

Attachment 12

Underpinning Documentation



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March 7, 2018

APTIM

200 Horizon Center
Trenton, NJ 08691

Attn: Ms. Crystal Leavey

Re: Warehouse Footing Underpinning
Site 16, 45 Linden Ave East
Jersey City, NJ
MRCE File # 12249A

Dear Ms. Leavey:

This letter serves to summarize MRCE inspection work at Site 16 from July 7, 2014 to November 24, 2014 with regard to underpinning warehouse wall footings during remediation excavation. The summary will be included with documentation APTIM is preparing for the Interim Remedial Action Report.

EXHIBITS

The following exhibits are attached to illustrate this letter:

<u>Exhibit</u>	<u>Description</u>
Drawing SOE-KP1	Key Plan
Drawing SOE-1	Support of Excavation Plan
Drawing SOE-2	Support of Excavation
Drawing SOE-3	Support of Excavation Phase II Plan and Section A-A
Appendix A	Photographs

MRCE SITE WORK SUMMARY

MRCE visited the site six times from July 7, 2014 to August 29, 2014 to observe excavation, inspect test pits, and conduct condition surveys of select areas of the warehouse.

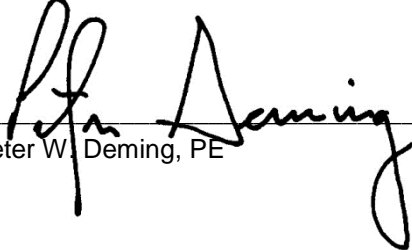
MRCE was notified of possible contamination requiring excavation and removal beneath wall perimeter footings at the east side of the warehouse in Phase II and Phase III areas (see Drawing SOE-KP1). MRCE developed an underpinning plan consisting of excavated pits backfilled with concrete, with shims and wedges to transfer the foundation loads to soils beneath the contaminated areas. The proposed underpinning plan is shown on Drawings SOE-1 and SOE-2.

MRCE was on site from October 28, 2014 to October 30, 2014 during excavation adjacent to the warehouse foundation in the Phase III area. During Phase III excavation the contaminated layer was not encountered below the existing footings. Therefore, underpinning was not required. The building exterior wall was monitored for settlement during excavation; no movement was observed.

MRCE was on site from October 31, 2014 to November 24, 2014 to inspect test pits, excavation and underpinning in the Phase II area. Test pits at the east-west running wall south of the EZ Warehouse loading dock showed the contaminated layer above the bottom of the wall footing, and therefore, no underpinning was required along the east-west wall. Test pits along the north-south running wall showed contamination extending beneath the wall footings, but above the bottom of the columns footings. Therefore, underpinning was required beneath the wall footings between the column footings, but not beneath the column footings. The underpinning plan is shown on Drawings SOE-2 and SOE-3. Underpinning extended approximately 115-ft south from the corner of the east-west and north-south walls in Phase II. Underpinning pits ranged from 3.5-ft to 5-ft in depth below the bottom of the wall footings, averaging 4-ft. Underpinning pits were typically 4-ft wide, extending to the back of the wall footing. Underpinning depth was typically extended to provide access to the back of the wall footing, rather than by the depth of the contaminated layer.

