

PROJECT: 14SP.20451.2

CONTRACT: DN00127

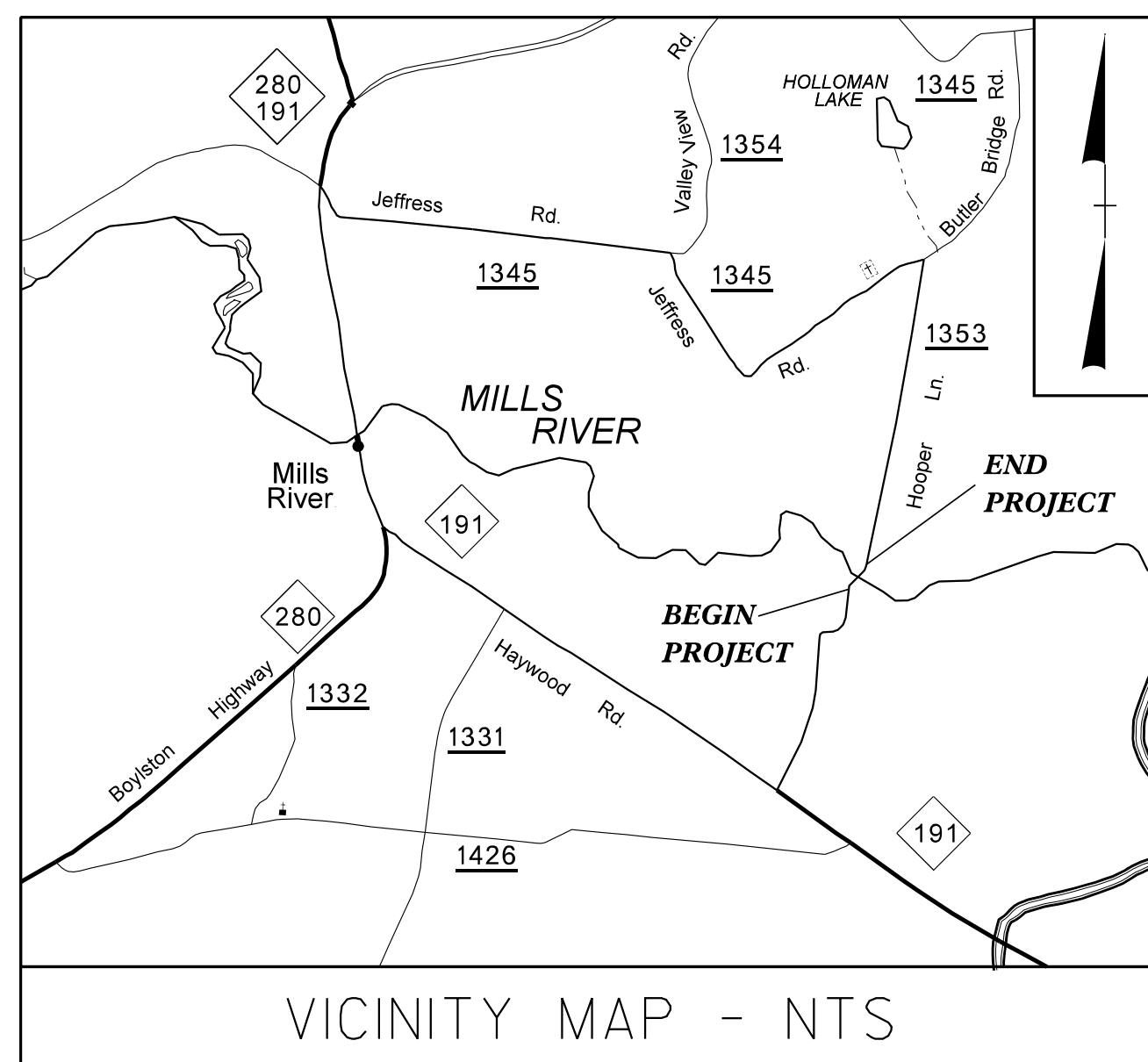
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HENDERSON COUNTY

**LOCATION: BRIDGE NO. 147 OVER MILLS RIVER
ON SR 1353 (HOOPER LANE)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	14SP.20451.2	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
14SP-20451.2	N/A	P.E.	
14SP-20451.2	N/A	R/W	
14SP-20451.2	N/A	CONST.	



VICINITY MAP - NTS

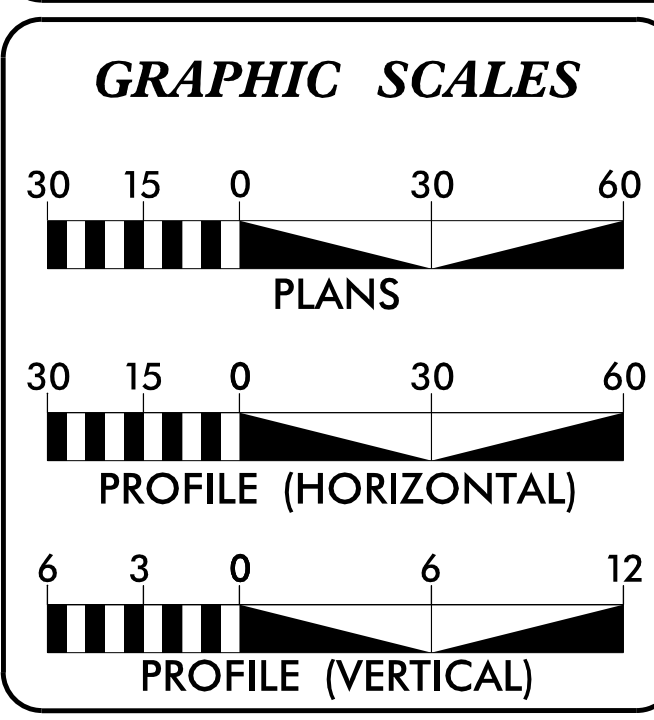
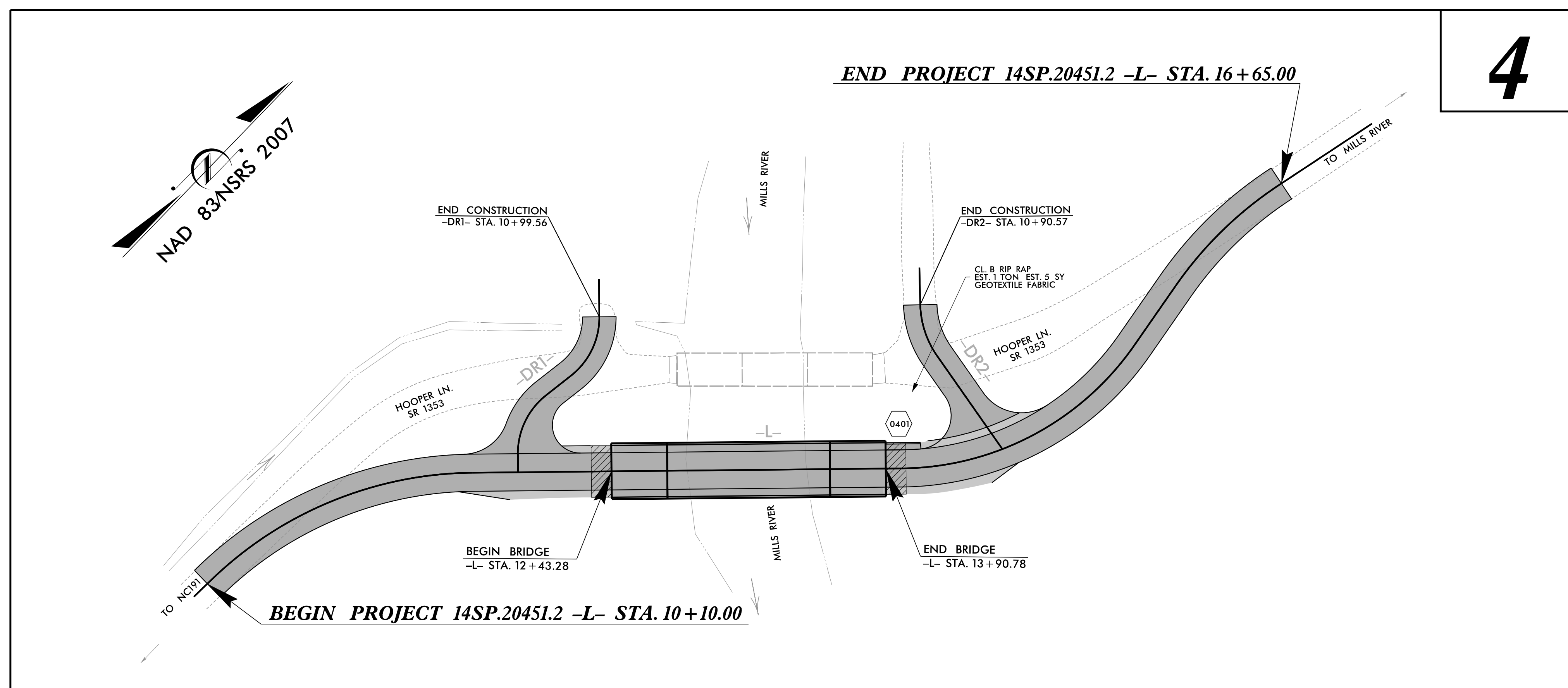
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina
828-253-2796

Tri-Cities, TN 423-467-8401
 Knoxville, TN 865-546-5800
 Spartanburg, SC 864-574-4775
 Charleston, SC 843-974-5650
 Middlesboro, KY 606-248-6600
 Charlotte, NC 704-357-0488
 Boone, NC 828-355-9933
 Atlanta, GA 770-627-3509

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



DESIGN DATA

ADT 2012 =	280
ADT 2025 =	560
* T =	6 %
V =	20 MPH
* TTST = 3% DUAL =	3%
FUNC CLASS =	LOCAL SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 14SP.20451.2 =	0.096 MI.
LENGTH STRUCTURE PROJECT 14SP.20451.2 =	0.028 MI.
TOTAL LENGTH OF PROJECT 14SP.20451.2 =	0.124 MI.

Prepared in the Office of:
VAUGHN & MELTON
1318-F PATTON AVE.
ASHEVILLE NC, 28806
FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 4, 2016

LETTING DATE:
JULY 13, 2021

RECEE SCHULER, PE
PROJECT ENGINEER

DAVID DAVES
PROJECT DESIGN ENGINEER

NCDOT CONTACT:
GARRETT HIGDON
PROJECT ENGINEER - ROADWAY DESIGN

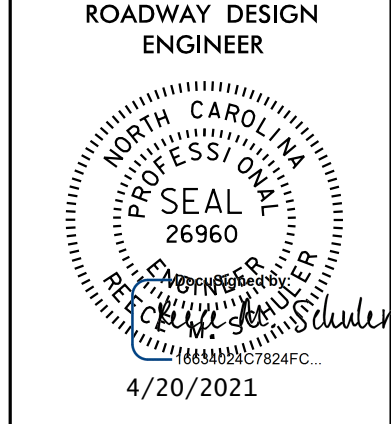
HYDRAULICS ENGINEER

DocuSigned by:
Bradley Adnew
SIGNATURE: _____ P.E. 5/14/2021

ROADWAY DESIGN ENGINEER

DocuSigned by:
Reece M. Schuler
SIGNATURE: _____ P.E. 5/14/2021

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**



SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
3B-1	SUMMARY OF EARTHWORK, SUMMARY OF GUARDRAIL, AND SHOULDER BERM GUTTER SUMMARY
3D-1	DRAINAGE SUMMARY
4 THRU 5	PLAN AND PROFILE SHEET
TMP-1 THRU TMP-3	TRAFFIC CONTROL PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLAN
EC-1 THRU EC-6	EROSION CONTROL PLANS
RF-1 THRU RF-3	REFORESTATION PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-13	CROSS-SECTIONS
S-1 THRU S-24	STRUCTURE PLANS

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED 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 11.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.05 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. 560.02

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.

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 WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

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 City of Asheville, 24" Water Line

2018 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2018
REV.

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 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 11
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type 11 Modified Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method 1
DIVISION 8 - INCIDENTALS	
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-x-x-x-
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---
Existing Historic Property Boundary	---HPB---
Known Contamination Area: Soil	☠-s-☠
Potential Contamination Area: Soil	☠-s-☠
Known Contamination Area: Water	☠-W-☠
Potential Contamination Area: Water	☠-W-☠
Contaminated Site: Known or Potential	☠?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
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	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	◆
Exist Permanent Easement Pin and Cap	◇
New Permanent Easement Pin and Cap	◆
Vertical Benchmark	⊠
Existing Right of Way Marker	△
Existing Right of Way Line	-----
New Right of Way Line	○ R W
New Right of Way Line with Pin and Cap	○ R W ◆
New Right of Way Line with Concrete or Granite R/W Marker	○ R W ◆
New Control of Access Line with Concrete C/A Marker	○ C/A
Existing Control of Access	○ C/A
New Control of Access	○ C/A
Existing Easement Line	---E---
New Temporary Construction Easement	---E---
New Temporary Drainage Easement	---TDE---
New Permanent Drainage Easement	---PDE---
New Permanent Drainage /Utility Easement	---DUE---
New Permanent Utility Easement	---PUE---
New Temporary Utility Easement	---TUE---
New Aerial Utility Easement	---AUE---

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	---T---
Proposed Guardrail	---T---
Existing Cable Guiderail	---□---
Proposed Cable Guiderail	---□---
Equality Symbol	⊕
Pavement Removal	▨

VEGETATION:

Single Tree	☼
Single Shrub	☼

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

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	○ S
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	●
U/G Power Line LOS B (S.U.E.*)	---P---
U/G Power Line LOS C (S.U.E.*)	---P---
U/G Power Line LOS D (S.U.E.*)	---P---

TELEPHONE:

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

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	---W---
U/G Water Line LOS C (S.U.E.*)	---W---
U/G Water Line LOS D (S.U.E.*)	---W---
Above Ground Water Line	---A/G Water---

TV:

TV Pedestal	⊕
TV Tower	⊗
U/G TV Cable Hand Hole	○
U/G TV Cable LOS B (S.U.E.*)	---TV---
U/G TV Cable LOS C (S.U.E.*)	---TV---
U/G TV Cable LOS D (S.U.E.*)	---TV---
U/G Fiber Optic Cable LOS B (S.U.E.*)	---TV FO---
U/G Fiber Optic Cable LOS C (S.U.E.*)	---TV FO---
U/G Fiber Optic Cable LOS D (S.U.E.*)	---TV FO---

GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	---G---
U/G Gas Line LOS C (S.U.E.*)	---G---
U/G Gas Line LOS D (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---
SS Forced Main Line LOS B (S.U.E.*)	---FSS---
SS Forced Main Line LOS C (S.U.E.*)	---FSS---
SS Forced Main Line LOS D (S.U.E.*)	---FSS---

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line LOS B (S.U.E.*)	---TU/L---
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	●
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

SURVEY CONTROL SHEET 44-0147

-FINAL-

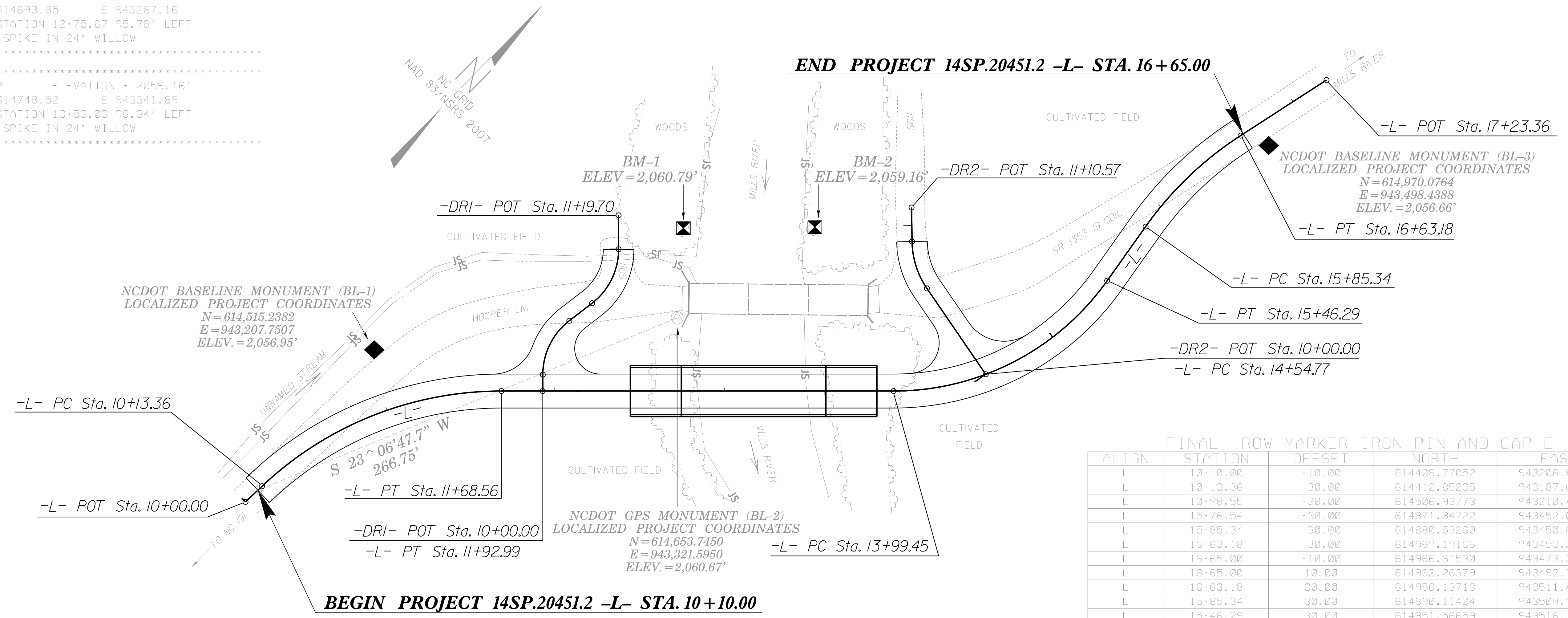
BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
	1	BL-1	614515.2382	943207.7507	2056.95	11+03.91	36.12 LT
	2	BL-2	614653.7450	943321.5950	2060.67	12+72.07	43.04 LT
	3	BL-3	614970.0764	943498.4388	2056.66	16+73.87	13.87 RT

PDE
-FINAL- ROW MARKER PERMANENT EASEMENT -E

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+00.00	30.00	614481.86326	943264.96078
L	11+68.56	50.00	614514.82242	943313.11970
L	13+00.00	50.00	614607.04524	943406.77809
L	13+00.00	30.00	614621.29617	943392.74560

.....
 BM1 ELEVATION = 2060.79'
 N 614693.85 E 943287.16
 L STATION 12+75.67 95.78' LEFT
 RR SPIKE IN 24" WILLOW

 BM2 ELEVATION = 2059.16'
 N 614748.52 E 943341.89
 L STATION 13+53.03 96.34' LEFT
 RR SPIKE IN 24" WILLOW



-FINAL- ROW MARKER IRON PIN AND CAP -E

ALIGN	STATION	OFFSET	NORTH	EAST
L	10+10.00	-10.00	614408.77052	943206.89013
L	10+13.36	-30.00	614412.85235	943187.02441
L	10+98.56	-30.00	614506.93773	943210.43257
L	15+76.54	-30.00	614871.84722	943452.08748
L	15+85.34	-30.00	614880.53260	943450.68239
L	16+63.18	-30.00	614969.19166	943453.29619
L	16+65.00	-10.00	614966.61530	943473.21277
L	16+65.00	10.00	614962.26379	943492.73364
L	16+63.18	30.00	614956.13713	943511.85880
L	15+85.34	30.00	614890.11404	943509.91242
L	15+46.29	30.00	614851.56659	943516.14846
L	13+99.45	30.00	614691.07334	943463.60894
L	11+68.56	30.00	614529.07336	943299.08721
L	10+13.36	30.00	614410.68861	943246.98538
L	10+10.00	10.00	614408.04927	943226.87712

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "440147 BL-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 614653.745(ft) EASTING: 943321.595(ft) ELEVATION: 2060.67(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999781653

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "440147 BL-2" TO -L- STATION 10+10.00 IS S 23°06'47.7" W 266.75'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

-L- FINAL

TYPE	STATION	NORTH	EAST
POT	10+00.00	614398.4164	943216.5230
PC	10+13.36	614411.7705	943217.0049
PT	11+68.56	614550.4498	943278.0385
PC	13+99.45	614712.4497	943442.5602
PT	15+46.29	614846.7756	943486.5335
PC	15+85.34	614885.3231	943480.2974
PT	16+63.18	614962.6644	943482.5775
POT	17+23.36	615021.4041	943495.6715

NOTES:

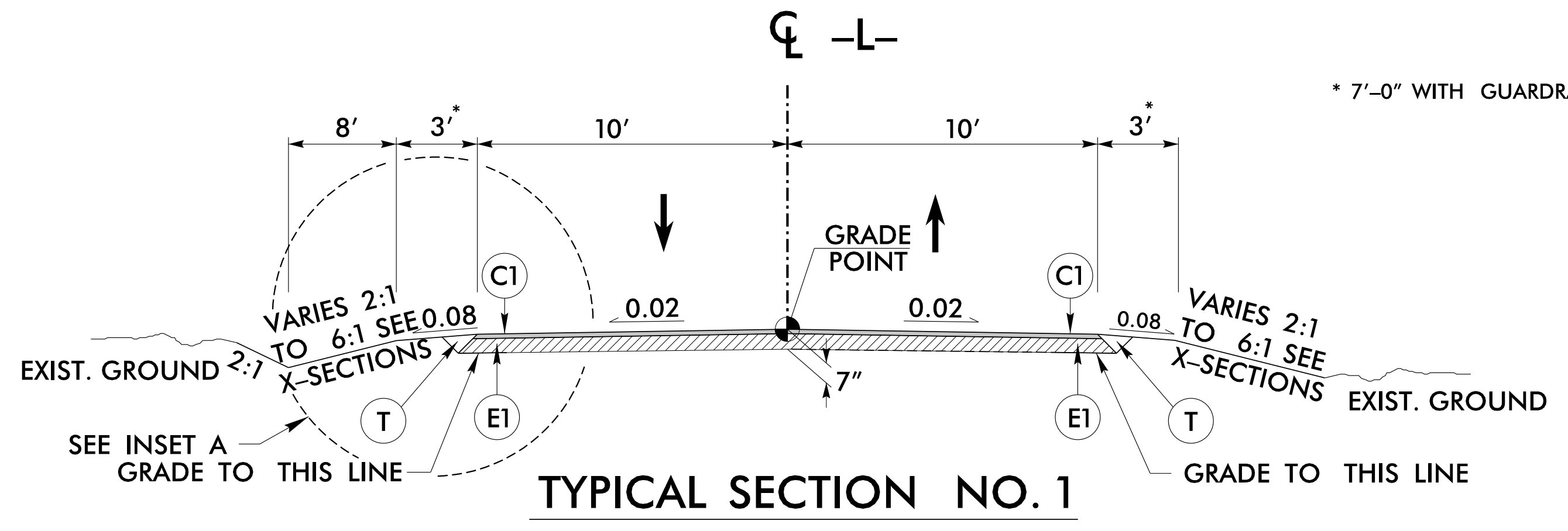
- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 440147_LS_CONTROL.TXT
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER CONTROL INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- ⊕ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT BY THE NCDOT LOCATION AND SURVEYS UNIT. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

