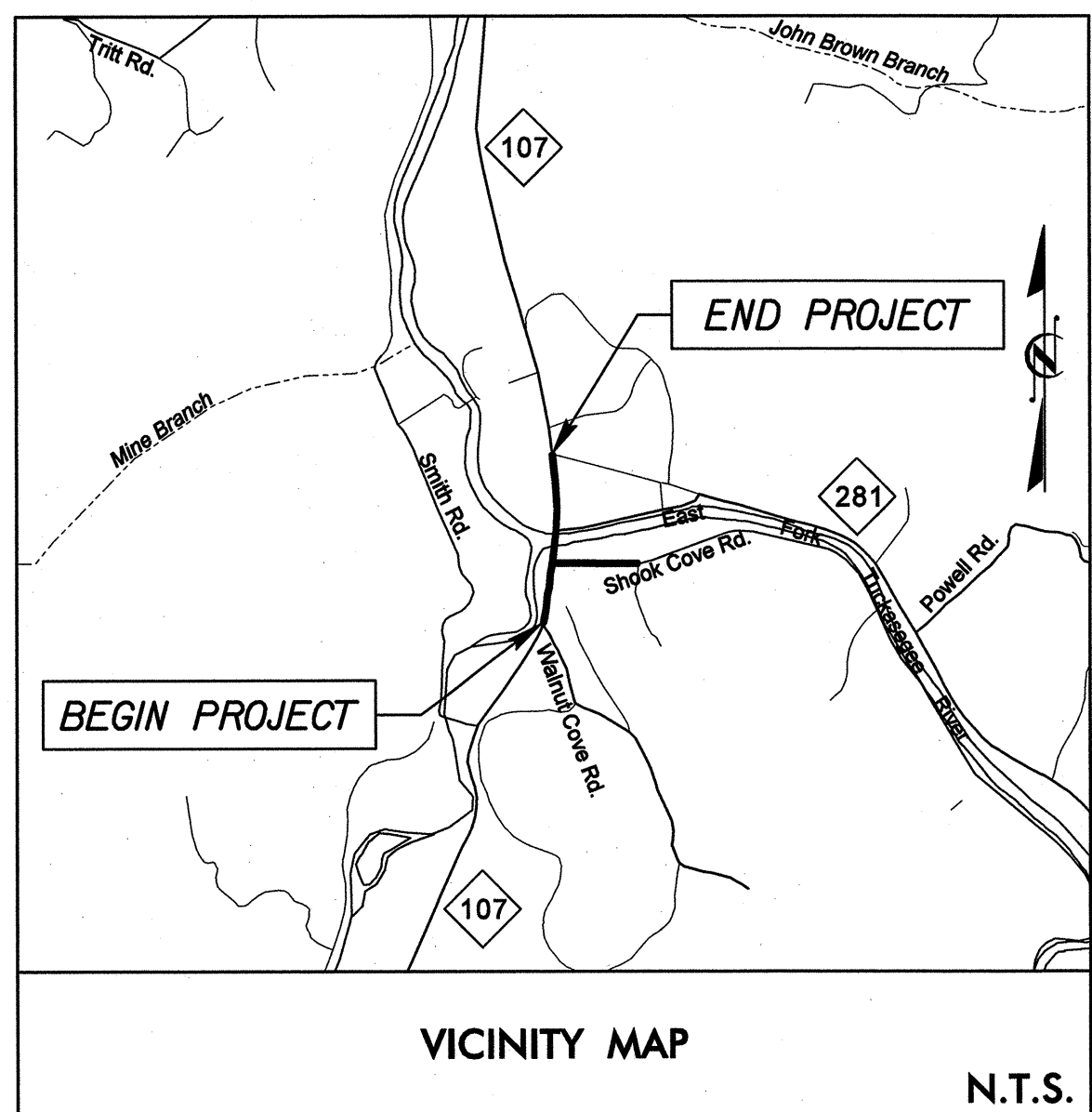


TIP PROJECT: B-3480

CONTRACT: C201166

See Sheet 1A For Index of Sheets
See Sheet 1B For Standard Symbology Sheet

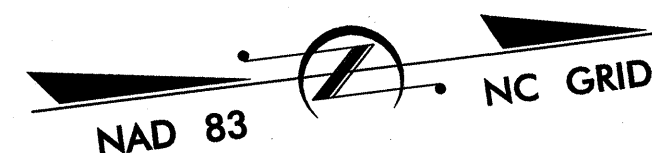


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JACKSON COUNTY

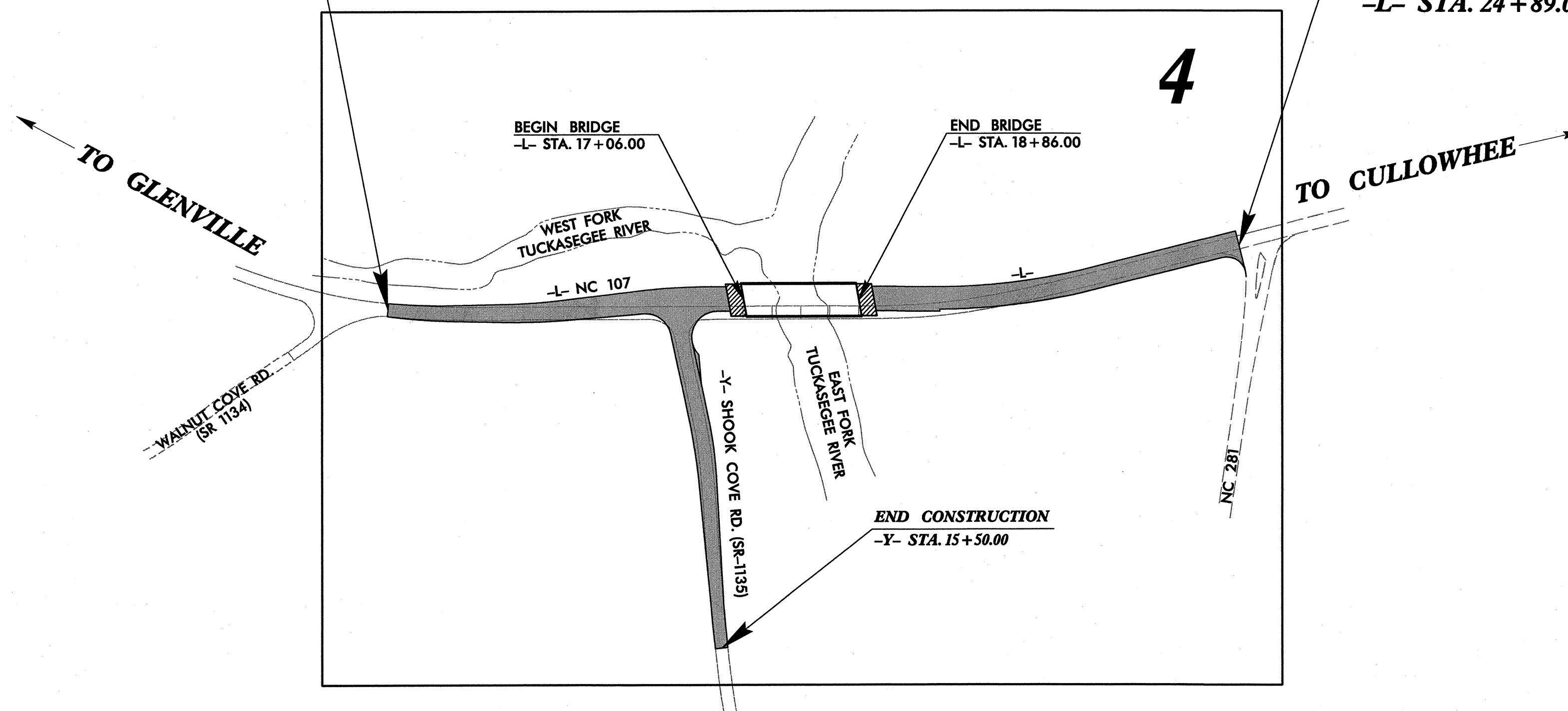
**LOCATION: BRIDGE NO. 39 OVER EAST FORK
TUCKASEGEE RIVER ON NC 107**

**TYPE OF WORK: GRADING, PAVING, DRAINAGE
AND STRUCTURE**

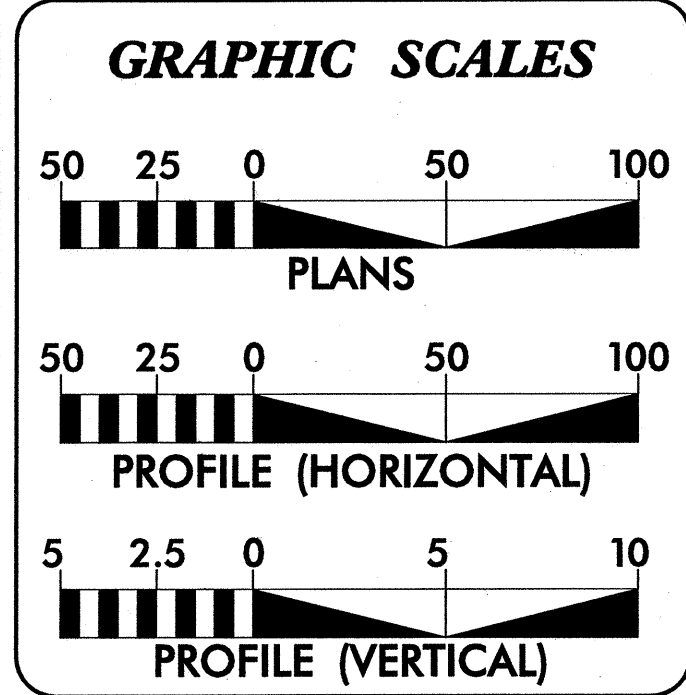


BEGIN TIP PROJECT B-3480
-L- STA. 11+50.00

END TIP PROJECT B-3480
-L- STA. 24+89.00



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3480	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33097.1.1	BRSTP-107(3)	P.E.	
33097.2.2	BRSTP-107(3)	R/W & UTILITIES	
33097.3.2	BRSTP-107(8)	CONSTRUCTION	



DESIGN DATA

ADT 2010 =	6,200
ADT 2030 =	11,600
DHV =	13 %
D =	55 %
T =	5 % *
V =	50 MPH
*(TTST 1% + DUAL 4%)	
RURAL MINOR ARTERIAL REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3480	=	0.220 Miles
LENGTH STRUCTURE TIP PROJECT B-3480	=	0.034 Miles
TOTAL LENGTH TIP PROJECT B-3480	=	0.254 Miles

NCDOT CONTACT: **BRENDA MOORE, PE**
Project Engineer - Roadway Design Unit

Prepared In the Office of:
ST/RALPH WHITEHEAD ASSOCIATES, INC.
1000 West Morehead St., Ste. 200, Charlotte NC, 28208
NC License Number F-0991
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 15, 2010

LETTING DATE:
MARCH 20, 2012

JOSEPH A. FREEMAN, PE
PROJECT ENGINEER

RICHARD ODYSKI, PE
PROJECT DESIGN ENGINEER

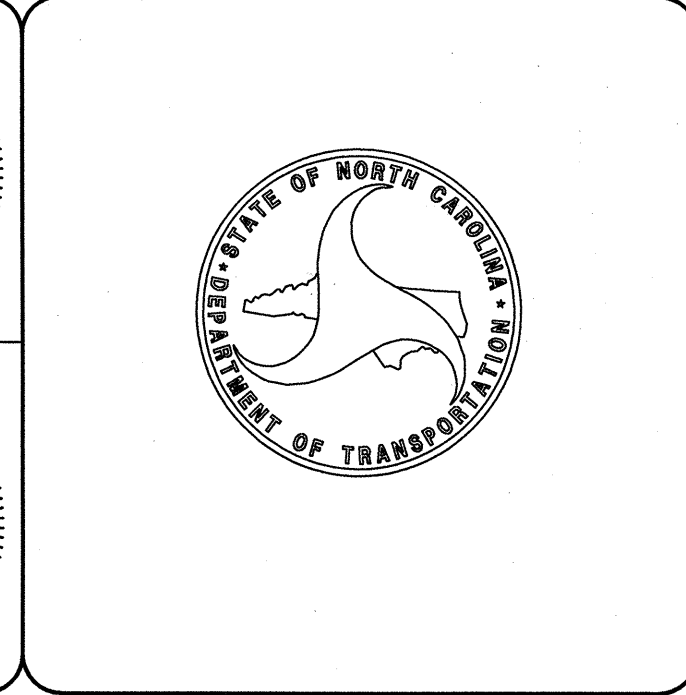
HYDRAULICS ENGINEER

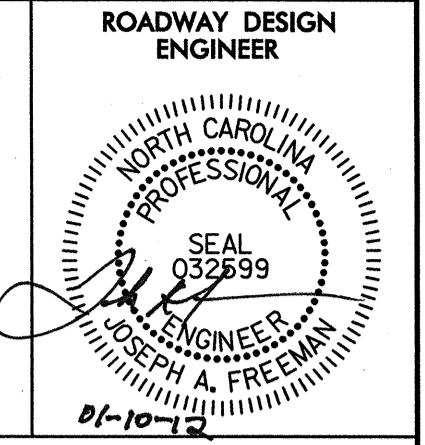
Edward J. Vance P.E.
SIGNATURE

ROADWAY DESIGN ENGINEER

Richard Odyski P.E.
SIGNATURE

01-10-12





STV/Ralph Whitehead Associates, Inc.
 1000 West Morehead St., Ste. 200
 Charlotte, NC 28208
 NC License Number F-0991

INDEX OF SHEETS

1	TITLE SHEET
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1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2 THRU 2-B	TYPICAL SECTIONS AND DETAILS
2-C	STANDARD TEMPORARY SHORING
2-D THRU 2-F	STANDARD TEMPORARY WALL
2-G THRU 2-H	REINFORCED SOIL SLOPE WITH GEOCELL FACING CELL
2-I	DETAIL OF ROCK PLATING
2-J	WIRE MESH AND ROCK ANCHORS FOR ROCK MESH DETAIL
3	SUMMARY OF QUANTITIES
3-A THRU 3-B	SUMMARY SHEETS
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THRU TCP-6	TRAFFIC CONTROL PLANS
EC-1 THRU EC-5	EROSION CONTROL SHEETS
RF-1	REFORESTATION DETAIL SHEET
UO-1 THRU UO-2	UTILITY BY OTHERS PLAN
X-0	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-11	CROSS-SECTIONS
S-1 THRU S-45	STRUCTURE PLANS

GENERAL NOTES

GENERAL NOTES:

2012 SPECIFICATIONS
 EFFECTIVE: 01-17-12
 REVISED: 11/01/11

GRADING AND SURFACING OR RESURFACING AND WIDENING:
 THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:
 CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:
 ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:
 ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:
 THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

UNDERDRAINS:
 UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

STREET TURNOUT:
 STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

GUARDRAIL:
 THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:
 SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

END BENTS:
 THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:
 UTILITY OWNERS ON THIS PROJECT ARE VERIZON SOUTH AND DUKE ENERGY. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:
 ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.02	Parallel Pipe End Section - Precast Concrete Section for 15" to 24" Pipe
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.51	Brick Manhole - 12" thru 36" Pipe
840.52	Precast Manhole - 4', 5' and 6' Diameter
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.04	Street Turnout
854.01	Double Faced Concrete Barrier - Types I, II, III and IV
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

3/15/06

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	-----
Property Monument	□ EDM
Parcel/Sequence Number	① 123
Existing Fence Line	-----
Proposed Woven Wire Fence	-----
Proposed Chain Link Fence	-----
Proposed Barbed Wire Fence	-----
Existing Wetland Boundary	----- WLB
Proposed Wetland Boundary	----- WLB
Existing Endangered Animal Boundary	----- EAB
Existing Endangered Plant Boundary	----- EPB

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	□

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	----- JS
Buffer Zone 1	----- BZ 1
Buffer Zone 2	----- BZ 2
Flow Arrow	-----
Disappearing Stream	-----
Spring	-----
Wetland	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	-----

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ CSX TRANSPORTATION MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite Marker	-----
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	----- E
Proposed Temporary Construction Easement	----- E
Proposed Temporary Drainage Easement	----- TDE
Proposed Permanent Drainage Easement	----- PDE
Proposed Permanent Utility Easement	----- PUE
Proposed Temporary Utility Easement	----- TUE
Proposed Permanent Easement with Iron Pin and Cap Marker	-----

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	----- C
Proposed Slope Stakes Fill	----- F
Proposed Curb Ramp	----- CR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	-----

VEGETATION:

Single Tree	○
Single Shrub	○
Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	----- Vineyard

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	----- CONC
Bridge Wing Wall, Head Wall and End Wall	----- CONC WW
MINOR:	
Head and End Wall	----- CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○
Storm Sewer	----- S

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊠
U/G Power Cable Hand Hole	⊠
H-Frame Pole	●
Recorded U/G Power Line	----- P
Designated U/G Power Line (S.U.E.*)	----- P

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	⊠
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	⊠
Recorded U/G Telephone Cable	----- T
Designated U/G Telephone Cable (S.U.E.*)	----- T
Recorded U/G Telephone Conduit	----- TC
Designated U/G Telephone Conduit (S.U.E.*)	----- TC
Recorded U/G Fiber Optics Cable	----- T FO
Designated U/G Fiber Optics Cable (S.U.E.*)	----- T FO

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded U/G Water Line	----- W
Designated U/G Water Line (S.U.E.*)	----- W
Above Ground Water Line	----- A/G Water

TV:

TV Satellite Dish	⊠
TV Pedestal	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	⊠
Recorded U/G TV Cable	----- TV
Designated U/G TV Cable (S.U.E.*)	----- TV
Recorded U/G Fiber Optic Cable	----- TV FO
Designated U/G Fiber Optic Cable (S.U.E.*)	----- TV FO

GAS:

Gas Valve	⊕
Gas Meter	⊕
Recorded U/G Gas Line	----- G
Designated U/G Gas Line (S.U.E.*)	----- G
Above Ground Gas Line	----- A/G Gas

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	----- SS
Above Ground Sanitary Sewer	----- A/G Sanitary Sewer
Recorded SS Forced Main Line	----- FSS
Designated SS Forced Main Line (S.U.E.*)	----- FSS

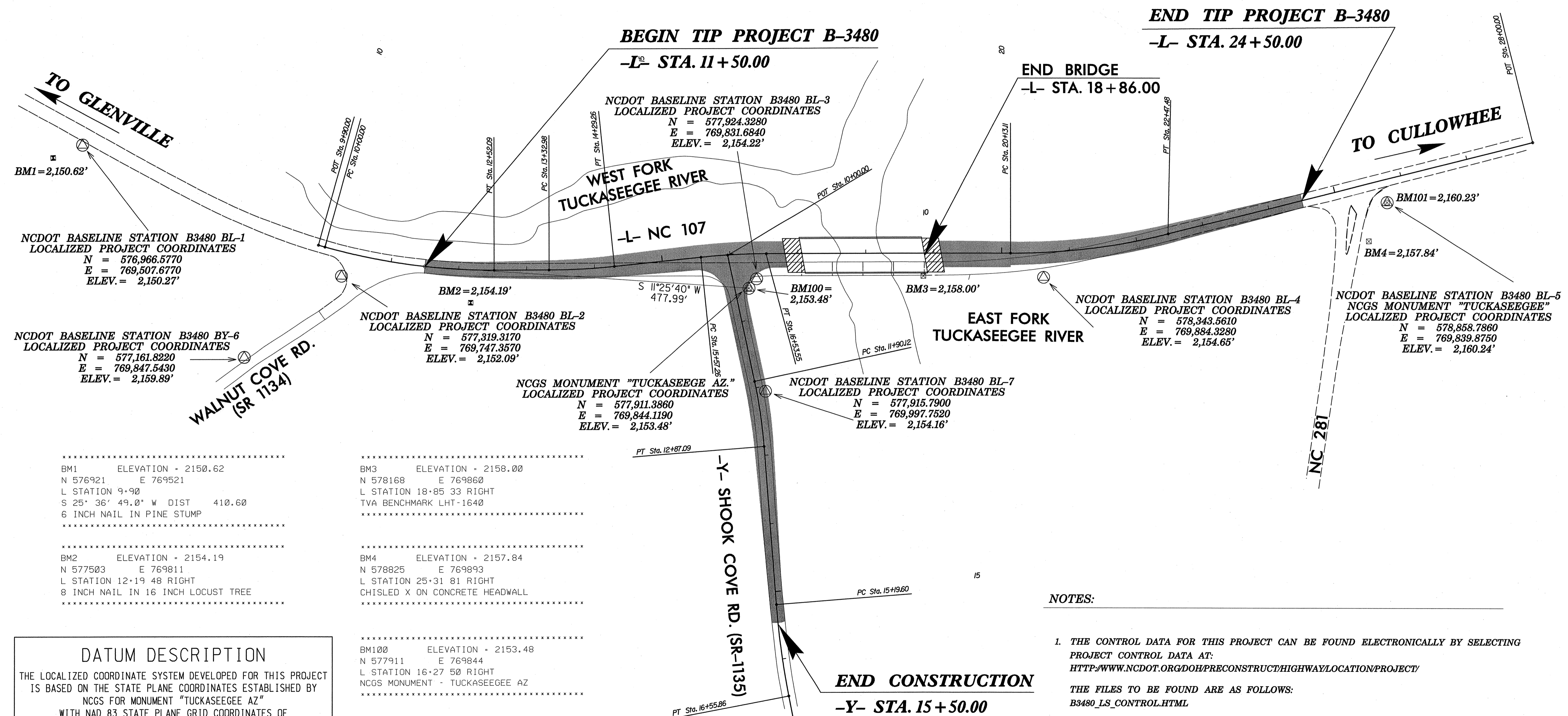
MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	⊠
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line	----- TUTL
U/G Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

SURVEY CONTROL SHEET B-3480

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	576966.5770	769507.6770	2150.33	OUTSIDE PROJECT LIMITS	
2	BL-2	577319.3170	769747.3570	2152.15	10+33.63	35.05 RT
3	BL-3	577924.3280	769831.6840	2154.26	16+38.65	36.55 RT
4	BL-4	578343.5610	769884.3280	2154.67	20+59.99	36.21 RT
5	BL-5	578858.7860	769839.8750	2160.24	25+71.02	32.98 RT

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
33	BL-3	577924.3280	769831.6840	2154.26	10+43.04	34.40 LT
7	BY1-7	577915.7900	769997.7520	2154.19	12+07.59	12.76 LT



.....
 BM1 ELEVATION = 2150.62
 N 576921 E 769521
 L STATION 9+90
 S 25° 36' 49.0" W DIST 410.60
 6 INCH NAIL IN PINE STUMP

.....
 BM2 ELEVATION = 2154.19
 N 577503 E 769811
 L STATION 12+19 48 RIGHT
 8 INCH NAIL IN 16 INCH LOCUST TREE

.....
 BM3 ELEVATION = 2158.00
 N 578168 E 769860
 L STATION 18+85 33 RIGHT
 TVA BENCHMARK LHT-1640

.....
 BM4 ELEVATION = 2157.84
 N 578825 E 769893
 L STATION 25+31 81 RIGHT
 CHISLED X ON CONCRETE HEADWALL

.....
 BM100 ELEVATION = 2153.48
 N 577911 E 769844
 L STATION 16+27 50 RIGHT
 NCGS MONUMENT - TUCKASEEGEE AZ

.....
 BM101 ELEVATION = 2160.23
 N 578859 E 769840
 L STATION 25+71 33 RIGHT
 NCGS MONUMENT - TUCKASEEGEE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "TUCKASEEGEE AZ" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 577,911.3860(ft) EASTING: 769,844.1190(ft) ELEVATION: 2,153.48(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999774142

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "TUCKASEEGEE AZ" TO -L- STATION 11+50.00 IS S 11°25'40" W 477.99'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAYLOCATION/PROJECT/](http://www.ncdot.org/DOH/PRECONSTRUCT/HIGHWAYLOCATION/PROJECT/)


THE FILES TO BE FOUND ARE AS FOLLOWS:
 B3480_LS_CONTROL.HTML

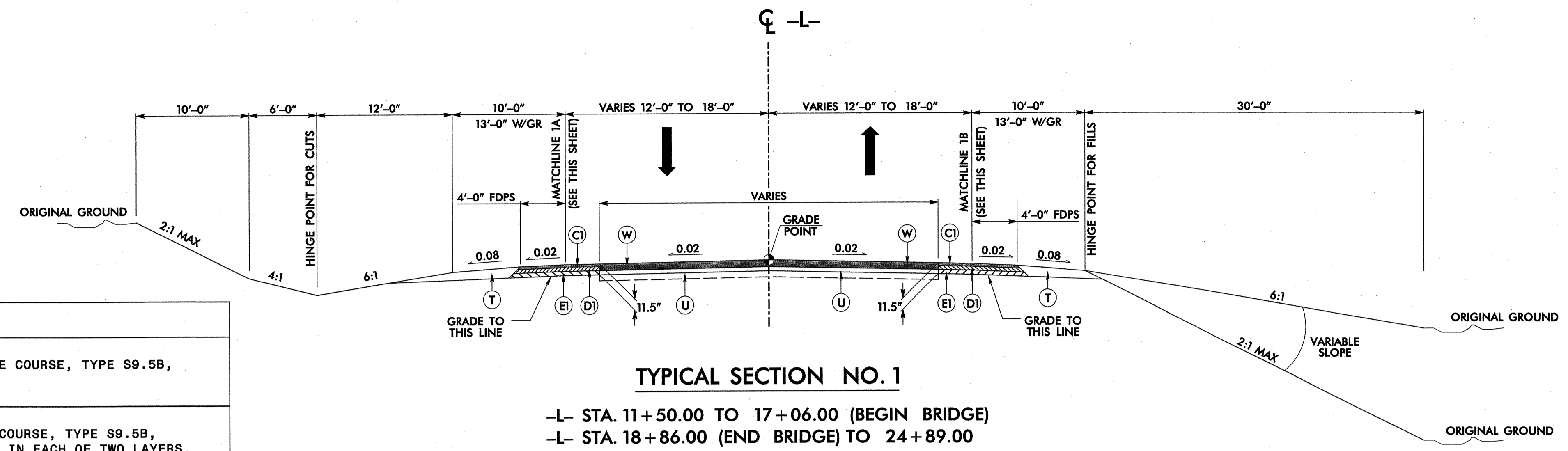
SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⊕ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL AND VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 ○ PROJECT CONTROL ESTABLISHED USING CONVENTIONAL NCGS CONTROL MONUMENTS

NOTE: DRAWING NOT TO SCALE

6/2/99
 1/10/2012
 r:\roadway\p\proj\B3480\RDY_psh_1c.dgn
 L:\csm

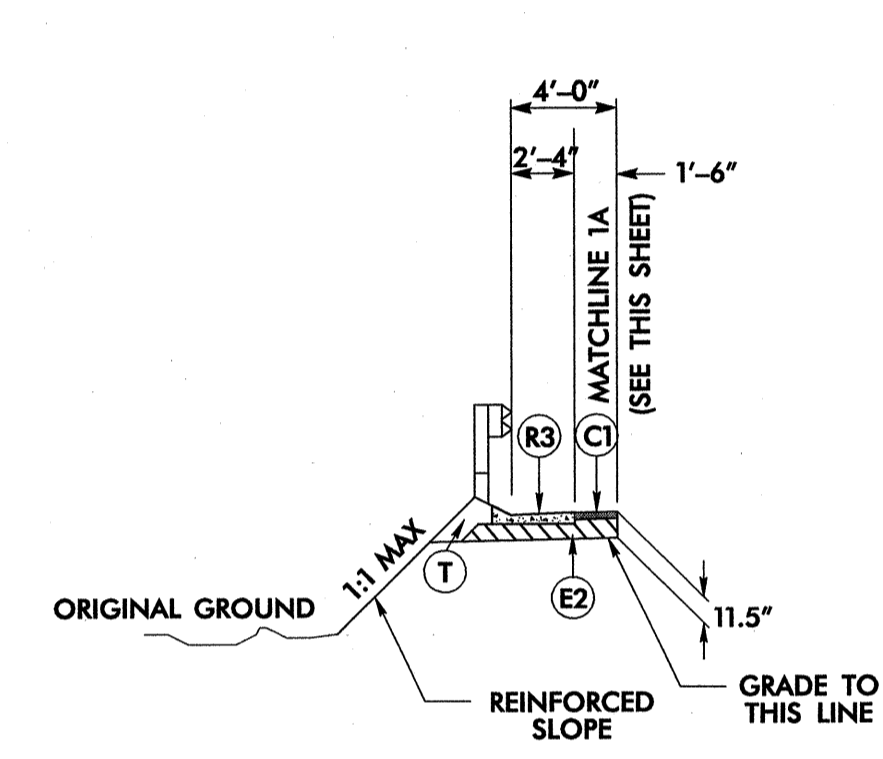
PROJECT REFERENCE NO. B-3480	SHEET NO. 2
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032596 JOSEPH A. FREEMAN	PAVEMENT DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22898 CLARK S. MORRISON
 STV/Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208 NC License Number F-0991	



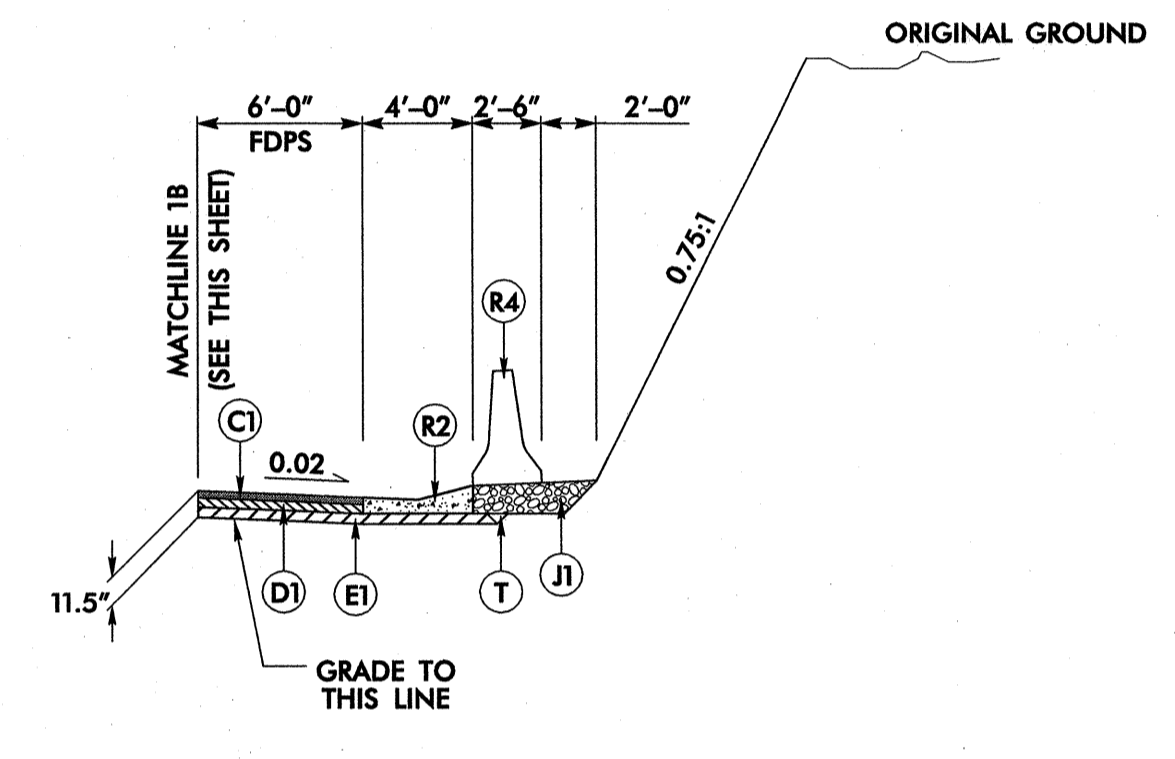
TYPICAL SECTION NO. 1

-L- STA. 11+50.00 TO 17+06.00 (BEGIN BRIDGE)
 -L- STA. 18+86.00 (END BRIDGE) TO 24+89.00

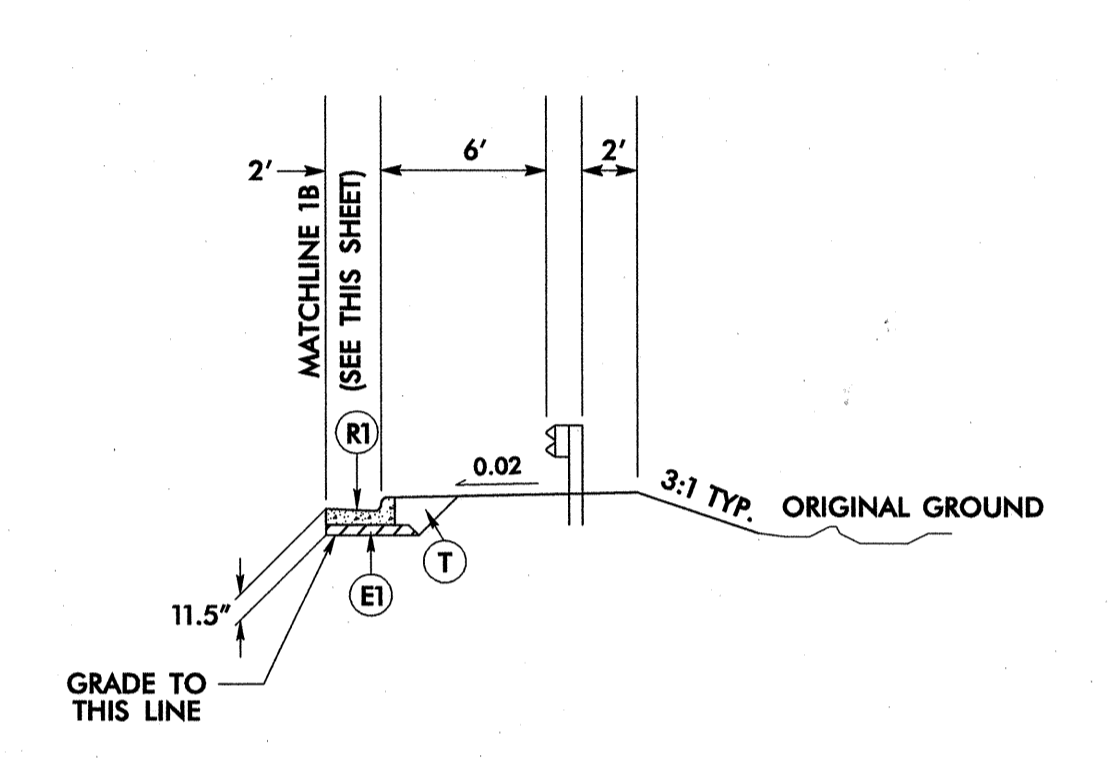
PAVEMENT SCHEDULE	
C	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
J	6" AGGREGATE BASE COURSE
J1	VARIABLE DEPTH AGGREGATE BASE COURSE
P	PRIME COAT AT A RATE OF 0.35 GAL. PER SQ. YD.
R1	2'-6" CONCRETE CURB AND GUTTER
R2	EXPRESSWAY GUTTER
R3	SHOULDER BERM GUTTER
R4	TYPE T DOUBLE FACED CONCRETE BARRIER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	PAVEMENT WEDGING (SEE DETAIL - SHEET 2A)



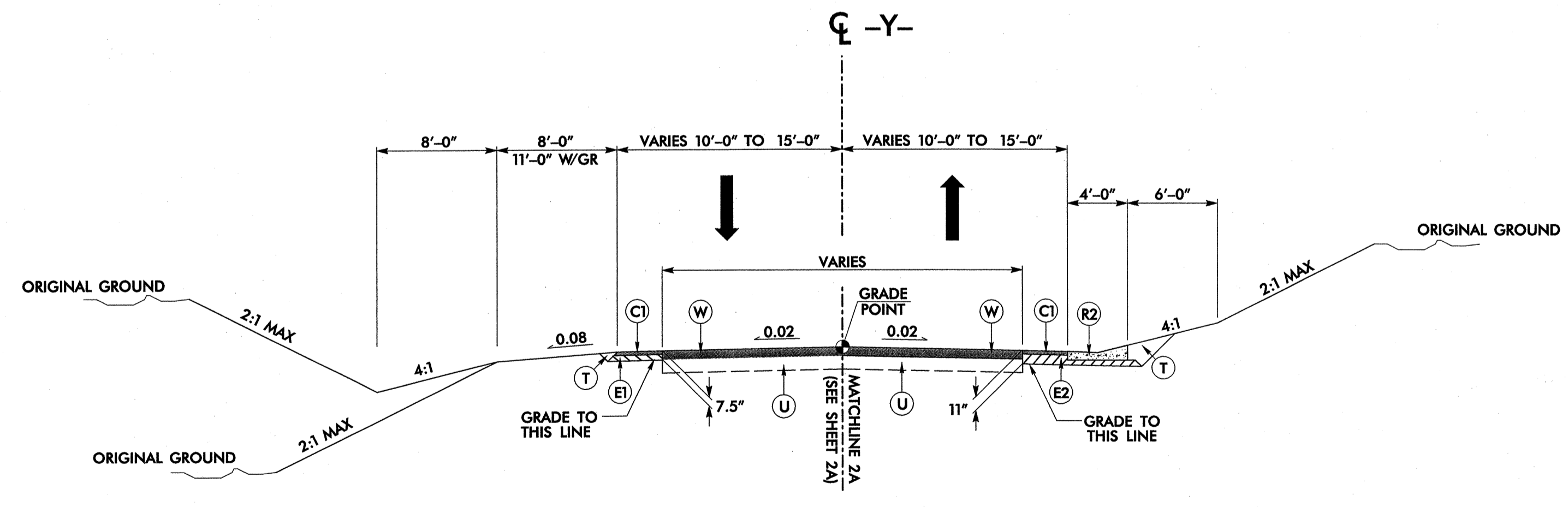
PARTIAL TYPICAL SECTION NO. 1A
 USE IN CONJUNCTION WITH T.S. NO. 1 FOR:
 -L- STA. 11+80.00 TO 13+15.00 LT



PARTIAL TYPICAL SECTION NO. 1B
 USE IN CONJUNCTION WITH T.S. NO. 1 FOR:
 -L- STA. 12+70.00 TO 14+70.00 RT




PARTIAL TYPICAL SECTION NO. 1C
 USE IN CONJUNCTION WITH T.S. NO. 1 FOR:
 -L- STA. 16+15.06 TO 16+82.02 RT
 -L- STA. 19+09.98 TO 20+13.11 RT

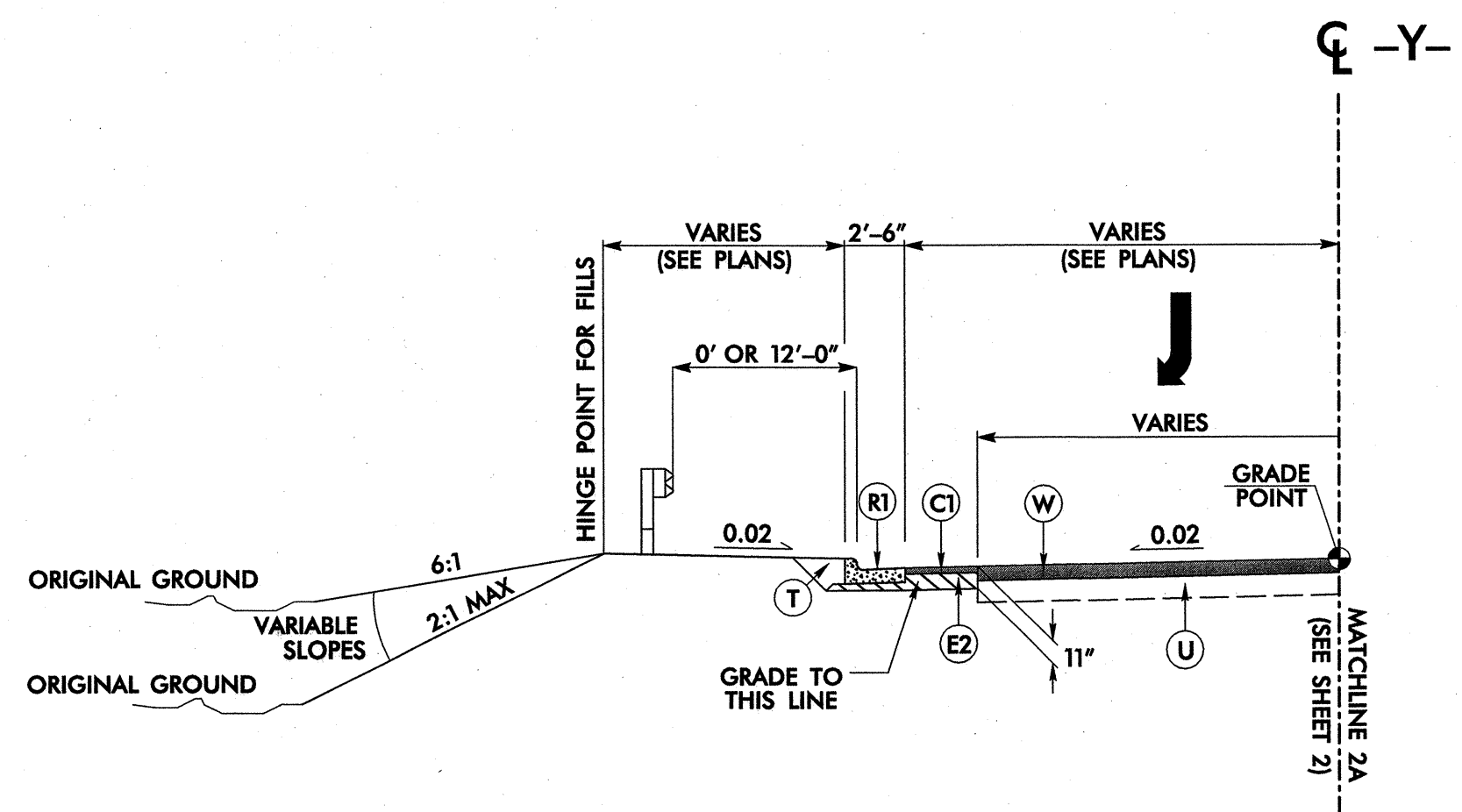


TYPICAL SECTION NO. 2

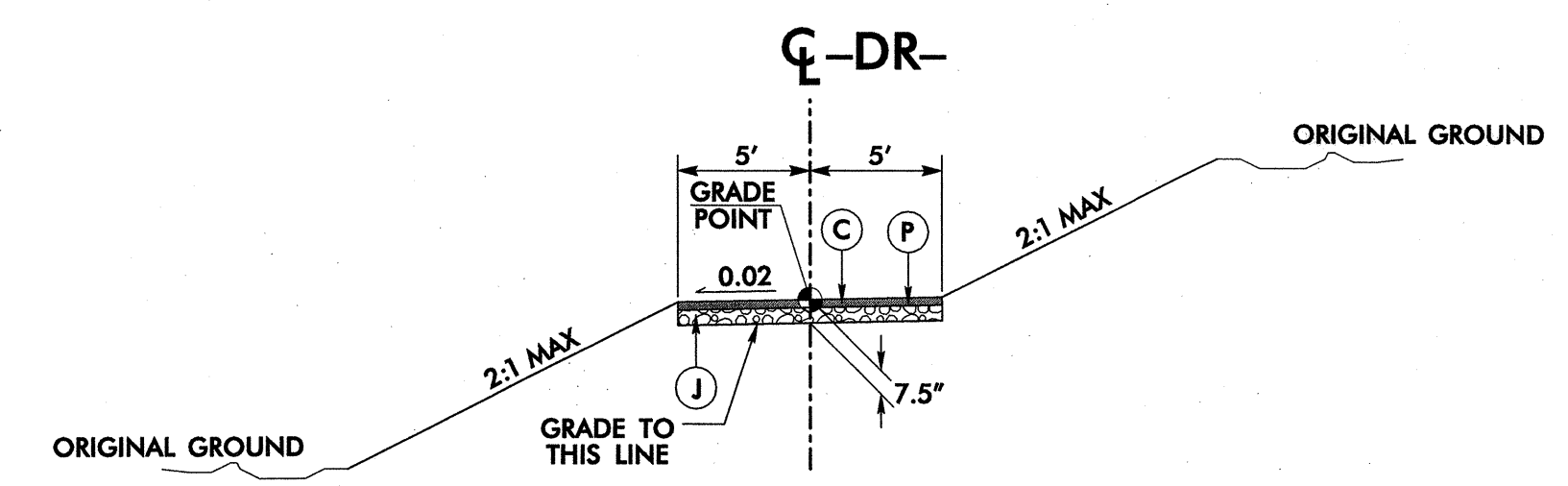
-Y- STA. 10+18.21 TO 15+50.00

- NOTES:**
- 1) TYPICAL SECTIONS SHOWN FOR TANGENT SECTIONS ONLY. SEE PLANS AND STANDARD DRAWINGS FOR SUPERELEVATION DETAILS AND WIDENING /LANE ADDITIONS AT INTERSECTION. MAXIMUM ROLLOVER IS 6%.
 - 2) ALL PAVEMENT EDGES SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

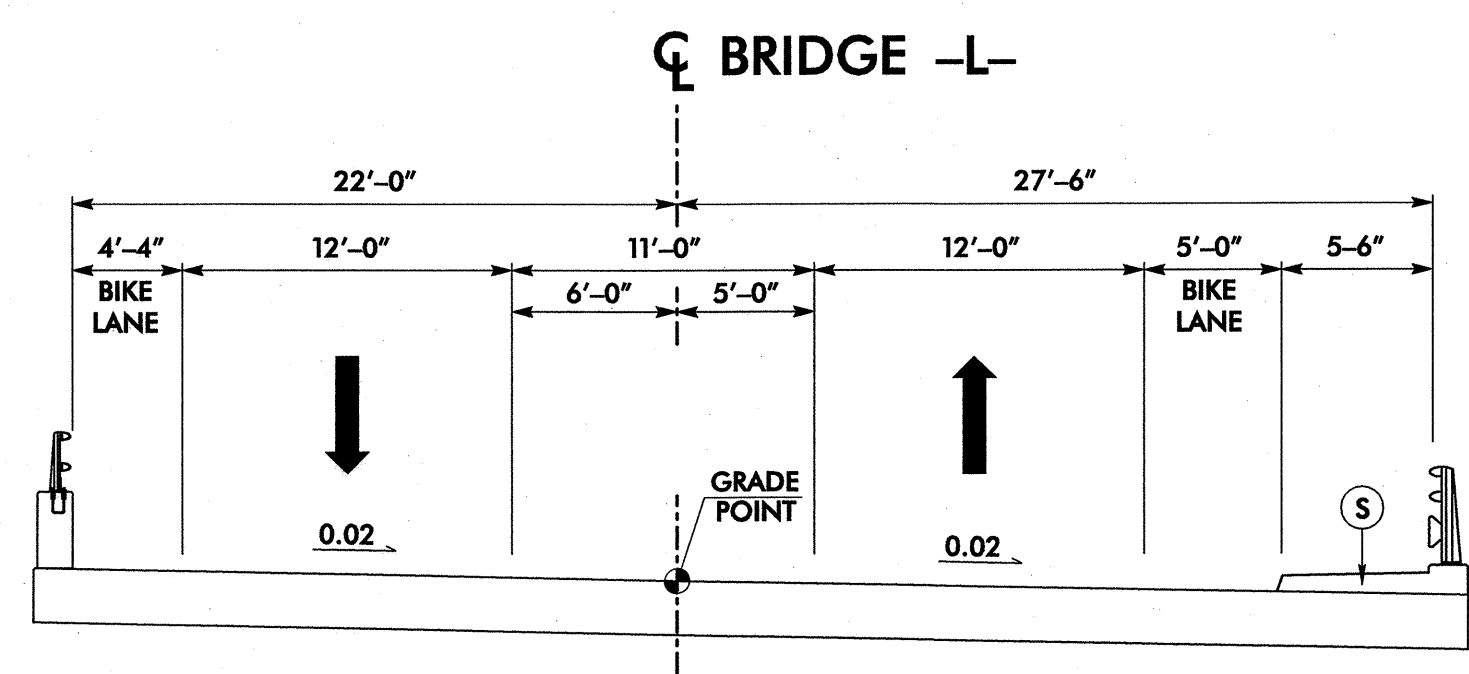
PROJECT REFERENCE NO. B-3480	SHEET NO. 2A
ROADWAY DESIGN ENGINEER JOSEPH A. FREEMAN SEAL 092599 NORTH CAROLINA PROFESSIONAL ENGINEER	PAVEMENT DESIGN ENGINEER CLARK S. MORRISON SEAL 22898 NORTH CAROLINA PROFESSIONAL ENGINEER
 STV/ Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208 NC License Number F-0991	



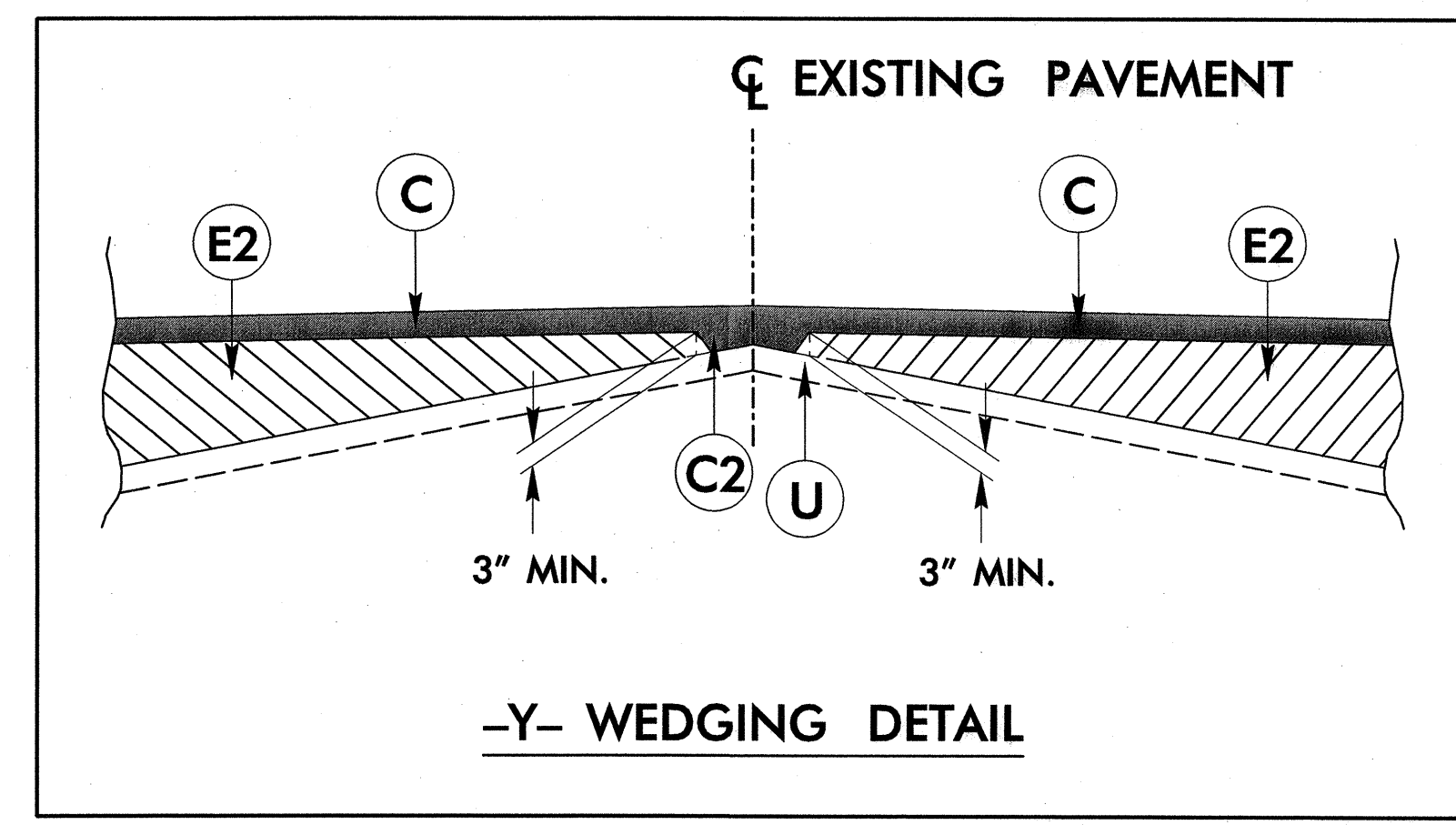
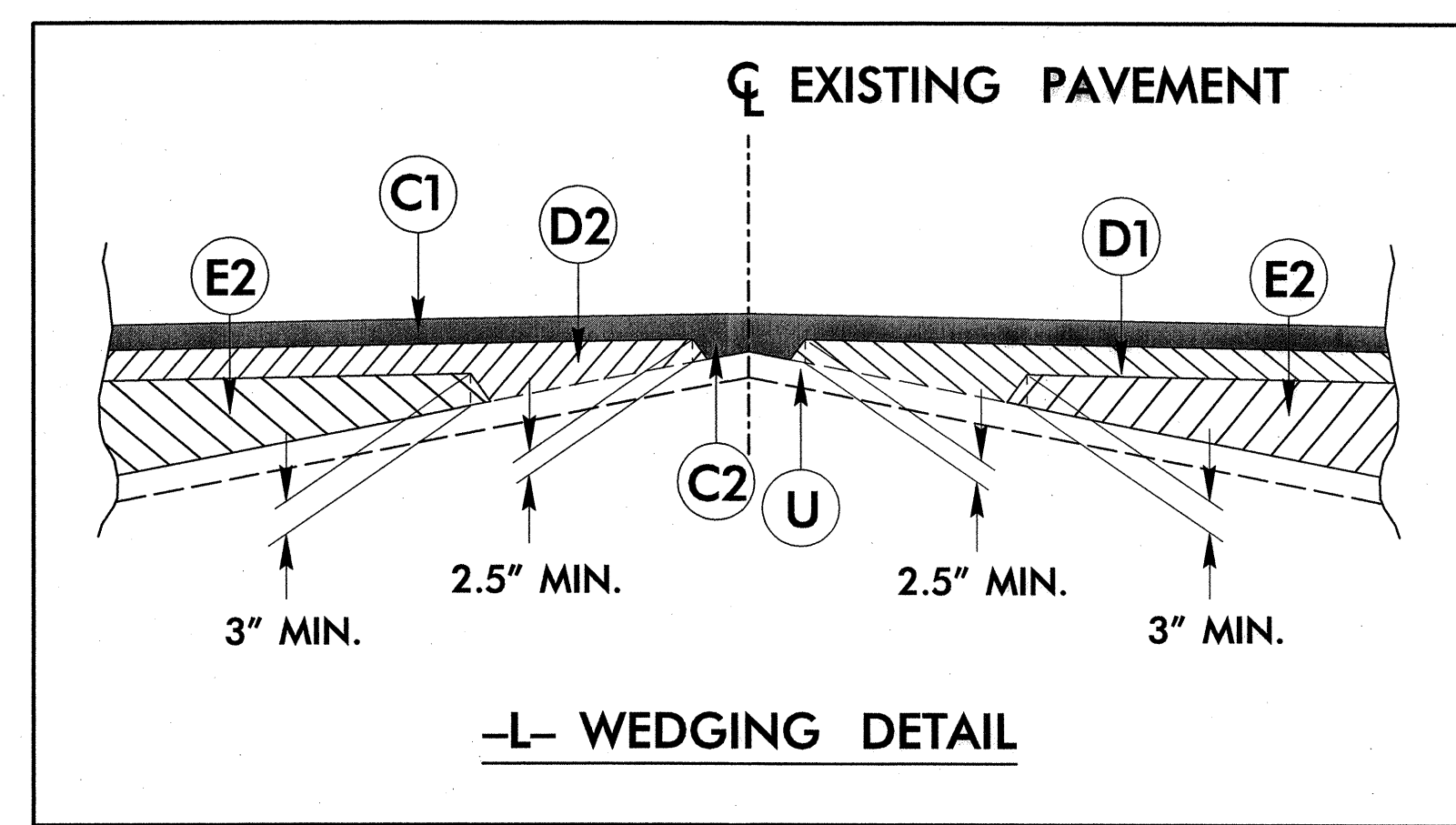
PARTIAL TYPICAL SECTION NO. 2A
 USE IN CONJUNCTION WITH T.S. NO. 2 FOR:
 -Y- STA. 10+20.79 TO 10+92.35



TYPICAL SECTION NO. 3
 -DR- STA. 5+28.19 TO 6+27.89



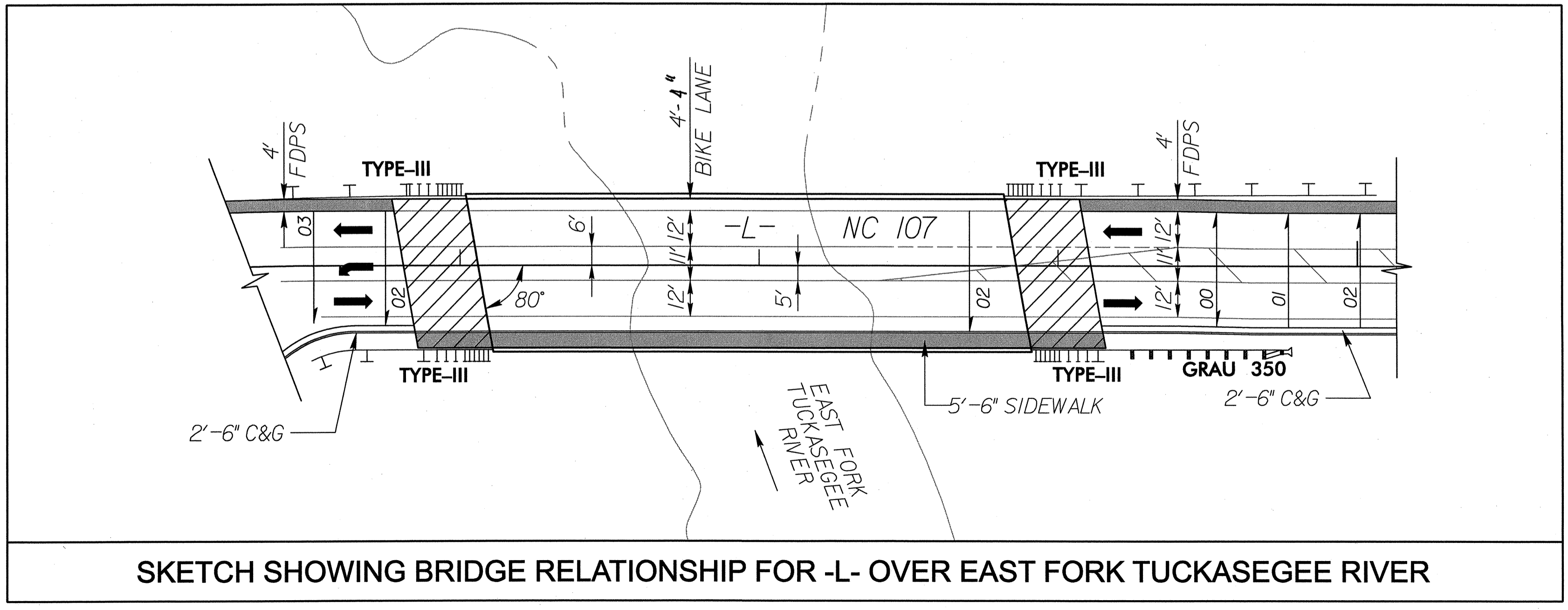
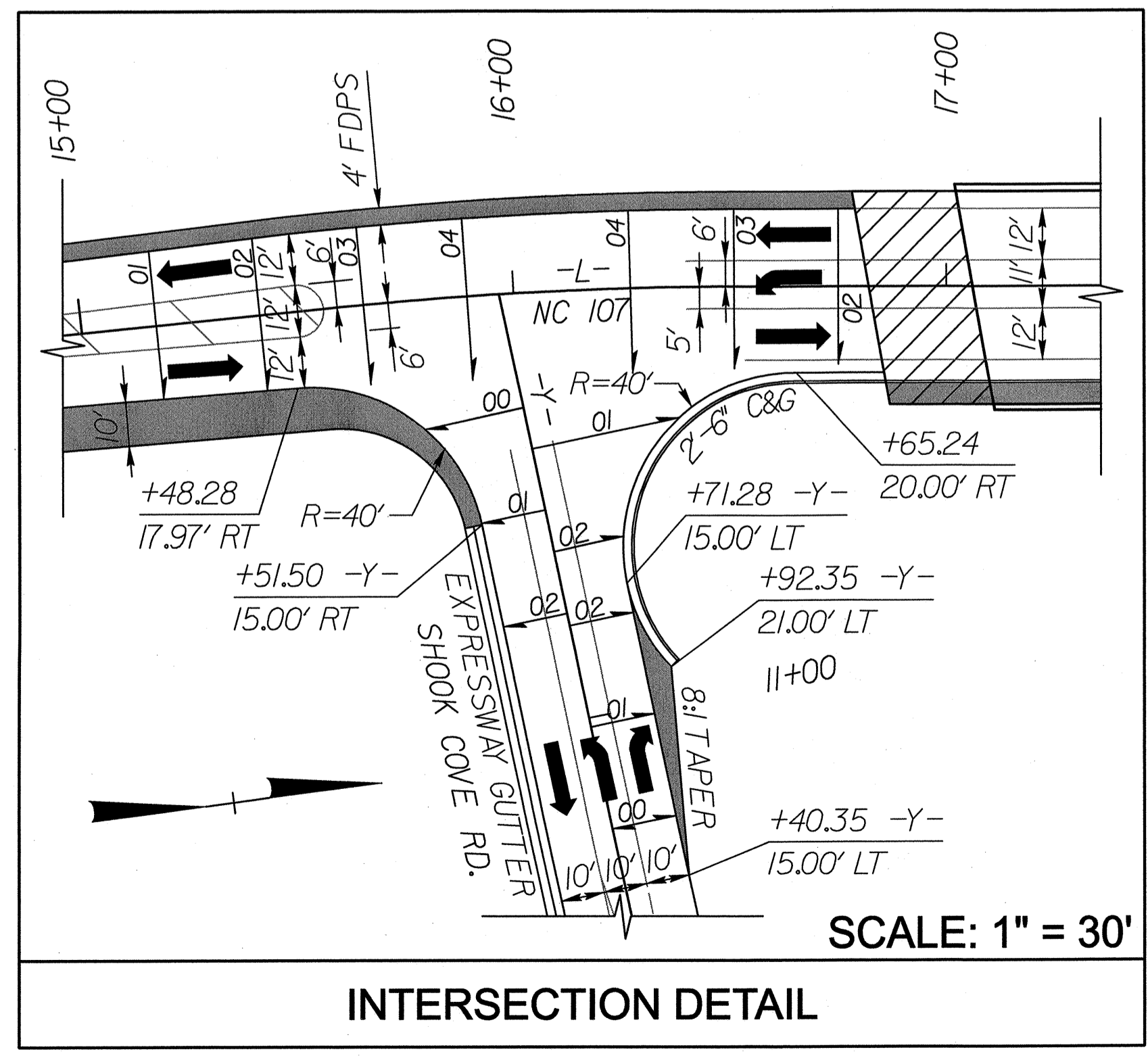
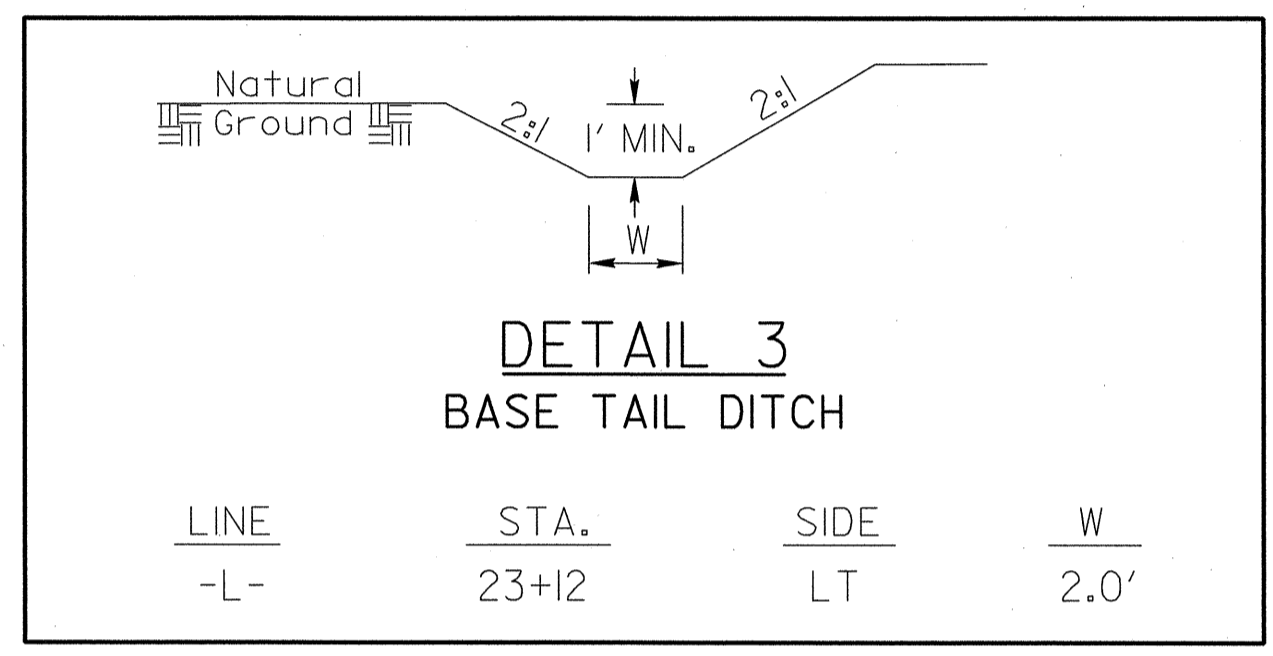
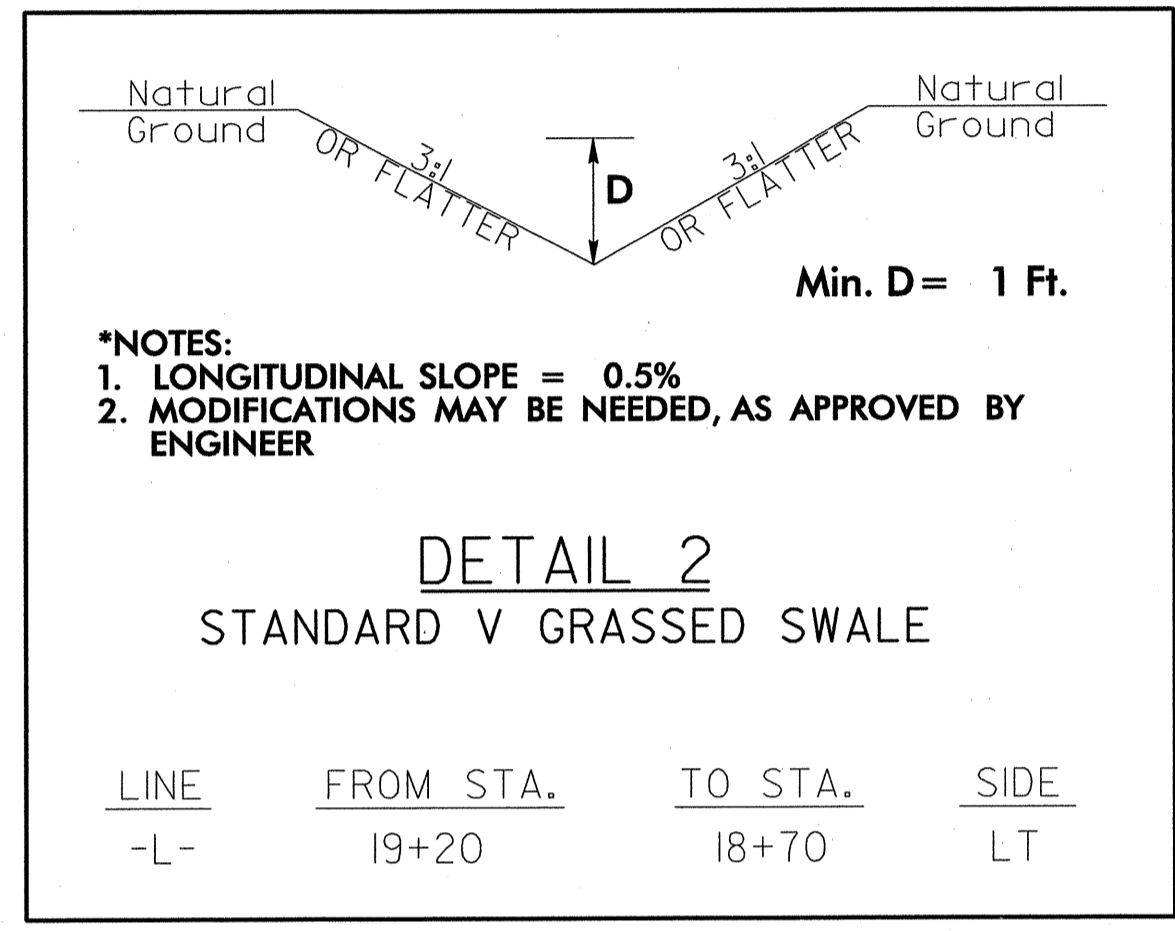
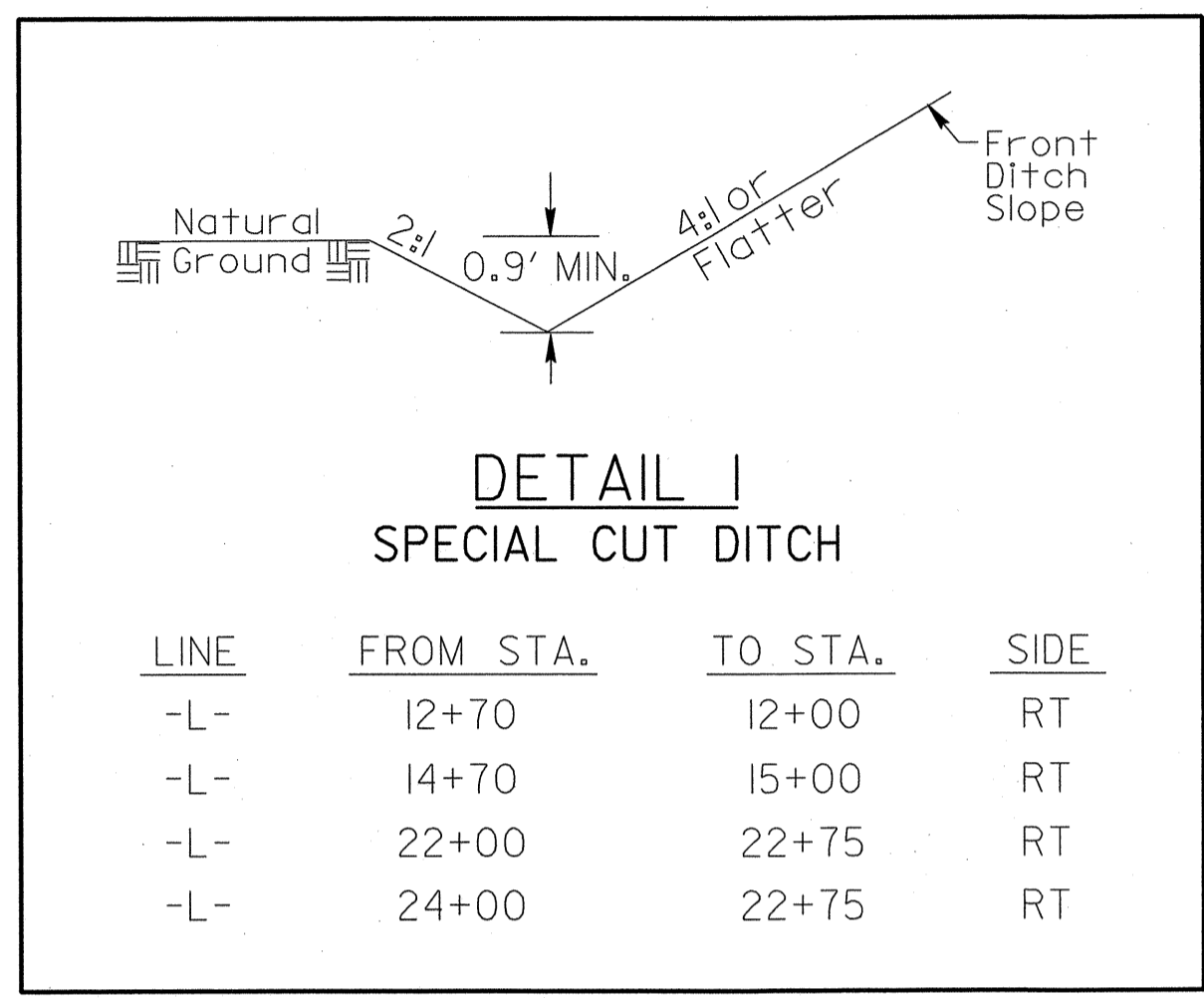
BRIDGE TYPICAL SECTION