Very truly yours,

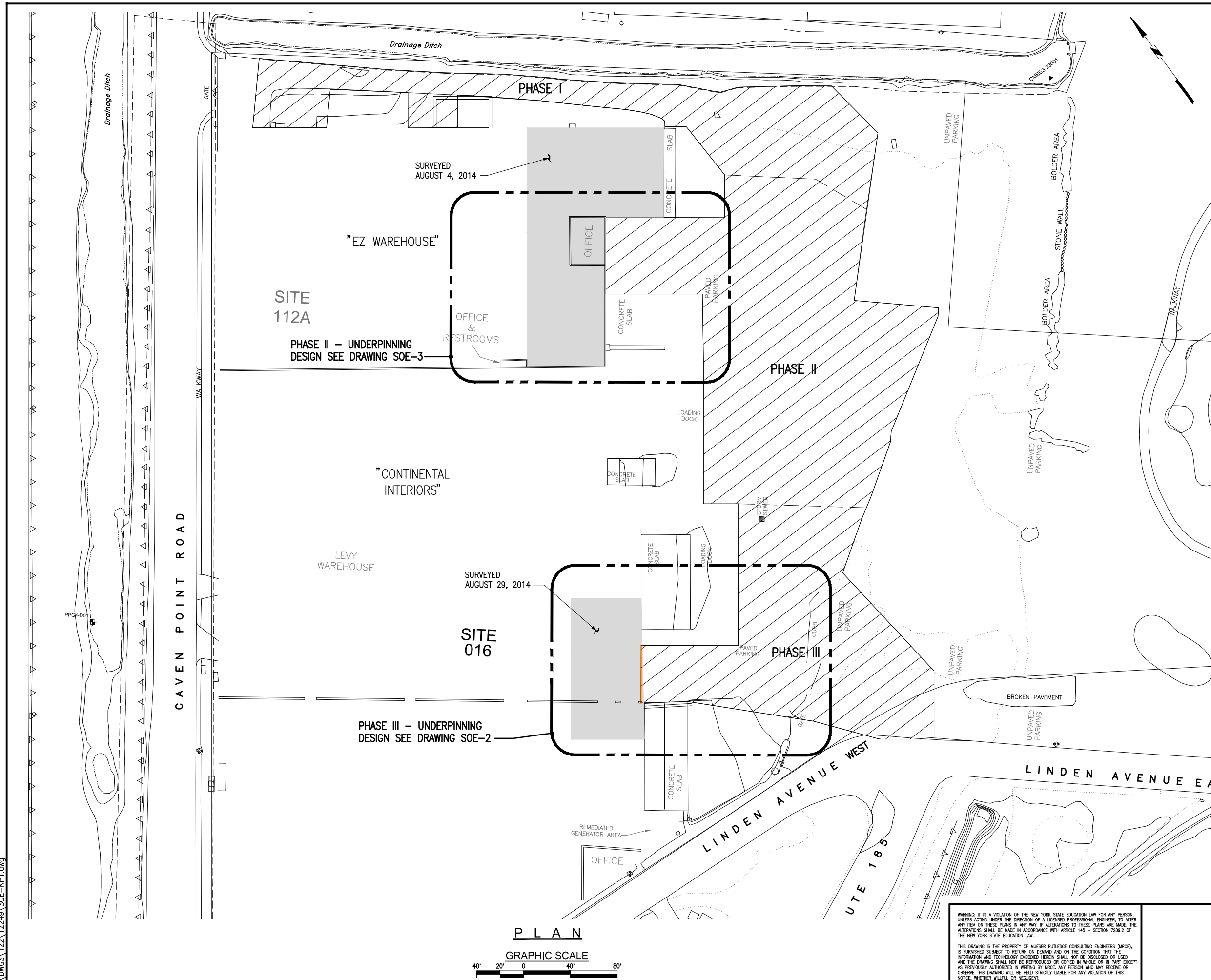
MUESER RUTLEDGE CONSULTING ENGINEERS



Peter W. Deming, PE

EXHIBITS

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- LEGEND:**
- PORTION OF BUILDING INCLUDED IN CONDON SURVEY.
 - SOIL REMEDIATION PHASES
 - PARTIAL PLAN LIMITS