GEOID MODEL - G09NC
 NOTE: DRAWING NOT TO SCALE

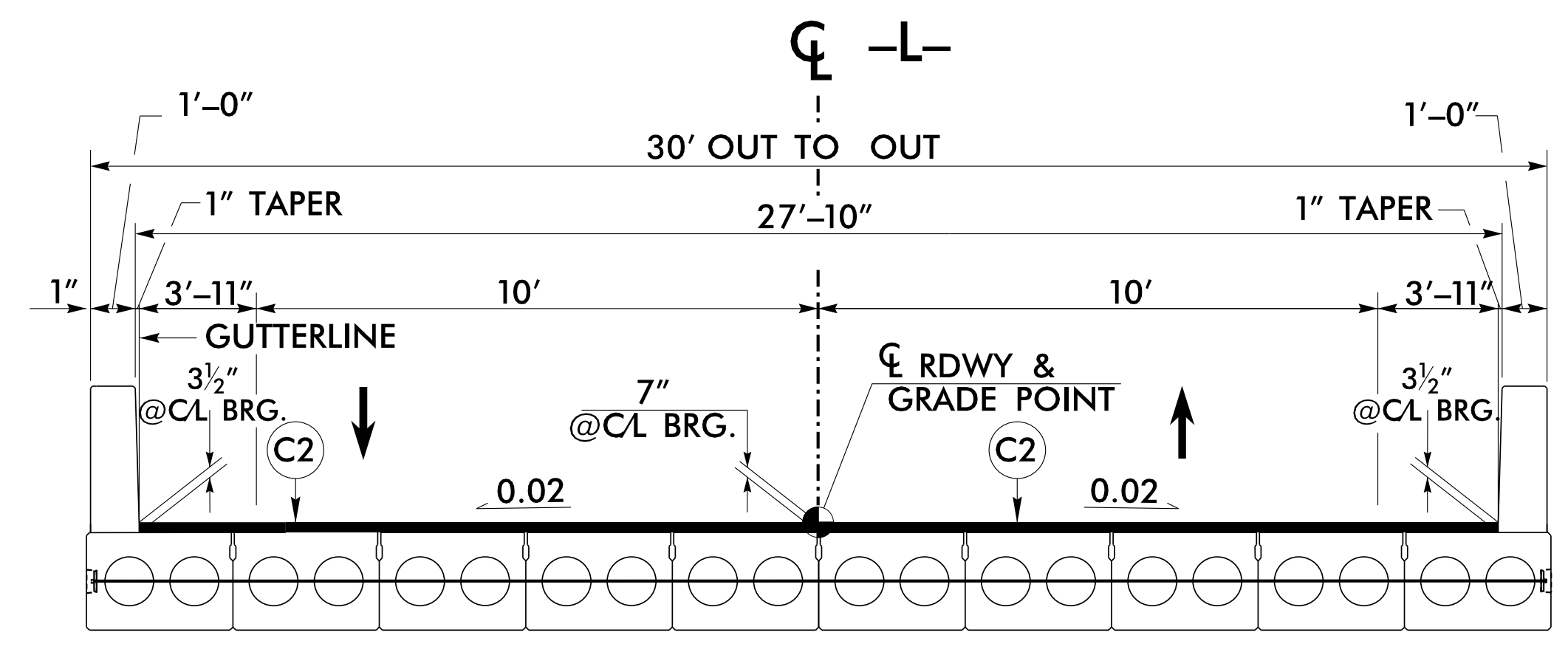
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6/2/2021

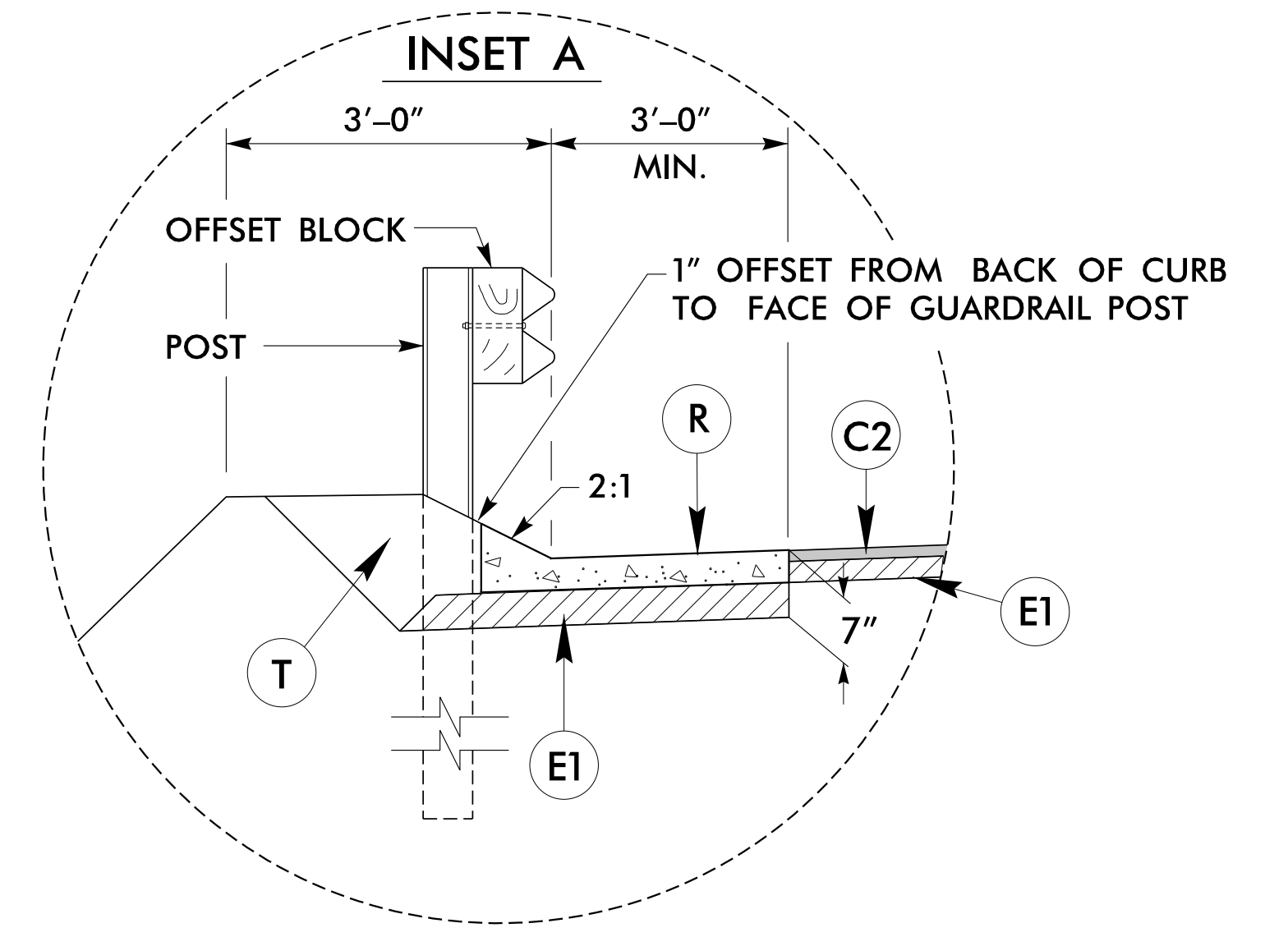
PROJECT REFERENCE NO. 14SP.20451.2	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



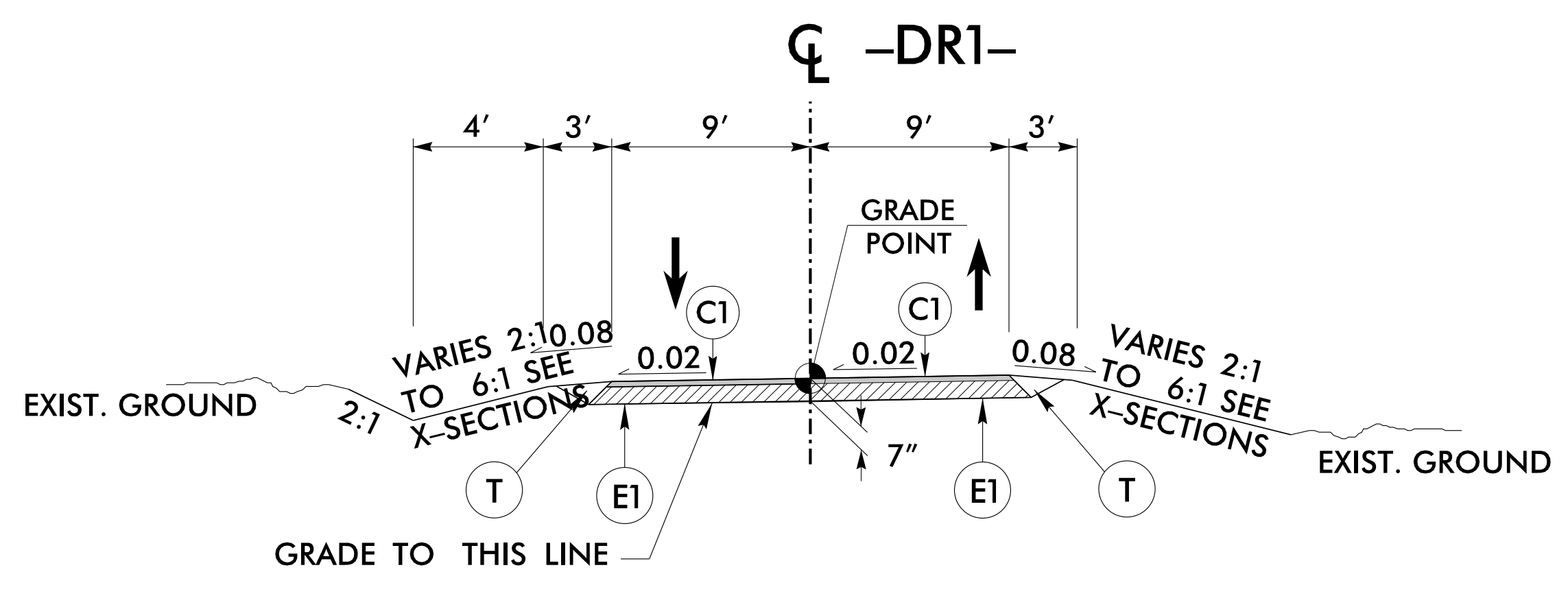
USE TYPICAL SECTION NO. 1
 -L- STA. 10+10.00 TO -L- STA. 12+43.28 (BEGIN BRIDGE)
 -L- STA. 13+90.78 (END BRIDGE) TO -L- STA. 16+65.00



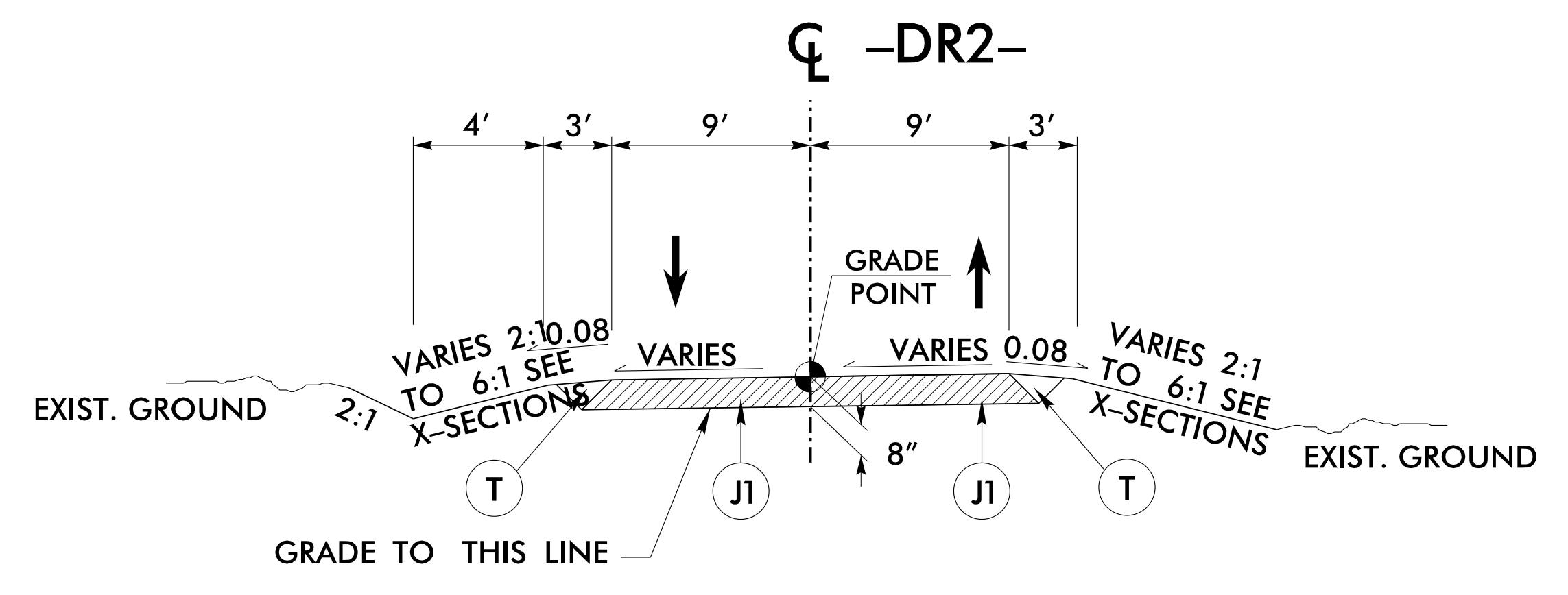
USE TYPICAL SECTION NO. 2
 -L- STA. 12+43.28 (BEGIN BRIDGE) TO
 -L- STA. 13+90.78 (END BRIDGE)



INSET A
 -L- STA. 14+01.87 (END APPROACH SLAB) TO -L- STA. 14+10.00 LT



USE TYPICAL SECTION NO. 3
 -DR1- STA. 10+00.00 TO -DR1- STA. 11+19.70



USE TYPICAL SECTION NO. 4
 -DR2- STA. 10+00.00 TO -DR2- STA. 11+10.57

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS BETWEEN 1 1/2" AND 2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
J1	PROP. 8" AGGREGATE BASE COURSE.
T	EARTH MATERIAL

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

4/2/2021 8:35:44 AM
 C:\Users\jtrout\OneDrive\Documents\14SP.20451.2\14SP.20451.2.dgn

6/21/2016

COMPUTED BY: JCG DATE: 6-14-16
CHECKED BY: RMS DATE: 6-13-16

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. SHEET NO.
14SP.20451.2 3B-1

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
SUMMARY NO.1					
-L- STA. 10+10 TO STA. 12+43.28 (BEGIN BRIDGE)	114		836	722	
-DR1- STA. 10+10.00 TO STA. 10+99.70	2		283	281	
SUBTOTAL SUMMARY NO.1	116		1119	1159	
SUMMARY NO.2					
-L- STA. 13+90.78 (END BRIDGE) TO STA. 16+65	38		1258	1220	
-DR2- STA. 10+10.00 TO STA. 10+90.57	0		125	125	
SUBTOTAL SUMMARY NO.2	38		1383	1345	
PROJECT SUBTOTAL					
EST. 5% FOR REPLACING TOP SOIL ON BORROW PITS	154		2502	2504	117
GRAND TOTAL					
SAY	154		2502	2466	2500

SHOULDER BERM GUTTER

LINE	STATION	STATION	LOCATION LSR/ECL	LENGTH (FT)
-L-	14+01.87	14+10.00	LT	8.13'
			TOTAL	8.13'
			SAY	10'

CONTINGENCY ITEMS:

INCIDENTAL STONE = 25 TONS

UNDERCUT EXCAVATION = 25 CY

SELECT GRANULAR MATERIAL = 25 CY

CLASS IV SUBGRADE STABILIZATION = 25 TONS

GEOTEXTILE FOR SOIL STABILIZATION = 25 SY

Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, and clearing and grubbing will be paid for at the contract lump sum price for "grading".

"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

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						IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	XI MOD	XI	GREU TL-3	GREU TL-2	TYPE III	TYPE III SHOP CURVED	B-77	AT-1	EA	G	NG					
-L-	11+87.03	12+43.28	RT	56.25'			12+43.28		4'	7'	25'		0.5'					1		1								
-L-	12+24.47	12+43.28	LT	25'	31.25'			12+43.28	4'	7'		6.25'		1.0'						1								
-L-	13+90.78	14+45.45	RT	56.25'				13+90.78	4'	7'		25'		0.5'				1		1								
-L-	13+90.78	14+20.55	LT	25'	18.75'		13+90.78		4'	7'	6.25'		1.0'						1									
			SUBTOTAL	162.5'	50'													2		4								
			LESS DEDUCTIONS FOR ANCHORS																									
			GREU TL 2 @ 25' =	-50'																								
			TYPE III @ 18.75' =	-75'																								
			AT-1 2 @ 6.25' =	-12.5'																								
			PROJECT TOTALS:	37.5'	37.5'													2		4								
			SAY:	50'	50'																							
			ADDITIONAL GUARDRAIL POSTS = 5 EA.																									

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misc\m1\trp\hick

COMPUTED BY: JCG DATE: 6-13-16
 CHECKED BY: RMS DATE: 6-13-16

PROJECT REFERENCE NO. SHEET NO.
 14SP.20451.2 3D-1

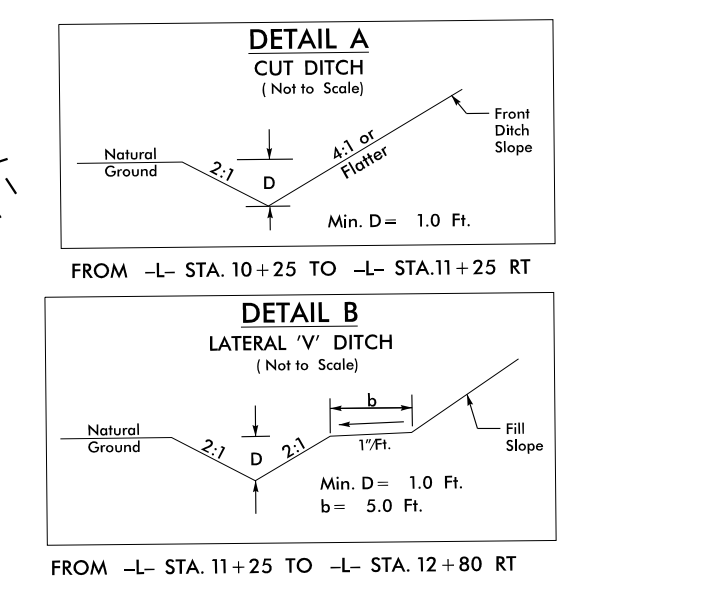
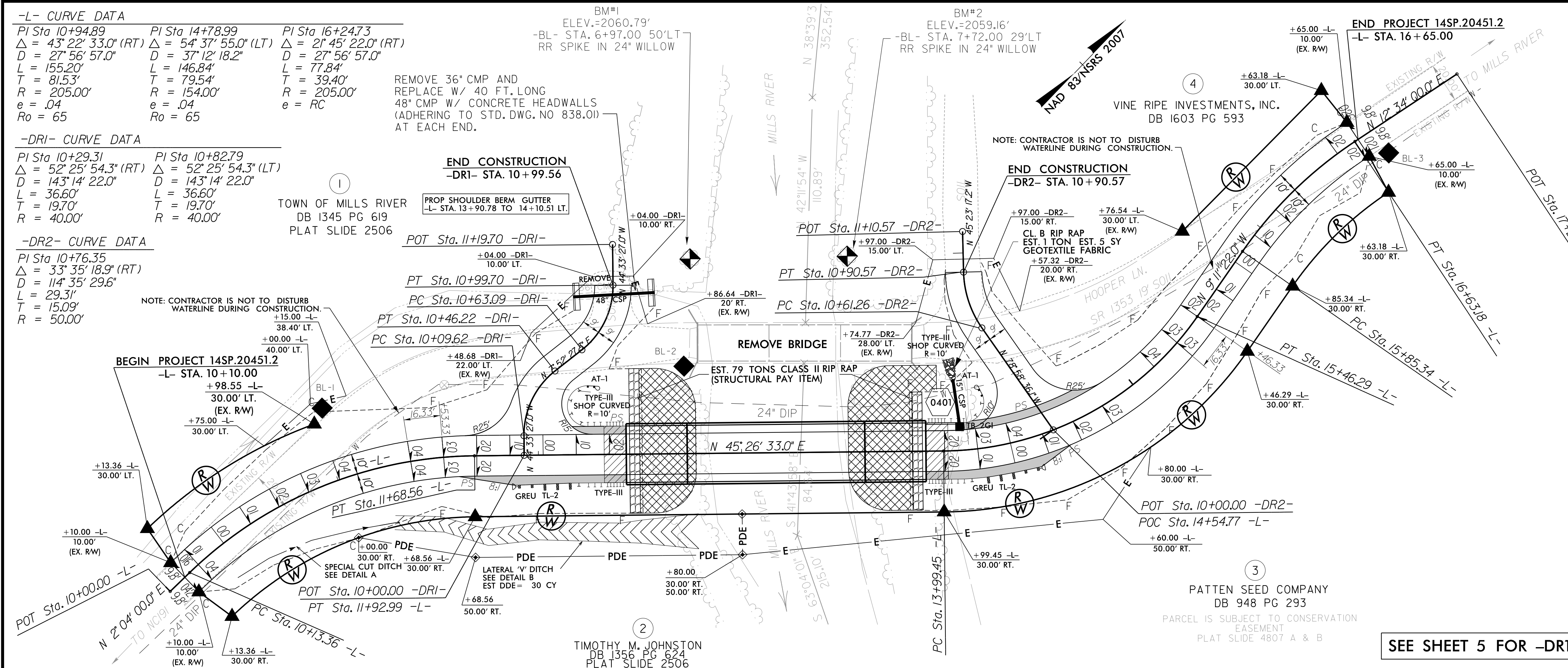
DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

