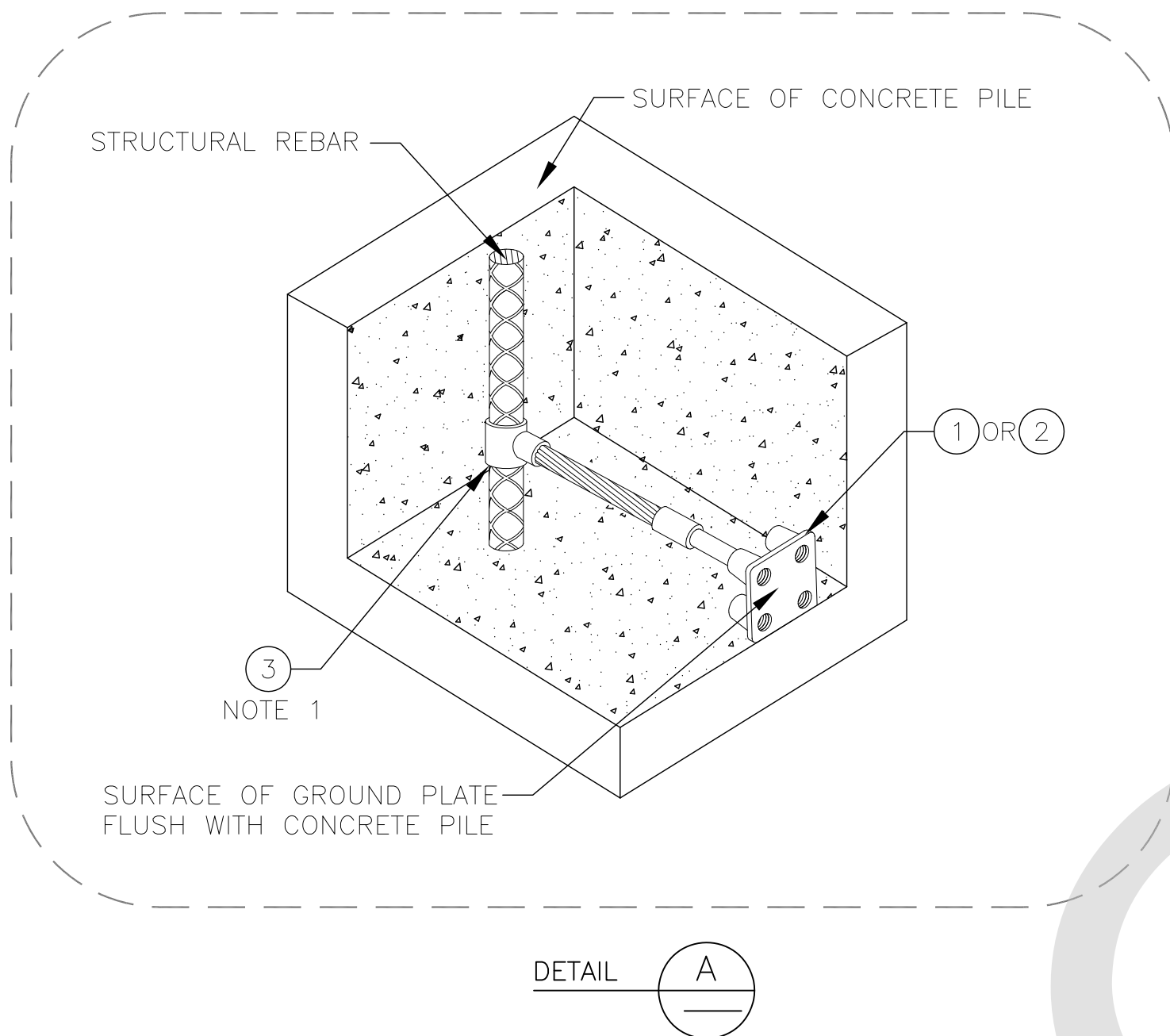
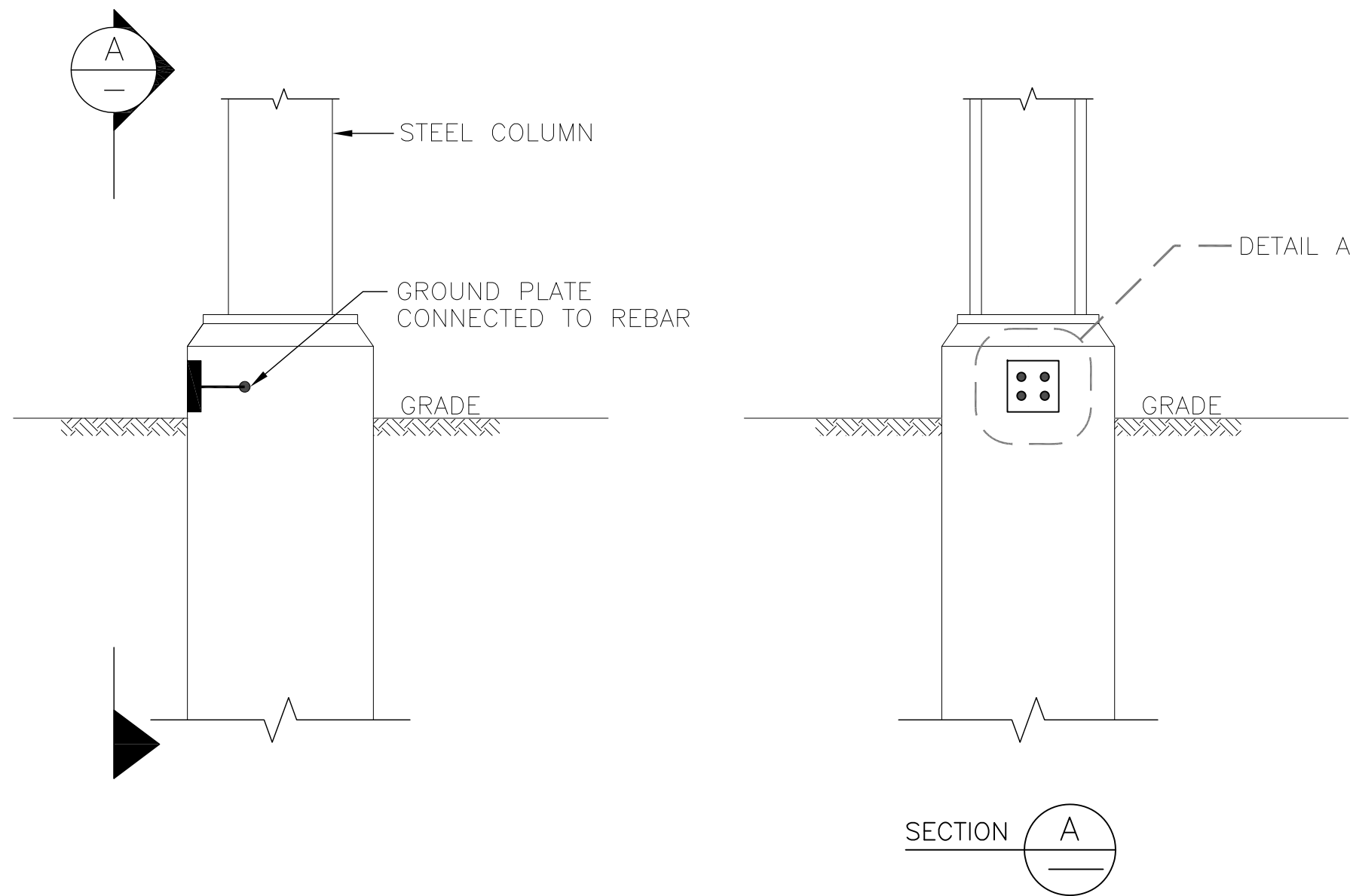


PLOTTED BY: FALLURI PLOTTED DATE: 2015/04/01 PAPER SIZE AT FULL: ANSI D (22.00 x 34.00 INCHES)
 FILE: \\FILE-RGDC01\DEPT\G0107 PROGRAM MANAGEMENT & STANDARDS\PMPS DESIGN STANDARDS\7 REFERENCE MATERIAL\24 ELECTRIFICATION\GROUNDING AND BONDING STANDARD DRAWINGS\MSX-200-009 REV 1.DWG

NOTES:
 1. EXOTHERMIC CONNECTION PROVIDED FOR NUMBER 5 REBAR. REFER TO MXS-100-001 DETAIL 4 FOR ADDITIONAL SIZES.

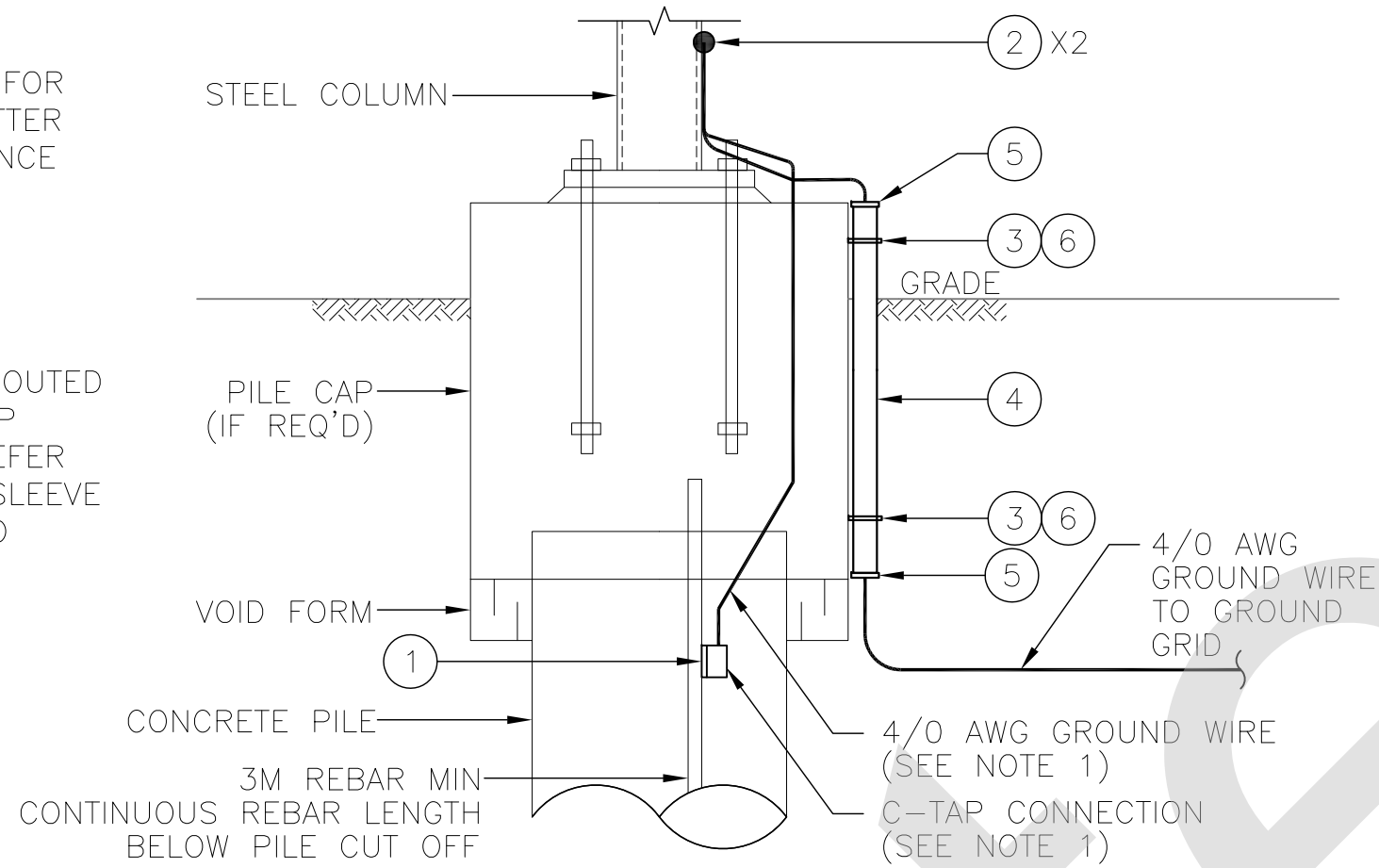


DETAIL 1 – CONNECTION FLUSH GROUND PLATE EMBEDDED IN PIER

ITEM	QTY	UNIT	MATERIAL DESCRIPTION	MANUFACTURER & CAT. NO.
1	1	EA	GROUND PLATE ASSEMBLY	ERICO: B532C OR EQUIVALENT
2	1	EA	GROUND PLATE ASSEMBLY	ERICO: B532D OR EQUIVALENT
3	1	EA	GROUND WIRE TO REBAR EXOTHERMIC CONNECTION	BURNDY: B-7731 OR EQUIVALENT

REFERENCE DRAWINGS			ISSUE			REVISIONS		
DWG NO.	TITLE		NO.	DATE	ISSUED FOR	REV.	DATE	
			3	15/04/06	FINAL DESIGN			
			2	15/03/06	100% DESIGN			
			1	15/02/09	90% DESIGN			
			0	15/01/16	60% DESIGN	1	15/04/15	REVISED NOTE 1 IN DETAIL3

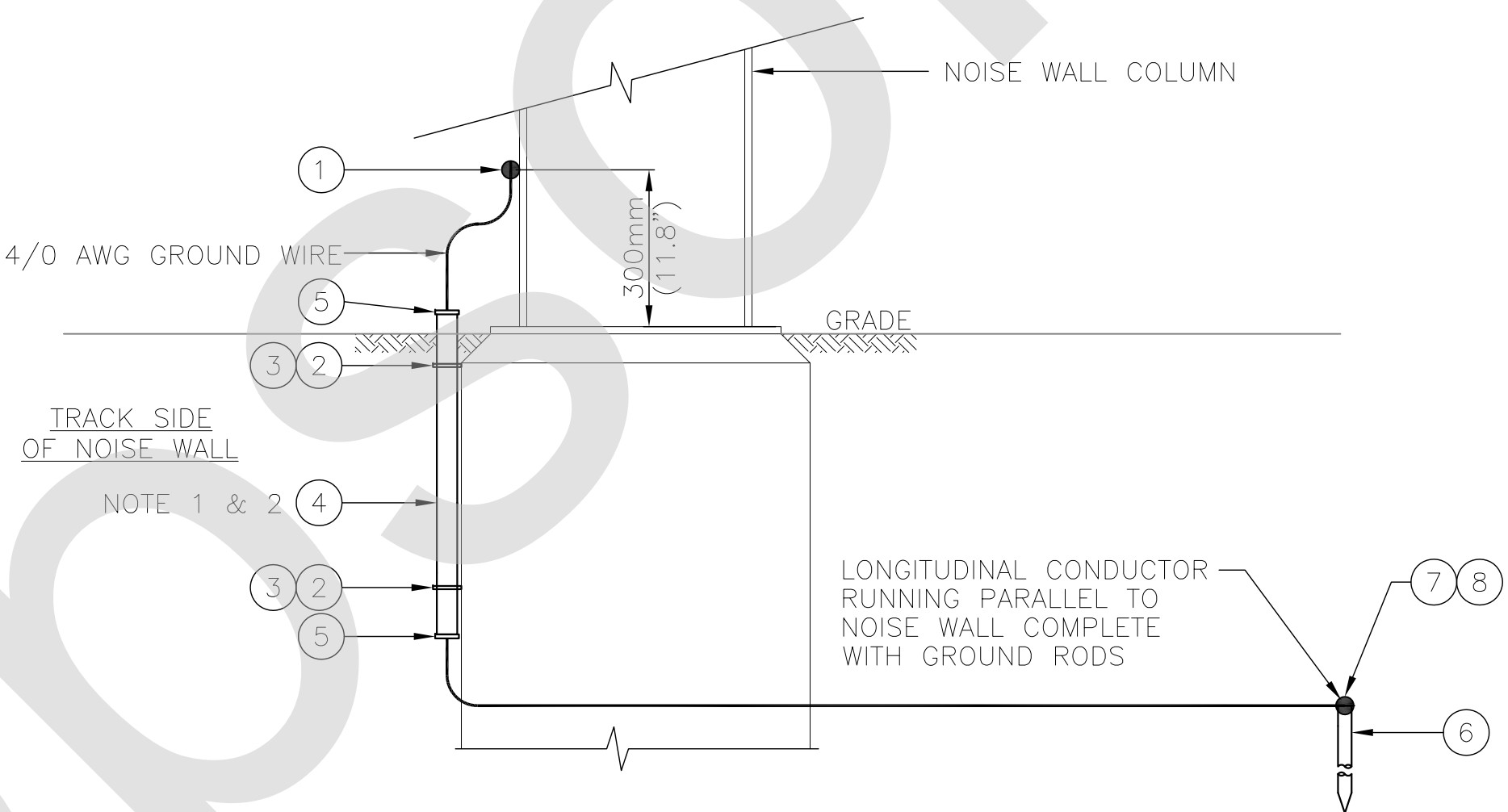
NOTES:
 1. PROVIDED AND INSTALLED BY PILE CONTRACTOR.
 2. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SCOPE OF WORK AFTER PILE IS POURED REFERENCE CIVIL PILE GROUNDING.
 3. WHEN PILE CAPS ARE REQUIRED AS PER CIVIL DRAWINGS, GROUND PILE CONDUCTOR SHALL BE ROUTED OUT OF THE TOP OF CAP WITH 1" PVC SLEEVE, REFER TO CIVIL DRAWING FOR SLEEVE LOCATION TO ENSURE NO CONFLICT WITH CIVIL STRUCTURAL STEEL.



DETAIL 2 – CONCRETE PILE REBAR GROUNDING

ITEM	QTY	UNIT	MATERIAL DESCRIPTION	MANUFACTURER & CAT. NO.
1	1	EA	CRIMP CONNECTOR WITH C-TAP	T&B: 45790 OR EQUIVALENT
2	2	EA	VERTICAL WIRE TAP TO VERTICAL STEEL SURFACE	BURNDY: B-8718 OR EQUIVALENT
3	2	EA	27mm CONDUIT CLAMP 1 HOLE	T&B: 1278 OR EQUIVALENT
4	PER DESIGN	N/A	27mm CONDUIT	(GENERIC)
5	2	EA	BUSHING	(GENERIC)
6	2	EA	ANCHOR, 1 1/2", SS 304,316	HILTI: KB3 1/4" 2-1/4" OR EQUIVALENT

NOTES:
 1. CONDUITS SHALL BE TERMINATED SAME LEVEL AS FOUNDATION ABOVE GRADE. CONDUIT DEPTH SHALL BE SUCH THAT THE GROUND WIRE IS PROTECTED FROM DAMAGE AND CAN BE CONNECTED TO THE GROUND GRID. THE DEPTH WILL BE DETERMINED BASED ON LOCAL SITE CONDITIONS.
 2. CONDUIT NOT REQUIRED IF GRADE IS EQUAL WITH OR EXCEEDS TOP OF FOUNDATION.

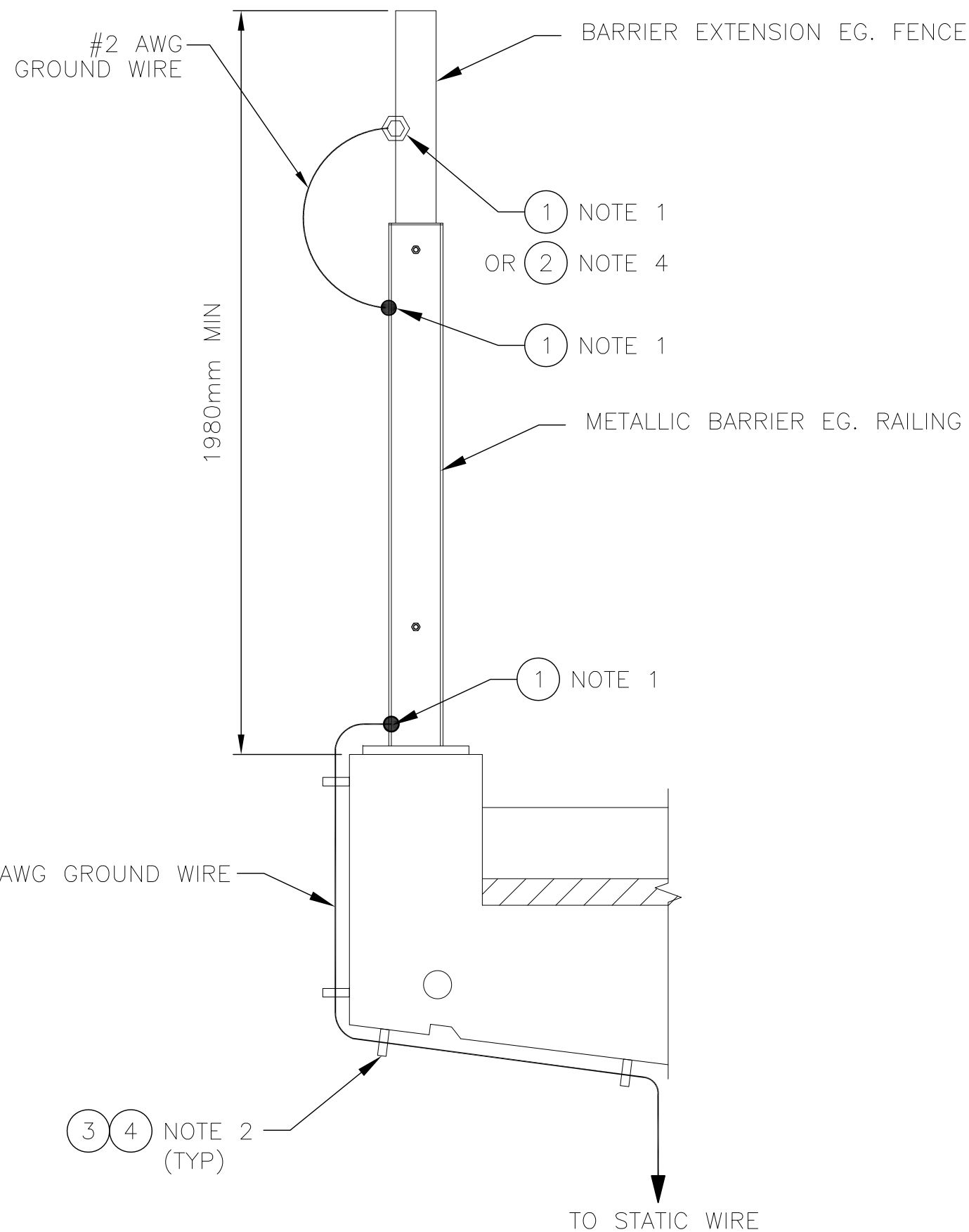


DETAIL 3 – NOISE WALL COLUMN GROUNDING

ITEM	QTY	UNIT	MATERIAL DESCRIPTION	MANUFACTURER & CAT. NO.
1	1	EA	VERTICAL WIRE TAP TO VERTICAL STEEL SURFACE	BURNDY: B-8718 OR EQUIVALENT
2	2	EA	ANCHOR, 1 1/2", SS 304,316	HILTI: KB3 1/4" 2-1/4" OR EQUIVALENT
3	2	EA	27mm CONDUIT CLAMP 1-HOLE	T&B: 1278 OR EQUIVALENT
4	PER DESIGN	N/A	27mm CONDUIT	(GENERIC)
5	2	EA	BUSHING	(GENERIC)
6	1	EA	COPPER CLAD STEEL GROUND ROD 3MX20MM	(GENERIC)
7	1	EA	HORIZONTAL WIRE TAP TO HORIZONTAL WIRE RUN	BURNDY: B-241 OR EQUIVALENT
8	1	EA	HORIZONTAL THROUGH WIRE TO GROUND ROD	BURNDY: B-541 OR EQUIVALENT

NOTES:
 1. GROUND WIRE TO BE CADWELDED TO METAL STRUCTURE AS DETAILED ON DRAWING MSX-100-003 DETAIL 1.
 2. WHEN CONCRETE STRUCTURE IS GROUNDED INDEPENDENTLY, COPPER WIRE SHALL BE ANCHORED TO STRUCTURE USING HILTI TYPE TZ EXPANSION ANCHOR AND P-CLIP FOR AESTHETICS ONLY. IF COPPER WIRE SERVES TO GROUND STRUCTURE AND BARRIER, THE CONNECTION TO CONCRETE MUST BE MADE AS PER MSX-200-009 DETAIL 1. GROUND WIRE MUST BE CONNECTED TO BARRIER EVERY 2m MINIMUM.
 3. BARRIER MUST BE BONDED TO STATIC WIRE AT NO LESS THAN 2 (TWO) PLACES.
 4. USE SERVIT CONNECTOR IF CADWELD CONNECTION CANNOT BE USED ON BARRIER EXTENSION (IF FENCE FOR EXAMPLE).

NOTE:
 THIS DRAWING IS PROVIDED FOR INSTRUCTIONAL DESIGN PURPOSES ONLY BASED ON METROLINX CO. TRANSIT DESIGN GUIDELINES AND REQUIREMENTS. THE CONSULTANT SHALL VERIFY FOR LOCAL CODE COMPLIANCE, EXISTING SITE CONDITIONS AND INTER DISCIPLINARY DRAWING COORDINATION. ALL DIMENSIONS AND SPECIFICATIONS SHOULD BE VERIFIED BY CONSULTANT AND/OR CONTRACTOR BEFORE ACTUAL CONSTRUCTION BEGINS.



DETAIL 4 – GROUNDING CONCRETE BRIDGE METALLIC BARRIERS

ITEM	QTY	UNIT	MATERIAL DESCRIPTION	MANUFACTURER & CAT. NO.
1	2	EA	VERTICAL CABLE TO VERTICAL STEEL SURFACE EXOTHERMIC CONNECTION	BURNDY: B-8718 OR EQUIVALENT
2	1	EA	CONNECTOR, SERVIT, COPPER	BURNDY: KS26 OR EQUIVALENT
3	4	EA	ANCHOR, SS 304,316	HILTI: KB3 1/4" X 2-1/4" OR EQUIVALENT
4	4	EA	CABLE P-CLIP	GENERIC

PARSONS
BRINCKERHOFF

METROLINX

TRACTION ELECTRIFICATION
 GROUNDING AND BONDING
 STANDARD INSTALLATION DESIGN DETAILS
 STEEL AND CONCRETE STRUCTURES

CONTRACT NO. RQQ-2011-PP-032	DWG. NO. MXS-200-009	REV. 1	SHEET 17/26
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