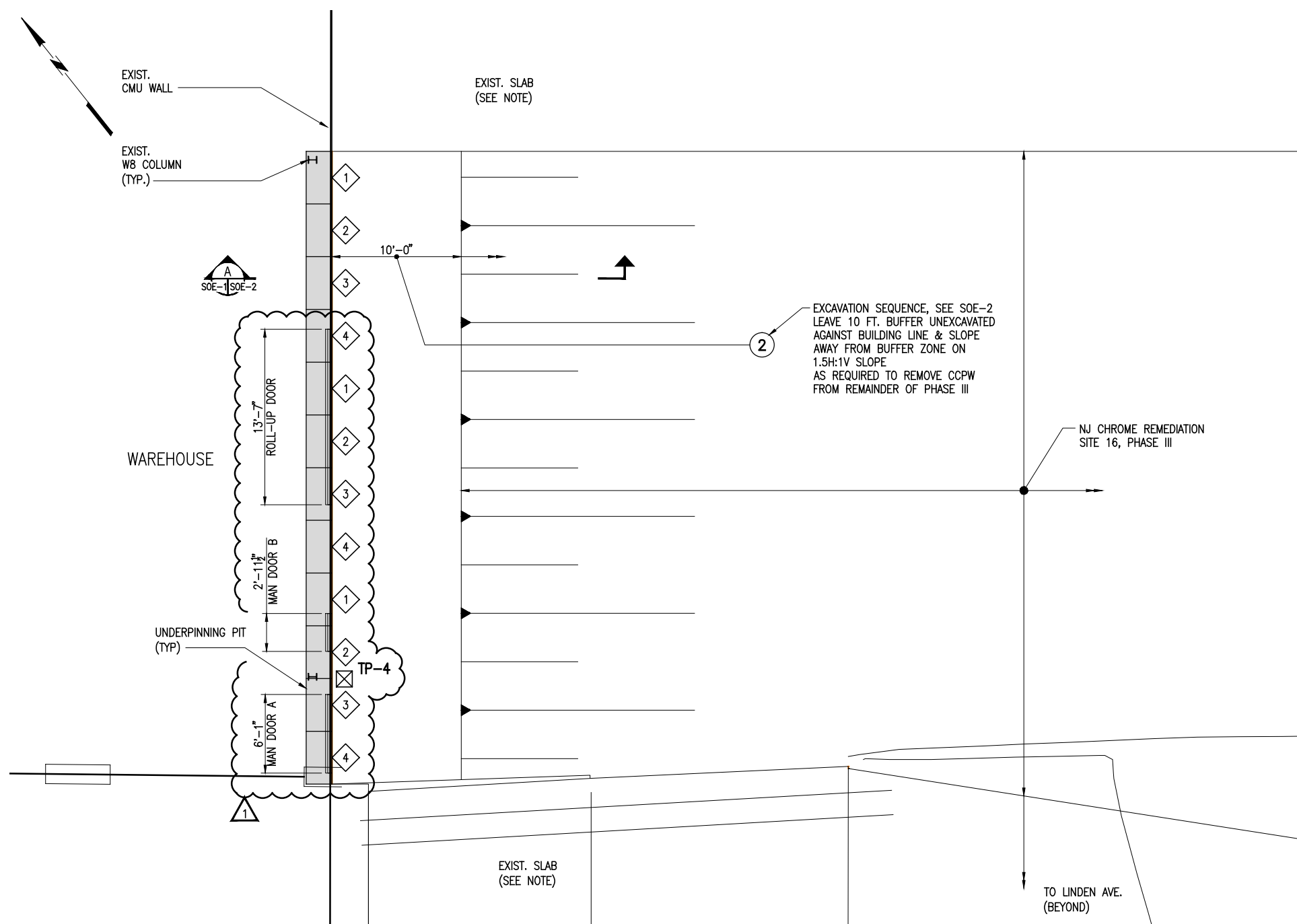
- NOTES:**
1. BASE PLAN OBTAINED FROM CB&I AS DRAWING NO. 146429-D1-7 SHEET NO. C-7 DATED 12/11/13.
 2. ACCESS TO SITE AND BUILDING COORDINATED BY CB&I AND WCD GROUP ON BEHALF OF PPG INDUSTRIES, INC.
 3. CONDON SURVEYS CONDUCTED BY MRCE ON AUGUST 4 & 29, 2014.

REV.	DATE	BY	DESCRIPTION
45 LINDEN AVE. EAST SOIL REMEDIATION-SITE 16			
JERSEY CITY			NJ
PPG INDUSTRIES, INC.			
ALLISON PARK			NJ
MUESER RUTLEDGE CONSULTING ENGINEERS			
14 PENN PLAZA - 225 W. 34TH STREET, NY, NY 10122			
SCALE	MADE BY: L.R.	DATE: 11-04-2014	FILE NUMBER
GRAPHIC	CH'KD BY: J.V.L.	DATE: 11-04-2014	12249
KEY PLAN			SOE-KP1

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NOTE:
 1. CUT SLAB AND SLOPE AS REQUIRED TO REACH EXCAVATION SUBGRADES. REPLACE IN KIND.