**SUB-REGIONAL & REGIONAL
 LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)**

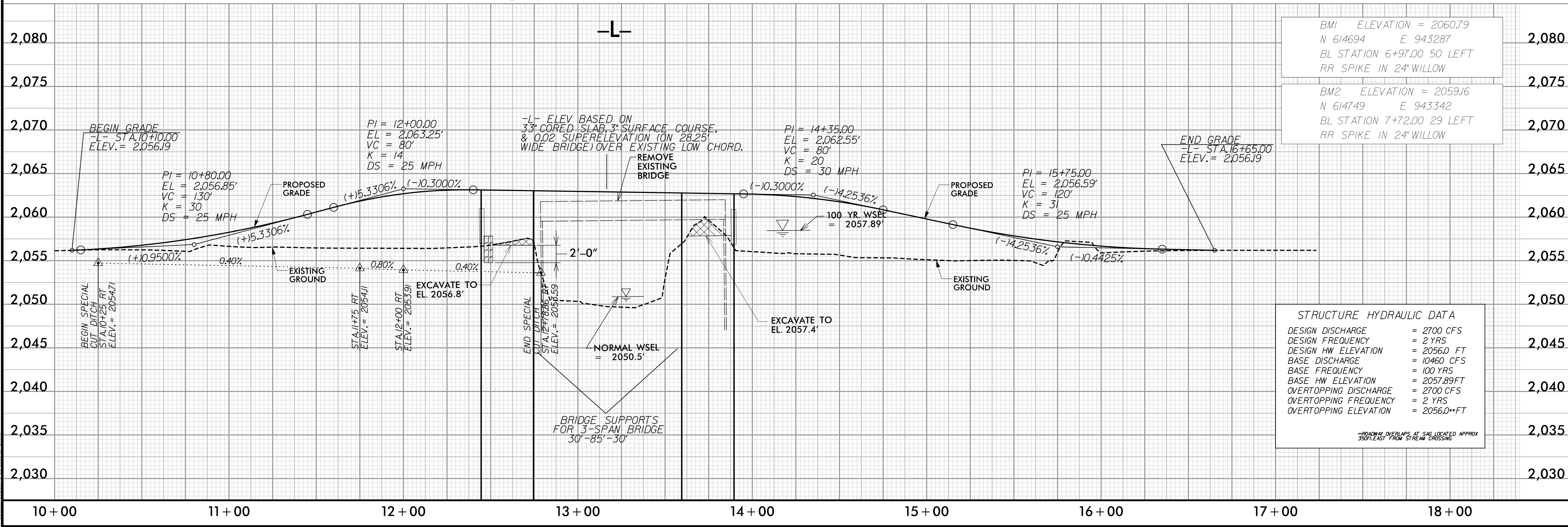
STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO.	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)								C.S. PIPE						R.C. PIPE (CLASS III)						R.C. PIPE (CLASS IV)						ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE)	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') * TOTAL LF. FOR PAY QUANTITY SHALL BE COL. 'A' + (.13 X COL. 'B')	FRAME, GRATES AND HOOD STANDARD 840.03	CONCRETE TRANSITIONAL SECTION	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS	ABBREVIATIONS																														
							12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"										18"	24"	30"	36"	42"	48"																									
							DO NOT USE RCP				DO NOT USE CSP				DO NOT USE CAAP				DO NOT USE HDPE																																																					
12+38	LT																																													9.8																			2- 48" ENDWALLS REQUIRED							
14+08	LT	401	2062.28	2059.11																																																																				
14+08	LT	401	OUT	2059.11	2059.01																																																																			
TOTAL																																															9.8	1																								
SAY																																															10																									

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

PROJECT REFERENCE NO. 14SP.20451.2	SHEET NO. 4
ROADWAY DESIGN ENGINEER SEAL 26960 4/20/2021	HYDRAULICS ENGINEER SEAL 033023 4/20/2021
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

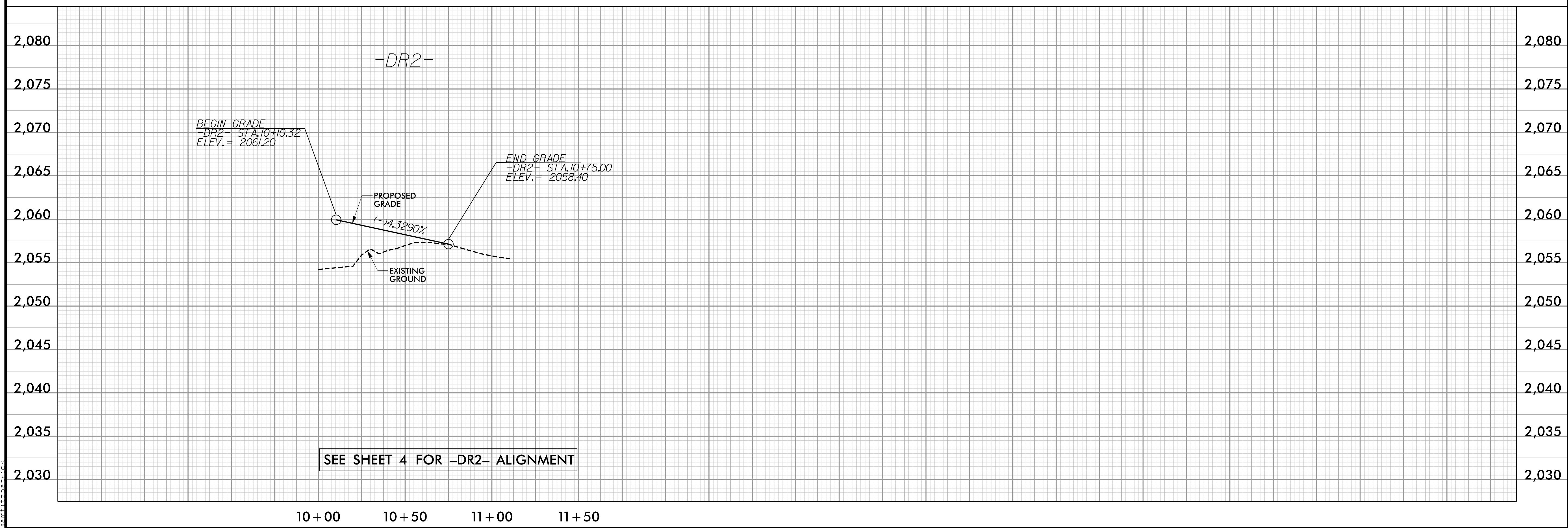
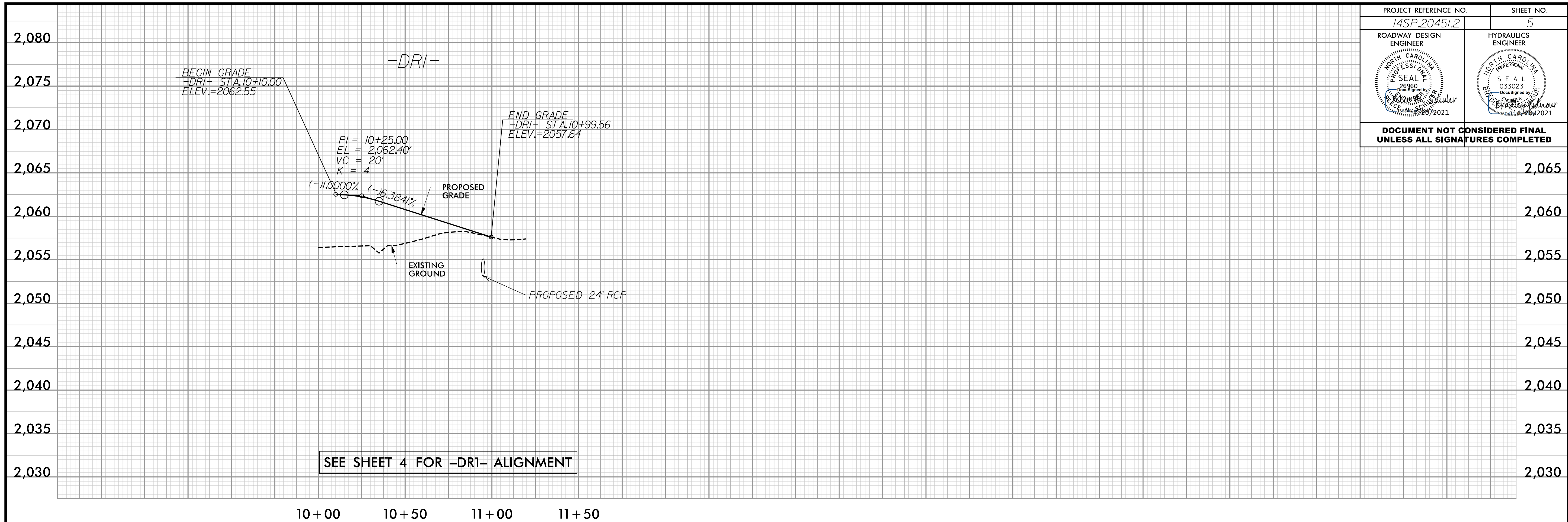


SEE SHEET 5 FOR -DRI- AND -DR2- PROFILES



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PROJECT REFERENCE NO. 14SP.20451.2	SHEET NO. 5
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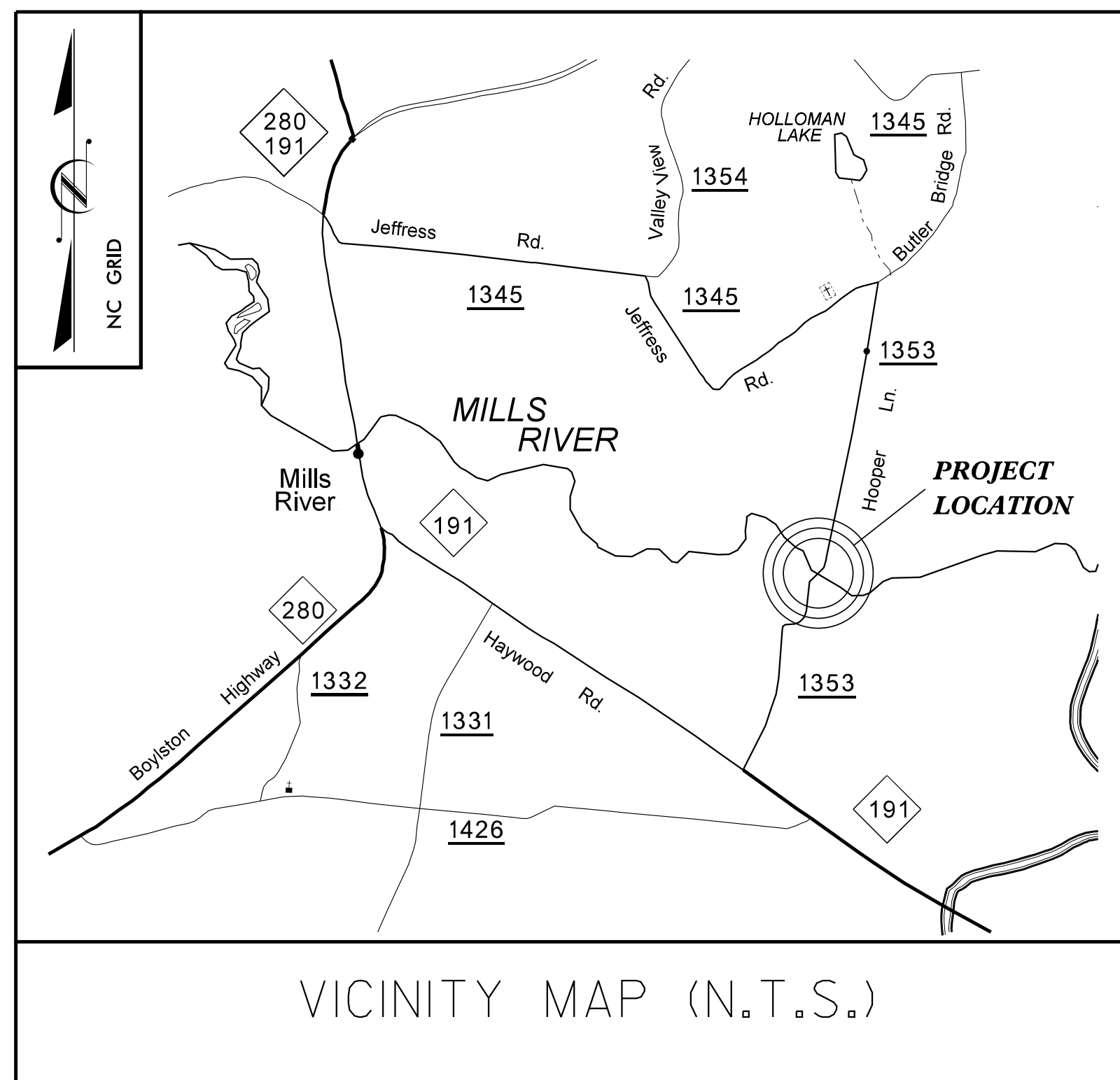
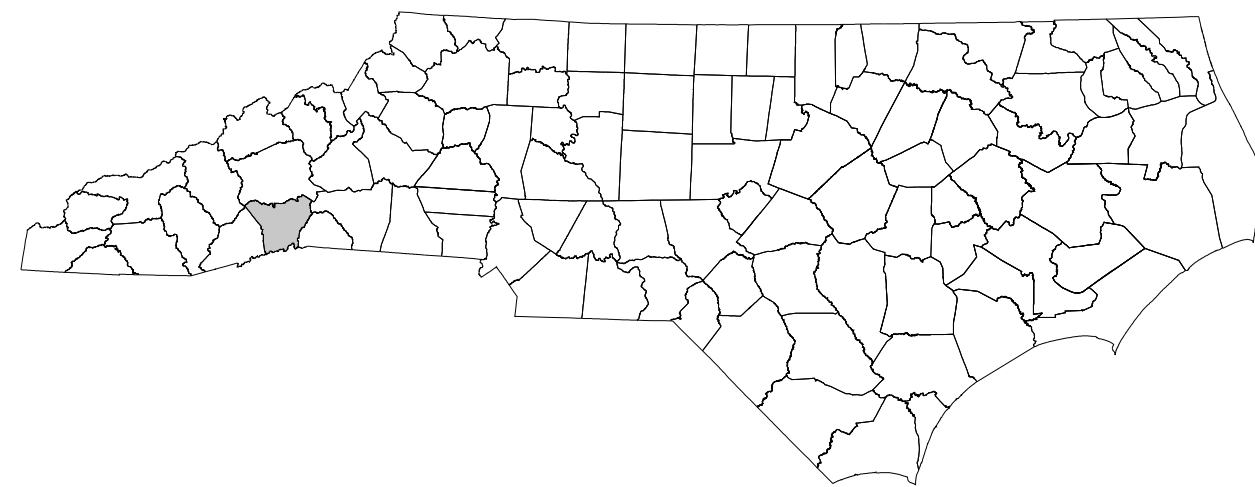


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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

HENDERSON COUNTY
DIVISION 14



**LOCATION: BRIDGE NO.147 OVER MILLS RIVER
ON SR 1353 (HOOPER LANE)**

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

INDEX OF SHEETS

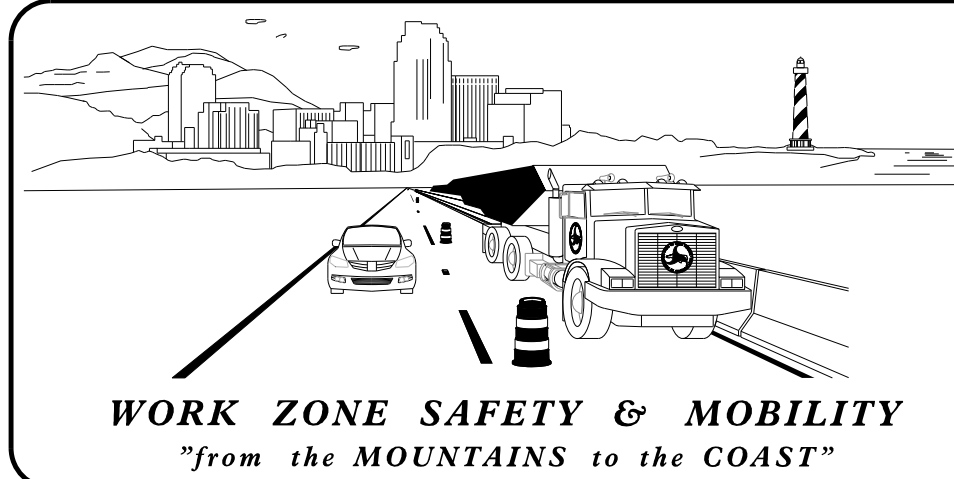
SHEET NO.	TITLE
TMP-1	TITLE SHEET AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKINGS
TMP-1B	TRANSPORTATION OPERATIONS PLAN: GENERAL NOTES AND LOCAL NOTES
TMP-2	PHASING NOTES
TMP-3	TEMPORARY TRAFFIC CONTROL PHASE I DETAIL
TMP-4	TEMPORARY TRAFFIC CONTROL PHASE II DETAIL

SHEET NO.

TMP-1

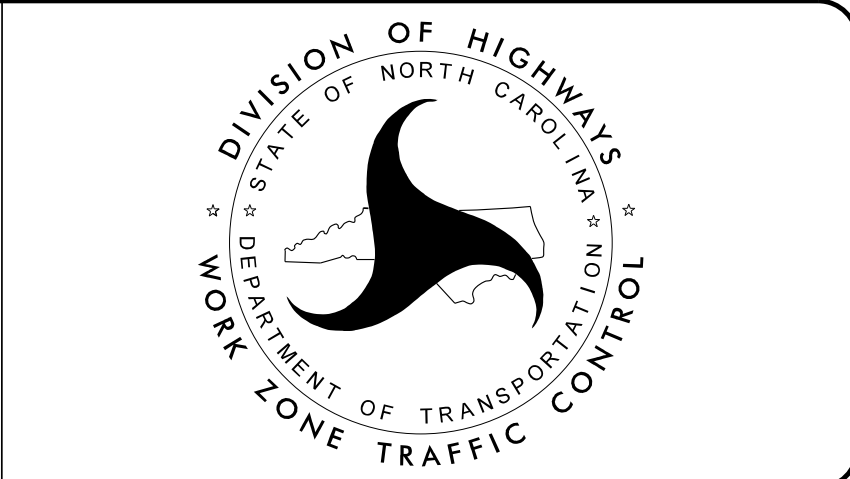
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PLANS PREPARED BY:
LLOYD DEWAYNE BROWN, P.E., P.L.S.
PROJECT ENGINEER
ALEX M. FITZPATRICK
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:
GARRETT HIGDON
PROJECT ENGINEER



V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina
828-253-2796

- Boone, NC 828-355-9933
- Tri-Cities, TN 423-467-8401
- Knoxville, TN 865-546-5800
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ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- REMOVAL

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION
	PAINT
P1	WHITE EDGELINE (4")
P13	YELLOW DOUBLE CENTER (4")

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW PANEL (TYPE C)
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
- CHANGEABLE MESSAGE SIGN

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

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Boone, NC 828-355-9933

Turkey Creek, TN 423-467-8401

Knoxville, TN 865-546-5800

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Milledgeville, KY 606-248-6600

Raleigh, NC 919-977-9455

Charlotte, NC 704-357-0488

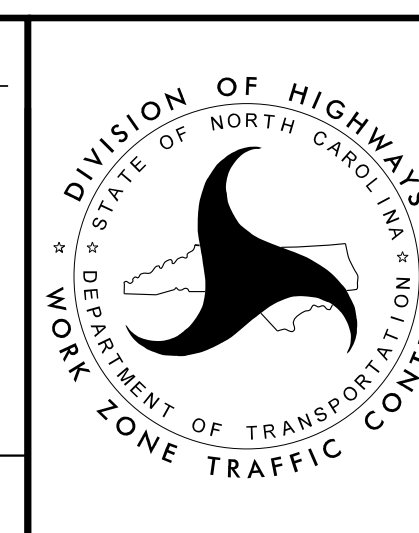
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ROADWAY STANDARD
DRAWINGS & LEGEND

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRE OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- C) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

SIGNING

- D) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- E) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.
- F) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.
- G) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

- H) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.
- I) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

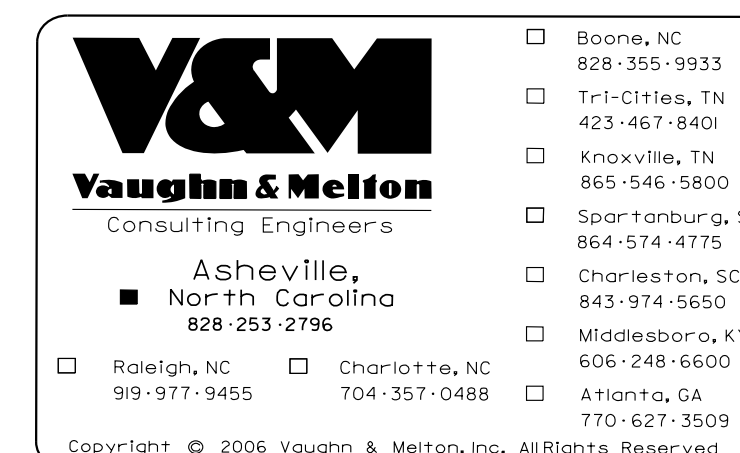
- J) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

<u>ROAD NAME</u>	<u>MARKING</u>	<u>MARKER</u>
SR 1353 HOOPER LANE	PAINT	NONE

- K) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
- L) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- M) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

LOCAL NOTES:

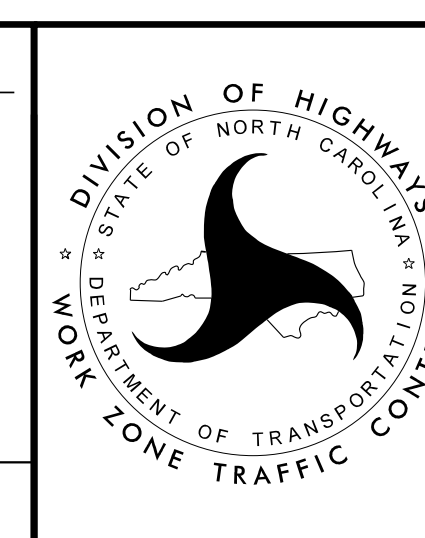
- 1) EMERGENCY VEHICLE ACCESS MUST BE MAINTAINED AT ALL TIMES.
- 2) NOTIFY THE FIRE DEPT, E.M.S., AND HENDERSON COUNTY SCHOOL BOARD 30 DAYS PRIOR TO ROAD CLOSURE.
- 3) LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION.



