

CONTRACT: DN01092

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

HELENE
EMERGENCY REPAIRS

COUNTY TRANSYLVANIA
PROJECT DESCRIPTION SITES ON FISH HATCHERY RD,
US 276 SOUTH AND BARCLAY RD

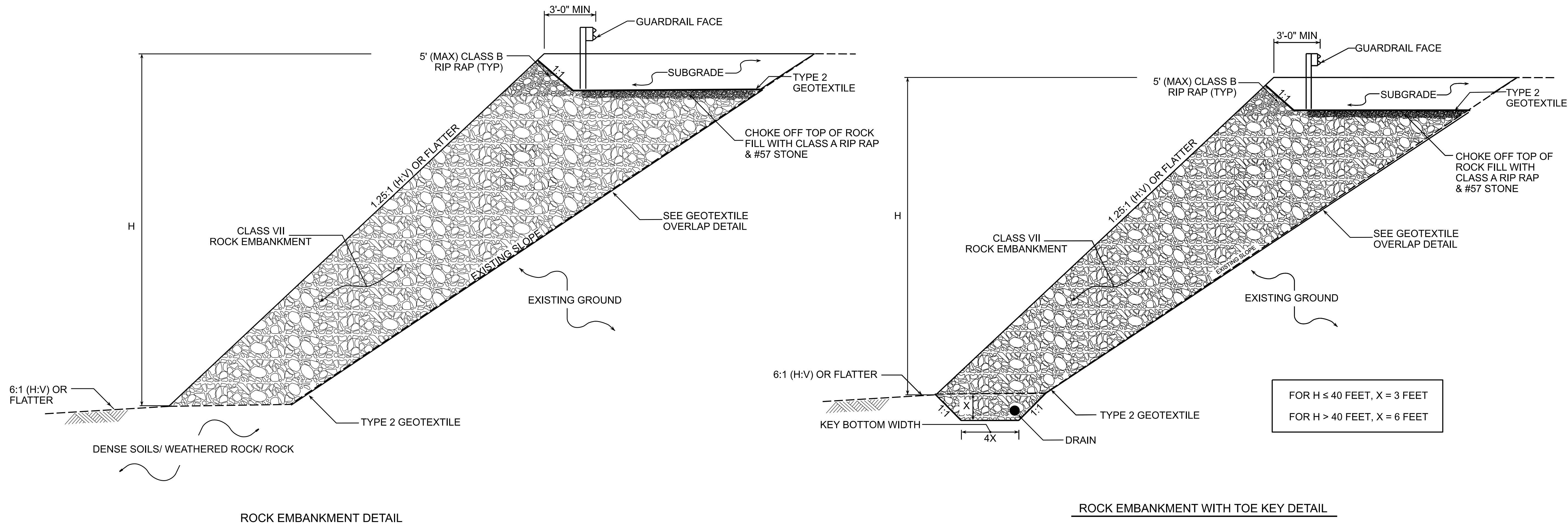
ROUTE	SITE #	SITE LATITUDE	SITE LONGITUDE	REPAIR OPTION 1	REPAIR OPTION 2	REPAIR OPTION 3
SR-1408 Fish Hatchery Road	30	35.28998862	-82.77815151	1.25:1 Rock Embankment with Toe Key		
US 276 South	702	35.18018258	-82.73290864	Seal Cracks in Asphalt & Regrade Slope + Wire Mesh Slope Stabilization		
SR-1207 Barclay Road	803	35.20066556	-82.739248	Soil Nail Retaining Wall with Shotcrete Face + 2x3 Micropile Grade Beam		

WHEN MULTIPLE REPAIR OPTIONS ARE AVAILABLE AT A SITE LOCATION, THE CONTRACTOR SHALL PROCEED IN SEQUENTIAL ORDER AND CHOOSE THE FIRST OPTION THAT FITS WITHIN SITE CONSTRAINTS

PRIOR TO CONSTRUCTING THE GEOTECHNICAL REPAIRS, AN ON-SITE MEETING WITH THE PRIME CONTRACTOR, THE GEOTECHNICAL SPECIALTY SUBCONTRACTOR (IF APPLICABLE), THE DIVISION CONSTRUCTION REPRESENTATIVE AND THE GEOTECHNICAL OPERATIONS GROUP REPRESENTATIVE SHALL BE CONDUCTED