P L A N
 SCALE: 1:5

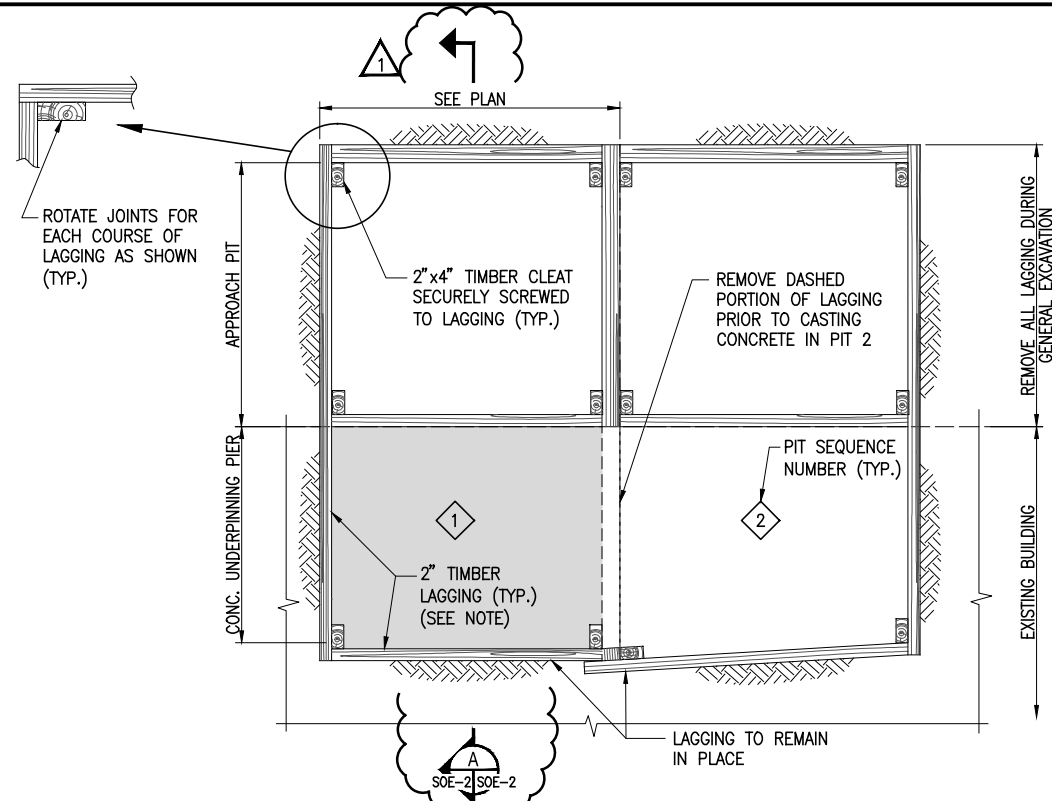


- LEGEND:**
- ⊗ - TP-4 EXCAVATED BY ENTACT 8/29/14, INSPECTED BY MRCE.
 - ⊠ - UNDERPINNING PIT SEQUENCE NUMBER

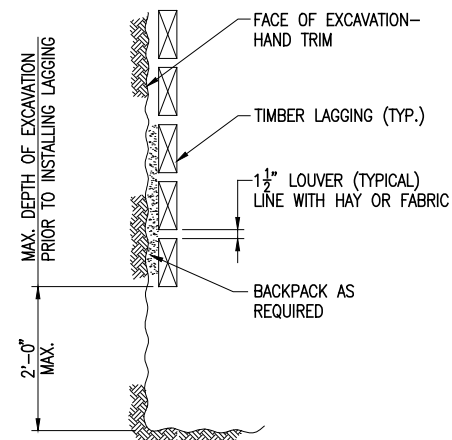
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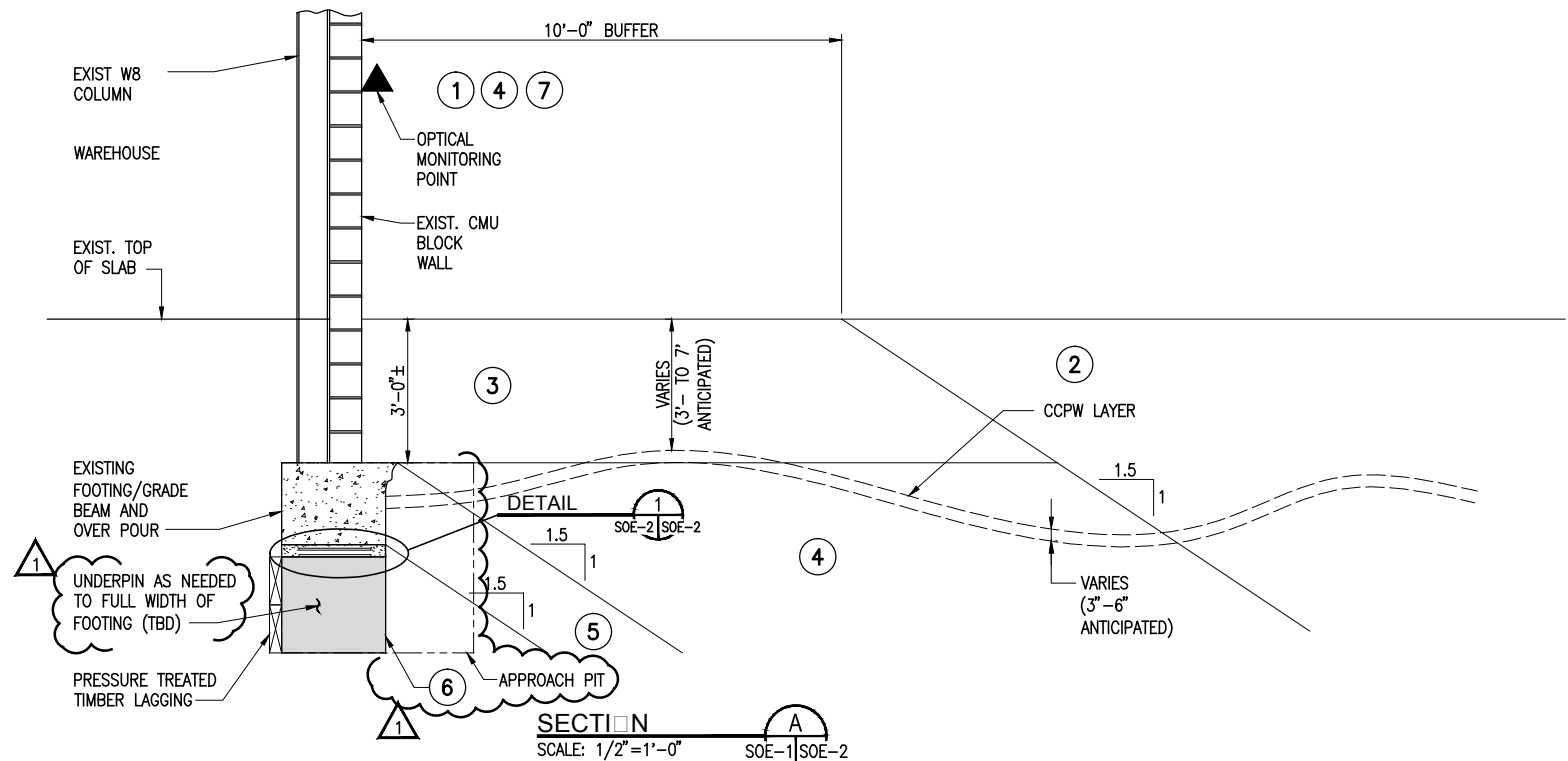
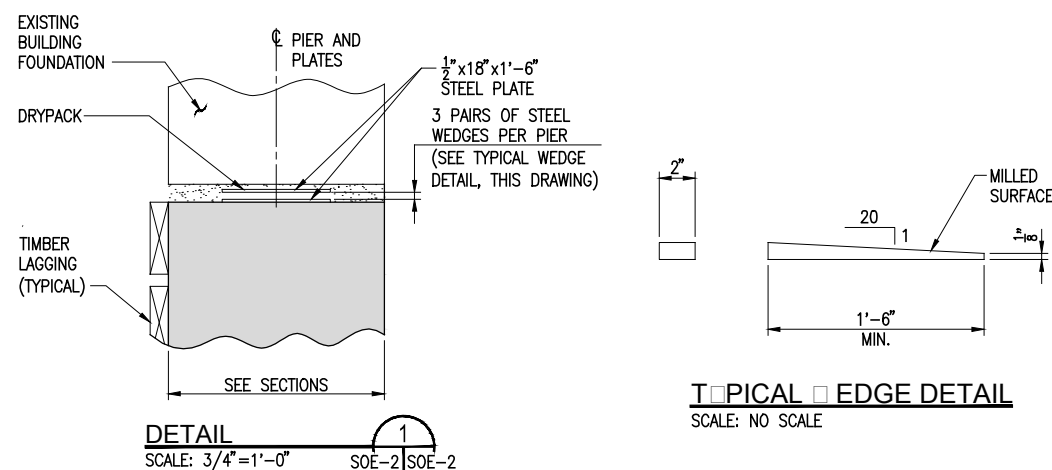
1	10-15-14	J.L.V.	INCORPORATED GEI COMMENTS
REV.	DATE	BY	DESCRIPTION
LINDEN AVENUE, SITE 16			
JERSEY CITY			NJ
PPG INDUSTRIES, INC.			
ALLISON PARK			PA
MUESER RUTLEDGE CONSULTING ENGINEERS			
14 PENN PLAZA - 225 W. 34TH STREET, NY, NY 10122			
SCALE	MADE BY: J.E.M.	DATE: 09-26-2014	FILE NUMBER
GRAPHIC	CH'KD BY: S.R.L.	DATE: 09-26-2014	12249
SUPPORT OF EXCAVATION PLAN			SOE-1



