 12. ALL TIEDOWNS/TIEBACKS SHALL BE PROOF OR PERFORMANCE TESTED IN
- ACCORDANCE WITH THE REQUIREMENTS OUTLINED IN THE POST-TENSIONING INSTITUTE (PTI) DOCUMENT "RECOMMENDATIONS FOR PRESTRESSED ROCK AND SOIL ANCHORS", PTI-DC35,1-04, AT LEAST 2 ANCHORS OR 2% OF ALL ANCHORS, WHICHEVER IS GREATER, SHALL UNDERGO PERFORMANCE TESTS, ALL REMAINING ANCHORS SHALL UNDERGO PROOF TESTS AS FOLLOWS.
- PROOF TEST: AL, 0.25P, 0.50P, 0.75P, 1.00P, 1.20P, 1.33P, HOLD 1.33P FOR CREEP TEST. (WHERE P = DESIGN LOAD) RECORD READINGS AT 0.1.2.3.4.5.6 AND 10 MINUTES. RELEASE TO TRANSFER LOAD AND LOCK OFF NUT.
- PERFORMANCE TEST AL, 0.25P AL, 0.25P, 0.50P
- AL, 0.25P, 0.50P, 0.75P AL, 0.25P, 0.50P, 0.75P, 1.00P AL, 0.25P, 0.50P, 0.75P, 1.00P, 1.20P
- AL, 0.25P, 0.50P, 0.75P, 1.00P, 1.20P, 1.33P HOLD 1.33P FOR CREEP TEST. RECORD READINGS AT 0,1,2,3,4,5,6 AND 10 MINUTES. RELEASE TO TRANSFER LOAD AND LOCK OFF NUT.
- 13. JACKING SHALL BE PERFORMED UTILIZING A CALIBRATED CENTER-HOLE

- 14. ANCHOR MOVEMENTS SHALL BE RECORDED WITH A DIAL INDICATOR
- 15. ANCHORS SHALL HAVE AN ALLOWABLE CAPACITY SUITABLE FOR ACHIEVING LOADS PRESCRIBED ON THE DRAWINGS, ANCHORS SHALL BE LOCKED OFF AT 60 PERCENT OF THE DESIGN VALUE UPON COMPLETION OF TESTING UNLESS OTHERWISE NOTED.
- 17. CONTRACTOR SHALL SUBMIT TIEDOWN/ANCHOR SHOP DRAWINGS FOR APPROVAL PRIOR TO COMMENCING TIEDOWN/ANCHOR INSTALLATION, SHOP DRAWINGS SHALL CONTAIN TIEDOWN/ANCHOR DETAILS, INSTALLATION AND TESTING PROCEDURES.

18. ANCHORS TO BE DETENSIONED ONLY AFTER REMOVAL OF RAKERS.

CAPABLE OF READING TO INCREMENTS OF 0,001-INCH

SOIL MIX INSTALLATION NOTES

STRENGTH SPECIFIED ABOVE.

COLUMNS.

- ALL SOIL-MIXING SHALL MEET THE MINIMUM STRENGTH AND PERMEABILITY REQUIREMENTS INDICATED HERE.
- SINGLE OR MULTI-SHAFT MIXING EXCAVATION-MIXING-REPLACEMENT METHODS USING A BACKHOE TO REACH THE DESIGNATED DEPTH SHALL MECHANICALLY MIX SOIL AND CEMENT SLURRY TO PROVIDE THE FULL DIMENSIONS OF THE SYSTEM AS INDICATED
- 3. THE MIXING SHALL HAVE MIXING EQUIPMENT CONFIGURED IN SUCH A MANNER THAT THEY ARE CAPABLE OF THOROUGHLY BLENDING THE INSITU SOIL AND CEMENT SLURRY INTO A HOMOGENEOUS SOIL-CEMENT MIXTURE.
- 4. MIXING EQUIPMENT SHALL HAVE SUITABLE EXTENSION OR TORQUE AND CROWD TO MAINTAIN THE REQUIRED TOOL (SHAFT) ROTATIONAL SPEED AND PENETRARTION/WITHDRAWAL RATES ACROSS THE HEIGHT OF SOIL-MIX
- 5. SOIL-MIX INSTALLATION SHALL BE SEQUENCED TO ENSURE THE FOLLOWING IN-SITU PROPERTIES:
- A. SOIL-MIX BULK SHALL ATTAIN A MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 200 PSI AT 28 DAYS, COMPRESSION TESTING SHALL BE IN ACCORDANCE WITH ASTM C39. B. MIXING VOLUME: A MINIMUM OF 50% OF SOIL VOLUME DESIGNATED

FOR SOIL-MIXING SHALL ACHIEVE THE MINIMUM COMPRESSIVE

- 6. TEST PROGRAM: FOUR COLUMNS SHALL BE CORED FULL DEPTH. LOCATIONS OF CORING SHALL BE DETERMINED BY THE CONTRACTOR IN CONSULTATION WITH THE OWNER'S ENGINEER. CORES SHALL HAVE A MINIMUM DIAMETER OF 3-INCHES AND SHALL BE PERFORMED IN ACCORDANCE WITH ASTM D2113. WHERE CORE RECOVERY DOES NOT EXCEED 85 PERCENT. ONE ADDITIONAL CORE SHALL BE ATTAINED FROM AN ALTERNATE LOCATION. CORE HOLES SHALL BE TREMIE GROUTED WITH NEAT CEMENT GROUT CORING SHALL NOT BE PERFORMED UNTIL THE COLUMNS HAVE SET FOR A MINIMUM OF 48 HOURS. FOUR REPRESENTATIVE SAMPLES SHALL BE COMPRESSION TESTED AT 3 DAYS AND 7 DAYS FOLLOWING INSTALLATION OF COLUMNS. ADDITIONAL COMPRESSION TESTING SHALL BE PERFORMED AT 14 AND 28 DAYS PER THE DIRECTION OF THE OWNER'S ENGINEER.
- 7. COMPRESSIVE STRENGTH: COLUMNS SHALL ATTAIN A MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 100 PSI AT 28 DAYS. COMPRESSION TESTING SHALL BE IN ACCORDANCE WITH ASTM C39.
- 8. THE CONTRACTOR SHALL SUBMIT A SOIL-MIX GROUT DESIGN FOR REVIEW BY THE OWNERS ENGINEER PRIOR TO INSTALLATION.
- 9. SOIL MIXING SHALL BE CONDUCTED SUCH THAT THERE IS NO HEAVE. SETTLEMENT OR LOSS OF SUPPORT TO ADJACENT STRUCTURES. 10. ADDITIONAL GROUTING SHALL BE PERFORMED AS REQUIRED TO SEAL
- INTERFACES IN INSTANCES OF GROUNDWATER SEEPAGE. 11. ALL COLUMNS SHALL BE INSTALLED IN THE LOCATIONS SHOWN ON THE CONTRACT DRAWINGS UNLESS OTHERWISE APPROVED BY THE OWNER'S ENGINEER, IF OBSTRUCTIONS ARE ENCOUNTERED WHILE DRILLING THE SOIL MIX COLUMNS, CONTRACTOR SHALL FOLLOW ALTERNATIVES PROPOSED IN DRAWING SOE-303, UNDER THE DIRECTION OF THE OWNER'S ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURATE LAYOUT INCLUDING ANY NECESSARY SURVEYING.
- 12. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR MATERIALS AND INSTALLATION PROCEDURES. ALTERNATES WHERE PROPOSED SHALL BE ACCOMPANIED BY ALL ATTENDANT SUPPORTING CALCULATIONS.

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A DRY EXCAVATION BY MEANS OF PUMPING OR DEWATERING AND LEGALLY

DISPOSING OF THE GROUNDWATER OFF THE PROJECT SITE.

DEWATERING NOTES

CITY BUILDING CODE.

WELDING

- NYCBUILDING DEPARTMENT NOTES 1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE
- REQUIREMENTS OUTLINED IN THE 2014 NEW YORK CITY BUILDING CODE. 2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF BUILDINGS AND ADJACENT PROPERTY OWNER'S 24-48 HOURS PRIOR TO COMMENCING EXCAVATION AS PER SECTION 3304.3.1 AND 3304.3.2 OF THE NEW YORK
- 3. ALL WORK CONTAINED HEREIN SHALL BE SUBJECT TO SPECIAL INSPECTION IN ACCORDANCE WITH CHAPTER 17 OF THE NEW YORK CITY BUILDING CODE. SPECIAL INSPECTORS SHALL MEET THE QUALIFICATIONS OUTLINED IN THE RULES OF THE CITY OF NEW YORK, SECTION 101-06, DATED
- 6-30-08. REQUIRED SPECIAL INSPECTIONS INCLUDE:
- A. SOILS AND ROCK AS PER SECTION 1704.7 i. FILL PLACEMENT
- ii. IN-PLACE SOIL DENSITY iii. SUBGRADE INSPECTION
- B. CONCRETE CONSTRUCTION AS PER SECTION 1704.4 CONCRETE MIX DESIGN CONCRETE CYLINDERS AND TESTING
- iii. CAST-IN-PLACE CONCRETE INCLUDING PLACEMENT OF FORM WORK AND REINFORCING STEEL C. EXCAVATION - SHEETING, SHORING AND BRACING AS PER 1704.20

4. IN CONFORMANCE WITH THE NEW YORK CITY BUILDING CODE, THE OWNER'S

5. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION ON

SCOPE AND DETAILED REQUIREMENTS FOR INSPECTIONS AND TESTING.

ENGINEER SHALL BE RETAINED TO CONDUCT THE REQUIRED SPECIAL

AND 3304.4.1 DEEP FOUNDATION ELEMENTS AS PER SECTION 1704.8 STEEL CONSTRUCTION AS PER SECTION 1704.3

数Churchvard ※ PROJECT LOCATION MAP

45 BROAD STREET (PROJECT SITE) BEAVER STREET

DRAWING LIST

SITE LOCATION MAP

SUPPORT OF EXCAVATION GENERAL NOTES SOE 001.00 SUPPORT OF EXCAVATION NYCT NOTES SOE 002.00 SOE 100.00 SITE INSTRUMENTATION PLAN SOE 101.00 SECANT AND CAISSON ID PLAN SOE 102.00 SUPPORT OF EXCAVATION PLAN - PHASE 1 SOE 201.00 SUPPORT OF EXCAVATION PHASE 1 SECTIONS SOE 202.00 SUPPORT OF EXCAVATION PHASE 1 SECTIONS SOE 103.00 SUPPORT OF EXCAVATION PLAN - PHASE 2 SOE 203.00 SUPPORT OF EXCAVATION PHASE 2 SECTIONS SOE 204.00 SUPPORT OF EXCAVATION PHASE 2 SECTIONS SOE 104.00 SUPPORT OF EXCAVATION PLAN - PHASE 3 SUPPORT OF EXCAVATION PHASE 3 SECTIONS SOE 205.00 SOE 301.00 SUPPORT OF EXCAVATION ELEVATIONS SOE 302.00 SUPPORT OF EXCAVATION ELEVATIONS 2 SUPPORT OF EXCAVATION DETAILS 1 SOE 401.00 SOE 402.00 SUPPORT OF EXCAVATION DETAILS 2 SOE 403.00 SUPPORT OF EXCAVATION DETAILS 3 SOE 404.00 SUPPORT OF EXCAVATION DETAILS 4



NEW YORK NY 10004 John A. Cetra Madison 45 Broad Development, LLC 105 Madison Avenue

BROAD

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2017.04.13 NYCT - 4th SUBMISSION 2017.03.21 60% CONSTRUCTION DOCUMENTS - UPDATED 2017.03.13 REVISED FOR FOUNDATION BID NYCT - 3rd SUBMISSION 2017.03.07 2017.03.01 60% CONSTRUCTION DOCUMENTS

2016.11.07 FOUNDATION AND EXCAVATION FOR BID

2016.04.22 ISSUED FOR DESIGN DEVELOPMENT

2016.12.30 NYCT - 2nd SUBMISSION

Damian Titus

Du To

APPROVED

Under Directive 2 of 1975

NYC Development Hub

Date: 06/15/2017:



SUPPORT OF EXCAVATION - GENERAL NOTES (SHEET 1 OF 1)

121190772 CETRARUDDY ARCHITECTURE DPC 564 BROADWAY NEW YORK NY 10012 T 212 941 9801 F 212 941 9440

TRANSIT AUTHORITY GENERAL NOTES

- 1. THE NYC TRANSIT (NYCT) RESERVES THE RIGHT TO PLACE INSPECTORS, FLAGMEN OR OTHER PERSONNEL IN THE SUBWAY STRUCTURES DURING CONSTRUCTION OF THE PROJECT LINKED BY A TELEPHONE SYSTEM, IF DEEMED NECESSARY, TO OBSERVE THE EFFECTS OF THE CONSTRUCTION ON THE TRANSIT FACILITIES. NYCT FURTHER RESERVES THE RIGHT TO PLACE SUCH PERSONNEL WHENEVER, IN ITS OPINION, THE PROJECT CONDITIONS WARRANT SUCH PLACEMENT, REGARDLESS OF DISTANCE. THE COST OF SUCH PERSONNEL, TELEPHONE INSTALLATION AND ANY RE-ROUTES, DIVERSIONS OF SERVICE, WORK TRAINS, ETC., MADE NECESSARY BY THE PROJECT, MUST BE BORNE BY THE PROJECT OR THE RESPONSIBLE NEW YORK CITY/STATE AGENCY.
- 2. ALL ROCK EXCAVATION ADJACENT TO THE TRANSIT STRUCTURE IS TO BE CHANNEL DRILLED TWO FEET BELOW SUBGRADE.
- 3. IF TOP OF ROCK IS FOUND BELOW SUBWAY STRUCTURE, THE SUBWAY STRUCTURE MUST BE UNDERPINNED IN ACCORDANCE WITH DRAWINGS TO BE SUBMITTED TO NYCT FOR APPROVAL.
- 4. IF ROCK IS SOFT OR SEAMY, LATERAL SUPPORTS MUST BE PROVIDED BELOW THE SUBWAY STRUCTURE IN ACCORDANCE WITH DRAWINGS TO BE SUBMITTED TO NYCT FOR APPROVAL.
- BLASTING WILL BE PERMITTED ONLY WITH LIGHT CHARGES SUBJECT TO THE APPROVAL OF NYCT'S ENGINEER AND IN ACCORDANCE WITH THE REGULATIONS OF THE FIRE DEPARTMENT. THE CONTRACTOR SHALL PROVIDE A DETAILED MONITORING PLAN, PROVIDING FOR MEASUREMENTS OF BOTH PARTICLE VELOCITY AND DISPLACEMENTS AT CRITICAL LOCATIONS OF THE NYCT STRUCTURE. THE MONITORING PLAN SHALL INCLUDE THRESHOLD AND UPSET LEVELS OF BOTH PARTICLE VELOCITY AND SETTLEMENT TOGETHER WITH AN ACTION PLAN FOR THEIR IMPLEMENTATION. THE CONTRACTOR SHALL SECURE AN APPROVED SEISMOLOGIST TO INSTALL AND OPERATE SUITABLE VELOCITY GAUGES TO CONTINUOUSLY MONITOR PARTICLE VELOCITY AND AN INDEPENDENT LICENSED SURVEYOR TO MONITOR DISPLACEMENTS. THE PRESENCE OF A QUALIFIED TECHNICIAN FROM MONITORING COMPANY IS NECESSARY TO PROVIDE THE VIBRATION READING UPON REQUEST OF NYCT ENGINEER. THE THRESHOLD MAXIMUM PARTICLE VELOCITY ABOVE AMBIENT CAUSED BY THE BLASTING WILL BE 0.5 INCH PER SECOND. VALUES EXCEEDING THIS LEVEL WILL BE REVIEWED AND EVALUATED BY NYCT'S ENGINEER. IN NO CASE WILL PARTICLE VELOCITIES EXCEED THE UPSET LEVEL OF 2.0 INCHES PER SECOND.
- 6. BEFORE PLACING CONCRETE, THE SUBGRADE OF THE FOUNDATIONS IN THE VICINITY OF THE SUBWAY STRUCTURE IS TO BE INSPECTED AND APPROVED BY NYCT'S ENGINEER.
- 7. IF ANY PORTION OF THE SUBWAY STRUCTURE OR FINISH IS DAMAGED, IT SHALL BE REPAIRED OR REPLACED WITH THE SAME MATERIALS IN PLACE, SUBJECT TO THE APPROVAL OF NYCT'S ENGINEER AND AT THE EXPENSE OF THE PROJECT.
- B. EXCAVATION EMBANKMENTS ARE TO BE SHORED AND BRACED. DRAWINGS INDICATING A SUGGESTED METHOD OF CONSTRUCTION ARE TO BE SUBMITTED TO NYCT FOR APPROVAL IN CONJUNCTION WITH THE PROJECT'S CONTRACT DRAWINGS. IN CASE OF EXCAVATION UNDERMINING THE SUBWAY STRUCTURE, UNDERPINNING MAY BE REQUIRED. DRAWINGS FOR UNDERPINNING ARE TO BE SUBMITTED TO NYCT FOR APPROVAL.
- 9. TEMPORARY SHORING MAY BE PLACED IN DIRECT CONTACT WITH NYCT STRUCTURES ONLY IF THE NYCT STRUCTURE IS SHOWN TO BE ABLE TO SUPPORT ALL ANTICIPATED LOADS THAT CAN BE TRANSFERRED THROUGH THE TEMPORARY STRUCTURES WITHOUT DAMAGING THE EXISTING STRUCTURE. AT THE COMPLETION OF THE PROJECT, THESE TEMPORARY SHORING AND BRACING SYSTEMS ARE TO BE REMOVED OR CUT-OFF AS APPROVED BY NYCT.
- O. WHEN PILES ARE TO BE DRIVEN OR DRILLED ADJACENT TO THE SUBWAY STRUCTURE, BORING DATA, PILE LAYOUTS, SPECIFICATIONS AND INSTALLATION PROCEDURES ARE TO BE SUBMITTED TO NYCT FOR APPROVAL. VELOCITY METERS ARE TO BE INSTALLED IN THE SUBWAY TUNNEL AT CRITICAL LOCATIONS TO MONITOR INDUCED VIBRATIONS. INDUCED DISPLACEMENTS ALONG THE TUNNEL STRUCTURE AND TRACK INVERT ARE TO BE MONITORED DURING DRIVING OR DRILLING. THE THRESHOLD MAXIMUM PARTICLE VELOCITY ABOVE AMBIENT CAUSED BY THE DRIVING OR DRILLING WILL BE 0.5 INCH PER SECOND. VALUES EXCEEDING THIS LEVEL WILL BE REVIEWED AND EVALUATED BY NYCT'S ENGINEER. IN NO CASE WILL PARTICLE VELOCITIES EXCEED THE UPSET LEVEL OF 2.0 INCHES PER SECOND.
- 11. NO PILES ARE PERMITTED TO BE INSTALLED BY ANY METHOD WITHIN THREE FEET OF SUBWAY STRUCTURE, MEASURED FROM THE EDGE OF THE PILE OR CASING TO THE WALL. CLOSED-END PILES WILL NOT BE PERMITTED TO BE DRIVEN WITHIN TEN FEET OF THE SUBWAY STRUCTURE.
- 12. ALL PILES ARE TO BE PLACED WITHIN A PREAUGERED CASED HOLE TO THE INFLUENCE LINE. THE CASING SHALL BE CLEANED WITHOUT DISTURBING THE SOIL OUTSIDE THE CASING AND THE PILE TO BE PLACED WITHIN THE CASING FOR INSTALLATION. THE PILES MAY THEN BE DRIVEN BEYOND THE INFLUENCE LINE WITHIN THE CASING.
- 13. THE INFLUENCE LINE SHALL START AT THE BOTTOM OF THE SUBWAY STRUCTURE AND EXTEND FROM 1H:1V TO 2H:1V SLOPE DEPENDING ON THE SOIL PROPERTIES AND GROUND WATER TABLE. FOR PILES INSTALLED WITHIN TEN FEET OF THE SUBWAY STRUCTURE, THE CASING SHALL BE EXTENDED UP TO THE BOTTOM OF THE SUBWAY STRUCTURE.
- 14. ALL PILES ARE TO BE DRIVEN OR DRILLED A MINIMUM OF TEN FEET BELOW THE INTERSECTION OF THE PILE CENTERLINE AND THE INFLUENCE LINE OF THE SUBWAY STRUCTURE.
- 15. THE USE OF "DOWN-THE-HOLE -HAMMERS" FOR INSTALLATION OF PILES THROUGH OVERBURDEN AND FILL WILL BE PERMITTED ONLY TO REMOVE BOULDERS. IT WILL NOT BE PERMITTED AS A MATTER OF COURSE TO ADVANCE THE HOLE. THEIR USE TO CONSTRUCT ROCK SOCKETS WILL NOT BE ALLOWED WITHIN 5 FEET OF THE NYCT STRUCTURE. THE USE OF MACHINE UTILIZING AIR FOR SOIL REMOVAL WILL NOT BE ALLOWED.
- 16. VIBRATORY HAMMERS WILL NOT BE PERMITTED WITHIN 75 FEET OF SUBWAY STRUCTURES. HOERAMS WILL NOT BE PERMITTED WITHIN 25 FEET OF SUBWAY STRUCTURES.
- 17. DYNAMIC COMPACTION METHODS USING DROPPED HEAVY WEIGHTS CANNOT BE CONDUCTED WITHIN 1000 FEET OF ANY NYCT STRUCTURE UNLESS IT IS SHOWN THAT INDUCED SETTLEMENTS AND VIBRATIONS WILL NOT DAMAGE THESE STRUCTURES. A SUITABLE MONITORING PLAN INCLUDING SETTLEMENT AND VIBRATION MEASUREMENTS MUST BE APPROVED BY NYCT'S ENGINEER FOR ALL SUCH OPERATIONS WITHIN THESE DISTANCES.
- 18. THERE SHALL BE NO MACHINE EXCAVATION WITHIN 3 FEET OF NYCT STRUCTURES, POWER DUCT LINES, OR ANY OTHER FACILITIES UNTIL THEY HAVE BEEN CAREFULLY EXPOSED BY HAND EXCAVATION.
- 19. ALL DEWATERING OPERATIONS CONDUCTED WITHIN 500 FEET OF THE NYCT STRUCTURE MUST BE PERFORMED IN ACCORDANCE WITH DRAWINGS AND PROCEDURES SUBMITTED TO NYCT FOR APPROVAL. THE DISTANCE FROM THE STRUCTURE TO THE DEWATERING OPERATION CAN BE REDUCED PROVIDED THAT SOIL CONDITIONS AT THE SITE INDICATE THAT THE RADIUS OF INFLUENCE OF THE DEWATERING IS LESS THAN 500 FEET. FOR DEWATERING WITHIN THE RADIUS OF INFLUENCE, THE DEWATERING PROGRAM MUST BE SHOWN TO HAVE NEGLIGIBLE INFLUENCE ON SETTLEMENTS OF THE NYCT STRUCTURE.
- 20. SUBWAY ENTRANCES (VENTILATORS, ETC.) ARE TO BE UNDERPINNED OR SHORED AND BRACED IF DIRECTED BY NYCT'S ENGINEER.
- 21. NYCT, AT ITS DISCRETION, RESERVES THE RIGHT TO REQUIRE THE PROJECT TO CLOSE OR MAINTAIN AND PROTECT EXISTING SUBWAY ENTRANCES, VENTILATORS, ETC. ADJACENT TO THE PROJECT DURING CONSTRUCTION. SUCH CONSTRUCTION MAY INCLUDE UNDERPINNING, SHORING, BRACING AND ERECTION OF SUITABLE BARRICADES AND/OR CANOPIES AND SHIELDS. SUCH PROTECTION SHALL BE IN ACCORDANCE WITH DRAWINGS SUBMITTED TO NYCT FOR APPROVAL.
- 22. IF SHIELDS ARE TO BE INSTALLED TO PROTECT NYCT FACILITIES AND/OR THE PUBLIC, PLANS SHOWING THE LOCATION, TYPE AND METHOD OF ATTACHMENT TO THE TRANSIT STRUCTURE MUST BE SUBMITTED TO NYCT FOR APPROVAL.
- 23. ALL LUMBER AND PLYWOOD USED FOR PROTECTION OF SUBWAY FACILITIES MUST BE FIRE RETARDANT.
- 24. SUBWAY EMERGENCY EXITS MUST BE KEPT CLEAR AT ALL TIMES.
- 25. IN EXCAVATING OVER OR NEAR THE SUBWAY ROOF, SPECIAL CARE SHALL BE EXERCISED SO THAT THE THIN CONCRETE PROTECTION OF THE SUBWAY WATERPROOFING IS NOT DAMAGED.
- 26. BURNING OF, WELDING TO OR DRILLING THROUGH EXISTING STEEL STRUCTURES WILL NOT BE PERMITTED EXCEPT AS SHOWN ON DRAWINGS APPROVED BY NYCT.
- 27. HORIZONTAL AND VERTICAL CONTROL SURVEY DATA OF THE EXISTING NYCT STRUCTURE IS TO BE TAKEN BY A LICENSED LAND SURVEYOR TO MONITOR ANY MOVEMENTS THAT OCCUR DURING CONSTRUCTION AND TO SHOW THAT THE INDUCED MOVEMENTS ARE WITHIN ALLOWABLES NOTED BELOW. IF ANY MOVEMENTS EXCEED ALLOWABLES, REMEDIATION AS APPROVED BY NYCT SHALL BE PERFORMED.