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Dean Hardister 11/26/2024
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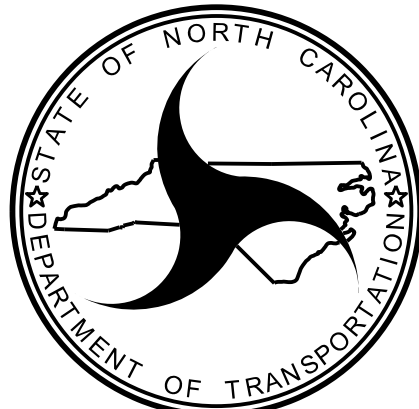
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- NOTES:
1. THE MAXIMUM ALLOWABLE HEIGHT FOR THE ROCK EMBANKMENT DETAIL IS 80'.
 2. FOR ROCK EMBANKMENT, BENCH EXISTING SLOPE IN ACCORDANCE WITH SECTION 235 OF THE STANDARD SPECIFICATIONS, WHERE POSSIBLE.

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PREPARED BY: DP	DATE: 10/24
REVIEWED BY:	DATE:

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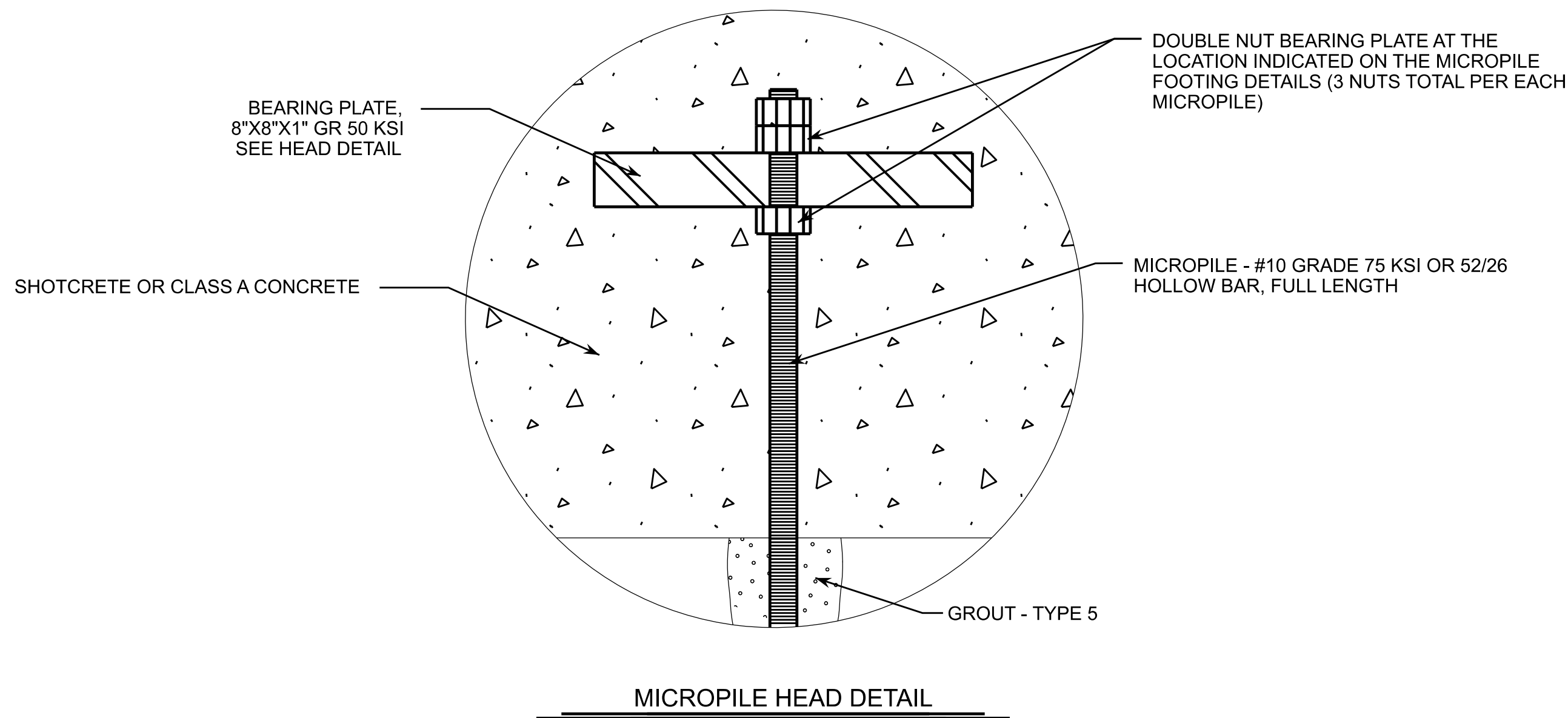
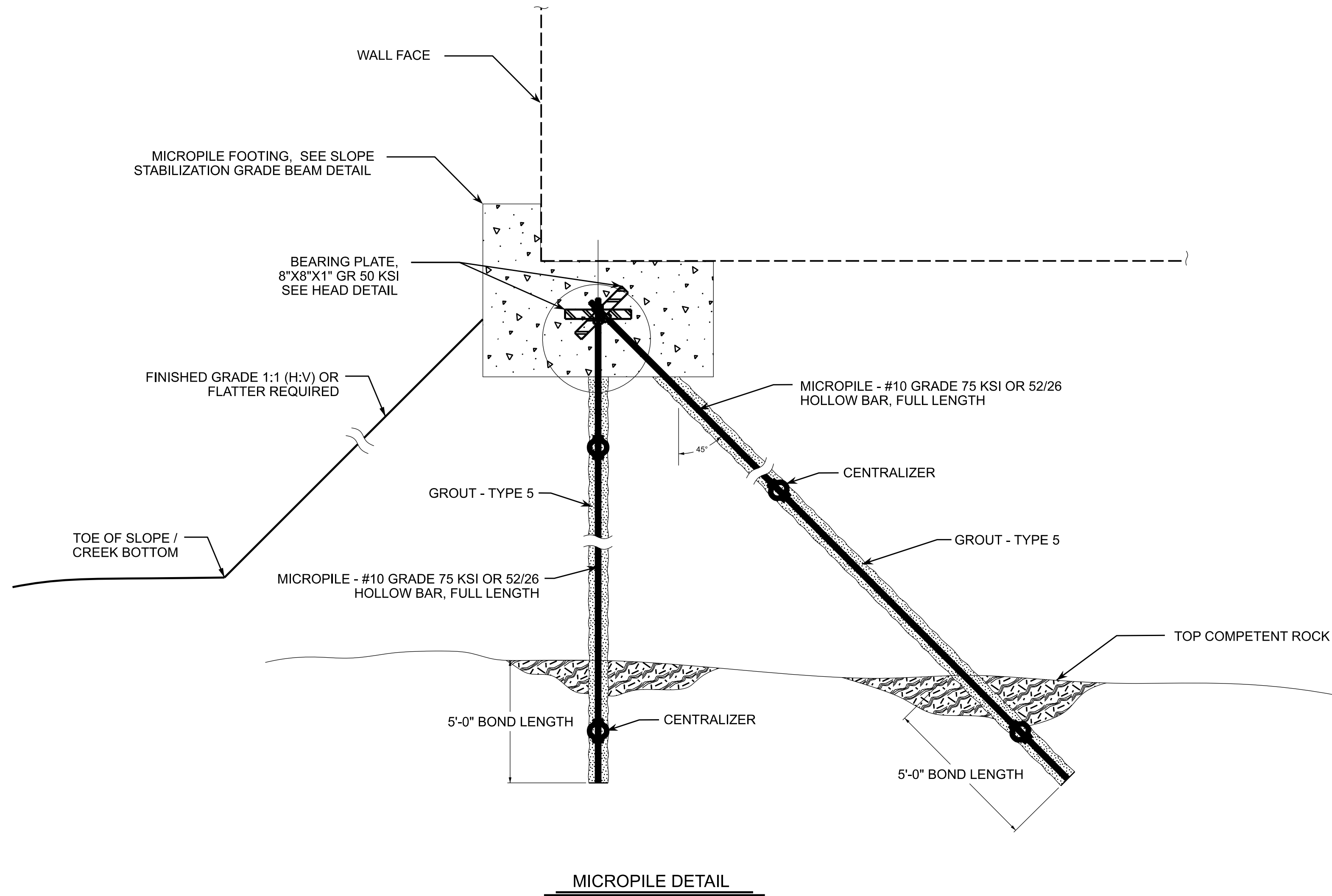
NORTH CAROLINA
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GEOTECHNICAL
ENGINEERING UNIT

HURRICANE HELENE EMERGENCY REPAIRS

ROCK EMBANKMENT

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		



NOTES:

GENERAL NOTES:

THE MICROPILES HAVE BEEN DESIGNED IN GENERAL ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE MICROPILE FOUNDATIONS HAVE BEEN DESIGNED TO SUPPORT A LOAD OF 60 KIPS IN COMPRESSION AND TENSION.