TYPICAL UNDERPINNING PIT SHORING DETAIL
SCALE: NO SCALE



TYPICAL LAGGING INSTALLATION DETAIL
SCALE: 3/4"=1'-0"



- UNDERPINNING NOTES:**
- A. IF PILE FOUNDATIONS ARE FOUND WITH GRADE BEAMS SPANNING BETWEEN THEM, NO UNDERPINNING IS REQUIRED. THE UNDERPINNING DESIGN SHOWN ON THE CONTRACT DRAWINGS IS BASED ON THE ASSUMPTION THAT THE EXISTING BUILDING TO BE UNDERPINNED IS FOUNDED ON CONTINUOUS FOUNDATIONS. IF INDIVIDUAL COLUMN FOOTINGS ARE FOUND, THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHO WILL REVISE THE DESIGN ACCORDINGLY.
 - B. ONLY PITS HAVING THE SAME NUMERICAL DESIGNATION SHALL BE OPEN AT ANY ONE TIME.
 - C. PITS OF THE FOLLOWING NUMERICAL DESIGNATION SHALL NOT BE EXCAVATED UNTIL ALL PITS OF THE PREVIOUS NUMERICAL DESIGNATION ARE COMPLETED AND DRYPACKED. EXCAVATE ALL #1, THEN #3, THEN #2, THEN #4.
 - D. SEQUENCE UNDERPINNING WORK SUCH THAT PITS ARE EXCAVATED, CONCRETED AND DRYPACKED DURING THE SAME WORK WEEK. DO NOT LEAVE PITS OPEN OVER WEEKEND OR HOLIDAYS. NO VERTICAL SOIL FACE SHALL REMAIN EXPOSED (UNLAGGED) FOR MORE THAN FOUR HOURS.
 - E. EXCAVATION BELOW BOTTOM OF EXISTING FOOTING SHALL BE BY SHOVELS. CAREFULLY HAND TRIM FACE OF CUT TO MINIMIZE UNDERMINING ADJACENT PORTIONS OF THE EXISTING FOOTING. PROVIDE TIMBER LAGGING FOR ALL PITS AS SHOWN ON THE TIMBER SHEETED PIT DETAIL.
 - F. DO NOT EXCAVATE MORE THAN 2 FEET BEFORE INSTALLING TIMBER LAGGING. LEAVE 1-1/2" LOUVERS BETWEEN LAGGING BOARDS AND IMMEDIATELY BACKPACK VOIDS BEHIND THE LAGGING. SHOULD TOTAL DEPTH OF UNDERPINNING BE LESS THAN 2 FEET, THE PIT MAY BE CONCRETED WITHOUT PLACING TEMPORARY TIMBER LAGGING.
 - G. WHERE REQUIRED, PROVIDE POSITIVE DEWATERING AHEAD OF THE UNDERPINNING PIT EXCAVATION. MAINTAIN A DRY STABLE SUBGRADE AT ALL TIMES. DO NOT EXCAVATE IN THE WET. WHERE LOW FLOW GROUNDWATER IS ENCOUNTERED, SUMP FROM LOW POINT CONSTRUCTED IN APPROACH PIT. CONTRACTOR TO BE PREPARED TO INSTALL WELLPOINT SYSTEM IF DIRECTED TO DO SO BY ENGINEER SHOULD FLOW BECOME HIGH ENOUGH TO TRANSPORT SOIL OR PREVENT ADEQUATE SUBGRATE INSPECTION OR APPROVAL.
 - H. ALL UNDERPINNING PITS SHALL BEAR ON APPROVED SUBGRADE A MINIMUM OF 6 INCHES BELOW CCPW LAYER.
 - I. UNDERSIDE OF FOOTING SHALL BE CLEANED OF ALL SOIL AND LOOSE MATERIAL PRIOR TO DRIVING WEDGES AND DRYPACKING. DRYPACKING SHALL OCCUR AFTER UNDERPINNING CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.

- EXCAVATION SEQUENCE:**
1. ESTABLISH X, Y, Z DEFORMATION MONITORING POINTS AT 5-FT TO 10-FT SPACING ALONG BUILDING LINE AS ACCESSIBLE. OBTAIN A MINIMUM OF TWO SETS OF READINGS ON TWO SEPARATE DAYS FOR USE AS BASELINE READINGS.
 2. ESTABLISH AND MARK OUT 10-FT BUFFER ZONE ADJACENT BUILDING FAÇADE. COMMENCE 1.5H:1V SLOPED EXCAVATION BEYOND BUFFER ZONE. ESTABLISH LOCAL SURVEY CONTROL USING NORTH OR SOUTH END AS ORIGIN (0+00) AND EXPOSE AND DOCUMENT DEPTH TO AND THICKNESS OF CHROMATE CHEMICAL PRODUCTION WASTE (CCPW) LAYER ALONG EXPOSED SLOPE PARALLEL TO BUILDING LINE.
 3. EXCAVATE IN BUFFER ZONE ALONG BUILDING LINE TO EXPOSE TOP OF CONCRETE FOOTING, ANTICIPATED AT DEPTHS RANGING UP TO 3-FT BELOW GROUND SURFACE.
 4. EXCAVATE BY SLOPING AWAY FROM TOP OF FOOTING AT 1.5H:1V, EXPOSING AND DOCUMENTING DEPTH TO AND THICKNESS OF CCPW LAYER. IDENTIFY SEGMENTS WHERE EXCAVATION IS ANTICIPATED TO EXTEND BELOW 2-FT BELOW TOP OF EXISTING FOOTING. ESTABLISH SEQUENCE FOR EXCAVATION SEGMENTS IN 4-FT WIDE STRIPS USING SEQUENTIAL ORDER 1, 2, 3, 4, 1, 2, 3, 4 ...N. MARK OUT STRIP LIMITS BELOW GRADE ON BLOCK WALL FOR VISUAL REFERENCE AND GUIDANCE. OBTAIN THIRD SET OF READINGS OF DEFORMATION MONITORING POINTS.
 5. EXCAVATE IN 4-FT WIDE STRIPS EXPOSING EDGE OF CONCRETE FOOTING, TAKING CARE NOT TO EXTEND EXCAVATION BELOW FOOTING.
 6. SHOULD EXCAVATION HAVE TO PROGRESS BENEATH BOTTOM EDGE OF FOOTING PROBE FOR PILES. FOR NO PILES, SHORE PIT USING TIMBER LAGGING AND METHODS AS SHOWN.
 7. PERFORM TWO FINAL SURVEYS OF MONITORING POINTS WITHIN 15-FT OF EACH UNDERPINNING PIT UPON COMPLETION AND TWO WEEKS FOLLOWING COMPLETION.

1	10-15-14	J.L.V.	INCORPORATED GEI COMMENTS
REV.	DATE	BY	DESCRIPTION
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ALLISON PARK			PA
MUESER RUTLEDGE CONSULTING ENGINEERS			
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AS NOTED	CH'KD BY: S.R.L.	DATE: 09-26-2014	12249
SUPPORT OF EXCAVATION			SOE-2

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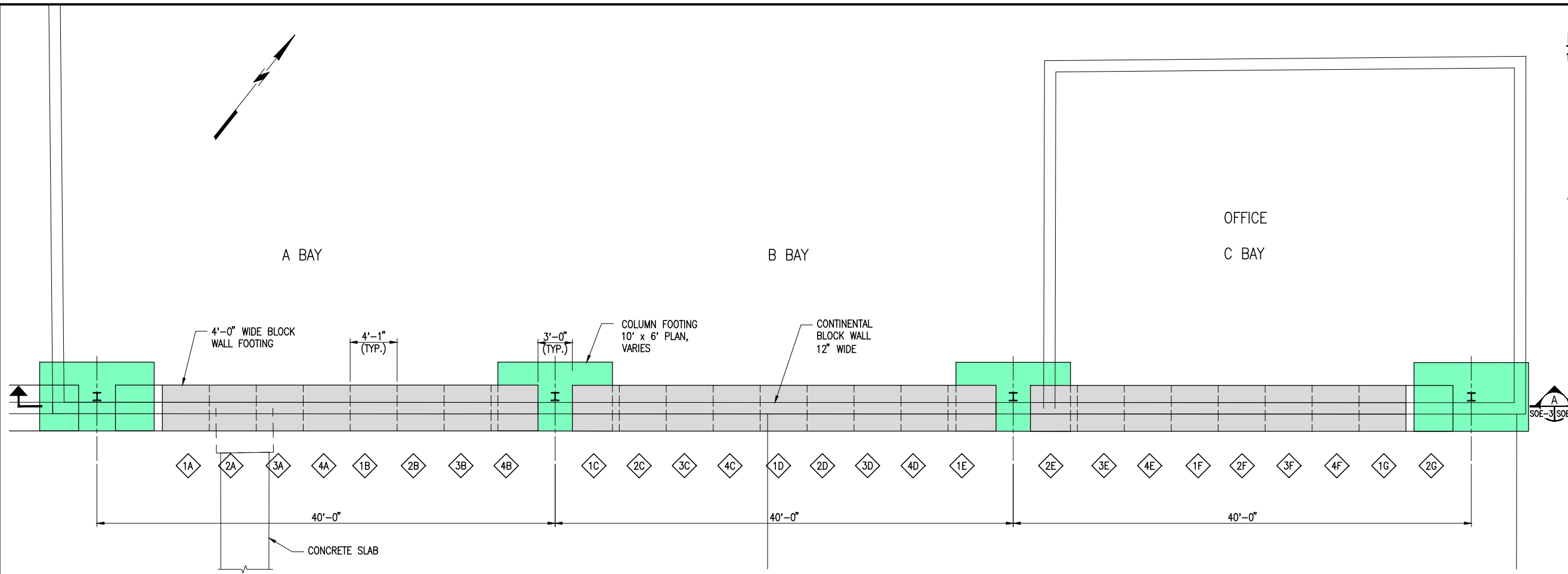
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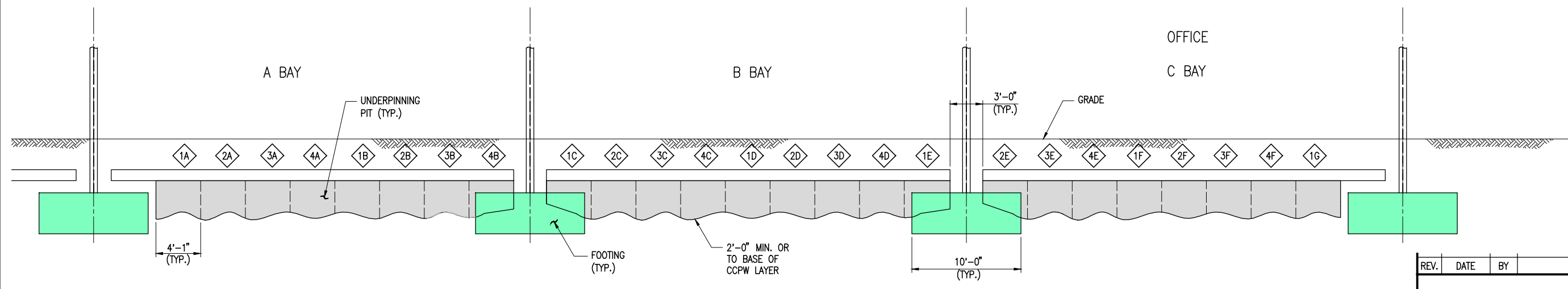
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NOTE:
 1. SEE DRAWING SOE-KP1 FOR PLAN LOCATION AND DWGS. SOE-1 AND SOE-2 FOR DETAILS, UNDERPINNING AN EXCAVATION SEQUENCE NOTES.

LEGEND:
 X - UNDERPINNING PIT SEQUENCE NUMBER



PLAN
 SCALE: 1:5



SECTION A-A
 SCALE: 1:5

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MUESER RUTLEDGE CONSULTING ENGINEERS			
14 PENN PLAZA - 225 W. 34TH STREET, NY, NY 10122			
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GRAPHIC	CH'KD BY: S.R.L.	DATE: 11-04-2014	12249
SUPPORT OF EXCAVATION PHASE II			SOE-3
PLAN AND SECTION A-A			

APPENDIX A
PHOTOGRAPHS



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