PAVEMENT SCHEDULE	
C	1.5" S9.5B
C1	3" S9.5B
C2	VARIABLE S9.5B
D1	4.0" I19.0B
D2	VARIABLE I19.0B
E1	4.5" B25.0B
E2	VARIABLE B25.0B
J	6" AGGREGATE BASE COURSE
J1	VAR. AGGREGATE BASE COURSE
P	PRIME COAT
R1	CONC C&G (2'-6")
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

- NOTES:**
- 1) TYPICAL SECTIONS SHOWN FOR TANGENT SECTIONS ONLY. SEE PLANS AND STANDARD DRAWINGS FOR SUPERELEVATION DETAILS AND WIDENING /LANE ADDITIONS AT INTERSECTION. MAXIMUM ROLLOVER IS 6%.
 - 2) ALL PAVEMENT EDGES SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

K:\2012\Roadway\Proj\B3480_RDY_tjpb.dgn
 1/27/12





Swt. A. Nields 11/19/11 DATE SIGNATURE DATE SIGNATURE

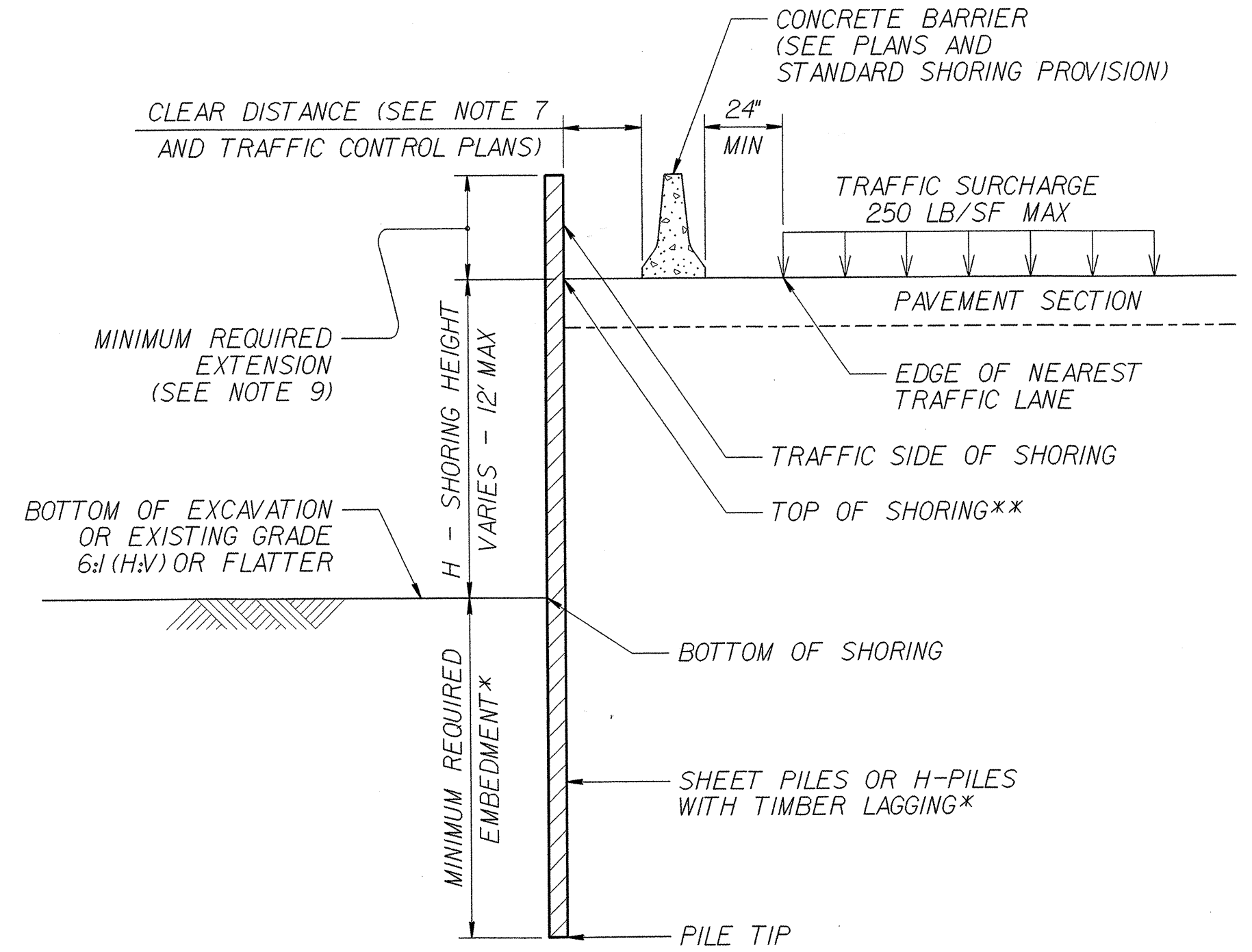
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT						SURCHARGE CASE WITH TRAFFIC IMPACT					
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING				
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN ³ /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN ³ /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)				
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73		
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0		
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5		
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5		
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0		
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5		
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0		
12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5			
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5		
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5		
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5		
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5		
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5		
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5		
12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5			

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

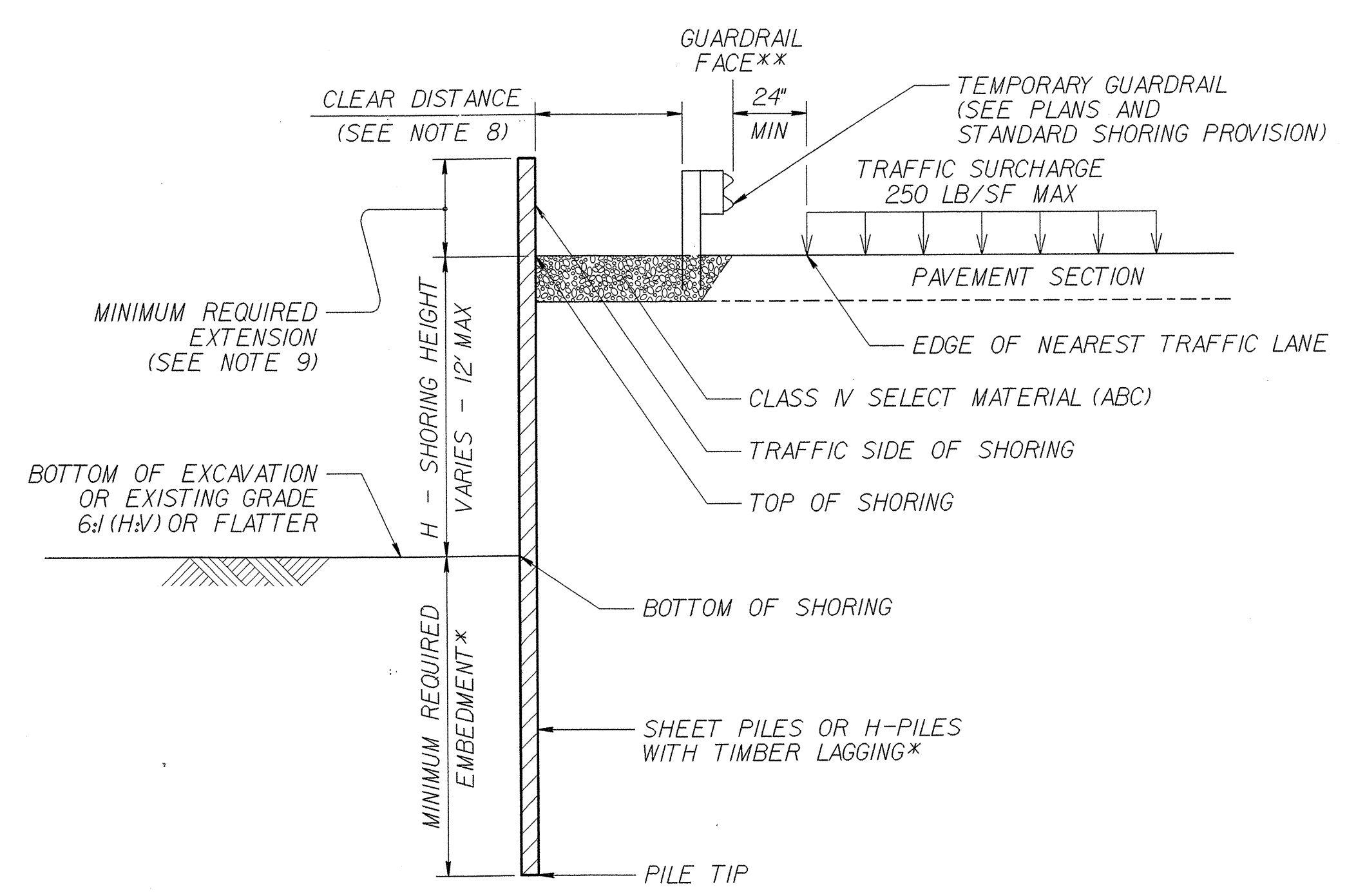
***DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**

NOTES:

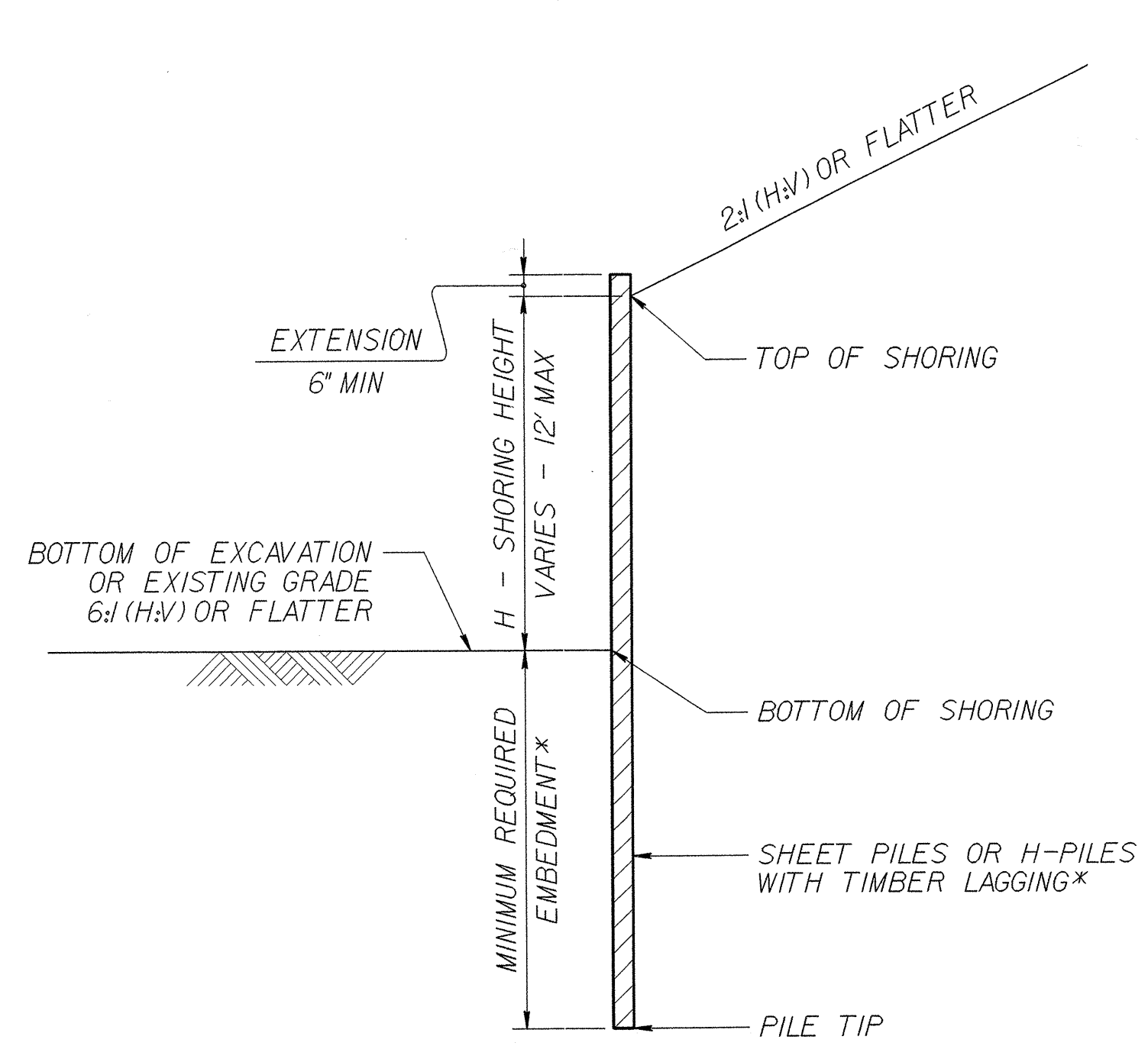
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ LB/CF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ LB/SF
- DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
- DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
- USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
- AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
- AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
- MINIMUM REQUIRED EXTENSION IS 6' FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32' FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
- MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
- SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM.
- CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



CONCRETE BARRIER
**TOP OF SHORING = EDGE OF PAVEMENT

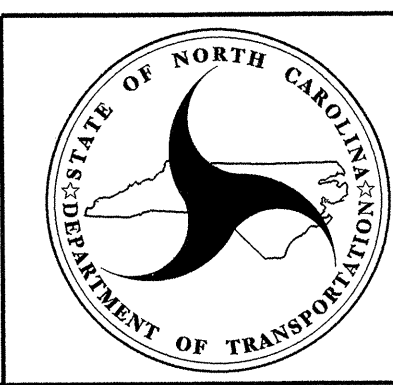


TEMPORARY GUARDRAIL
**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING (SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING (SURCHARGE CASE)
*SEE TABLE ABOVE.

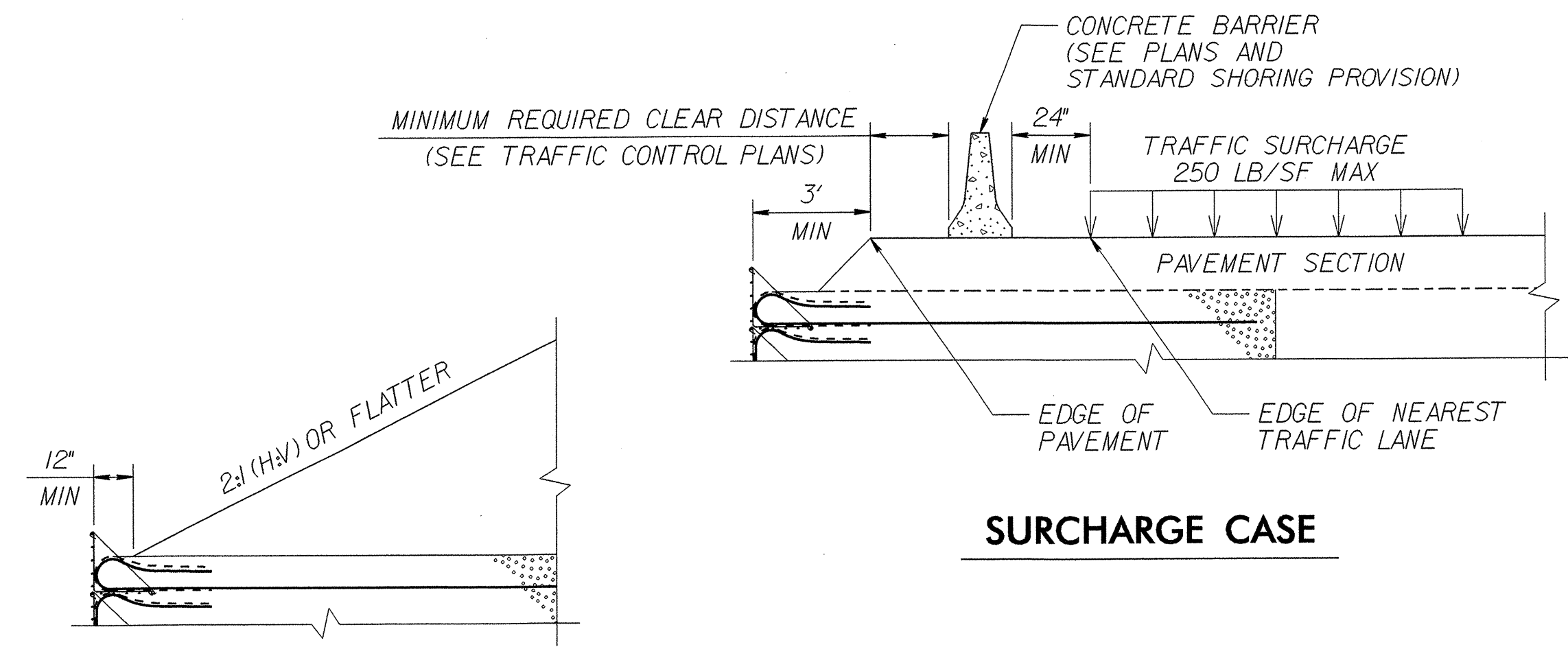


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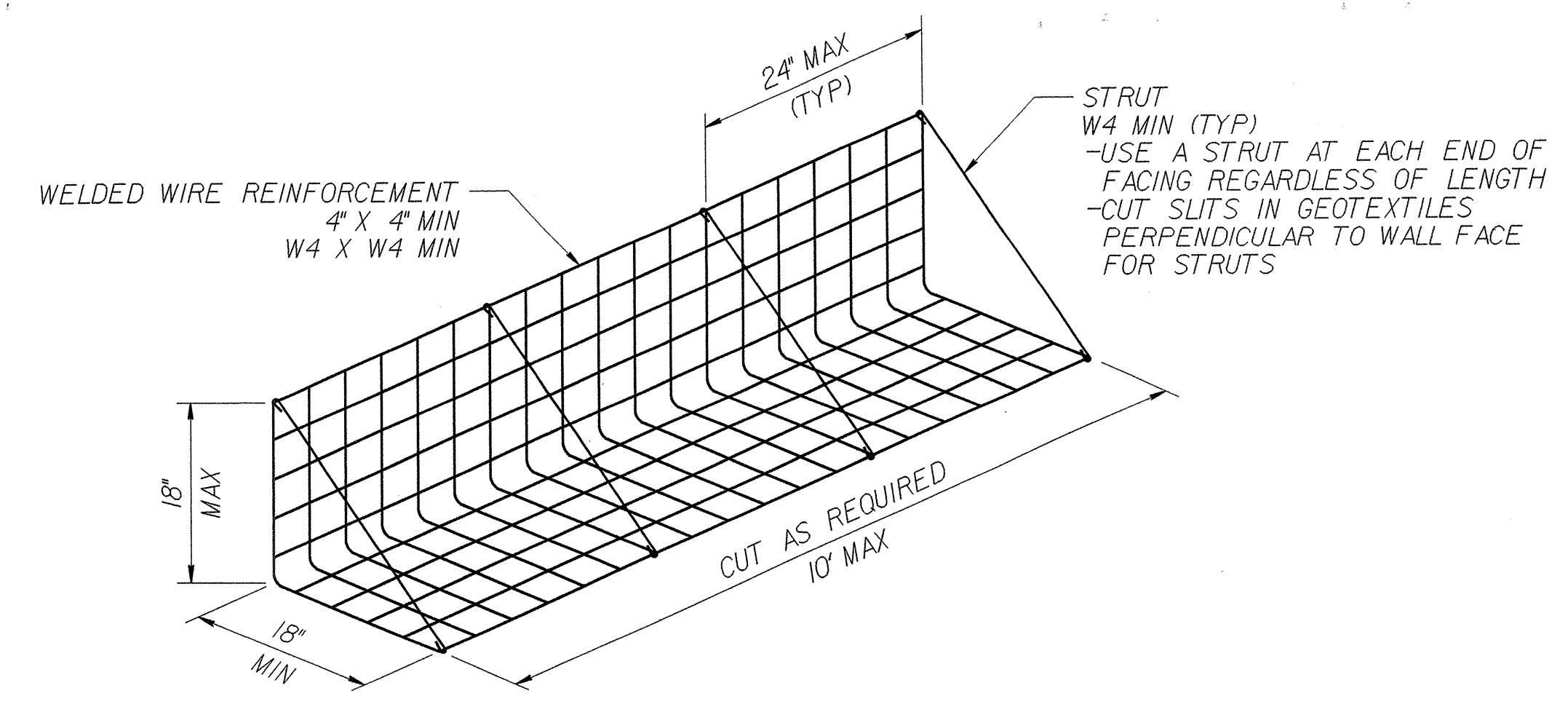
STANDARD TEMPORARY SHORING

DATE: 1-17-12

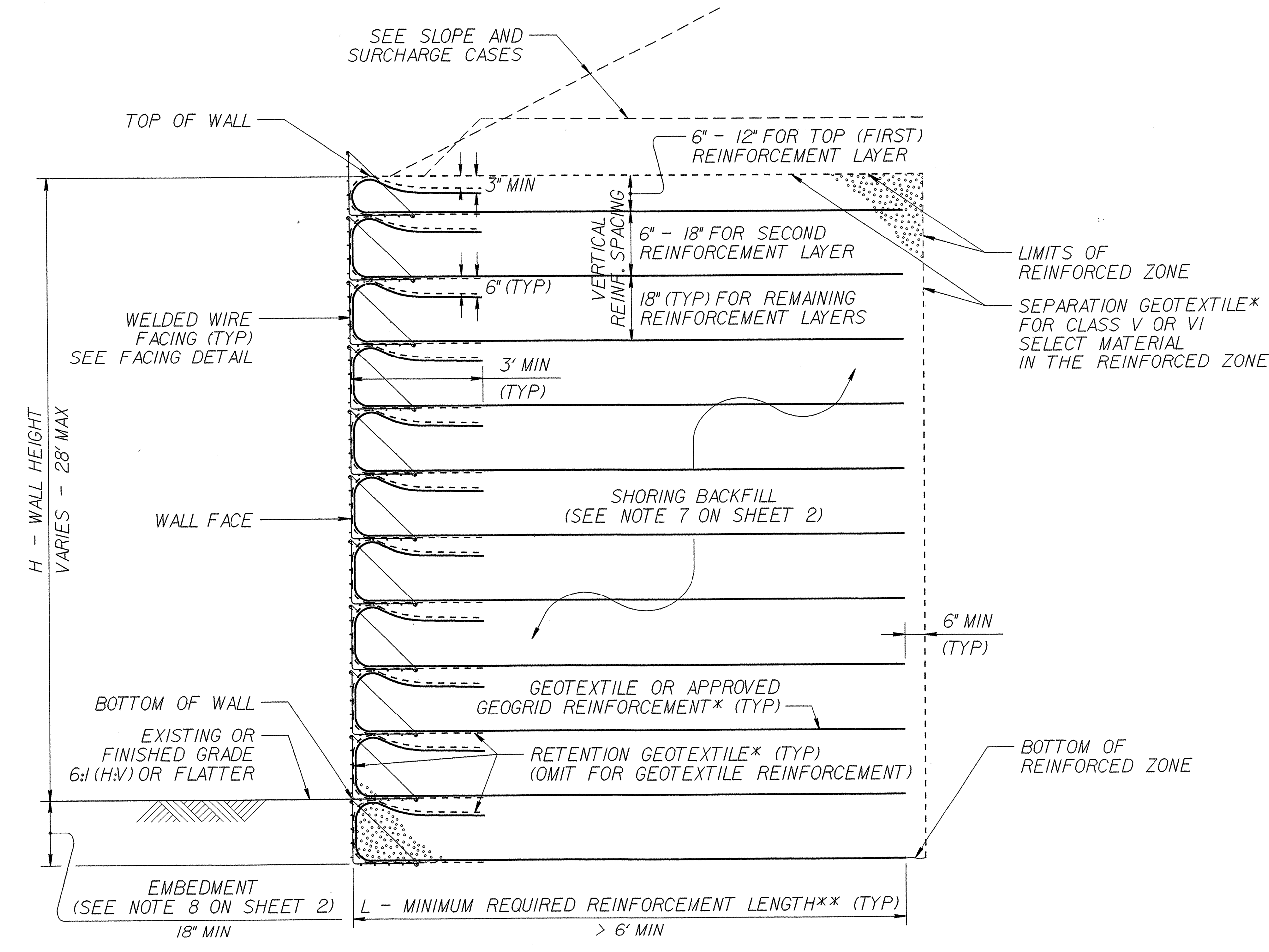


SURCHARGE CASE

SLOPE CASE

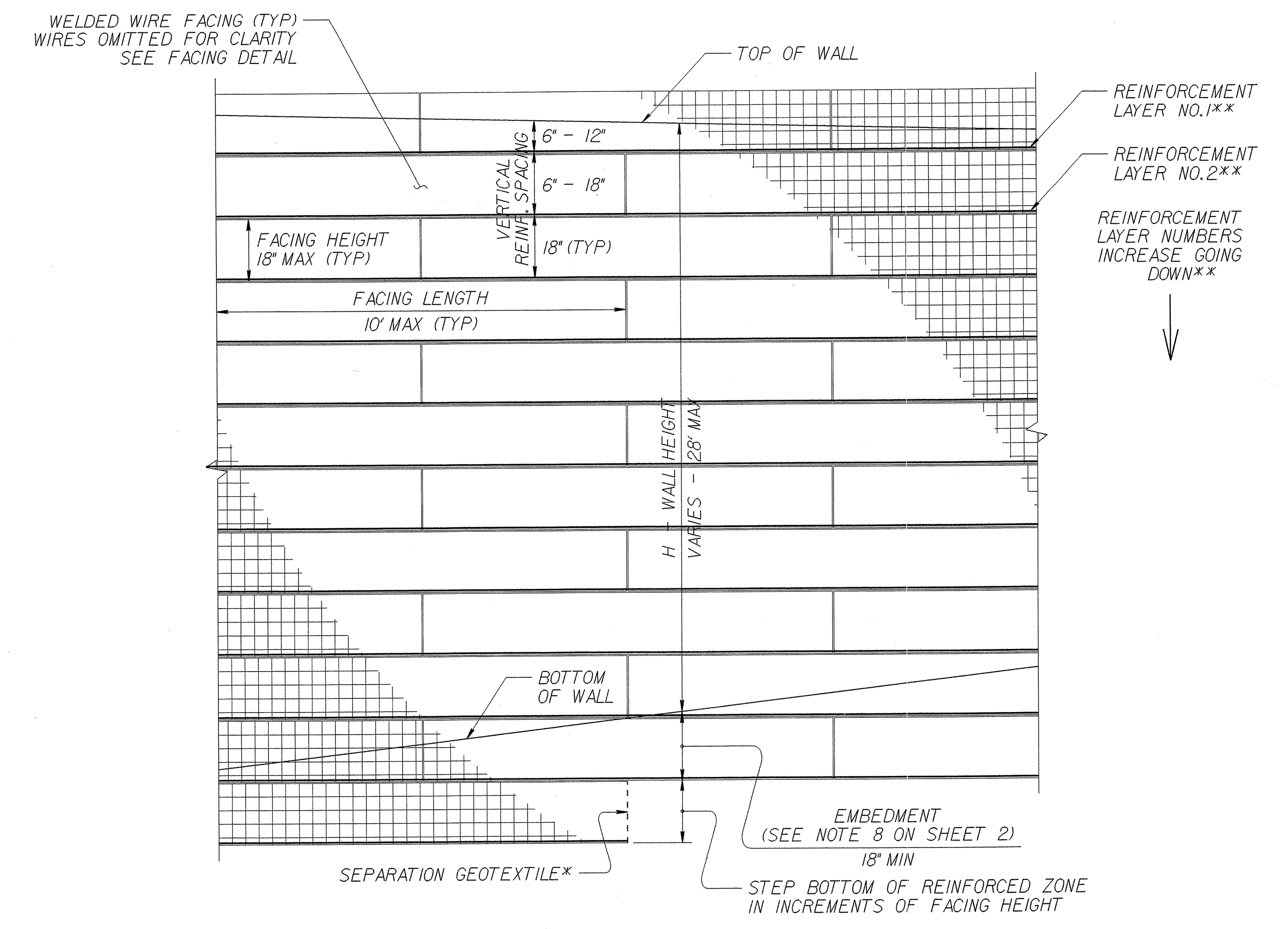


FACING DETAIL



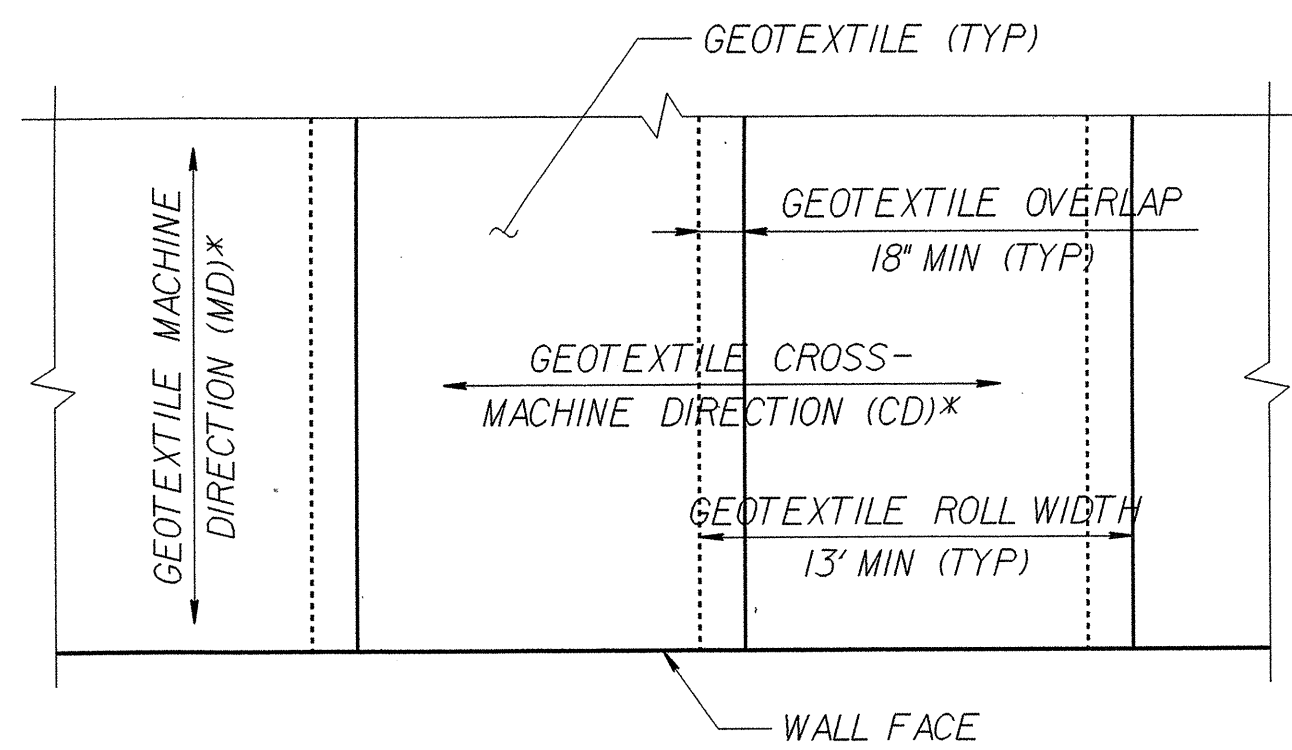
STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
 *SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
 **SEE REINFORCEMENT TABLES ON SHEET 3.

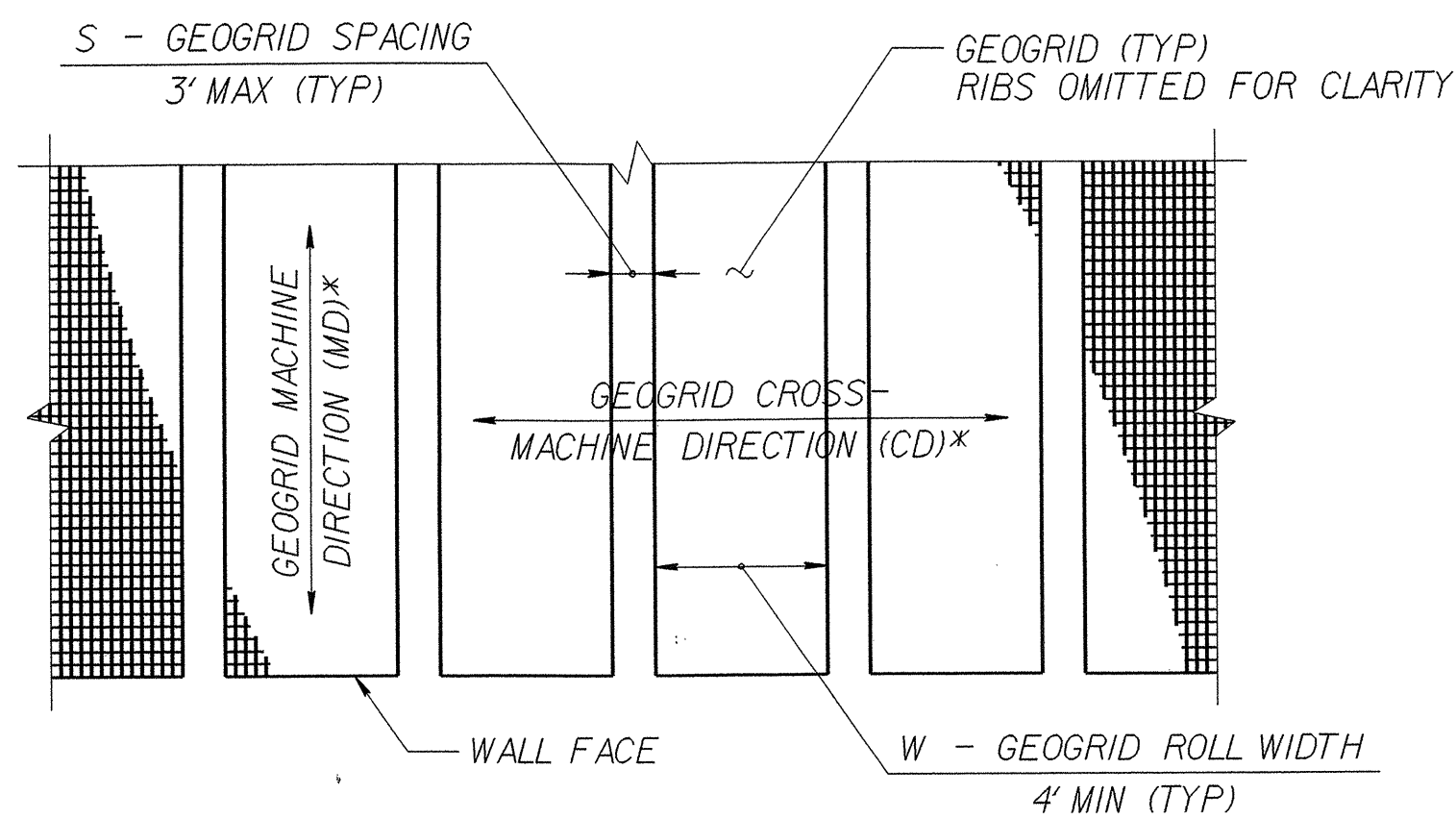


STANDARD TEMPORARY WALL - PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
 **SEE REINFORCEMENT TABLES ON SHEET 3.



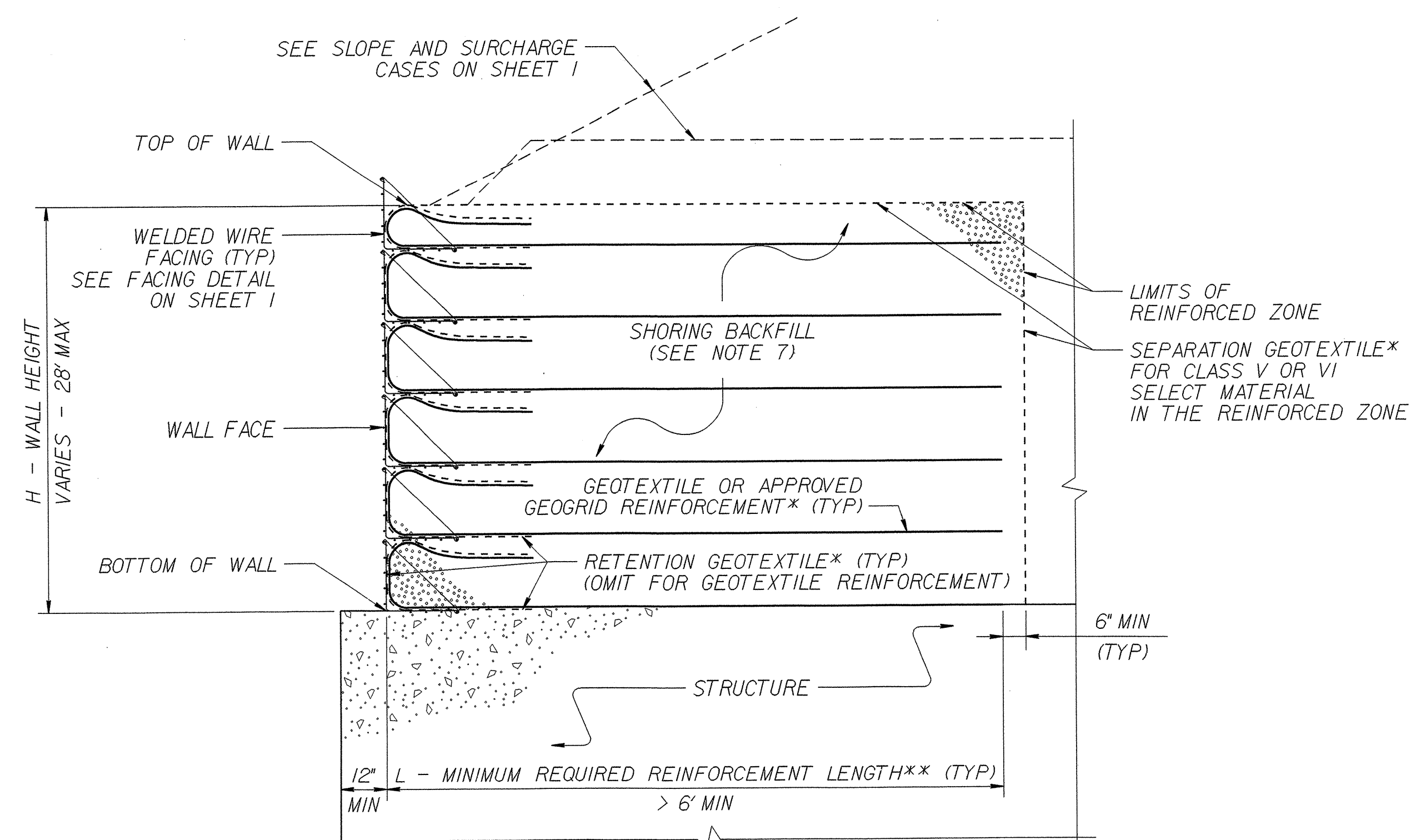
GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR
GEOTEXTILE REINFORCEMENT)



GEOGRID PLACEMENT
(80% COVERAGE MIN FOR
GEOGRID REINFORCEMENT -
 $\frac{W}{W+S} \times 100 \geq 80\%$,
SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

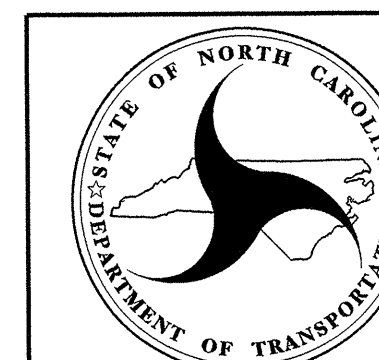
*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ LB/CF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ LB/SF
- DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
- DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
- USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
- DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
- EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
- DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
- GEOGRIDS ARE APPROVED FOR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) BASED ON MATERIAL TYPE. FOR DETAILS OF APPROVED GEOGRIDS AND SHORT-TERM DESIGN STRENGTHS, SEE www.ncdot.org/doh/operations/materials/soils/gep.html DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

- FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
- AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH THE FOLLOWING CONDITIONS OCCUR:
- W (REINFORCEMENT ROLL WIDTH) $\geq L$ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
- REINFORCEMENT STRENGTH IN CD \geq MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
- SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION.
- DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
- FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
- DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
- CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
- FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
- FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.




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STANDARD DRAWING NO. 1801.02

STANDARD
TEMPORARY WALL
Sheet 2 of 3

DATE: 1-17-12

GEOTECHNICAL ENGINEER ENGINEER



Scott A. Hadden 11/18/11
SIGNATURE DATE

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																									
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
SLOPE CASE	> 0	CLASS II, TYPE I, CLASS III, CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27	
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21	
		A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15	16	16	17	17	18	19	19	20	
		CLASS II, TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	19	
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	16	16	17	18	18	

L - MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)
(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

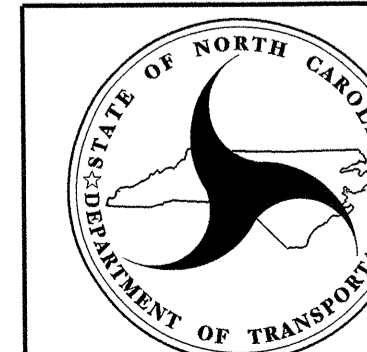
REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT SHORT-TERM DESIGN STRENGTH (LB/FT)
(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD
(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.



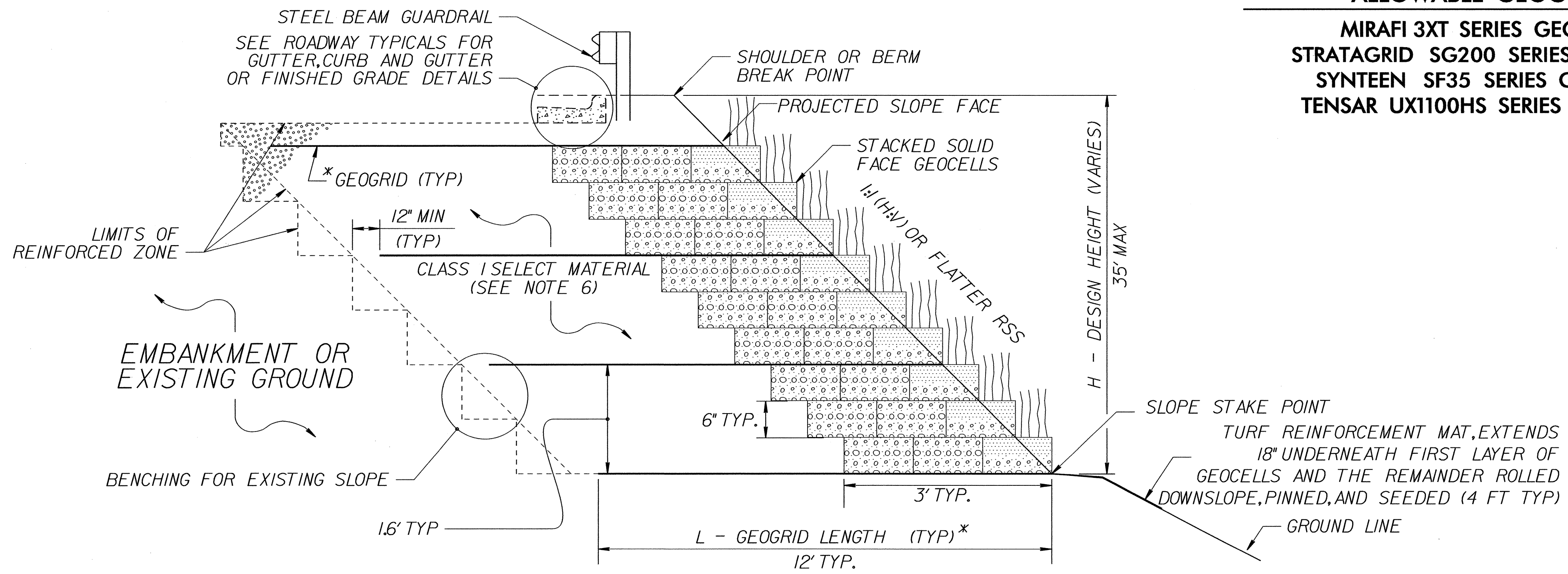
GEOTECHNICAL ENGINEERING UNIT
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

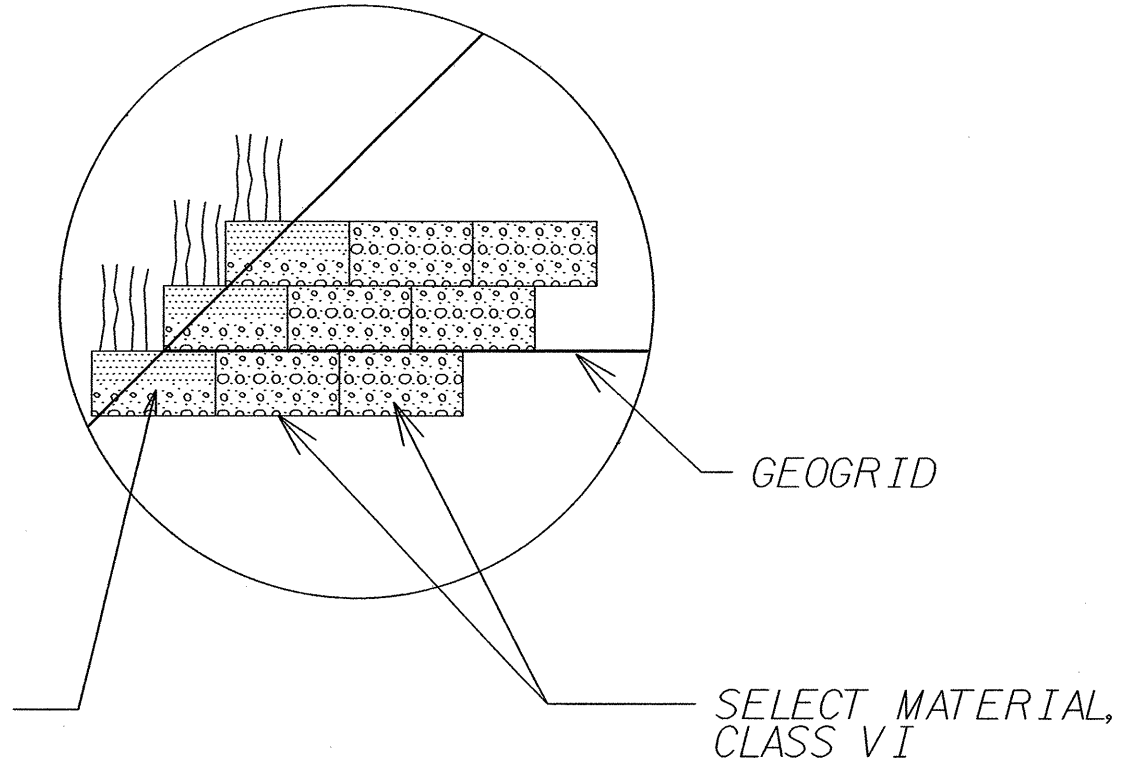
STANDARD TEMPORARY WALL
Sheet 3 of 3

DATE: 1-17-12

ALLOWABLE GEOGRIDS
MIRAFI 3XT SERIES GEOGRID.
STRATAGRID SG200 SERIES GEOGRID.
SYNTEEN SF35 SERIES GEOGRID.
TENSAR UX1100HS SERIES GEOGRID.



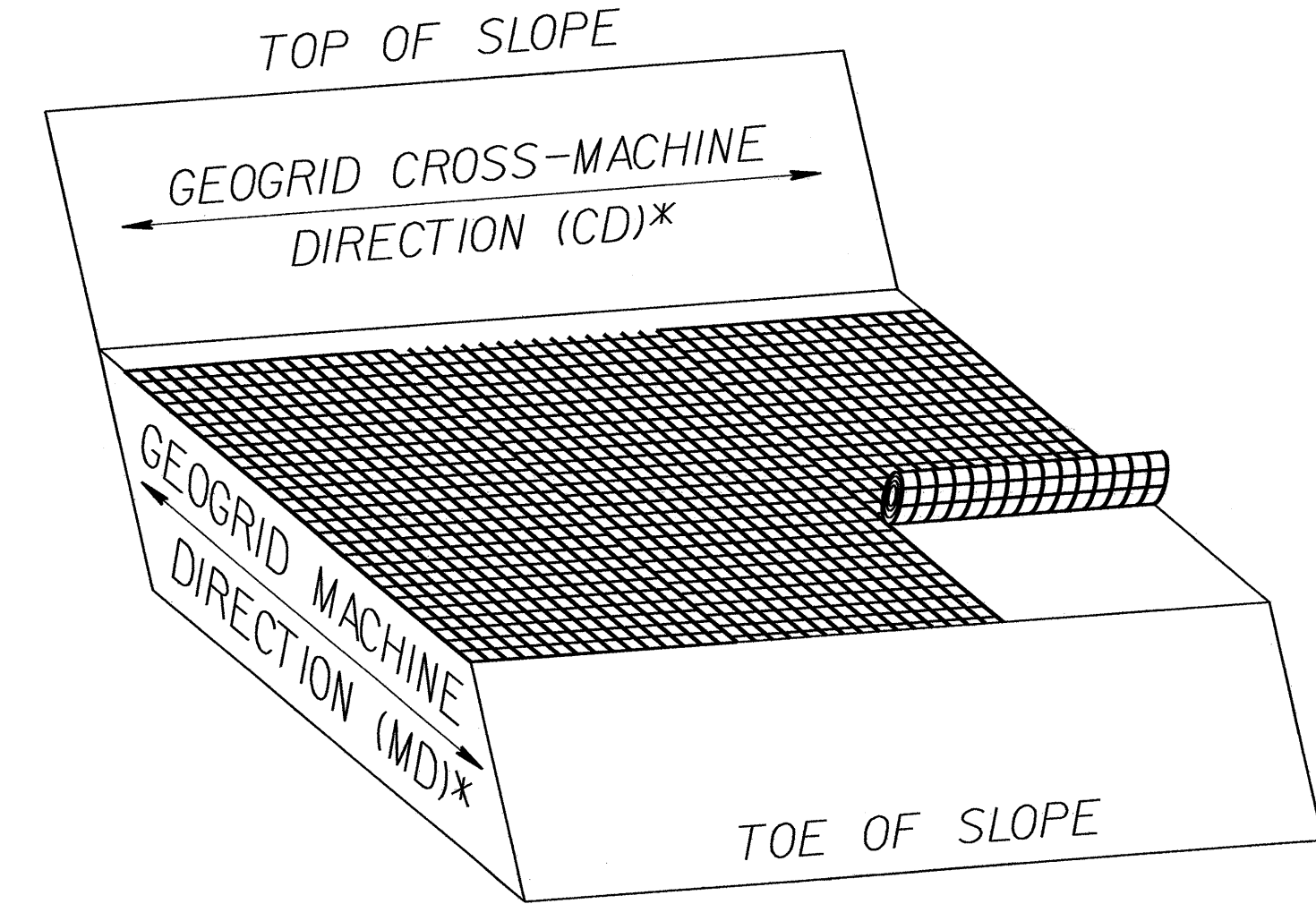
DETAIL A



FILL OUTER CELL WITH SELECT MATERIAL, CLASS I AND SEED AS DIRECTED

REINFORCED SOIL SLOPE WITH GEOCELL FACING WITH SELECT MATERIAL THAT MEETS ARTICLE 560-2 OF THE STANDARD SPECIFICATIONS

***GEOGRID LAYOUT DETAILS.**



GEOGRID LAYOUT DETAILS

***SEE NOTES 8 AND 9.**

NOTES:

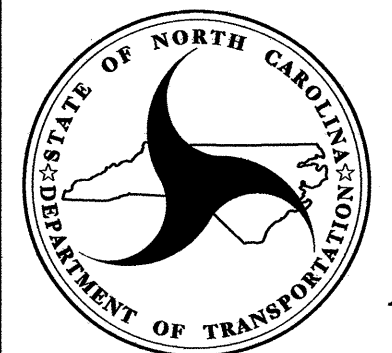
- FOR STEEL BEAM GUARDRAIL SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- SEE ROADWAY PLANS FOR REINFORCED SOIL SLOPE WITH GEOCELL FACING (RSSGF) LOCATIONS.
- FOR REINFORCED SOIL SLOPES WITH GEOCELL FACING, SEE REINFORCED SOIL SLOPES WITH GEOCELL FACING SPECIAL PROVISION. FOR EROSION CONTROL MAT FACING, SEE PERMANENT SOIL REINFORCEMENT MAT PROVISION.
- STANDARD RSSGF ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
 UNIT WEIGHT, $\gamma = 120$ PCF
 FRICTION ANGLE, $\phi = 30$ DEGREES
 COHESION, $c = 0$ PSF
- DO NOT USE RSSGF IF THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE EXISTING GROUND OR TOE OF SLOPE.
- DO NOT USE RSSGF WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW RSSGF.
- FOR 1:1 TO < 1.5:1 (H:V) RSSGF, USE CLASS I SELECT MATERIAL IN THE REINFORCED ZONE THAT MEETS ARTICLE 560-2 OF THE STANDARD SPECIFICATIONS EXCEPT FOR SELECT MATERIAL THAT MEETS AASHTO M 145 FOR SOIL CLASSIFICATIONS A-4 AND A-5. DO NOT USE A-4 OR A-5 SOIL OR CLASS II OR III SELECT MATERIAL FOR 1:1 TO < 1.5:1 (H:V) RSSGF.
- EXCEPT FOR TENSAR UX GEOGRIDS, DO NOT SPLICE OR OVERLAP GEOGRIDS IN THE MACHINE DIRECTION (MD) SO THAT SPLICES OR OVERLAPS ARE PARALLEL TO THE TOE OF SLOPE. TENSAR UX GEOGRIDS MAY BE SPLICED ONCE PER GEOGRID LENGTH IN ACCORDANCE WITH TENSAR'S RECOMMENDED CONNECTION DETAIL. A LENGTH OF AT LEAST 4' IS REQUIRED FOR EACH TENSAR UX GEOGRID PIECE.
- EXCEPT FOR TENSAR UX GEOGRIDS, PLACE GEOGRIDS SO THAT GEOGRIDS ARE ADJACENT TO EACH OTHER IN THE CROSS-MACHINE DIRECTION (CD). TENSAR UX GEOGRIDS MAY BE PLACED WITH A MAXIMUM SPACING BETWEEN GEOGRIDS OF 1.64' IN THE CD. STAGGER TENSAR UX GEOGRIDS SO THAT GEOGRIDS ARE CENTERED OVER GAPS IN THE GEOGRID LAYER BELOW.
- DO NOT PLACE FIRST GEOGRID LAYER UNTIL EXCAVATION DIMENSIONS AND IN-SITU MATERIAL ARE APPROVED.
- SEED SLOPE FACE ACCORDING TO PLANS/CONTRACT OR AS DIRECTED BY THE ENGINEER.

PREPARED BY: EJS	DATE: 9/11
REVIEWED BY: SCC	DATE: 11/11

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

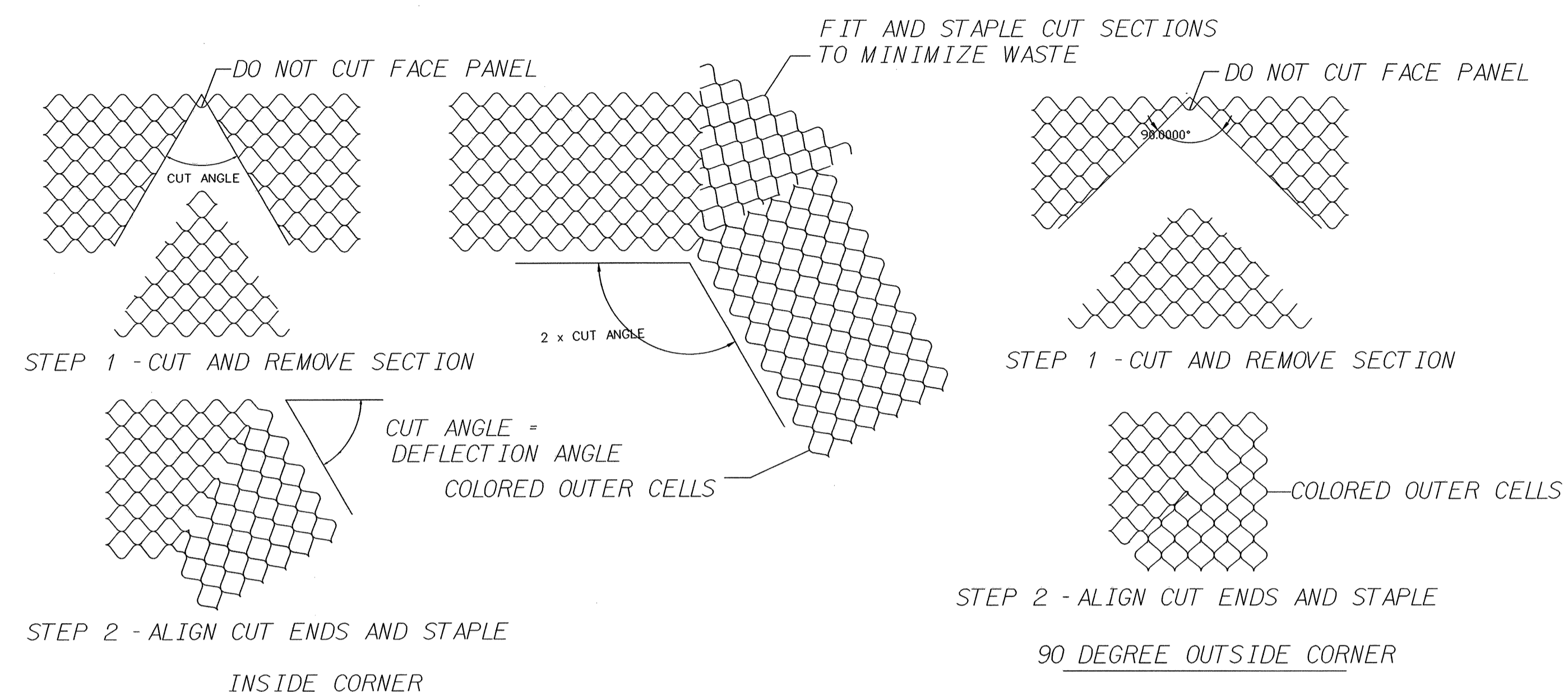


REINFORCED SOIL SLOPE WITH GEOCELL FACING

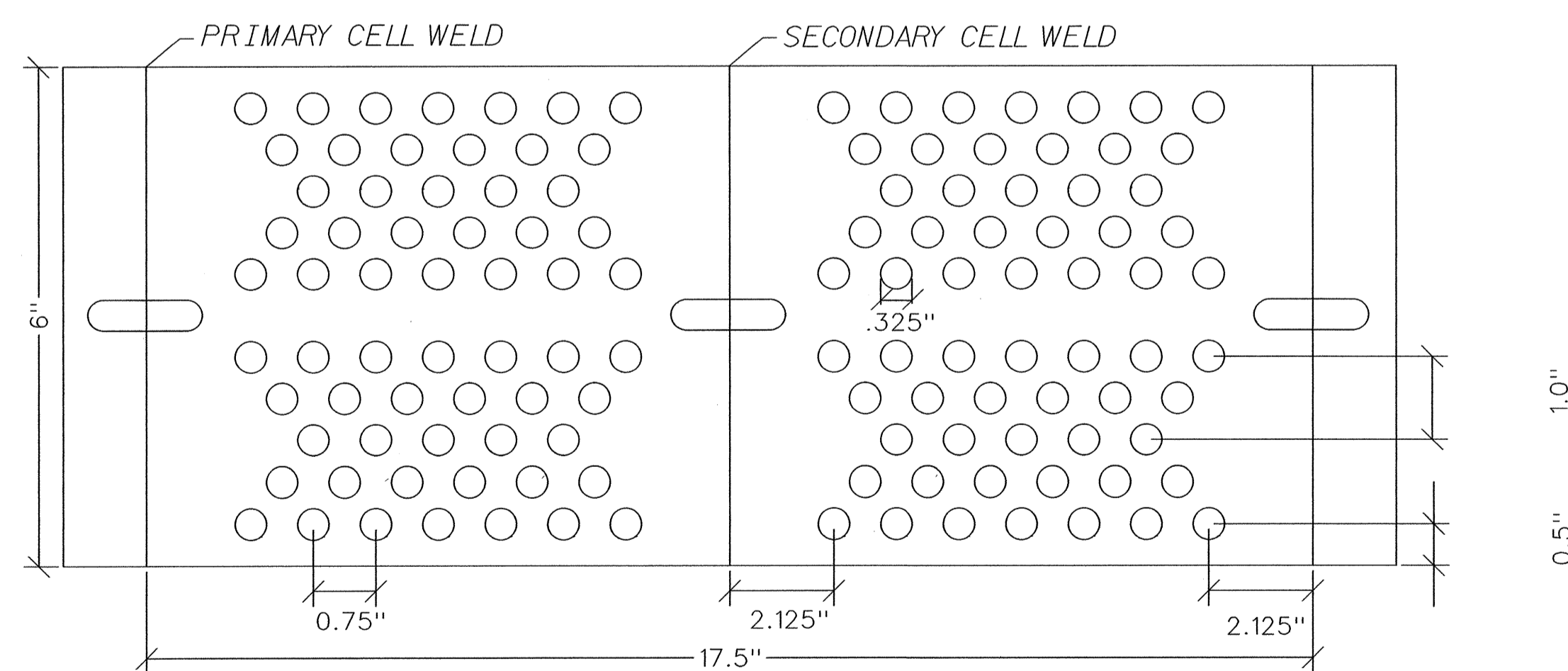
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		



Signature: S. Clark Date: 1/26/11



GEOCELL WALL BEND CUT DETAILS
COLORED FRONT FACE



TYPICAL PERFORATION PATTERN -
6" COLLAPSED GEOCELL SECTIONS

GENERAL CONSTRUCTION SEQUENCE:

EXCAVATE AND SHAPE FOUNDATION SOILS TO THE GRADES, ELEVATIONS AND DIMENSIONS SHOWN ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE NO. 57 STONE FOR THE BASE GEOCELL LAYER UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED BY THE ENGINEER.

PLACE SELECT MATERIAL, CLASS IV LEVELING PAD MATERIALS TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS AND COMPACT TO A MINIMUM 95% STANDARD PROCTOR DRY DENSITY (SPDD).

PLACE TURF REINFORCEMENT MAT AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

EXPAND GEOCELL FOOTING SECTIONS INTO POSITION ON THE PREPARED SUBGRADE (OR BASE) AND TEMPORARILY ANCHOR AT THE CORNERS AND ALONG THE EDGES.

OVERFILL GEOCELL SECTIONS AND COMPACT THE INFILL MATERIAL TO A MINIMUM 95% SPDD, IN ACCORDANCE WITH SUBARTICLE 235-4(C) OF THE STANDARD SPECIFICATIONS. REMOVE EXCESS FILL TO LEVEL WITH THE TOP OF THE CELLS. USE WALK-BEHIND COMPACTION EQUIPMENT TO COMPACT MATERIAL WITHIN THE GEOCELL SECTIONS AND WITHIN 3 FT OF THE BACK OF THE GEOCELL SECTIONS.

PLACE TYPE II, ENGINEERING FABRIC OVER THE BASE OF THE EXCAVATION AND EXTEND UP THE FACE OF THE EXCAVATION AND PIN INTO POSITION. ALLOW 12 INCH OVERLAPS AT ADJOINING SECTIONS OF GEOTEXTILE.

EXPAND GEOWEB SECTIONS, DIMENSIONED ACCORDING TO THE CONSTRUCTION DRAWINGS INTO POSITION USING STRETCHER FRAMES, TEMPORARY STAKES OR OTHER SUITABLE METHOD TO TEMPORARILY HOLD IN PLACE. INTERLEAF OR OVERLAP EDGES OF ADJACENT SECTIONS IN EACH LAYER, ACCORDING TO WHICH SIDE WALL PROFILES ABUT. ENSURE THAT ALL ADJOINING SECTIONS ARE FLUSH AT THE JOINTS AND ADJOINING CELLS ARE FULLY STAPLED.

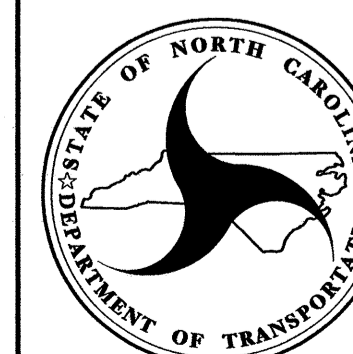
PLACE SUBSEQUENT LAYERS WITH THE SPECIFIED SET BACK AND ALIGN GEOCELLS SECTION TO AVOID OVERHANGING OF UPPER SECTIONS OVER LOWER SECTIONS.

WHERE DIFFERENT INFILL MATERIALS ARE SPECIFIED FOR THE OUTER CELLS (EG. TOPSOIL/VEGETATED), THE FOLLOWING PROCEDURES MAY BE USED.

- A) COVER OUTER CELLS WITH REMOVABLE BOARD WHILE FILLING BACK CELLS. PLACE SPECIAL INFILL IN OUTER CELLS BEFORE ADVANCING TO THE NEXT LAYER.
- B) LEAVE OUTER CELLS OPEN BUT USE EXTRA CARE TO FILL BACK CELLS AND AVOID EXCESSIVE SPILLAGE INTO OUTER CELLS.

WHEN THE SLOPE CONSTRUCTION IS ACCEPTED, SEED FACE OF SLOPE FACE IN ACCORDANCE WITH THE CONTRACT, SECTION 1660 OF THE STANDARD SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

GEOTECHNICAL ENGINEERING UNIT



- EASTERN REGIONAL OFFICE
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- CONTRACT OFFICE

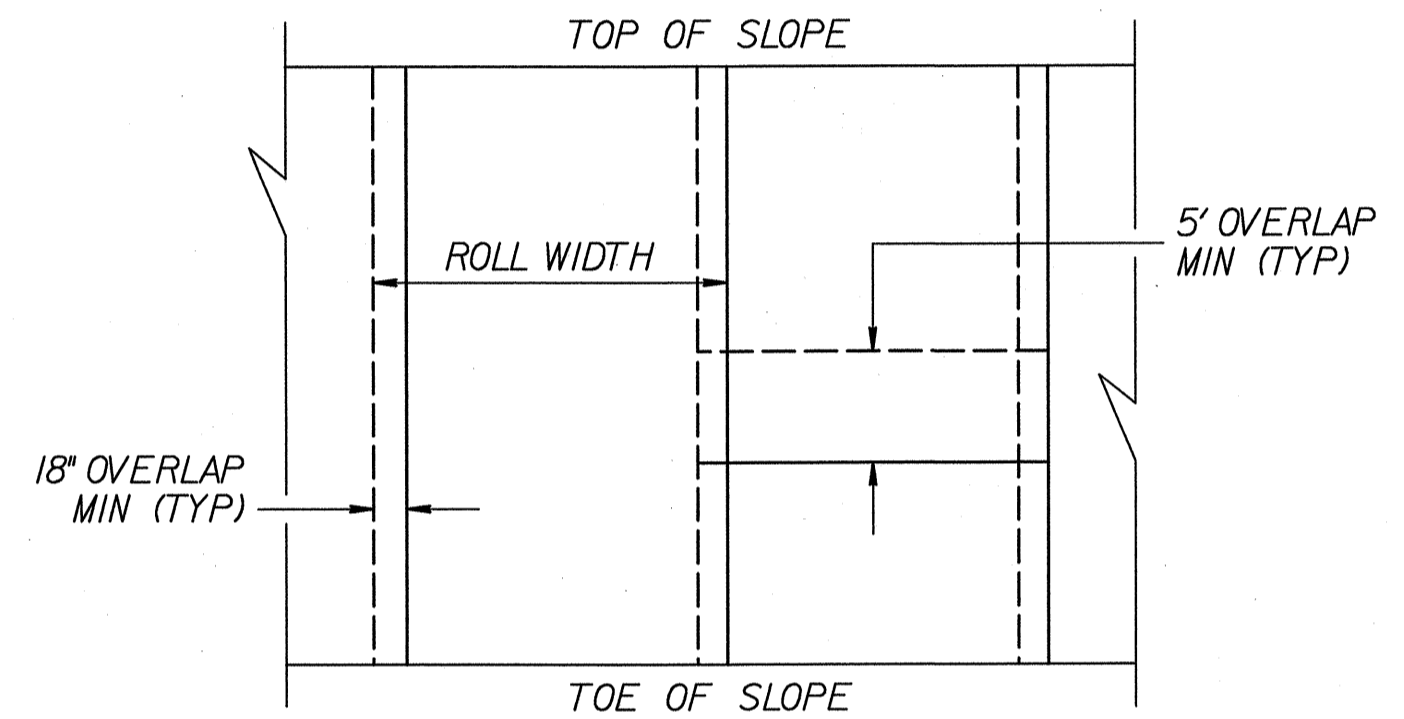
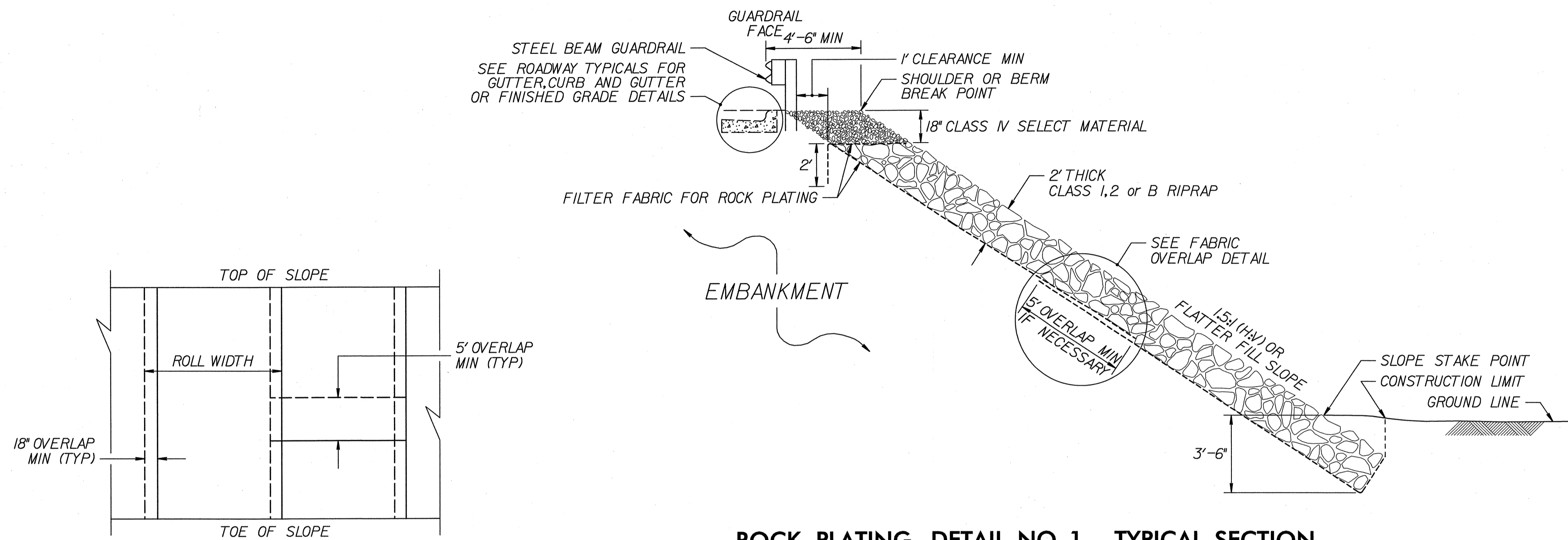
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

REINFORCED SOIL SLOPE
WITH GEOCELL FACING

REVISIONS

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

PREPARED BY: EJS DATE: 9/11
REVIEWED BY: SCC DATE: 11/11



FABRIC OVERLAP DETAIL
(PLAN VIEW)

ROCK PLATING DETAIL NO. 1 – TYPICAL SECTION
(MIRROR FOR LT SIDE)

USE ROCK PLATING DETAIL NO. 1
AT THE FOLLOWING LOCATIONS:

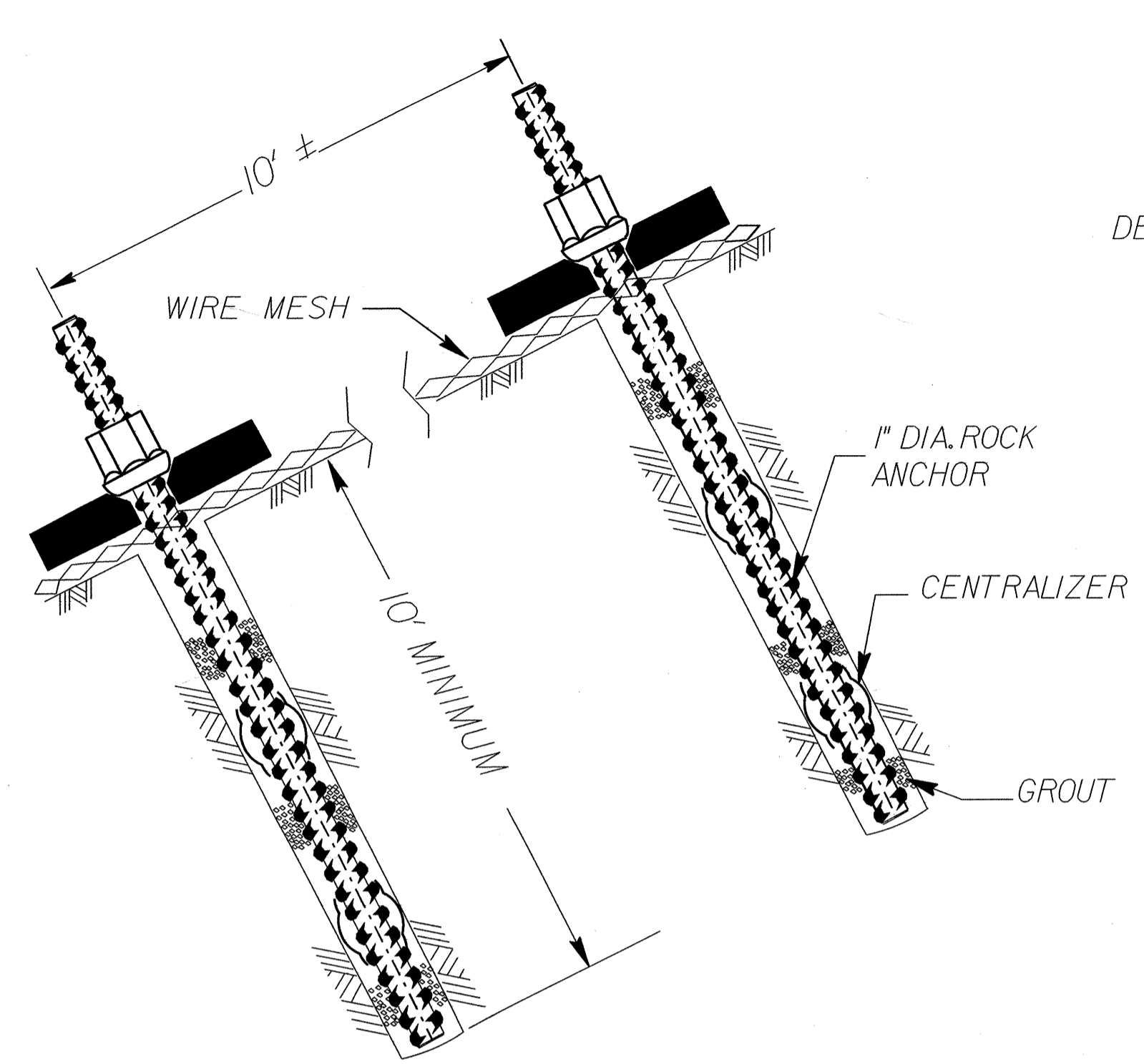
- STA 14+00 LT ± TO STA 16+76 LT±
- STA 19+01 LT ± TO STA 19+88 LT±
- STA 16+71 RT ± TO STA 16+86 RT±
- STA 19+16 RT ± TO STA 19+73 RT±

EXTEND ROCK PLATING LIMITS TO 2:1 SLOPES.

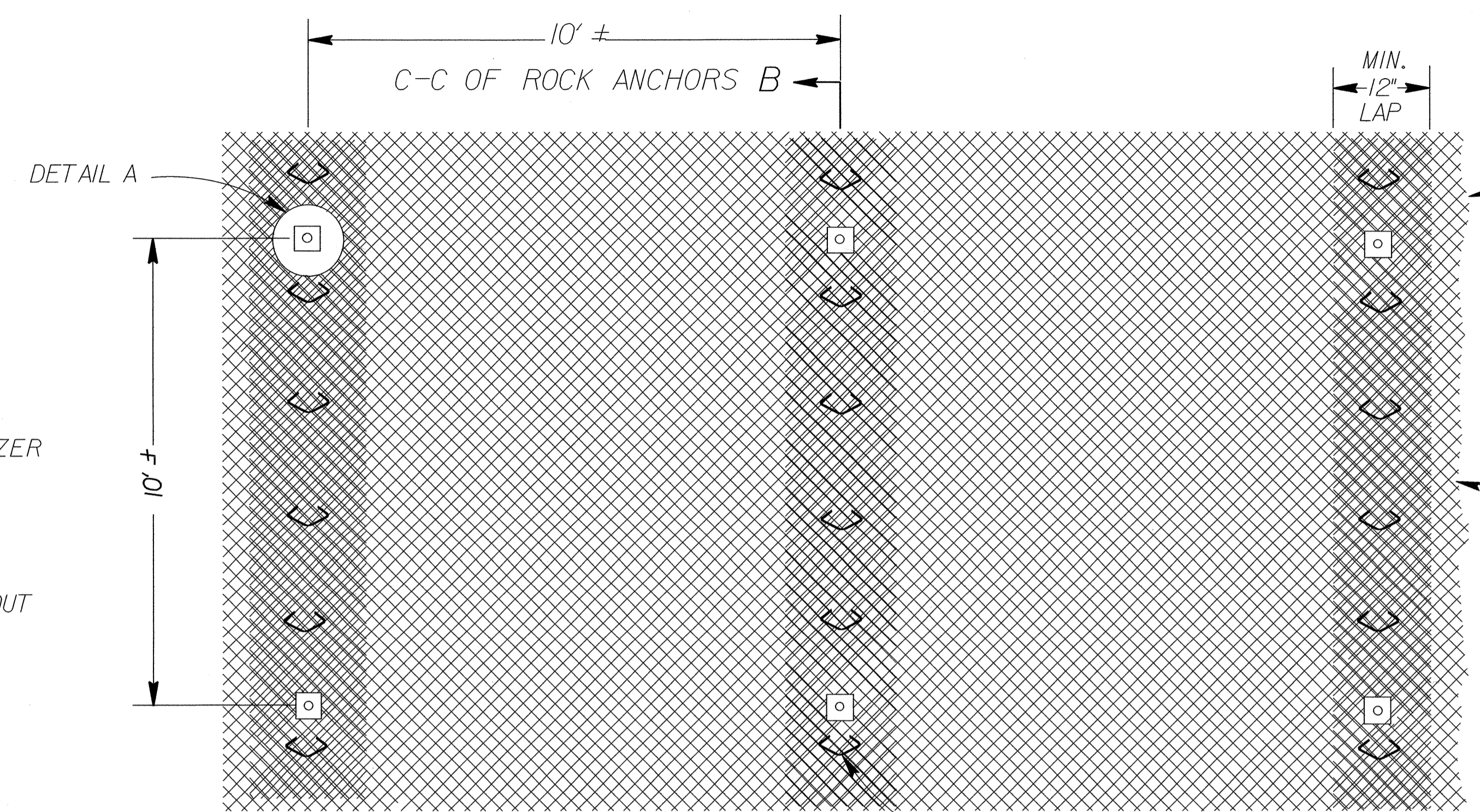
ROCK PLATING DETAIL AND LOCATION WAS RECOMMENDED BY THE GEOTECHNICAL ENGINEERING UNIT. THE RECOMMENDATIONS WERE SUBMITTED & SEALED BY A PROFESSIONAL ENGINEER, SHANE C. CLARK, LICENSE #29869.

FOR ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.

DETAIL OF ROCK PLATING

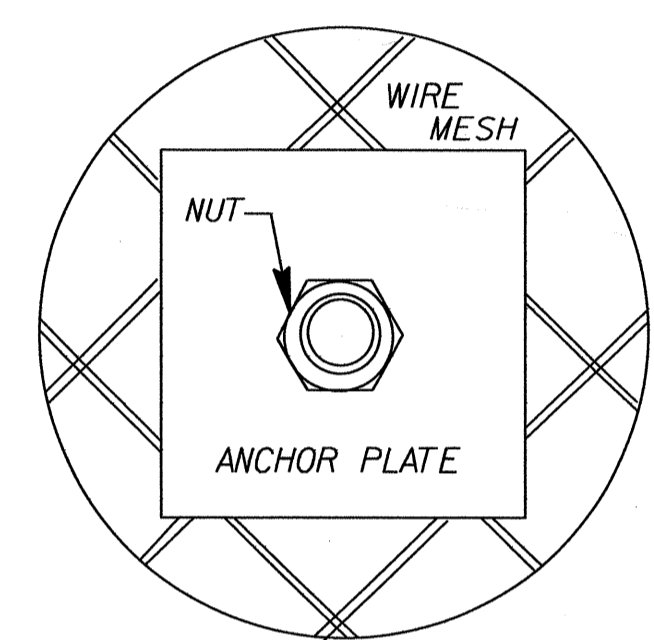


SECTION B-B
N.T.S.



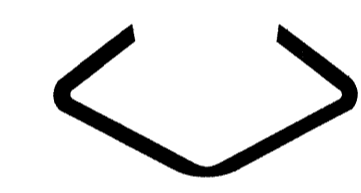
DETAIL OF WIRE MESH
N.T.S.

GALVANIZED HEXAGONAL DOUBLE TWISTED STEEL WIRE MESH
MAXIMUM 3 1/4" X 4 1/2" MESH OPENING
MINIMUM DIA. 0.012 INCHES WIRE,
OR APPROVED ALTERNATE



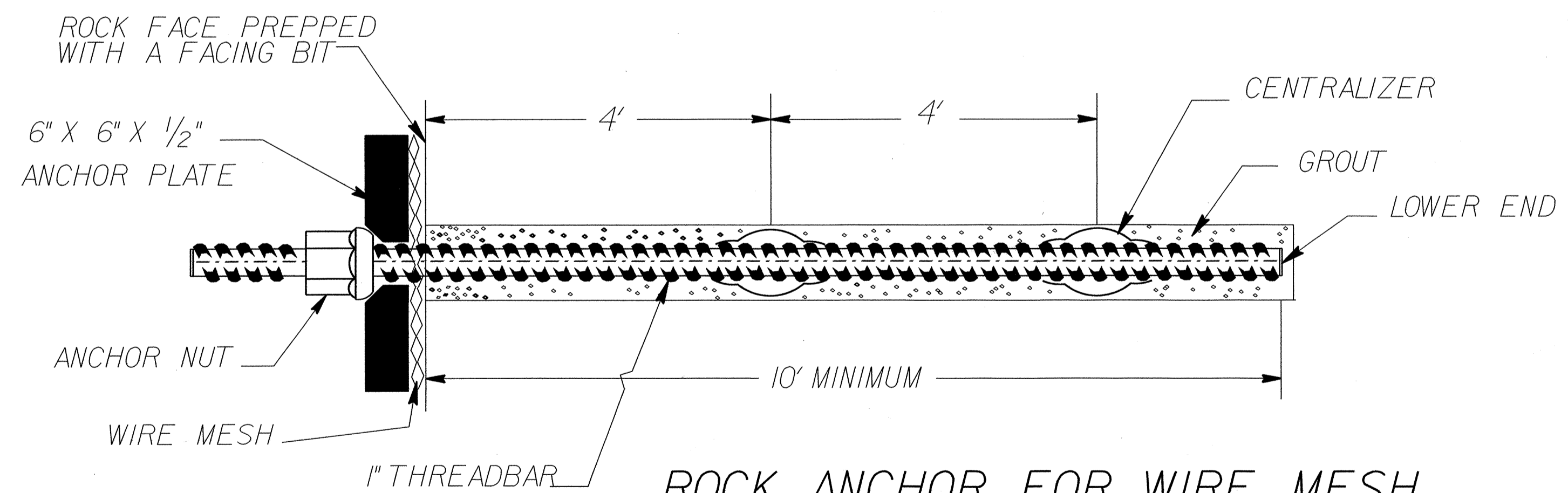
DETAIL A
ROCK ANCHOR ASSEMBLY

STEEL WIRE HOG RING



NOTES:

- 1) WIRE MESH SHALL BE INSTALLED ON ROCK SLOPES AT LOCATIONS AS DIRECTED BY THE ENGINEER, IF REQUIRED.
- 2) CONTRACTOR CAN ORDER MATERIALS AFTER OBTAINING APPROVAL FROM THE ENGINEER




ROCK ANCHOR FOR WIRE MESH
N.T.S.

QUANTITY	
WIRE MESH	225 ± SY.
ROCK BOLT FOR WIRE MESH	200 ± LF.

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH



WIRE MESH AND ROCK ANCHORS FOR ROCK MESH DETAILS

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201166

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0000930000-E	SP	200	LF	GENERIC MISCELLANEOUS ITEM ROCK ANCHORS FOR WIRE MESH
0000960000-E	SP	230	SY	GENERIC MISCELLANEOUS ITEM REINFORCED SOIL SLOPES WITH GEOCELL FACING
0000960000-E	SP	225	SY	GENERIC MISCELLANEOUS ITEM WIRE MESH
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (17+96-L-)
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0057000000-E	226	100	CY	UNDERCUT EXCAVATION
0063000000-N	SP	Lump Sum		GRADING
0098000000-E	SP	650	SY	PRE-SPLITTING OF ROCK
0106000000-E	230	6,000	CY	BORROW EXCAVATION
0134000000-E	240	20	CY	DRAINAGE DITCH EXCAVATION
0195000000-E	265	250	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	350	SY	GEOTEXTILE FOR SOIL STABILIZATION
0199000000-E	SP	2,080	SF	TEMPORARY SHORING
0223000000-E	275	1,535	SY	ROCK PLATING
0318000000-E	300	90	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
0320000000-E	300	280	SY	FOUNDATION CONDITIONING GEOTEXTILE
0335200000-E	305	692	LF	15" DRAINAGE PIPE
0335300000-E	305	58	LF	18" DRAINAGE PIPE
0335500000-E	305	88	LF	30" DRAINAGE PIPE
0335850000-E	305	2	EA	*** DRAINAGE PIPE ELBOWS (15")
0453000000-E	310	1	EA	*** PIPE END SECTION (18")
0995000000-E	340	90	LF	PIPE REMOVAL

SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description
1099700000-E	505	100	TON	CLASS IV SUBGRADE STABILIZATION
1121000000-E	520	43	TON	AGGREGATE BASE COURSE
1220000000-E	545	150	TON	INCIDENTAL STONE BASE
1275000000-E	600	41	GAL	PRIME COAT
1330000000-E	607	225	SY	INCIDENTAL MILLING
1489000000-E	610	1,590	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	800	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE 119.0B
1519000000-E	610	1,040	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1575000000-E	620	175	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	500	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	815	44.8	CY	SUBDRAIN EXCAVATION
2033000000-E	815	33.6	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	200	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	815	1	EA	SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE
2264000000-E	840	0.13	CY	PIPE PLUGS
2275000000-E	SP	2.29	CY	FLOWABLE FILL
2286000000-N	840	15	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	12.5	LF	MASONRY DRAINAGE STRUCTURES
2366000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	8	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	1	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	2	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2396000000-N	840	2	EA	FRAME WITH COVER, STD 840.54

ItemNumber	Sec #	Quantity	Unit	Description
2549000000-E	846	440	LF	2'-6" CONCRETE CURB & GUTTER
2556000000-E	846	140	LF	SHOULDER BERM GUTTER
2577000000-E	846	650	LF	CONCRETE EXPRESSWAY GUTTER
2703000000-E	854	210	LF	CONCRETE BARRIER, TYPE ***** (I)
3030000000-E	862	700	LF	STEEL BM GUARDRAIL
3045000000-E	862	75	LF	STEEL BM GUARDRAIL, SHOP CURVED
3150000000-N	862	20	EA	ADDITIONAL GUARDRAIL POSTS
3195000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3210000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	3	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3317000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3360000000-E	863	377	LF	REMOVE EXISTING GUARDRAIL
3382000000-E	862	87.5	LF	TEMPORARY STEEL BM GUARDRAIL (SHOP CURVED)
3387000000-N	862	1	EA	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ***** (AT-1)
3387000000-N	862	1	EA	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ***** (B-77)
3435000000-N	SP	22	EA	GENERIC GUARDRAIL ITEM EXTRA LENGTH GUARDRAIL POST 8" STEEL
3500000000-E	866	160	LF	WOVEN WIRE FENCE, *** FABRIC (48")
3506000000-E	866	10	EA	4" TIMBER FENCE POSTS, ***** LONG (8)
3515000000-E	866	4	EA	5" TIMBER FENCE POSTS, 8'-0" LONG
3628000000-E	876	1,500	TON	RIP RAP, CLASS I
3649000000-E	876	15	TON	RIP RAP, CLASS B

ItemNumber	Sec #	Quantity	Unit	Description
3656000000-E	876	1,600	SY	GEOTEXTILE FOR DRAINAGE
4400000000-E	1110	610	SF	WORK ZONE SIGNS (STATIONARY)
4410000000-E	1110	80	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	135	EA	DRUMS
4435000000-N	1135	25	EA	CONES
4445000000-E	1145	264	LF	BARRICADES (TYPE III)
4455000000-N	1150	1,000	DAY	FLAGGER
4465000000-N	1160	8	EA	TEMPORARY CRASH CUSHIONS
4485000000-E	1170	580	LF	PORTABLE CONCRETE BARRIER
4490000000-E	1170	660	LF	PORTABLE CONCRETE BARRIER (ANCHORED)
4770000000-E	1205	1,840	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)
4810000000-E	1205	25,896	LF	PAINT PAVEMENT MARKING LINES (4")
4835000000-E	1205	186	LF	PAINT PAVEMENT MARKING LINES (24")
4850000000-E	1205	920	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
6000000000-E	1605	2,500	LF	TEMPORARY SILT FENCE
6006000000-E	1610	430	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	320	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	570	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	3	ACR	TEMPORARY MULCHING
6018000000-E	1620	150	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1.75	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	300	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	300	LF	SAFETY FENCE
6030000000-E	1630	560	CY	SILT EXCAVATION
6036000000-E	1631	11,000	SY	MATting FOR EROSION CONTROL

ItemNumber	Sec #	Quantity	Unit	Description
6037000000-E	SP	20	SY	COIR FIBER MAT
6038000000-E	SP	50	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	825	LF	1/4" HARDWARE CLOTH
6070000000-N	1639	12	EA	SPECIAL STILLING BASINS
6071010000-E	SP	425	LF	WATTLE
6071020000-E	SP	150	LB	POLYACRYLAMIDE (PAM)
6071030000-E	1640	200	LF	COIR FIBER BAFFLE
6071050000-E	SP	2	EA	*** SKIMMER (1-1/2")
6084000000-E	1660	4.1	ACR	SEEDING & MULCHING
6087000000-E	1660	3	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	125	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	3.25	TON	FERTILIZER TOPDRESSING
6114500000-N	1667	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.2	ACR	REFORESTATION

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK
 IN CUBIC YARDS

CHAIN	FROM STATION	TO STATION	SIDE	UNCL. EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L-	11+50.00	17+06.00	RT & LT	2,541		3,579	1,038	
		BEGIN BRIDGE						
-Y-	10+18.21	15+50.00	RT & LT	111		1014	903	
SUBTOTAL SUMMARY NO. 1				2,652		4,593	1,941	
-L-	18+86.00	24+89.00	RT & LT	156		3,358	3,202	
		END BRIDGE						
SUBTOTAL SUMMARY NO. 2				156		3,358	3,202	
SUBTOTAL SUMMARY 1-2				2,808		7,951	5,143	
ESTIMATE LOSS DUE TO CLEARING AND GRUBBING				-555			555	
PROJECT TOTAL				2,253		7,951	5,698	
ESTIMATE 5% FOR TOPSOIL ON BORROW PITS							285	
GRAND TOTAL				2,253		7,951	5,983	
SAY				2,300			6,000	

ESTIMATED DDE = 20 CY
 ESTIMATED UNDERCUT CONTINGENCY = 100 CY

2'-6" CURB AND GUTTER

SURVEY LINE	STATION	STATION	LOCATION L/R/V/CL	LENGTH
-L-	16+64.81	20+13.11	RT	348
-Y-	10+34.11	10+91.30	LT	89
TOTAL:				437
SAY:				440

EXPRESSWAY GUTTER

SURVEY LINE	STATION	STATION	LOCATION L/R/V/CL	LENGTH
-L-	12+70.00	14+69.98	RT	202
-Y-	15+86.92	16+54.69	RT	446
TOTAL:				648
SAY:				650

SHOULDER BERM GUTTER

SURVEY LINE	STATION	STATION	LOCATION L/R/V/CL	LENGTH
-L-	11+82.00	13+15.00	LT	132
TOTAL:				132
SAY:				140

TEMP. GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	SHOP CURVED	ANCHORS		
					SHO CURVED	AT-1	B77
-L-	16+28.00	16+81.00	RT	87.5	1	1	

NOTE: Approximate quantities only. Unclassified Excavation, Fine Grading and Clearing and Grubbing will be paid for at the contract lump sum price for "Grading."

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS										REMARKS				
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	B77	GRAU 350	M-350	TYPE III	CAT-1	VI MOD	BIC	AT-1						
-L-	11+50.00	17+01.95	LT	556.25				BRIDGE	4.00	5.50-7.00																		22 EA. 8' STRONG POST GR STA. 11+80 TO 13+15	
-L-	11+98.88	12+70.13	RT	68.75				SLOPE	10.00	13.00	50		1																
-L-	14+70.03	15+02.71	RT	25.00				SLOPE	10.00	13.00																			
-L-	16+32.21	17+10.99	RT	43.75	81.25			BRIDGE	10.00	13.00																		201.4	
-L-	18+81.95	20+64.74	LT	181.25				BRIDGE	5.00	8.00	50		1															175.6	
-L-	18+90.96	19+84.70	RT	93.75				BRIDGE	11.00	14.00				1															
TOTAL:				968.75	81.25			ANCHOR DEDUCTIONS		TOTAL																			
								GRAU-350	3 @	50																			
								TYPE-III	4 @	18.75																			
								B-77	2 @	18.75																			
								CAT-1	1 @	6.25																			
								AT-1	1 @	6.25																			
TOTAL ANCHOR LENGTH:				268.75	6.25																								
TOTAL GUARDRAIL LENGTH:				700.00	75.00																								
SAY:				700.00	75.00																								
ADDITIONAL GUARDRAIL POST 20 EACH																													
								TOTAL DEDUCTIONS =		275.00																			

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
 G = GATING IMPACT ATTENUATOR TYPE 350
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

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CURVE DATA -L-

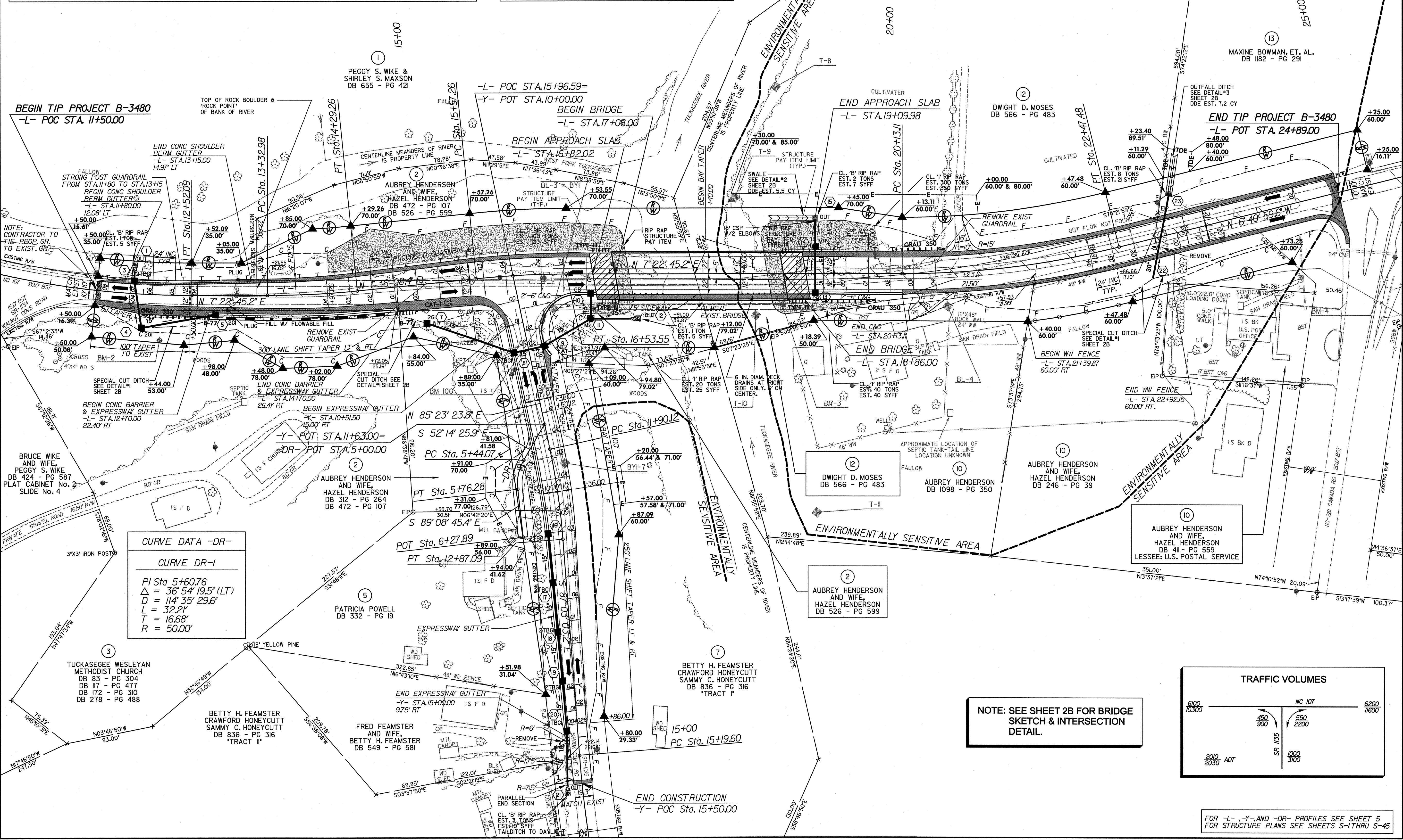
CURVE L-1	CURVE L-2	CURVE L-3	CURVE L-4
PI Sta 11+26.85	PI Sta 13+81.16	PI Sta 16+05.45	PI Sta 21+30.89
$\Delta = 15^{\circ} 45' 21.3" (LT)$	$\Delta = 5^{\circ} 46' 36.8" (LT)$	$\Delta = 5^{\circ} 46' 36.8" (RT)$	$\Delta = 14^{\circ} 03' 44.9" (LT)$
D = 6' 15" 00.0"	D = 6' 00" 00.0"	D = 6' 00" 00.0"	D = 6' 00" 00.0"
L = 252.09'	L = 96.28'	L = 234.37'	L = 234.37'
T = 126.85'	T = 48.18'	T = 48.18'	T = 117.78'
R = 916.73'	R = 954.93'	R = 954.93'	R = 954.93'
e = 0.04	e = 0.04	e = 0.04	e = 0.04
DS = 50 mph	DS = 50 mph	DS = 50 mph	DS = 50 mph
RUNOFF = 96'	RUNOFF = 96'	RUNOFF = 96'	RUNOFF = 96'

CURVE DATA -Y-

CURVE Y-1	CURVE Y-2
PI Sta 12+38.68	PI Sta 15+87.80
$\Delta = 7^{\circ} 33' 33.02" (RT)$	$\Delta = 6^{\circ} 30' 21.35" (LT)$
D = 7' 47" 43.2"	D = 4' 46" 28.73"
L = 96.97'	L = 136.28'
T = 48.56'	T = 68.20'
R = 735.00'	R = 1,200.00'
e = 0.04	e = 0.04
DS = 50 mph	DS = 50 mph
RUNOFF = 96'	RUNOFF = 96'

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 1000 West Morehead St., Ste. 200
 Charlotte, NC 28208
 NC License Number F-0991

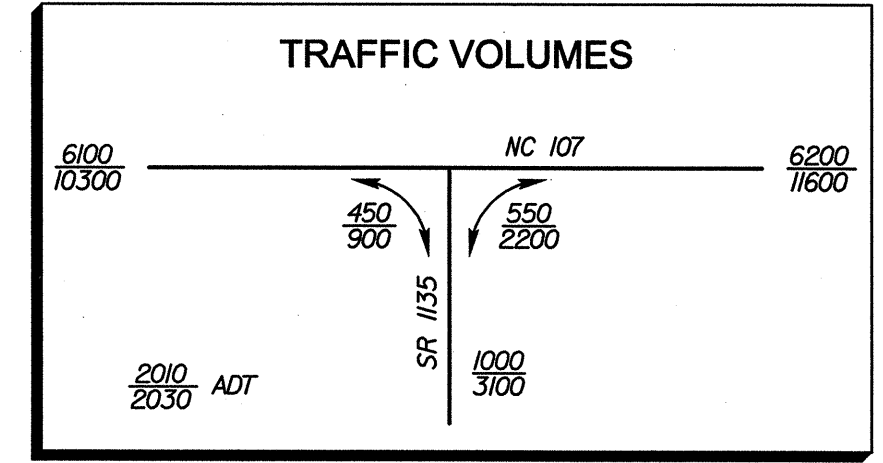
PROJECT REFERENCE NO. B-3480	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



CURVE DATA -DR-

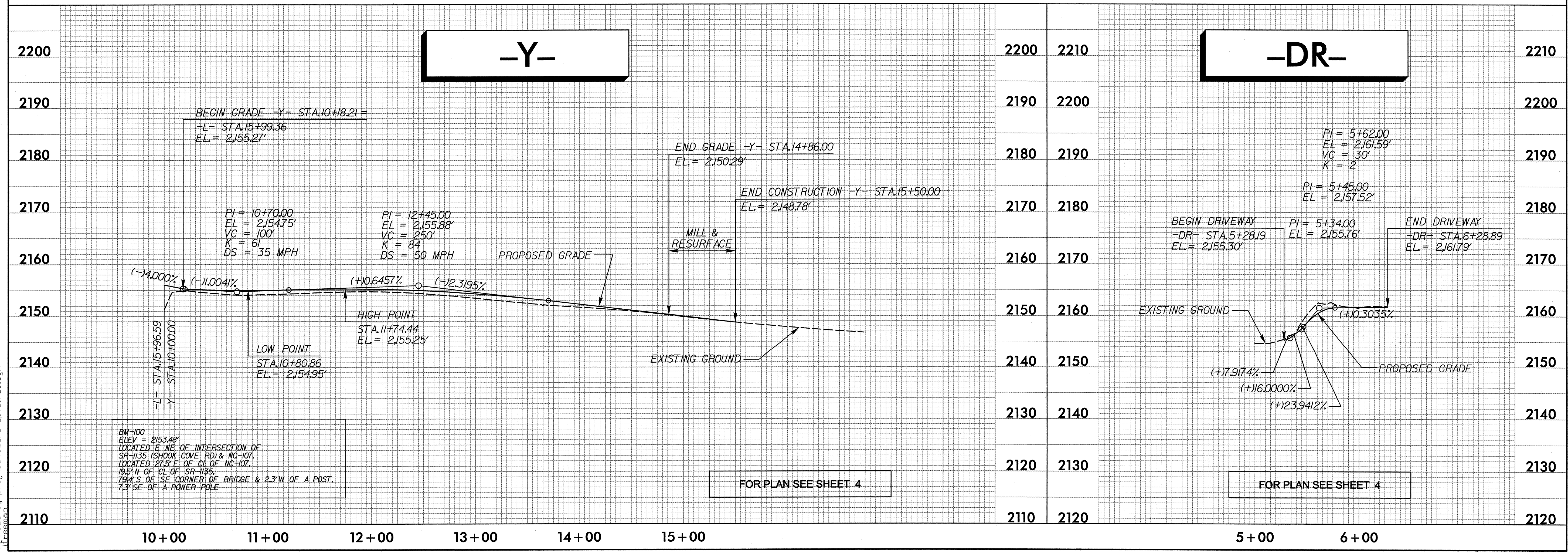
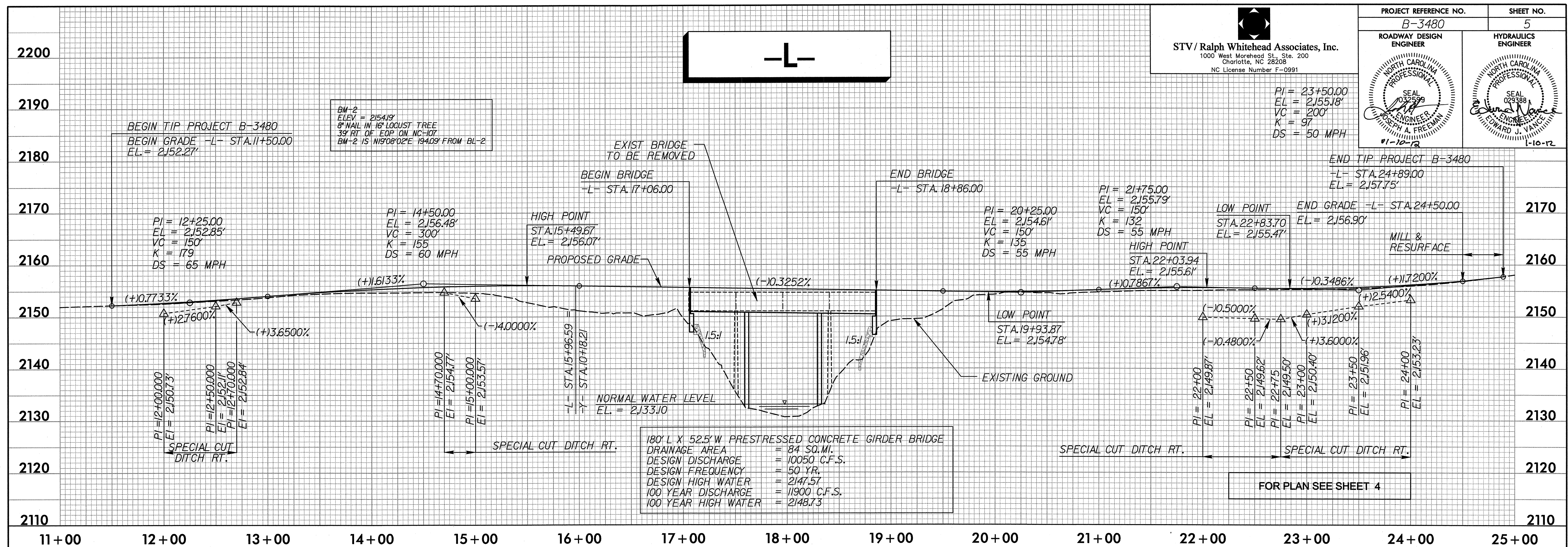
CURVE DR-1
PI Sta 5+60.76
$\Delta = 36^{\circ} 54' 19.5" (LT)$
D = 114' 35" 29.6"
L = 32.21'
T = 16.68'
R = 50.00'

NOTE: SEE SHEET 2B FOR BRIDGE SKETCH & INTERSECTION DETAIL.



FOR -L-, -Y-, AND -DR- PROFILES SEE SHEET 5
 FOR STRUCTURE PLANS SEE SHEETS S-1THRU S-45

1/10/2012
 F:\roadway\proj\B3480\RDY_psh_4.dgn



1/10/2012
 F:\roadway\p-r-o-j\3480\RDY_p1sh_5.dgn
 J. Freeman