LAYOUT OF THE PILES SHALL BE BY THE GENERAL CONTRACTOR. MICROPILE LAYOUT IS BASED ON PILE LOCATION AT THE BOTTOM OF THE MICROPILE CAP. GENERAL CONTRACTOR SHALL LAY OUT PILES BASED ON DRILLING ELEVATION SUCH THAT THE MICROPILE LOCATION WILL BE AT THE PLANNED LOCATION AT THE BOTTOM OF THE PILE CAP.

MATERIAL SPECIFICATIONS:

FOR MICROPILE USE TYPE 5 GROUT, SEE SECTION 1003 OF THE STANDARD SPECIFICATIONS.

PROVIDE STEEL PLATES THAT MEET ASTM A572 GRADE 50 KSI.

ALL THREAD MICROPILE REINFORCEMENT SHALL BE MINIMUM GRADE 75 KSI.

MICROPILE NUTS WILL BE MANUFACTURED BY THE BAR MANUFACTURER AND COMPATIBLE WITH THE BAR TYPE SPECIFIED.

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

TYPICAL MICROPILE CONSTRUCTION SEQUENCE:

WHERE POSSIBLE LEVEL AREA OF MICROPILE FOOTING PRIOR TO DRILLING.

IF REQUIRED, INSTALL AND TEST PILES IN ACCORDANCE AASHTO GUIDLINES AS DIRECTED BY THE ENGINEER.

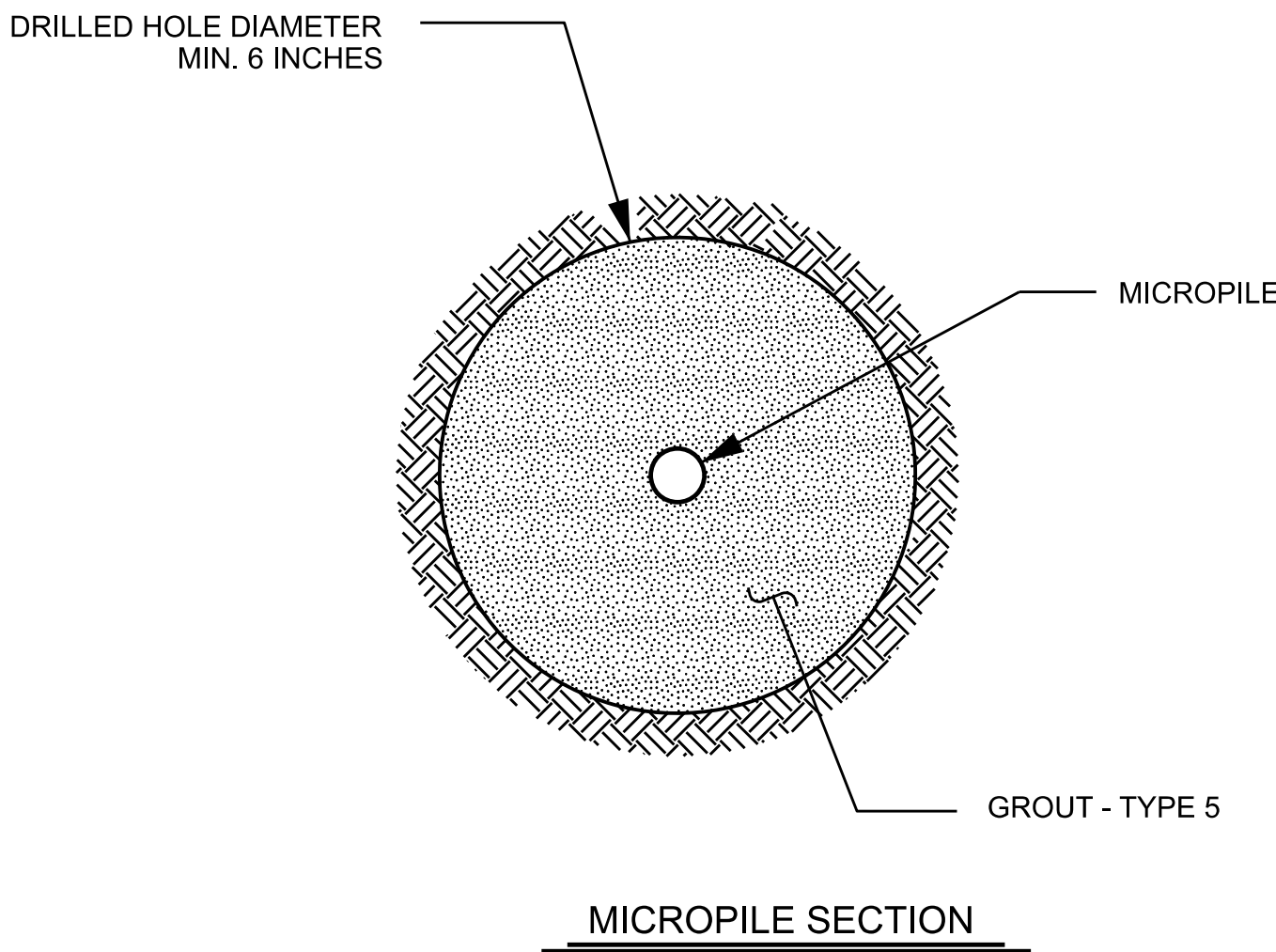
ROTARY FLUSH TEMPORARY CASING TO TOP OF ROCK USING AIR OR WATER AS FLUSHING MEDIUM. CARE SHALL BE TAKEN SO MINIMAL LOSS OF MATERIALS OUTSIDE THE THE TEMPORARY CASING OCCURS.

