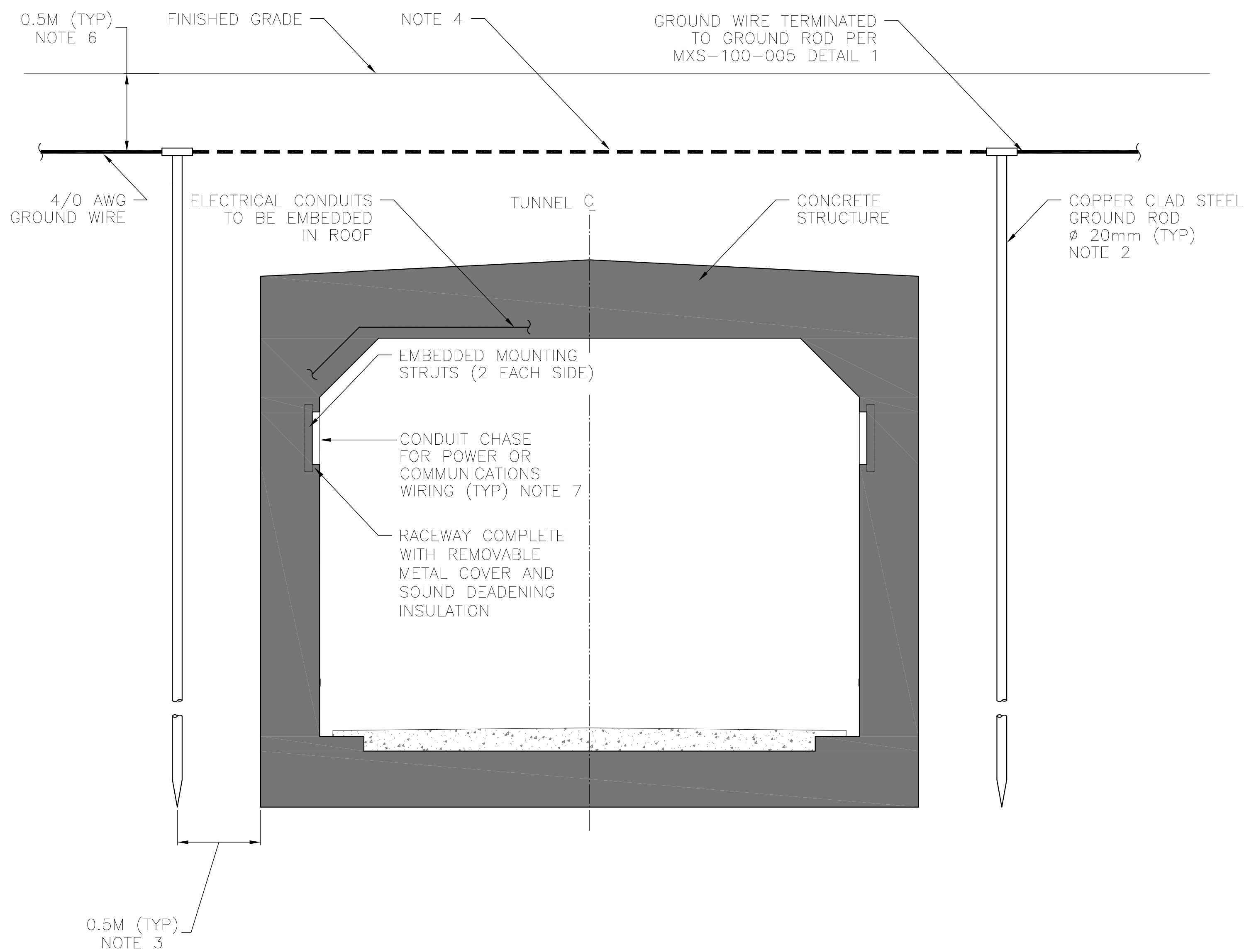


NOTES:

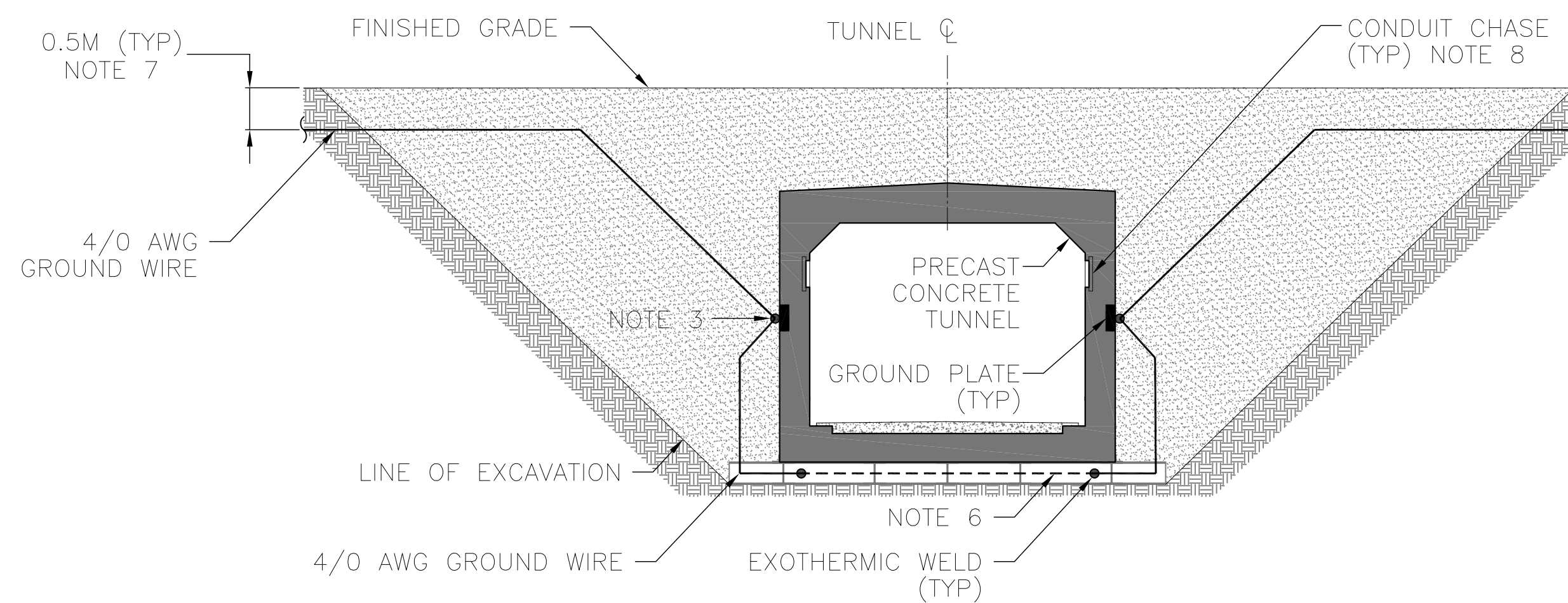
1. THE NUMBER OF GROUND RODS REQUIRED SHALL BE DETERMINED BY THE CONTRACTOR BASED ON LOCAL SITE CONDITIONS. AT MINIMUM, EACH LONGITUDINAL GRID CONDUCTOR MUST BE CONNECTED TO GROUND ROD ON EITHER SIDE OF THE TUNNEL. ADDITIONAL RODS MAY BE REQUIRED.
2. GROUND RODS MUST BE BURIED TO A MINIMUM DEPTH EXCEEDING THE MAXIMUM DEPTH OF THE TUNNEL.
3. THE GROUND RODS SHALL BE INSTALLED AS CLOSE TO TO THE TUNNEL AS PRACTICAL. TYPICALLY 0.5M SPACING IS ACCEPTABLE.
4. THE LONGITUDINAL GRID CONDUCTORS SHOULD BE CONTINUOUS ABOVE THE EXISTING TUNNEL SECTION. HOWEVER, IF THIS IS NOT POSSIBLE THE CONDUCTORS CAN BE TERMINATED AT THE GROUND RODS ON EITHER SIDE OF THE TUNNEL. THIS WILL IMPACT THE PERFORMANCE OF THE GRID AND WILL REQUIRE ADDITIONAL GROUND RODS AND CONDUCTORS TO COMPENSATE.
5. APPLICABLE ONLY IF TUNNEL SECTION IS INSTALLED IN AREA COVERED BY GROUND GRID.
6. THE DEPTH OF THE GROUND GRID WILL DEPEND ON LOCAL SITE CONDITIONS AND MUST BE DETERMINED BY THE CONTRACTOR PRIOR TO INSTALLATION. 0.5M IS A TYPICAL VALUE THAT HAS BEEN PROVIDED FOR REFERENCE.
7. WHERE REQUIRED BY DETAIL DESIGN, A GROUND WIRE SHALL BE RUN ALONG THE CONDUIT CHASES AND USED TO GROUND ELECTRICAL EQUIPMENT INSIDE THE TUNNEL. THIS GROUND WIRE SHALL BE CONNECTED TO THE GROUNDING SYSTEM AT THE ENTRANCE AND EXIT OF THE TUNNEL.



DETAIL 1 - GROUNDING EXISTING TUNNEL SECTION

NOTES:

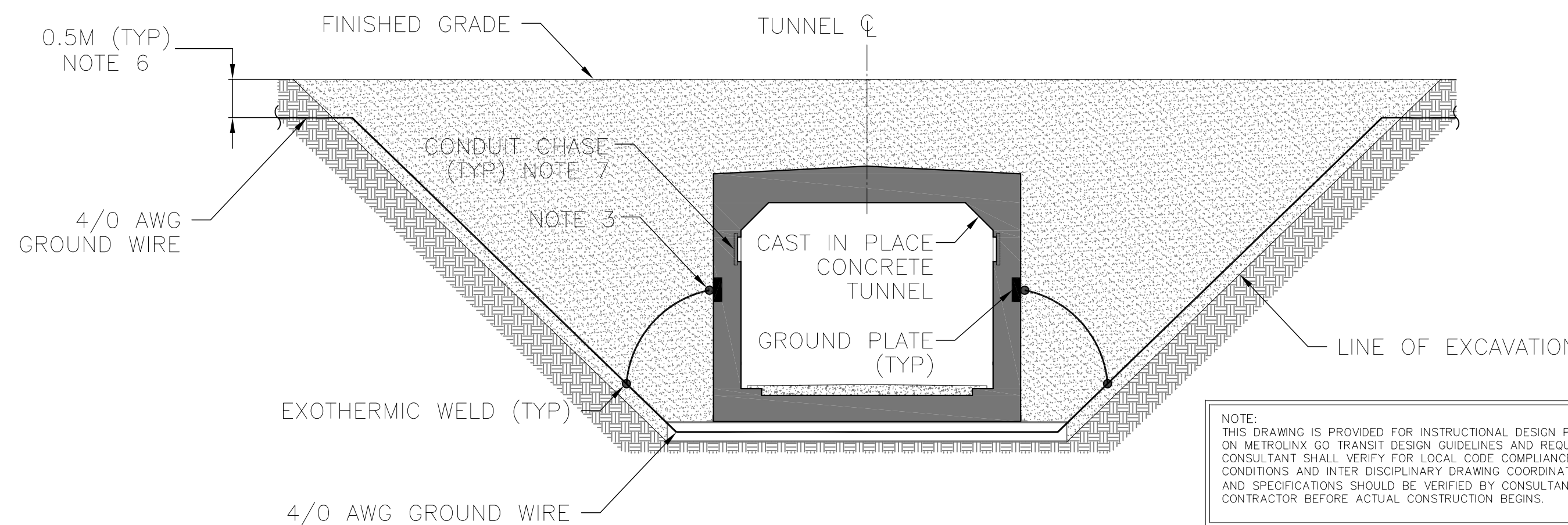
1. CONNECTION TO TUNNEL AT LOCATION OF EACH LONGITUDINAL GROUND GRID CONDUCTOR.
2. PRE-CAST SECTIONS MUST BE ELECTRICALLY CONNECTED EITHER BY INTERCONNECTION OF REBAR STRUCTURE OR EXTERNAL GROUND WIRE.
3. GROUND CONDUCTORS SHALL BE WELDED TO GROUND PLATES CAST INTO THE TUNNEL SECTIONS. REFER TO MXS-200-011 DETAIL 2 FOR GROUND PLATE DETAILS.
4. MINIMUM 2 (TWO) GROUND PLATES ARE REQUIRED FOR EACH CONTINUOUSLY POURED SECTION. 1 (ONE) FOR EACH SIDE OF THE TUNNEL SECTION.
5. APPLICABLE ONLY IF TUNNEL SECTION IS INSTALLED IN AREA COVERED BY GROUND GRID.
6. ELECTRICAL CONTINUITY MUST BE MAINTAINED UNDER TUNNEL. CONDUCTOR TO BE CADWELDED TO STEEL SUPPORT ON EITHER SIDE. IF STEEL IS NOT ELECTRICALLY CONTINUOUS CONDUCTOR MUST BE ADDED UNDER TUNNEL AS INDICATED.
7. THE DEPTH OF THE GROUND GRID WILL DEPEND ON LOCAL SITE CONDITIONS AND MUST BE DETERMINED BY THE CONTRACTOR PRIOR TO INSTALLATION. 0.5M IS A TYPICAL VALUE THAT HAS BEEN PROVIDED FOR REFERENCE.
8. CONDUIT CHASES GROUNDED PER DETAIL 1.



DETAIL 2 - GROUNDING PROPOSED PRECAST TUNNEL SECTIONS

NOTES:

1. CONNECTION TO TUNNEL AT LOCATION OF EACH LONGITUDINAL GROUND GRID CONDUCTOR.
2. CAST-IN-PLACE SECTIONS MUST BE ELECTRICALLY CONNECTED EITHER BY INTERCONNECTION OF REBAR STRUCTURE OR EXTERNAL GROUND WIRE.
3. GROUND CONDUCTORS SHALL BE WELDED TO GROUND PLATES CAST INTO THE TUNNEL SECTIONS. REFER TO MXS-200-011 DETAIL 2 FOR GROUND PLATE DETAILS.
4. MINIMUM 2 (TWO) GROUND PLATES ARE REQUIRED FOR EACH CONTINUOUSLY POURED SECTION. 1 (ONE) FOR EACH SIDE OF THE TUNNEL SECTION.
5. APPLICABLE ONLY IF TUNNEL SECTION IS INSTALLED IN AREA COVERED BY GROUND GRID.
6. THE DEPTH OF THE GROUND GRID WILL DEPEND ON LOCAL SITE CONDITIONS AND MUST BE DETERMINED BY THE CONTRACTOR PRIOR TO INSTALLATION. 0.5M IS A TYPICAL VALUE THAT HAS BEEN PROVIDED FOR REFERENCE.
7. CONDUIT CHASES GROUNDED PER DETAIL 1.



DETAIL 3 - GROUNDING PROPOSED CAST IN PLACE TUNNEL SECTIONS

NOTE:
THIS DRAWING IS PROVIDED FOR INSTRUCTIONAL DESIGN PURPOSES ONLY BASED ON METROLINX GO 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.

PLOTTED BY: PAULRI PLOTTED DATE: 2015/04/01 PAPER SIZE AT FULL: ANSI D (22.00 x 34.00 INCHES) FILE: \\FILE-RGDC01\DEPT\GO\CI07 PROGRAM MANAGEMENT & STANDARDS\PMPS DESIGN STANDARDS\7 REFERENCE MATERIAL\24 ELECTRIFICATION\GROUNDING AND BONDING STANDARD DRAWINGS\MXD-100-003.DWG

REFERENCE DRAWINGS	ISSUE	REVISIONS	DRAWN BY:	DESIGNED BY:		
			SB 15/01/30	SXF 15/01/30		
			CHEKED BY: CTG 15/01/16	APPROVED BY: ZBT 15/01/16		
			SCALE: NTS	FULL SIZE ONLY		
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE
		2	15/04/06	FINAL DESIGN		
		1	15/03/06	100% DESIGN		
		0	15/02/09	90% DESIGN		

**PARSONS
BRINCKERHOFF**

METROLINX

**TRACTION ELECTRIFICATION
GROUNDING AND BONDING
DIRECTIVE INSTALLATION DESIGN DETAILS
TUNNELS**

CONTRACT NO. RQ-2011-PP-032	DWG. NO. MXD-100-003	REV. 0	SHEET 23/26
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