APPROVED: Lloyd D. Brown
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**TRANSPORTATION
OPERATIONS PLAN**

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PHASING NOTES

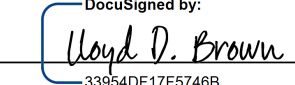
PHASE I

- STEP 1: ERECT WORK ZONE ADVANCED WARNING SIGNS USING DETAIL DRAWINGS FOR WORK ZONE SIGNS USING NCDOT ROADWAY STANDARD DRAWINGS NO.1101.01, SHEET 3 OF 3.
- STEP 2: WHILE MAINTAINING TRAFFIC ON EXISTING SR 1353 (HOOPER LANE) IN THE EXISTING PATTERN, USING NCDOT ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 14, INSTALL TYPE III BARRICADES AND THE NECESSARY DRUMS AND CONSTRUCT AWAY FROM TRAFFIC, PROPOSED STRUCTURE AND -L- STA. 10+25 +/- TO -L- STA. 16+50 +/- UP TO BUT NOT INCLUDING THE FINAL SURFACE COURSE.
- STEP 3: USING NCDOT ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 14, AND FLAGGERS AS NECESSARY, PERFORM THE FOLLOWING ON SR 1353 (HOOPER LANE): CONSTRUCT -L- FROM STA.10+10 +/- TO STA. 11+00 +/- (TIE-IN TO EXISTING ROADWAY) UP TO, BUT NOT INCLUDING, THE FINAL LAYER OF SURFACE COURSE. CONSTRUCT -L- FROM STA. 15+75 +/- TO STA. 16+65 +/- (TIE-IN TO EXISTING ROADWAY) UP TO, BUT NOT INCLUDING, THE FINAL LAYER OF SURFACE COURSE.
- STEP 4: PLACE TEMPORARY PAVEMENT MARKINGS ON -L- (SEE SHEET TMP-4).

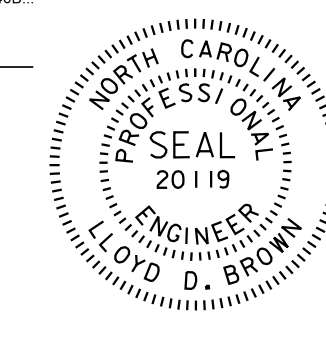
PHASE II

- STEP 1: USING NCDOT ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 14, INSTALL ADVISORY SPEED LIMIT OF 20 MPH, THEN SHIFT TRAFFIC TO NEW -L-, REMOVE BARRICADES AND DRUMS PLACED IN PHASE I STEP 2, INSTALL TYPE III BARRICADES AND DETOUR SIGNS PER NCDOT ROADWAY STANDARD DRAWING 1101.03 SHEET 3 OF 9 (NOTE: THIS STEP TO BE COMPLETED IN A CONTINUOUS MANNER) (SEE SHEET TMP-4 FOR TRAFFIC PATTERN)
- STEP 2: USING NCDOT ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 14 FINISH DRIVE TIE-INS, REMOVE EXISTING STRUCTURE AND ROADWAY ON OLD LOCATION OF SR SR 1353 (HOOPER LANE) (SEE SHEET TMP-4)
- STEP 3: USING NCDOT ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 14 AND FLAGGERS AS NECESSARY PLACE THE FINAL LAYER OF SURFACE COURSE ON -L-.
- STEP 4: USING NCDOT ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 14 PLACE FINAL PAVEMENT MARKINGS ON -L- REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES. OPEN -L- (SR 1353 HOOPER LANE) TO A TWO-LANE TWO-WAY TRAFFIC PATTERN.

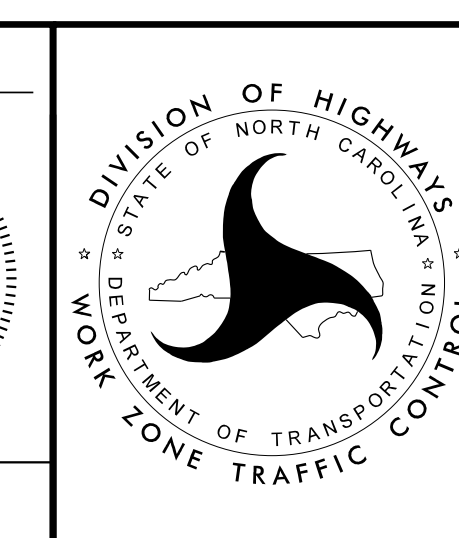
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Lloyd D. Brown
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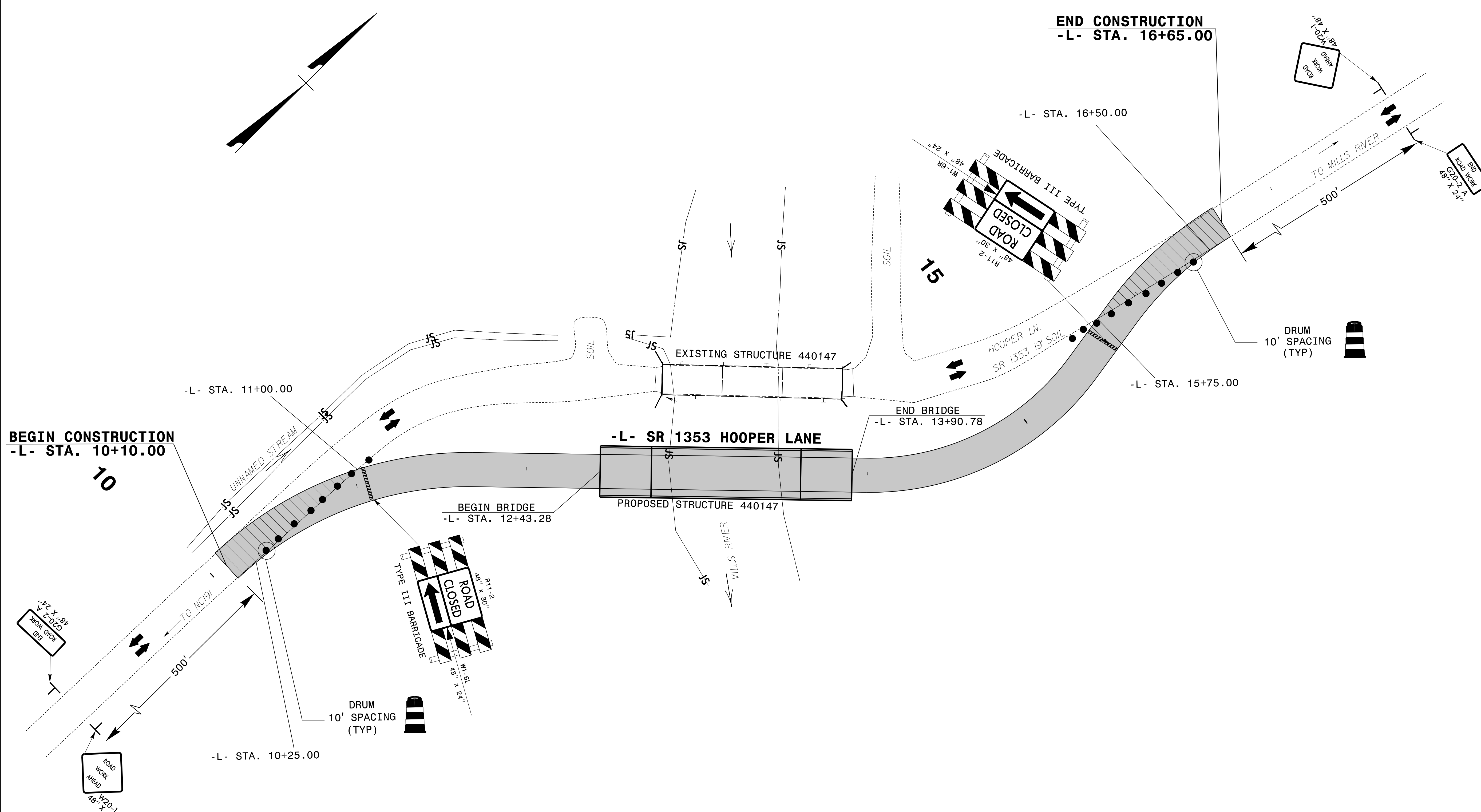
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PHASING NOTES



BEGIN CONSTRUCTION
-L- STA. 10+10.00

-L- STA. 11+00.00

BEGIN BRIDGE
-L- STA. 12+43.28

-L- SR 1353 HOOPER LANE

PROPOSED STRUCTURE 440147

EXISTING STRUCTURE 440147

END BRIDGE
-L- STA. 13+90.78

END CONSTRUCTION
-L- STA. 16+65.00

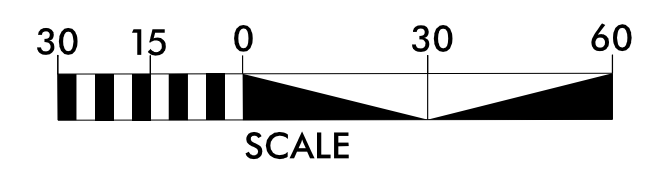
-L- STA. 15+75.00

TO NC/91

TO MILLS RIVER

DRUM SPACING (TYP)

DRUM SPACING (TYP)



CONSTRUCT UNDER TRAFFIC

MAINTAIN ACCESS TO DRIVEWAYS DURING CONSTRUCTION

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Consulting Engineers

Asheville, North Carolina
828-253-2796

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Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3509

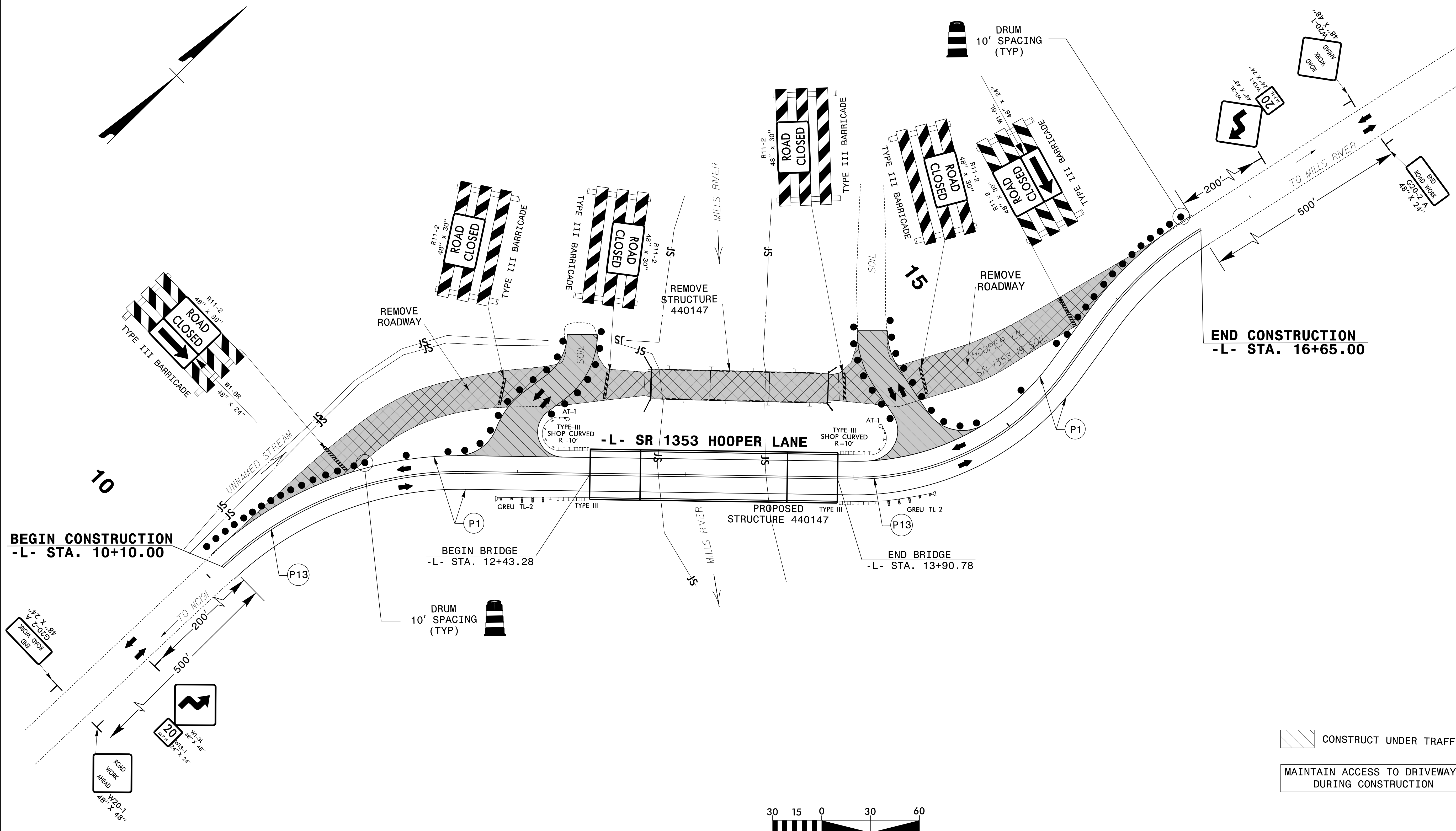
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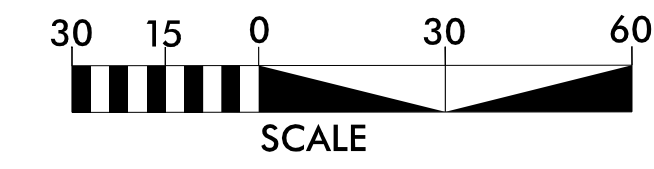
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CONSTRUCT UNDER TRAFFIC

MAINTAIN ACCESS TO DRIVEWAYS DURING CONSTRUCTION



TEMPORARY PAVEMENT MARKING SCHEDULE				
SYMBOL	DESCRIPTION	QUANTITY BREAKDOWN	PAY ITEM	TOTAL QUANTITY
P1	WHITE EDGELINE	225 FT	PAINT (4")	450 FT
P13	YELLOW DOUBLE CENTER	225 FT	PAINT (4")	450 FT

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Consulting Engineers

Asheville, North Carolina
828-253-2796

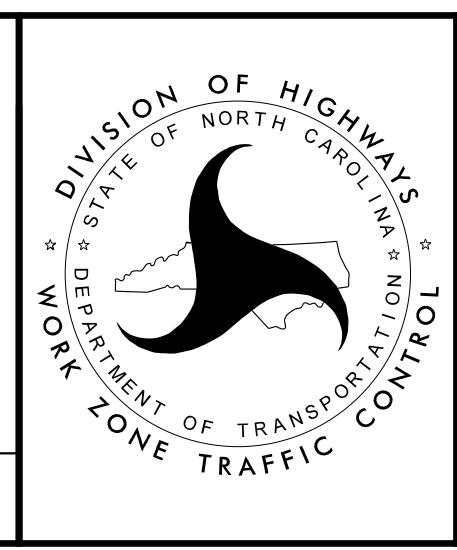
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- Tri-Cities, TN 423-467-8401
- Knoxville, TN 865-546-5800
- Spartanburg, SC 864-574-4775
- Charleston, SC 843-974-5650
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- Atlanta, GA 770-627-3509

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APPROVED: Lloyd D. Brown
DATE: 5/12/2021

PROFESSIONAL ENGINEER
LLOYD D. BROWN
20119

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TEMPORARY TRAFFIC CONTROL PHASE II DETAIL

5/12/2021 10:09:28 AM T:\TrafficControl\TCTP\tmp-4.dgn User:samf11zpatrick

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**PAVEMENT MARKING PLAN
HENDERSON COUNTY**

**LOCATION : BRIDGE NO.147 OVER MILLS RIVER
ON SR 1353 (HOOPER LANE)**

TIP NO. 14SP.20451.2	SHEET NO. PMP-1
APPROVED: <i>Lloyd D. Brown</i> <small>3384DF1FF5T48B</small>	
DATE: 5/12/2021	
	

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UNLESS ALL SIGNATURES COMPLETED**

PROJECT: 14SP.20451.2

CONTRACT: DN00127

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C. DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE & MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES & MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

A.) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE


<u>ROAD NAME:</u>	<u>MARKING</u>
SR 1353 (HOOPER LANE)	PAINT

B.) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C.) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE SHEET
PMP-2	PAVEMENT MARKING DETAIL AND SCHEDULE

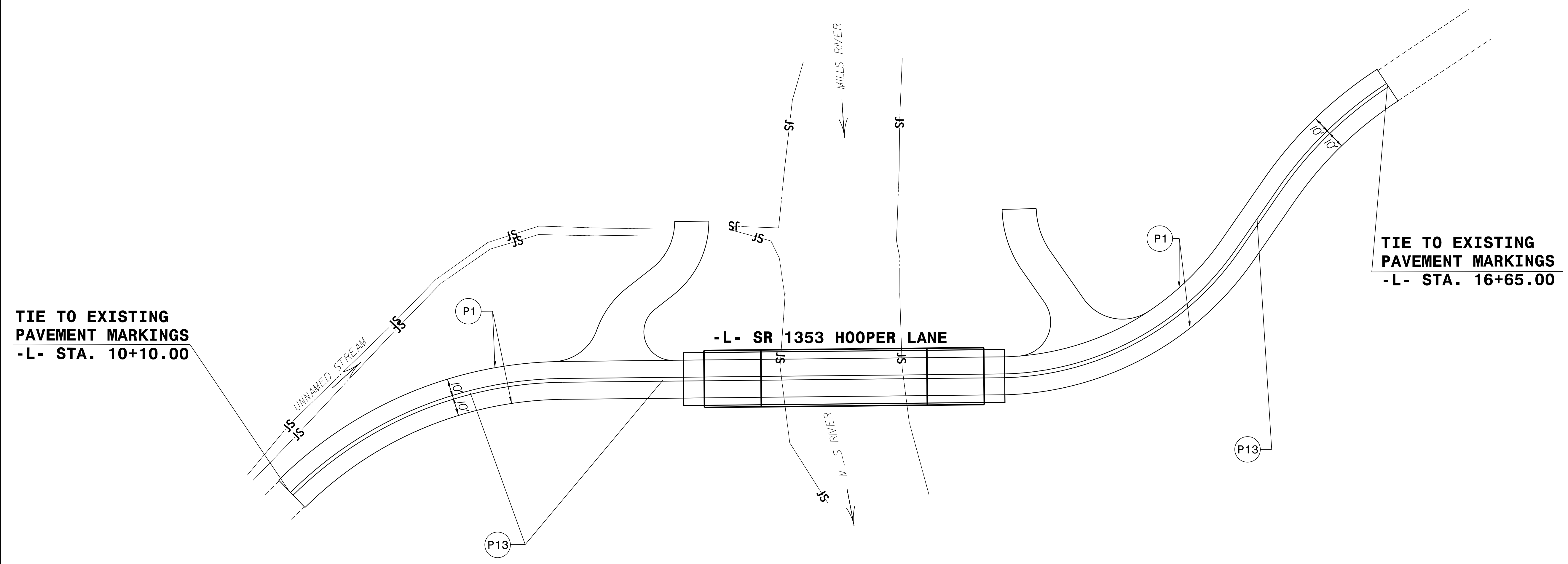
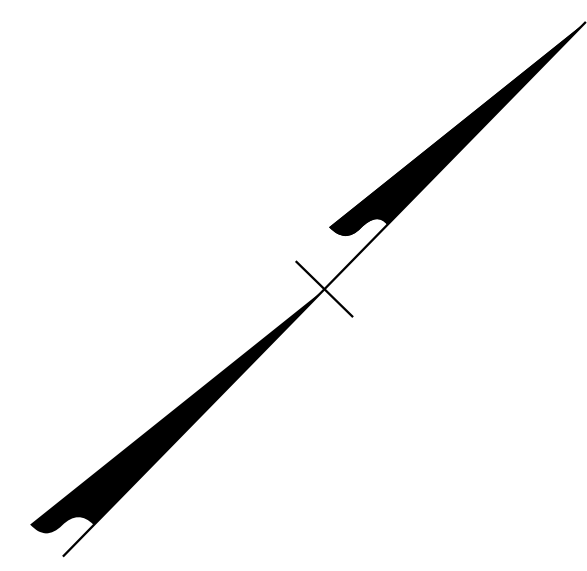


Boone, NC 828-355-9933
 Tri-Cities, TN 423-467-8401
 Knoxville, TN 865-546-5800
 Spartanburg, SC 864-574-4775
 Charleston, SC 843-574-5650
 Asheville, North Carolina 828-253-2796
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TRANSPORTATION ENGINEER LLOYD D. BROWN, P.E.
TRANSPORTATION DESIGN ENGINEER ALEX M. FITZPATRICK