USE ROTARY PERCUSSIVE DRILLING TO DRILL ROCK SOCKET TO REQUIRED DEPTH. MINIMUM BOND LENGTH IS 5 FEET INTO COMPETENT ROCK, WITH A MINIMUM OVERALL LENGTH OF AT LEAST 10 FT.

PLACE GROUT FOR MICROPILES BY TREMIE METHOD FROM BOTTOM OF THE HOLE.

FOR SOLID BAR MICROPILES, INSTALL CENTER CORE REINFORCEMENT STEEL (STEEL MAY BE PLACED PRIOR TO OR IMMEDIATELY AFTER GROUTING).

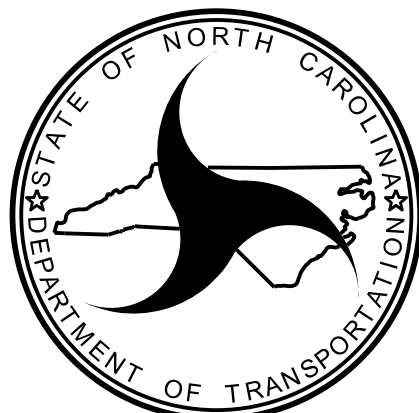
CUT TOPS OF PILES TO FINAL ELEVATION AND INSTALL PLATES. FOR MICROPILES AND MICROPILE FOOTING, SEE MICROPILE SLOPE STABILIZATION PROVISION.



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MICROPILES

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NO.
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NOTES

DESIGN ASSUMPTIONS:

- ANCHOR/VERTICAL MICROPILE LOAD OF 55 KIPS.
- VERTICAL LOAD OF 4.6 KIPS/SQFT.
- LATERAL LOAD OF 4.9 KIPS/SQFT.

INVERT ALTERNATE STIRRUPS AS SHOWN.

STIRRUPS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR MICROPILES.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE
MCP DETAILS.

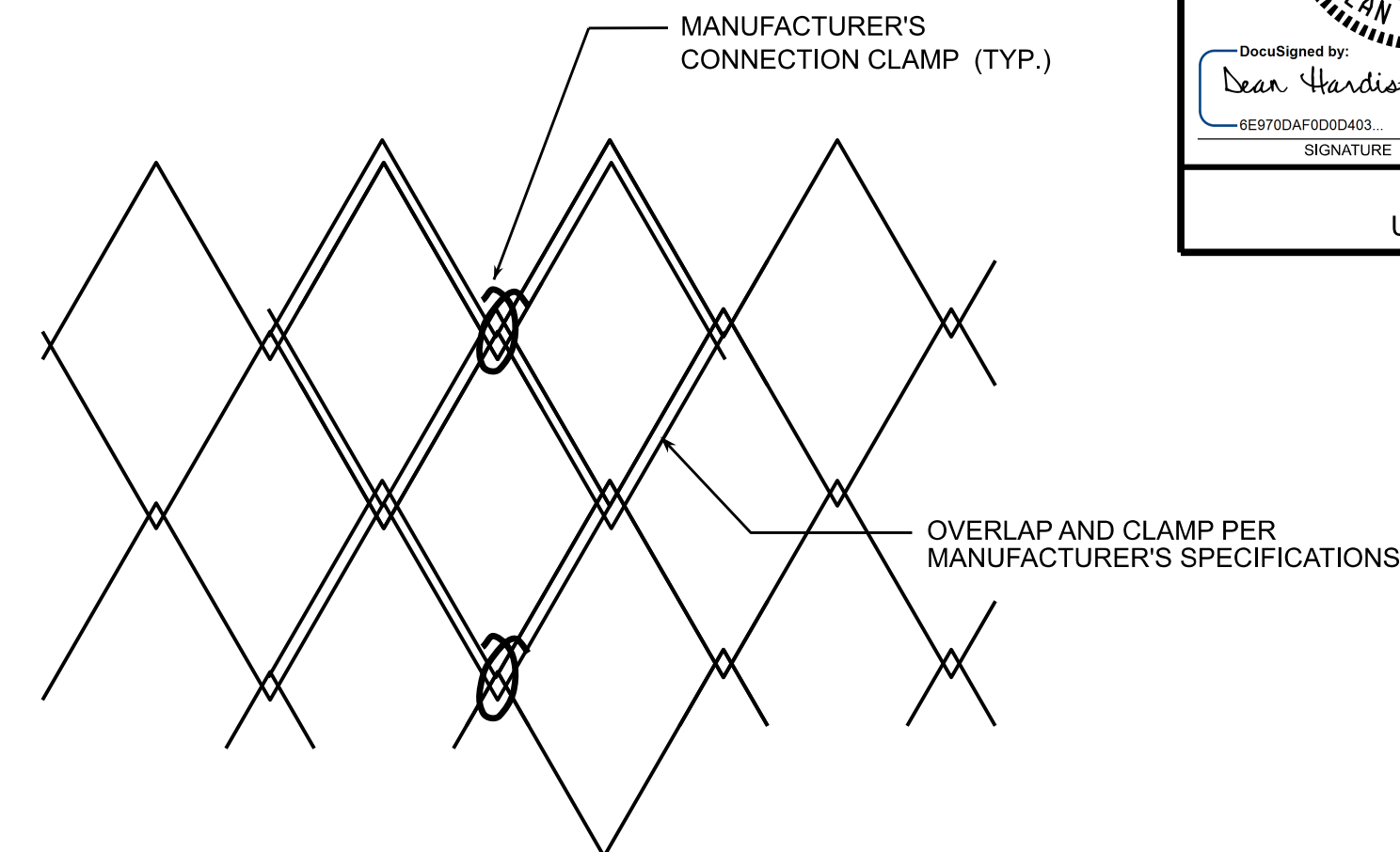
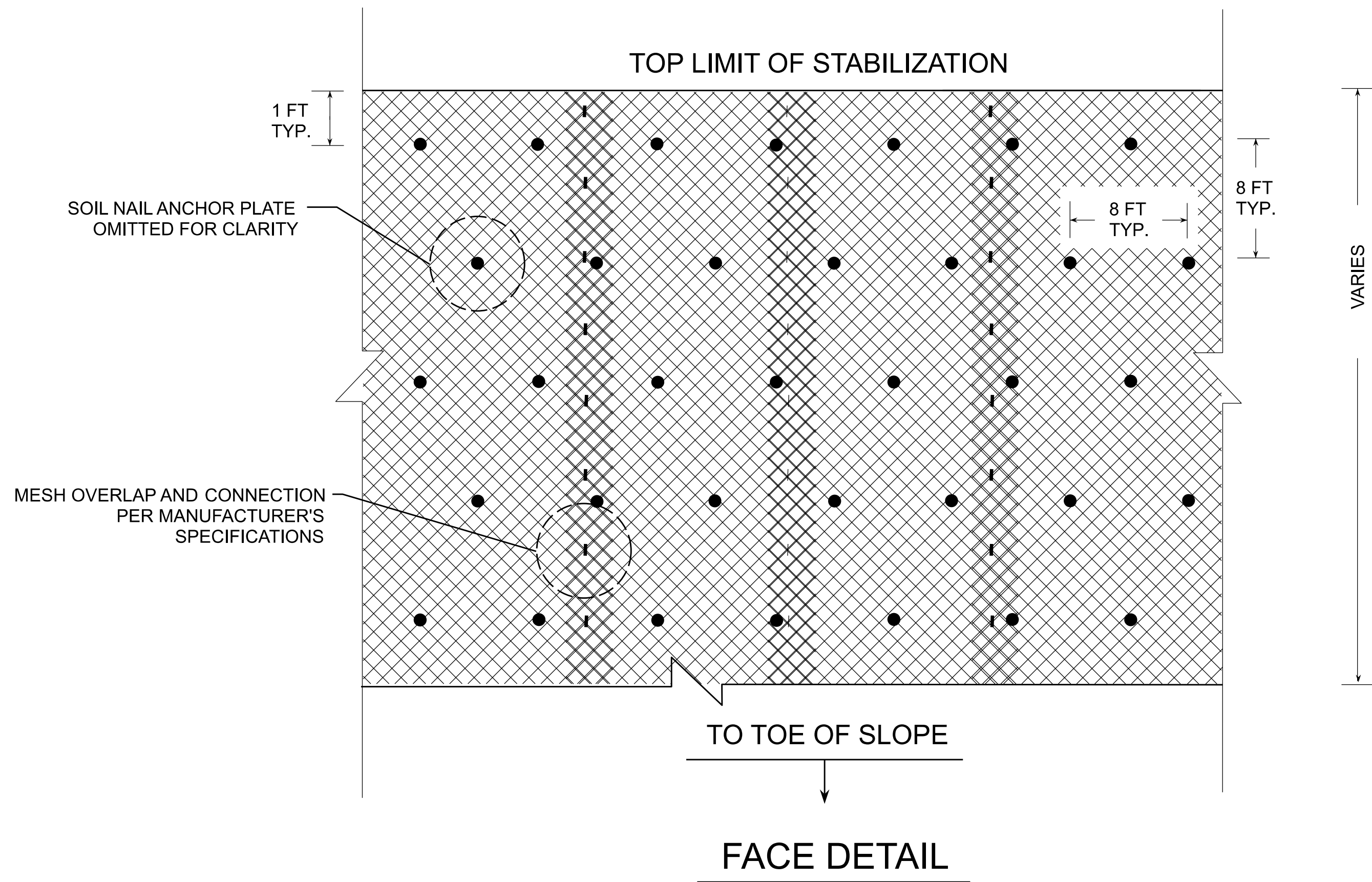
BEARING PLATES SHALL BE GRADE 50 STEEL.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT

BAR	SIZE	TYPE	LENGTH
B1	#7	STR.	-
B2	#5	STR.	-
B3	#4	STR.	2'-6"
-	-	-	-
S1	#4	1	6'-5"
S2	#4	2	3'-5"
-	-	-	-
U1	#4	3	5'-6"

REINFORCING STEEL = 45 LBS./LIN.FT.
CLASS A CONCRETE = 0.3 CU.YD./LIN.FT.



MESH OVERLAP & CONNECTION DETAIL

NOTES:

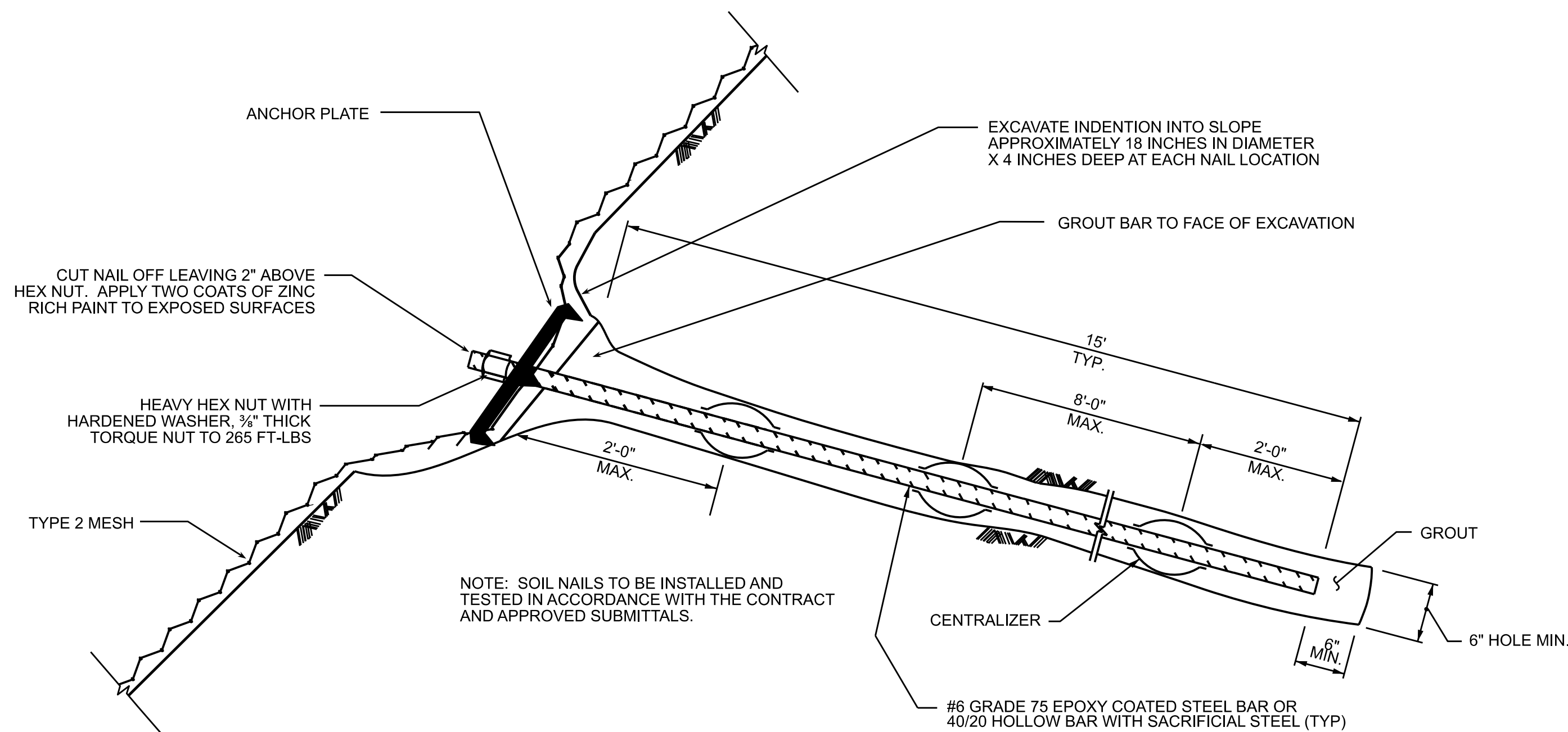
WIRE MESH SHALL BE INSTALLED ON SLOPES AS DIRECTED BY THE ENGINEER. AREAS TO BE ANCHORED MUST BE APPROVED BY THE ENGINEER PRIOR TO ORDERING MATERIALS OR BEGINNING CONSTRUCTION.

SOIL NAIL LENGTH = 15 FT (TYP)

DESIGN TEST LOAD (DTL) = 15 KIPS (1 k/ft)

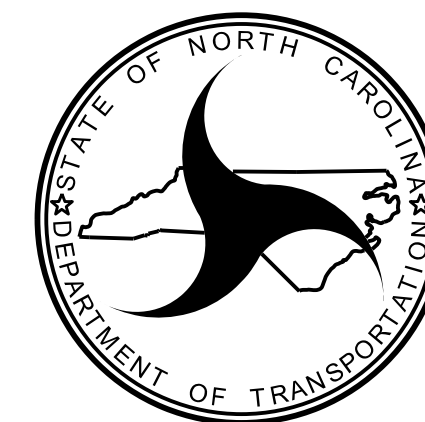
INSTALL NAILS INTO SLOPE WITH AN INCLINATION OF 75 TO 90 DEGREES TO THE SLOPE.

VERIFICATION TESTS ARE NOT REQUIRED.



TYPICAL SECTION

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WIRE MESH
SLOPE STABILIZATION

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
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SHEET
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PREPARED BY: DP	DATE: 10/24
REVIEWED BY:	DATE: