

# Manhattan West Southwest Residential Tower

PART OF THE MANHATTAN WEST MASTER PLAN  
West 31st Street & Dyer Avenue  
New York, NY

OWNER/DEVELOPER:

**Brookfield**  
80P West 31st Street LLC  
Brookfield Properties W 33rd CO L.P.  
Brookfield Place, 250 Vesey Street  
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ISRAEL BERGER & ASSOCIATES, INC.**  
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VRIDIAN ENERGY & ENVIRONMENTAL**  
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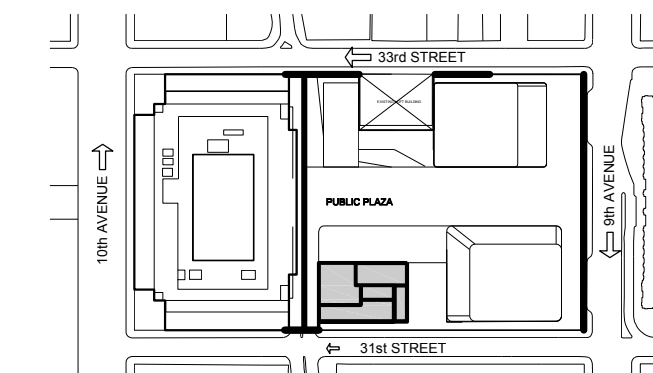
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TEL: (212) 321-6800

12	11-07-2014	ISSUED FOR DOB FILING
11	10-23-2014	BULLETIN #2
10	09-26-2014	STRUCTURAL REVISIONS
9	09-09-2014	ISSUED FOR CONSTRUCTION
8	08-01-2014	90% CONSTRUCTION DOCUMENTS
7	06-03-2014	50% CONSTRUCTION DOCUMENTS
6	05-16-2014	BID SET
5	05-09-2014	DOB FILING
4	03-14-2014	DESIGN DEVELOPMENT
3	02-14-2014	FOUNDATION FILING

DATE: 02/21/2014  
REVISION: 1  
NB#

NORTH: 5/32° E 0°

KEY PLAN:



PROJECT:

MANHATTAN WEST  
NEW YORK, NEW YORK

DRAWING TITLE:

FOUNDATION  
PLAN

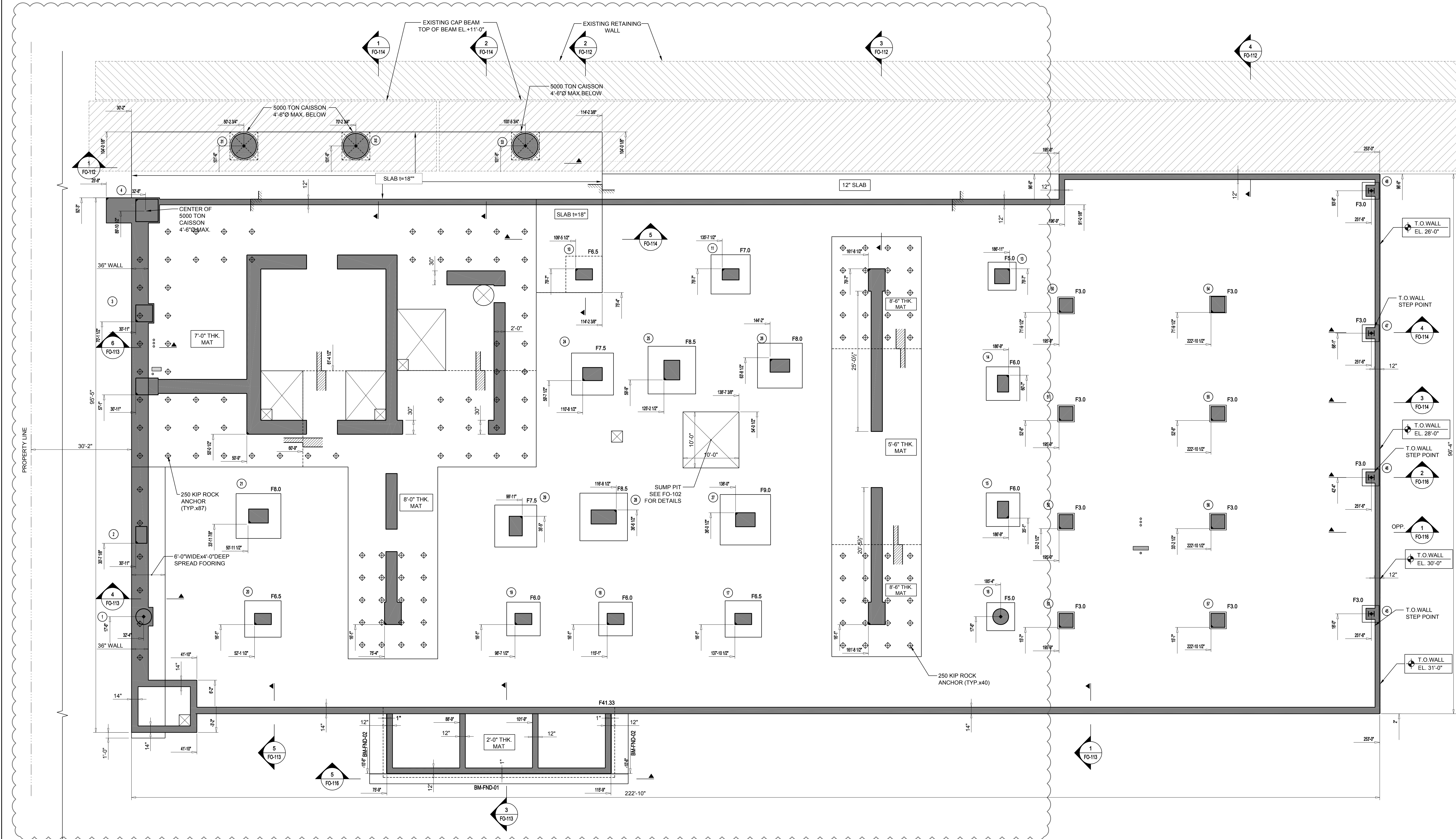
SEAL & SIGNATURE:

DATE: 02/21/2014  
PROJECT NO: 13165.00  
DRAWN BY: JMS  
CHECKED BY: JS  
DWG NO: 13165.00

FO-101.00  
SHEET NO: 02 of 70

FILE NO:

13165.00-FO-101.dwg



SLAB THICKNESS  
U.O.N.:  
**t = 18"**

SLAB CONCRETE  
STRENGTH:  
**f<sub>c</sub> = 5 ksi**

TOP OF SLAB  
ELEVATION U.O.N.:  
**SEE PLAN**

**DRAWING NOTES:**

- FOR GENERAL NOTES SEE S-601.
- FOR COLUMN SCHEDULE AND DETAILS SEE S-401 TO S-403.
- FOR SHEAR WALL PLANS AND DETAILS SEE S-410 TO S-432.
- 6" SLAB ON GRADE SHALL HAVE WWF #6 @ 2.0' AT MIDHEIGHT.
- TOP OF FOOTING OR FOUNDATION MAT SHALL BE 1'-6" BELOW TOP OF SLAB ON GRADE WHERE UNDER SLAB GRAVEL IS USED. WHERE UNDER SLAB GRAVEL IS NOT USED, TOP OF FOOTING OR FOUNDATION MAT SHALL MATCH BOTTOM OF SLAB.
- FOR FOUNDATION DETAILS AND SECTIONS SEE FO-111 TO FO-115.
- FOR FOUNDATION MAT PART PLANS AND SECTIONS SEE FO-121 TO FO-122.
- FOR FOOTING SCHEDULE AND FOUNDATION WALL SCHEDULE SEE FO-101.
- CONCRETE STRENGTH OF SHEAR WALLS TO MATCH STRENGTH OF COLUMNS.
- CONTRACTOR TO LOCATE AND VERIFY ALL OPENINGS THROUGH SLAB FROM ARCHITECTURAL AND MEP DRAWINGS.
- FOR TYPICAL CONCRETE DETAILS SEE S-601 TO S-603.
- FOR TYPICAL STEEL DETAILS SEE S-601 TO S-603.
- CONCRETE STRENGTH OF STRUCTURE SHOWN ON PLAN SHALL BE THE FOLLOWING.  
U.O.N.:  
FOOTINGS 6 KSI  
FOUNDATION MATS 8 KSI  
FOUNDATION WALLS 8 KSI
- ⊕ INDICATES TIE DOWN ROCK ANCHOR WITH 250 KIPS CAPACITY.
- REINFORCE 18" SLAB WITH #6 @ 12" EACH WAY, TOP AND BOTTOM.
- REINFORCE 12" SLAB WITH #6 @ 12" EACH WAY, TOP AND BOTTOM.

FOOTING SCHEDULE						
MARK	LENGTH	WIDTH	DEPTH (IN)	BOTTOM REINFORCEMENT		REMARKS
				PARALLEL TO LENGTH	PARALLEL TO WIDTH	
F3.0	3'-0"	3'-0"	24	6-#6	6-#6	HOOK BARS
F5.0	5'-0"	5'-0"	27	10-#8	10-#8	HOOK BARS
F6.0	6'-0"	6'-0"	33	14-#8	14-#8	HOOK BARS
F6.5	6'-0"	6'-0"	36	14-#9	14-#9	HOOK BARS
F7.0	7'-0"	7'-0"	39	18-#9	18-#9	HOOK BARS
F7.5	7'-0"	7'-0"	45	20-#9	20-#9	HOOK BARS
F8.0	8'-0"	8'-0"	45	22-#9	22-#9	HOOK BARS
F8.5	8'-0"	8'-0"	48	24-#9	24-#9	HOOK BARS
F9.0	9'-0"	9'-0"	54	26-#9	26-#9	HOOK BARS
F41.33	41'-4"	12'-8"	48	25-#9	82-#9	HOOK BARS

FOUNDATION WALL SCHEDULE					
THICKNESS	VERTICAL REINFORCEMENT		HORIZONTAL REINFORCEMENT	TIES	REMARKS
	INSIDE FACE	OUTSIDE FACE			
1'-2"	#7 @ 12"	#5 @ 12"	#4 @ 12" EA. FACE	NONE	
1'-0"	#7 @ 12"	#5 @ 12"	#4 @ 12" EA. FACE	NONE	



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Southwest Residential  
Tower

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DATE:

REVISION:

NO. #

NORTH

5/32"x1'-0"

KEY PLAN:

PROJECT:

MANHATTAN WEST  
NEW YORK, NEW YORK

DRAWING TITLE:

CELLAR  
PLAN

DATE:

PROJECT NO.:

DRAWN BY:

CHECKED BY:

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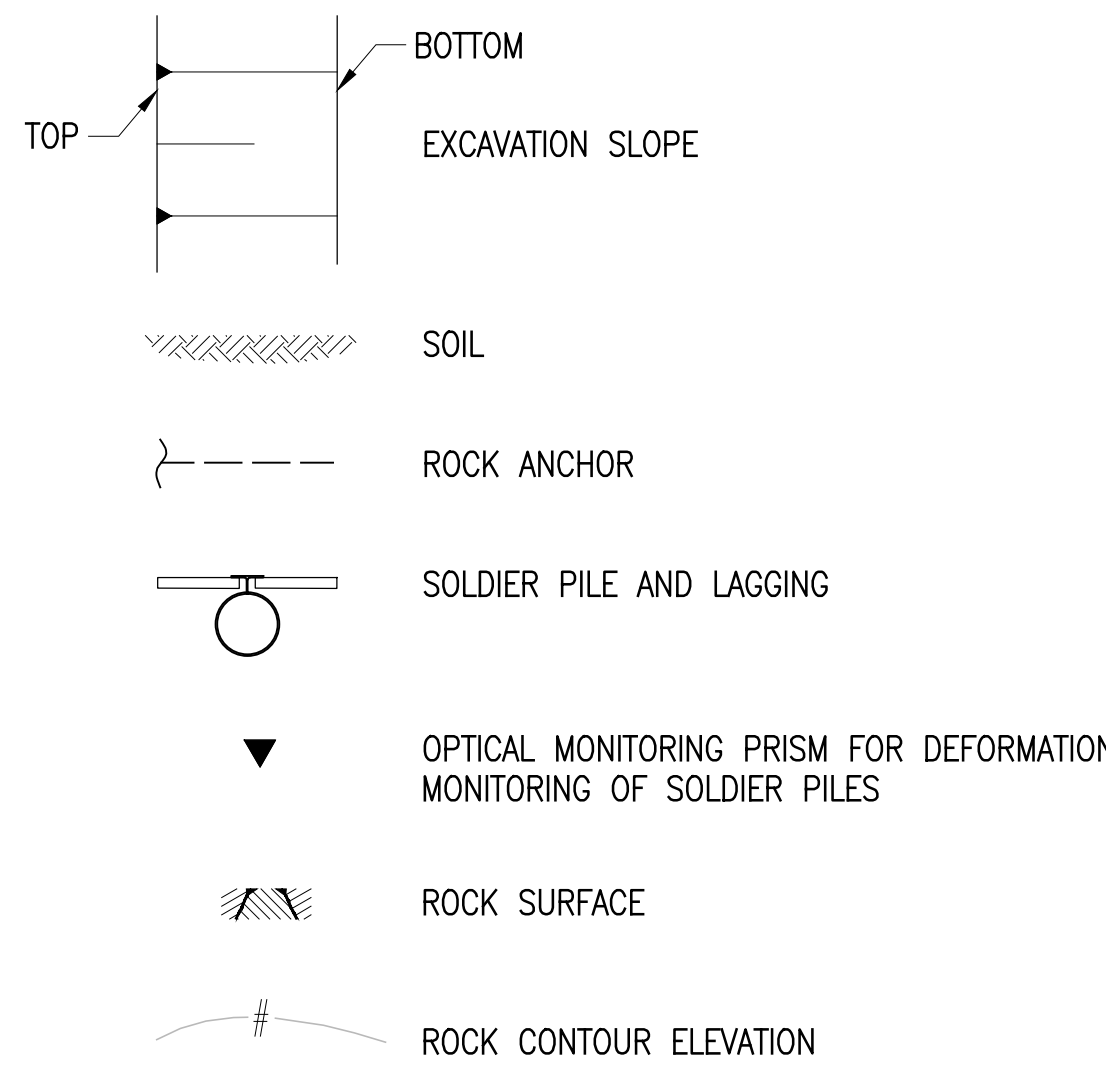
LIST OF DRAWINGS

- SOE-100.00 – SUPPORT OF EXCAVATION – GENERAL AND EXCAVATION NOTES  
SOE-101.00 – SUPPORT OF EXCAVATION – PLAN  
SOE-110.00 – SUPPORT OF EXCAVATION – SECTIONS 1 OF 2  
SOE-111.00 – SUPPORT OF EXCAVATION – SECTIONS 2 OF 2  
SOE-120.00 – SUPPORT OF EXCAVATION – DETAILS

LIST OF ABBREVIATIONS:

- ℄ – CENTERLINE  
DIA. – DIAMETER  
ELEC. – ELECTRICAL  
EL. – ELEVATION  
EXIST. – EXISTING  
FTG. – FOOTING  
NO. – NUMBER  
O.C. – ON CENTER  
℄ – PROPERTY LINE  
SCHED. – SCHEDULE  
SOE – SUPPORT OF EXCAVATION  
TYP. – TYPICAL  
W.P. – WORKING POINT

LIST OF SYMBOLS:



GENERAL NOTES:

- CONTRACTOR MAY ELECT TO SUBMIT VALUE ENGINEERING AND OWN DESIGN FOR SUPPORT OF EXCAVATION, INCLUDING ALL MEASURES REQUIRED TO SUPPORT ADJACENT STRUCTURES, STREETS, SIDEWALKS AND UTILITIES, PREPARED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF NEW YORK FOR REVIEW BY THE ENGINEER-OF-RECORD.
- ELEVATIONS ON PLANS ARE GIVEN RELATIVE TO DATUM NAVD88.
- THE SUPPORT OF EXCAVATION SYSTEM HAS BEEN DESIGNED FOR 600 PSF AT EXISTING GRADE ALONG THE EXTERIOR OF THE SITE.
- MATERIALS:
  - A. ALL STEEL (U.O.N.): ASTM A572, GRADE 50
  - B. SOLDIER PIPE PILES: ASTM A 252, CLASS 3
  - C. TIMBER LAGGING: SOUTHERN PINE OR EQUAL  
FB = 1250 PSI (MIN)  
FV = 175 PSI (MIN)
  - D. STEEL THREAD BAR: ASTM A722, GRADE 150
  - E. ROCK BOLTS: ASTM A615 GRADE 75
  - F. ROCK PIN REINFORCING: ASTM A615, GRADE 60
  - G. GROUT: MIN. 4000 PSI COMPRESSIVE STRENGTH AT 28 DAYS
  - H. WELDING: AWS D1.1, E70XX ELECTRODES
- SOLDIER (DRILLED-IN) PIPE PILES:
  - A. ALL SOLDIER PILES SHALL BE INSTALLED PLUMB IN DRILLED HOLES. ANY DEVIATIONS OF THE PILE ALIGNMENT BEYOND THOSE SPECIFIED SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER PRIOR TO EXCAVATION.
  - B. ALL PILES SHALL BE FILLED WITH GROUT.
  - C. PILE SPLICES SHALL DEVELOP THE FULL MOMENT AND SHEAR CAPACITY OF THE PILES.
- ALL ANCHORS SHALL BE INSTALLED AND TESTED ACCORDING TO THE DETAILS AND PROCEDURES ON DRAWING SOE-120.00.
- ALL ROCK BOLTS SHALL BE INSTALLED ACCORDING TO THE DETAILS AND PROCEDURES SHOWN ON DRAWING SOE-120.00.
- FOUNDATION PLAN PREPARED BY DeSIMONE CONSULTING ENGINEERS P.L.L.C., DATED 2-28-2014.

GENERAL EXCAVATION NOTES:

- GENERAL EXCAVATION ACROSS THE SITE SHALL NOT EXTEND DEEPER THAN THE SLAB-ON-GRADE GRANULAR FILL SUBGRADE ELEVATION. DEEPER EXCAVATIONS SHALL BE EXCAVATED INDIVIDUALLY, ON A LOCALIZED BASIS DOWN FROM SUBGRADE. CONTRACTOR TO VERIFY ELEVATIONS PRIOR TO COMMENCING WORK.
- CONTRACTOR SHALL VERIFY AND RECORD ROCK ELEVATIONS DURING SOLDIER (DRILLED-IN) PIPE PILE INSTALLATION. ACTUAL TOP OF ROCK ELEVATIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO EXCAVATION.
- SOIL EXCAVATION SHALL NOT PROCEED DEEPER THAN 2 FEET BELOW THE LAST INSTALLED LAGGING. ALL LAGGING SHALL BE PLACED HORIZONTAL AND BACKPACKED PRIOR TO ADVANCING THE EXCAVATION. THE EXCAVATION SHALL BE SEQUENCED SO THAT STABILITY OF ADJACENT STRUCTURES WITHIN 10' OF THE LAGGING IS MAINTAINED AT ALL TIMES.
- ROCK EXCAVATION:
  - A. LINE DRILL AS REQUIRED.
  - B. PLUG ALL SEEMS AND LENSES IN ROCK WITH GROUT AS REQUIRED IF WATER BEARING.
  - C. INSTALL ROCK BOLTS AS REQUIRED AND AS DIRECTED BY THE ENGINEER.
  - D. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING TIMING AND EFFECTS OF BLASTING (IF USED) WITH EXISTING RAILROAD OPERATIONS PER THE RECOMMENDATIONS OF THE OWNER'S BLAST CONSULTANT.
  - E. NO BLASTING SHALL OCCUR WITHIN A 50'-FOOT RADIUS OF NEWLY PLACED CONCRETE STRUCTURES BEFORE 7 DAYS OF CURING, UNLESS WRITTEN PERMISSION IS OBTAINED FROM THE ENGINEER OF RECORD.
  - F. ALL BLASTING OPERATIONS SHALL COMPLY WITH ALL LOCAL AND STATE LAWS, RULES, AND REGULATIONS, AND AMTRAK AND LIRR BLASTING SPECIFICATIONS.
- CONTRACTOR SHALL LOCATE ALL UTILITIES AND EXISTING UNDERGROUND STRUCTURES PRIOR TO INSTALLING SOLDIER PILES, TIEBACKS OR ROCK BOLTS. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING, RELOCATING AND REINSTALLING EXISTING UTILITIES THAT INTERFERE WITH PROPOSED EXCAVATION AND SUPPORT OF EXCAVATION MEMBERS.
- THE CONTRACTOR SHALL PROVIDE ALL MEASURES AND PRECAUTIONS NECESSARY TO PREVENT DAMAGE AND MINIMIZE SETTLEMENT OF EXISTING OR NEW CONSTRUCTION INSIDE OR OUTSIDE PROJECT LIMITS.
- MONITORING:
  - A. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING MONITORING POINTS ON THE SOE. THE CONTRACTOR SHALL FREQUENTLY READ AND RECORD ALL MOVEMENTS OR SETTLEMENTS DURING EXCAVATION AND REPORT MOVEMENTS TO CONSTRUCTION MANAGER.
  - B. CONTRACTOR SHALL SUBMIT AND CONDUCT A VIBRATION MONITORING PLAN AND PROGRAM AS PER AMTRAK/LIRR REQUIREMENTS AS APPROVED BY ENGINEER.
- THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT FOR THE DEWATERING SYSTEM IF REQUIRED. THE DEWATERING SYSTEM SHALL MAINTAIN THE WATER LEVEL TO A MINIMUM OF 3 FEET BELOW THE DEEPEST SUBGRADE AT ALL TIMES. THIS LEVEL SHALL BE MAINTAINED UNTIL ALL LOWER LEVEL AND GROUND FLOOR SLABS, PERIMETER WALLS AND WATERPROOFING ARE INSTALLED AND THE PERMANENT BUILDING DRAINAGE SYSTEM IS FULLY OPERATIONAL.
- PROPOSED WORK ON DRAWINGS ARE SUBJECT TO SPECIAL INSPECTION IN ACCORDANCE WITH THE NEW YORK CITY BUILDING CODE.
- NOTIFICATION TO BE PROVIDED TO THE D.O.B. 24-48 HOURS PRIOR TO COMMENCEMENT OF EARTHWORK AS PER BC 3304.3.1.

3

PROJECT

Manhattan West  
Southwest Residential  
Tower

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225 WEST 34TH STREET  
NEW YORK, NY 10122  
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- 3 10-16-2014 REVISED PER DOB COMMENT  
2 05-16-2014 ISSUED FOR BID  
1 03-14-2014 DESIGN DEVELOPMENT

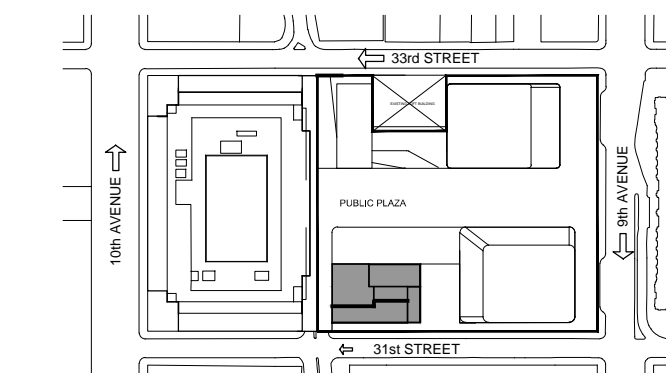
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D.O.B. NUMBER:

NB#

NORTH: Scale: AS NOTED

KEY PLAN:

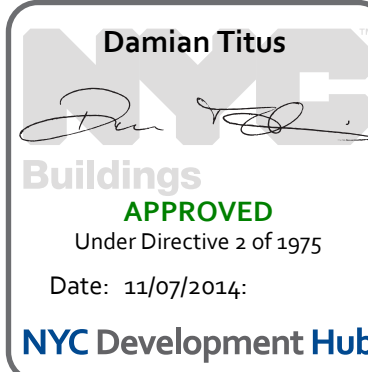


PROJECT:

DRAWING TITLE:

SUPPORT OF EXCAVATION  
GENERAL AND EXCAVATION  
NOTES

SEAL & SIGNATURE: DATE: 12.18.2013  
PROJECT NO.: 33148.00  
DRAWN BY: KJ  
CHECKED BY: EB  
DATE: 12/18/2013  
SHEET NO.: 00  
FILE NO.: SOE-100.00.dwg





PROJECT  
**Manhattan West  
Southwest Residential  
Tower**

PART OF THE MANHATTAN WEST MASTER PLAN  
West 31st Street & Dyer Avenue  
New York, NY

OWNER/DEVELOPER

**Brookfield**

80P West 31st Street LLC  
Brookfield Properties W 31st CO.L.P.  
Brookfield Place, 250 Vesey Street  
New York, NY 10281

ARCHITECT

**SLCEArchitects,LLP**

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NEW YORK, NY 10018  
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DESIGN ARCHITECT / MASTER PLAN ARCHITECT:

**SOM**

Skidmore, Owings & Merrill LLP  
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**ROMAN AND WILLIAMS**

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**JAMES CORNER**

FIELD OPERATIONS  
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NEW YORK, NY 10018  
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**DeSIMONE CONSULTING**

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NEW YORK, NY 10011  
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NEW YORK, N.Y. 10121  
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FAX.: (212) 615-3700

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**ISRAEL BERGER & ASSOCIATES, INC.**

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FAX.: (212) 689-4449

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**VIRIDIAN ENERGY & ENVIRONMENTAL**

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NORWALK, CT 06854  
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FAX.: (203) 299-1656

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LIVINGSTON, NJ 07039  
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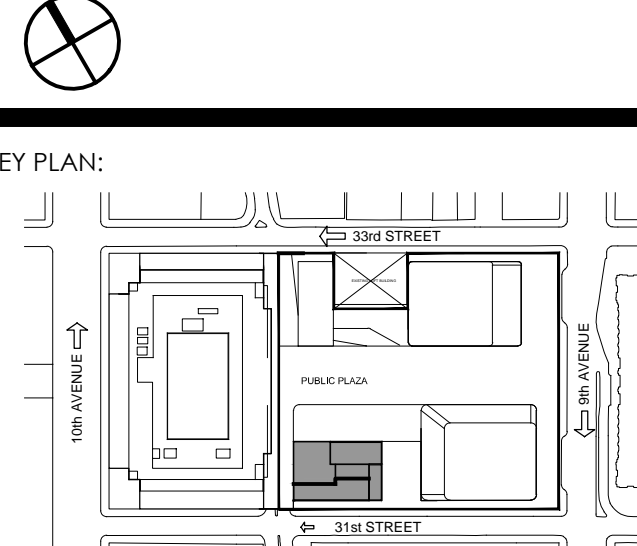
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KEY PLAN:



PROJECT:

DRAWING TITLE:

**SUPPORT OF EXCAVATION  
PLAN**

SEAL & SIGNATURE:

DATE: 12.16.2013

PROJECT NO.: 13146.00

DRAWN BY: KJ

CHECKED BY: EB

DATE: 11/07/2014

PROJECT NO.: 13146.00

SHEET NO.: 00

FILE NO.: SOE-011.08.dwg

AMTRAK / LIRR YARD

EXISTING RETAINING WALL

EXISTING ROCK FACE, TOP OF  
ROCK VISIBLE ON THIS EDGE BUT  
NOT REFLECTED IN CONTOURS

REINFORCE NORTH FACE  
OF CUT SLOPE AS NEEDED

EXISTING MSE WALL  
TO BE REMOVED

TOP OF ROCK  
BASED ON BORINGS  
ONLY

**PLAN**  
SCALE: 1/8"=1'-0"

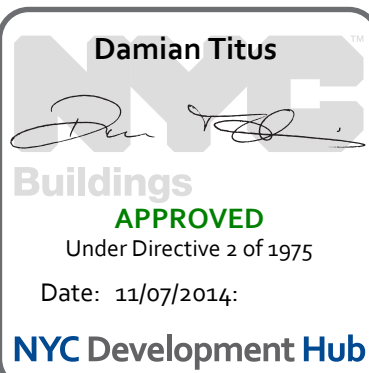
**FOOTING  
SUBGRADE  
SCHEDULE**

MARK	SUBGRADE ELEVATION
F3.0	15.2
F5.0	14.9
F6.0	14.4
F6.5	14.2
F6.5A	10.2
F6.5W	10.2
F7.0	13.9
F7.0A	9.9
F7.5	13.4

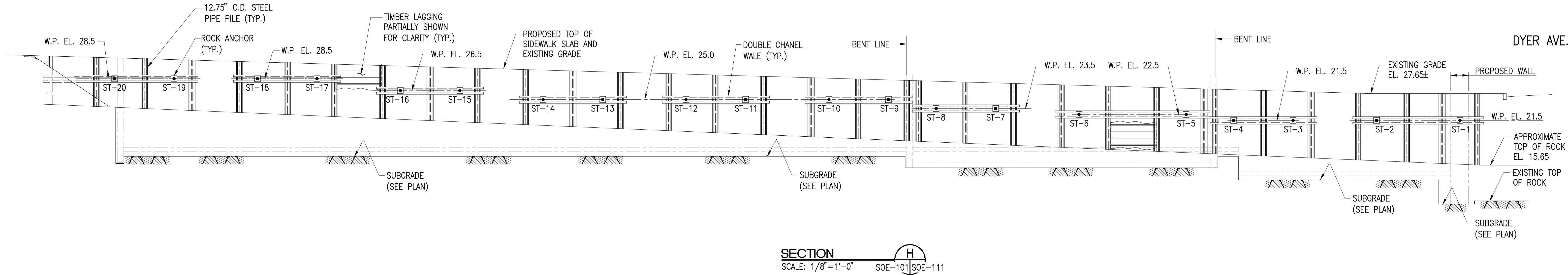
**NOTES:**

- SEE DRAWING SOE-100 FOR GENERAL NOTES, LIST OF ABBREVIATIONS AND LIST OF SYMBOLS.
- ELEVATIONS REFER TO NAVD88.
- SEE FO SERIES DRAWINGS FOR REINFORCED CONCRETE AT ROCK EDGES AT NORTH AND WEST SIDES.









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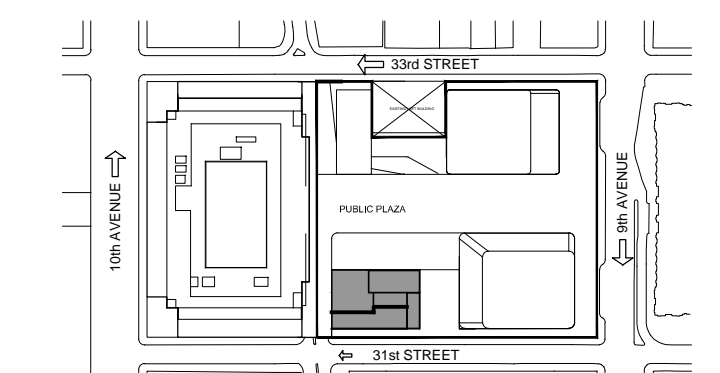
DATE: REVISION:

D.C.B. NUMBER:

NB#

NORTH: Scale: AS NOTED

KEY PLAN:



PROJECT:

MANHATTAN WEST  
NEW YORK, NEW YORK

DRAWING TITLE:

SUPPORT OF EXCAVATION  
SECTIONS  
2 OF 2

SEAL & SIGNATURE:

DATE: 12.16.2013

PROJECT NO: 31-08-00

DRAWN BY: KJ

CHECKED BY: EB

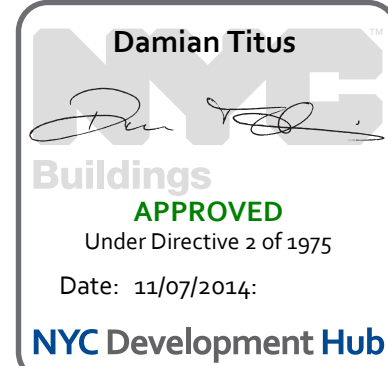
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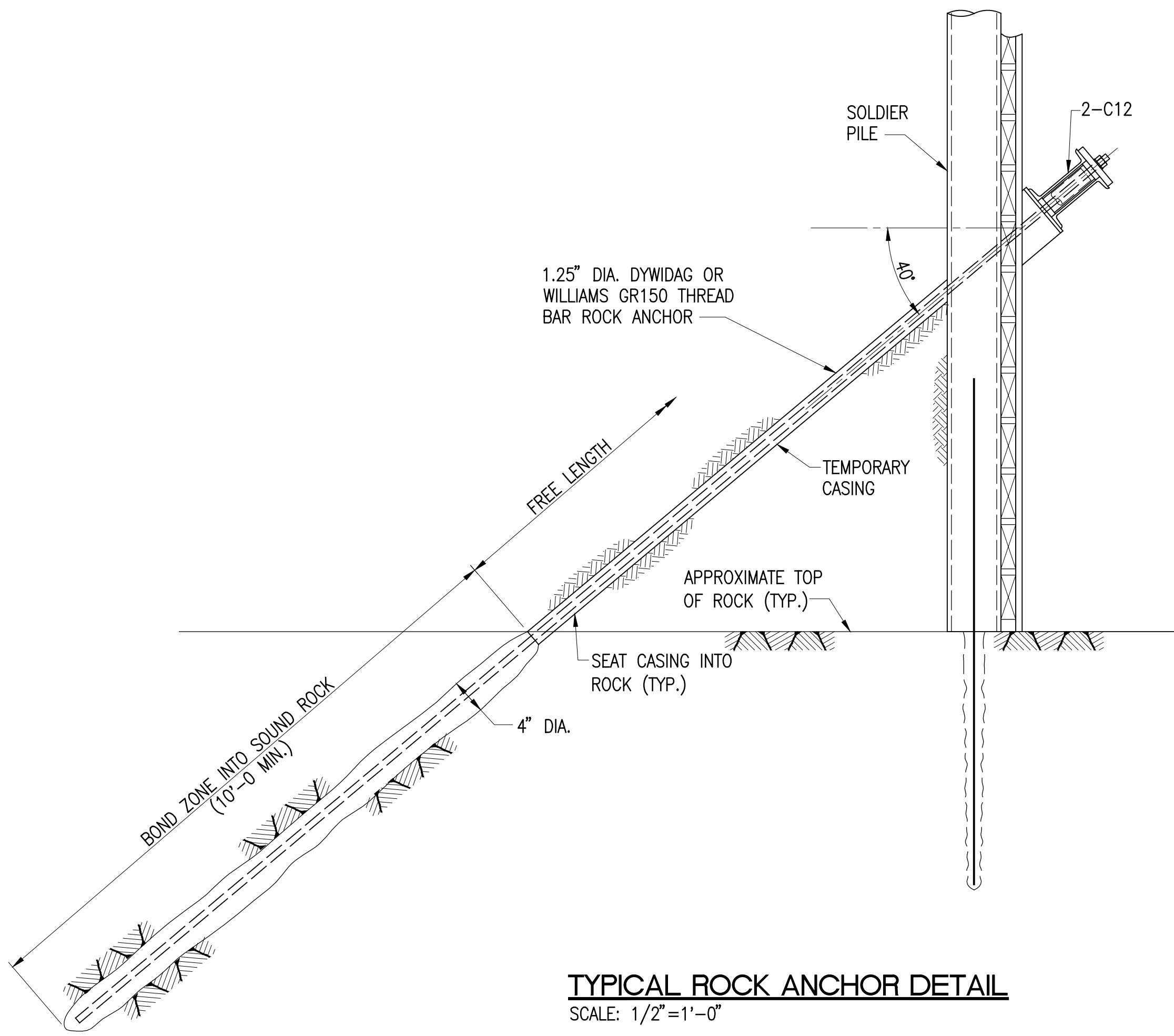
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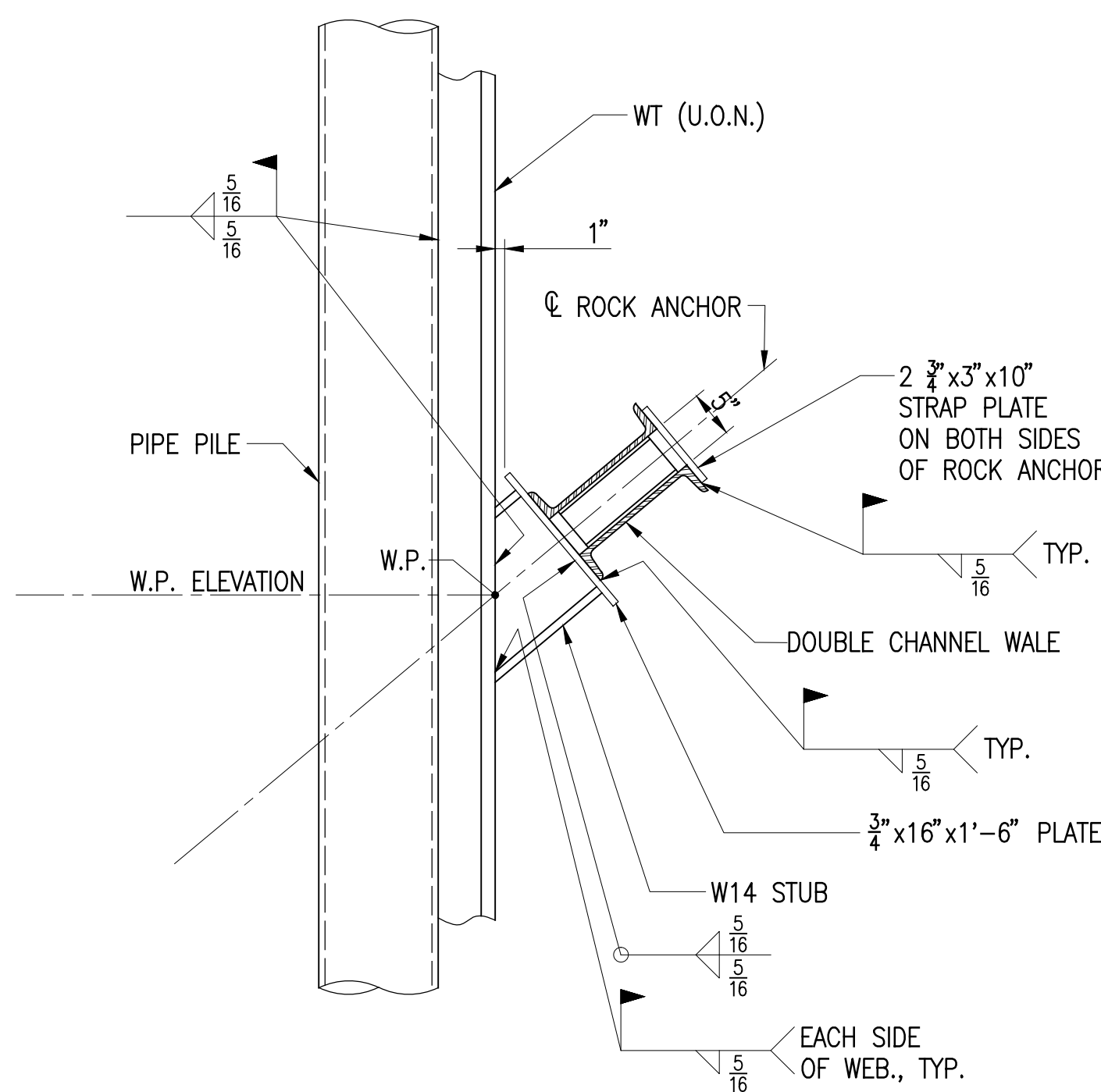
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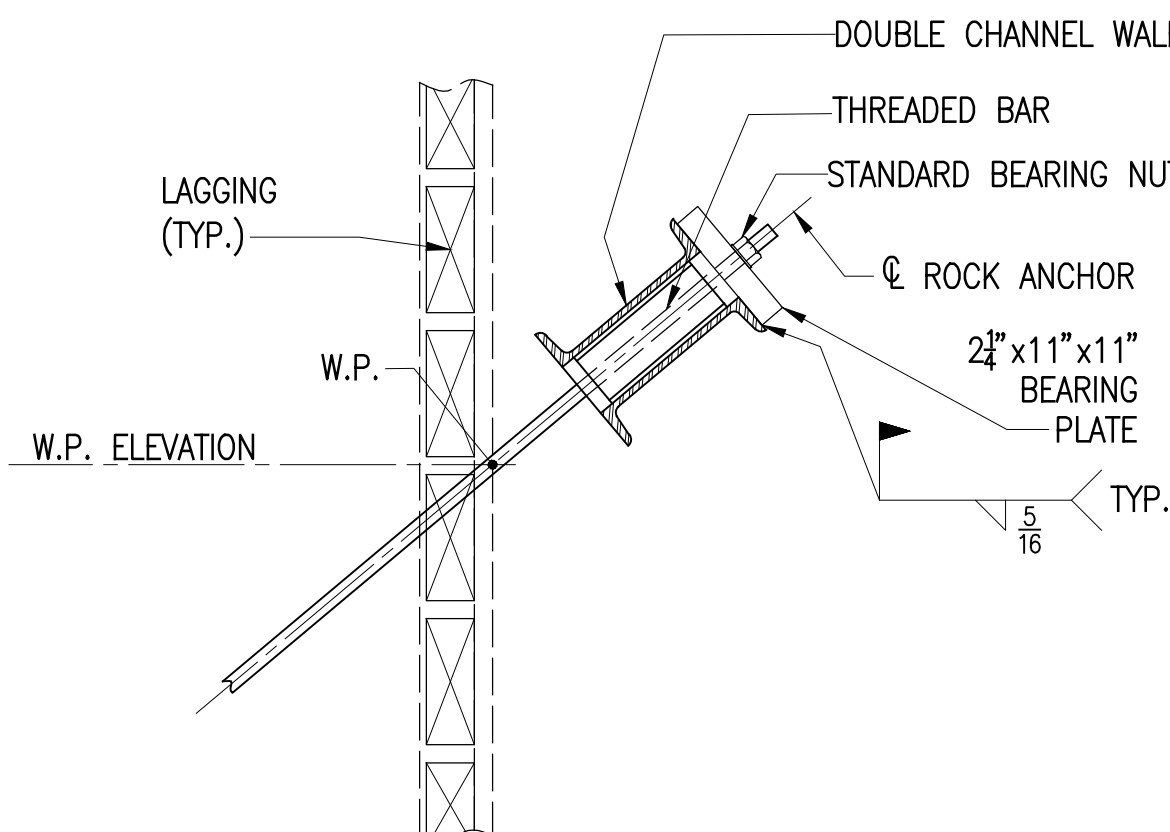




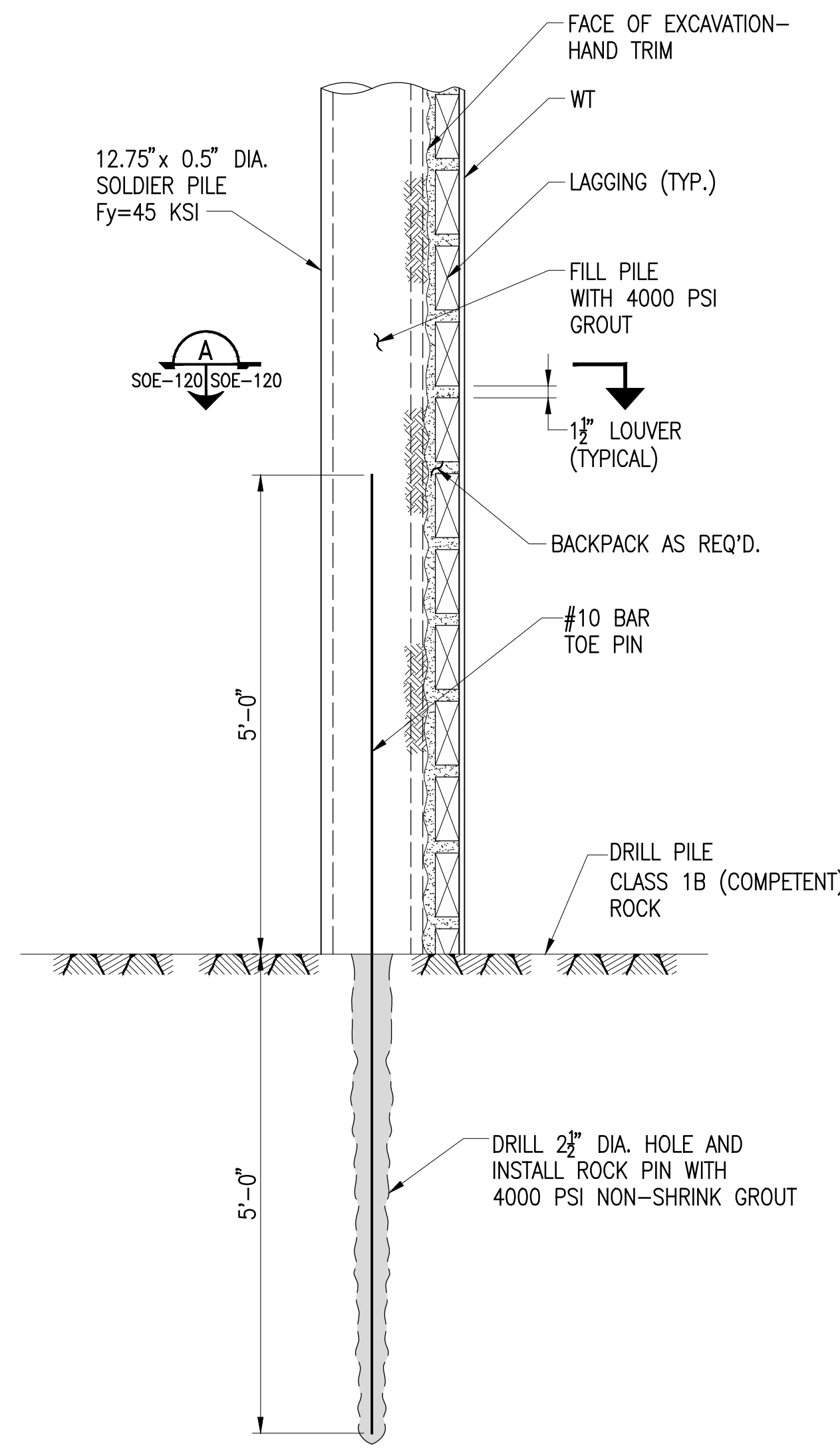
**TYPICAL ROCK ANCHOR DETAIL**  
SCALE: 1/2"=1'-0"



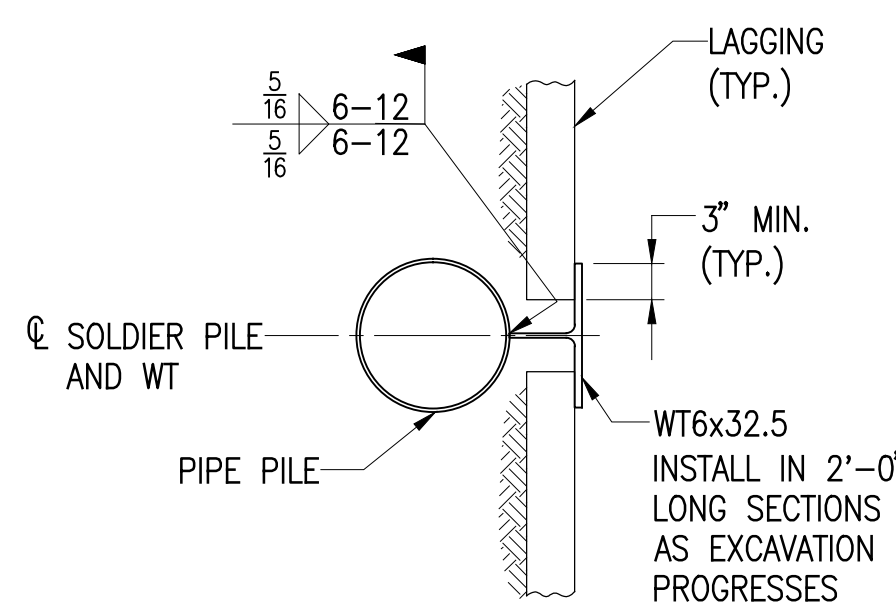
**TYPICAL WALE TO PILE CONNECTION**  
SCALE: 3/4"=1'-0"



**TYPICAL SECTION AT ROCK ANCHOR**  
SCALE: 3/4"=1'-0"



**TYPICAL PILE TO ROCK CONNECTION**  
SCALE: 3/4"=1'-0"



**SECTION**  
SCALE: 3/4"=1'-0" SOE-120 SOE-120

**ANCHOR PERFORMANCE TESTING PROCEDURE:**

1. A PERFORMANCE TEST SHALL BE EXECUTED ON A MINIMUM OF 2 ANCHORS. TEST LOADS FOR THESE ANCHORS SHALL BE 133 TIMES THE ROCK ANCHOR DESIGN LOAD (DL = 70 KIP).
2. LOAD AND UNLOAD ANCHORS IN THE FOLLOWING PATTERN, WHERE DL AND AL STANDS FOR DESIGN LOAD AND ALIGNMENT LOAD (0.1\*DL), RESPECTIVELY:

CYCLE:	1	AL	0.25DL
			AL
	2	AL	0.25DL
			0.5DL
	3	AL	0.25DL
			0.5DL
	4	AL	0.75DL
			0.25DL
	5	AL	0.5DL
			0.75DL
	4	AL	1.0DL
			0.25DL
	4	AL	0.5DL
			0.75DL
	5	AL	1.0DL
			1.2DL
	4	AL	1.33DL - TEST LOAD (HOLD FOR 10 MINUTES)
			ADJUST TO LOCK OFF LOAD OF 1.0DL

3. HOLD EACH INCREMENT OF LOAD JUST LONG ENOUGH TO OBTAIN A MOVEMENT READING. RECORD MOVEMENT READING, JACKING PRESSURE, AND LOAD.
4. WHILE HOLDING THE TEST LOAD (1.33DL), RECORD TOTAL MOVEMENTS MEASURED AT MINUTES 1 THROUGH 6 AND MINUTE 10. IF TOTAL MOVEMENT EXCEEDS 1.0MM, HOLD THE TEST LOAD FOR AN ADDITIONAL 50 MINUTES AND RECORD ADDITIONAL MOVEMENT READINGS.
5. ONCE THE ANCHOR IS LOCKED OFF AT 1.0 DL, VERIFY THAT THE LOAD IS WITHIN 5 PERCENT OF THE SPECIFIED LOCK OFF LOAD.

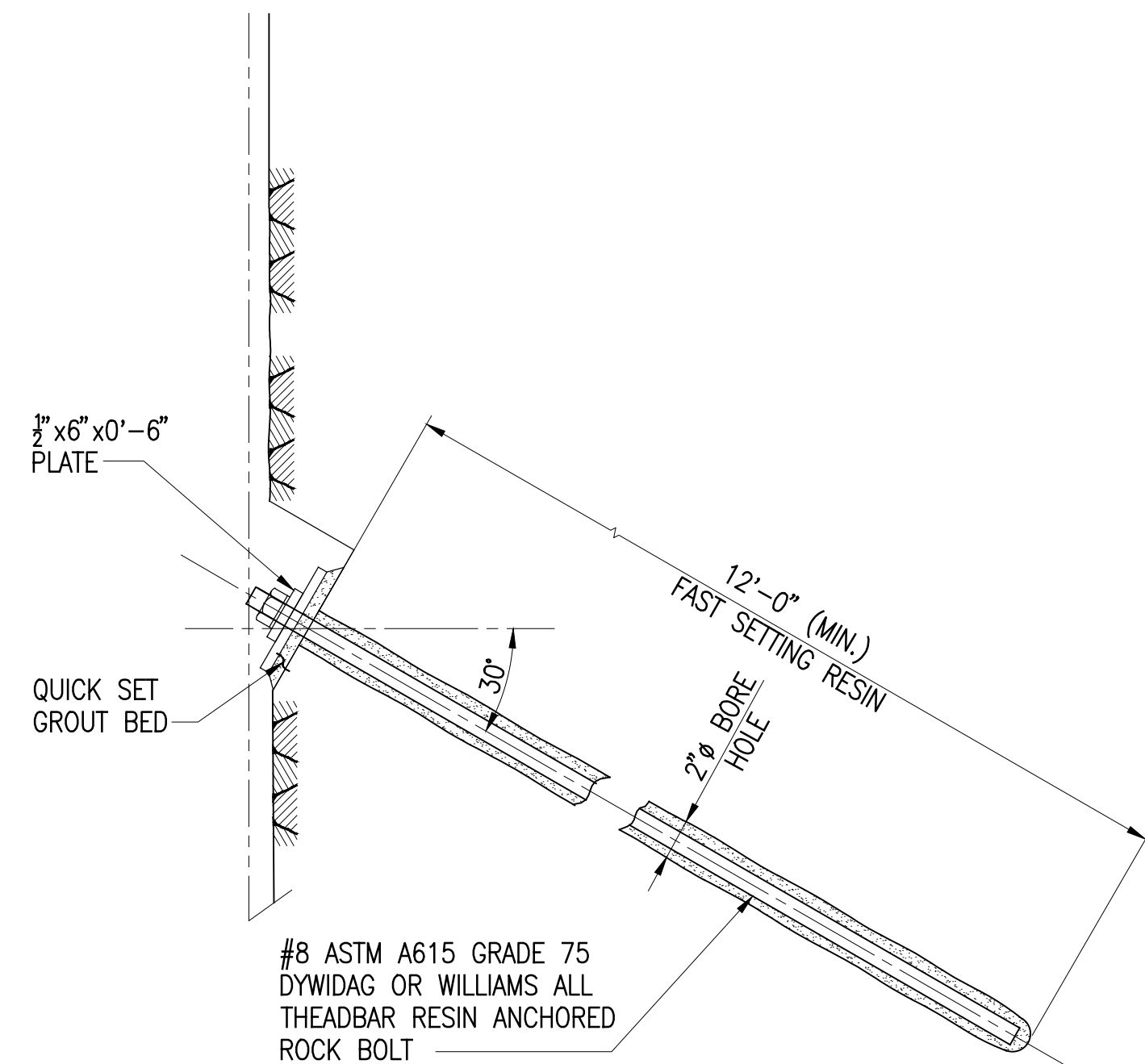
**ANCHOR PROOF TESTING PROCEDURE:**

1. PROOF TEST ALL ANCHORS NOT PERFORMANCE TESTED.
2. LOAD EACH ANCHOR IN ACCORDANCE WITH THE FOLLOWING SCHEDULE, WHERE DL AND AL STANDS FOR DESIGN LOAD AND ALIGNMENT LOAD (0.1\*DL), RESPECTIVELY:

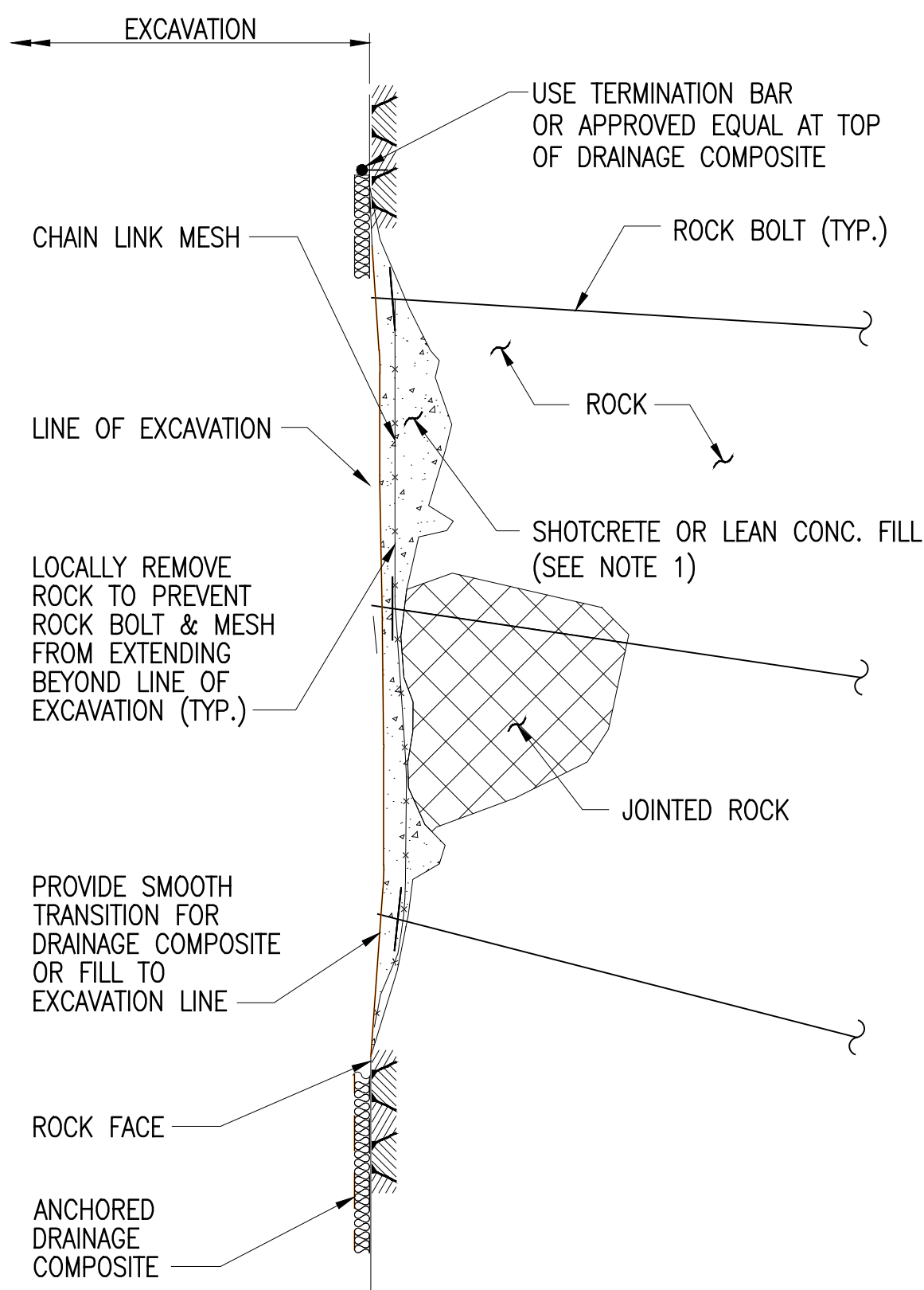
LOAD
A
0.25DL
0.50DL
0.75DL
1.00DL
1.33DL - TEST LOAD (HOLD ANCHOR FOR 10 MINUTES)
ADJUST LOAD TO 1.0DL AND LOCK OFF ANCHOR
3. HOLD EACH INCREMENT OF LOAD JUST LONG ENOUGH TO OBTAIN A MOVEMENT READING. RECORD MOVEMENT READING, JACKING PRESSURE, AND LOAD.
4. WHILE HOLDING THE TEST LOAD (1.33DL), RECORD TOTAL MOVEMENTS MEASURED AT MINUTES 1 THROUGH 6 AND MINUTE 10. IF TOTAL MOVEMENT EXCEEDS 1.0MM, HOLD THE TEST LOAD FOR AN ADDITIONAL 50 MINUTES AND RECORD ADDITIONAL MOVEMENT READINGS.
5. AFTER THE ANCHOR IS LOCKED OFF AT 1.0DL, PERFORM A LIFT OFF TEST TO VERIFY THAT THE LOAD IS WITHIN 5 PERCENT OF THE SPECIFIED LOCK OF LOAD.

**ANCHOR ACCEPTANCE CRITERIA:**

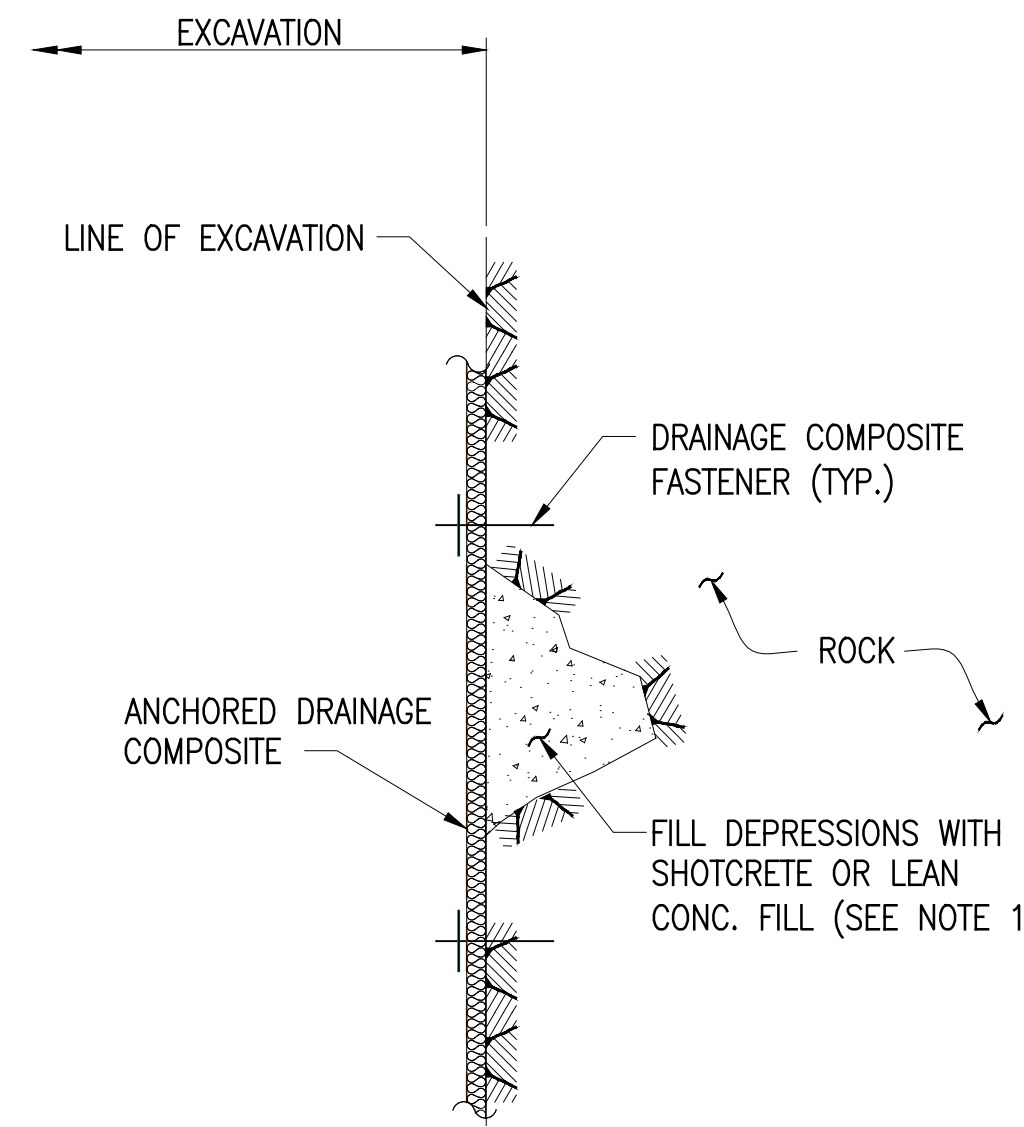
1. ACCEPT ANCHORS IF:
  - A. THE TOTAL ELASTIC MOVEMENT OBTAINED AT THE TEST LOAD WITH A 10 MINUTE LOAD HOLD EXCEEDS 80% OF THE THEORETICAL ELASTIC ELONGATION OF THE STRESSING LENGTH, BUT LESS THAN THE STRESSING LENGTH PLUS HALF OF THE BOND LENGTH.
  - B. THE CREEP RATE WITH A 60 MINUTE LOAD HOLD DOES NOT EXCEED 2.0 MM PER LOG CYCLE DURING THE FINAL LOG CYCLE OF THE PERFORMANCE TEST OR PROOF TEST REGARDLESS OF THE TENDON LENGTH AND LOAD.



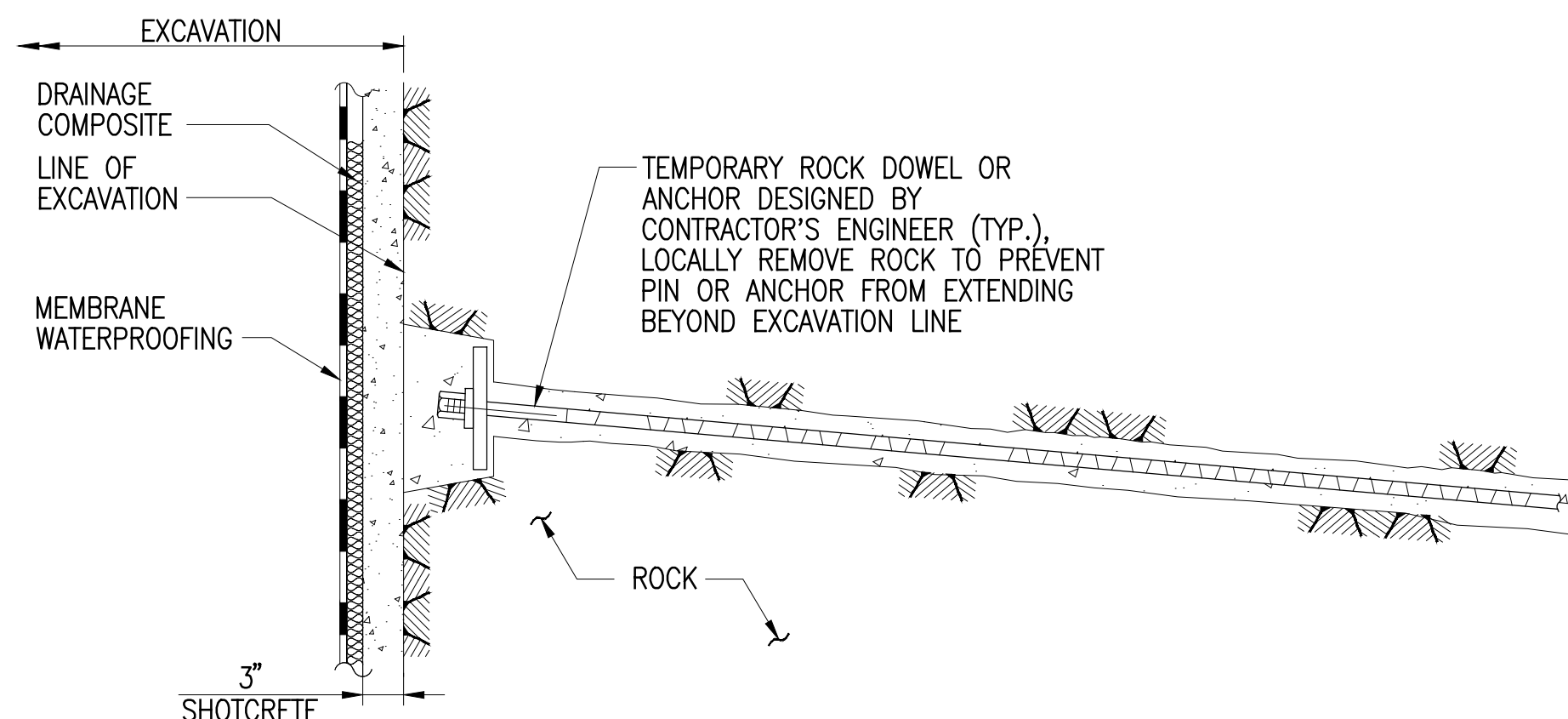
**TYPICAL ROCK BOLT DETAIL**  
SCALE: 1 1/2"=1'-0"



**ROCK FACE SUPPORT WITH CHAIN LINK MESH (WEAK ROCK)**  
NO SCALE

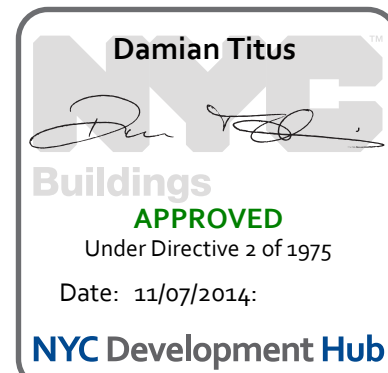


**ROCK SURFACE PREPARATION (FOR WATERPROOFING)**  
NO SCALE



NOTE: INTERFACE BETWEEN DRAINAGE COMPOSITE AND PERMANENT PIPING NOT SHOWN. SEE CONTRACT DOCUMENTS

**ROCK FACE SUPPORT IN AREA WITH MEMBRANE WATERPROOFING**  
NO SCALE



**PROJECT:**  
**Manhattan West Southwest Residential Tower**

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New York, NY

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**JAMES CORNER FIELD OPERATIONS**

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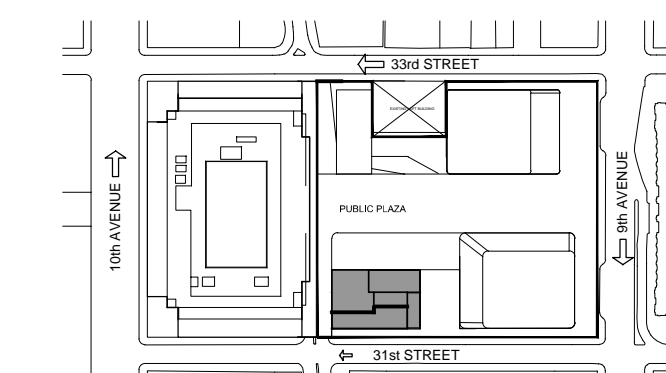
D.C.B. HANSEN:

**NB#**

NORTH:

Scale: AS NOTED

**KEY PLAN:**



PROJECT:

DRAWING TITLE:

**SUPPORT OF EXCAVATION SECTIONS AND DETAILS**

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