PAVEMENT MARKING DETAIL AND SCHEDULE



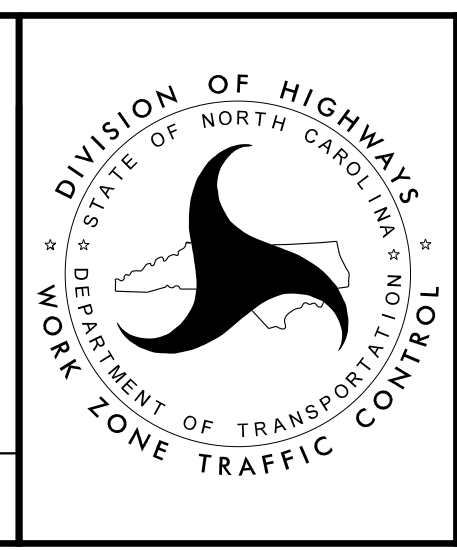
PAVEMENT MARKING SCHEDULE				
SYMBOL	DESCRIPTION	QUANTITY BREAKDOWN	PAY ITEM	TOTAL QUANTITY
P1	WHITE SOLID EDGE LINE	1310 FT	PAINT (4")	2620 FT
P13	YELLOW DOUBLE CENTER LINE	1310 FT	PAINT (4")	2620 FT

NOTE: 30 SCALE PMP

APPROVED: *Lloyd D. Brown*
DocuSigned by:
Lloyd D. Brown
33054DF17F5746B

DATE: 5/12/2021

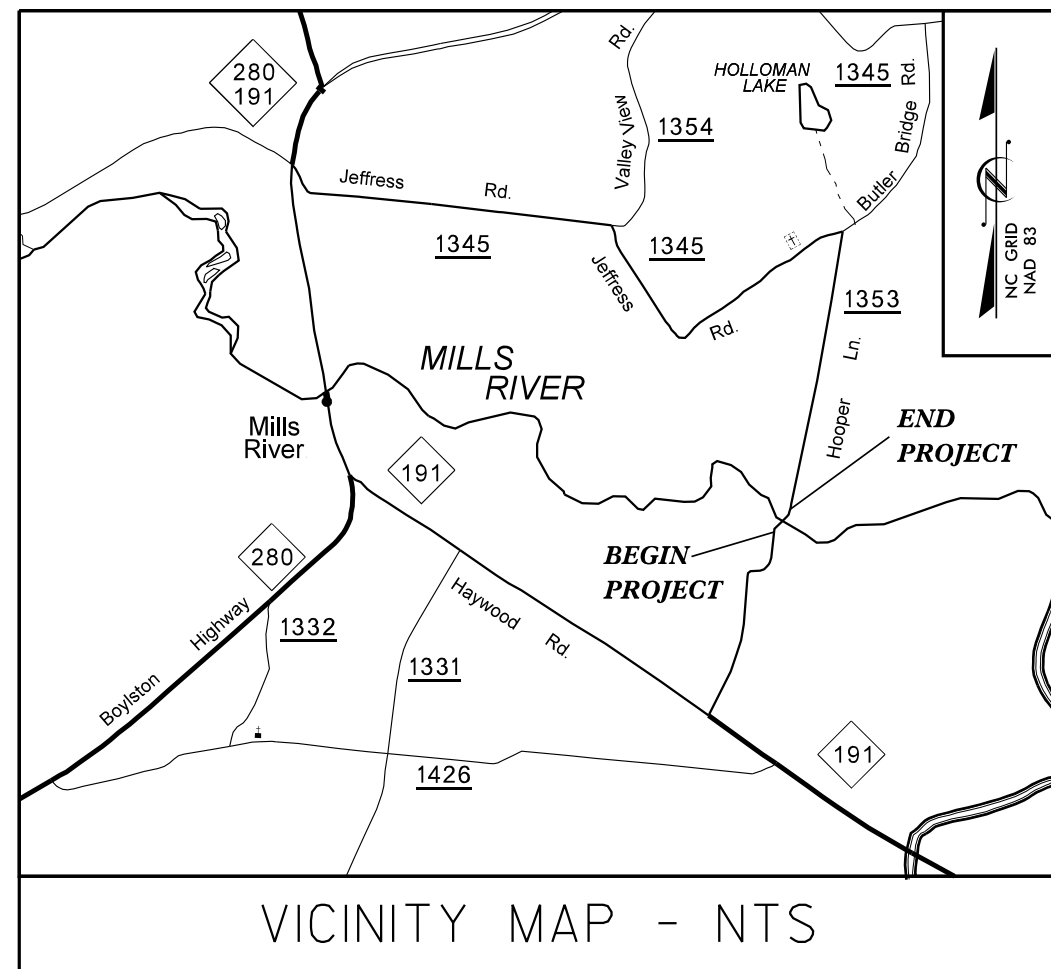
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PAVEMENT MARKING
DETAIL AND SCHEDULE

4/13/2021 9:35:38 AM
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 User: sam.fitzpatrick

PROJECT: 14SP.20451.2



NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
HENDERSON COUNTY

**LOCATION: BRIDGE NO. 147 OVER MILLS RIVER
ON SR 1353 (HOOPER LANE)
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE**

V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina
828-253-2796

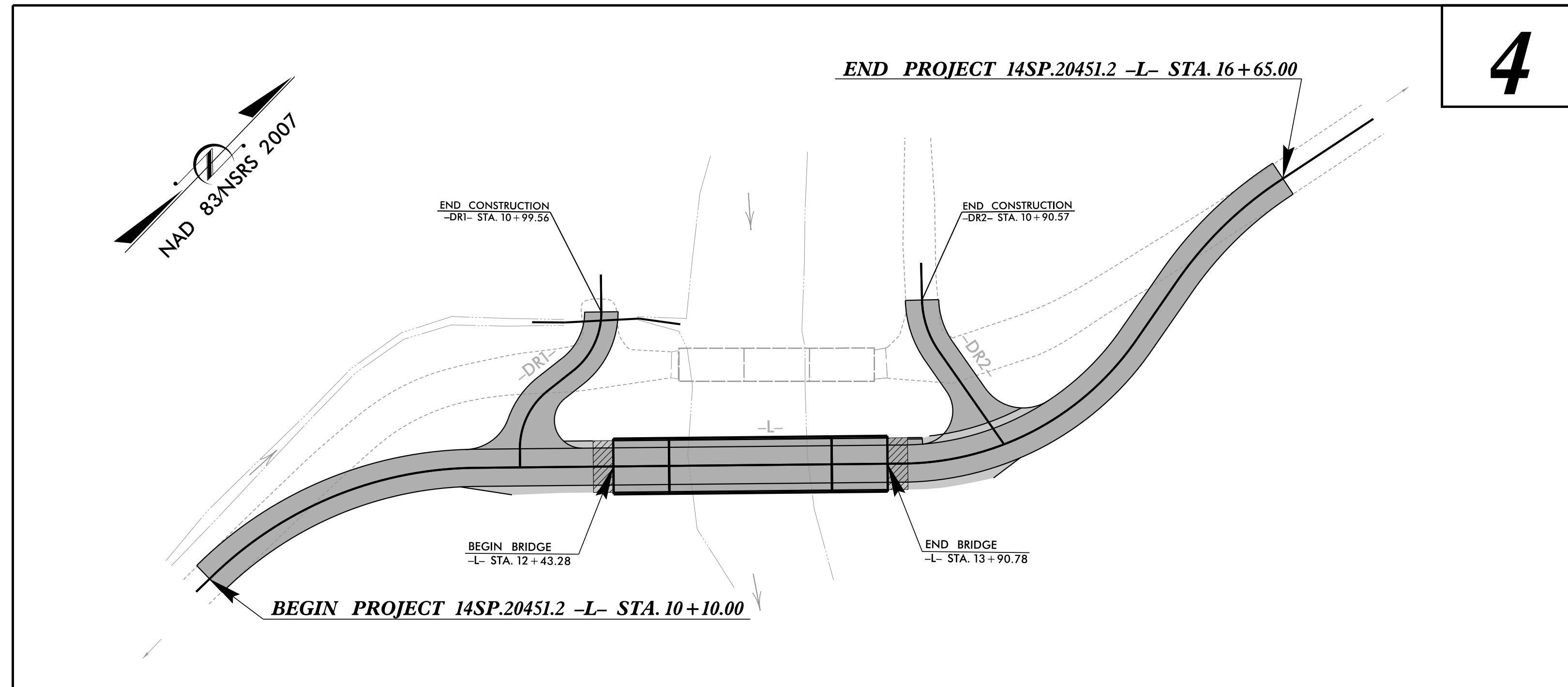
Boone, NC 828-355-9933
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Spartanburg, SC 864-574-4775
Charleston, SC 843-934-5650
Middleboro, KY 606-248-6600
Atlanta, GA 770-627-3590

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	14SP.20451.2	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
14SP-20451.2	N/A	P.E.	
14SP-20451.2	N/A	RW	
14SP-20451.2	N/A	CONST.	

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	TSF
1606.01	Special Sediment Control Fence	SCF
1622.01	Temporary Berms and Slope Drains	BSD
1630.02	Silt Basin Type B	SB
1633.01	Temporary Rock Silt Check Type-A	TRSCA
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	TRSCA-PAM
1633.02	Temporary Rock Silt Check Type-B	TRSCB
	Wattle / Coir Fiber Wattle	W
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	W-PAM
1634.01	Temporary Rock Sediment Dam Type-A	TRSDA
1634.02	Temporary Rock Sediment Dam Type-B	TRSDA-B
1635.01	Rock Pipe Inlet Sediment Trap Type-A	RPISTRA
1635.02	Rock Pipe Inlet Sediment Trap Type-B	RPISTRB
1630.04	Stilling Basin	SB
1630.06	Special Stilling Basin	SSB
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	SKB
	Tiered Skimmer Basin	TSKB
	Infiltration Basin	IB

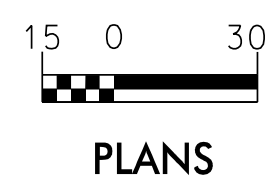


THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT
Refer To E. C. Special Provisions for Special Considerations.

GRAPHIC SCALE



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER RESOURCES.

Prepared in the Office of:
Vaughn & Melton Consulting Engineers
1318-F Patton Avenue
Asheville, NC 28806
2018 STANDARD SPECIFICATIONS

Designed by:
Christian Gonzalez-Martell 3939
NAME LEVEL III CERTIFICATION NO.

Reviewed in the Office of:
ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611
2018 STANDARD SPECIFICATIONS

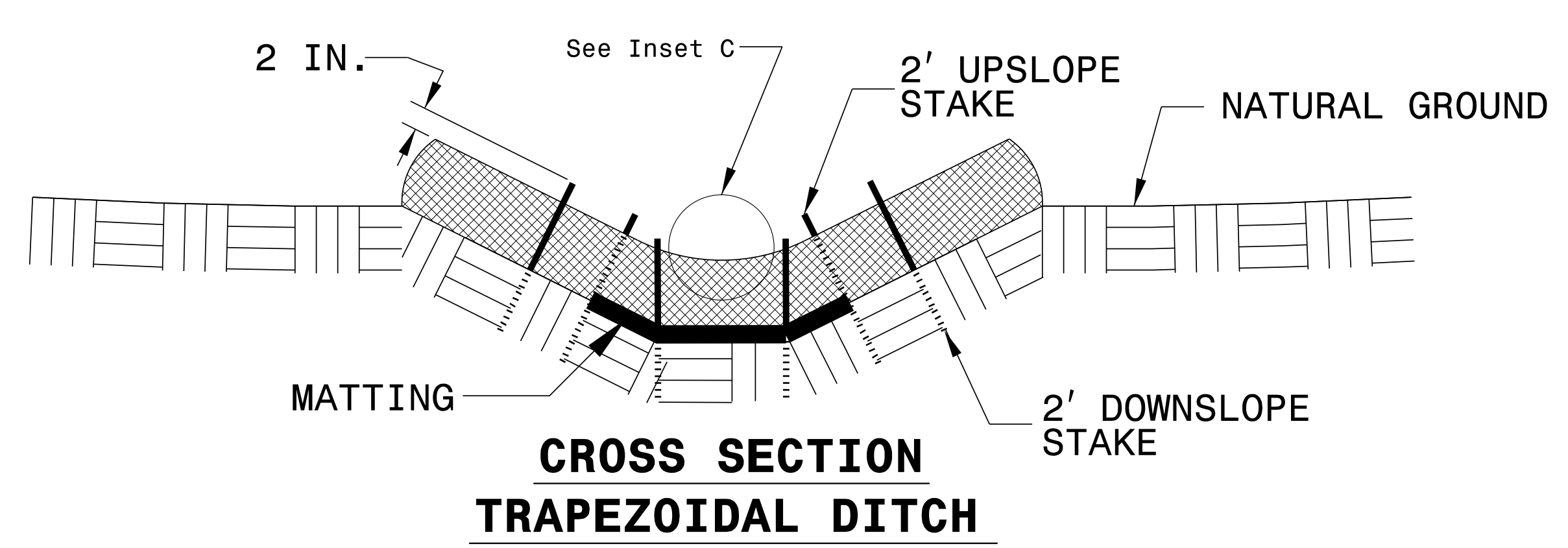
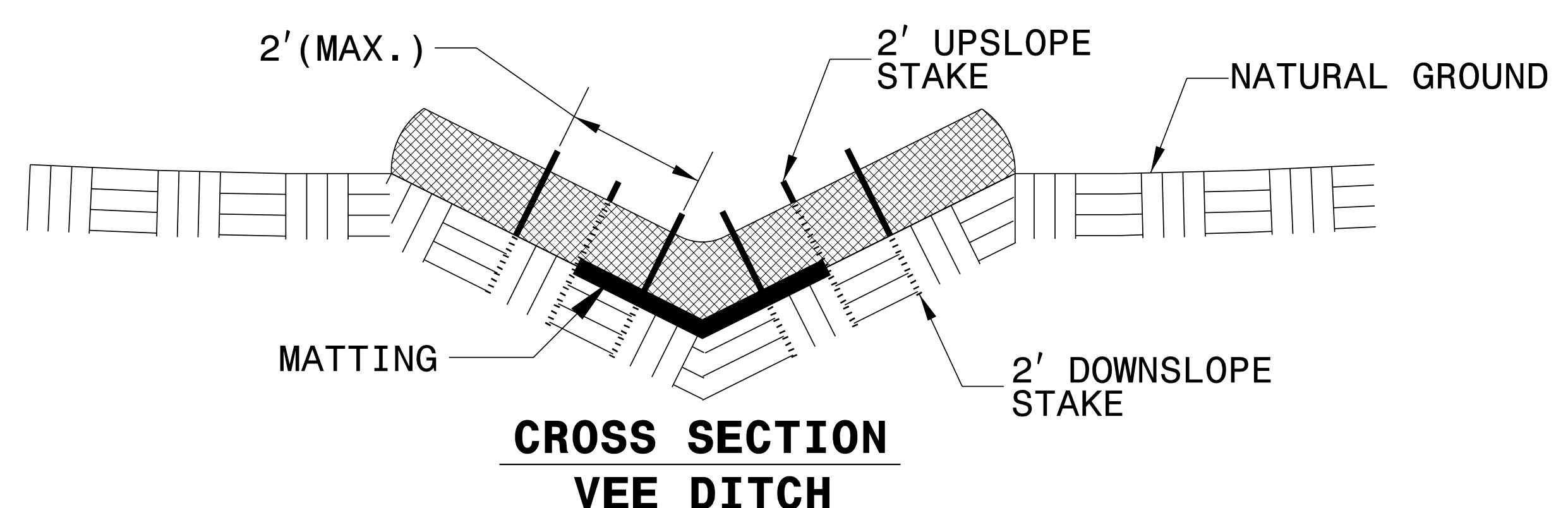
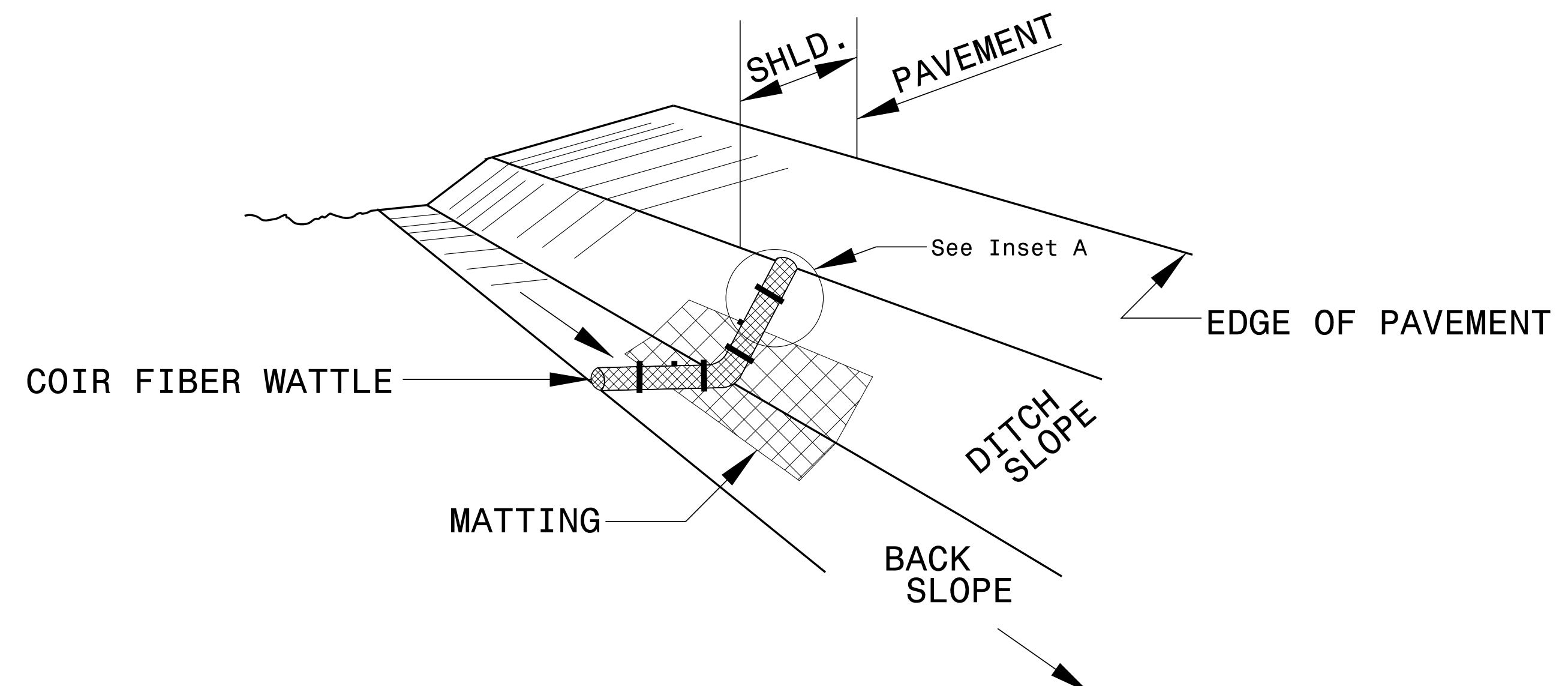
Reviewed by:
Reid Whitehead, PE, CPESC

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2018 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type J
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type J
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type J	1634.02 Temporary Rock Sediment Dam Type J
1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type J
1630.05 Temporary Diversion	1640.01 Coir Fiber Wattle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	

COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

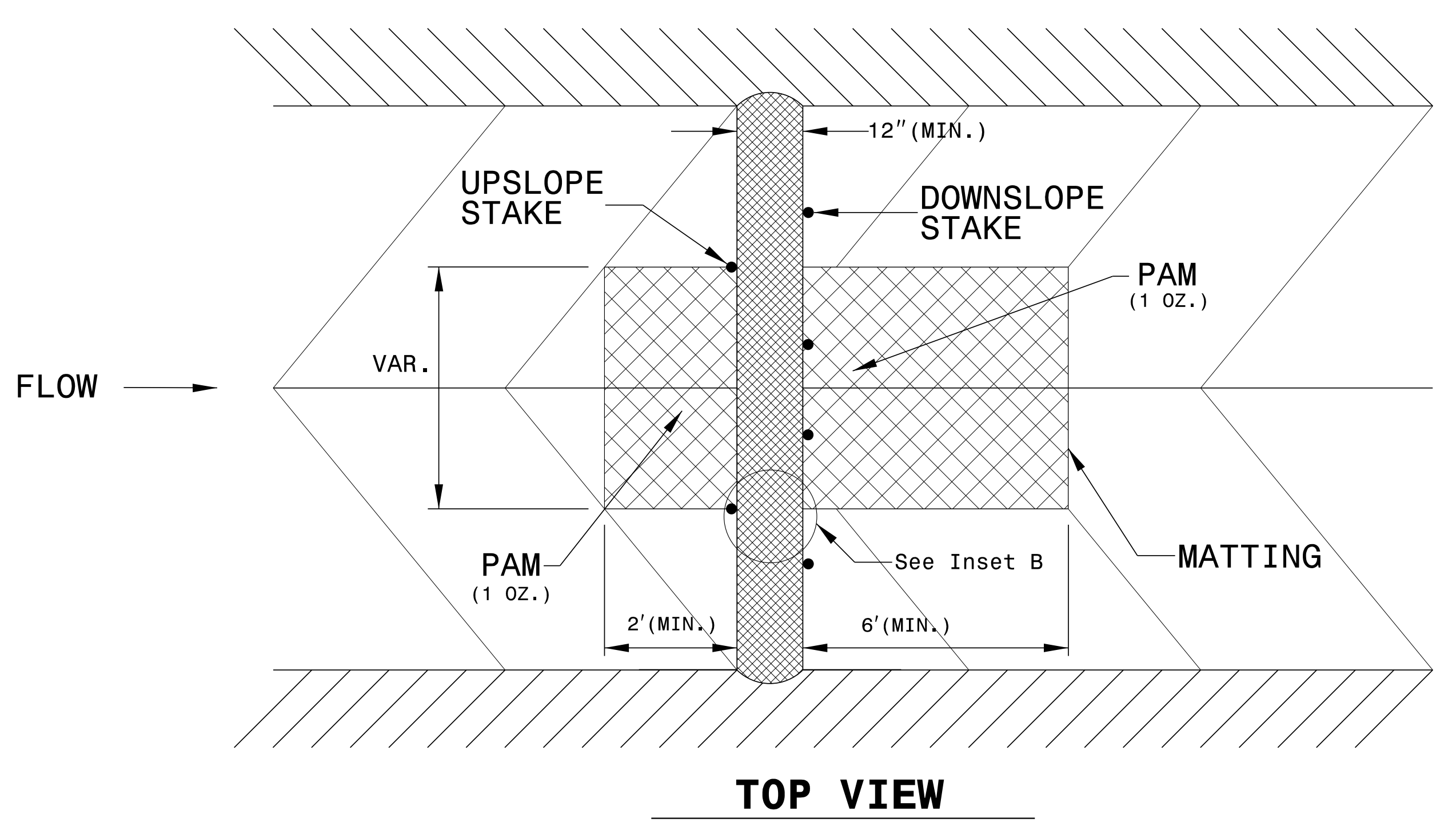
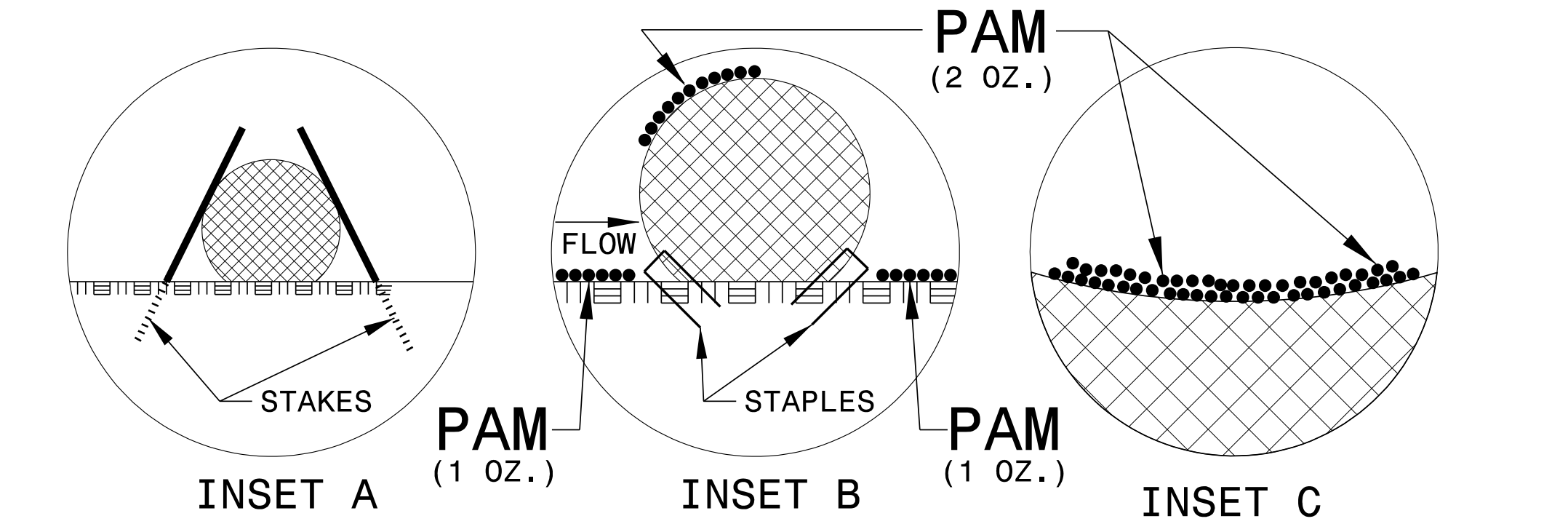
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.


PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. 14SP.20451.2	SHEET NO. EC-3
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Asheville, North Carolina
828-253-2796

- Boone, NC 828-355-9933
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- Charleston, SC 843-974-5650
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- Raleigh, NC 919-977-9455
- Charlotte, NC 704-357-0488
- Atlanta, GA 770-427-3590

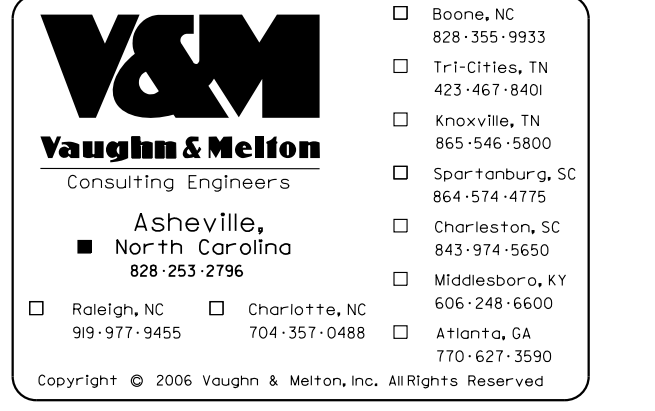
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SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

3/23/2021 10:33:09 AM
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 User: jldavis

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA



SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	10+25	12+79	LT	0
			SUBTOTAL		0
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					1750
				TOTAL	2055
				SAY	2055

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

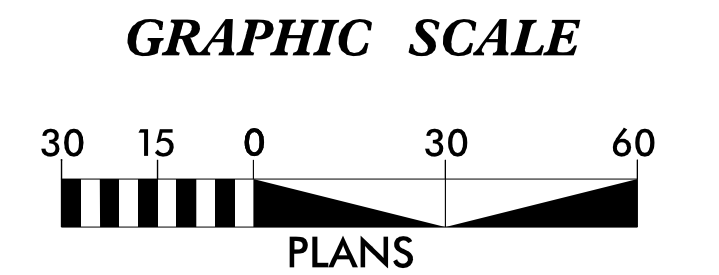
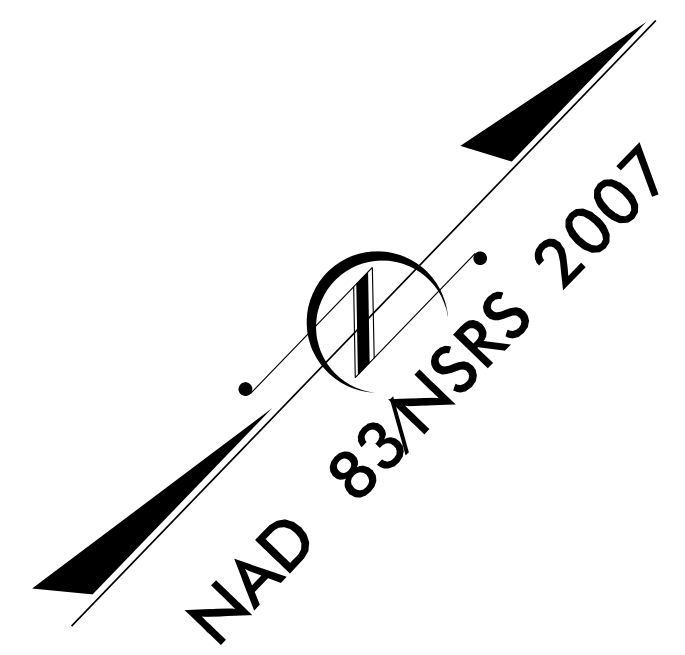
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PROJECT REFERENCE NO. 14SP.20451.2	SHEET NO. EC-4/CONST.4
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Asheville, North Carolina
828-253-2796

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<input type="checkbox"/> T-1-Cities, TN 423-467-8401	<input type="checkbox"/> Charleston, SC 843-974-5650
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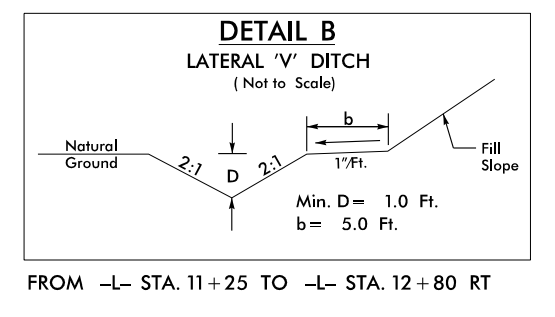
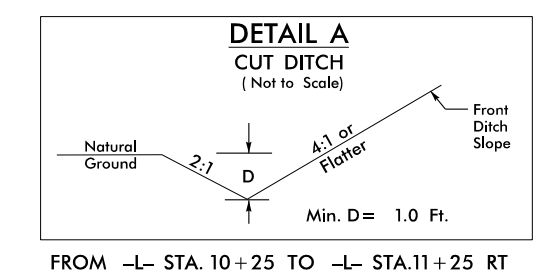
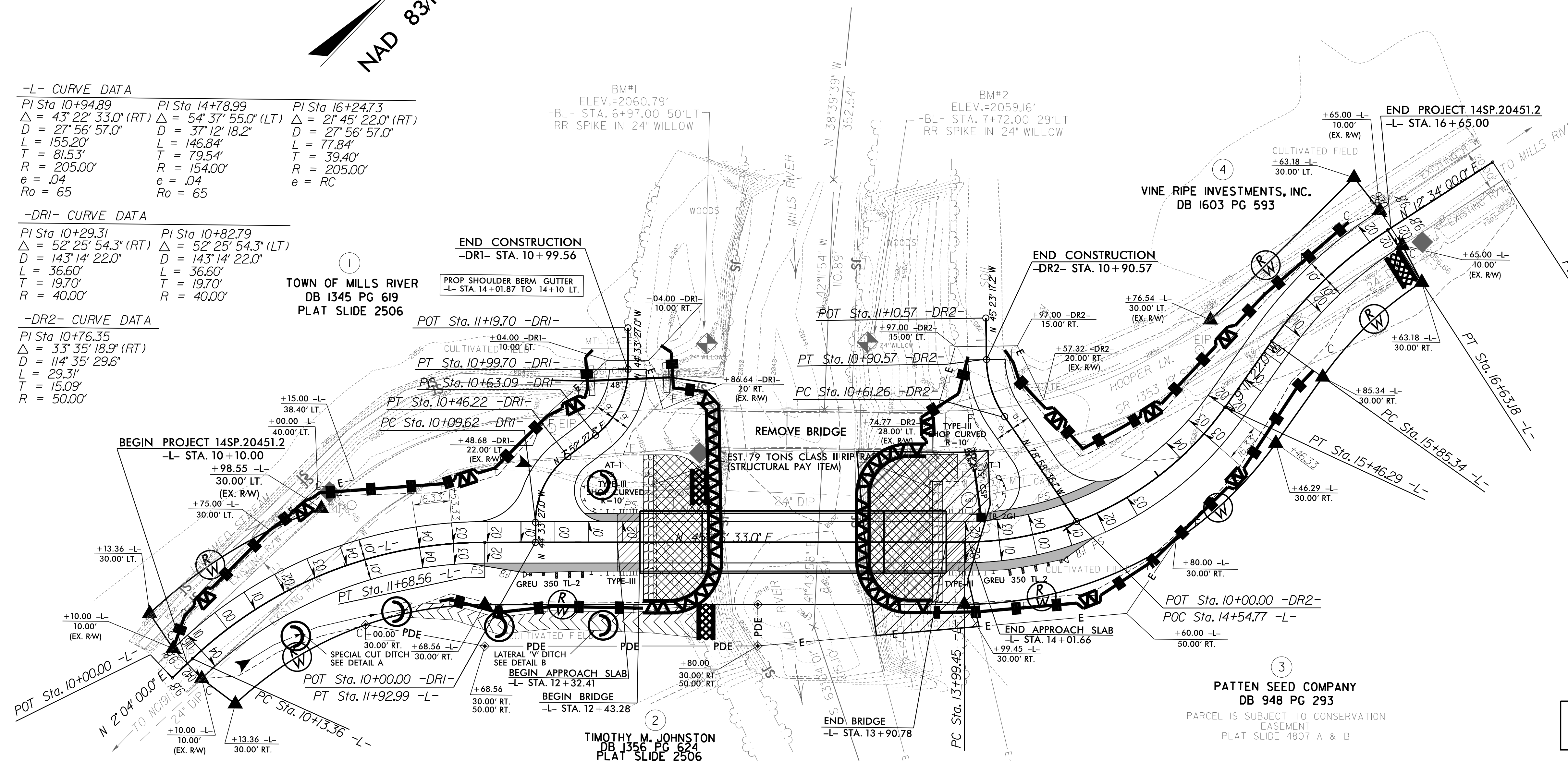
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-DRI- CURVE DATA

PI Sta 10+29.31 Δ = 52° 25' 54.3" (RT) D = 143° 14' 22.0" L = 36.60' T = 19.70' R = 40.00'	PI Sta 10+82.79 Δ = 52° 25' 54.3" (LT) D = 143° 14' 22.0" L = 36.60' T = 19.70' R = 40.00'
---	---

-DR2- CURVE DATA

PI Sta 10+76.35 Δ = 33° 35' 18.9" (RT) D = 114° 35' 29.6" L = 29.31' T = 15.09' R = 50.00'



Excavate Proposed Ditch according to Detail A from Sta. 10+25 to Sta. 11+25

Excavate Proposed Ditch according to Detail B from Sta. 11+25 to Sta. 12+80

ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

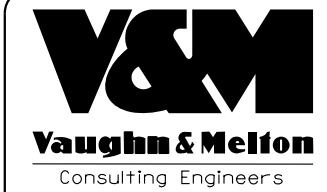
NOTE: UTILIZE SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

NOTE: PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

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CULVERT CONSTRUCTION SEQUENCE STA. 10+95 -DR1-

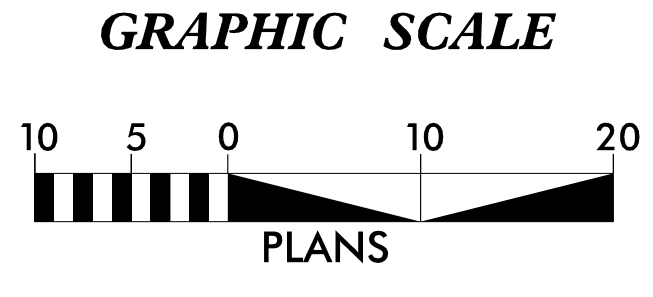
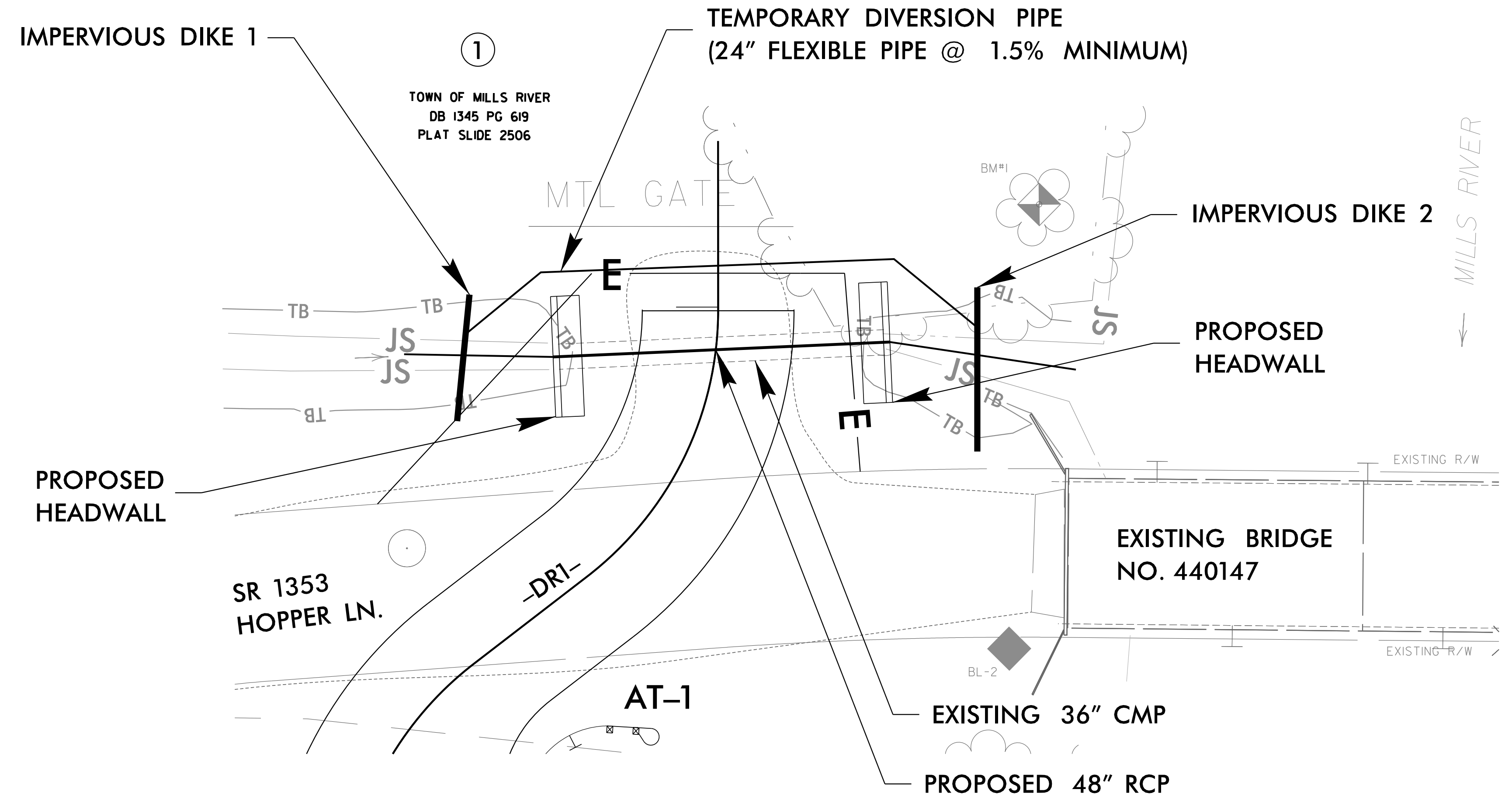


Asheville, North Carolina
828.253.2196

- Boone, NC 828.255.9333
- Tri-Cities, TN 423.467.8401
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1. INSTALL PROPOSED EROSION CONTROL PERIMETER MEASURES FOR PROJECT.
2. UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED THROUGHOUT PIPE INSTALLATION.
3. CONSTRUCT IMPERVIOUS DIKES 1 AND 2, AND INSTALL 24" TEMPORARY DIVERSION PIPE, DIVERTING FLOW THROUGH THE TEMPORARY PIPE.
4. REMOVE EXISTING 36" CMP.
5. INSTALL PROPOSED 48" RCP.
6. REMOVE IMPERVIOUS DIKES AND TEMPORARY PIPE.
7. COMPLETE CONSTRUCTION OF ROADWAY.