STRUCTURE	UCTURE NOTIFY NYCT ENGINEER		
ELEVATED	1/8 INCH	1/4 INCH	
SUBWAY	1/4 INCH	1/2 INCH	

28. BUS ROUTES AFFECTED BY THE PROJECT WILL OR MAY REQUIRE BUS DIVERSIONS. THESE ARRANGEMENTS SHALL BE MADE THROUGH:

MS. SARAH WYSS ACTING DIRECTOR, OPERATIONS PLANNING

NEW YORK CITY TRANSIT
2 BROADWAY, ROOM A17.82
NEW YORK, NEW YORK 10004

WHEN IMPACTING ANY BUS STOP, SPECIAL OPERATIONS MUST BE NOTIFIED TWO WEEKS IN ADVANCE.

TELEPHONE NUMBER 646/252-5517

29. DUCT LINES MUST BE MAINTAINED AND PROTECTED DURING CONSTRUCTION. ANY INTERFERENCE WITH DUCT LINES SHOULD BE REPORTED TO NYCT INSPECTOR. WHEN A DUCT LINE CONTAINING CABLES IS TO BE REMOVED, OR WHEN MASONRY ADJACENT THERETO IS TO BE REMOVED, PENETRATED, OR DRILLED, THE WORK SHALL BE DONE WITH HAND LABOR ENTIRELY, USING HAMMER AND CHISEL. JACKHAMMERS, BULL POINTS OR OTHER POWER EQUIPMENT SHALL NOT BE USED.

30. WHERE MANHOLES ARE ENCOUNTERED:

a) THEY SHALL BE PROTECTED AND RAISED OR LOWERED AS REQUIRED, TO MATCH THE NEW STREET GRADE.

- b) IF MANHOLE COVERS ARE RAISED OR LOWERED, PROTECT CABLES IN MANHOLE BY WOOD SHEETING OF 2" NOMINAL THICKNESS.
- c) PRIOR TO THE START OF CONSTRUCTION OPERATIONS AFFECTING MANHOLES AND DUCT LINES, SEVEN DAYS NOTICE MUST BE GIVEN TO MR. JOHN MALVASIO, P.E., ASSISTANT CHIEF ENGINEERING OFFICER, MAINTENANCE OF WAY, AT 718/694-1358.
- 31. CONSTRUCTION WORK DONE NEAR VENT GRATINGS AND HATCHES SHALL BE AS FOLLOWS:
- a) UNLESS APPROVED BY THE NYCT'S ENGINEER, ALL VENT GRATINGS AND HATCHES SHOULD REMAIN OUTSIDE THE CONSTRUCTION SITE, SEPARATED BY A CONSTRUCTION FENCE. PROTECTIVE SHIELDS MUST BE PROVIDED OVER VENT GRATINGS AS REQUIRED BY NYCT'S ENGINEER.
- b) NO BUILDING MATERIAL, VEHICLES OR CONSTRUCTION EQUIPMENT IS TO BE STORED OR RUN OVER VENT, GRATINGS, HATCHES OR EMERGENCY
- c) DETAILS OF SIDEWALK RECONSTRUCTION AROUND VENT GRATINGS, HATCHES AND EMERGENCY EXITS ARE TO BE SUBMITTED TO NYCT FOR APPROVAL.
- 32. TRACTORS, CRANES, EXCAVATORS, ETC. USED IN THE VICINITY OF THE ELEVATED STRUCTURES SHALL BE ISOLATED FROM THE GROUND. SINCE THE ELEVATED STRUCTURE IS USED AS A NEGATIVE RETURN PATH, WITH A CONSEQUENT POTENTIAL BETWEEN IT AND THE GROUND, ANY CONTACT BETWEEN THE STRUCTURE AND GROUNDED EQUIPMENT COULD RESULT IN BURNING OF THE STEEL.
- 33. TEMPORARY CONSTRUCTION SHEDS, BARRICADES OR PLYWOOD PARTITIONS MUST BE A MINIMUM OF 5'-0" FROM EDGE OF FINISHED PLATFORM.
- 34. STATION AREAS OR STAIRWAY/CLOSINGS: THE GENERAL REQUIREMENTS FOR STATION AREAS OR STAIRWAY/CLOSINGS ARE AS FOLLOWS:
- a) ONLY ONE STAIRWAY AT EACH STATION WILL BE PERMITTED TO BE CLOSED AT THE SAME TIME. APPROVALS FOR CLOSING ANY STAIRWAY MUST BE OBTAINED FROM THE DIVISION OF STATION OPERATIONS AT LEAST THREE WEEKS IN ADVANCE.
- b) MR. ASHOK PATEL, DIRECTOR, OFFICE OF STATION PROGRAMS; TELEPHONE 718/694-1695 OF THE DIVISION OF STATIONS MUST BE NOTIFIED ONE WEEK PRIOR TO THE ACTUAL CLOSING AND REOPENING OF THE ENTRANCE.
- c) SIGNAGE MUST BE SUPPLIED AND POSTED AT LEAST ONE WEEK IN ADVANCE, ADVISING THE PUBLIC OF THE PROPOSED SUBWAY STAIR CLOSING. HOWEVER, IF IT IS AN ENTIRE ENTRANCE CLOSING, SIGNAGE MUST BE POSTED TWO WEEKS IN ADVANCE.
- d) THE STREET ENTRANCE STAIRWAY SHOULD NOT BE CLOSED UNLESS MANPOWER AND MATERIALS ARE AVAILABLE TO COMMENCE WORK ON DATES PERMITTED.
- e) ONCE THE CLOSING IS EFFECTED, CONSTRUCTION SIGNS MUST BE PLACED AT APPROPRIATE LOCATIONS ON THE BARRICADES AT THE STREET AND MEZZANINE LEVELS, STATING THE CONTRACTOR'S NAME, 24 HOUR EMERGENCY TELEPHONE NUMBER, CONTRACT NUMBER, THE DURATION OF THE CLOSING, DIRECTION TO AN ALTERNATE ENTRANCE/EXIT, AND AN APOLOGY FOR THE INCONVENIENCE TO OUR CUSTOMERS.
- f)EXISTING STATION SIGNAGE MUST BE ADJUSTED TO REFLECT ANY CHANGES IN ACCESS/EGRESS.
- g) BARRICADES ARE TO BE PAINTED AND KEPT GRAFFITI FREE AT ALL TIMES. THE CONTRACTOR MUST MAINTAIN THE BARRICADED AREA CLEAN OF ALL DEBRIS.
- h) ALL MATERIALS ARE TO BE PROPERLY STORED AND SECURED AWAY FROM PASSENGER TRAFFIC.
- i) THE CONTRACTOR MUST REMOVE ALL WASTE MATERIAL AND BARRICADES FROM ALL STATION AREAS WHEN CONSTRUCTION IS COMPLETED.
- j)INSPECTION OF THE AREA UNDER CONSTRUCTION BY AUTHORIZED STATION DEPARTMENT EMPLOYEES SHALL NOT BE INHIBITED.

k) IF STREETLIGHTS ON THE SIDEWALKS ARE AFFECTED, TEMPORARY LIGHTS

- SHALL BE PROVIDED.

 35. IF NEW CONCRETE CONSTRUCTION IS JOINED TO EXISTING CONCRETE, DOWELS AND KEYWAYS ARE TO BE USED IN ACCORDANCE WITH NYCT
- STANDARDS.

 36. IF THE PROJECT INVOLVES CONSTRUCTION OR ALTERATION OF A SUBWAY FACILITY ON PRIVATE PROPERTY, THE PROPERTY OWNERS WILL BE REQUIRED TO ENTER INTO AN AGREEMENT WITH NYCT PERTAINING TO ALL WORK AFFECTING THE TRANSIT FACILITIES AND CLEARLY DEFINING LIMITS

AND RESPONSIBILITY FOR MAINTENANCE AND LIABILITY.

VENT GRATINGS, HATCHES AND EMERGENCY EXITS.

- 37. WHEREVER A NEW SIDEWALK IS BEING PLACED ADJACENT TO NYCT STRUCTURES THE FOLLOWING WILL BE REQUIRED:

 a) THE TOP OF THE NEW SIDEWALK SHALL BE FLUSH WITH THE SUBWAY
- b) THE SLOPE OF THE NEW SIDEWALK SHALL BE SUCH THAT THE DRAINAGE BE AWAY FROM THESE STRUCTURES.
- c) A 1/2" PREMOLDED FILLER SHALL BE INSTALLED BETWEEN THE NEW SIDEWALK AND NYCT STRUCTURE.

d) WHERE SIDEWALK ELEVATIONS ARE BEING CHANGED DETAILS OF

PERSONNEL SHALL HAVE ATTENDED NYCT TRACK SAFETY TRAINING AND

EXPECT TO FOLLOW NYCT RULES AND REGULATIONS AS PER TRAINING AND

- PROPOSED WORK AROUND NYCT STRUCTURES ARE TO BE SUBMITTED FOR APPROVAL.

 38. BEFORE ENTERING NYCT PROPERTY, CONTRACTOR OR SUBCONTRACTOR'S
- ENGINEER INSTRUCTIONS

 39. BEFORE THE START OF ANY WORK, THE CONTRACTOR SHALL MAKE AN EXAMINATION, IN THE PRESENCE OF NYCT'S ENGINEER, OF THE INTERIOR AND EXTERIOR OF NYCT SUBWAY OR OTHER STRUCTURE ADJACENT TO THE PROPOSED WORK. THE PERSON OR PERSONS AUTHORIZED BY THE CONTRACTOR TO MAKE THESE EXAMINATIONS SHALL BE APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL TAKE ALL PHOTOGRAPHS AS MAY BE NECESSARY OR ORDERED TO INDICATE THE EXISTING CONDITION OF NYCT STRUCTURE. ONE COPY OF EACH PHOTOGRAPH, EIGHT INCHES BY TEN INCHES IN SIZE, AND THE NEGATIVE IS TO BE SUBMITTED TO MR. JOHN MALVASIO, P.E., ASSISTANT CHIEF ENGINEERING OFFICER, MAINTENANCE—OF—WAY, 130 LIVINGSTON STREET, ROOM 8044D, BROOKLYN,
- 40. ALL ARCHITECTURAL DETAILS (TOKEN BOOTHS, RAILINGS, DOORS, ETC.)
 ARE TO CONFORM TO THE LATEST NYCT STANDARDS. THESE STANDARDS
 ARE AVAILABLE AT NYCT.

NEW YORK 11201, TELEPHONE 718/694-1358 BEFORE THE START OF

41. STANDARD NYCT INSURANCE CLAUSES ARE TO BE MADE PART OF THE PROJECT'S CONTRACT DRAWINGS. PROOF THAT THE NECESSARY INSURANCE IS IN EFFECT WILL BE REQUIRED BEFORE WORK CAN COMMENCE.

CONSTRUCTION.

42. AT THE CLOSE OF ANY PROJECT INVOLVING CONSTRUCTION OR ALTERATIONS TO TRANSIT FACILITIES, ONE SET OF VELLUMS OR MYLARS, FIVE SETS OF 35MM MICROFILM, AND ELECTRONIC COPIES COMPLYING TO MICROSTATION.DGN FORMAT OF "APPROVED AS—BUILTS" MUST BE PROVIDED TO NYCT FOR ITS RECORDS. FOR DETAILS OF SPECIFIC REQUIREMENTS CONTACT NYCT OUTSIDE PROJECTS.

43. AT LEAST SEVEN WORKING DAYS PRIOR TO THE START OF CONSTRUCTION OPERATIONS, NOTIFICATION MUST BE GIVEN TO MR. JOHN MALVASIO, P.E., ASSISTANT CHIEF ENGINEERING OFFICER, MAINTENANCE-OF-WAY, AT 718/694-1358. THE CONTRACTOR TO PROVIDE TEMPORARY QUARTERS NEAR THE JOB SITE FOR NYCT INSPECTORS CONTAINING A DESK AND TELEPHONE.

NYCT "NOT FOR BENEFIT" INSURANCE REQUIREMENTS

SECTION A: INSURANCE REQUIREMENTS

PRODUCTS—COMPLETED OPERATIONS;

REMOVED, WHERE NECESSARY;

THE PERMITTEE AT ITS SOLE COST AND EXPENSE SHALL CARRY AND MAINTAIN POLICIES OF INSURANCE AT ALL TIMES DURING THE PERIOD OF PERFORMANCE UNDER THIS AGREEMENT AS HEREIN SET FORTH BELOW:

- WORKERS' COMPENSATION: INCLUDING EMPLOYER'S LIABILITY INSURANCE WITH LIMITS OF LIABILITY NOT LESS THAN \$2,000,000 WHICH MAY BE MET BY A COMBINATION OF PRIMARY AND EXCESS INSURANCE MEETING THE STATUTORY LIMITS OF NEW YORK STATE.
- 2. COMMERCIAL GENERAL LIABILITY: (ISO 2001 FORM OR EQUIVALENT) APPROVED BY PERMITTOR IN THE PERMITTEE'S NAME WITH LIMITS OF LIABILITY IN THE AMOUNT OF NOT LESS THAN \$3,000,000 FOR EACH OCCURRENCE ON A COMBINED SINGLE LIMIT BASIS FOR INJURIES TO PERSONS (INCLUDING DEATH) AND DAMAGE TO PROPERTY, \$3,000,000 GENERAL AGGREGATE AND \$3,000,000 IN THE AGGREGATE WITH RESPECT TO PRODUCTS/COMPLETED OPERATIONS. THE LIMITS MAY BE PROVIDED IN THE FORM OF A PRIMARY POLICY OR COMBINATION OF PRIMARY AND UMBRELLA/EXCESS POLICY. WHEN THE MINIMUM CONTRACT AMOUNTS CAN ONLY BE MET WHEN APPLYING THE UMBRELLA/EXCESS POLICY, THE UMBRELLA/EXCESS POLICY MUST FOLLOW FORM OF THE UNDERLYING POLICY AND BE EXTENDED TO "DROP DOWN" TO BECOME PRIMARY IN THE EVENT PRIMARY LIMITS ARE REDUCED OR AGGREGATE LIMITS ARE EXHAUSTED. SUCH INSURANCE SHALL BE PRIMARY AND NON—CONTRIBUTORY TO ANY OTHER VALID AND COLLECTIBLE INSURANCE AND MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE.
- SUCH POLICY SHOULD BE WRITTEN ON AN OCCURRENCE FORM, AND SHALL INCLUDE THE FOLLOWING COVERAGES:
- ADDITIONAL INSURED ENDORSEMENT (I.S.O. FORM CG 20 26 07/04) VERSION OR EQUIVALENT APPROVED BY THE PERMITTOR, SHALL NAME THE INDEMNITEES AS REFERENCED UNDER SECTION B OF THIS AGREEMENT AS ADDITIONAL INSUREDS.
 CONTRACTUAL LIABILITY ASSUMED BY THE PERMITTEE UNDER THIS AGREEMENT;
 PERSONAL AND ADVERTISING INJURY;
- INDEPENDENT CONTRACTORS;
 "XCU" (EXPLOSION, COLLAPSE, AND UNDERGROUND HAZARDS) WHERE NECESSARY;
 CONTRACTUAL LIABILITY EXCLUSION, APPLICABLE TO CONSTRUCTION OR DEMOLITION OPERATIONS TO BE PERFORMED WITHIN 50 FEET OF RAILROAD TRACKS, MUST BE
- 3. BUSINESS AUTOMOBILE LIABILITY: (ISO FORM CA 00 01 10 01 OR EQUIVALENT) APPROVED BY THE PERMITTOR IS REQUIRED IF PERMITTEE'S VEHICLE ENTERS PERMITTOR'S PROPERTY. THE INSURANCE MUST BE IN THE NAME OF THE PERMITTEE OR ITS CONTRACTOR ENTERING THE PERMITTOR PROPERTY WITH LIMITS OF LIABILITY IN THE AMOUNT OF NOT LESS THAN \$2,000,000 EACH ACCIDENT FOR CLAIMS FOR BODILY INJURIES (INCLUDING DEATH) TO PERSONS AND FOR DAMAGE TO PROPERTY ARISING OUT OF THE OWNERSHIP, MAINTENANCE OR USE OF ANY OWNED, HIRED OR NON-OWNED MOTOR VEHICLE.
- 4. RAILROAD PROTECTIVE LIABILITY: (ISO-RIMA OR EQUIVALENT FORM) APPROVED BY PERMITTOR COVERING THE WORK TO BE PERFORMED AT THE DESIGNATED JOB SITE AND AFFORDING PROTECTION FOR DAMAGES ARISING OUT OF BODILY INJURY OR DEATH, PHYSICAL DAMAGE TO OR DESTRUCTION OF PROPERTY, INCLUDING DAMAGE TO THE INSURED'S OWN PROPERTY AND CONFORMING TO THE FOLLOWING:
- THE POLICY SHALL BE ISSUED TO THE "NAMED INSUREDS" LISTED UNDER SECTION B.
 THE LIMIT OF LIABILITY SHALL BE NOT LESS THAN \$2,000,000 PER OCCURRENCE, SUBJECT TO A \$6,000,000 ANNUAL AGGREGATE;
 POLICY MUST BE ENDORSED TO PROVIDE COVERAGE FOR CLAIMS ARISING FROM INJURY TO EMPLOYEES COVERED BY FEDERAL EMPLOYER'S LIABILITY ACT (FELA).
 INDICATE THE NAME AND ADDRESS OF THE DESIGNATED CONTRACTOR, PROJECT
- LOCATION AND DESCRIPTION OF WORK, AND PERMIT NUMBER IF APPLICABLE.

 EVIDENCE OF RAILROAD PROTECTIVE LIABILITY INSURANCE, MUST BE PROVIDED IN THE FORM OF A POLICY. A DETAILED INSURANCE BINDER (ACORD OR MANUSCRIPT FORM) WILL BE ACCEPTED PENDING ISSUANCE OF THE POLICY, WHICH MUST BE PROVIDED WITHIN 30 DAYS FROM THE EFFECTIVE DATE.
- 5. ENVIRONMENTAL INSURANCE: IN THE EVENT ENVIRONMENTAL OR POLLUTION EXPOSURES EXIST, THE PERMITTEE SHALL REQUIRE THE ENVIRONMENTAL CONTRACTOR OR SUB-CONTRACTOR TO PROVIDE THE APPLICABLE INSURANCE COVERING SUCH EXPOSURE. THE LIMITS AND TYPES OF INSURANCE PROVIDED MUST BE SATISFACTORY TO THE PERMITTOR AND APPROVED PRIOR TO THE START OF THE WORK.

SECTION B: INDEMNITEES (ADDITIONAL INSUREDS / NAMED INSUREDS)

NEW YORK CITY TRANSIT AUTHORITY ("NYCT"), THE MANHATTAN AND BRONX SURFACE TRANSIT OPERATING AUTHORITY ("MABSTOA"), THE STATEN ISLAND RAPID TRANSIT OPERATING AUTHORITY ("SIRTOA"), THE METROPOLITAN TRANSPORTATION AUTHORITY ("MTA") INCLUDING ITS SUBSIDIARIES AND AFFILIATES, MTA CAPITAL CONSTRUCTION ("MTACC"), MTA BUS COMPANY ("MTA BUS"), AND THE CITY OF NEW YORK ("CITY" AS OWNER) AND THE RESPECTIVE AFFILIATES AND SUBSIDIARIES EXISTING CURRENTLY OR IN THE FUTURE OF AND SUCCESSORS TO EACH INDEMNIFIED PARTIES LISTED HEREIN.

SECTION C: GENERAL INSURANCE REQUIREMENTS

- INSURANCE COMPANIES: ALL OF THE INSURANCE REQUIRED BY THIS ARTICLE SHALL BE WITH COMPANIES LICENSED OR AUTHORIZED TO DO BUSINESS IN THE STATE OF NEW YORK WITH AN A.M. BEST COMPANY RATING OF NOT LESS THAN A-/VII OR BETTER AND REASONABLY APPROVED BY THE PERMITTOR/MTA.
- FORMS: ALL FORMS SHALL COMPLY WITH THE INSURANCE SERVICES OFFICE, INC. ("ISO") OR ITS EQUIVALENT APPROVED BY THE INSURANCE DEPARTMENT OF THE STATE OF NEW YORK
- 3. POLICY DEDUCTIBLE / SELF INSURED RETENTION: INSURANCE MAY CONTAIN A DEDUCTIBLE AND OR SELF-INSURED RETENTION AND SHALL NOT EXCEED \$100,000. THE PERMITTEE SHALL BE RESPONSIBLE FOR ALL CLAIM EXPENSES AND LOSS PAYMENTS WITHIN THE DEDUCTIBLE OR SELF-INSURED RETENTION.
- 4. POLICY TERMS: THESE POLICIES MUST: (I) BE WRITTEN IN ACCORDANCE WITH THE REQUIREMENTS OF THE PARAGRAPHS ABOVE, AS APPLICABLE; (II) BE ENDORSED IN FORM ACCEPTABLE TO INCLUDE A PROVISION THAT SHOULD THE POLICY BE CANCELED, MATERIALLY CHANGED, OR NOT RENEWED, NOTICE SHALL BE DELIVERED IN ACCORDANCE WITH THE INSURANCE POLICY PROVISIONS TO THE PERMITTOR, AND (III) STATE OR BE ENDORSED TO PROVIDE THAT THE COVERAGE AFFORDED UNDER THE PERMITTEE'S POLICIES SHALL APPLY ON A PRIMARY AND NOT ON AN EXCESS OR CONTRIBUTING BASIS WITH ANY POLICIES WHICH MAY BE AVAILABLE TO THE PERMITTOR/MTA, AND ALSO THAT THE PERMITTEE'S POLICIES, PRIMARY AND EXCESS, MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE. (IV) IN ADDITION, PERMITTEE'S POLICIES SHALL STATE OR BE ENDORSED TO PROVIDE THAT, IF A SUBCONTRACTOR'S POLICY CONTAINS ANY PROVISION THAT MAY ADVERSELY AFFECT WHETHER PERMITTEE'S POLICIES ARE PRIMARY AND MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE, PERMITTEE'S AND SUBCONTRACTOR'S POLICIES SHALL NEVERTHELESS BE PRIMARY AND MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE. AT LEAST TWO (2) WEEKS PRIOR TO THE EXPIRATION OF THE POLICIES. THE PERMITTEE SHALL ENDEAVOR TO PROVIDE EVIDENCE OF RENEWAL OR REPLACEMENT POLICIES OF INSURANCE, WITH TERMS AND LIMITS NO LESS FAVORABLE THAN THE EXPIRING POLICIES.

SECTION D: SUBMISSION OF INSURANCE

INCLUSION OF ALL REQUIRED ENDORSEMENTS.

CERTIFICATES OF INSURANCE MAY BE SUPPLIED AS EVIDENCE OF POLICIES EXCEPT FOR RAILROAD PROTECTIVE LIABILITY. HOWEVER, IF REQUESTED BY THE PERMITTOR, THE PERMITTEE SHALL DELIVER TO THE PERMITTOR WITHIN FORTY-FIVE (45) DAYS A COPY OF SUCH POLICIES, CERTIFIED BY THE INSURANCE CARRIER AS BEING TRUE AND COMPLETE. IF A CERTIFICATE OF INSURANCE IS SUBMITTED, IT MUST: (1) BE PROVIDED ON THE PERMITTOR CERTIFICATE OF INSURANCE; (2) BE SIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE INSURANCE CARRIER OR PRODUCER AND NOTARIZED; (3) DISCLOSE ANY DEDUCTIBLE, SELF-INSURED RETENTION, SUB-LIMIT, AGGREGATE LIMIT OR ANY EXCLUSIONS TO THE POLICY THAT MATERIALLY CHANGE THE COVERAGE; (4) INDICATE THE ADDITIONAL INSUREDS AS REQUIRED HEREIN UNDER SECTION B; THE PERMITTEE MUST PROVIDE A COPY OF THE ADDITIONAL INSURED ENDORSEMENT (ISO) FORM CG 20 26 07/04 OR ITS EQUIVALENT AND MUST REFERENCE THE POLICY INFORMATION; (5) INDICATE PROJECT NAME AND LOCATION ON THE CERTIFICATE; AND (6) EXPRESSLY REFERENCE THE

THE PERMITTEE OR ITS CONTRACTOR/SUBCONTRACTOR PERFORMING THE WORK SHALL FURNISH EVIDENCE OF ALL POLICIES BEFORE ANY WORK IS STARTED TO THE APPROPRIATE DEPARTMENT:

NEW AGREEMENTS:
MTA/NYCT MOW ENGINEERING
ATTENTION: MR. JOHN MALVASIO
130 LIVINGSTON STREET

BROOKLYN, NY 11201

UNDER THIS AGREEMENT.

RENEWAL INSURANCE:

MTA RISK INSURANCE MANAGEMENT
ATTENTION: RUTH APOSTOL
2 BROADWAY - 21ST FLOOR
NEW YORK, NY 10004

SECTION E: NO LIMIT OF LIABILITY
THE MINIMUM AMOUNTS OF INSURANCE REQUIRED IN THE DETAIL DESCRIPTION OF POLICIES ABOVE SHALL NOT BE CONSTRUED TO LIMIT THE EXTENT OF THE PERMITTEE'S LIABILITY

SECTION F: RIGHT TO REQUEST ADDITIONAL INSURANCE

SECTION F: RIGHT TO REQUEST ADDITIONAL INSURANCE
PERMITTEE FURTHER AGREES TO PROVIDE, AT PERMITTEE'S SOLE COST AND EXPENSE, SUCH INCREASED OR EXPANDED INSURANCE COVERAGE AS PERMITTOR MAY FROM TIME TO TIME AS DEEM APPROPRIATE.

SECTION G: EVENT OF DEFAULT

IF, AT ANY TIME DURING THE PERIOD OF THIS AGREEMENT, INSURANCE AS REQUIRED IS NOT IN EFFECT, OR PROOF THEREOF IS NOT PROVIDED TO THE PERMITTOR, THE PERMITTOR SHALL HAVE THE OPTIONS TO: (I) DIRECT THE PERMITTEE TO SUSPEND WORK OR OPERATION WITH NO ADDITIONAL COST OR EXTENSION OF TIME DUE ON ACCOUNT THEREOF; OR (II) TREAT SUCH FAILURE AS AN EVENT OF DEFAULT.

SECTION H: NOTICE OF CLAIM

THE PERMITTEE SHALL IMMEDIATELY FILE WITH NYCT/MTA'S TORT DIVISION (WITH A COPY TO THE PROJECT MANAGER), 130 LIVINGSTON STREET, 11TH FLOOR, BROOKLYN, NEW YORK 11201, A NOTICE OF ANY OCCURRENCE LIKELY TO RESULT IN A CLAIM AGAINST NYCT/MTA AND SHALL ALSO FILE WITH THE TORTS DIVISION DETAILED SWORN PROOF OF INTEREST AND LOSS WITH THE CLAIM. THIS PARAGRAPH SHALL SURVIVE THE EXPIRATION OR EARLIER

TERMINATION OF THE CONTRACT.

45 BROAD STREET

NEW YORK NY 10004

John A. Cetra
State of New York
Registered Architect
No. 018861

CetraRuddy Architecture DPC

S84 Broadway Suite 401
New York, NY 10012
212.941.9801

Madison 45 Broad
Development, LLC

105 Madison Avenue
New York, NY 10016

WSP Group
228 East 45th Street, 3rd FI
New York, NY 10017
212.687.9888

LANGAN
21 Penn Plaza
360 West 31st Street, 8th FI
New York, NY 10001
212.479.5400

MPFP LLC / M. Paul
Friedberg & Partners
120 Broadway, Floor 20
New York, NY 10005
212.477.6366

New York, NY 10001
212.479.5400

Ventresca Design, LLC
44-02 Eleventh St, Suite 203
Long Island City, NY 11101
212.600.0033

BuroHappold Engineering
100 Broadway
New York, NY 10005
212.334.2025

6/8/17

2017.04.13 NYCT - 4th SUBMISSION
2017.03.21 60% CONSTRUCTION DOCUMENTS - UPDATED
2017.03.13 REVISED FOR FOUNDATION BID
2017.03.07 NYCT - 3rd SUBMISSION
2017.03.01 60% CONSTRUCTION DOCUMENTS
2016.12.30 NYCT - 2nd SUBMISSION
2016.11.07 FOUNDATION AND EXCAVATION FOR BID

Damian Titus

APPROVED

Date: 06/15/2017:

Under Directive 2 of 1975

NYC Development Hub

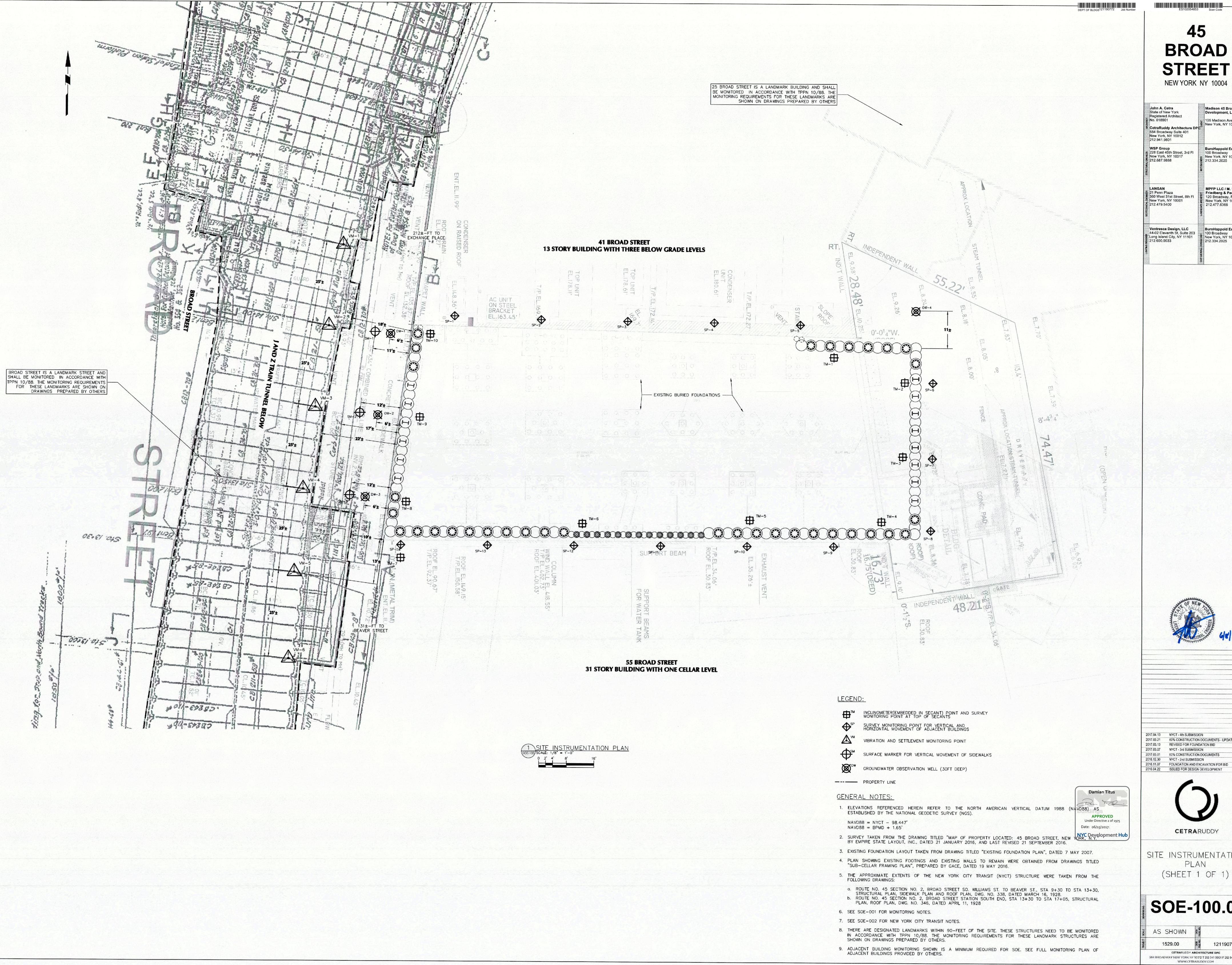


SUPPORT OF EXCAVATION - NYCT NOTES (SHEET 1 OF 1)

SOE-002.00

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584 BROADWAY NEW YORK NY 10012 T 212 941 9801 F 212 941 9440



BROAD

Development, LLC 105 Madison Avenue New York, NY 10016 ₹ CetraRuddy Architecture DPC WSP Group 228 East 45th Street, 3rd FI New York, NY 10017 212.687.9888 BuroHappold Engineering 100 Broadway New York, NY 10005 212.334.2025

LANGAN 을 21 Penn Plaza 를 360 West 31st Street, 8th Fl New York, NY 10001 MPFP LLC / M. Paul Friedberg & Partners 120 Broadway, Floor 20 New York, NY 10005 212.477.6366

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2017.04.13 NYCT - 4th SUBMISSION 2017.03.21 60% CONSTRUCTION DOCUMENTS - UPDATED

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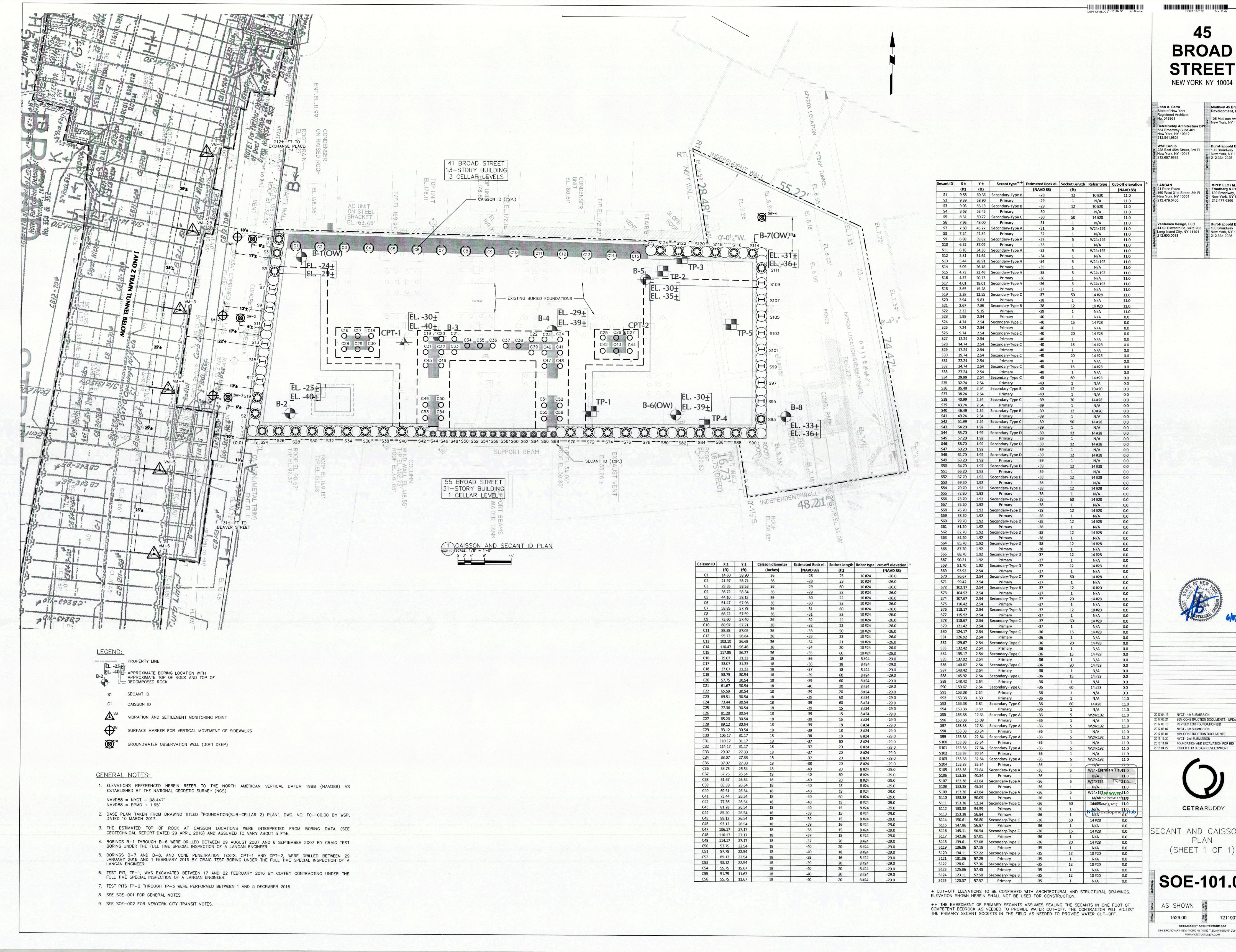
CETRARUDDY

SITE INSTRUMENTATION PLAN

SOE-100.00

AS SHOWN

1529.00 121190772 CETRARUDDY ARCHITECTURE DPC 584 BROADWAY NEW YORK NY 10012 T 212 941 9801 F 212 941 9440



BROAD

NEW YORK NY 10004

John A. Cetra State of New York Madison 45 Broad Development, LLC Registered Architect 105 Madison Avenue New York, NY 10016 **英 CetraRuddy Architecture DP** 584 Broadway Suite 401 New York, NY 10012 WSP Group 228 East 45th Street, 3rd Fl New York, NY 10017 BuroHappold Engineering 100 Broadway New York, NY 10005 212.334.2025

MPFP LLC / M. Paul Friedberg & Partners 120 Broadway, Floor 20 21 Penn Plaza 360 West 31st Street, 8th F New York, NY 10005 212.477.6366

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2017.04.13 NYCT - 4th SUBMISSION 2017.03.21 60% CONSTRUCTION DOCUMENTS - UPDATED 2017.03.13 REVISED FOR FOUNDATION BID 2017.03.07 NYCT - 3rd SUBMISSION 2017.03.01 60% CONSTRUCTION DOCUMENTS 2016.12.30 NYCT - 2nd SUBMISSION

2016.04.22 ISSUED FOR DESIGN DEVELOPMENT

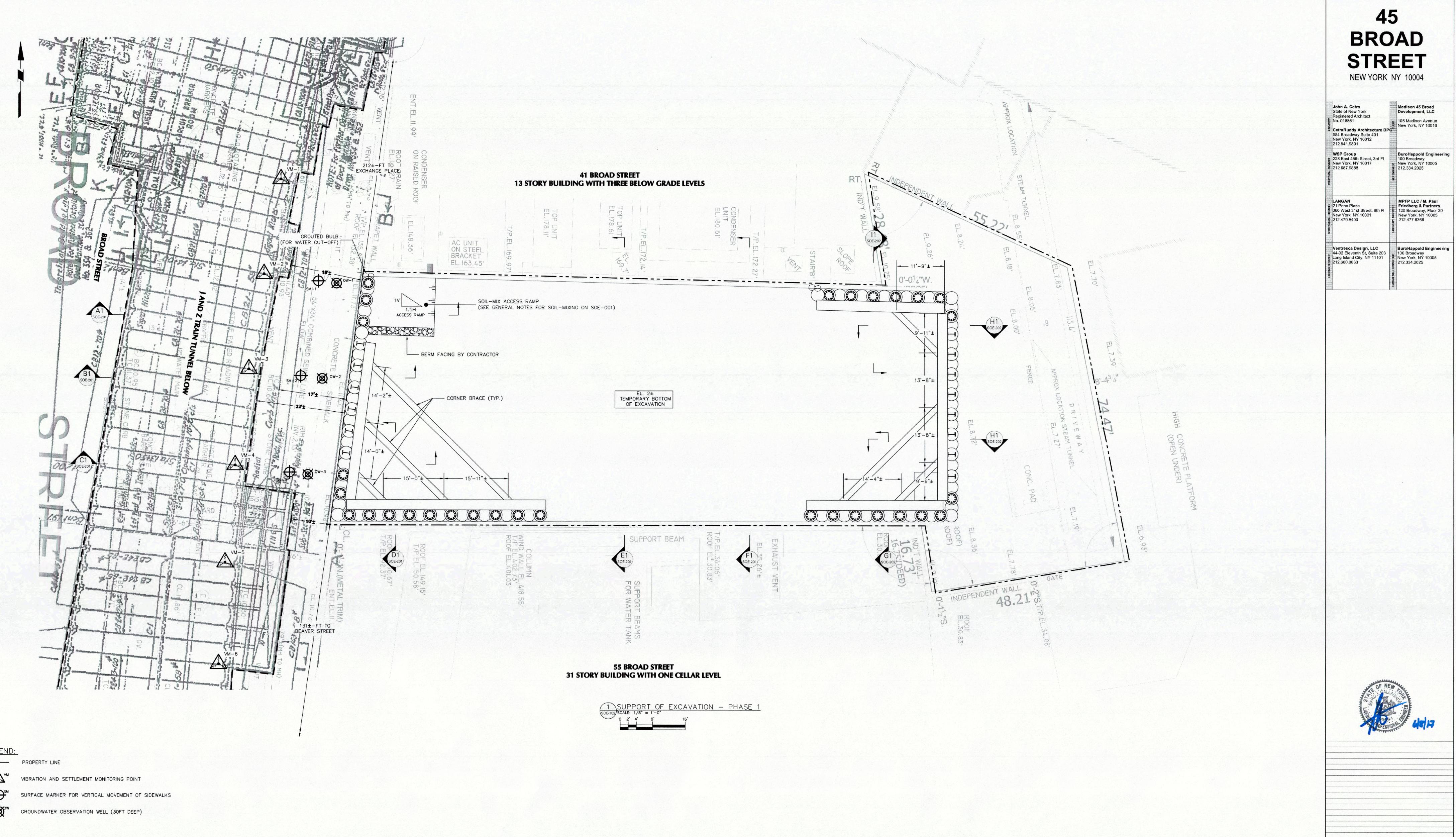
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(SHEET 1 OF 1)

SOE-101.00

AS SHOWN 1529.00

121190772 CETRARUDDY ARCHITECTURE DPC 584 BROADWAY NEW YORK NY 10012 T 212 941 9801 F 212 941 9440



GENERAL NOTES:

1. ELEVATIONS REFERENCED HEREIN REFER TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88) AS ESTABLISHED BY THE NATIONAL GEODETIC SURVEY (NGS). NAVD88 = NYCT - 98.447'NAVD88 = BPMD + 1.65'

2. BASE PLAN TAKEN FROM DRAWING TITLED "FOUNDATION (SUB-CELLAR 2) PLAN", DWG. NO. FO-100.00 BY WSP, DATED 10 MARCH 2017.

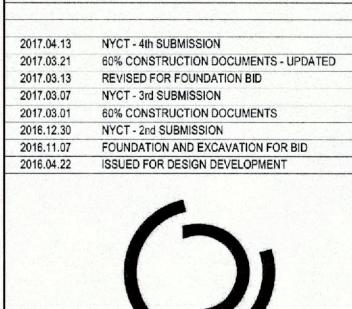
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 b. ROUTE NO. 45 SECTION NO. 2, BROAD STREET STATION SOUTH END, STA 13+30 TO STA 17+05, STRUCTURAL PLAN, ROOF PLAN, DWG. NO. 346, DATED APRIL 11, 1928
- 5. REFER TO SOE-101 FOR SECANT PILE INFORMATION.
- 6. REFER TO SOE-200 SERIES FOR SECTIONS.
- 7. REFER TO SOE-300 SERIES FOR ELEVATIONS.

8. REFER TO SOE-400 SERIES FOR DETAILS.

PHASE 1 - EXCAVATION SEQUENCE:

- 1. DRILL ALL SECANT PILES ON THE EAST, WEST AND NORTH FROM GROUND SURFACE.
- 2. CONSTRUCT A 10-FEET WIDE, ACCESS BERM AT 1.5H:1V SLOPE FROM SIDEWALK USING SOIL-MIXING, AS SHOWN ON THIS DRAWING. THE SOIL-MIXED BERM SHALL BE ARMORED ON THE SOUTH SIDE BY GABION WALLS OR APPROVED ALTERNATE.
- 3. EXCAVATE THE ENTIRE SITE TO EL. 2±.
- 4. DRILL SECANTS ON THE SOUTH SHOWN ON PHASE 1 DRAWING FROM EL. 2±.
- 5. INSTALL THE FIRST TIER WALERS AND CORNER BRACES AT ALL THREE CORNERS AS SHOWN.





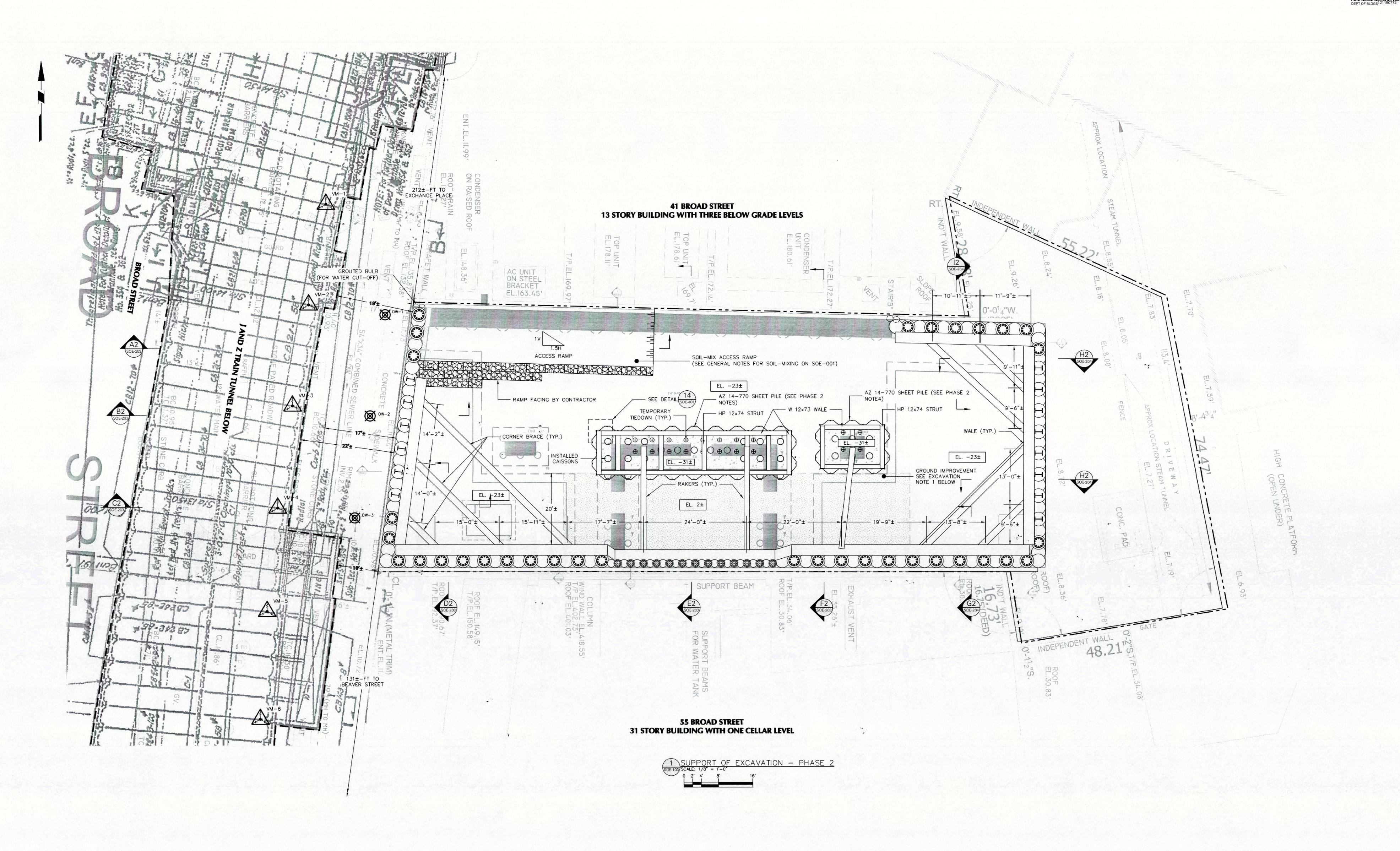


SUPPORT OF EXCAVATION PLAN - STAGE (SHEET 1 OF 3)

SOE-102.00

AS SHOWN 1529.00 CETRARUDDY ARCHITECTURE DPC

121190772 584 BROADWAY NEW YORK NY 10012 T 212 941 9801 F 212 941 9440



--- PROPERTY LINE

VIBRATION AND SETTLEMENT MONITORING POINT

SURFACE MARKER FOR VERTICAL MOVEMENT OF SIDEWALKS

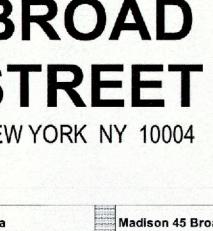
GROUNDWATER OBSERVATION WELL (30FT DEEP)

GENERAL NOTES:

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- 5. REFER TO SOE-101 FOR SECANT PILE INFORMATION.
- REFER TO SOE-200 SERIES FOR SECTIONS.
- REFER TO SOE-300 SERIES FOR ELEVATIONS. 8. REFER TO SOE-400 SERIES FOR DETAILS.

PHASE 2 - EXCAVATION SEQUENCE:

- 1. PERFORM SOIL MIXING TO ABOUT 20-FEET NORTH IN FRONT OF THE SOUTH SECANT PILE WALL. THE SOIL-MIXING SHALL EXTEND FROM EL. 2± TO TOP OF DECOMPOSED ROCK. CONTRACTOR SHALL PROVIDE A SOIL-CEMENT MIXTURE WITH 200 PSI UNCONFINED COMPRESSIVE STRENGTH.
- 2. INSTALL ALL REMAINING SECANTS ALONG SOUTH WALL FROM EL. 2±.
- 3. AFTER THE IMPROVED SOIL HAS ACHIEVED SUFFICIENT STRENGTH, EXCAVATE AND INSTALL MIDDLE AND BOTTOM TIERS OF WALERS AND CORNER-BRACES (EL. -7± AND EL. -17±) AT ALL CORNERS. SOIL-MIX AREA TO REMAIN AT EL. 2±.
- 4. EXCAVATE SITE TO EL. -20± (EXCEPT FOR SOIL MIX AREA). MAINTAIN SOIL-MIX ACCESS RAMP ALONG NORTHWEST OF SITE AS EXCAVATION PROGRESSES.
- 5. DRILL CAISSONS SHOWN HEREIN, WITHIN THE CAISSON CAP FOOTPRINT FROM EL. $-20 \pm .$
- 6. INSTALL SHEET PILES AROUND THE CENTRAL CAISSON CAP. EXCAVATE CAISSON CAP TO EL. -31±, INSTALL CAISSON CAP REINFORCEMENT AND SLEEVES FOR TIEDOWNS, AND POUR CONCRETE FOR THE CAISSON CAP.
- 7. INSTALL AND PRESTRESS THE TEMPOARARY TIEDOWNS AS SPECIFIED ON SOE-001.
- 8. TRENCH THROUGH THE SOIL-CEMENT MIX BLOCK, AND INSTALL THE TOP TIER RAKERS ALONG THE SOUTH SECANT WALL.



CHITECT	John A. Cetra State of New York Registered Architect No. 018861 CetraRuddy Architecture DP 584 Broadway Suite 401 New York, NY 10012 212.941.9801		Madison 45 Broad Development, LLC 105 Madison Avenue New York, NY 10016
STRUCTURAL ENGINEER	WSP Group 228 East 45th Street, 3rd Fl New York, NY 10017 212.687.9888	MEP ENGINEER	BuroHappold Engineering 100 Broadway New York, NY 10005 212.334.2025
GEOTECHNICAL ENGINEER	LANGAN 21 Penn Plaza 360 West 31st Street, 8th Fl New York, NY 10001 212.479.5400	LANDSCAPE ARCHITECT	MPFP LLC / M. Paul Friedberg & Partners 120 Broadway, Floor 20 New York, NY 10005 212.477.6366
ESIGNER	Ventresca Design, LLC 44-02 Eleventh St, Suite 203 Long Island City, NY 11101 212.600.0033	SULTANT	BuroHappold Engineering 100 Broadway New York, NY 10005 212.334.2025



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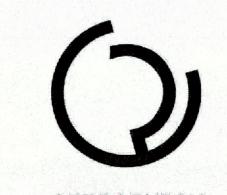
Damian Titus

APPROVED

Under Directive 2 of 1975

NYC Development Hub

Date: 06/15/2017:



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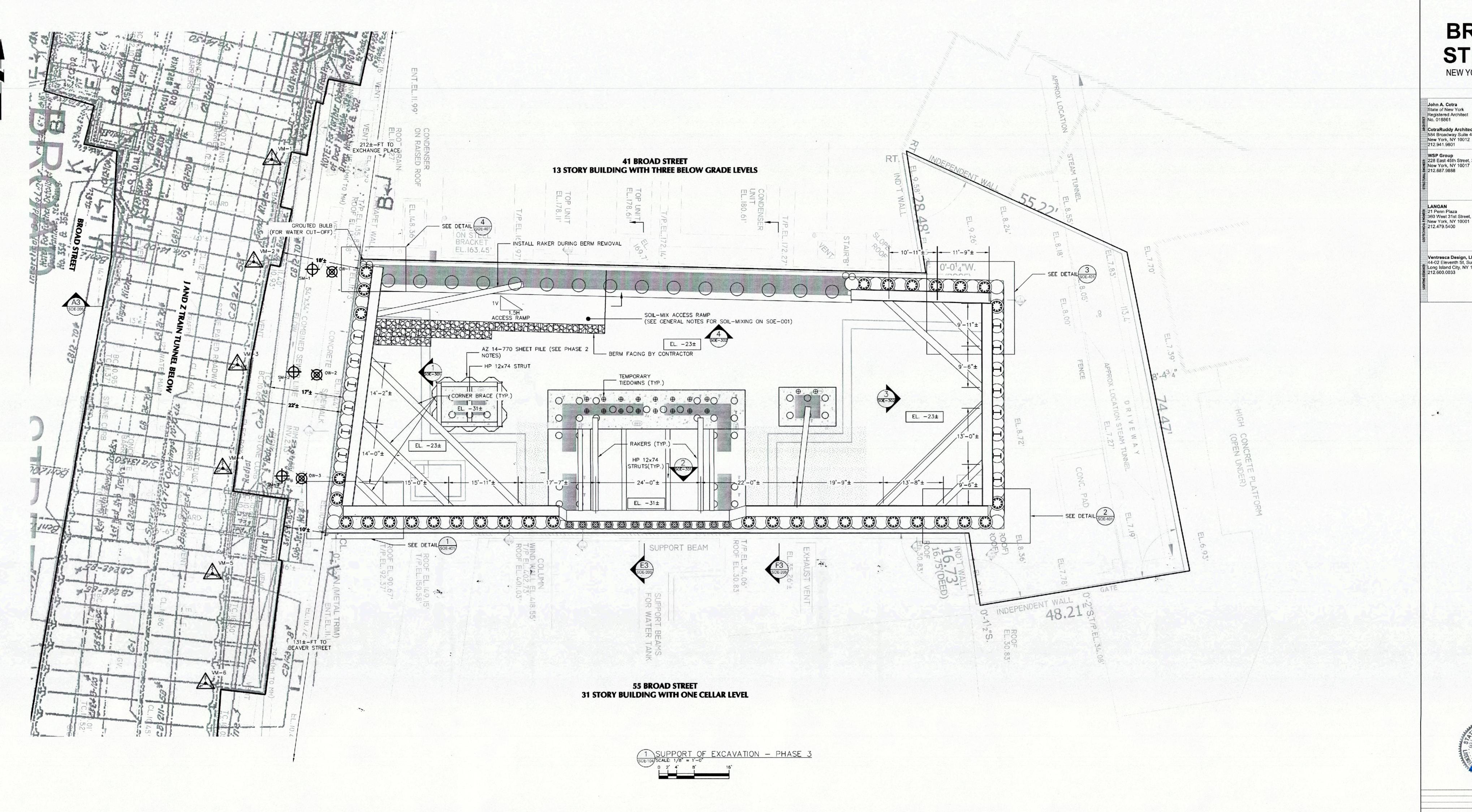
SUPPORT OF EXCAVATION PLAN - STAGE 2 (SHEET 2 OF 3)

SOE-103.00

AS SHOWN

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LEGEND:

--- PROPERTY LINE

VIBRATION AND SETTLEMENT MONITORING POINT

SURFACE MARKER FOR VERTICAL MOVEMENT OF SIDEWALKS

GROUNDWATER OBSERVATION WELL (30FT DEEP)

GENERAL NOTES:

NAVD88 = BPMD + 1.65

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8. REFER TO SOE-400 SERIES FOR DETAILS.

DWG. NO. 346, DATED APRIL 11, 1928

PHASE 3 - EXCAVATION SEQUENCE:

- 1. REMOVE THE SOIL-MIXED BLOCK AS REQUIRED TO INSTALL THE SECOND TIER OF RAKERS AND WALERS.
- 2. INSTALL SHEET PILES AND STRUTS AS SHOWN ON THE DRAWING TO COMPLETE THE CAISSON CAP INSTALLATION WITHIN THE CORE.
- 3. INSTALL REMAINING FOUNDATIONS EXCEPT THE NORTHWEST CORNER UNDER THE ACCESS BERM.
- 4. BRACE THE WEST WALL AT THE ACCESS BERM LATERALLY USING RAKERS, AS THE SOIL-MIXED BERM IS REMOVED.
- 5. CONSTRUCT FINAL CAISSONS AND CAP AT THE NORTHWEST CORNER.





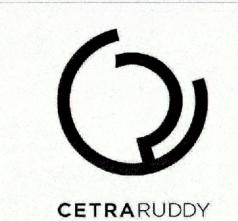
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Madison 45 Broad Development, LLC 105 Madison Avenue New York, NY 10016 CetraRuddy Architecture DPC 584 Broadway Suite 401 New York, NY 10012 212.941.9801 BuroHappold Engineering 100 Broadway New York, NY 10005 212.334.2025 WSP Group 228 East 45th Street, 3rd Fl New York, NY 10017 212.687.9888 LANGAN
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Long Island City, NY 11101
212.600.0033

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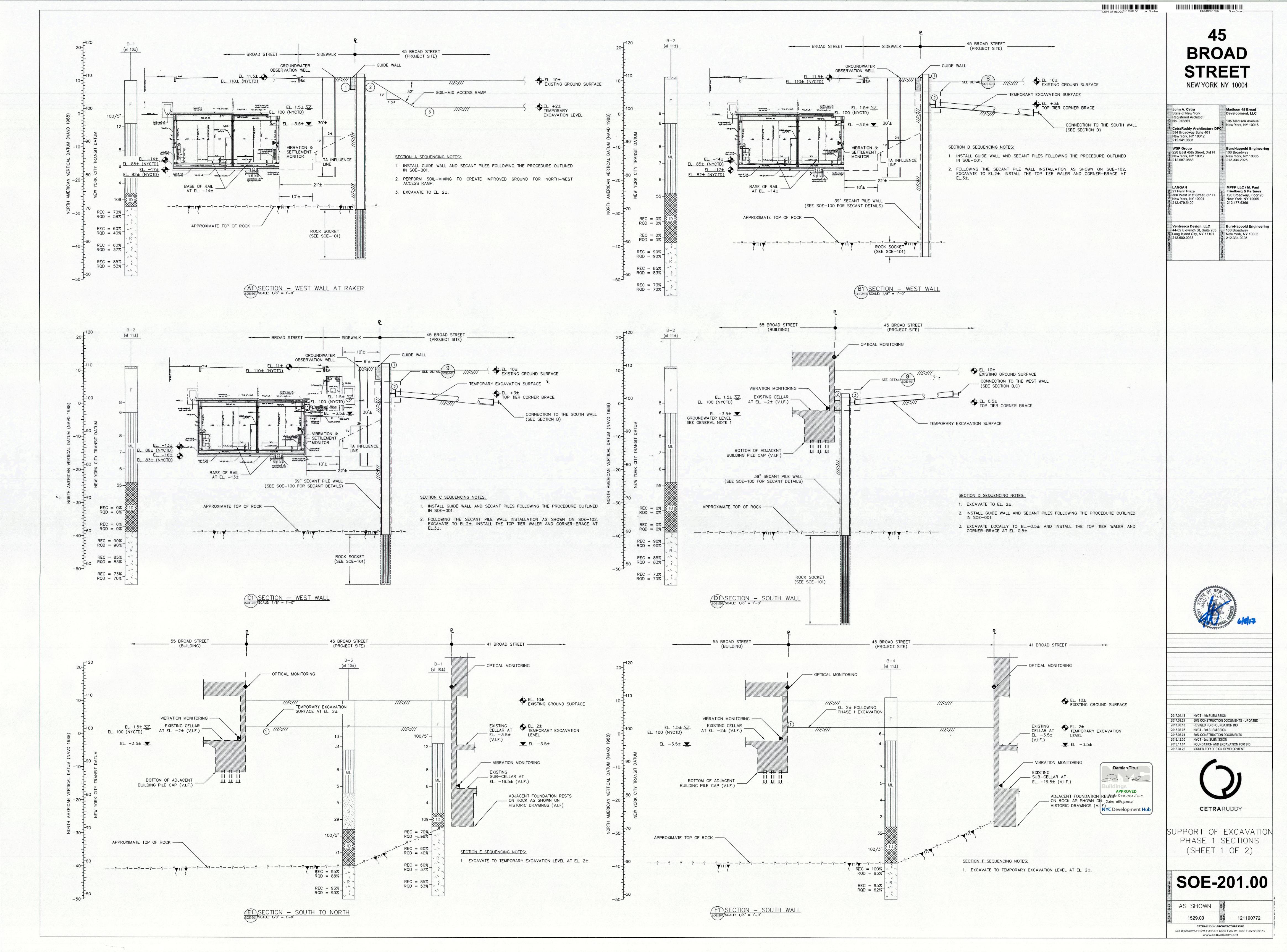
2017.04.13 NYCT - 4th SUBMISSION 2017.03.21 60% CONSTRUCTION DOCUMENTS - UPDATED 2017.03.13 REVISED FOR FOUNDATION BID 2017.03.07 NYCT - 3rd SUBMISSION 2017.03.01 60% CONSTRUCTION DOCUMENTS 2016.12.30 NYCT - 2nd SUBMISSION 2016.11.07 FOUNDATION AND EXCAVATION FOR BID 2016.04.22 ISSUED FOR DESIGN DEVELOPMENT



SOE-104.00

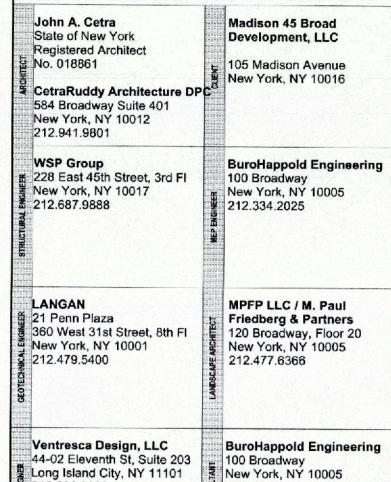
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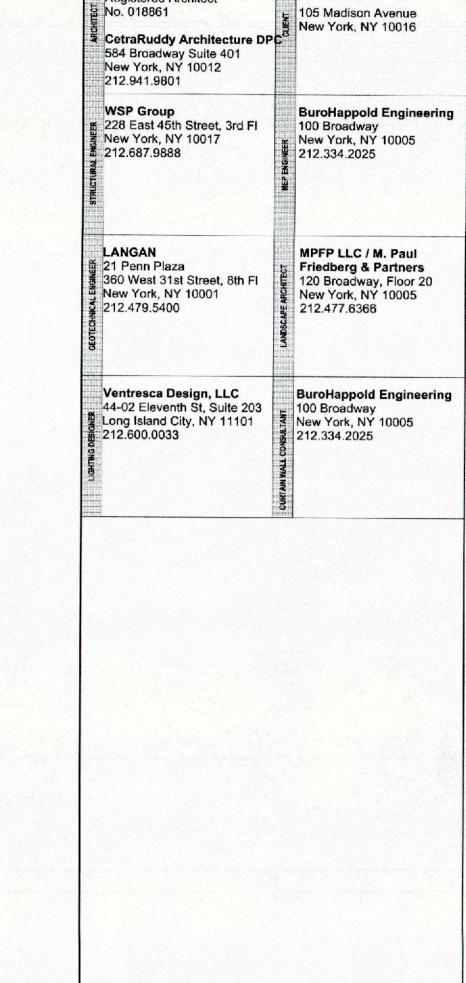
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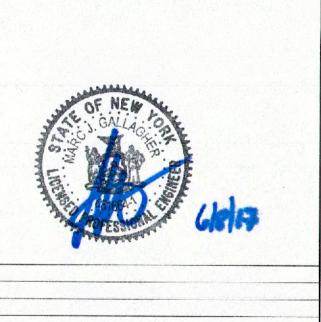




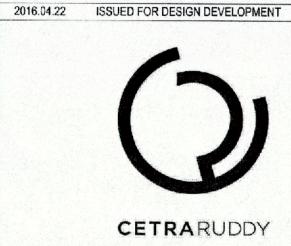
BROAD STREET NEW YORK NY 10004







2017.04.13 NYCT - 4th SUBMISSION 2017.03.21 60% CONSTRUCTION DOCUMENTS - UPDATED 2017.03.13 REVISED FOR FOUNDATION BID 2017.03.07 NYCT - 3rd SUBMISSION 2017.03.01 60% CONSTRUCTION DOCUMENTS 2016.12.30 NYCT - 2nd SUBMISSION 2016.11.07 FOUNDATION AND EXCAVATION FOR BID



Damian Titus

APPROVED Under Directive 2 of 1975

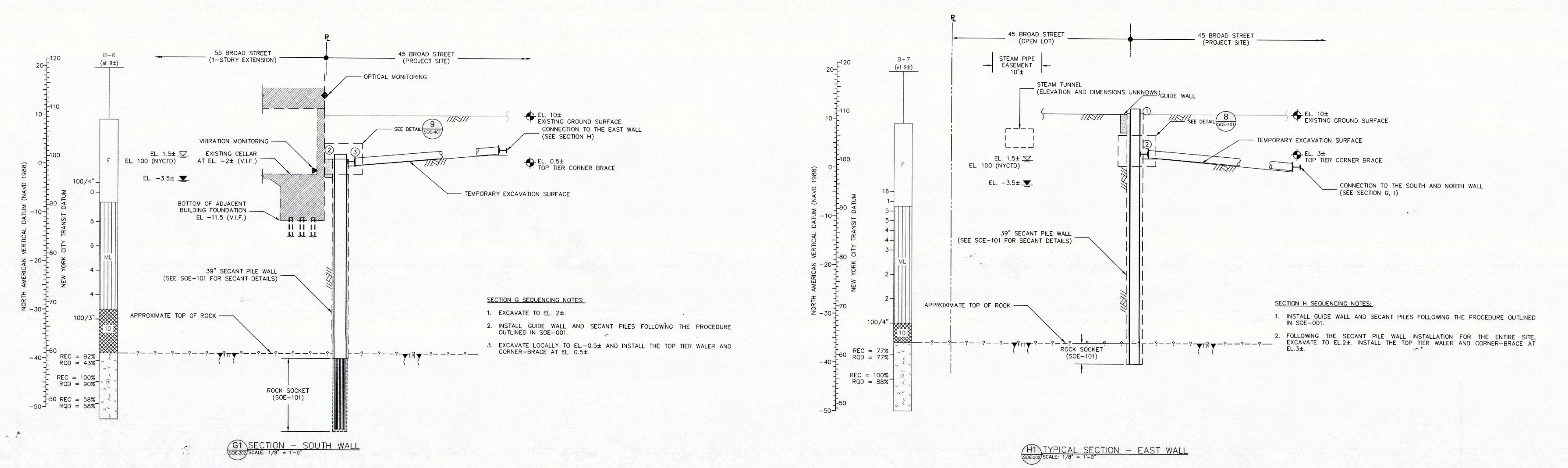
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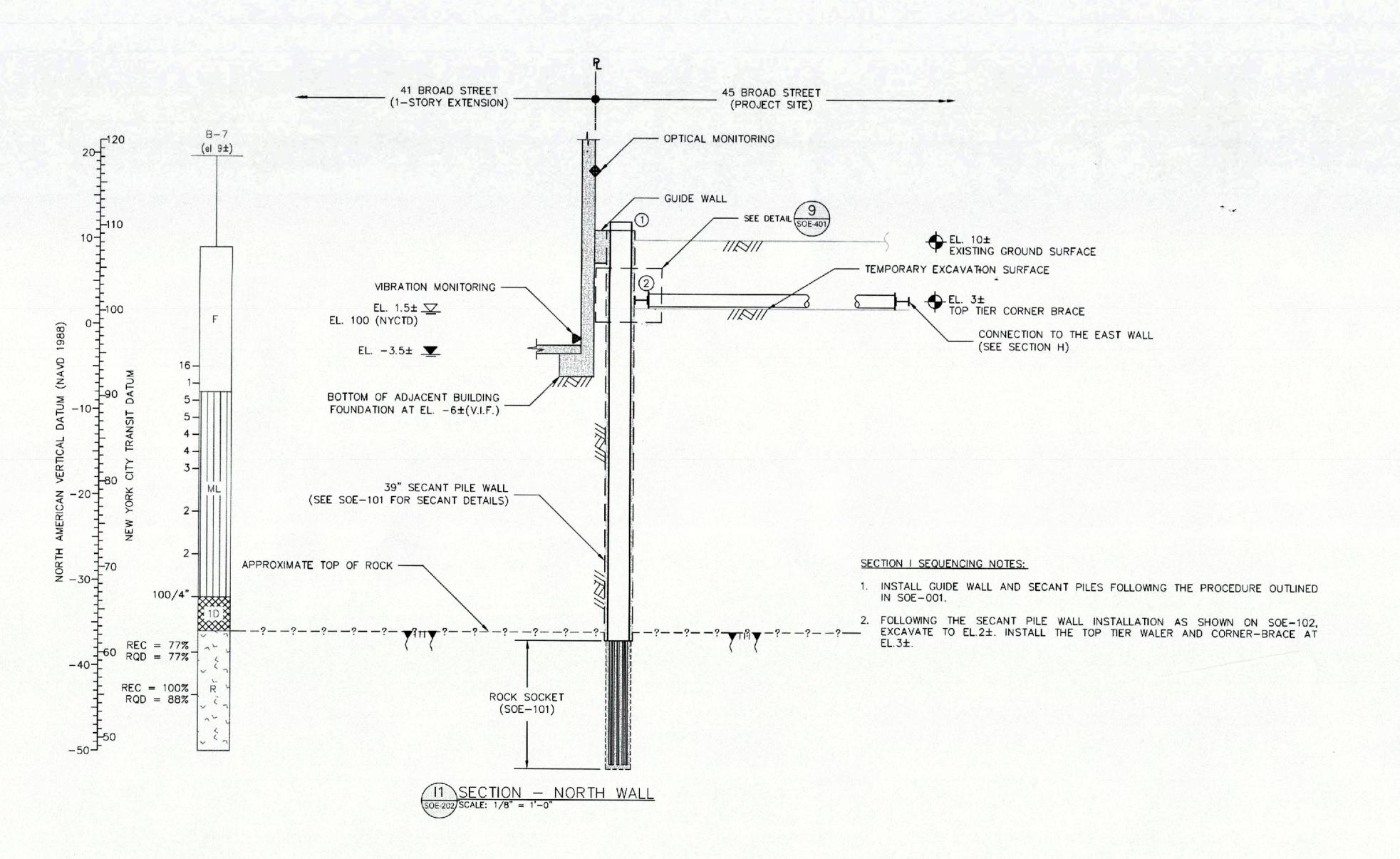
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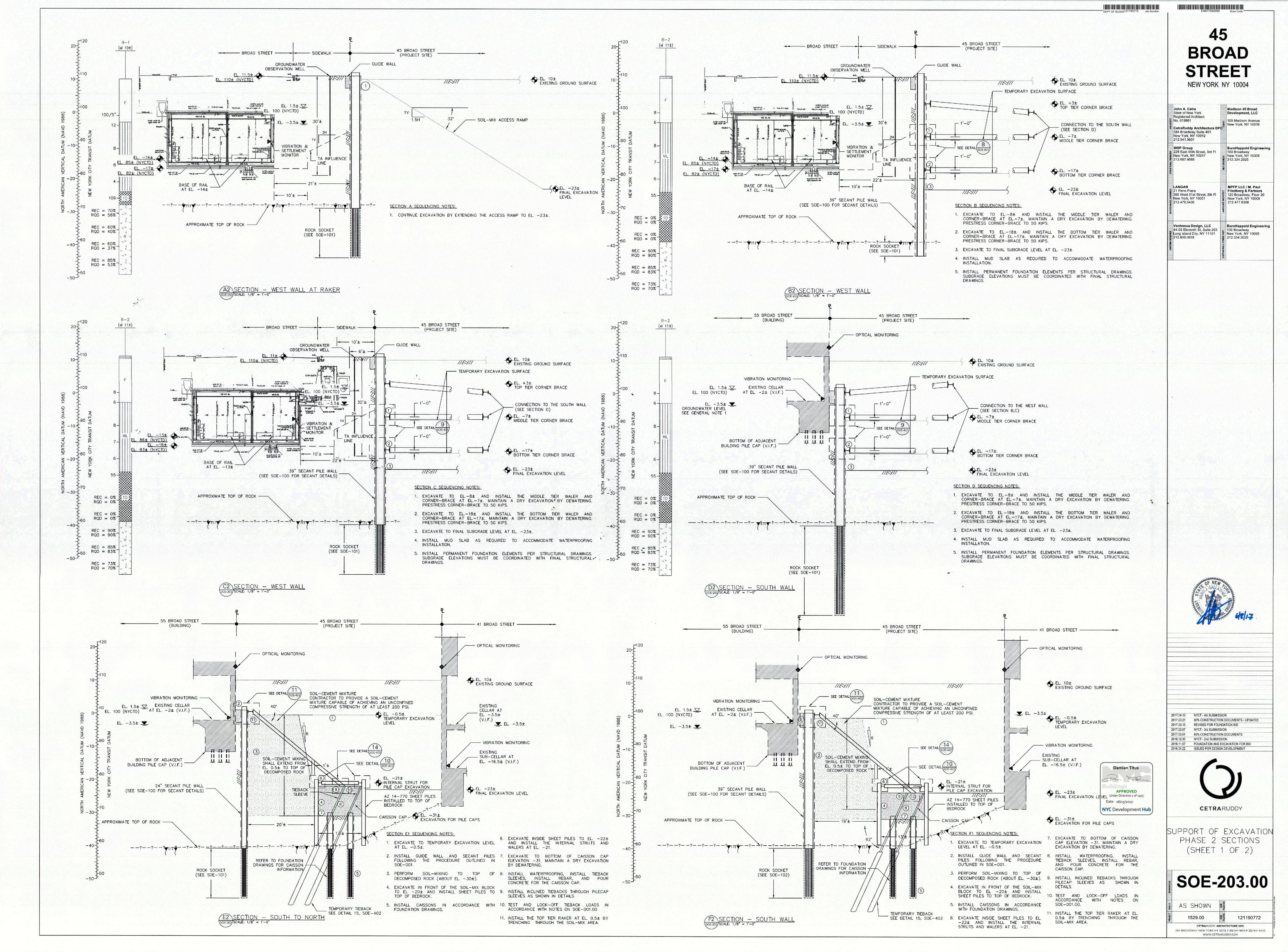
SUPPORT OF EXCAVATION (SHEET 2 OF 2)

SOE-202.00

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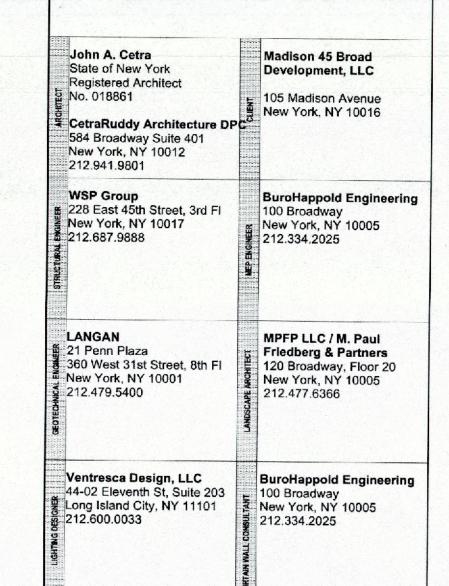


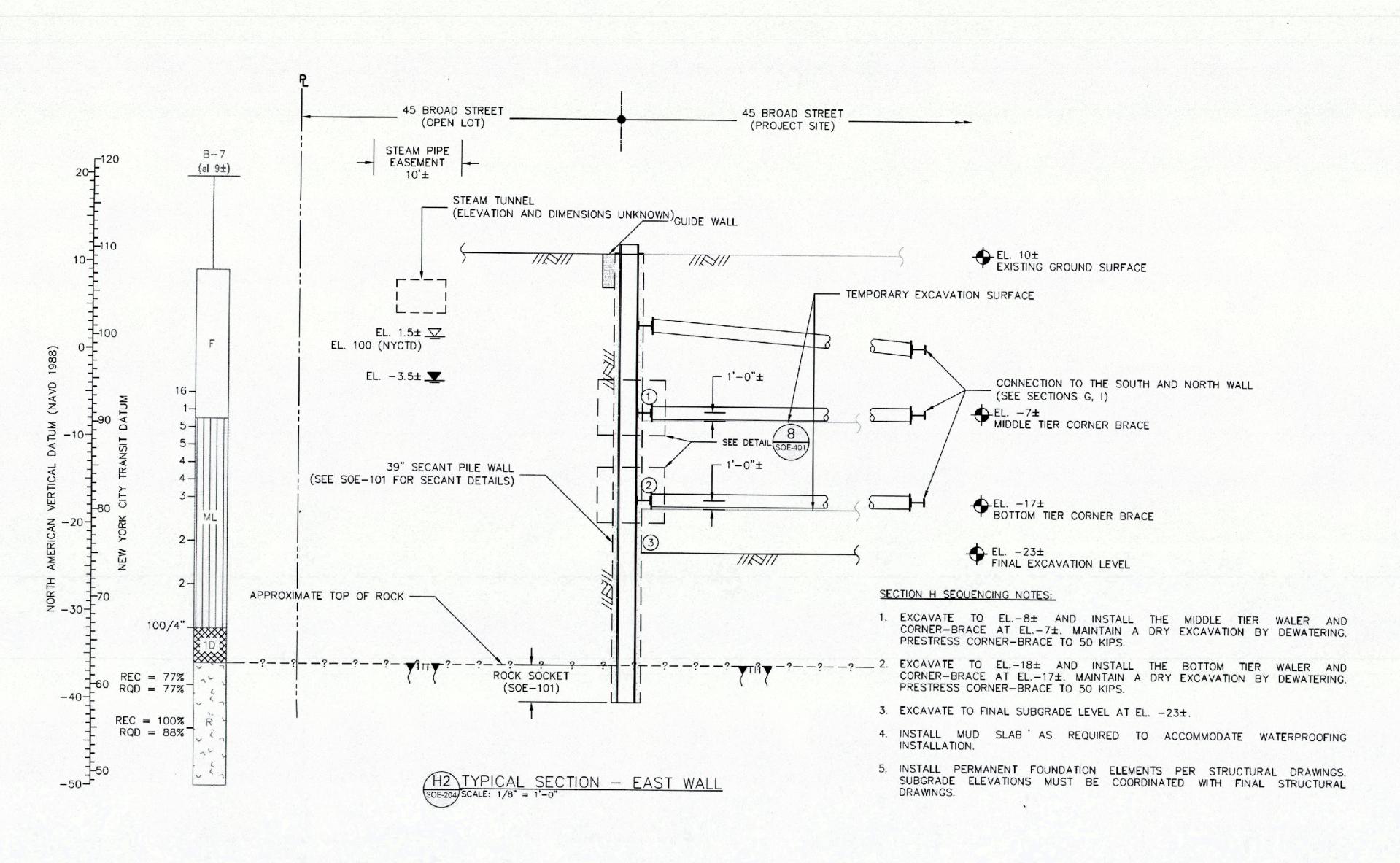


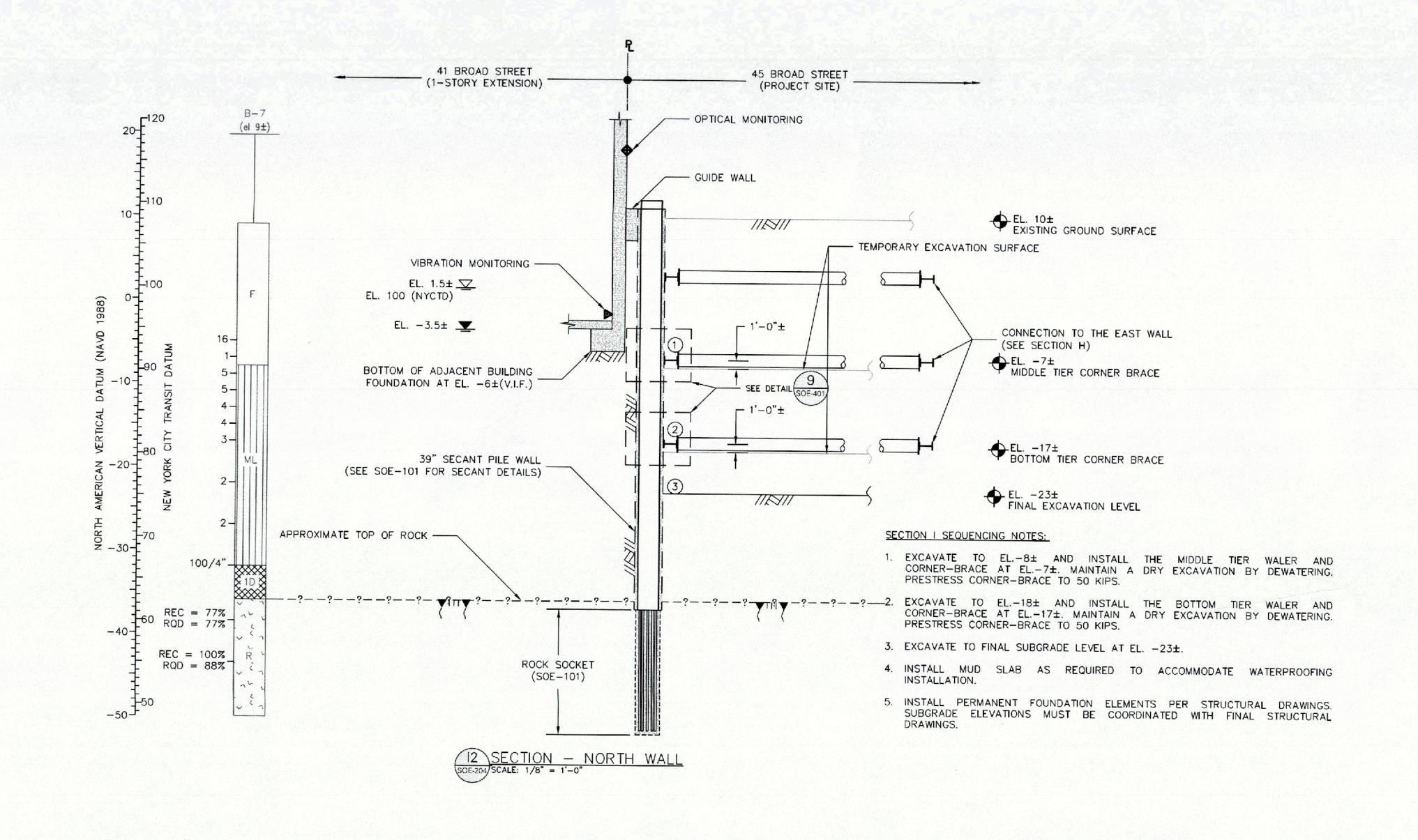












55 BROAD STREET

(1-STORY EXTENSION)

VIBRATION MONITORING -

39" SECANT PILE WALL

ROCK SOCKET

(SOE-101)

EL. 1.5± Z EXISTING CELLAR

BOTTOM OF ADJACENT BUILDING FOUNDATION -

EL -11.5 (V.I.F.)

(SEE SOE-101 FOR SECANT DETAILS)

EL. 100 (NYCTD) AT EL. -2± (V.I.F.)

EL. −3.5± <u>▼</u>

APPROXIMATE TOP OF ROCK -

100/4"

100/3"-

REC = 92% RQD = 43%

REC = 100%

-50 REC = 58% RQD = 58%

RQD = 90%

45 BROAD STREET

- OPTICAL MONITORING

r 1'−0"±

(PROJECT SITE)

TEMPORARY EXCAVATION SURFACE

EL. 10± EXISTING GROUND SURFACE

CONNECTION TO THE EAST WALL

EL. -7±
MIDDLE TIER CORNER BRACE

→ EL. -17± BOTTOM TIER CORNER BRACE

EXCAVATE TO EL.-8± AND INSTALL THE MIDDLE TIER WALER AND CORNER-BRACE AT EL.-7±. MAINTAIN A DRY EXCAVATION BY DEWATERING. PRESTRESS CORNER-BRACE TO 50 KIPS.

2. EXCAVATE TO EL.-18± AND INSTALL THE BOTTOM TIER WALER AND CORNER-BRACE AT EL.-17±. MAINTAIN A DRY EXCAVATION BY DEWATERING. PRESTRESS CORNER-BRACE TO 50 KIPS.

4. INSTALL MUD SLAB AS REQUIRED TO ACCOMMODATE WATERPROOFING

5. INSTALL PERMANENT FOUNDATION ELEMENTS PER STRUCTURAL DRAWINGS. SUBGRADE ELEVATIONS MUST BE COORDINATED WITH FINAL STRUCTURAL

← EL. −23± FINAL EXCAVATION LEVEL

(SEE SECTION H)

3. EXCAVATE TO FINAL SUBGRADE LEVEL AT EL. -23±.

SECTION G SEQUENCING NOTES:

INSTALLATION.

DRAWINGS.



2017.04.13	NYCT - 4th SUBMISSION
2017.03.21	60% CONSTRUCTION DOCUMENTS - UPDATED
2017.03.21	REVISED FOR FOUNDATION BID
2017.03.13	
7117 (112 (117	NVCT 3rd CLIPMICCION

2017.03.21	60% CONSTRUCTION DOCUMENTS - UPDAT	ED
2017.03.13	REVISED FOR FOUNDATION BID	
2017.03.07	NYCT - 3rd SUBMISSION	
2017.03.01	60% CONSTRUCTION DOCUMENTS	
2016.12.30	NYCT - 2nd SUBMISSION	
2016.11.07	FOUNDATION AND EXCAVATION FOR BID	
2016.04.22	ISSUED FOR DESIGN DEVELOPMENT	

Damian Titus

APPROVED Under Directive 2 of 1975

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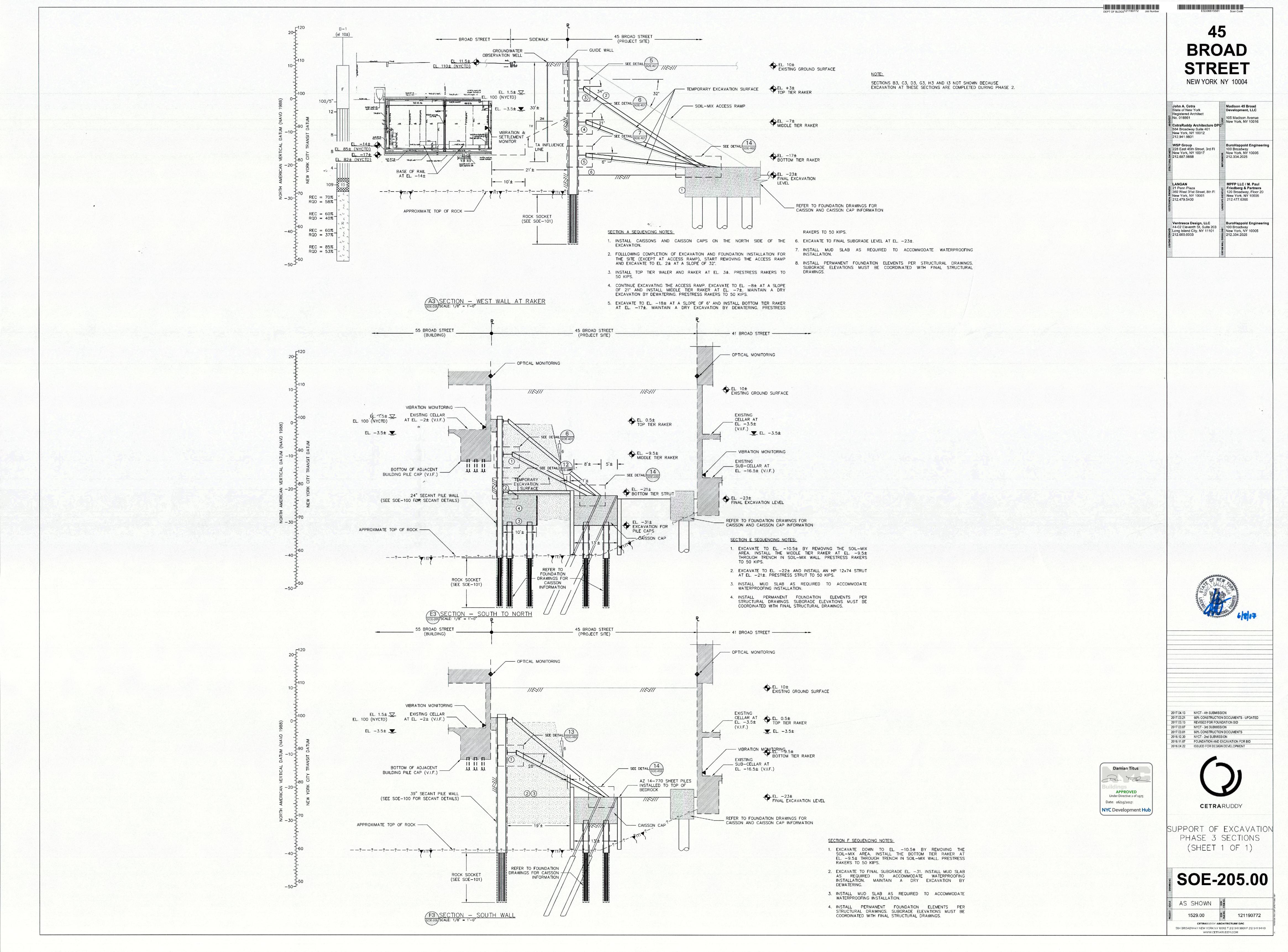
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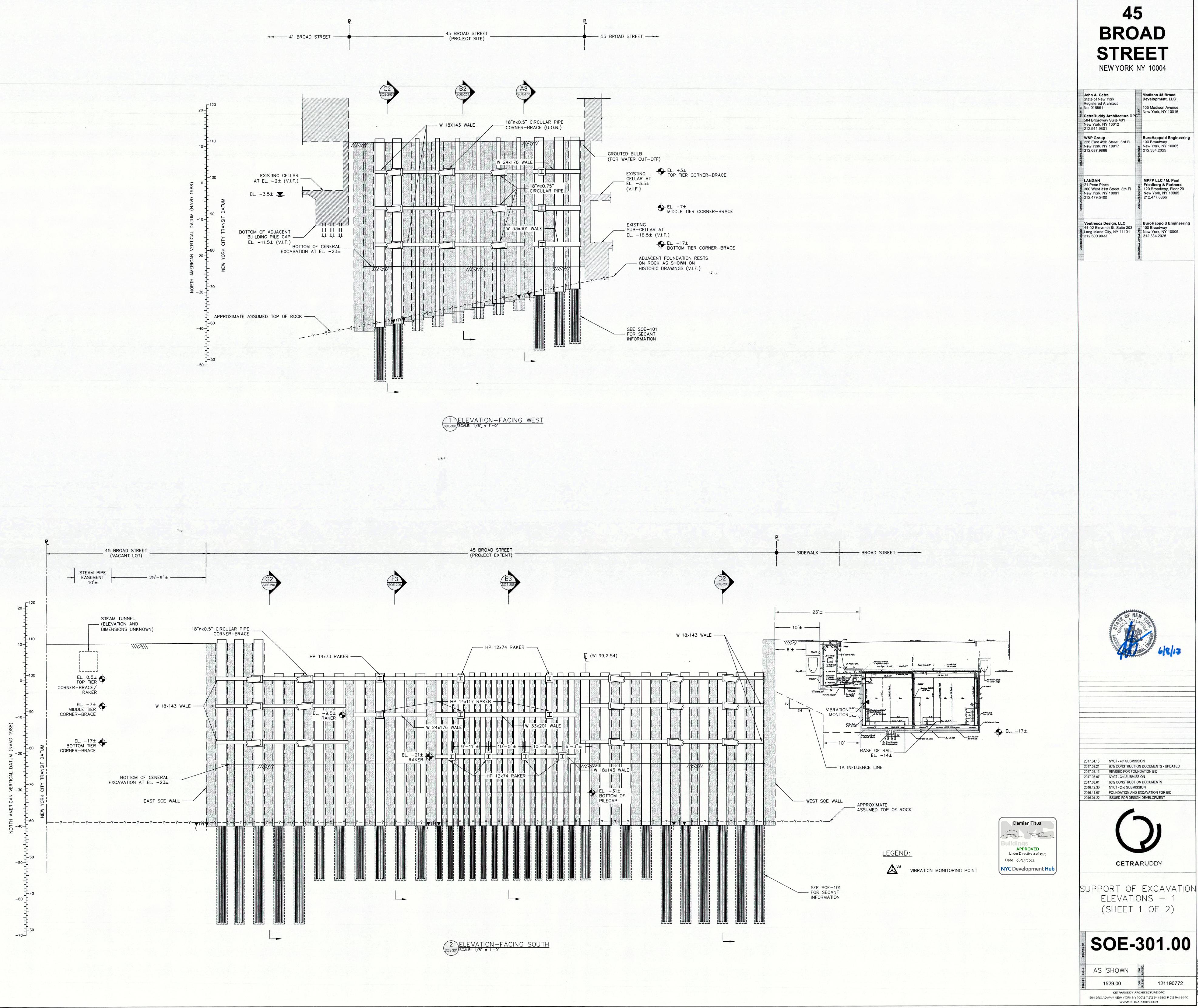




SUPPORT OF EXCAVATION PHASE 2 SECTIONS (SHEET 2 OF 2)

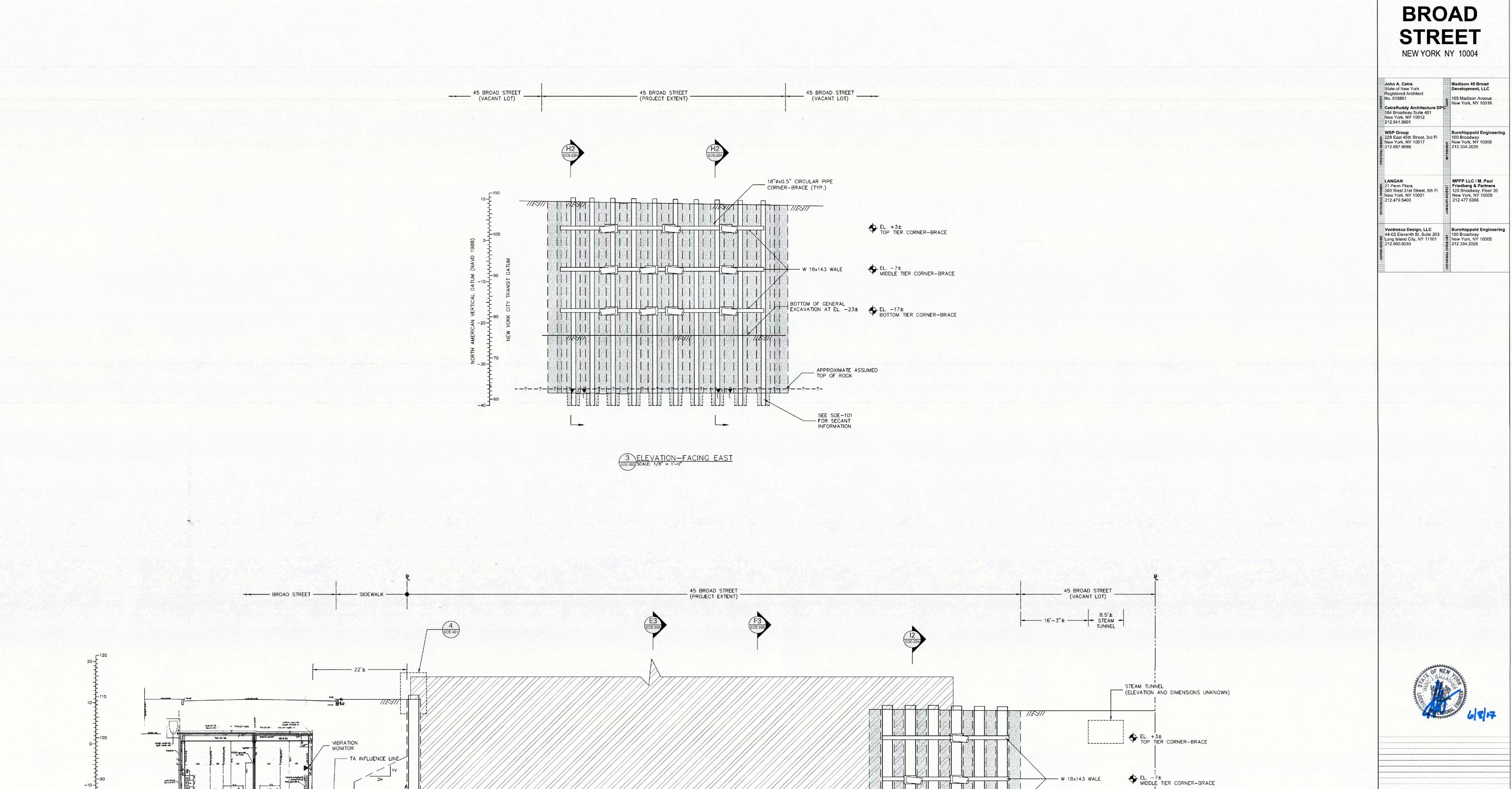
SCALE	AS SHOWN	DOB PAGE NO.	
PROJECT	1529.00	DOR FILE NO	121190772
	CETRARUDDY	ARCHITECT	TURE DPC
	584 BROADWAY NEW YORK N	Y 10012 T 2	12 941 9801 F 212 941 9440
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John A. Cetra State of New York Registered Architect No. 018861 CetraRuddy Architecture DP 584 Broadway Suite 401 New York, NY 10012 212.941.9801	OUENT	Madison 45 Broad Development, LLC 105 Madison Avenue New York, NY 10016
WSP Group 228 East 45th Street, 3rd Fl New York, NY 10017 212.687.9888	NEP ENGINEER	BuroHappold Engineering 100 Broadway New York, NY 10005 212.334.2025
LANGAN 21 Penn Plaza 360 West 31st Street, 8th Fl New York, NY 10001 212.479.5400	LANDSCAPE ARCHITECT	MPFP LLC / M. Paul Friedberg & Partners 120 Broadway, Floor 20 New York, NY 10005 212.477.6366

SOE-301.00



BASE OF RAIL EL. -14±

WEST SOE WALL -

Damian Titus APPROVED Under Directive 2 of 1975 Date: 06/15/2017: NYC Development Hub

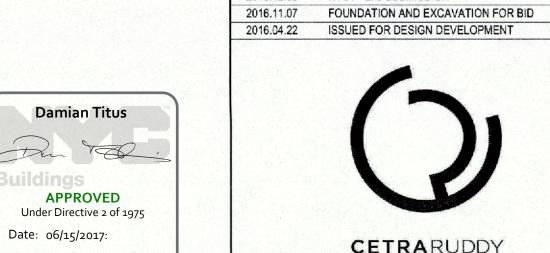
BOTTOM OF GENERAL
EXCAVATION AT EL. -23±

SEE SOE-101
FOR SECANT
INFORMATION

LEGEND:

EL. -17±
BOTTOM TIER CORNER-BRACE

VIBRATION MONITORING POINT



SUPPORT OF EXCAVATION ELEVATIONS - 2 (SHEET 2 OF 2)

CETRARUDDY

2017.04.13 NYCT - 4th SUBMISSION 2017.03.21 60% CONSTRUCTION DOCUMENTS - UPDATED

2017.03.13 REVISED FOR FOUNDATION BID

2016.12.30 NYCT - 2nd SUBMISSION

2017.03.07 NYCT - 3rd SUBMISSION 2017.03.01 60% CONSTRUCTION DOCUMENTS

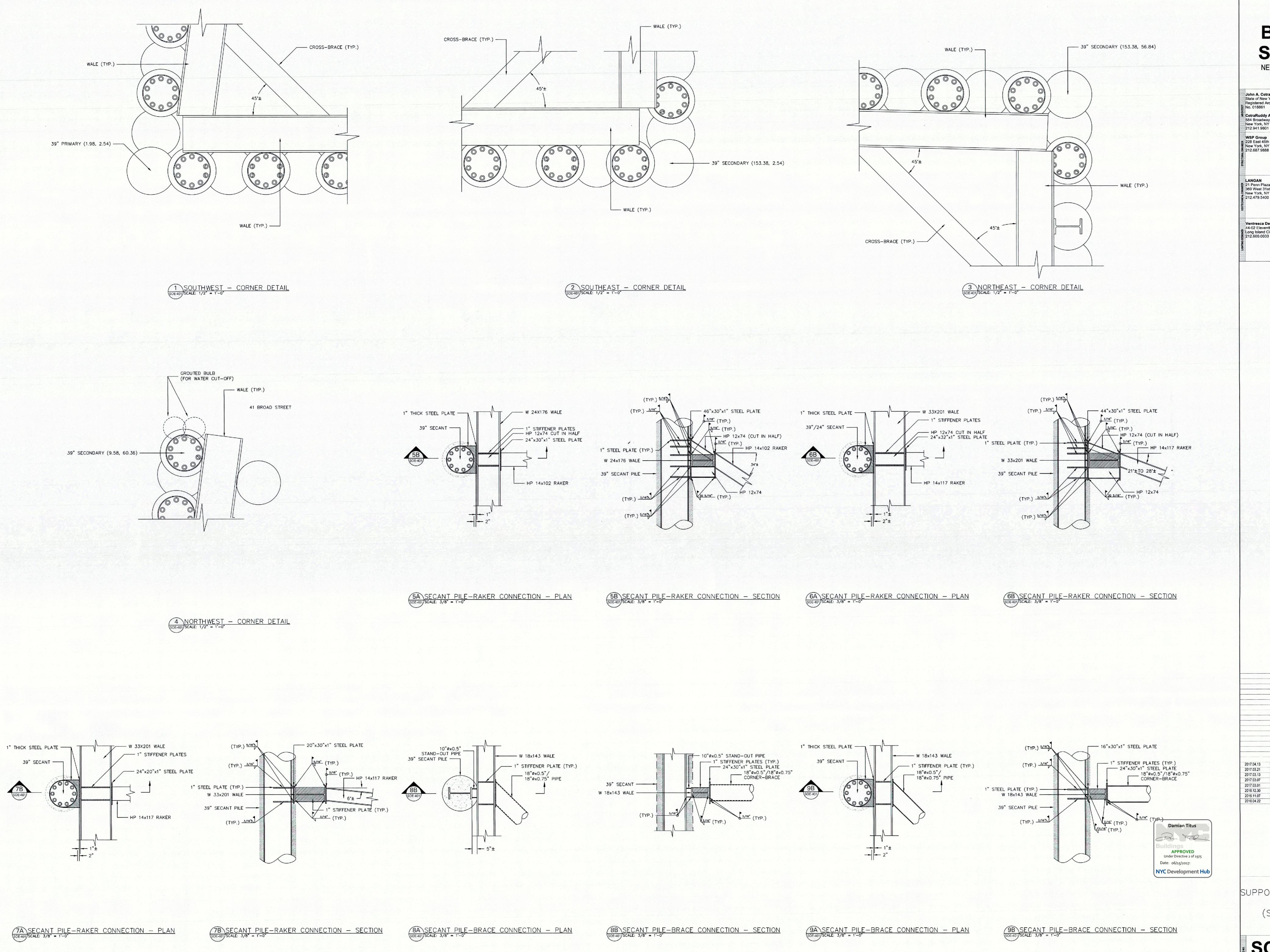
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DEPT OF BLDGS121190772 Job Number

SOE-302.00

AS SHOWN 121190772 CETRARUDDY ARCHITECTURE DPC 584 BROADWAY NEW YORK NY 10012 T 212 941 9801 F 212 941 9440



BROAD

STREET NEW YORK NY 10004

John A. Cetra
State of New York
Registered Architect
No. 018861 Madison 45 Broad Development, LLC 105 Madison Avenue New York, NY 10016 CetraRuddy Architecture DP 584 Broadway Suite 401 New York, NY 10012 212.941.9801 BuroHappold Engineering
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 2017.04.13
 NYCT - 4th SUBMISSION

 2017.03.21
 60% CONSTRUCTION DOCUMENTS - UPDATED

 2017.03.13
 REVISED FOR FOUNDATION BID

 2017.03.07
 NYCT - 3rd SUBMISSION

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2016.11.07 FOUNDATION AND EXCAVATION FOR BID
2016.04.22 ISSUED FOR DESIGN DEVELOPMENT

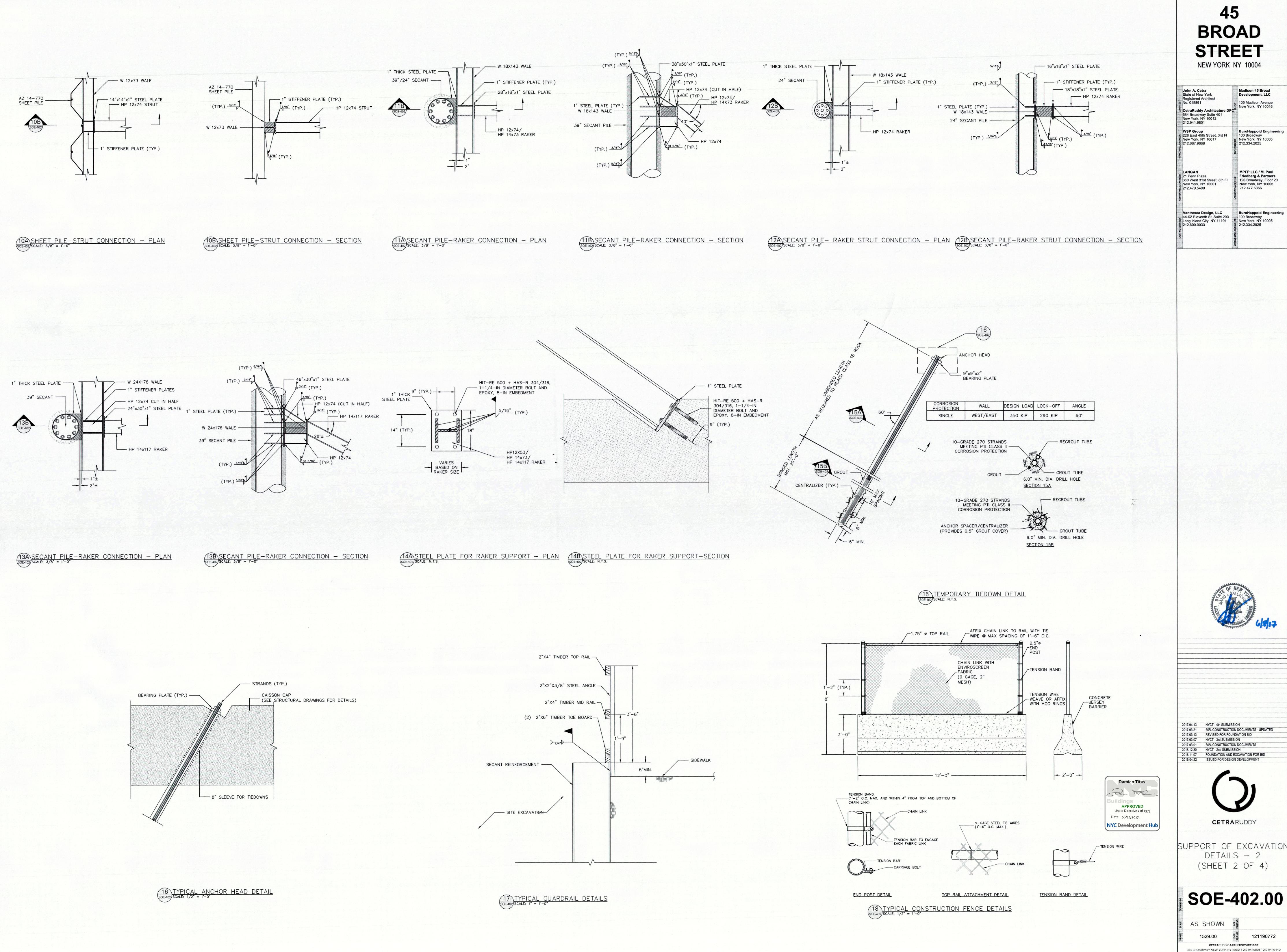
CETRARUDDY

SUPPORT OF EXCAVATION DETAILS - 1 (SHEET 1 OF 4)

SOE-401.00

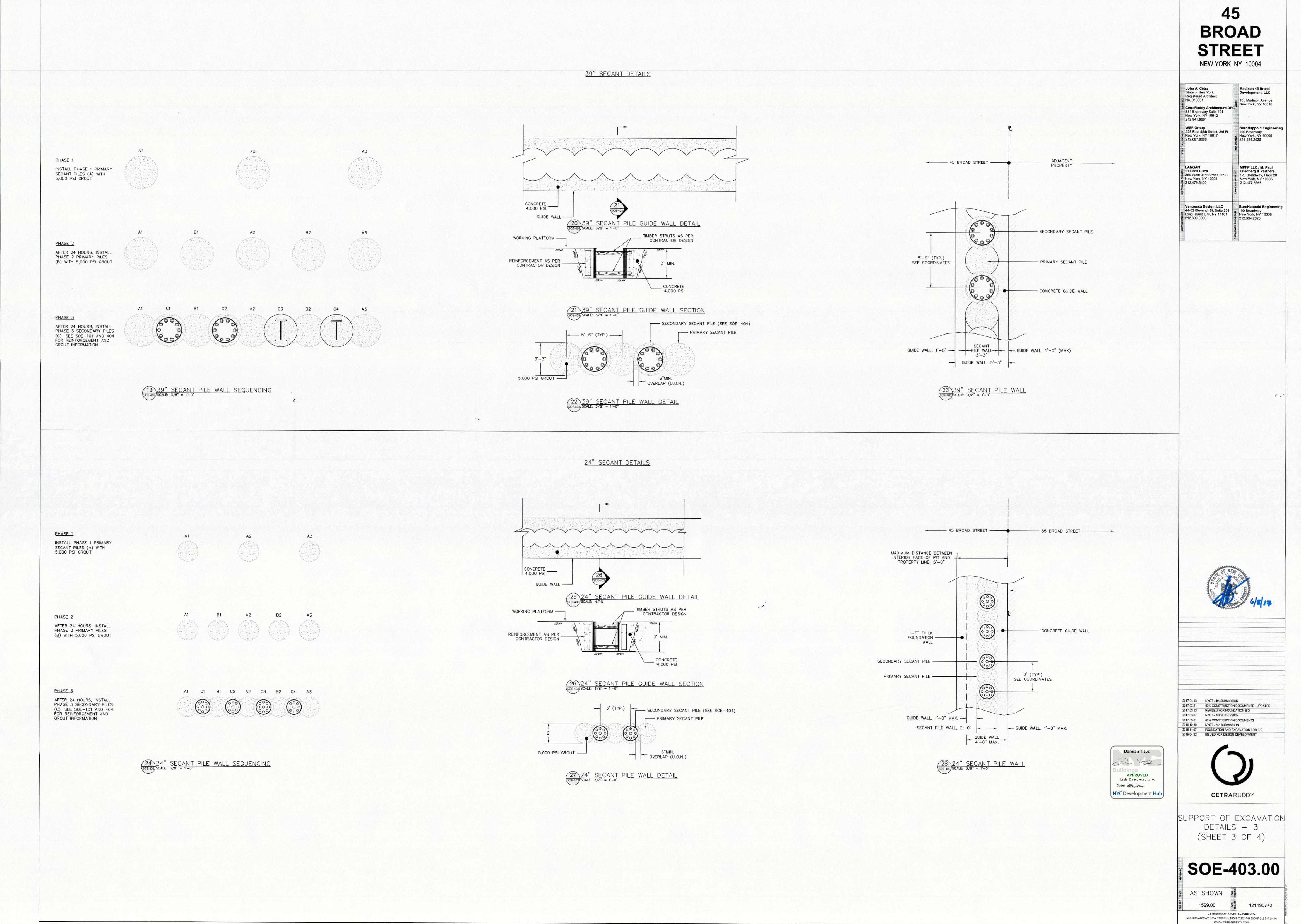
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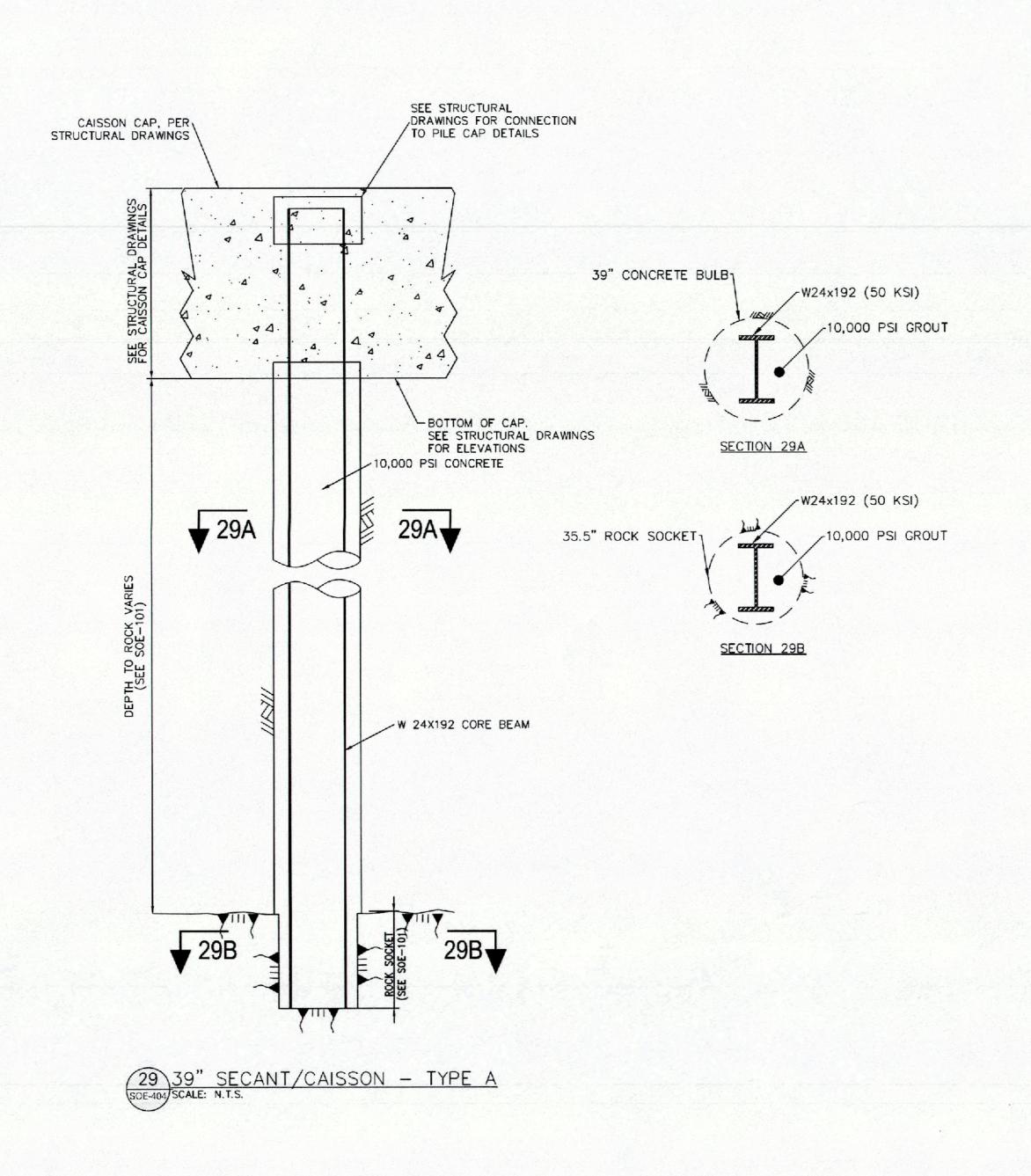
121190772 584 BROADWAY NEW YORK NY 10012 T 212 941 9801 F 212 941 9440

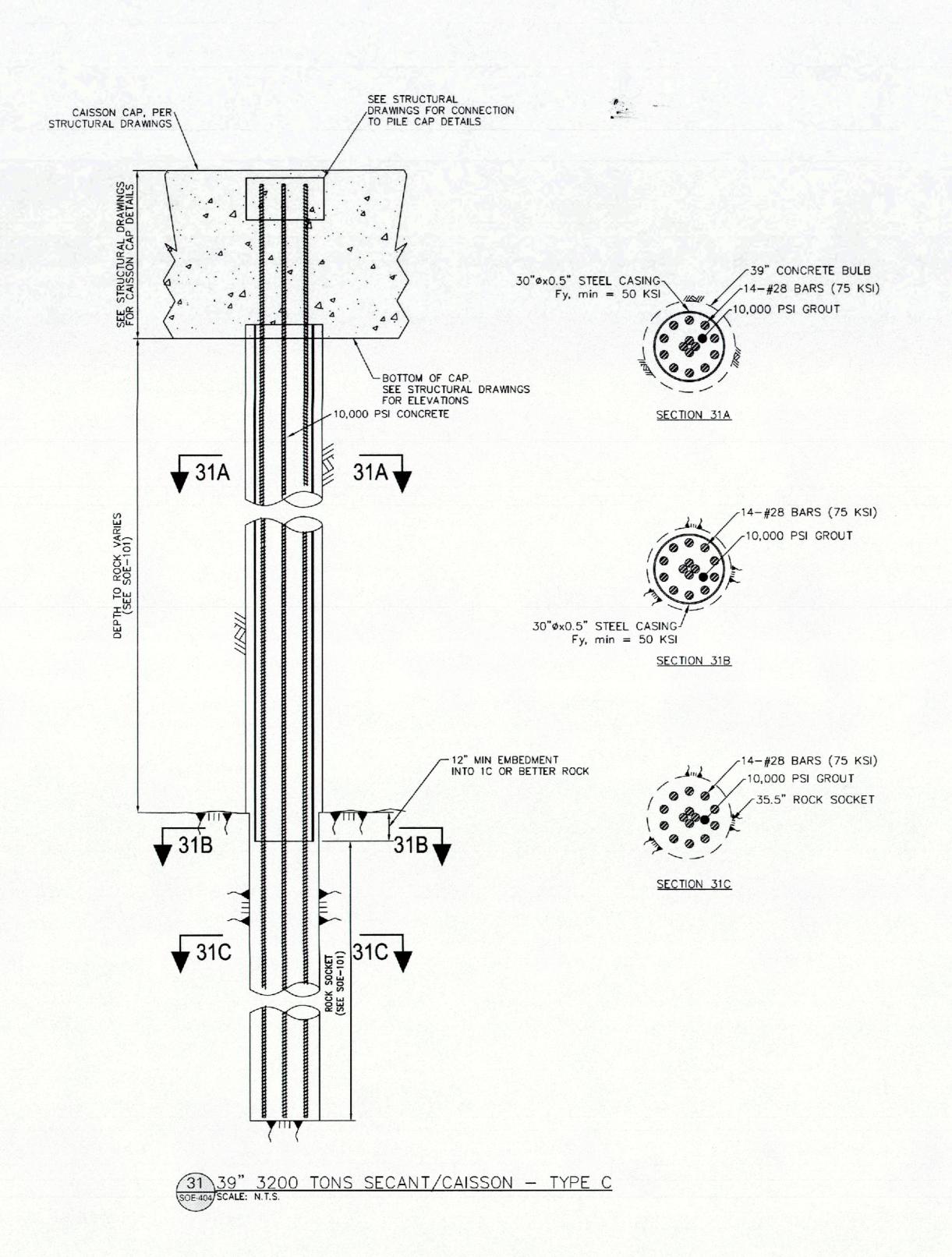


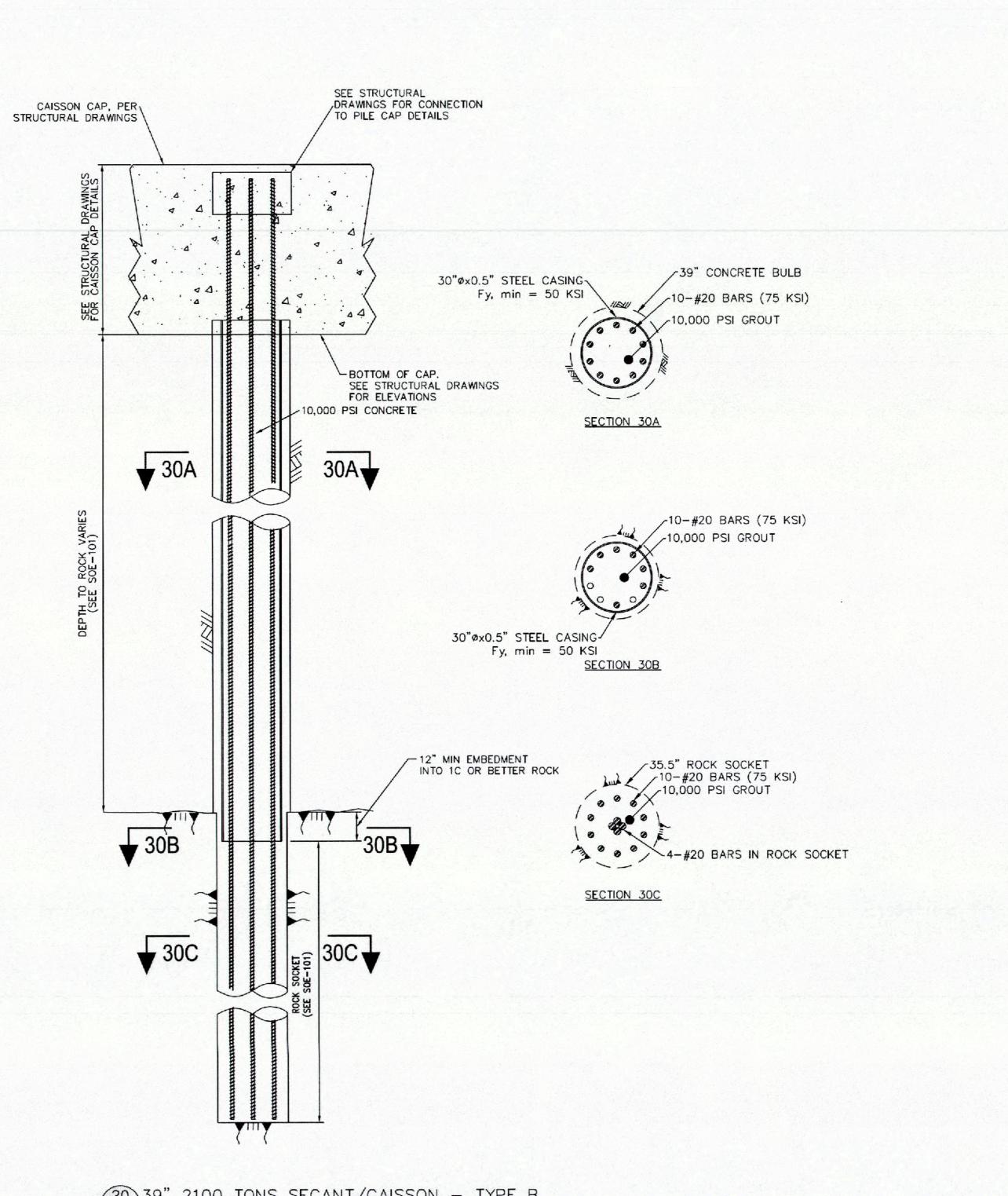
BuroHappold Engineering 100 Broadway New York, NY 10005 212.334.2025 Ventresca Design, LLC
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Long Island City, NY 11101
212.600.0033

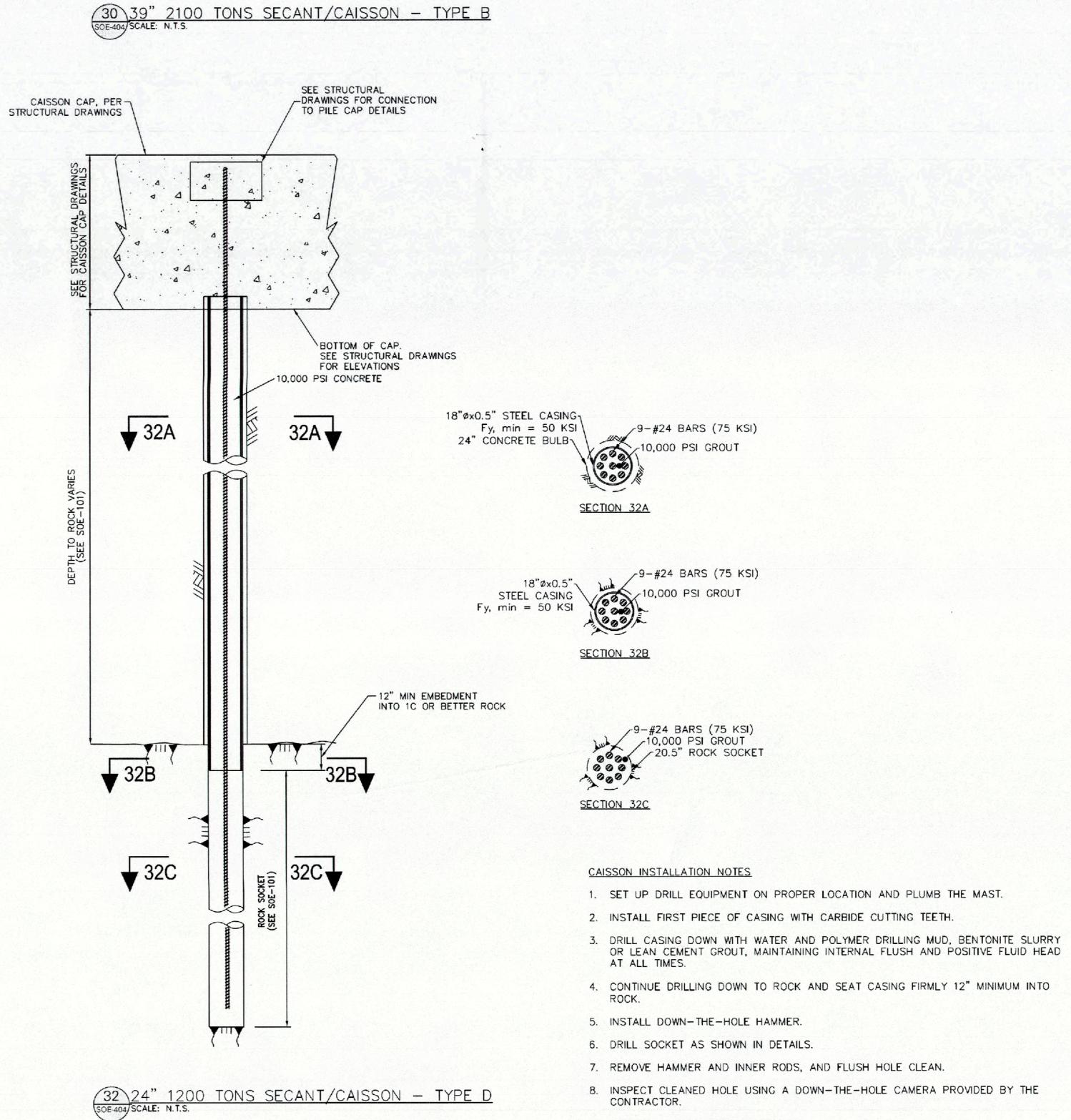
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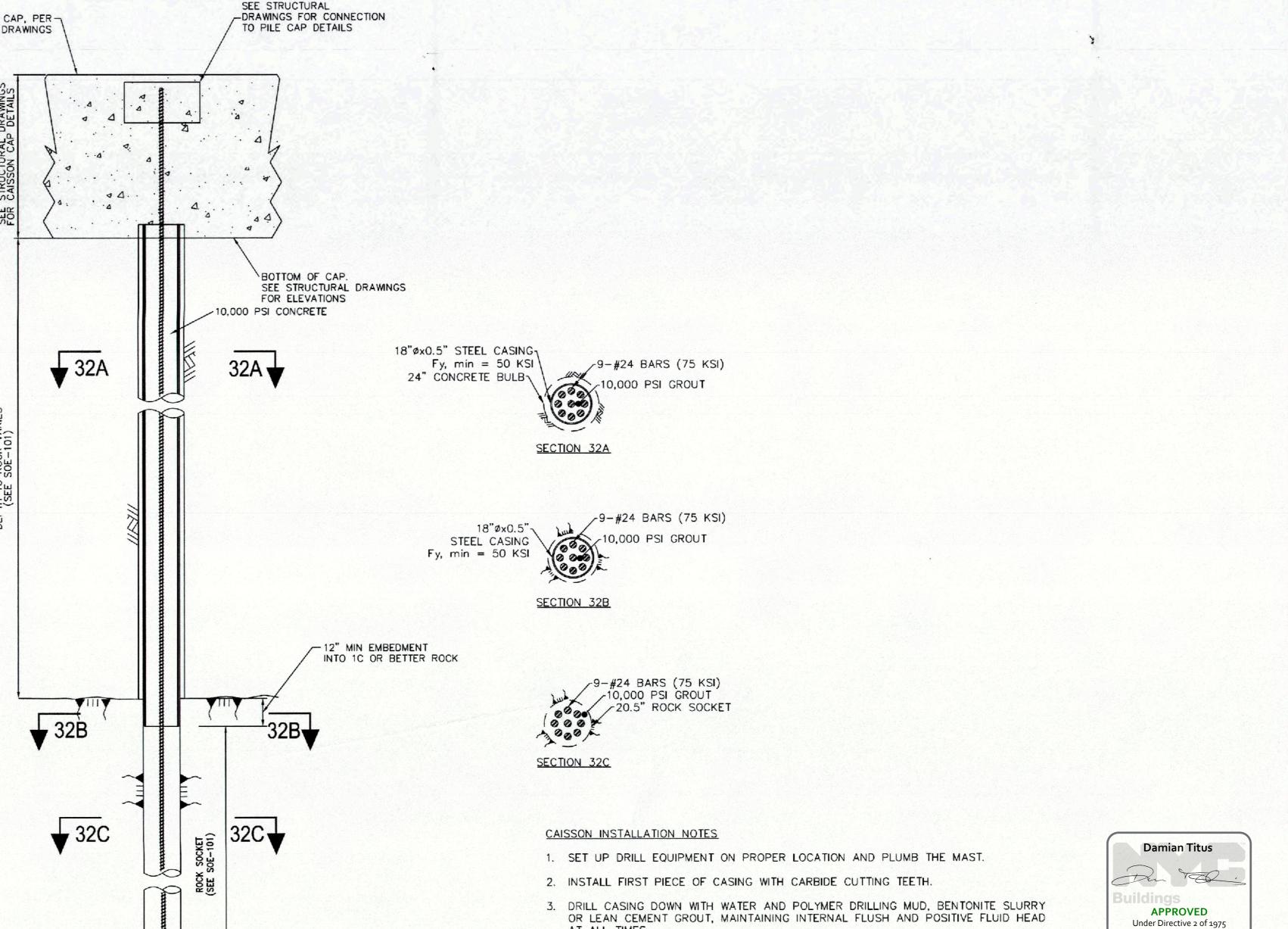












9. INSTALL CAISSON REINFORCEMENT.

FLOWS OUT OF THE TOP OF THE CAISSON.

12. MONITOR ADJACENT STRUCTURES DURING CONSTRUCTION.

10. PUMP CONCRETE/GROUT THROUGH TREMIE PIPE UNTIL GOOD CONCRETE/GROUT

11. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR USING MEANS AND METHODS TO INSTALL THE CAISSONS WITHOUT ADVERSELY AFFECTING THE ADJACENT AND SURROUNDING STRUCTURES, BUILDINGS, STREETS, AND UTILITIES.

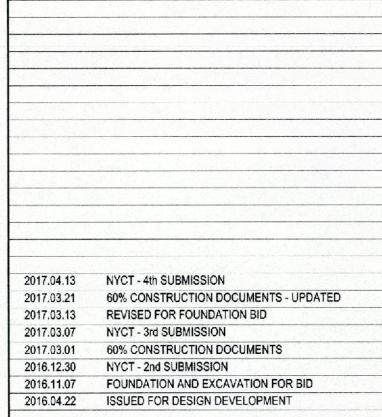


BROAD STREET NEW YORK NY 10004

DEPT OF BLDGS121190772 Job Number

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E N	WSP Group 228 East 45th Street, 3rd FI New York, NY 10017 212.687.9888	REP ENGNEER	BuroHappold Engineering 100 Broadway New York, NY 10005 212.334.2025
T ENGINE	LANGAN 21 Penn Plaza 360 West 31st Street, 8th FI New York, NY 10001 212.479.5400	LANDSCAPE ARCHITECT	MPFP LLC / M. Paul Friedberg & Partners 120 Broadway, Floor 20 New York, NY 10005 212.477.6366
LIGHTING DESIGNER	Ventresca Design, LLC 44-02 Eleventh St, Suite 203 Long Island City, NY 11101 212.600.0033	CURTAIN WALE CONSULTANT	BuroHappold Engineering 100 Broadway New York, NY 10005 212.334.2025







CETRARUDDY SUPPORT OF EXCAVATION DETAILS - 4

Date: 06/15/2017:

NYC Development Hub

(SHEET 4 OF 4)

SOE-404.00 AS SHOWN

121190772 1529.00 CETRARUDDY ARCHITECTURE DPC 584 BROADWAY NEW YORK NY 10012 T 212 941 9801 F 212 941 9440