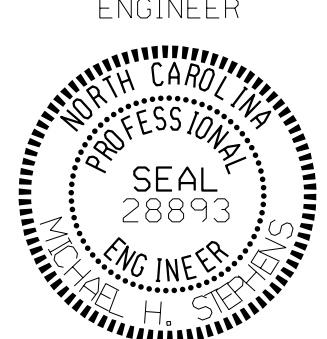
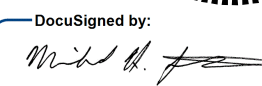


GEOTECHNICAL ENGINEER

ENGINEER



DocuSigned by:  
 11/15/2023

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**GENERAL NOTES:**

FOR ROCK NAIL RETAINING WALLS, SEE ROCK NAILED RETAINING WALLS SPECIAL PROVISION.

AN ARCHITECTURAL CONCRETE SURFACE TREATMENT IS REQUIRED. SEE ARCHITECTURAL CONCRETE SURFACE TREATMENT SPECIAL PROVISION.

PRIOR TO NAIL WALL CONSTRUCTION FOR RETAINING WALL, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

RETAINING WALL IS DESIGNED FOR THE FOLLOWING:  
 H = DESIGN HEIGHT + WALL EMBEDMENT  
 DESIGN LIFE = 100 YEARS  
 MINIMUM WALL EMBEDMENT ELEVATION = 1 FT

PRIOR TO CONSTRUCTION A PRECONDITION ASSESSMENT WILL BE PERFORMED ON THE EXISTING STRUCTURE LOCATED WITHIN 200 FEET OF RETAINING WALL.

LINE DRILL WALL CUT FACE AND BLAST PRIOR TO WALL CONSTRUCTION. VIBRATION MONITORING IS REQUIRED DURING CONSTRUCTION OF RETAINING WALL, SEE CONTROL OF VIBRATION SPECIAL PROVISION.

**NAIL NOTES:**

NAIL REINFORCEMENT- SHALL CONSIST OF #8 STEEL THREADED BAR CONFORMING TO NCDOT 1070-2 AND ASTM A615 GRADE 75. IF EPOXY COATED BARS ARE USED, THEN BARS WILL BE EPOXY COATED WITH A MINIMUM 7 MILS OF EPOXY PER NCDOT 1070-7. NAIL REINFORCEMENT COUPLERS ARE NOT ALLOWED.

NUTS, BOLTS, ADAPTORS- MATERIALS SHALL BE COMPATIBLE WITH THE SOIL NAIL BAR AND CAPABLE OF DEVELOPING THE ULTIMATE STRENGTH OF THE SOIL NAIL. NUTS WITHOUT WASHERS ARE ACCEPTABLE FOR USE.

CENTRALIZERS- PLASTIC, STAINLESS STEEL, OR OTHER NON-DELETERIOUS MATERIAL WHICH WILL MAINTAIN SHAPE AND LOCATION TO KEEP ROCK NAIL BAR IN CENTRAL PORTION OF THE DRILL HOLE.

BEARING PLATES- PLATE MATERIALS SHALL CONFORM WITH NCDOT 1072-6 AND ASTM A36.

HEADED (NELSON) STUDS- STEEL STUDS SHALL CONFORM WITH NCDOT 1072-6 TYPE B AND SHALL BE WELDED TO THE BEARING PLATES IN ACCORDANCE WITH NCDOT 1072-18.

GROUT- NEAT CEMENT GROUT MIX CONFORMING TO NCDOT 1003 AND CONSISTING OF TYPE I/II CEMENT AND WATER. GROUT SHALL BE BATCHED TO DEVELOP A SPECIFIC GRAVITY OF 1.85+/-0.1 AND SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 7 DAYS AND 4,500 PSI AT 28 DAYS AFTER BATCHING. GROUT SHALL BE BATCHED, STORED, AND PUMPED IN ACCORDANCE WITH ASTM C94.

STEEL REINFORCEMENT- REINFORCEMENT SHALL CONSIST OF DEFORMED STEEL BARS CONFORMING TO NCDOT 1070-2, WITH A MINIMUM YIELD STRENGTH OF 60 KSI

DRAINBOARD- PREFABRICATED GEOTEXTILE DRAINAGE MEDIA CONSISTING OF A PLASTIC CORE WITH GEOTEXTILE FILTER FABRIC ADHERED TO ONE SIDE CONFORMING TO NC DOT 1056. THE FILTER FABRIC SIDE SHALL BE PLACED AGAINST THE EXCAVATION FACE.

WATER- POTABLE.

SEE NAIL WALL ELEVATION VIEW FOR LENGTH REQUIREMENTS.

PERFORM 2 VERIFICATION TESTS AND 4 PROOF TESTS IN ACCORDANCE WITH NAILED RETAINING WALL SPECIAL PROVISION.

AFTER SUCCESSFUL TESTING THE NAIL REINFORCEMENT SHALL BE PROTECTED FROM DAMAGE DURING FURTHER CONSTRUCTION OPERATIONS.

**CONSTRUCTION SEQUENCE:**

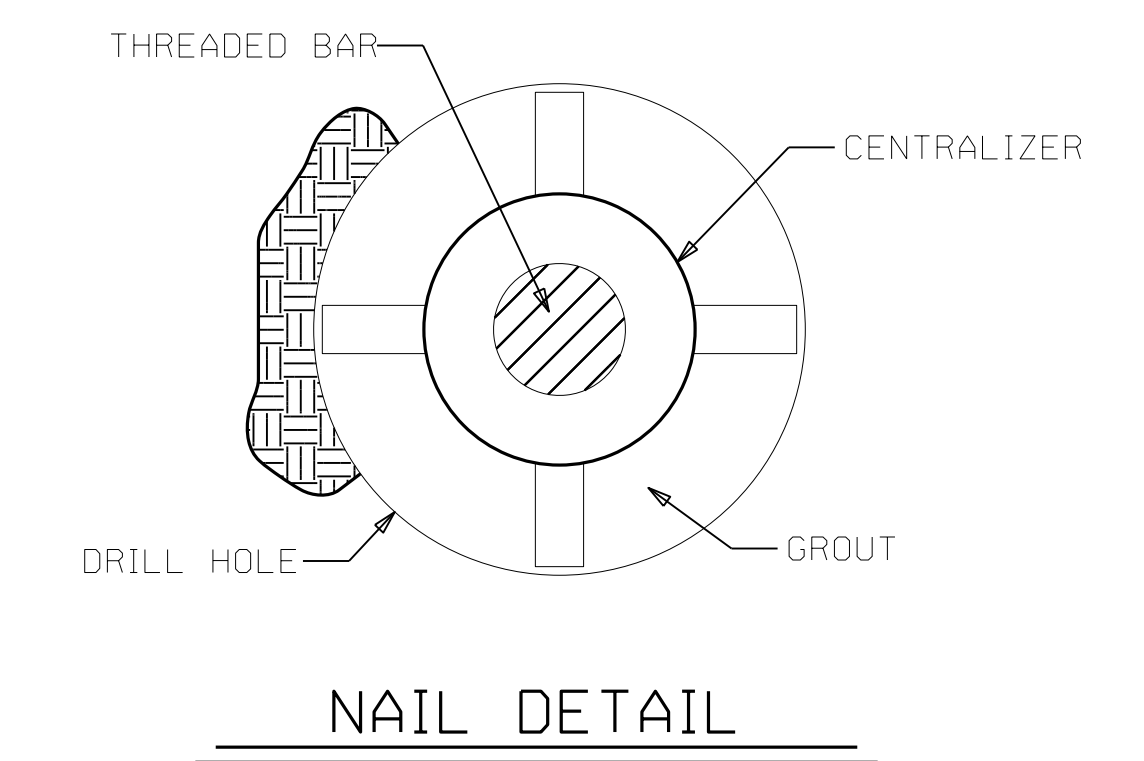
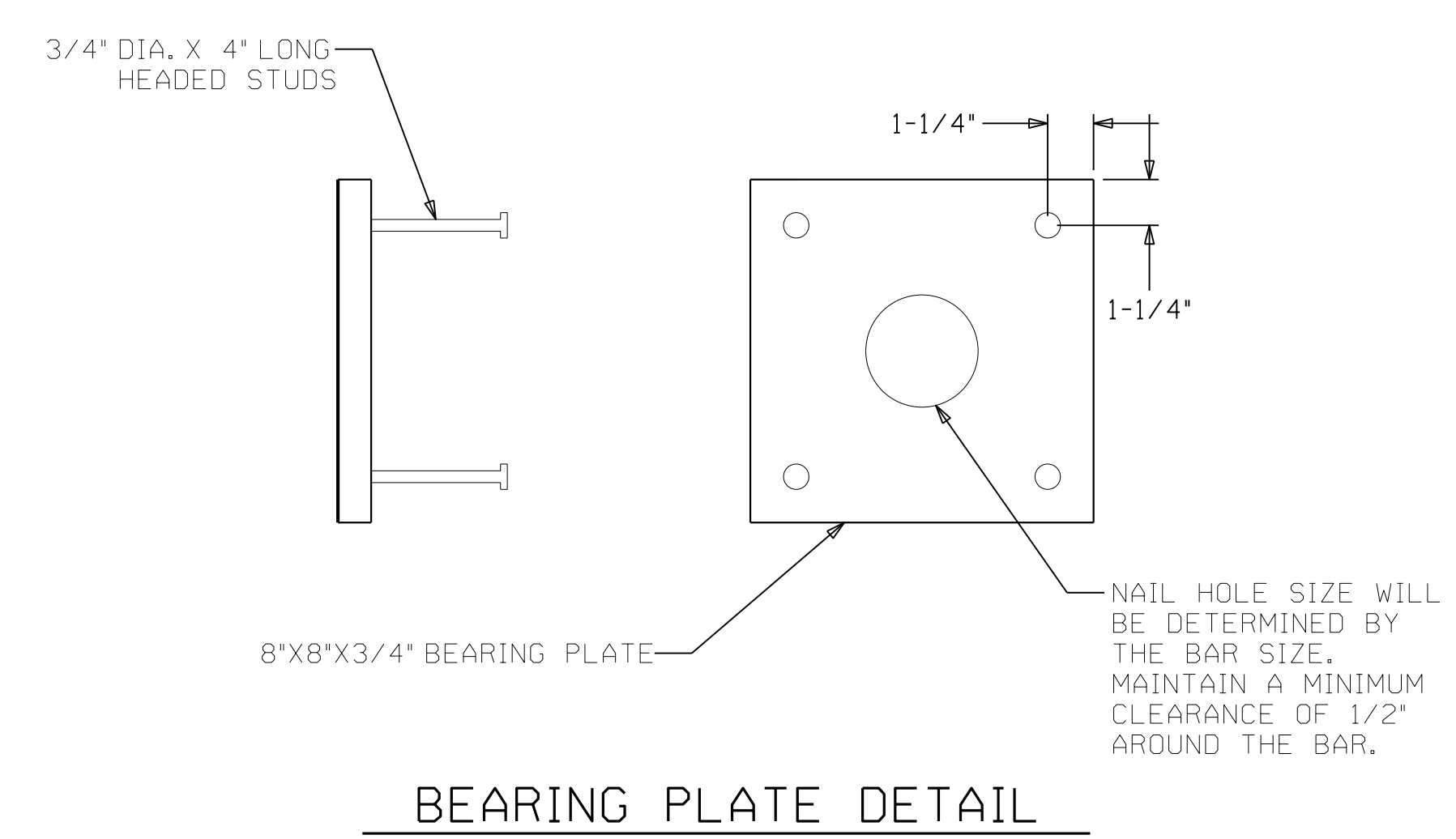
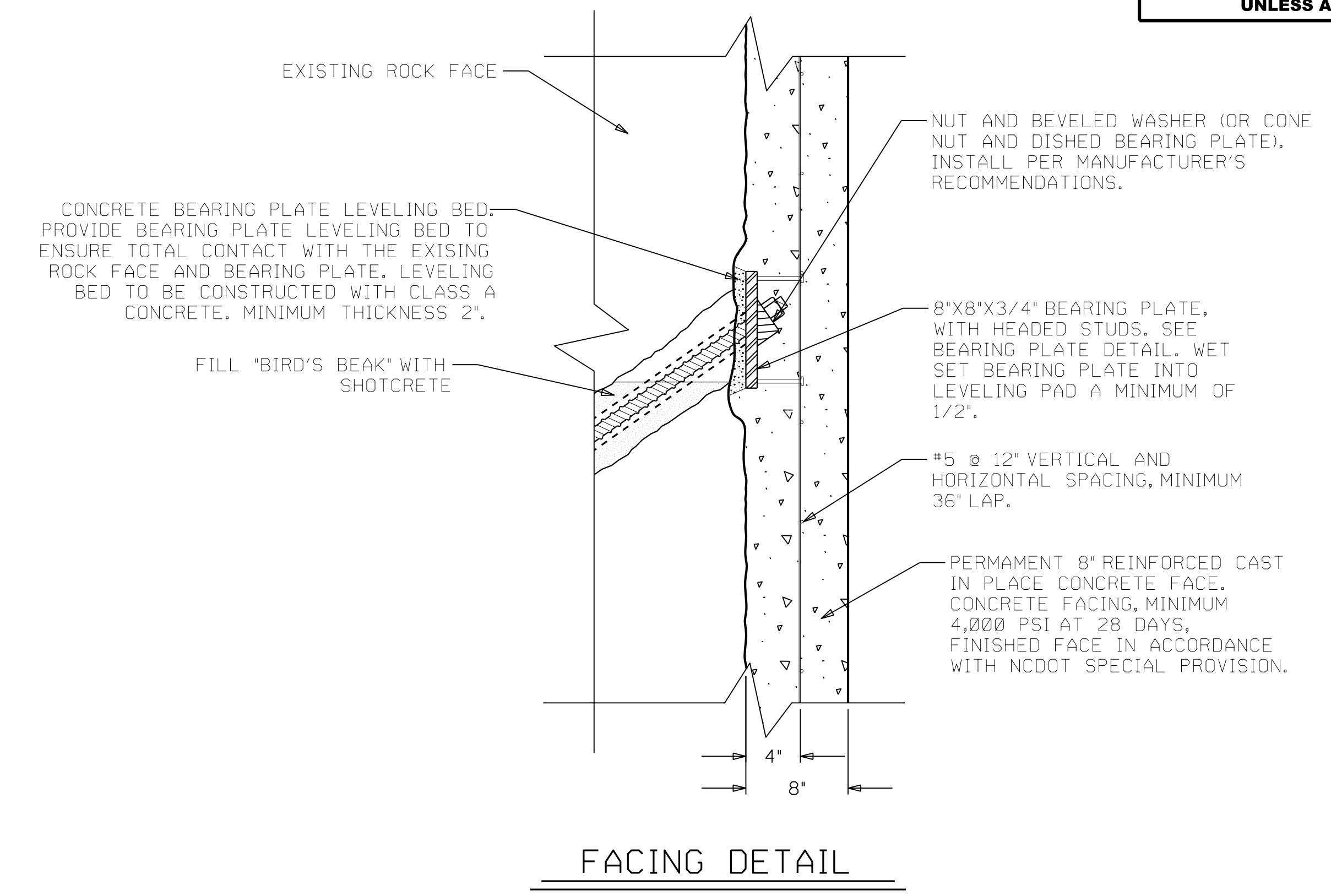
PRIOR TO EXCAVATION AND/OR BLASTING, THE WALL FACE WILL BE LINE DRILLED.

INSTALL AND PERFORM VERIFICATION TEST ON SACRIFICIAL NAIL IN ACCORDANCE WITH THE ROCK NAIL WALL SPECIAL PROVISION. MAXIMUM VERIFICATION TEST LOAD WILL NOT EXCEED 80% OF THE YIELD STRENGTH OF THE NAIL REINFORCEMENT.

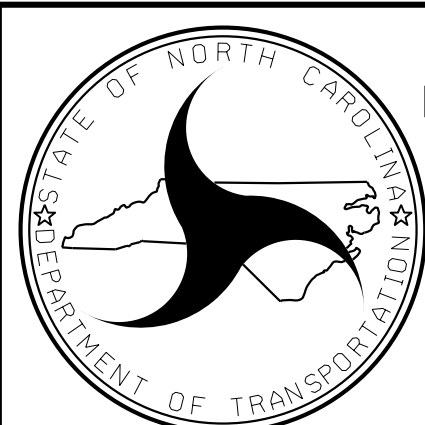
INSTALL NAILS AT SPACING INDICATED ON THE ELEVATION VIEW AND TYPICAL SECTION.

PERFORM PROOF TESTS IN ACCORDANCE WITH THE ROCK NAIL WALL SPECIAL PROVISION. MAXIMUM PROOF TEST LOAD WILL NOT EXCEED 50% OF THE YIELD STRENGTH OF THE NAIL REINFORCEMENT.

INSTALL THE REINFORCED CAST-IN-PLACE FACING.



PROJECT NO. 14SP.20441.2 (SF-430174)  
 HAYWOOD COUNTY  
 STATION: -L- 12+59.5  
 SHEET 4 OF 4



NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

GEOTECHNICAL  
ENGINEERING UNIT

ROCK NAIL WALL BRIDGE NO. 174 ON WATERVILLE ROAD OVER BIG CREEK					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. W-4

PREPARED BY: MHS	DATE: 11/23
REVIEWED BY: SCC	DATE: 11/23