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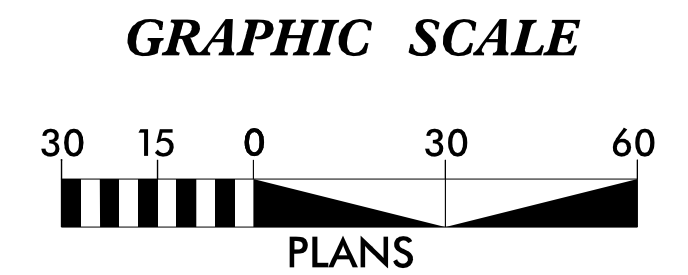
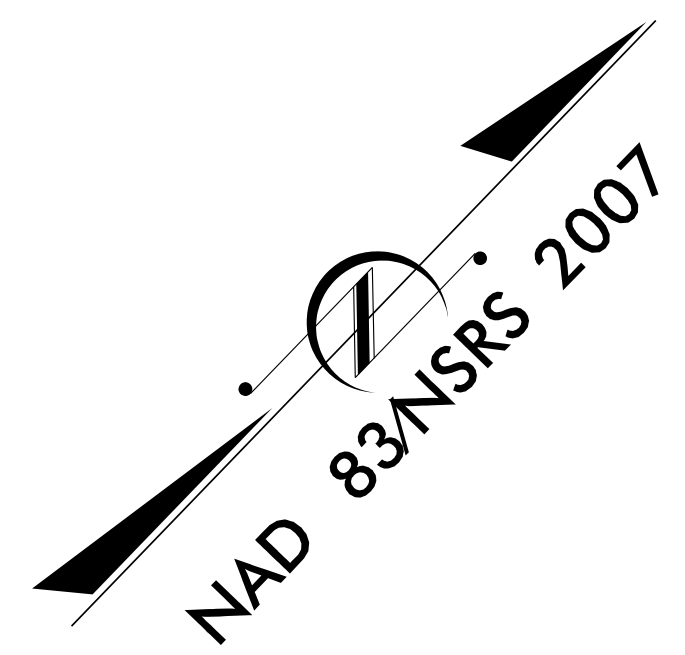
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828-253-2796

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-L- CURVE DATA

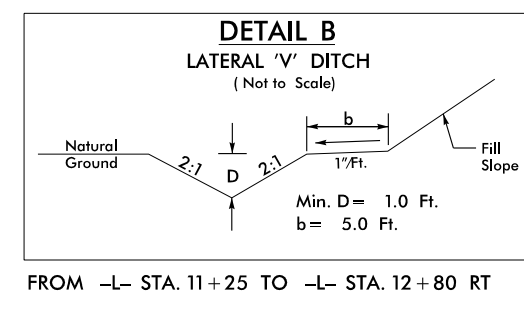
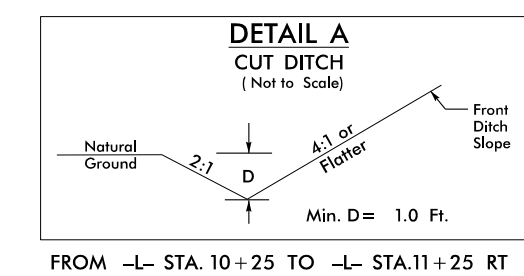
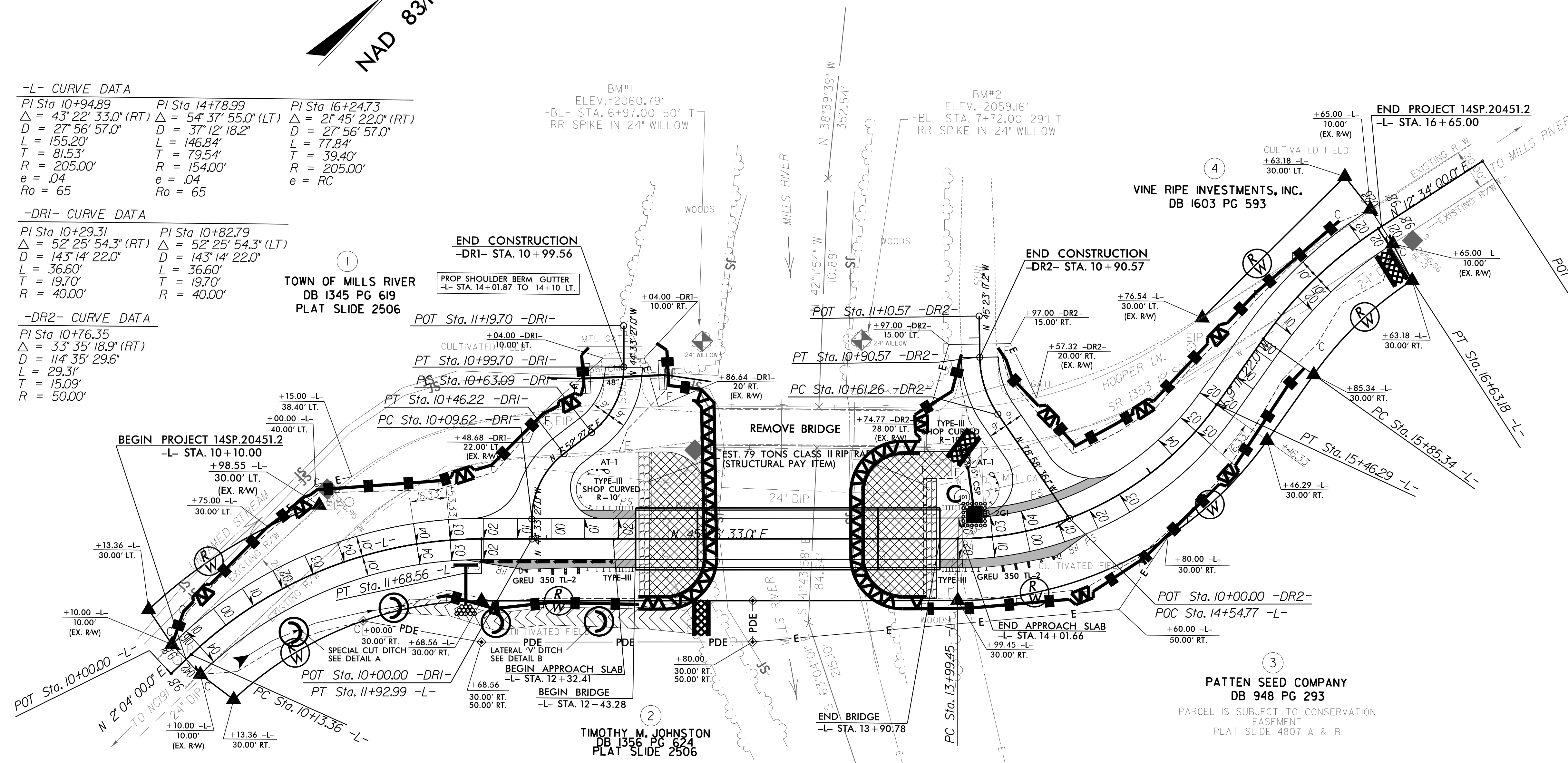
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-DRI- CURVE DATA

PI Sta 10+29.31 Δ = 52° 25' 54.3" (RT) D = 143° 14' 22.0" L = 36.60' T = 19.70' R = 40.00'	PI Sta 10+82.79 Δ = 52° 25' 54.3" (LT) D = 143° 14' 22.0" L = 36.60' T = 19.70' R = 40.00'
---	---

-DR2- CURVE DATA

PI Sta 10+76.35 Δ = 33° 35' 18.9" (RT) D = 114° 35' 29.6" L = 29.31' T = 15.09' R = 50.00'



NOTE:
UTILIZE SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

- NOTES:**
- 1) COIR FIBER MATTING SHALL BE USED TO STABILIZE THE STREAM BANKS (540 SQ YD)
 - 2) ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.
 - 3) ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.
 - 4) ONSITE CONCRETE WASHOUT STRUCTURE IS REQUIRED. LOCATION TO BE DETERMINED IN FIELD.

Place Matting for Erosion Control on Slopes as Work Allows.

3/23/2021 10:36:44 AM C:\Users\jrhenderson\Documents\147\Environmental\Erosion Control Design Files\Hend147_Env_EC-6.dgn

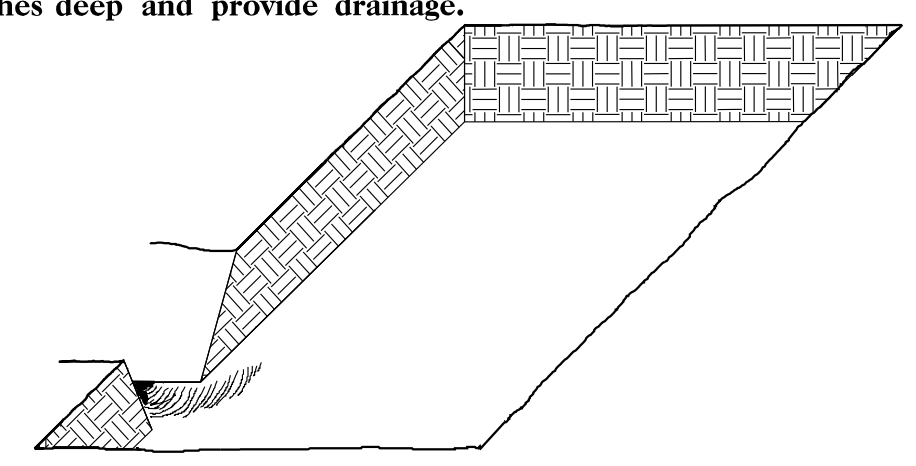
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	14SP.20451.2	RF-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

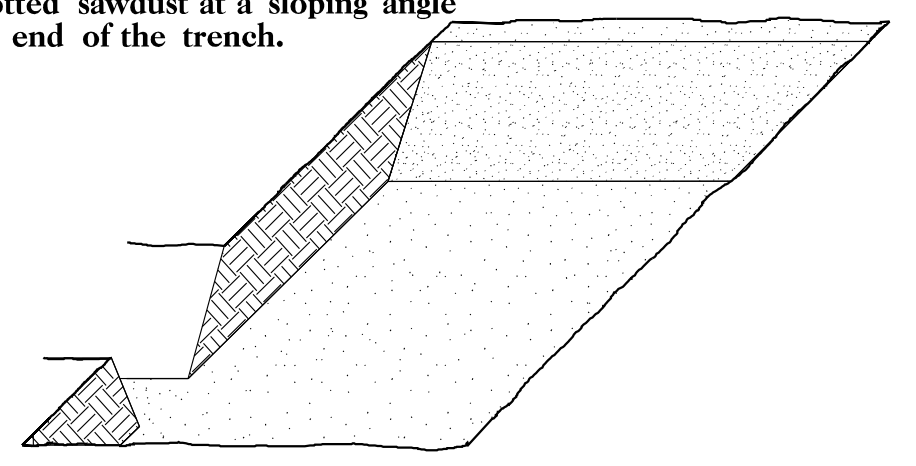
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

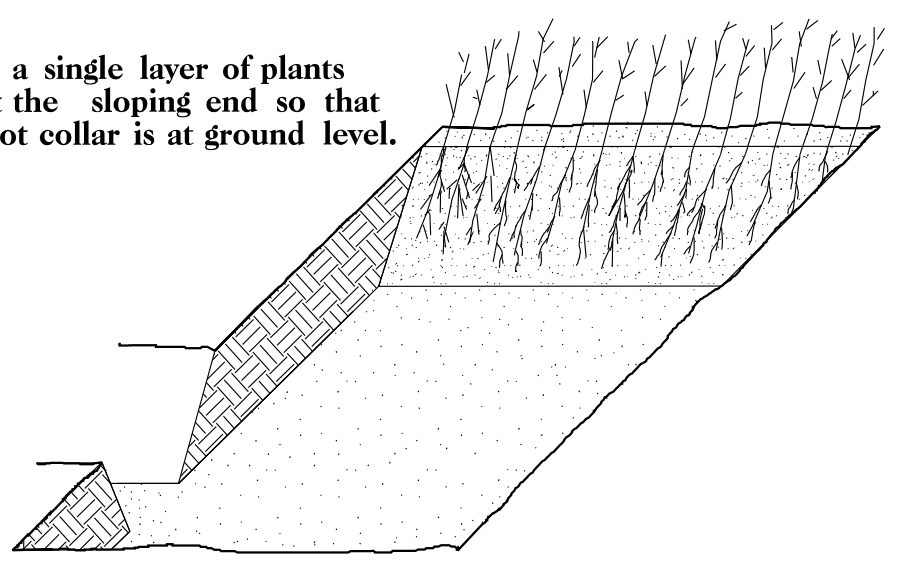
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



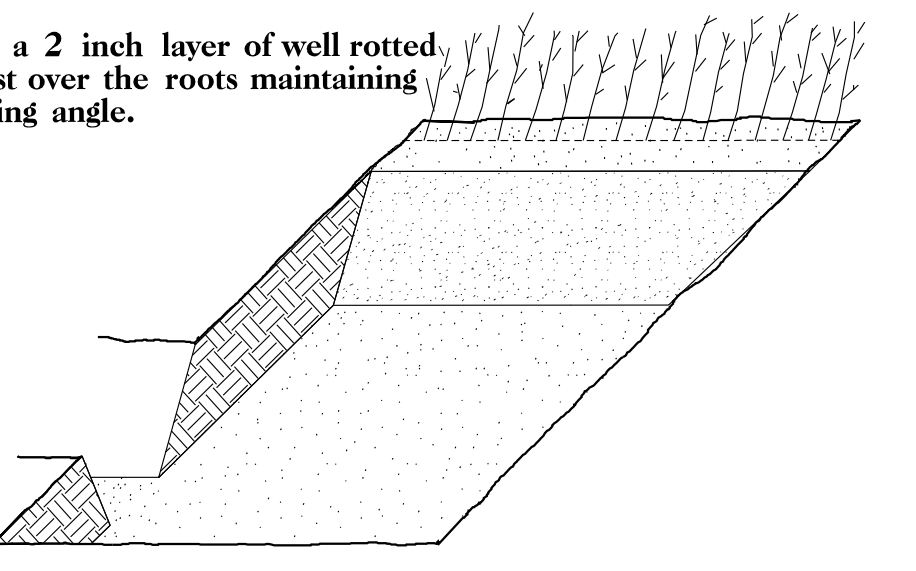
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

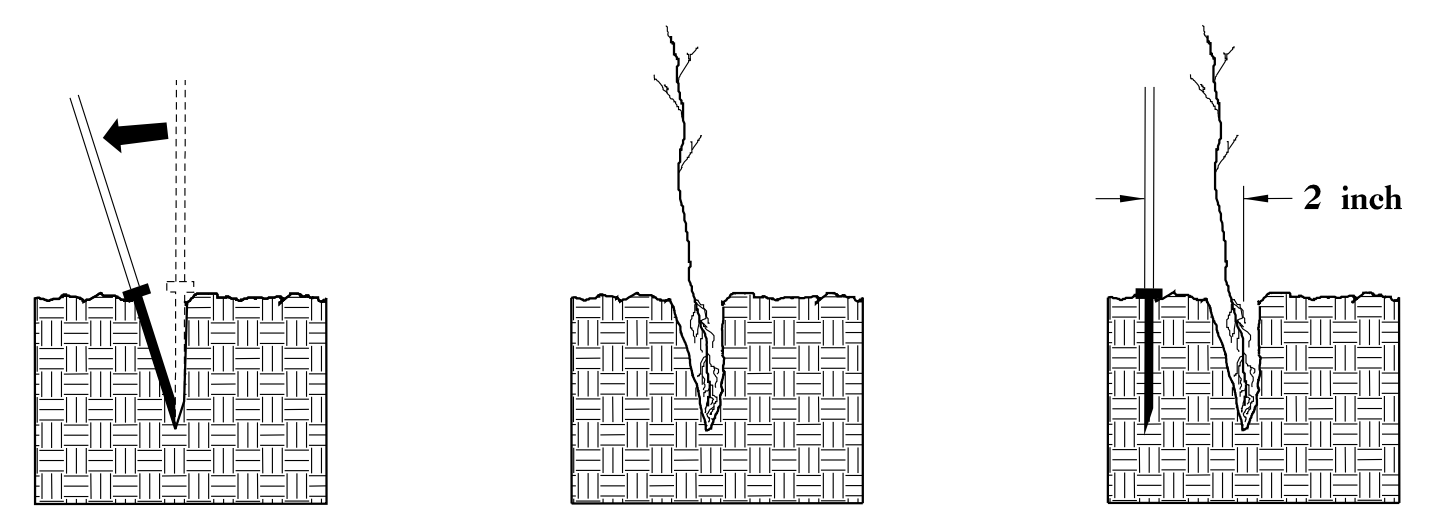


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

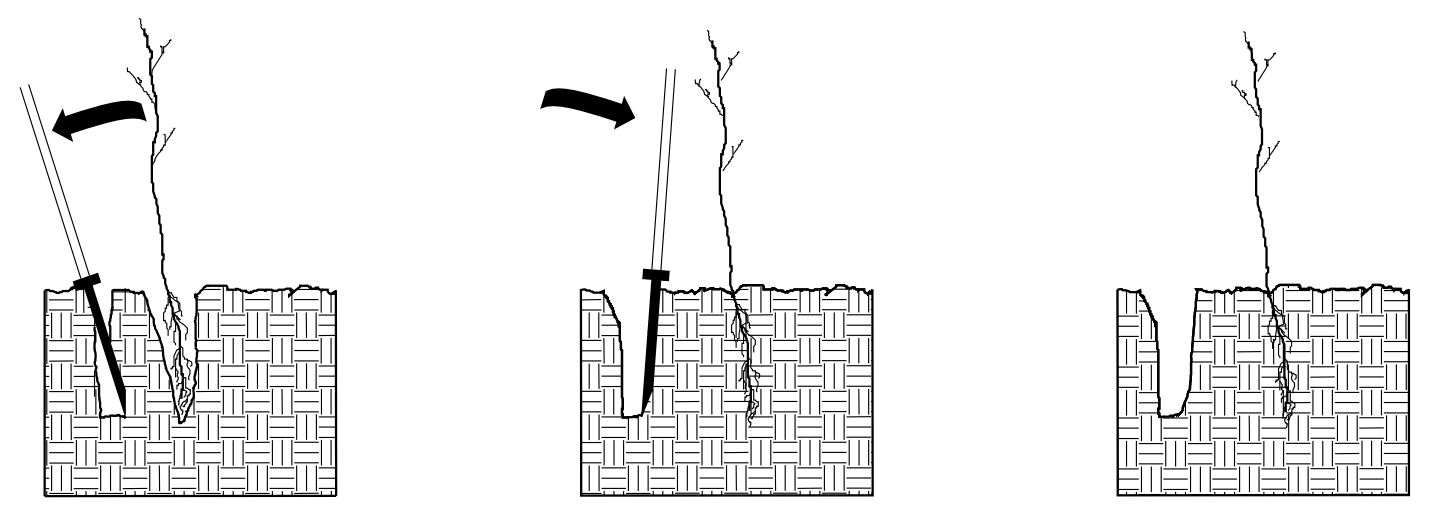


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

DOUBLE PLANTING METHOD USING THE KJC PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.
2. Remove planting bar and place seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.



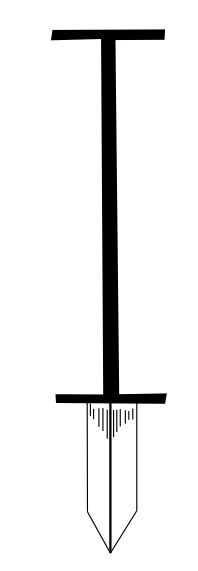
4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



KJC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

- TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

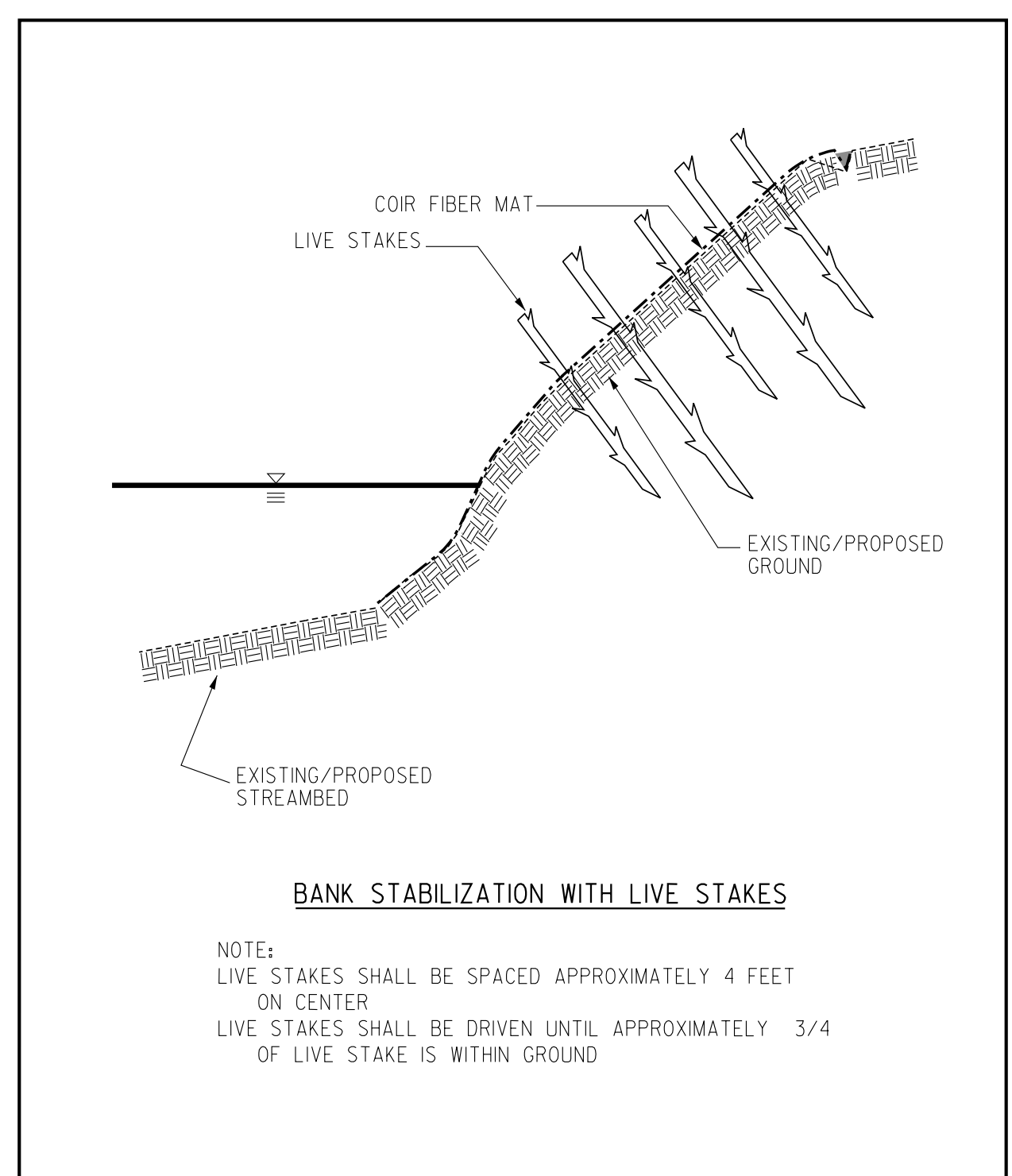
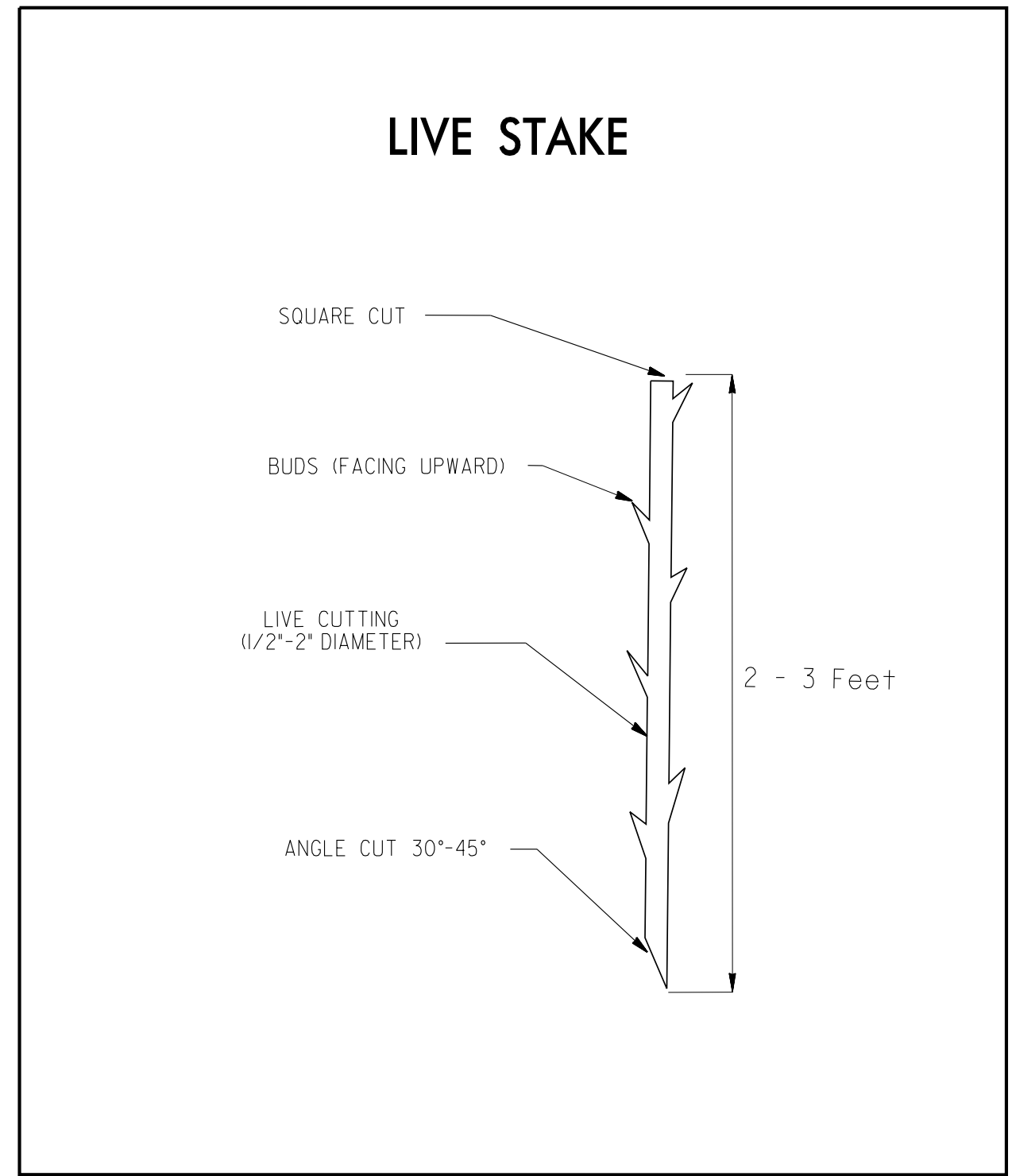
25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in 3R
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in 3R
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in 3R
25%	BETULA NIGRA	RIVER BIRCH	12 in - 18 in 3R

REFORESTATION DETAIL SHEET

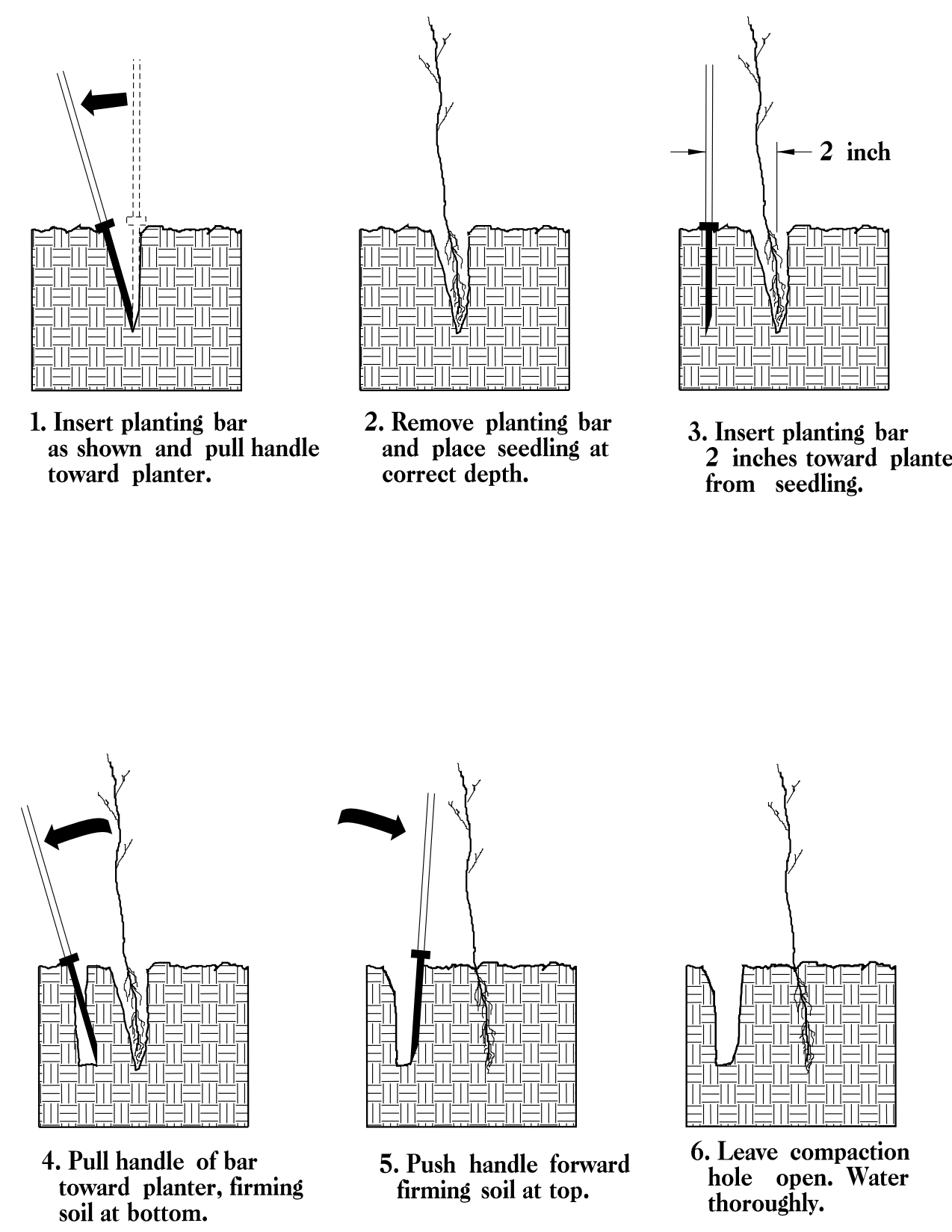
N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

PLANTING DETAILS

LIVE STAKES PLANTING DETAIL

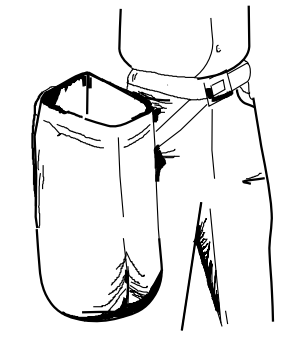


BAREROOT PLANTING DETAIL DOUBLE PLANTING METHOD USING THE K3C PLANTING BAR

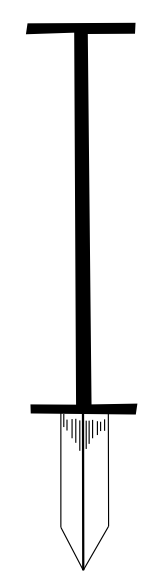


PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

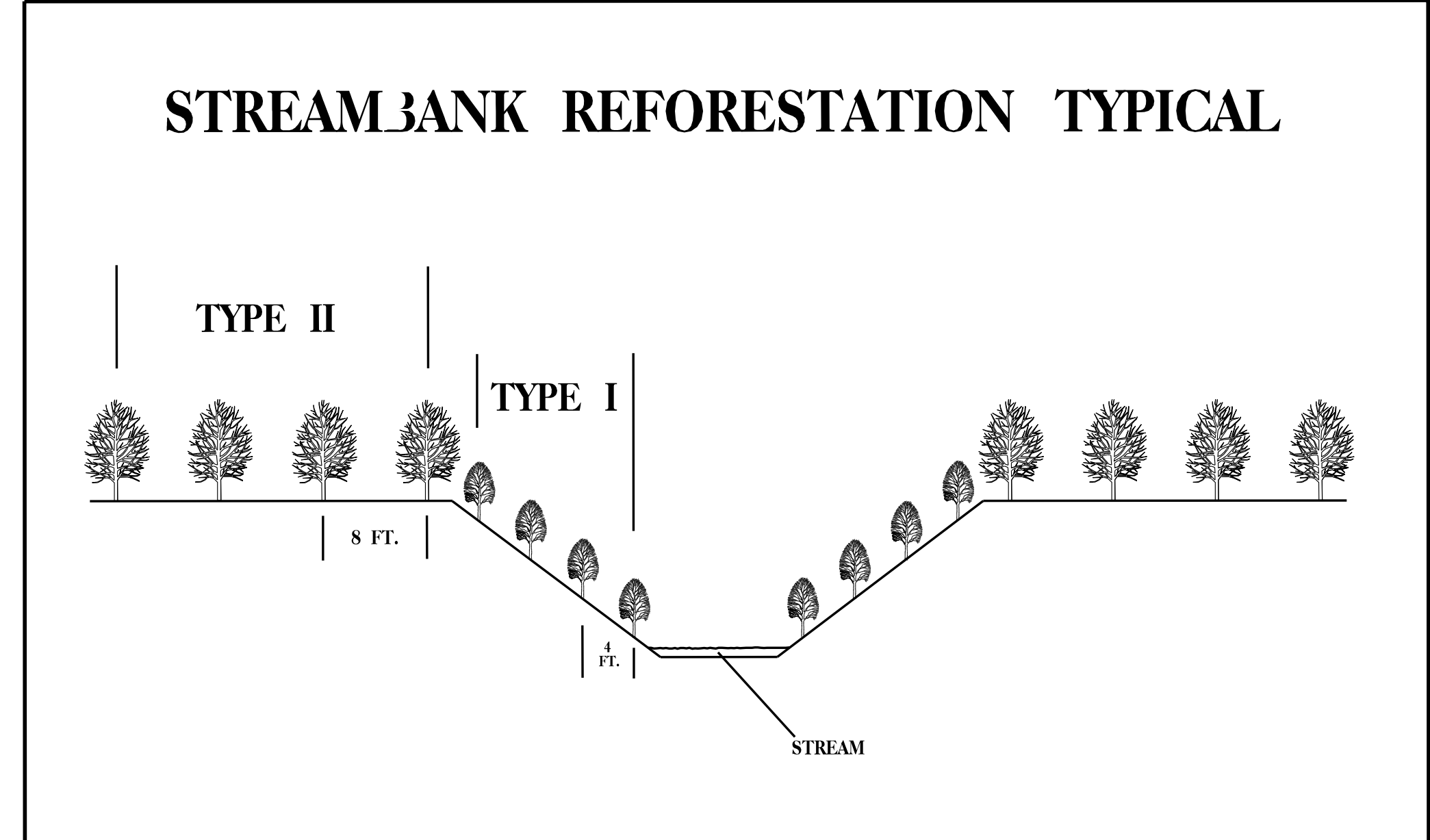


K3C PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

- TYPE 1 STREAMBANK REFORESTATION SHALL BE PLANTED 3 FT. TO 5 FT. ON CENTER, RANDOM SPACING, AVERAGING 4 FT. ON CENTER, APPROXIMATELY 2724 PLANTS PER ACRE.
- TYPE 2 STREAMBANK REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.
- NOTE: TYPE 1 AND TYPE 2 STREAMBANK REFORESTATION SHALL BE PAID FOR AS "STREAMBANK REFORESTATION"



STREAMBANK REFORESTATION


MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

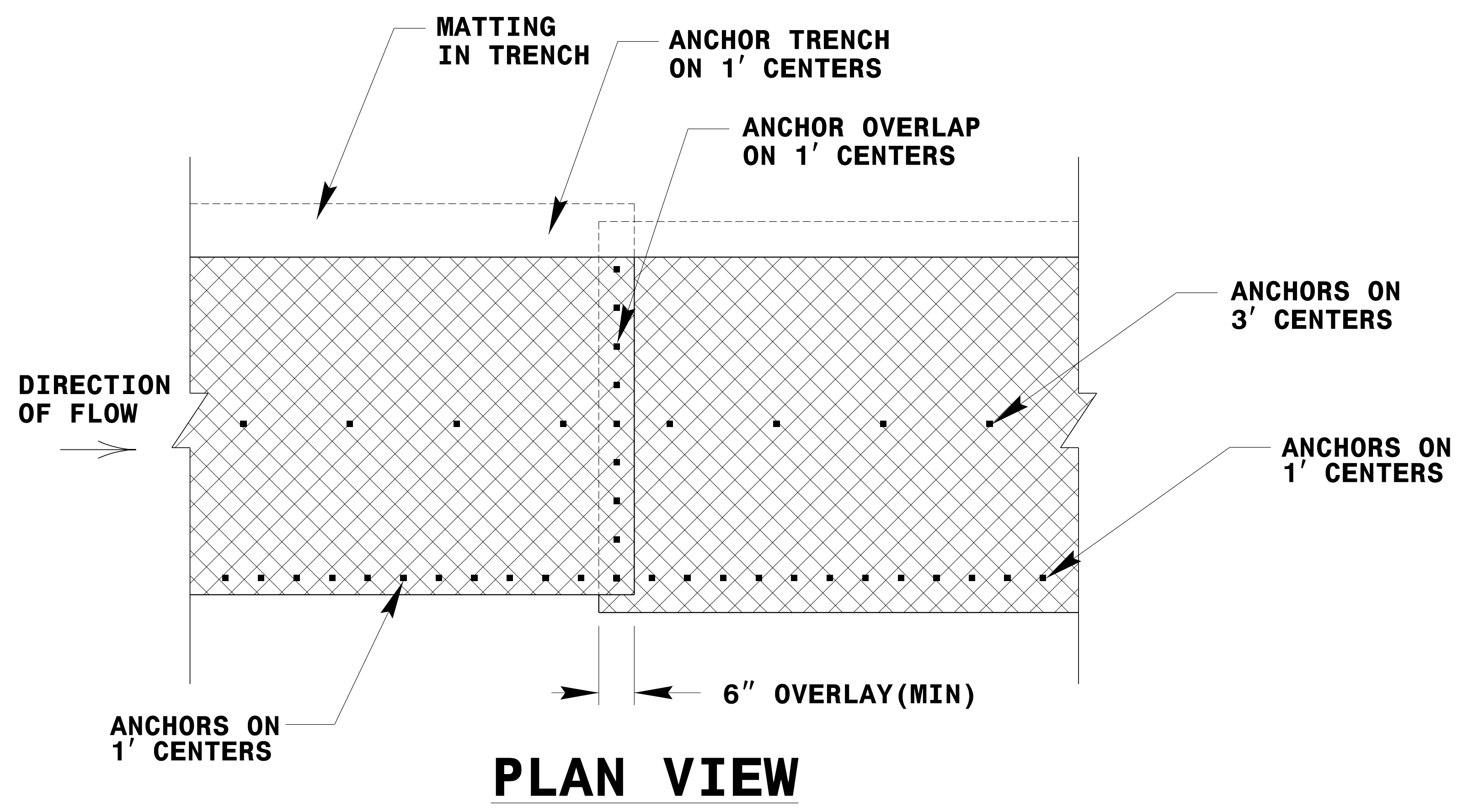
TYPE 1			
50% SALIX NIGRA	BLACK WILLOW	2 ft - 3 ft LIVE STAKES	
50% CORNUS AMOMUM	SILKY DOGWOOD	2 ft - 3 ft LIVE STAKES	
TYPE 2			
25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in 3R	
25% PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in 3R	
25% PRUNUS SEROTINA	BLACK CHERRY	12 in - 18 in 3R	
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in 3R	

SEE PLAN SHEETS FOR AREAS TO BE PLANTED

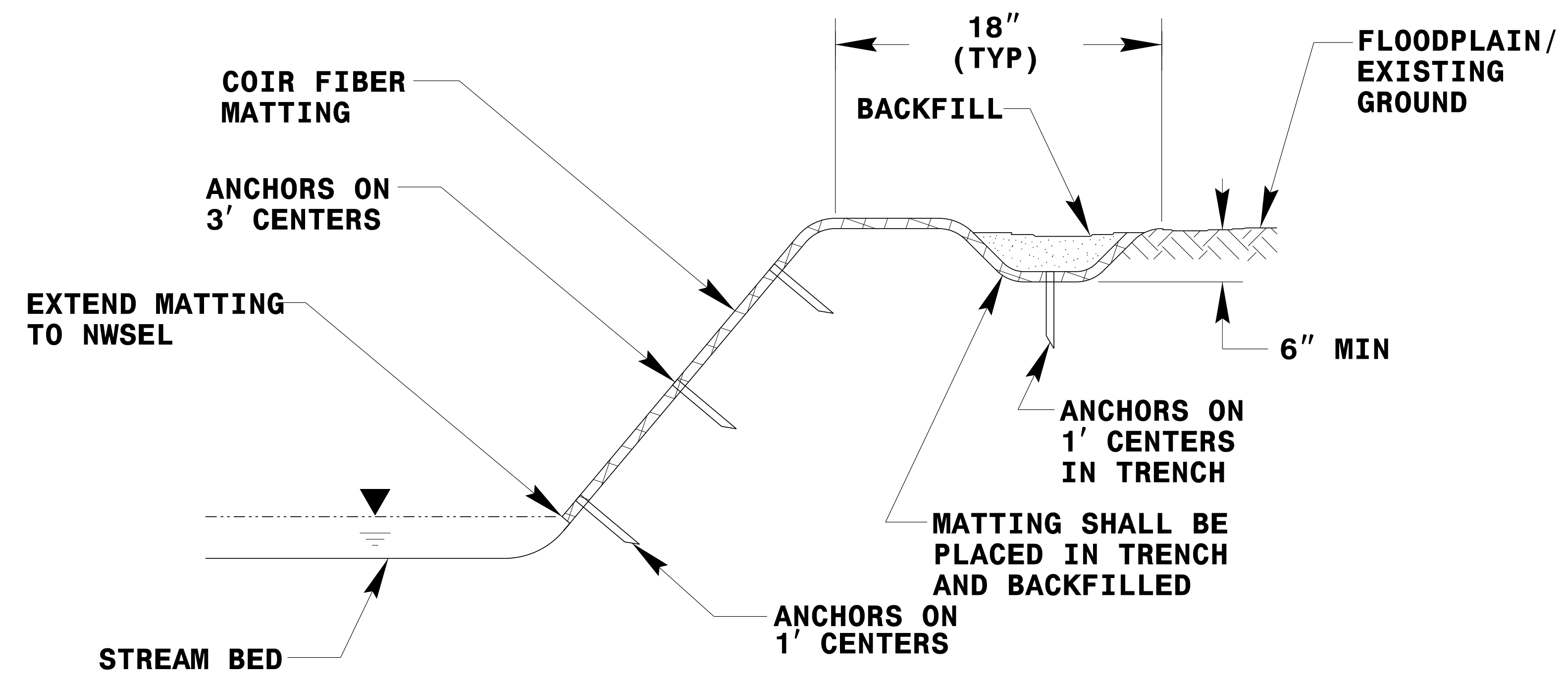
STREAMBANK REFORESTATION DETAIL SHEET 1 OF 2

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

PROJECT REFERENCE NO. 14SP.20451.2	SHEET NO. RF-3
	
Asheville, North Carolina 828-253-2796	
<input type="checkbox"/> Tri-Cities, TN 423-467-8401 <input type="checkbox"/> Knoxville, TN 865-546-5500 <input type="checkbox"/> Spartanburg, SC 864-574-4775 <input type="checkbox"/> Charleston, SC 843-974-5650 <input type="checkbox"/> Middletown, KY 606-248-6600 <input type="checkbox"/> Charlotte, NC 704-357-0488	<input type="checkbox"/> Boone, NC 828-355-9933 <input type="checkbox"/> Atlanta, GA 770-627-3509
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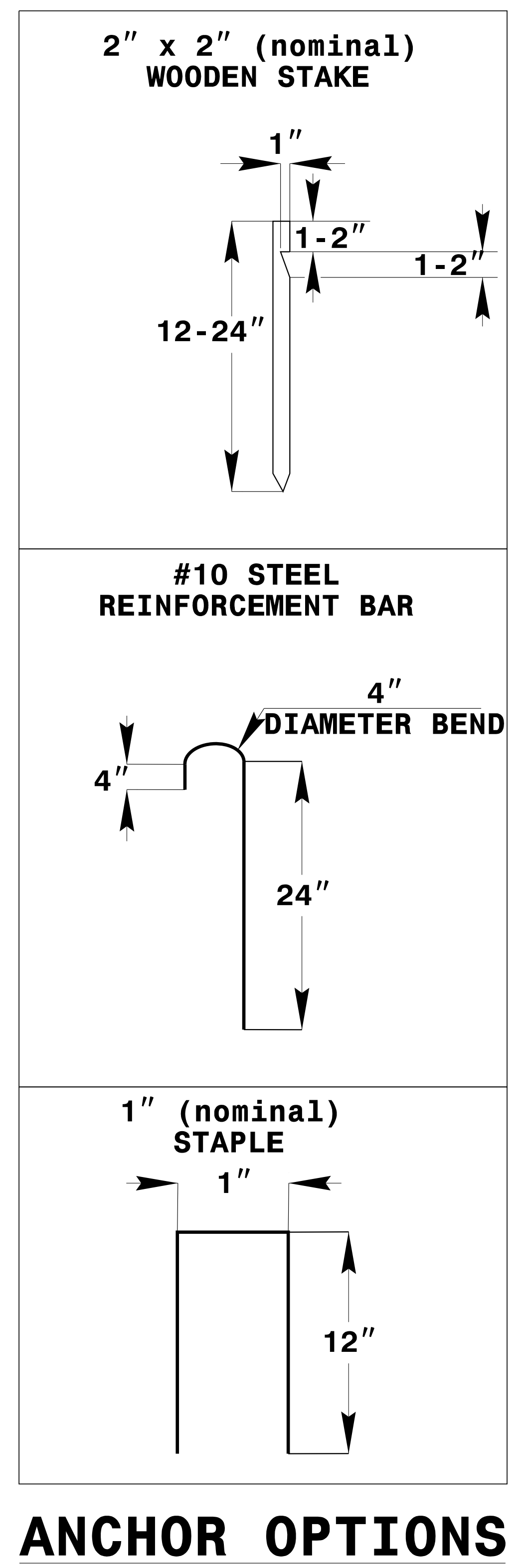
PLAN VIEW



TYPICAL CROSS SECTION

COIR FIBER MATTING DETAIL

NOT TO SCALE



ANCHOR OPTIONS

STREAMBANK REFORESTATION
DETAIL SHEET 2 OF 2
 N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT