

GENERAL NOTES

- LOCATION OF ALL UNDERGROUND UTILITIES ARE APPROXIMATE. ALL LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE AS-BUILT PLANS AND UTILITY MARK OUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES.
- IF AN UNFORESEEN INTERFERENCE EXISTS BETWEEN AN EXISTING AND A PROPOSED UTILITY OR STRUCTURE THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER SO THAT THE APPROPRIATE REVISIONS CAN BE MADE.
- THE CONTRACTOR IS TO ADHERE TO ALL APPLICABLE CONSTRUCTION SAFETY STANDARDS AS PUBLISHED IN THE CODE OF FEDERAL REGULATIONS 1926 AS AMENDED.
- THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS WITH ALL LOCAL, STATE AND FEDERAL AGENCIES AS MAY BE REQUIRED FOR PROPOSED WORK.
- ALL EROSION CONTROLS (IF REQ'D) ARE TO BE SET IN PLACE PRIOR TO ANY LAND DISTURBANCES ON THE SITE.
- THE CONTRACTOR IS TO USE CAUTION WHEN WORKING NEAR OR UNDER OVERHEAD UTILITIES. THE CONTRACTOR IS TO NOTIFY THE UTILITY COMPANIES OF HIS INTENT PRIOR TO COMMENCEMENT OF ANY WORK.
- ANY DRAINAGE STRUCTURES, UTILITIES, DITCHES, GRASSED AREAS, PAVEMENT, CONCRETE OR CURBS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
- THE CONTRACTOR SHALL BE SOLELY AND DIRECTLY RESPONSIBLE TO THE OWNER AND OPERATORS OF SUCH PROPERTIES FOR ANY DAMAGE, INJURY, EXPENSE, LOSS, INCONVENIENCE, DELAY, SUITS, ACTIONS, OR CLAIMS OF ANY CHARACTER RESULTING FROM THE CONSTRUCTION OPERATIONS UNDER THIS CONTRACT.
- NEITHER THE OWNER, OFFICERS OR AGENTS OF THE BUSINESS SHALL BE RESPONSIBLE TO THE CONTRACTOR FOR DAMAGES AS A RESULT OF THE CONTRACTOR'S FAILURE TO PROTECT UTILITIES ENCOUNTERED IN THE COURSE OF PERFORMING WORK WHERE THE CONTRACTOR'S OPERATIONS COULD CAUSE DAMAGE OR INCONVENIENCE TO WATER, FIRE PROTECTION SYSTEMS, TELEPHONE, ELECTRIC SERVICES, SANITARY AND STORM WATER SYSTEM, THE OPERATIONS SHALL BE SUSPENDED UNTIL ALL ARRANGEMENTS NECESSARY FOR THE PROTECTION OF THESE UTILITIES AND SERVICES HAVE BEEN MADE BY THE CONTRACTOR.
- ALL WORK NOT SPECIFICALLY ASSOCIATED WITH FOUNDATION UNDERPINNING & SUPPORT OF EXCAVATION WORK ASSOCIATED WITH CONSTRUCTION OF NEW BUILDING AT 553 WEST 30th STREET, NYC TO BE DESIGNED AND INSTALLED BY OTHERS.
- THIS PLAN AND APPLICATION ARE FILED FOR APPROVAL ONLY OF THE STATED WORK APPEARING ON THE APPLICATION FORM AND DETAILED ON THE ACCOMPANYING PLANS. ALL OTHER MATTERS ARE NOT TO BE RELIED UPON AND ARE NOT TO BE CONSTRUED AS BEING APPROVED OR IN COMPLIANCE WITH APPLICABLE CODES, RULES OR REGULATIONS. THESE MATTERS ARE SHOWN FOR INFORMATION PURPOSES ONLY.

SOILS NOTE

THIS SUPPORT OF EXCAVATION DESIGN ASSUMES SUBSURFACE CONDITIONS ARE CONSISTENT WITH GEOTECHNICAL REPORT / SOIL BORINGS PREPARED BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES. GEOTECHNICAL REPORT ESTIMATES GROUNDWATER PRESENT AT ELEVATIONS OF REQUIRED EXCAVATION. BRONZINO ENGINEERING, P.C. HAS MADE NO FIELD INSPECTIONS OR GEOTECHNICAL STUDIES TO VERIFY SOIL CONDITIONS. IT IS RECOMMENDED THAT PROPER TESTING AND VERIFICATIONS BE CONDUCTED BY A SOILS ENGINEER PRIOR TO START OF UNDERPINNING WORK.

N.Y.C.D.O.B. NOTES

- CONTRACTOR SHALL TAKE NOTICE OF THE REQUIREMENTS CONTAINED IN 1RCNY SECTION 52-01 FOR EXCAVATIONS & EARTHWORK AND THE 2008 NEW YORK CITY CONSTRUCTION CODE, SECTION 33 FOR SAFEGUARDS DURING CONSTRUCTION. CONTRACTOR SHALL FULLY COMPLY WITH EACH AND EVERY ONE OF SAID REQUIREMENTS THROUGHOUT THE PROJECT. CONTRACTOR SHOULD REFER TO BIS WEBSITE AT WWW.NYC.GOV/BUILDINGS FOR ADDITIONAL INFORMATION.
- AS PER SECTION 27-195 OF THE ADMINISTRATIVE CODE, NO EARTHWORK SHALL START UNLESS THE PERMIT HOLDER NOTIFIES THE N.Y.C.D.O.B. AT LEAST TWENTY-FOUR (24), BUT NO MORE THAN FORTY-EIGHT (48) HOURS PRIOR TO THE COMMENCEMENT OF WORK. THE NOTIFICATION SHALL STATE THE DATE THAT SUCH EARTHWORK IS TO COMMENCE. SHOULD THE NOTIFICATION DATE FALL ON A WEEKEND OR AN OFFICIAL HOLIDAY, THE PERMIT HOLDER SHALL NOTIFY THE DEPARTMENT ON THE LAST BUSINESS DAY BEFORE THE COMMENCEMENT DATE.
- UNLESS SPECIFICALLY NOTED OTHERWISE, BRONZINO ENGINEERING, P.C. IS RETAINED SOLELY TO PROVIDE PLANS FOR THE SUBJECT PROJECT AND RESPONSIBILITY IS THEREBY LIMITED TO THE ACCURACY OF THESE DRAWINGS.
- UNLESS OTHERWISE STATED, BRONZINO ENGINEERING, P.C. IS NOT RETAINED FOR ANY JOB SUPERVISION, BUT MAY BE RETAINED FOR SPECIFIC SPECIAL / PROGRESS INSPECTIONS. CONTRACTOR TO CONTACT THE ENGINEER DESIGNATED ON THE TECHNICAL RESPONSIBILITY FORM (TR-1) IN WRITING AT LEAST 72 HRS. PRIOR TO START OF WORK TO ARRANGE FOR REQUIRED INSPECTIONS.
- THE INSPECTING ENGINEER IS NOT RESPONSIBLE FOR ANY WORK PERFORMED WITHOUT PRIOR WRITTEN NOTICE TO THE ENGINEER NOR FOR ANY UNINSPECTED OR UNACCEPTABLE WORK.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED WORK PERMITS FOR ALL WORK SHOWN ON PLANS PRIOR TO START OF WORK. AS PER NYCDOB CODE, PERMITS FOR WORK DEPICTED IN THESE PLANS SHALL BE POSTED AT JOB SITE WITHIN 3 DAYS OF ISSUANCE.
- COPIES OF SPECIAL INSPECTION FIELD LOGS (PERIODIC OR CONTINUOUS), TR-1 FORMS AND SPECIAL INSPECTION SIGN-IN LOGS SHALL BE KEPT ON SITE BY CONTRACTOR AND MADE AVAILABLE TO THE N.Y.C.D.O.B. UPON REQUEST.
- CONTRACTOR / OWNER SHALL PROVIDE BRONZINO ENGINEERING, P.C. WITH PRE-CONSTRUCTION SURVEY (ASSESSMENT AND DOCUMENTATION OF EXISTING CONDITIONS) AND BENCHMARK SURVEYS OF ADJOINING PROPERTIES AND STRUCTURES TO DETERMINE IF ADJOINING PROPERTIES AND STRUCTURES ARE ADVERSELY AFFECTED BY EXCAVATION OPERATIONS AS OUTLINED IN THIS PLAN. SURVEY SHOULD CONTAIN A RECOMMENDED MONITORING PLAN AND BE CERTIFIED BY LICENSED NEW YORK STATE PROFESSIONAL ENGINEER.
- ALL BUILDINGS DESIGNATED AS "LANDMARKS" LOCATED WITHIN 90 FEET OF THE PROPOSED EXCAVATION AND OVERALL SITE DEVELOPMENT WORK ARE TO BE MONITORED AS PER THE REQUIREMENTS OF TPN 10/88.
- ROCK REMOVAL, IF REQUIRED, SHALL COMPLY WITH THE REQUIREMENTS OF THE NEW YORK CITY FIRE CODE AND SECTION 3307.4.2 OF THE 2008 NEW YORK CITY CONSTRUCTION CODE. THE USE OF EXPLOSIVES IS STRICTLY PROHIBITED UNLESS THE WRITTEN CONSENT OF THE COMMISSIONER AND THE NEW YORK CITY FIRE DEPARTMENT IS OBTAINED.
- OWNER SHALL OBTAIN WRITTEN CONSENT FROM ADJACENT PROPERTY OWNERS FOR ALL WORK THAT EXTENDS BEYOND PROPERTY LINE INTO ADJACENT PROPERTY.
- CONTRACTOR SHALL OBTAIN N.Y.C.D.O.T. PERMITS FOR ANY WORK THAT EXTENDS INTO SIDEWALK AND/OR ROADWAY.

ELEVATION DATUM

ELEVATIONS NOTED AS XX.XX REFER TO ELEVATIONS AS DEFINED BY BOROUGH OF MANHATTAN TOPOGRAPHICAL DATUM, WHICH IS 2.750 FEET ABOVE NATIONAL GEODETIC SURVEY DATUM AT SANDY HOOK, NJ.

MONITORING OF ADJACENT STRUCTURES

- CONTRACTOR / OWNER SHALL PROVIDE BRONZINO ENGINEERING, P.C. WITH PRE-CONSTRUCTION SURVEY (ASSESSMENT AND DOCUMENTATION OF EXISTING CONDITIONS) AND BENCHMARK SURVEYS OF ADJOINING PROPERTIES AND STRUCTURES TO DETERMINE IF ADJOINING PROPERTIES AND STRUCTURES ARE ADVERSELY AFFECTED BY EXCAVATION OPERATIONS AS OUTLINED IN THIS PLAN. SURVEY SHOULD CONTAIN A RECOMMENDED MONITORING PLAN AND BE CERTIFIED BY LICENSED NEW YORK STATE PROFESSIONAL ENGINEER.
- ALL ADJACENT STRUCTURES SHALL BE MONITORED FOR BOTH VIBRATION AND DEFLECTION IN ACCORDANCE WITH SECTION 3309.6 OF THE 2008 NEW YORK CITY CONSTRUCTION CODES. THE USE OF EXPLOSIVES IS STRICTLY PROHIBITED UNLESS THE WRITTEN CONSENT OF THE COMMISSIONER AND THE NEW YORK CITY FIRE DEPARTMENT IS OBTAINED.
- ALL BUILDINGS DESIGNATED AS "LANDMARKS" LOCATED WITHIN 90 FEET OF THE PROPOSED EXCAVATION AND OVERALL SITE DEVELOPMENT WORK ARE TO BE MONITORED AS PER THE REQUIREMENTS OF TPN 10/88.
- SITE GROUNDWATER DEWATERING IS NOT REQUIRED AS PART OF THIS WORK SCOPE.
- OWNER SHALL UTILIZE MONITORING LOCATIONS SHOWN ON THESE S.O.E. PLANS AS REFERENCE ONLY AND SUBMIT MONITORING PLAN FOR REVIEW BY S.O.E. DESIGN APPLICANT BASED ON THE FOLLOWING CRITERIA:
 -OPTICAL DATA SHALL BE COLLECTED EVERY MONDAY, WEDNESDAY AND FRIDAY DURING THE EXCAVATION / S.O.E. PHASE AND FORWARDED TO S.O.E. DESIGN APPLICANT FOR REVIEW UNLESS OTHERWISE DIRECTED BY S.O.E. DESIGN APPLICANT.
 -VIBRATION MONITORING SHALL BE CONTINUOUSLY MONITORED DURING THE EXCAVATION / S.O.E. PHASE UNLESS OTHERWISE DIRECTED BY S.O.E. DESIGN APPLICANT.
 -CONTRACTOR SHALL STOP WORK AND NOTIFY S.O.E. DESIGN APPLICANT IMMEDIATELY SHOULD ANY OF THE FOLLOWING THRESHOLDS BE MET:
 *VIBRATION PEAK PARTICLE VELOCITY EXCEEDS 1.0 IN./SEC (IF BUILDING IS DESIGNATED AS "LANDMARKS", REFER TO TPN 10/88 FOR CRITERIA)
 *LATERAL OR VERTICAL DEFLECTION OF ADJACENT STRUCTURE EXCEEDS 3/8" (IF BUILDING IS DESIGNATED AS "LANDMARKS", REFER TO TPN 10/88 FOR CRITERIA)

NEW YORK CITY ENERGY CONSERVATION CODE

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE

SUPPORT OF EXCAVATION NOTES

- THIS SUPPORT OF EXCAVATION DESIGN IS RESTRICTED TO MAXIMUM EXCAVATIONS SHOWN & SOIL TYPES WITH AN ACTIVE LATERAL PRESSURE NOT EXCEEDING 40.00 PSF PER FOOT OF DEPTH.
- NO SURCHARGE GREATER THAN 300 PSF SHALL EXIST WITHIN 25' OF THE EXCAVATION & EDGES OF EXCAVATION SHALL BE CUT BACK AS INDICATED.
- ALL STRUCTURAL STEEL TO BE ASTM A992 OR ASTM A572, GRADE 50; SHEET PILES TO BE A572.
- SUPPORT STEEL WALERS FROM STEEL SOLDIER BEAMS BY WELDING AS SHOWN
- SUPPORT OF EXCAVATION SYSTEM TO BE FULLY ASSEMBLED BEFORE BEING SUBJECTED TO GROUND PRESSURE.
- INSTALLATION OF SUPPORT OF EXCAVATION SYSTEM TO BE IN ACCORDANCE WITH ALL O.S.H.A. REGULATIONS.
- ALL WALTER SPLICE CONNECTIONS, IF REQUIRED, TO BE LOCATED AT POINT OF INTERSECTION WITH STEEL RAKERS ONLY.
- TIMBER LAGGING TO BE DOUGLAS FIR OR SOUTHERN PINE, No. 1, NOMINAL 3" THICK, NEW OR USED, WITH A MIN. Fy=1,950, psi, Fb=1,200 psi, E=1,600,000 psi IN GOOD SERVICEABLE CONDITION (ALL TIMBER TO BE LEFT IN PLACE AFTER COMPLETION OF PROJECT TO BE PRESSURE TREATED)

STRUCTURAL / DEMOLITION WORK

ALL FOUNDATION, ARCHITECTURAL & STRUCTURAL WORK FOR NEW BUILDINGS & DEMOLITION WORK FOR EXISTING BUILDING TO BE DESIGNED AND INSTALLED BY OTHERS. CONTRACTOR TO COORDINATE ALL WORK WITH STRUCTURAL ENGINEER AS REQUIRED.

USE AND ACCESS AGREEMENT

NO FOUNDATION UNDERPINNING WORK OR PLACEMENT EXCAVATION COMPONENTS ON ADJACENT PROPERTIES IS TO BEGIN UNTIL PROPER USE AND ACCESS AGREEMENT IS SIGNED BY OWNER OF DEVELOPED PROPERTY AS WELL AS ADJACENT BUILDING OWNERS TO AUTHORIZE UNDERPINNING OF ADJACENT BUILDINGS AND PLACEMENT OF S.O.E. COMPONENTS ON ADJACENT PROPERTIES. COPY OF AGREEMENT SHALL BE FORWARDED TO DESIGN APPLICANT PRIOR TO START OF SUPPORT OF EXCAVATION / UNDERPINNING WORK.

NYCDOT APPROVAL

PRIOR TO START OF WORK THE CONTRACTOR SHALL OBTAIN NYCDOT APPROVAL FOR THE INSTALLATION OF TIEBACKS ALONG WEST 56th STREET. COPY OF APPROVAL / PERMIT SHALL BE PROVIDED TO DESIGN APPLICANT ONCE OBTAINED.

PROGRESS / SPECIAL INSPECTIONS

CONCRETE TEST CYLINDERS (TIEBACK GROUT) BC 1905.6
 STRUCTURAL STEEL - WELDING BC 1704.3.1
 EXCAVATION - SHEETING, SHORING & BRACING BC 1704.19
 BC 3306.6
 STRUCTURAL SAFETY - STRUCTURAL STABILITY BC 1704.19

ASSOCIATED N.Y.C.D.O.B. APPLICATIONS

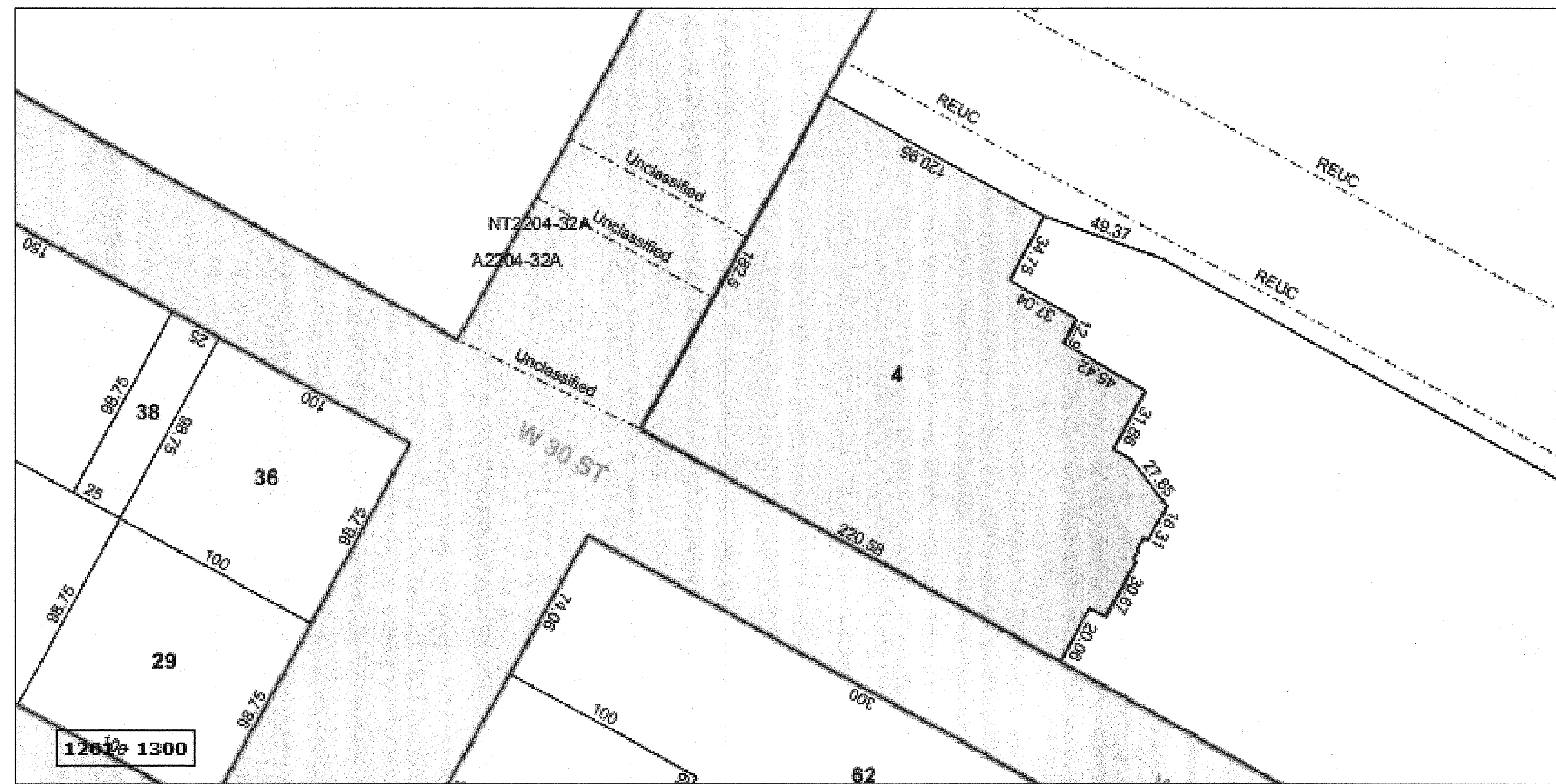
NEW BUILDING NB #121184208
 FOUNDATION & STRUCTURAL FOR N.B. NB #121184208
 SIDEWALK SHED ALT-3 TBD
 BUILDERS PAVEMENT PLAN ALT-3 TBD
 CONSTRUCTION FENCE ALT-2 TBD
 EXISTING SUPPORT OF EXCAVATION NB #121324290

LIST OF DRAWINGS

SHEET #	DRAWING #	TITLE
1	SOE-001.00	SUPPORT OF EXCAVATION COVER SHEET
2	SOE-002.00	SUPPORT OF EXCAVATION PLAN
3	SOE-003.00	SUPPORT OF EXCAVATION SECTIONS
4	SOE-004.00	SUPPORT OF EXCAVATION SECTIONS
5	SOE-005.00	SUPPORT OF EXCAVATION SECTIONS
6	SOE-006.00	SUPPORT OF EXCAVATION SECTIONS
7	SOE-007.00	SUPPORT OF EXCAVATION DETAILS



LOCATION PLAN
 SCALE: 1" = 200'



PLOT PLAN
 SCALE: 1" = 50'

EXISTING S.O.E. COMPONENTS

EXISTING SUPPORT OF EXCAVATION COMPONENTS ON SITE WERE FILED, APPROVED AND INSTALLED UNDER APPLICATION #121324290 BY FNA ASSOCIATES, AND THE INSTALLATION INSPECTED BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES. SEE INSPECTION APPROVAL LETTER FROM LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, DATED APRIL 7, 2014, FOR INSTALLATION CERTIFICATIONS OF SUPPORT OF EXCAVATION COMPONENTS FOR TOWER D (553 WEST 30th STREET)

2	REVISED AS PER EU COMMENTS	6/10/14	RWB
1	REVISED AS PER NYCDOB EU COMMENTS	4/9/14	RWB
No.	DESCRIPTION	DATE	BY

BRONZINO ENGINEERING, P.C.
 10-4 TECHNOLOGY DRIVE
 SETAUKET, NY 11733
 631-751-8299

HUDSON YARDS - TOWER D
 553 WEST 30th STREET
 NEW YORK CITY, NY
 BLOCK: 702 LOT: 10 ZONE: C6-4 MAP: 08c

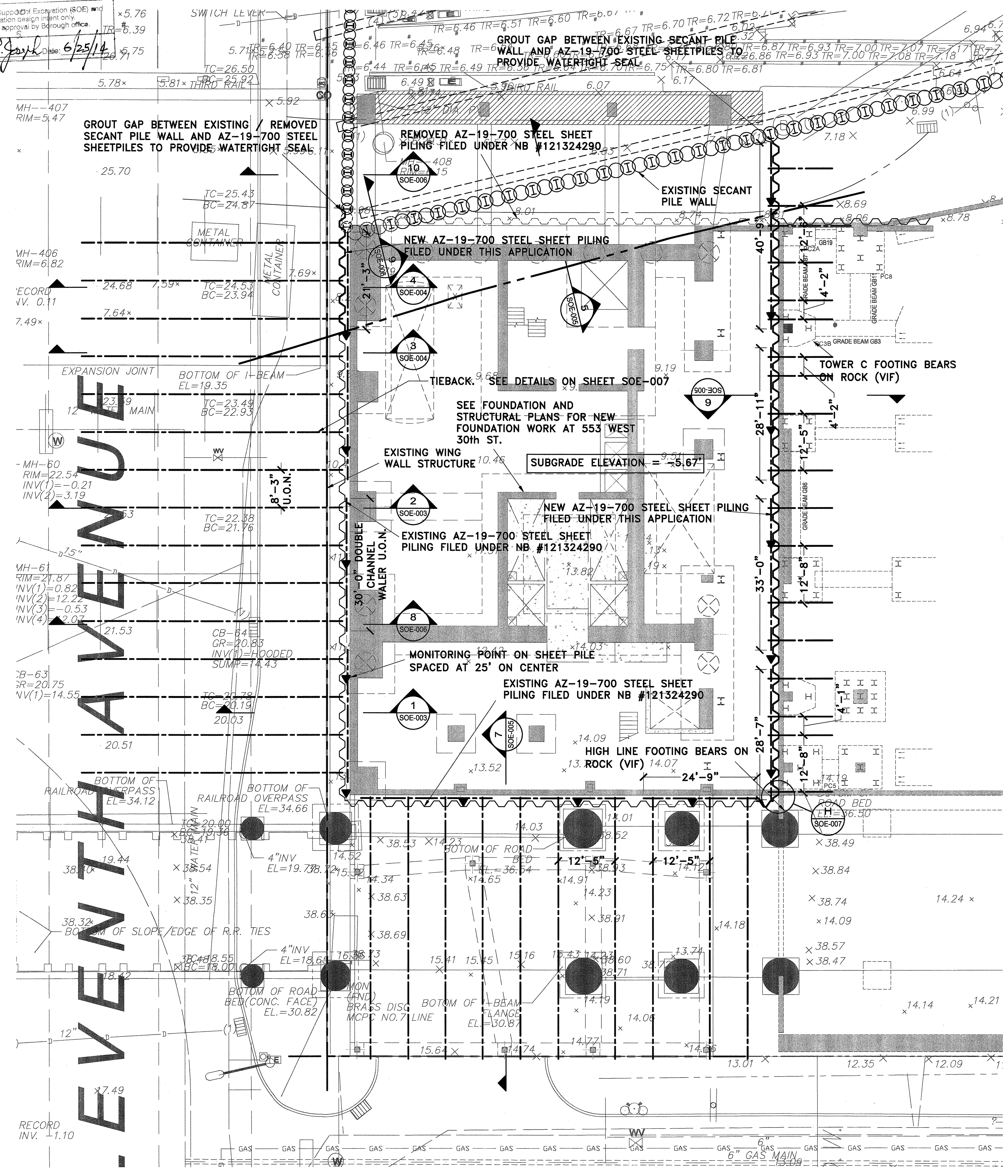
SUPPORT OF EXCAVATION COVER SHEET

UNAUTHORIZED ALTERATION OR ADDITION TO THIS PLAN IS A VIOLATION OF SECTION 7209 OF THE NYS EDUCATION LAW. COPIES OF THIS PLAN NOT BEARING THE PROFESSIONAL ENGINEER'S INKED SEAL OR EMBROSSED SEAL, SHALL NOT BE CONSIDERED TO BE A VALID TRUE COPY.

ROBERT W. BRONZINO
 LICENSED PROFESSIONAL ENGINEER
 STATE OF NEW YORK
 LICENSE NO. 077015

PROJECT #: 131107
 SCALE: AS NOTED
 DATE: 3/10/14
 DRAWING NO: SOE-001.00
 SHEET NO: 1 OF 7

New York City Department of Buildings
 5EP Excavation Unit
 Reviewed for Support of Excavation (SOE) and foundation design intent only.
 Subject to approval by Borough Office.
 Audited By: [Signature] Date: 6/25/14



NOTES:

- ELEVATIONS SHOWN ARE REFERENCED ELEVATIONS AS DEFINED BY BOROUGH OF MANHATTAN TOPOGRAPHICAL DATUM, WHICH IS 2.750 FEET ABOVE NATIONAL GEODETIC SURVEY DATUM AT SANDY HOOK, NJ.
- REFER TO FOUNDATION PLAN ON DRAWING NO. FO-100 TITLED "FOUNDATION PLAN (CELLAR)" BY WSP CANTOR SEINUK, DATED 1/10/14.
- FOR DEPTH OF EXCAVATION FOR FOOTINGS.
- STRUCTURAL BACKGROUNDS ARE BASED ON FO-SERIES PLANS BY WSP CANTOR SEINUK, DATED 1/10/14.
- REFER TO SOE-001 FOR NOTES AND SPECIFICATIONS.
- GEOTECHNICAL INFORMATION AS SHOWN IS BASED ON GEOTECHNICAL REPORT PREPARED BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES.
- EXISTING SHEETPILES ON SITE ARE DESIGNED AND INSTALLED BY OTHERS UNDER APPLICATION #121324290.

SYMBOL / ABBREVIATION LEGEND

S.W.	SIDEWALK		ELEVATION DESIGNATOR
S.B.	SOLDIER BEAM		
A/R	AS REQUIRED		
ELEV.	ELEVATION		DETAIL LABEL
FND.	FOUNDATION		SHEET LOCATION
BOT.	BOTTOM		
PSF	POUNDS PER SQUARE FOOT		
G.B.	GRADE BEAM		SECTION LABEL
O.D.	OUTSIDE DIAMETER		SHEET LOCATION
PSI	POUNDS PER SQUARE INCH		
MAX.	MAXIMUM		PROPERTY LINE
MIN.	MINIMUM		
P.L.	PROPERTY LINE		
C.L.	CENTERLINE		
TSF	TONS PER SQUARE FOOT		SLAB ELEVATION CHANGE
EXCAV.	EXCAVATED		
O.C.	ON CENTER		LOCATION OF BUILDING
FTG.	FOOTING		MONITORING POINTS
KSI	KIPS PER SQUARE INCH		
B.O.F.	BOTTOM OF FOOTING		
T.O.F.	TOP OF FOOTING		

[#.#] PROPOSED BOTTOM OF FOOTING ELEVATION

2	REVISED AS PER EU COMMENTS	6/10/14	RWB
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BRONZINO ENGINEERING, P.C.
 10-4 TECHNOLOGY DRIVE
 SETAUKET, NY 11733
 631-751-8299

HUDSON YARDS - TOWER D
 553 WEST 30th STREET
 NEW YORK CITY, NY
 BLOCK: 702 LOT: 10 ZONE: C6-4 MAP: 08c

SUPPORT OF EXCAVATION PLAN

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	PROJECT #: 131107
	SCALE: AS NOTED
	DATE: 3/10/14
	DRAWING NO: SOE-002.00
	SHEET NO: 2 OF 7

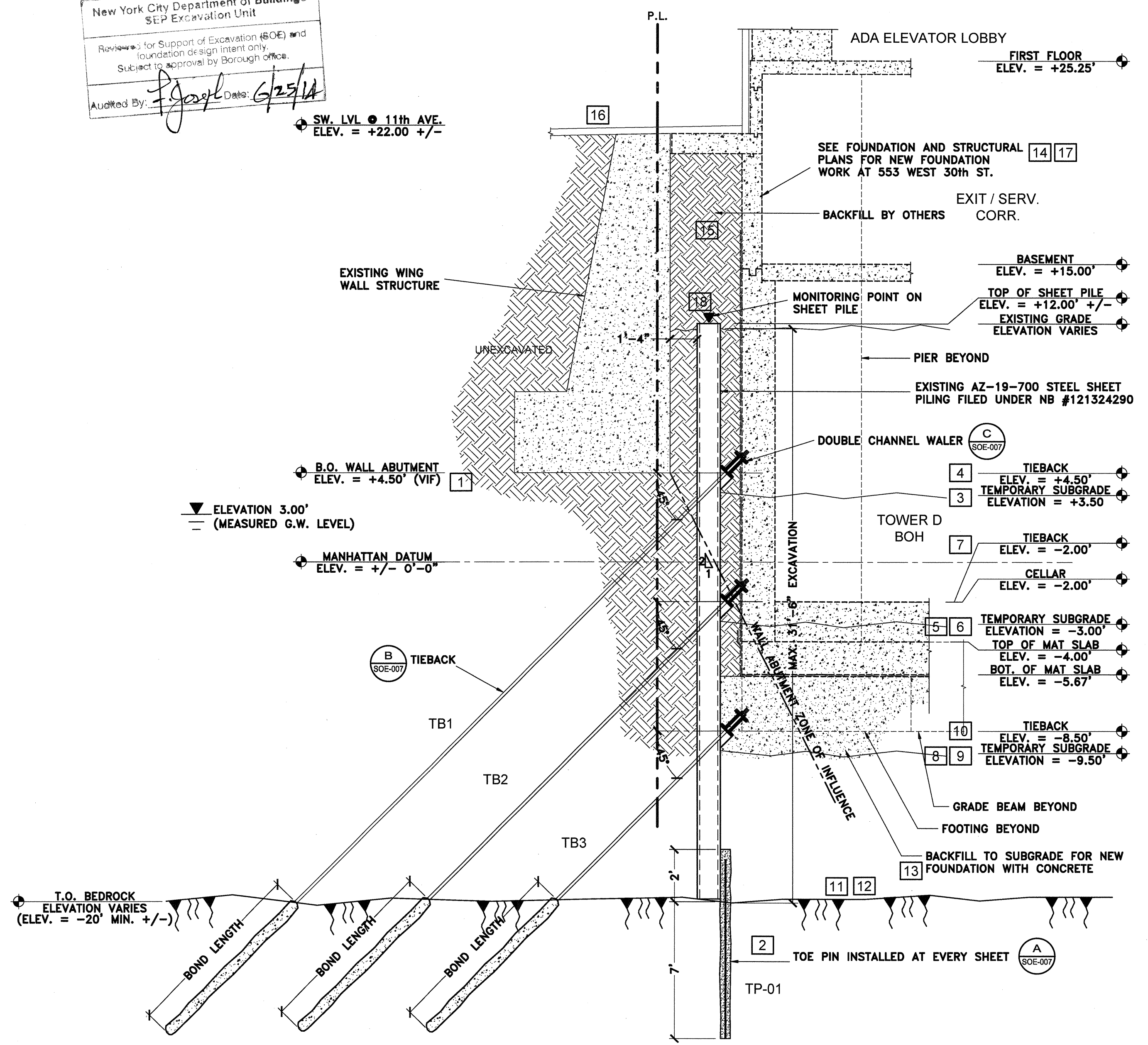
SUPPORT OF EXCAVATION PLAN
 SCALE: 1/8" = 1'-0"

New York City Department of Buildings
 SEP Excavation Unit
 Reviewed for Support of Excavation (SOE) and
 foundation design intent only.
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 Audited By: [Signature] Date: 6/25/14

SW. LVL @ 11th AVE.
 ELEV. = +22.00 +/-

ELEVATION 3.00'
 (MEASURED G.W. LEVEL)

MANHATTAN DATUM
 ELEV. = +/- 0'-0"



1 EXCAVATION SECTION - WEST SIDE AT 11th AVENUE ABUTMENT
 NOT TO SCALE

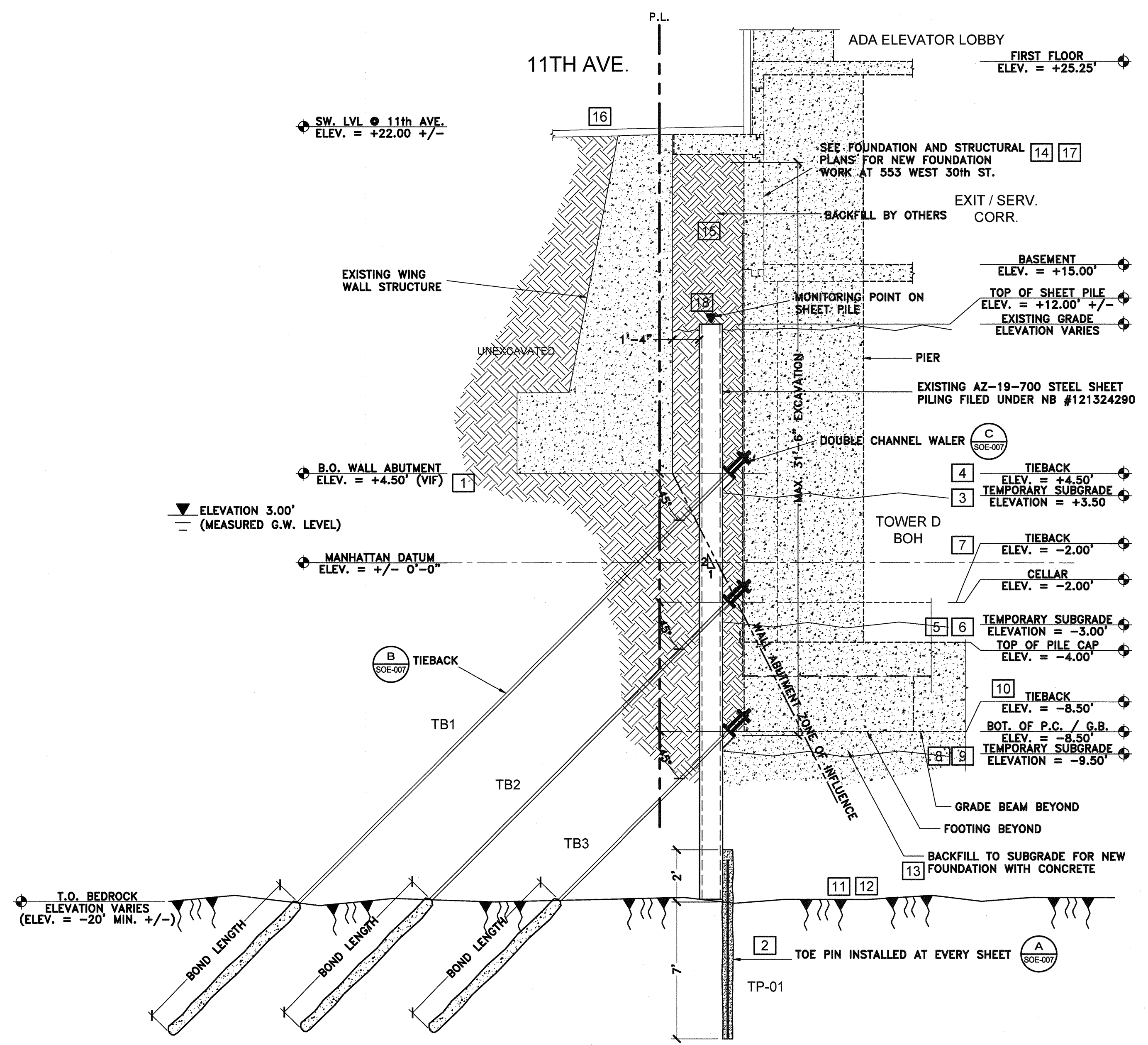
SUPPORT OF EXCAVATION SEQUENCE FOR SECTION 1/SOE-003

- PRIOR TO START OF WORK EXPLORATORY TEST PITS TO BE CONDUCTED ADJACENT TO EXISTING 11th AVENUE ABUTMENT TO VERIFY LOCATION OF BOTTOM OF FOOTING.
- INSTALL TOE PINS.
- EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF +3.50'
- INSTALL UPPER TIEBACKS (TB1)
- EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF -3.00'
- DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION -3.00'
- INSTALL TIEBACKS (TB2)
- EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF -9.50'
- DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION -9.50'
- INSTALL TIEBACKS (TB3)
- DEWATER SITE TO ROCK ELEVATION.
- EXCAVATE TO ROCK
- BACKFILL TO FOUNDATION SUBGRADE WITH LEAN CONCRETE.
- INSTALL NEW FOUNDATION, CELLAR, BASEMENT AND FIRST FLOOR.
- BACKFILL BETWEEN NEW FOUNDATION AND ABUTMENT AS REQUIRED.
- INSTALL TEMPORARY OR NEW SIDEWALK WIDENING.
- CONTINUE INSTALLATION OF FOUNDATION AND BUILDING AS PER APPROVED STRUCTURAL AND ARCHITECTURAL PLANS.
- MONITOR SHEETPILES FOR MOVEMENT EACH DAY AND ADJUST TIEBACK LOCK NUT AS REQUIRED.

SW. LVL @ 11th AVE.
 ELEV. = +22.00 +/-

ELEVATION 3.00'
 (MEASURED G.W. LEVEL)

MANHATTAN DATUM
 ELEV. = +/- 0'-0"



2 EXCAVATION SECTION - WEST SIDE AT 11th AVENUE ABUTMENT
 NOT TO SCALE

SUPPORT OF EXCAVATION SEQUENCE FOR SECTION 2/SOE-003

- PRIOR TO START OF WORK EXPLORATORY TEST PITS TO BE CONDUCTED ADJACENT TO EXISTING 11th AVENUE ABUTMENT TO VERIFY LOCATION OF BOTTOM OF FOOTING.
- INSTALL TOE PINS.
- EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF +3.50'
- INSTALL UPPER TIEBACKS (TB1)
- EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF -3.00'
- DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION -3.00'
- INSTALL TIEBACKS (TB2)
- EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF -9.50'
- DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION -9.50'
- INSTALL TIEBACKS (TB3)
- DEWATER SITE TO ROCK ELEVATION.
- EXCAVATE TO ROCK
- BACKFILL TO FOUNDATION SUBGRADE WITH LEAN CONCRETE.
- INSTALL NEW FOUNDATION, CELLAR, BASEMENT AND FIRST FLOOR.
- BACKFILL BETWEEN NEW FOUNDATION AND ABUTMENT AS REQUIRED.
- INSTALL TEMPORARY OR NEW SIDEWALK WIDENING.
- CONTINUE INSTALLATION OF FOUNDATION AND BUILDING AS PER APPROVED STRUCTURAL AND ARCHITECTURAL PLANS.
- MONITOR SHEETPILES FOR MOVEMENT EACH DAY AND ADJUST TIEBACK LOCK NUT AS REQUIRED.

2	REVISED AS PER EU COMMENTS	6/10/14	RWB
1	REVISED AS PER NYCDOB EU COMMENTS	4/9/14	RWB
No.	DESCRIPTION	DATE	BY

BRONZINO ENGINEERING, P.C.
 10-4 TECHNOLOGY DRIVE
 SETAUKET, NY 11733
 631-751-8299

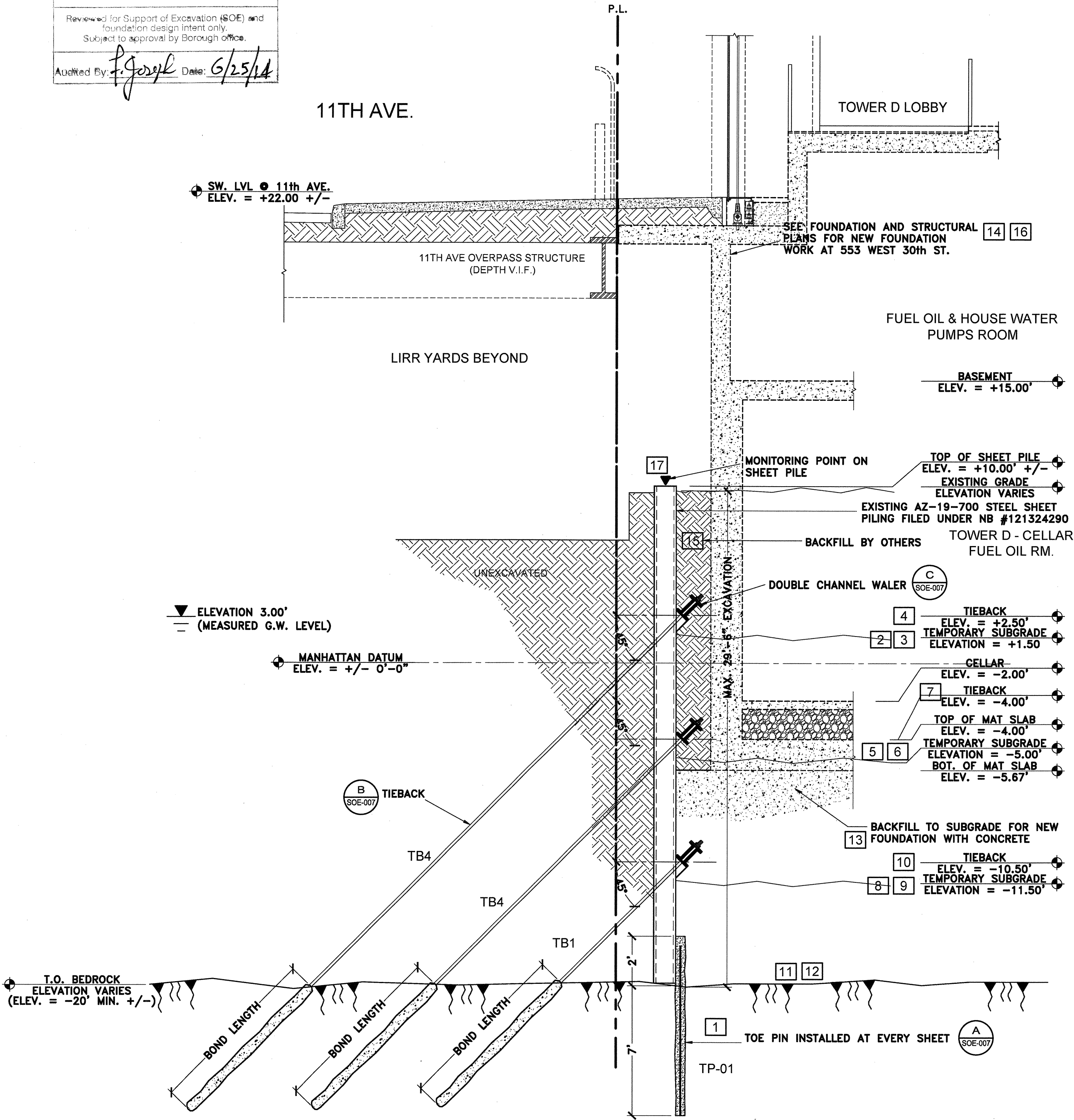
HUDSON YARDS - TOWER D
 553 WEST 30th STREET
 NEW YORK CITY, NY
 BLOCK: 702 LOT: 10 ZONE: C6-4 MAP: 08c

SUPPORT OF EXCAVATION
 NORTH ELEVATION

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ROBERT W. BRONZINO
 PROJECT #: 131107
 SCALE: AS NOTED
 DATE: 3/10/14
 DRAWING NO: SOE-003.00
 SHEET NO: 3 OF 7

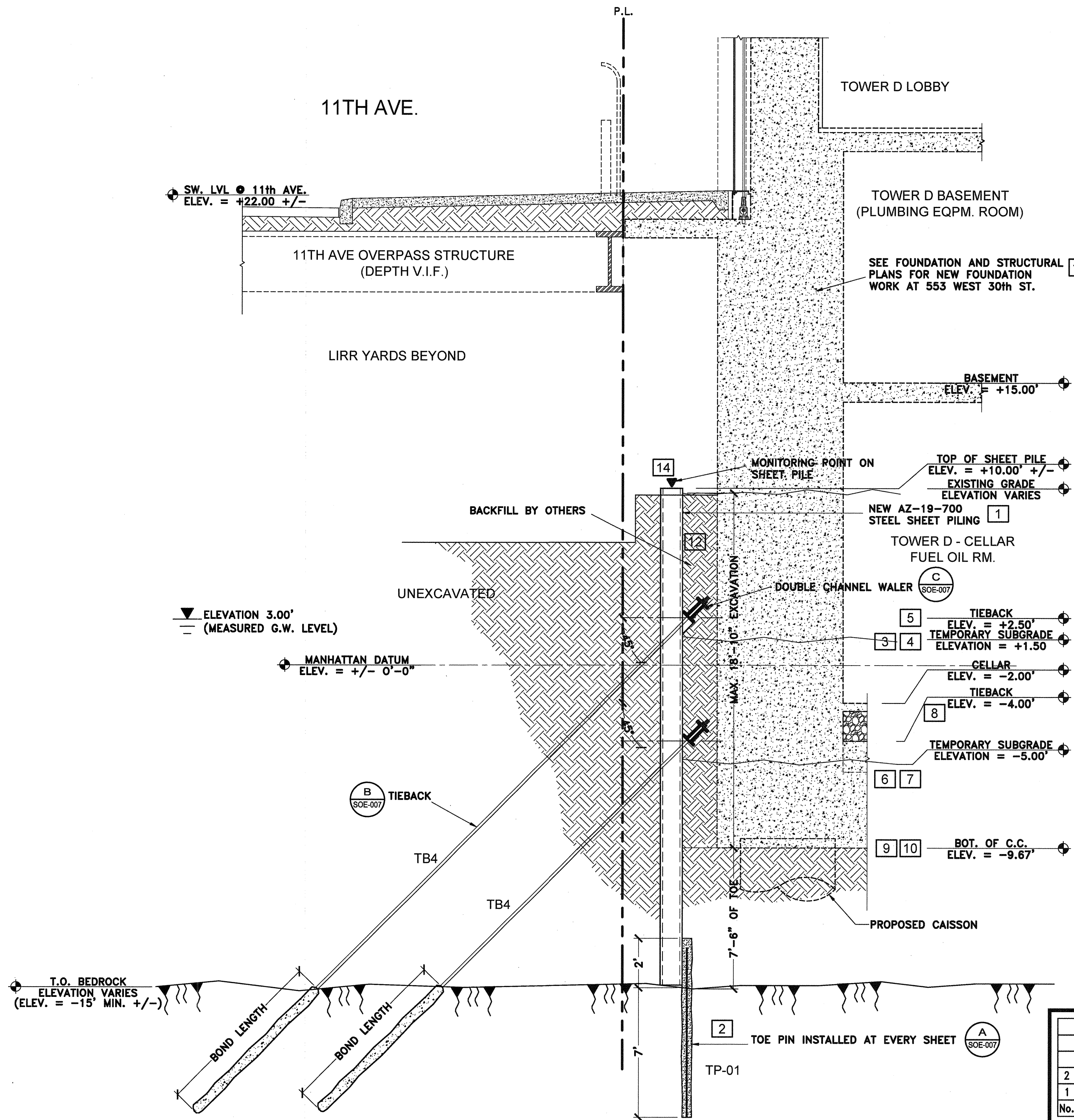
New York City Department of Buildings
 SEP Excavation Unit
 Reviewed for Support of Excavation (SOE) and
 Foundation Design Intent only.
 Subject to approval by Borough Office.
 Approved By: *[Signature]* Date: 6/25/14



3 EXCAVATION SECTION - WEST SIDE AT 11th AVENUE
 NOT TO SCALE

SUPPORT OF EXCAVATION SEQUENCE FOR SECTION 3/SOE-005

1. INSTALL TOE PINS.
2. EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF +1.50'
3. DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION +1.50'
4. INSTALL UPPER TIEBACKS (TB4)
5. EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF -5.00'
6. DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION -5.00'
7. INSTALL TIEBACKS (TB4)
8. EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF -11.50'
9. DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION -11.50'
10. INSTALL TIEBACKS (TB1)
11. DEWATER SITE TO ROCK ELEVATION.
12. EXCAVATE TO ROCK
13. BACKFILL TO FOUNDATION SUBGRADE WITH LEAN CONCRETE.
14. INSTALL NEW FOUNDATION, CELLAR, BASEMENT AND FIRST FLOOR.
15. BACKFILL BETWEEN NEW FOUNDATION AND SHEETPILES AS REQUIRED.
16. CONTINUE INSTALLATION OF FOUNDATION AND BUILDING AS PER APPROVED STRUCTURAL AND ARCHITECTURAL PLANS.
17. MONITOR SHEETPILES FOR MOVEMENT EACH DAY AND ADJUST TIEBACK LOCK NUT AS REQUIRED.



4 EXCAVATION SECTION - WEST SIDE AT 11th AVENUE
 NOT TO SCALE

SUPPORT OF EXCAVATION SEQUENCE FOR SECTION 4/SOE-005

1. DRIVE NEW SHEET PILES TO ROCK
2. INSTALL TOE PINS.
3. EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF +1.50'
4. DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION -1.50'
5. INSTALL UPPER TIEBACKS (TB4)
6. EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF -5.00'
7. DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION -5.00'
8. INSTALL TIEBACKS (TB4)
9. EXCAVATE TO FINAL SUBGRADE
10. DEWATER SITE TO FINAL SUBGRADE
11. INSTALL NEW FOUNDATION, CELLAR, BASEMENT AND FIRST FLOOR.
12. BACKFILL BETWEEN NEW FOUNDATION AND ABUTMENT AS REQUIRED.
13. CONTINUE INSTALLATION OF FOUNDATION AND BUILDING AS PER APPROVED STRUCTURAL AND ARCHITECTURAL PLANS.
14. MONITOR SHEETPILES FOR MOVEMENT EACH DAY AND ADJUST TIEBACK LOCK NUT AS REQUIRED.

No.	DESCRIPTION	DATE	BY
2	REVISED AS PER EU COMMENTS	6/10/14	RWB
1	REVISED AS PER NYCDDB EU COMMENTS	4/9/14	RWB

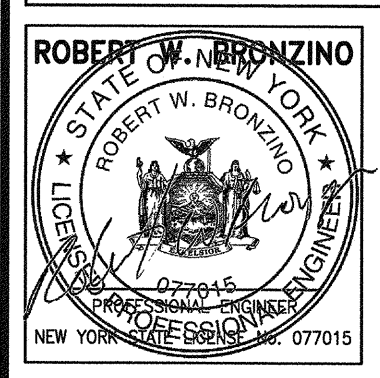
BRONZINO ENGINEERING, P.C.
 10-4 TECHNOLOGY DRIVE
 SETAUKET, NY 11733
 631-751-8299

HUDSON YARDS - TOWER D
 553 WEST 30th STREET
 NEW YORK CITY, NY
 BLOCK: 702 LOT: 10 ZONE: C6-4 MAP: 08c

SUPPORT OF EXCAVATION
 EAST ELEVATION

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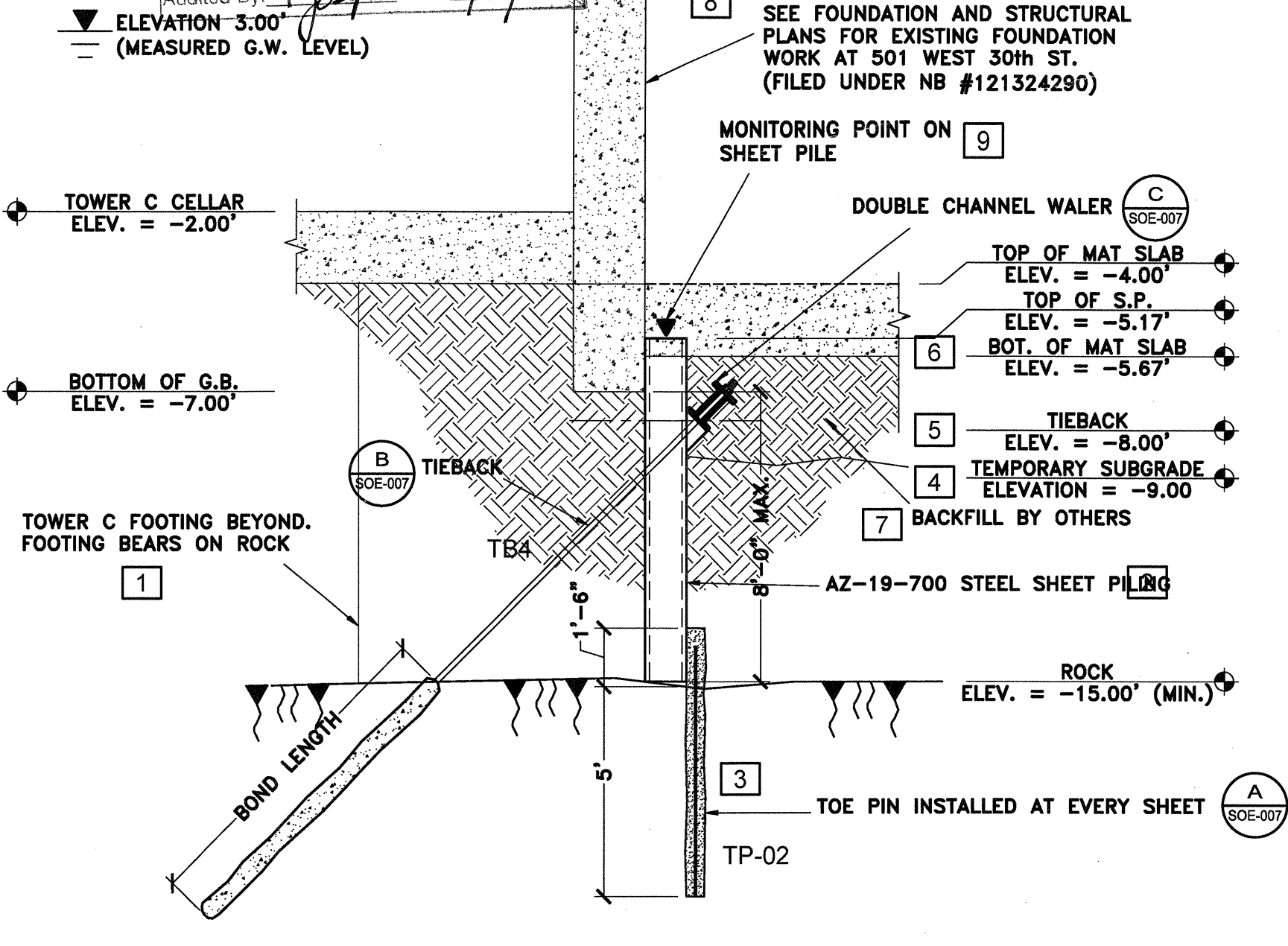
PROJECT #: 131107
 SCALE: AS NOTED
 DATE: 3/10/14
 DRAWING NO: SOE-004.00
 SHEET NO: 4 OF 7



New York City Department of Buildings
S-12 Excavation Unit

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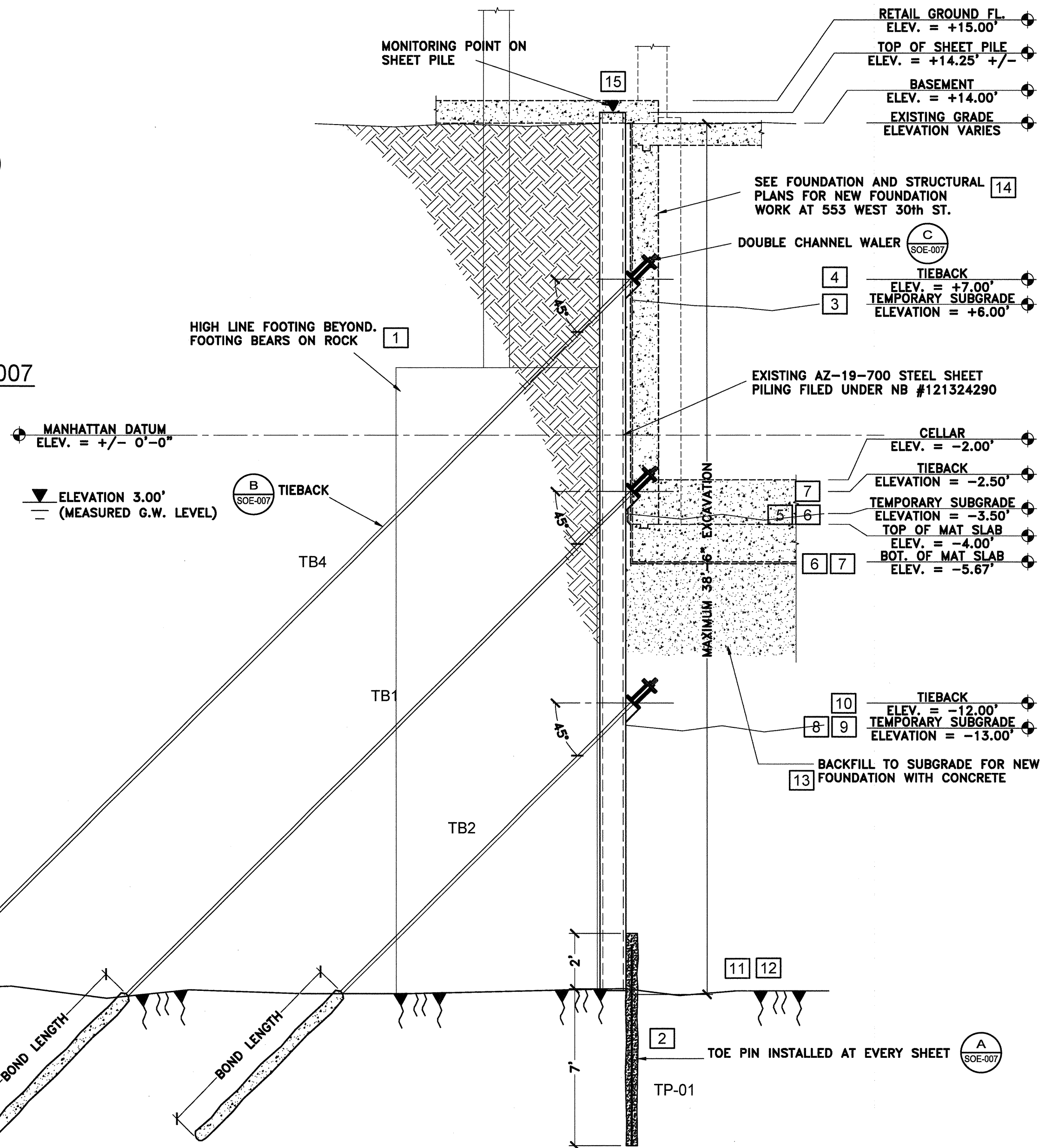
Audited By: *[Signature]* Date: 6/25/14



6 EXCAVATION SECTION - TOWER C
NOT TO SCALE

SUPPORT OF EXCAVATION SEQUENCE FOR SECTION 6/SOE-007

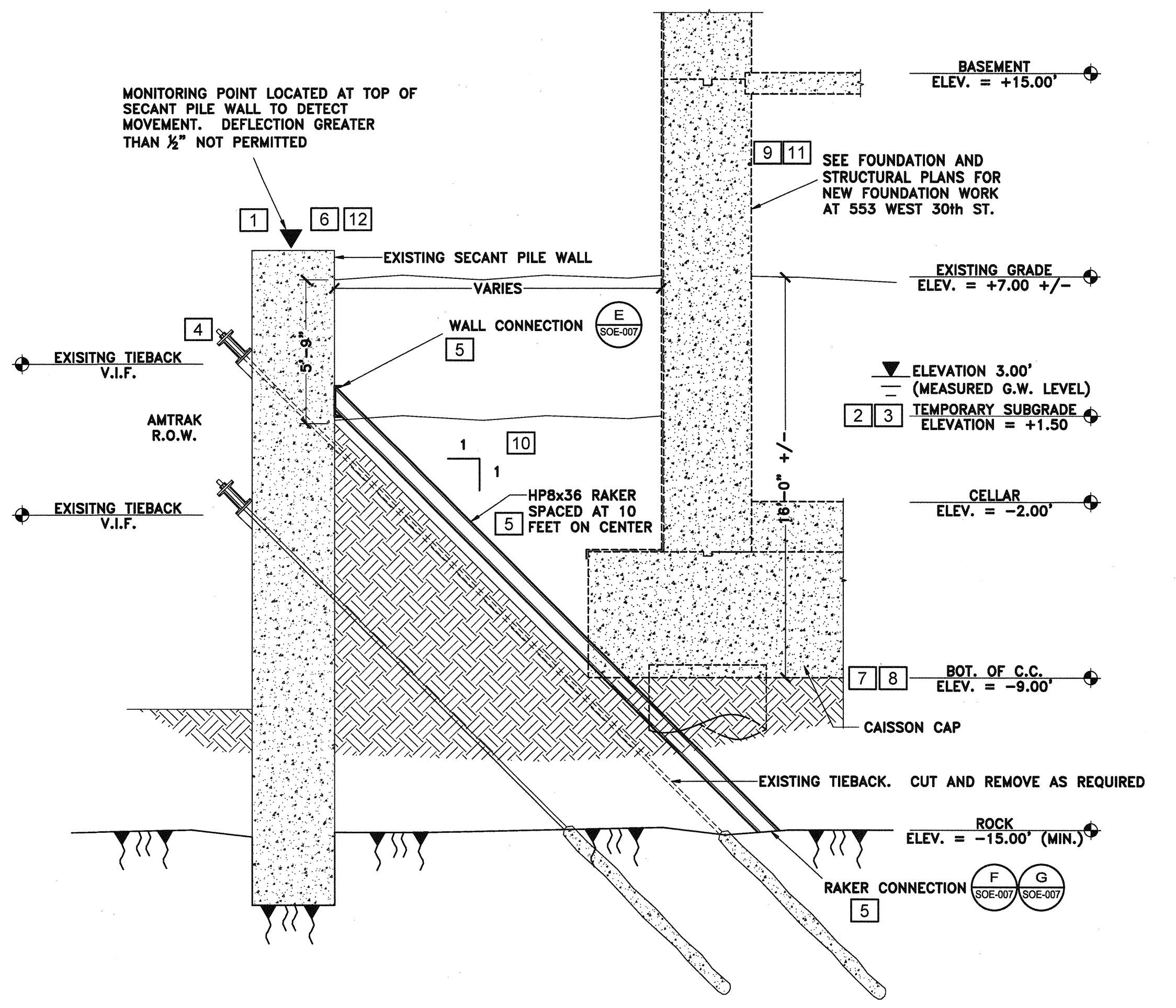
1. PRIOR TO START OF WORK EXPLORATORY TEST PITS TO BE CONDUCTED ADJACENT TO EXISTING TOWER C FOOTINGS & GRADE BEAMS TO VERIFY LOCATION OF BOTTOM OF FOOTING.
2. DRIVE IN SHEET PILES TO ROCK.
3. INSTALL TOE PINS.
4. EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF -9.00'
5. INSTALL TIEBACKS (TB)
6. DEWATER SITE TO FINAL SUBGRADE.
7. BACKFILL SITE TO FINAL SUBGRADE.
8. INSTALL NEW FOUNDATION, CELLAR, BASEMENT AND FIRST FLOOR AS PER APPROVED STRUCTURAL AND ARCHITECTURAL PLANS.
9. MONITOR SHEETPILES FOR MOVEMENT EACH DAY AND ADJUST TIEBACK LOCK NUT AS REQUIRED.



7 EXCAVATION SECTION AT HIGH LINE
NOT TO SCALE

SUPPORT OF EXCAVATION SEQUENCE FOR SECTION 7/SOE-007

1. PRIOR TO START OF WORK EXPLORATORY TEST PITS TO BE CONDUCTED ADJACENT TO EXISTING HIGH LINE FOOTINGS TO VERIFY LOCATION OF BOTTOM OF FOOTING.
2. INSTALL TOE PINS.
3. EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF +6.00'
4. INSTALL UPPER TIEBACKS (TB4)
5. EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF -3.50'
6. DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION -3.50'
7. INSTALL TIEBACKS (TB1)
8. EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF -13.00'
9. DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION -13.00'
10. INSTALL TIEBACKS (TB2)
11. DEWATER SITE TO ROCK ELEVATION.
12. EXCAVATE TO ROCK
13. BACKFILL TO FOUNDATION SUBGRADE WITH LEAN CONCRETE.
14. INSTALL NEW FOUNDATION, CELLAR, BASEMENT AND FIRST FLOOR.
15. MONITOR SHEETPILES FOR MOVEMENT EACH DAY AND ADJUST TIEBACK LOCK NUT AS REQUIRED.



5 EXCAVATION SECTION - AMTRAK RIGHT OF WAY
NOT TO SCALE

SUPPORT OF EXCAVATION SEQUENCE FOR SECTION 5/SOE-005

1. INSTALL MONITORING POINTS ON TOP OF EXISTING SECANT PILE WALL WITH A MAXIMUM SPACING OF 10 FEET ON CENTER. TAKE BENCHMARK READINGS.
2. DEWATER SITE TO ELEVATION OF +1.00 FEET.
3. EXCAVATE TO TEMPORARY SUBGRADE ELEVATION OF +1.50 FEET.
4. DE-STRESS TIEBACK FROM AMTRAK RIGHT OF WAY SIDE OF SECANT PILE WALL.
5. INSTALL BRACING SYSTEM (REQUIRED PENDING CONFIRMATION FROM SECANT PILE WALL ENGINEER OF RECORD).
6. CHECK SECANT WALL FOR MOVEMENT.
7. DEWATER SITE TO FINAL SUBGRADE ELEVATION.
8. EXCAVATE TO FINAL SUBGRADE ELEVATION AS SHOWN LEAVING EARTH BERM AGAINST SECANT PILE WALL. CUT AND REMOVE TIEBACK AS REQUIRED.
9. INSTALL NEW CAISSONS, FOUNDATION, CELLAR, BASEMENT AND FIRST FLOOR.
10. BACKFILL BETWEEN NEW FOUNDATION AND EXISTING SECANT PILE WALL AS REQUIRED.
11. CONTINUE INSTALLATION OF FOUNDATION AND BUILDING AS PER APPROVED STRUCTURAL AND ARCHITECTURAL PLANS.

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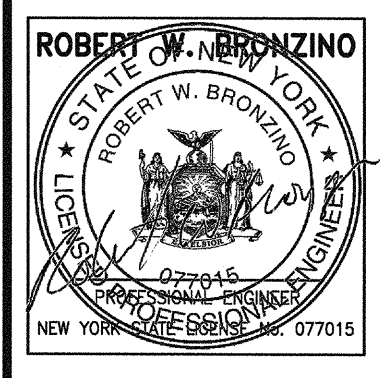
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SETAUKET, NY 11733
631-751-8299

HUDSON YARDS - TOWER D
553 WEST 30th STREET
NEW YORK CITY, NY
BLOCK: 702 LOT: 10 ZONE: C6-4 MAP: 08c

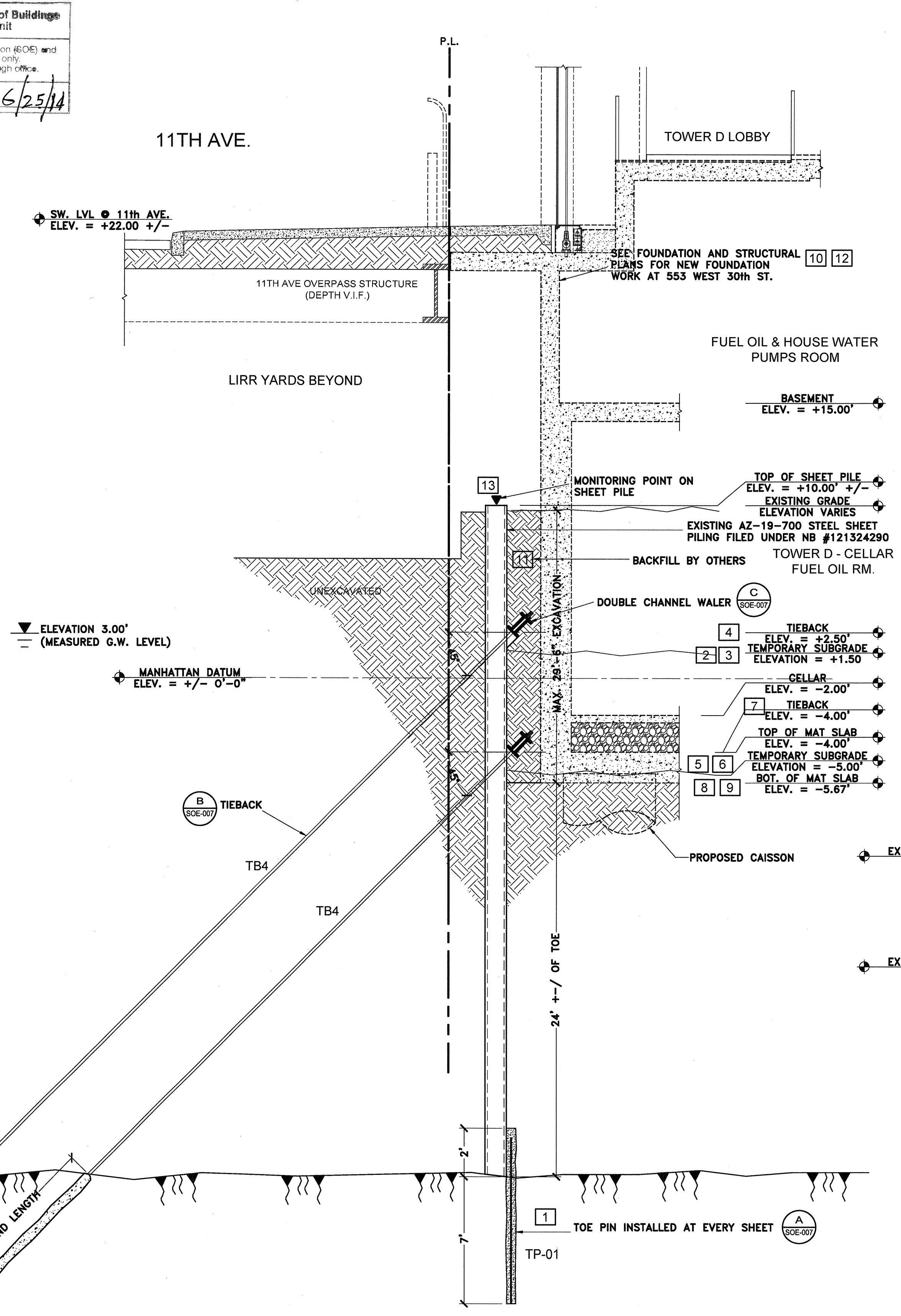
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DRAWING NO: SOE-005.00
SHEET NO: 5 OF 7



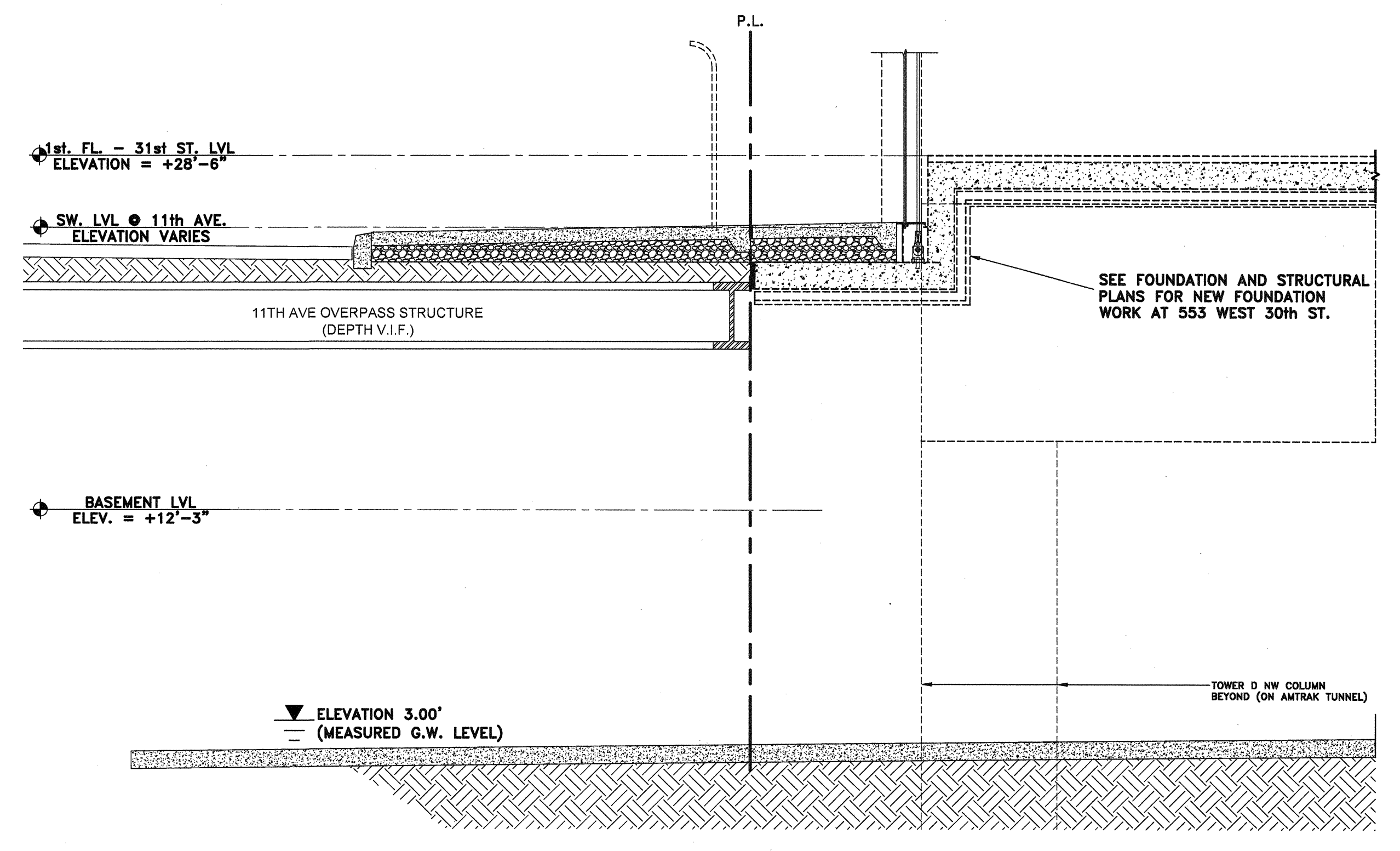
New York City Department of Buildings
SEP Excavation Unit
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Audited By: *P. G. Smith* Date: 6/25/14



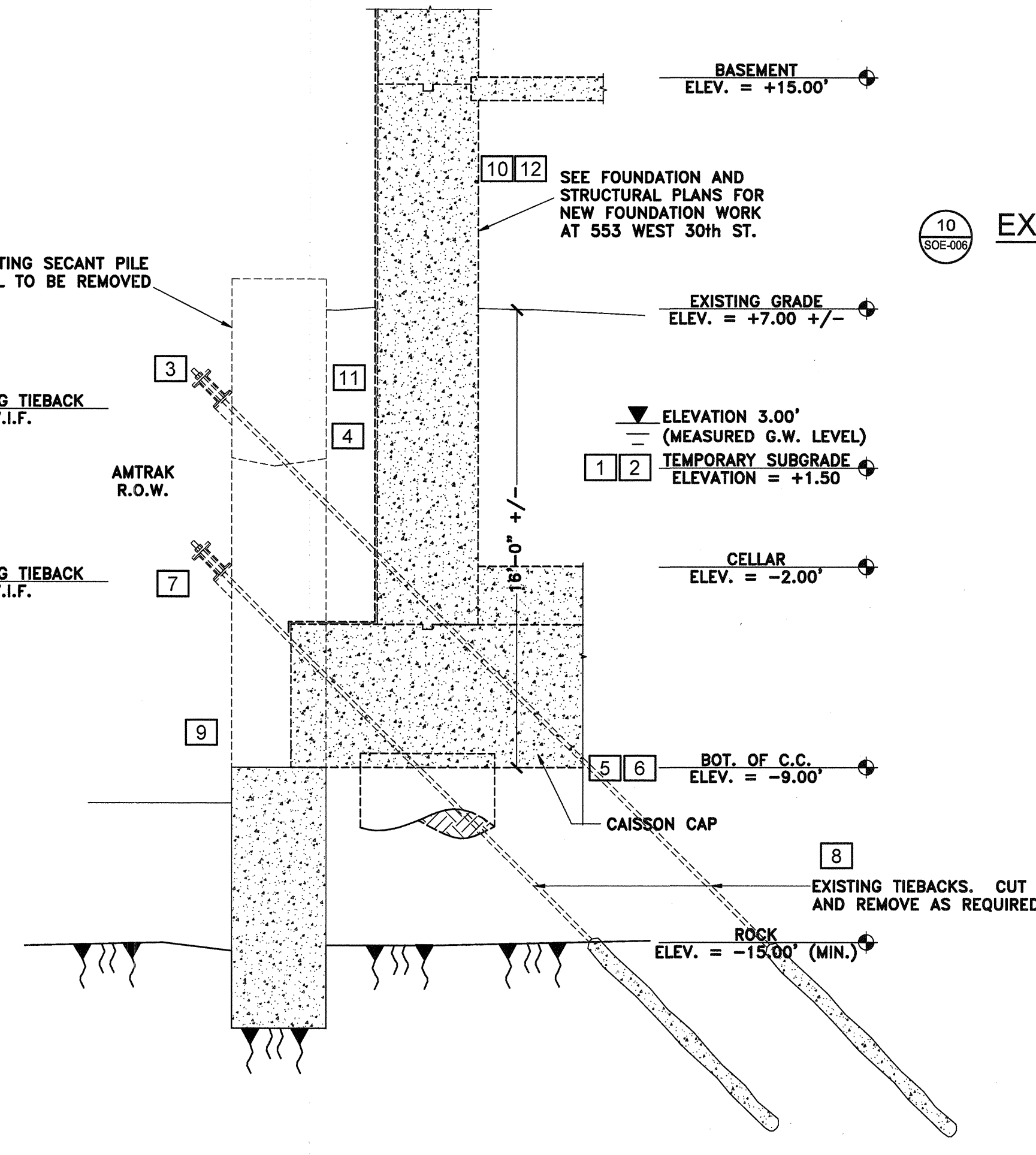
8 SOE-006 EXCAVATION SECTION - WEST SIDE AT 11th AVENUE
NOT TO SCALE

SUPPORT OF EXCAVATION SEQUENCE FOR SECTION 8/SOE-006

1. INSTALL TOE PINS.
2. EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF +1.50'
3. DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION -1.50'
4. INSTALL UPPER TIEBACKS (TB4)
5. EXCAVATE IN FRONT OF SHEETPILES DOWN TO TEMPORARY SUBGRADE ELEVATION OF -5.00'
6. DEWATER SITE TO TEMPORARY SUBGRADE ELEVATION -5.00'
7. INSTALL TIEBACKS (TB4)
8. EXCAVATE TO FINAL SUBGRADE
9. DEWATER SITE TO FINAL SUBGRADE
10. INSTALL NEW FOUNDATION, CELLAR, BASEMENT AND FIRST FLOOR.
11. BACKFILL BETWEEN NEW FOUNDATION AND ABUTMENT AS REQUIRED.
12. CONTINUE INSTALLATION OF FOUNDATION AND BUILDING AS PER APPROVED STRUCTURAL AND ARCHITECTURAL PLANS.
13. MONITOR SHEETPILES FOR MOVEMENT EACH DAY AND ADJUST TIEBACK LOCK NUT AS REQUIRED.



10 SOE-006 EXCAVATION SECTION - WEST SIDE AT LIRR DRIVE
NOT TO SCALE



9 SOE-006 EXCAVATION SECTION - AMTRAK RIGHT OF WAY
NOT TO SCALE

SUPPORT OF EXCAVATION SEQUENCE FOR SECTION 9/SOE-006

1. DEWATER SITE TO ELEVATION OF +1.50 FEET.
2. EXCAVATE TO TEMPORARY SUBGRADE ELEVATION OF +1.50 FEET.
3. DE-STRESS UPPER TIEBACK FROM AMTRAK RIGHT OF WAY SIDE OF SECANT PILE WALL.
4. REMOVE SECANT PILE TO TEMPORARY SUBGRADE ELEVATION OF +1.50 FEET
5. DEWATER SITE TO FINAL SUBGRADE ELEVATION.
6. EXCAVATE TO FINAL SUBGRADE ELEVATION AS SHOWN LEAVING EARTH BERM AGAINST SECANT PILE WALL.
7. DE-STRESS LOWER TIEBACK FROM AMTRAK RIGHT OF WAY SIDE OF SECANT PILE WALL
8. CUT AND REMOVE TIEBACKS AS REQUIRED.
9. REMOVE SECANT PILE WALL TO SUBGRADE.
10. INSTALL NEW CAISSONS, FOUNDATION, CELLAR, BASEMENT AND FIRST FLOOR.
11. BACKFILL BETWEEN NEW FOUNDATION AND EXISTING SECANT PILE WALL AS REQUIRED.
12. CONTINUE INSTALLATION OF FOUNDATION AND BUILDING AS PER APPROVED STRUCTURAL AND ARCHITECTURAL PLANS.

NOTE: INSTALL SHEET PILE WALL IN SECTIONS OF REMOVED SECANT PILE AS REQUIRED FOR GRADE DIFFERENCE AND DEWATERING.

No.	DESCRIPTION	DATE	BY
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NEW YORK CITY, NY
BLOCK: 702 LOT: 10 ZONE: C6-4 MAP: 08c

SUPPORT OF EXCAVATION SECTIONS

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ROBERT W. BRONZINO Professional Engineer No. 131107 Exp. 12/31/15	PROJECT #: 131107 SCALE: AS NOTED DATE: 3/10/14 DRAWING NO: SOE-006.00 SHEET NO: 6 OF 7
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TIE-BACK ANCHOR NOTES:

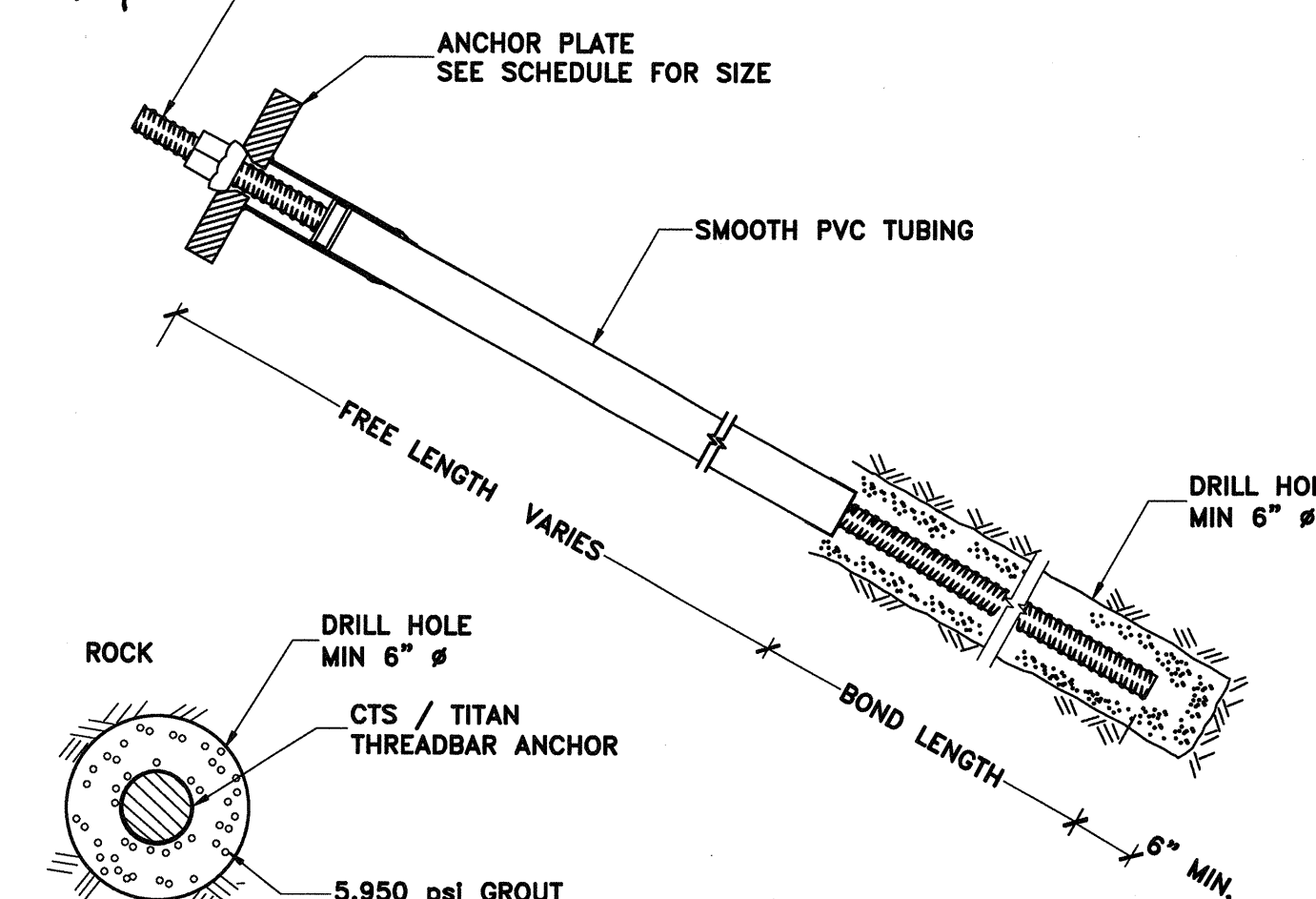
- MATERIAL:**
 - ALL THREADBARS SHALL BE CTS / TITAN THREADBAR (OR EQUIVALENT), CONFORMING TO ASTM A-615.
 - PLATES SHALL CONFORM TO ASTM A-36.
 - NUTS & COUPLERS SHALL BE CAPABLE OF DEVELOPING 100% OF THE ULTIMATE STRENGTH OF THREADBAR.
 - CARE SHALL BE TAKEN NOT TO DAMAGE THE THREADBARS. THE BARS SHALL BE KEPT FREE OF DIRT OR OTHER DELETERIOUS SUBSTANCES.
 - THREADBARS SHALL NOT BE WELDED OR USED AS A GROUND FOR WELDING.
- INSTALLATION PROCEDURES:**
 - DRILL TIE-BACK ANCHOR DRILL HOLES AT THE LOCATIONS INDICATED ON THESE DRAWINGS; REFER TO TABLE 1 ON SHEET SOE-008 FOR DRILL HOLE DIAMETER, DRILL HOLE ANGLE, AND MINIMUM REQUIRED DRILL HOLE LENGTH. DRILLING SHALL BE PERFORMED AS FOLLOWS:
 - NO LOSS OF GROUND DURING DRILLING SHALL BE ALLOWED. CASING SHALL BE INSTALLED TO TOP OF ROCK USING INTERNAL LIQUID FLUSH DUPLEX DRILLING TECHNIQUE. ALL DRILLING METHODS SHALL BE SUBMITTED FOR APPROVAL TO THE OWNER'S ENGINEER.
 - THE CONTRACTOR SHALL USE APPROPRIATE MEANS AND METHODS TO PREVENT SEEPAGE AND LOSS OF SOIL THROUGH THE ANNULAR SPACE BETWEEN THE STEEL SHEET PILES AND THE DRILL CASINGS. SUCH METHODS MAY INCLUDE DRILLING SOIL-CEMENT-BENTONITE COLUMNS BEHIND THE SHEET PILES, WELDING ANTI-SEEP COLLARS AT TIE-BACK ANCHOR LOCATIONS, PACKING HAY OR OTHER SUITABLE FILTER MATERIAL AROUND THE CASINGS, AND USE OF SACRIFICIAL CASINGS, ETC.
 - REJECTION OF HOLES: HOLES REJECTED BECAUSE OF NON-CONFORMANCE TO ALIGNMENT TOLERANCES OR BECAUSE THEY INTERCEPT OTHER HOLES SHALL BE FILLED WITH GROUT AND ANOTHER HOLE SHALL BE DRILLED AT THE CONTRACTOR'S EXPENSE.
 - GROUTING:**
 - EACH HOLE SHALL BE CLEANED OF ALL DRILL CUTTINGS, SLUDGE, AND DEBRIS BEFORE THE DRILL HOLE IS GROUTED.
 - GROUT SHALL BE CEMENT GROUT HAVING A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5000 PSI.
 - THE HOLES SHALL BE GROUTED FROM THE BOTTOM OF THE HOLE TO THE TOP WITH A TREMIE TUBE UNTIL UNCONTAMINATED GROUT RETURNS TO THE SURFACE.
 - GROUT SHALL BE PUMPED INTO THE DRILL HOLE PRIOR TO INSERTION OF THE THREADBAR.
 - THREADBAR PLACEMENT:**
 - CENTRALIZERS, SPACERS OR OTHER SUITABLE CENTERING DEVICES SHALL BE PLACED AT MAXIMUM 10-FOOT INTERVALS OR IN A SUFFICIENT NUMBER TO ENSURE ADEQUATE GROUT COVER OVER THE THREADBAR ASSEMBLY THROUGHOUT THE ENTIRE THREADBAR LENGTH. CENTRALIZERS AND SPACERS MAY BE MADE OF ANY MATERIAL (EXCEPT WOOD) NOT DELETERIOUS TO THE THREADBARS OR PVC SHEATHING, AND SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - A SMOOTH PLASTIC TUBING, FITTING SNUGLY OVER THE THREADBAR, SHALL BE PROVIDED IN THE FREE STRESSING LENGTH OF THE TIE-BACK ANCHORS AND SHALL GUARANTEE UNOBSTRUCTED ELONGATION DURING STRESSING.
 - THREADBAR CENTERLINES SHALL BE NORMAL TO THE BEARING PLATES.
 - CASING WITHDRAWAL:**
 - AFTER THREADBAR INSERTION, THE CASING SHALL BE WITHDRAWN WHILE SIMULTANEOUSLY PRESSURE GROUTING. THE MINIMUM GROUT PRESSURE SHALL BE 1 PSI PER FOOT OF EMBEDMENT BELOW GROUND SURFACE.
 - THE CONTRACTOR MAY CHOOSE TO LEAVE THE END SECTION OF THE CASING IN THE HOLE IN ORDER TO PREVENT SEEPAGE AND GROUND LOSS FROM AROUND THE THREADBAR.
- TIE-BACK ANCHOR TESTING:**
 - TEN PERCENT (10%) OF THE TIE-BACK ANCHORS SHALL BE PERFORMANCE TESTED. ALL OTHER ANCHORS SHALL BE PROOF TESTED USING A CALIBRATED CENTER HOLE JACK.
 - PERFORMANCE AND PROOF TESTING SHALL BE AS FOLLOWS:

PERFORMANCE TEST: AL, .25P, .50P, .75P, 1.00P, 1.20P, 1.33P

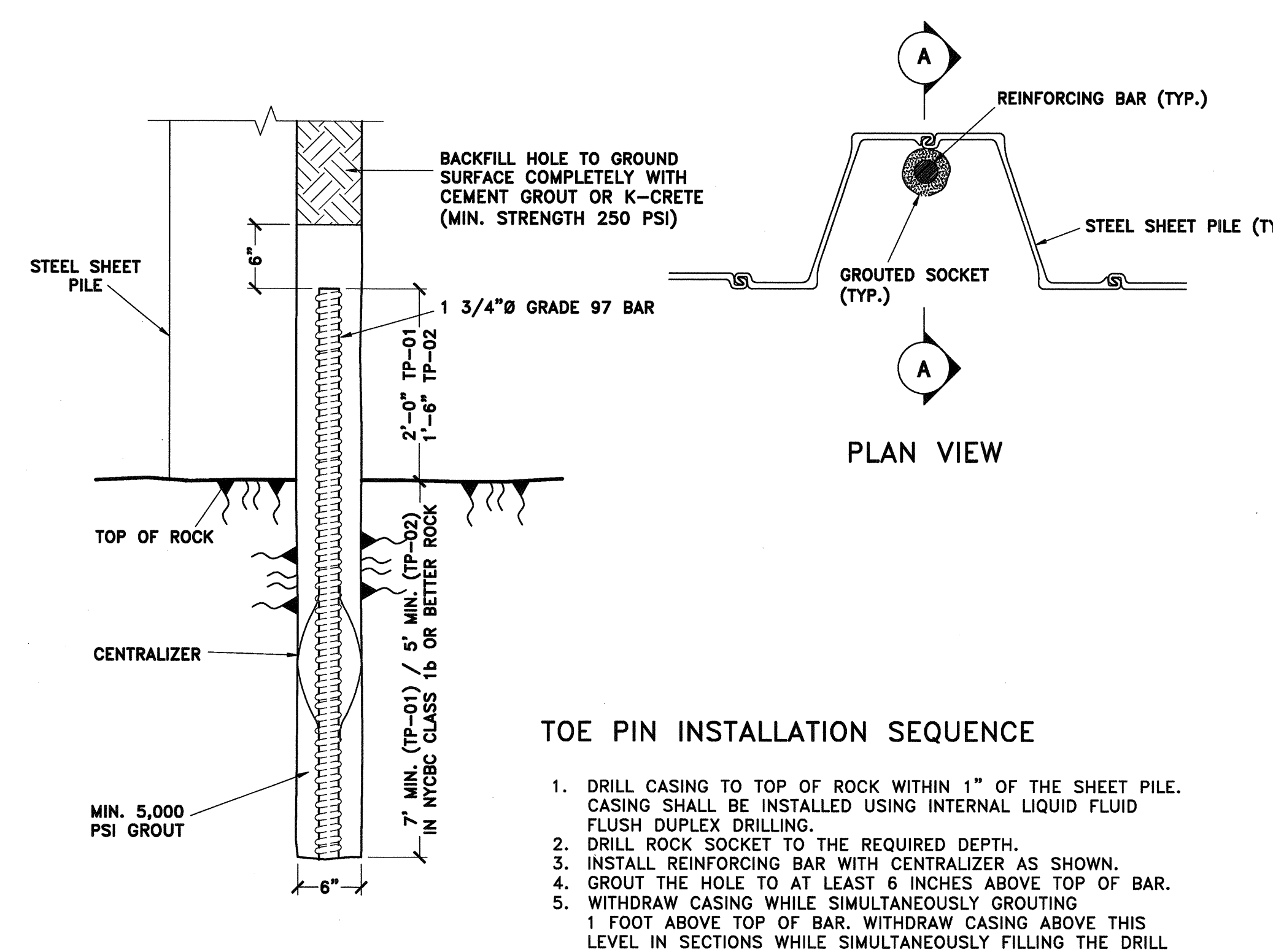
HOLD 1.33P FOR CREEP TEST. RECORD MOVEMENTS USING A DIAL INDICATOR CAPABLE OF READING INCREMENTS OF 0.001-INCH. RECORD READINGS AT 0, 1, 2, 3, 4, 5, 6 AND 10 MINUTES. IF THE INCREMENTAL MOVEMENT IS GREATER THAN 0.04-INCH, HOLD FOR AN ADDITIONAL 50 MINUTES AND TAKE READINGS IN 10 MINUTE INTERVALS. RELEASE TO ALIGNMENT LOAD, RE-STRESS TO TRANSFER LOAD, AND LOCK OFF ANCHOR NUT. PERFORM A LIFT-OFF TEST TO CONFIRM THE ACTUAL LOCK-OFF LOAD IS WITHIN 5% OF THE DESIGN LOCK-OFF LOAD.

PROOF TEST: AL, .25P, .50P, .75P, 1.00P, 1.20P, 1.33P. HOLD 1.33P FOR CREEP TEST. RECORD MOVEMENTS USING A DIAL INDICATOR CAPABLE OF READING INCREMENTS OF 0.001-INCH. RECORD READINGS AT 0, 1, 2, 3, 4, 5, 6 AND 10 MINUTES. IF THE INCREMENTAL MOVEMENT IS GREATER THAN 0.04-INCH, HOLD FOR AN ADDITIONAL 50 MINUTES AND TAKE READINGS IN 10 MINUTE INTERVALS. RELEASE TO ALIGNMENT LOAD, RE-STRESS TO TRANSFER LOAD, AND LOCK OFF ANCHOR NUT. PERFORM A LIFT-OFF TEST TO CONFIRM THE ACTUAL LOCK-OFF LOAD IS WITHIN 5% OF THE DESIGN LOCK-OFF LOAD.
 - ACCEPTANCE: IF THE INCREMENTAL MOVEMENT BETWEEN 0 AND 10 MINUTES IS LESS THAN 0.04-INCH OR THAT BETWEEN 10 AND 60 MINUTES IS LESS THAN 0.08-INCH, THE ANCHOR SHALL BE ACCEPTED.
 - REJECTED ANCHORS SHALL BE ABANDONED AND REPLACEMENT ANCHORS DRILLED AT CONTRACTOR'S EXPENSE.

Approved By: *[Signature]* Date: 6/25/14
 CTS / TITAN THREADBAR ANCHOR
 SEE TABLE 1 - TIEBACK ANCHOR SCHEDULE FOR SIZE.

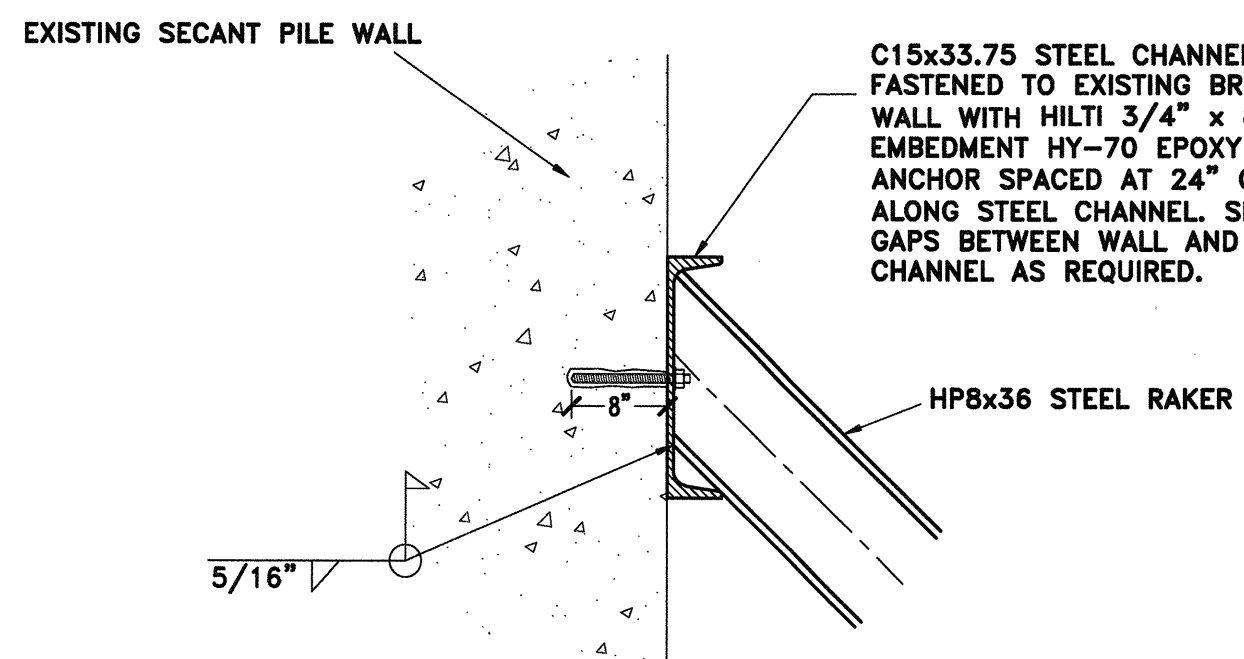


B TYPICAL TIEBACK DETAIL
NOT TO SCALE

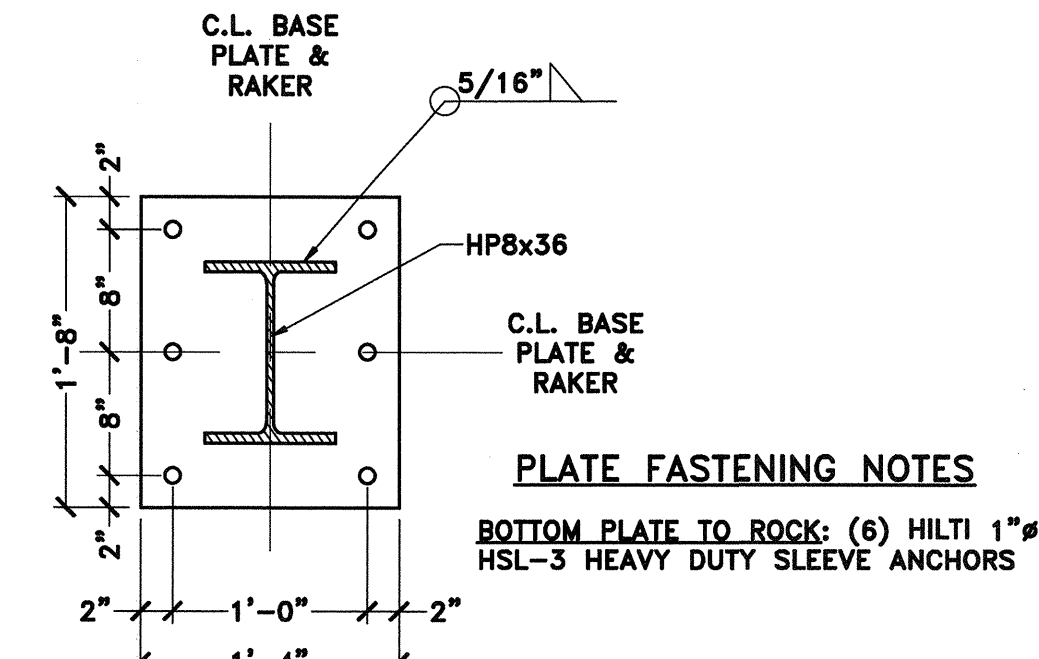


A TOE PIN DETAIL
NOT TO SCALE

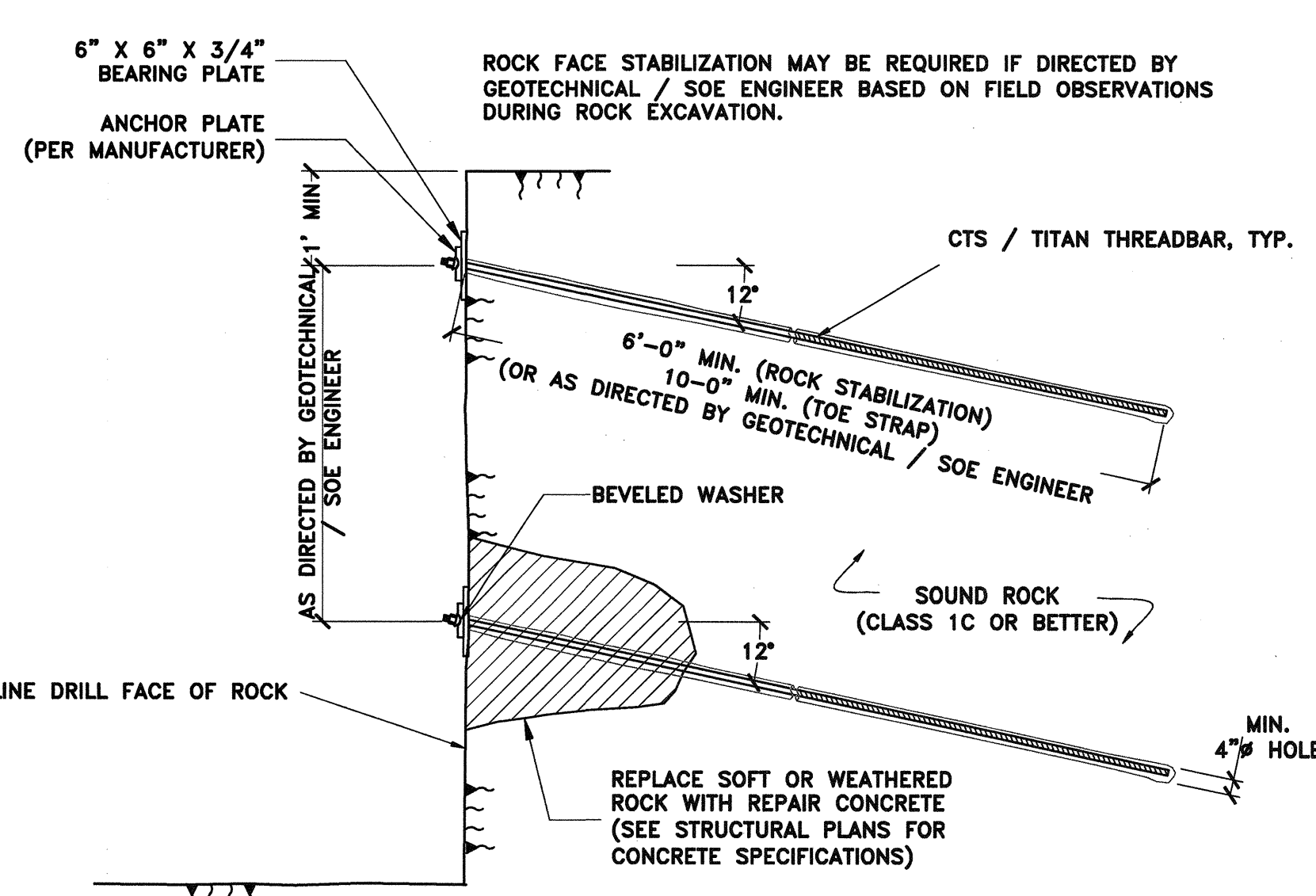
H CORNER SHEET PILE DETAIL
NOT TO SCALE



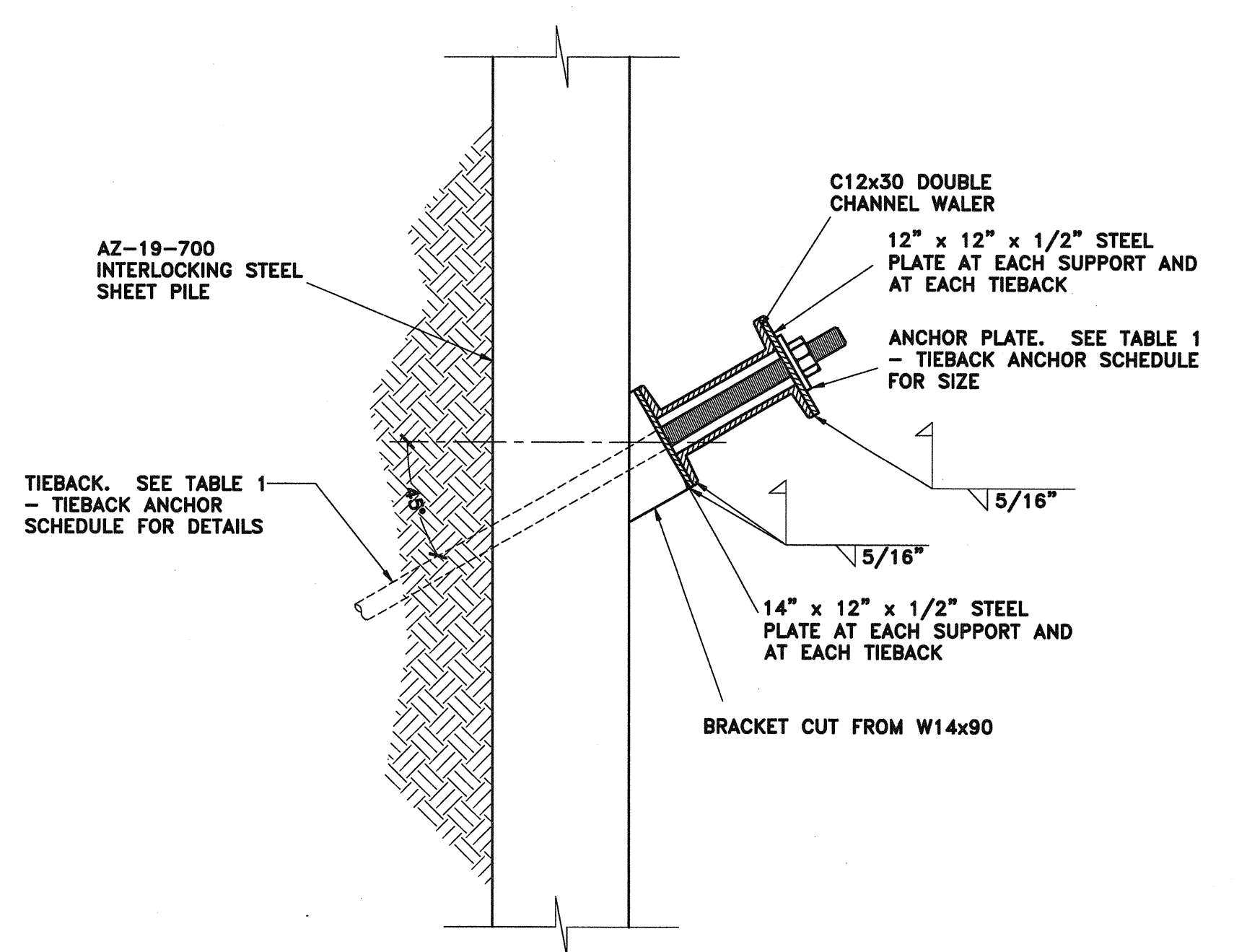
E RAKER CONNECTION DETAIL
NOT TO SCALE



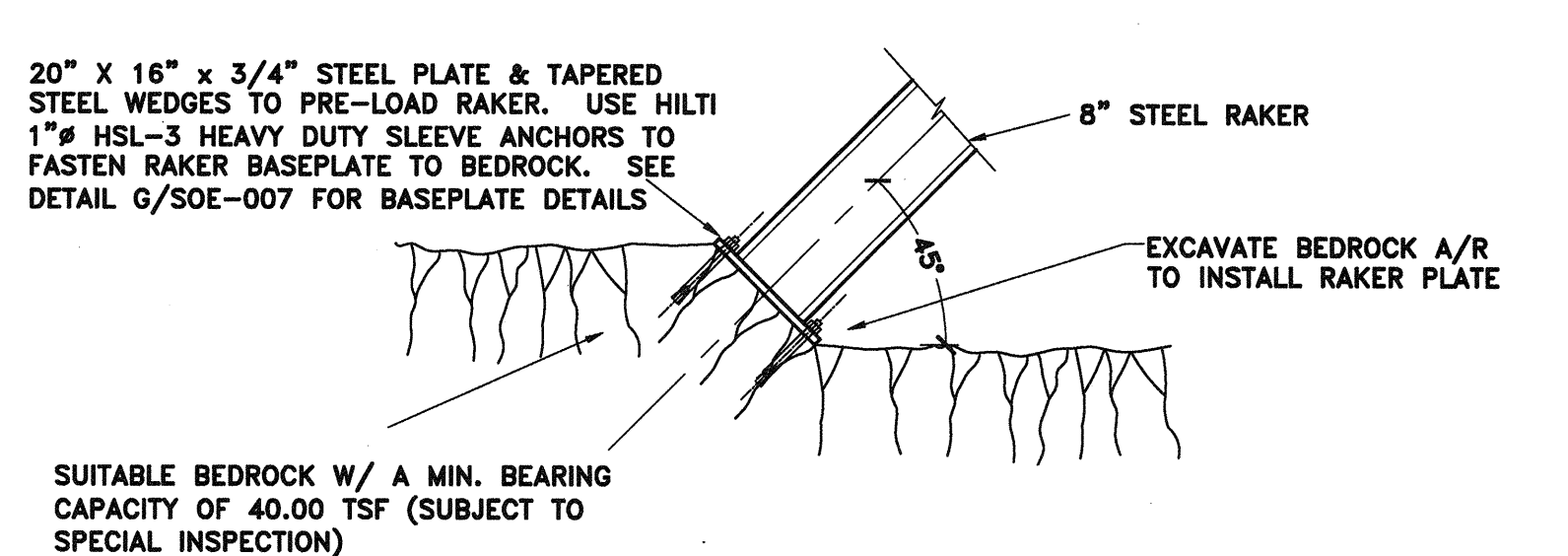
G RAKER BASEPLATE DETAIL
NOT TO SCALE



D ROCK BOLT DETAIL
NOT TO SCALE



C STEEL SHEET PILE WALER CONNECTION DETAIL
NOT TO SCALE



F RAKER BASE DETAIL IN ROCK
NOT TO SCALE

TOE PIN INSTALLATION SEQUENCE

- DRILL CASING TO TOP OF ROCK WITHIN 1" OF THE SHEET PILE. CASING SHALL BE INSTALLED USING INTERNAL LIQUID FLUSH DUPLEX DRILLING.
- DRILL ROCK SOCKET TO THE REQUIRED DEPTH.
- INSTALL REINFORCING BAR WITH CENTRALIZER AS SHOWN.
- GROUT THE HOLE TO AT LEAST 6 INCHES ABOVE TOP OF BAR.
- WITHDRAW CASING WHILE SIMULTANEOUSLY GROUTING 1 FOOT ABOVE TOP OF BAR. WITHDRAW CASING ABOVE THIS LEVEL IN SECTIONS WHILE SIMULTANEOUSLY FILLING THE DRILL HOLE WITH CEMENT GROUT OR K-CRETE.

TABLE 1- TIEBACK ANCHOR SCHEDULE

ID	USE	THREADBAR	DESIGN LOAD	LOCK-OFF LOAD	PLATE SIZE	BOND LENGTH	ANGLE
TB1	S.O.E. ANCHOR	CTS / TITAN 73/53	135k	114k	9"x9"x1 3/4"	8 FT.	45 DEGREES
TB2	S.O.E. ANCHOR	CTS / TITAN 103/78	260k	221k	9"x9"x1 3/4"	12 FT.	45 DEGREES
TB3	S.O.E. ANCHOR	CTS / TITAN 73/45	158k	135k	9"x9"x1 3/4"	10 FT.	45 DEGREES
TB4	S.O.E. ANCHOR	CTS / TITAN 40/20	65k	55k	7"x7"x1 3/4"	8 FT.	45 DEGREES

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HUDSON YARDS - TOWER D
 553 WEST 30th STREET
 NEW YORK CITY, NY
 BLOCK: 702 LOT: 10 ZONE: C6-4 MAP: 08c

SUPPORT OF EXCAVATION SECTIONS AND DETAILS

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ROBERT W. BRONZINO
 PROJECT #: 131107
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 SHEET NO: 7 OF 7