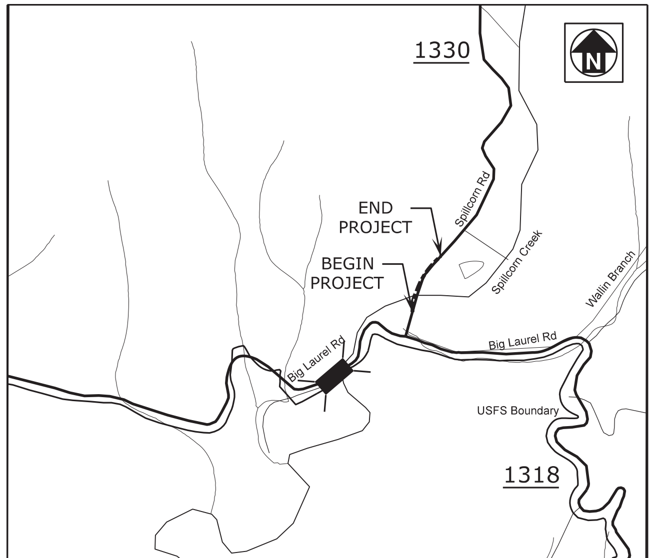
CONTRACT: DM00334 PROJECT: 17BP.13.R.169

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



VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

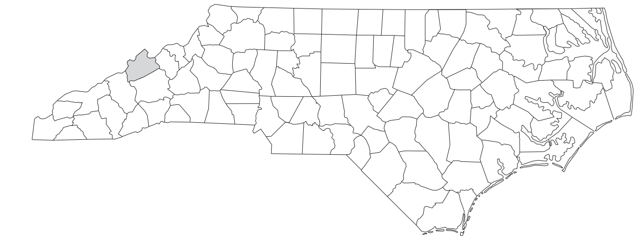
MADISON COUNTY

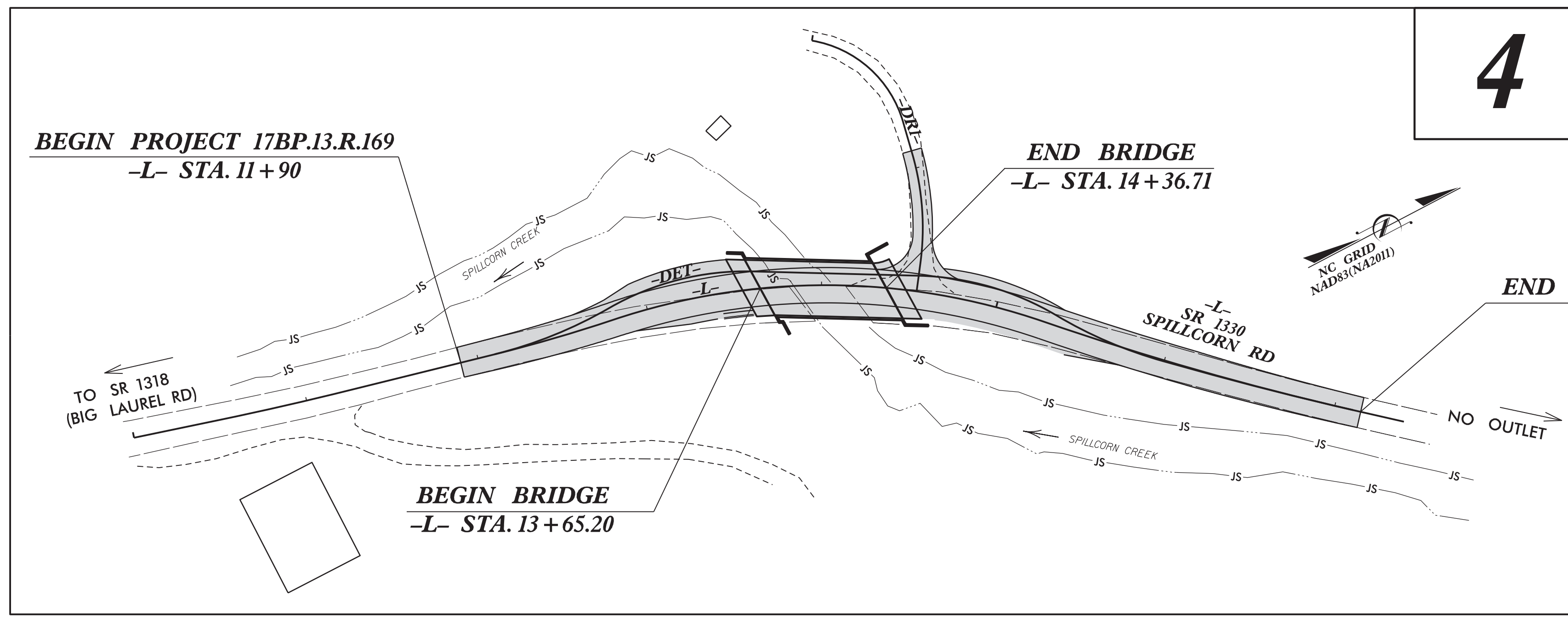
LOCATION: BRIDGE NO. 151 ON SR 1330 (SPILLCORN RD) OVER SPILLCORN CREEK

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.169	1	

STATE PROJECT NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.13.PE.169	N/A	P.E.
17BP.13.ROW.169	N/A	RW & UTIL
17BP.13.R.169	N/A	CONST





PLANS PREPARED BY:

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GRAPHIC SCALES

40 20 0 40 80
PLANS

40 20 0 40 80
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2016 = 340

V = 35 MPH

FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.13.R.169 = 0.085 MILES

LENGTH STRUCTURE PROJECT 17BP.13.R.169 = 0.014 MILES

TOTAL LENGTH PROJECT 17BP.13.R.169 = 0.099 MILES

Prepared In the Office of:
MATTERN & CRAIG
12 BROAD ST.
ASHEVILLE, NC 28801
FOR NCDOT DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 2, 2021

LETTING DATE:
DECEMBER 21, 2022

AARON CARVER, PE
PROJECT ENGINEER

MENG YANG, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT:
MIKE CALLOWAY
DIVISION 13 BRIDGE PROGRAM MANAGER

ROADWAY DESIGN ENGINEER

DocuSigned by: Aaron Carver 8250B42A220F49C...
NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CARVER
11/29/2022
P.E.
SIGNATURE:

HYDRAULICS ENGINEER

DocuSigned by: Aaron Carver 8250B42A220F49C...
NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CARVER
11/29/2022
P.E.
SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ69	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL
DocuSigned by: Aaron Carver
AARON C. CARVER
10/21/2022

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL PLAN SHEET SYMBOLS
2A-1	PAVEMENT SCHEDULE & TYPICAL SECTIONS
2B-1	ON-SITE DETOUR SHEET
2C-1	MODIFIED CONCRETE FLUME
2C-2	GUARDRAIL INSTALLATION IN LIEU OF STD 862.02 SHEET 6 OF 8
2C-3	GUARDRAIL INSTALLATION IN LIEU OF STD 862.03 SHEET 1 OF 7 AND SHEET 2 OF 7
2C-4	TYPE III - SHOP CURVED ANCHOR UNIT
2C-5	GUARDRAIL INSTALLATION A.T.-1 SYSTEM
3B-1	SUMMARY OF DRAINAGE QUANTITIES, SUMMARY OF GUARDRAIL, SUMMARY OF PAVEMENT REMOVAL, AND SUMMARY OF EARTHWORK
3G-1	GEOTECHNICAL SUMMARY SHEET
4	PLAN SHEET & PROFILE SHEET
RW01 thru RW04	RIGHT OF WAY SHEETS
TMP-1 thru TMP-5	TRAFFIC MANAGEMENT PLANS
PM-1	PAVEMENT MARKING PLAN
EC-1 thru EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLAN
UO-1 thru UO-2	UTILITIES BY OTHERS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 thru X-7	CROSS SECTION SHEETS
S-1 thru S-19	STRUCTURE PLANS

GENERAL NOTES

GENERAL NOTES: 2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

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.

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

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.

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:
POWER - FRENCH BROAD ELECTRIC MEMBERSHIP CORP.
PHONE - FRONTIER COMMUNICATIONS

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

STANDARD DRAWINGS

EFF. 01-16-2018
REV.

2018 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, 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 II
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
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modified Approach Fill
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	
815.02	Subsurface Drain
846.01	Concrete Curb, Gutter and Curb & Gutter
850.01	Concrete Paved Ditches
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Unit
876.02	Guide for Rip Rap at Pipe Outlets

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ69	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

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	
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	FLOW
False Sump	

RAILROADS:

Standard Gauge	CSX TRANSPORTATION
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 Easment 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	
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	S
Storm Sewer	S

UTILITIES:

POWER:

Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	P
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	T
Telephone Pedestal	T
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	HH
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	W
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line LOS B (S.U.E*)	
U/G Water Line LOS C (S.U.E*)	
U/G Water Line LOS D (S.U.E*)	
Above Ground Water Line	A/G Water

TV:

TV Pedestal	C
TV Tower	
U/G TV Cable Hand Hole	HH
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	S
Utility Unknown U/G Line LOS B (S.U.E.*)	?UTL
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	UST
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.

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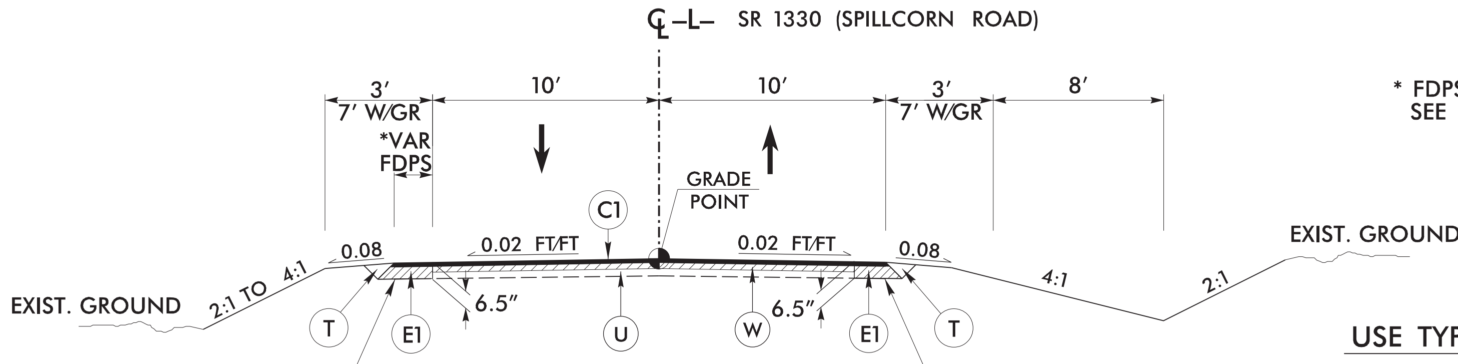
10/20/2022 10/21/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

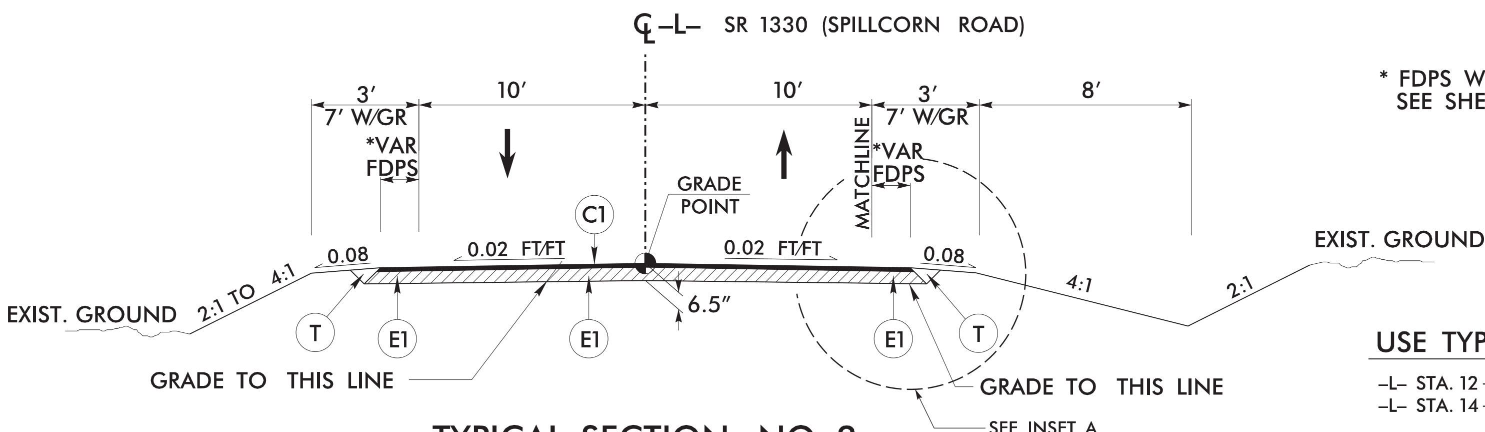
* FDPS WIDTH VARIES SEE SHEETS 2B-1 & 4



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

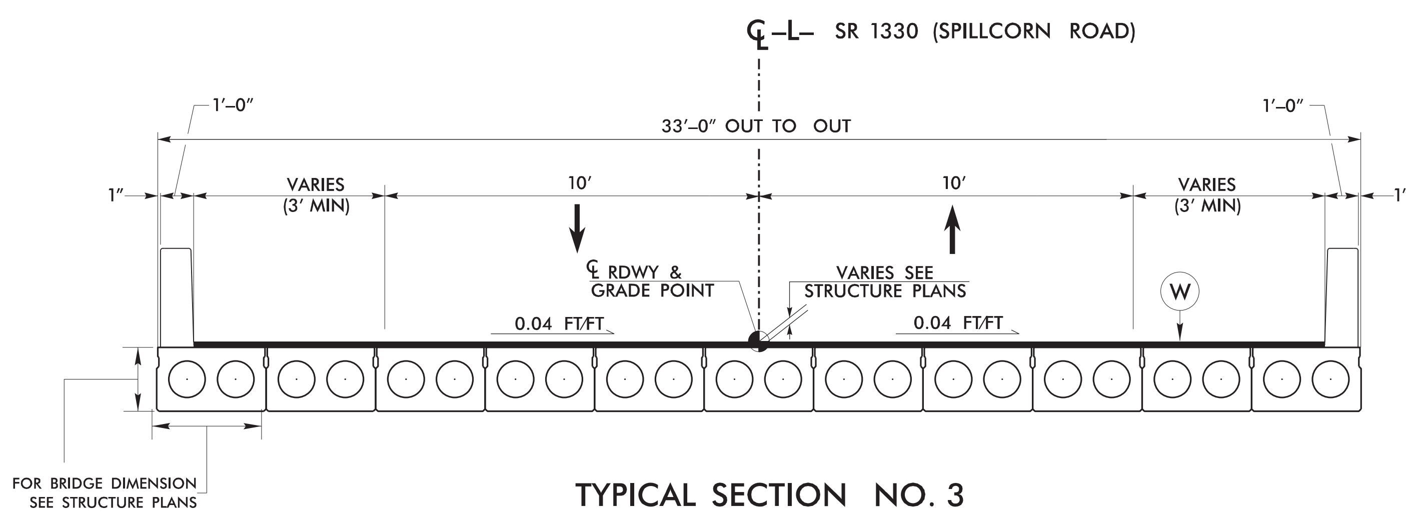
-L- STA. 11+90 TO -L- STA. 12+90
-L- STA. 16+05 TO -L- STA. 17+15



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

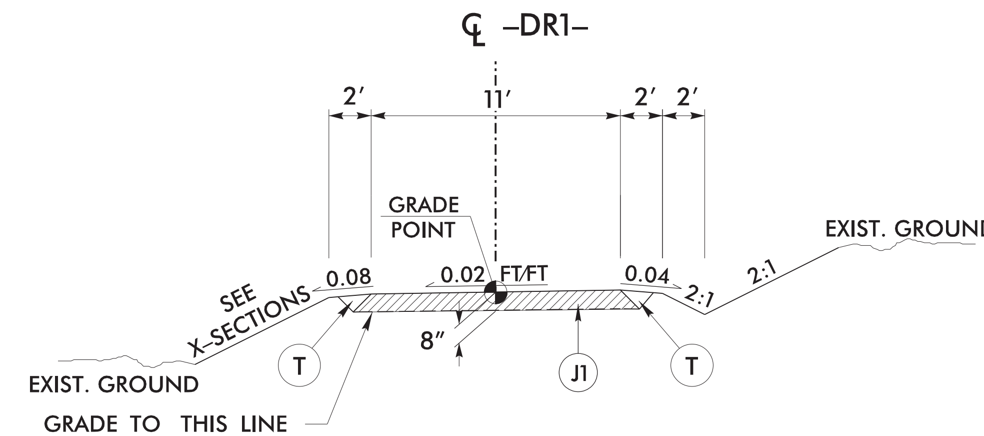
-L- STA. 12+90 TO -L- STA. 13+65.20 (BEGIN BRIDGE)
-L- STA. 14+36.71 (END BRIDGE) TO -L- STA. 16+05



TYPICAL SECTION NO. 3

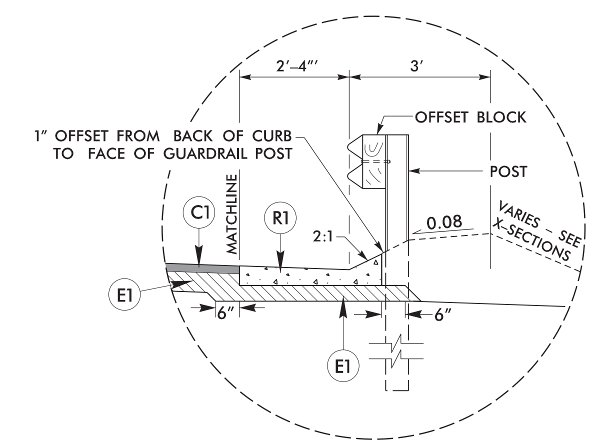
USE TYPICAL SECTION NO. 3

-L- STA. 13+65.20 (BEGIN BRIDGE) TO
-L- STA. 14+36.71 (END BRIDGE)



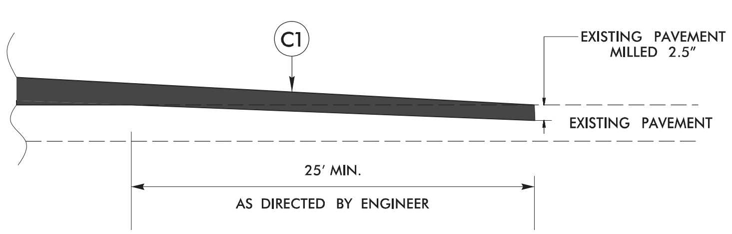
USE TYPICAL SECTION NO. 4

-DR1- STA. 10+90 TO -DR1- STA 11+60.42

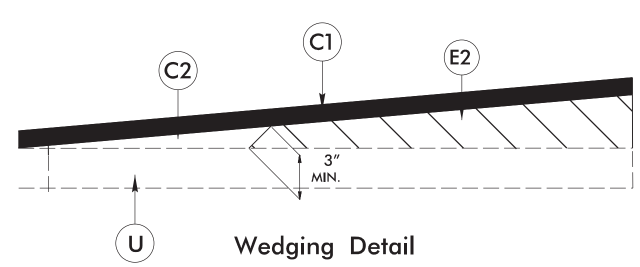


INSET A

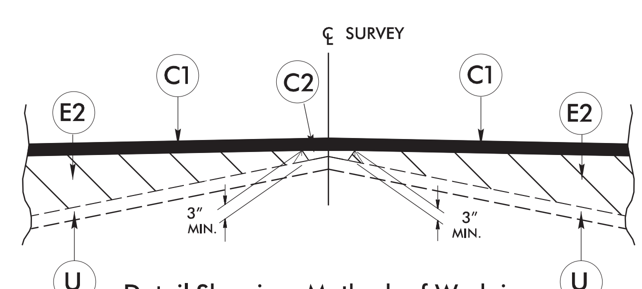
SBG -L- STA. 13+50 RT TO BEGIN APPROACH SLAB



Milling Existing Pavement



Wedging Detail



Detail Showing Method of Wedging

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 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 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, 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 5.5" IN DEPTH.
J1	8" AGGREGATE BASE COURSE
R1	SHOULDER BERM GUTTER (NCDOT STANDARD DRAWING NO. 846.01)
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	PROPOSED WEDGING (SEE APPROPRIATE DETAILS)

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.69	2B-1

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

DocuSigned by: Aaron Carver — 10/26/2022

DocuSigned by: Aaron Carver — 10/26/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ON–SITE DETOUR

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REVISIONS

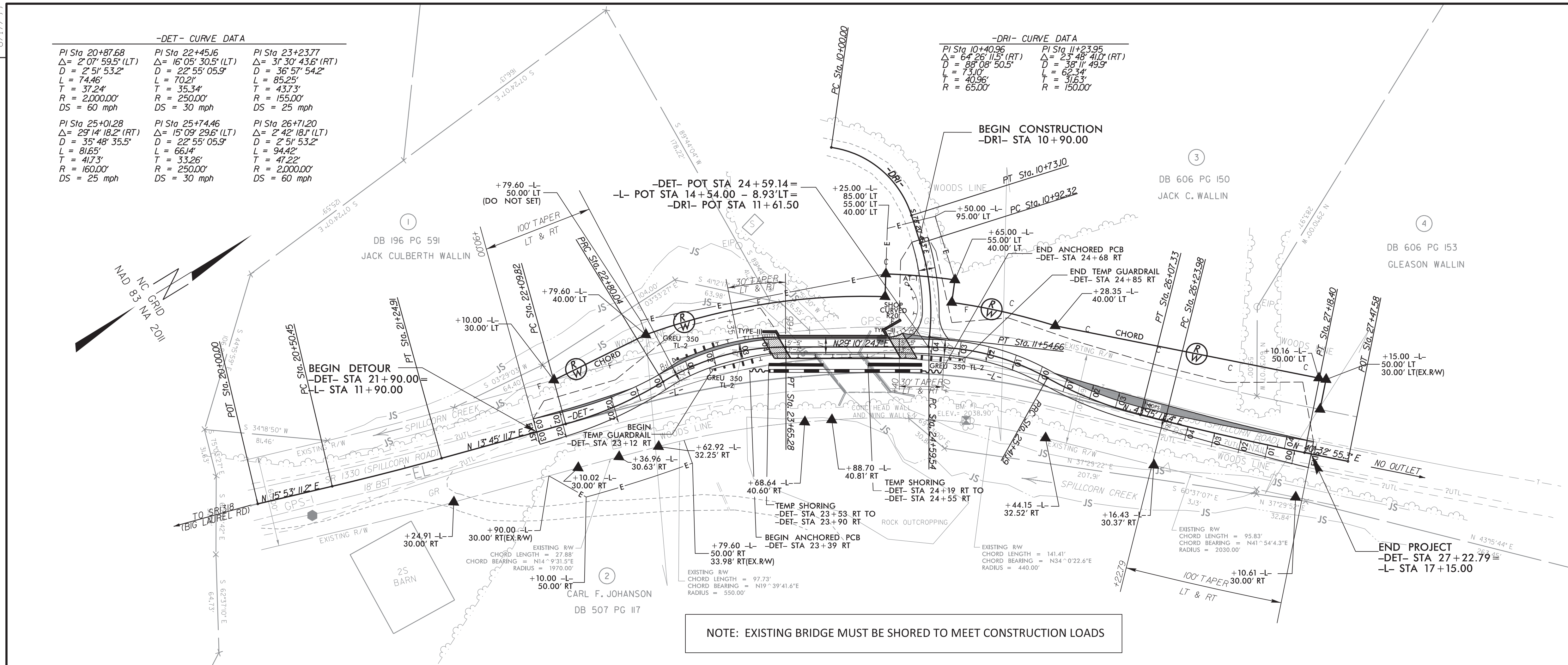
8/17/99

–DET– CURVE DATA

PI Sta 20+87.68 Δ = 2° 07' 59.5" (LT) D = 2° 51' 53.2" L = 74.46' T = 37.24' R = 2,000.00' DS = 60 mph	PI Sta 22+45.16 Δ = 16° 05' 30.5" (LT) D = 22° 55' 05.9" L = 70.21' T = 35.34' R = 250.00' DS = 30 mph	PI Sta 23+23.77 Δ = 31° 30' 43.6" (RT) D = 36° 57' 54.2" L = 85.25' T = 43.73' R = 155.00' DS = 25 mph
PI Sta 25+01.28 Δ = 29° 14' 18.2" (RT) D = 35° 48' 35.5" L = 81.65' T = 41.73' R = 160.00' DS = 25 mph	PI Sta 25+74.46 Δ = 15° 09' 29.6" (LT) D = 22° 55' 05.9" L = 66.14' T = 33.26' R = 250.00' DS = 30 mph	PI Sta 26+71.20 Δ = 2° 42' 18.1" (LT) D = 2° 51' 53.2" L = 94.42' T = 47.22' R = 2,000.00' DS = 60 mph

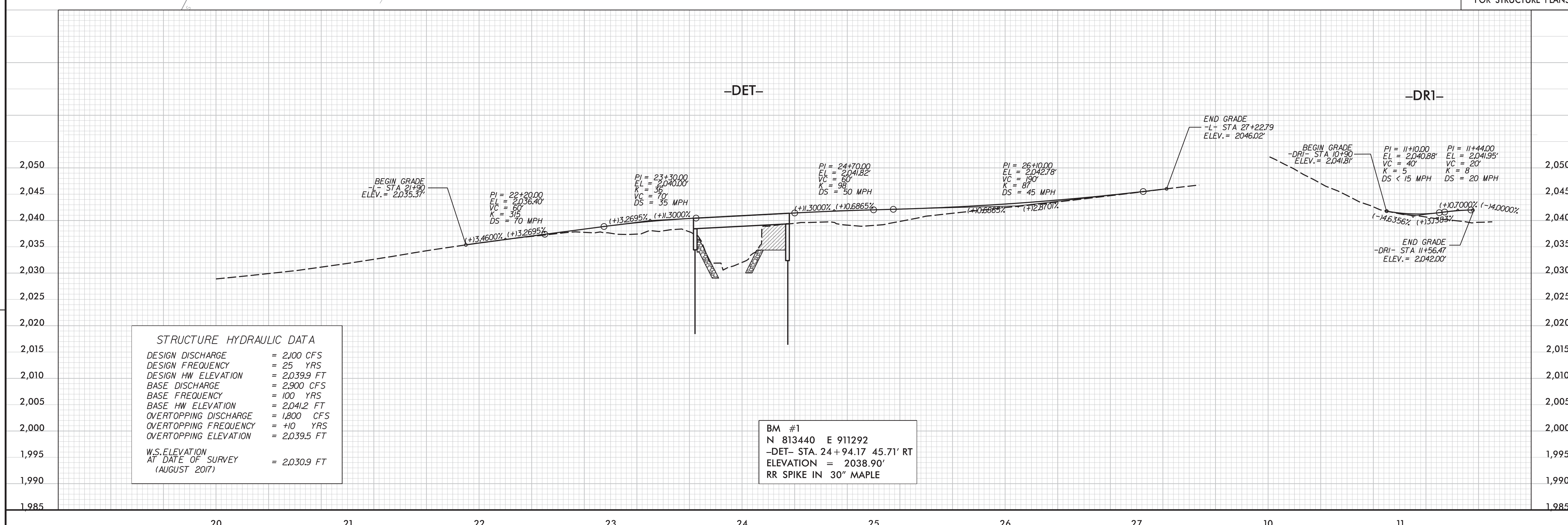
–DR1– CURVE DATA

PI Sta 10+40.96 Δ = 64° 26' 11.5" (RT) D = 88° 08' 50.5" L = 73.10' T = 40.96' R = 65.00'	PI Sta 11+23.95 Δ = 23° 48' 41.0" (RT) D = 38° 11' 49.9" L = 62.34' T = 31.63' R = 150.00'



NOTE: EXISTING BRIDGE MUST BE SHORED TO MEET CONSTRUCTION LOADS

SEE SHEETS S-1 THRU S-19 FOR STRUCTURE PLANS



STRUCTURE HYDRAULIC DATA

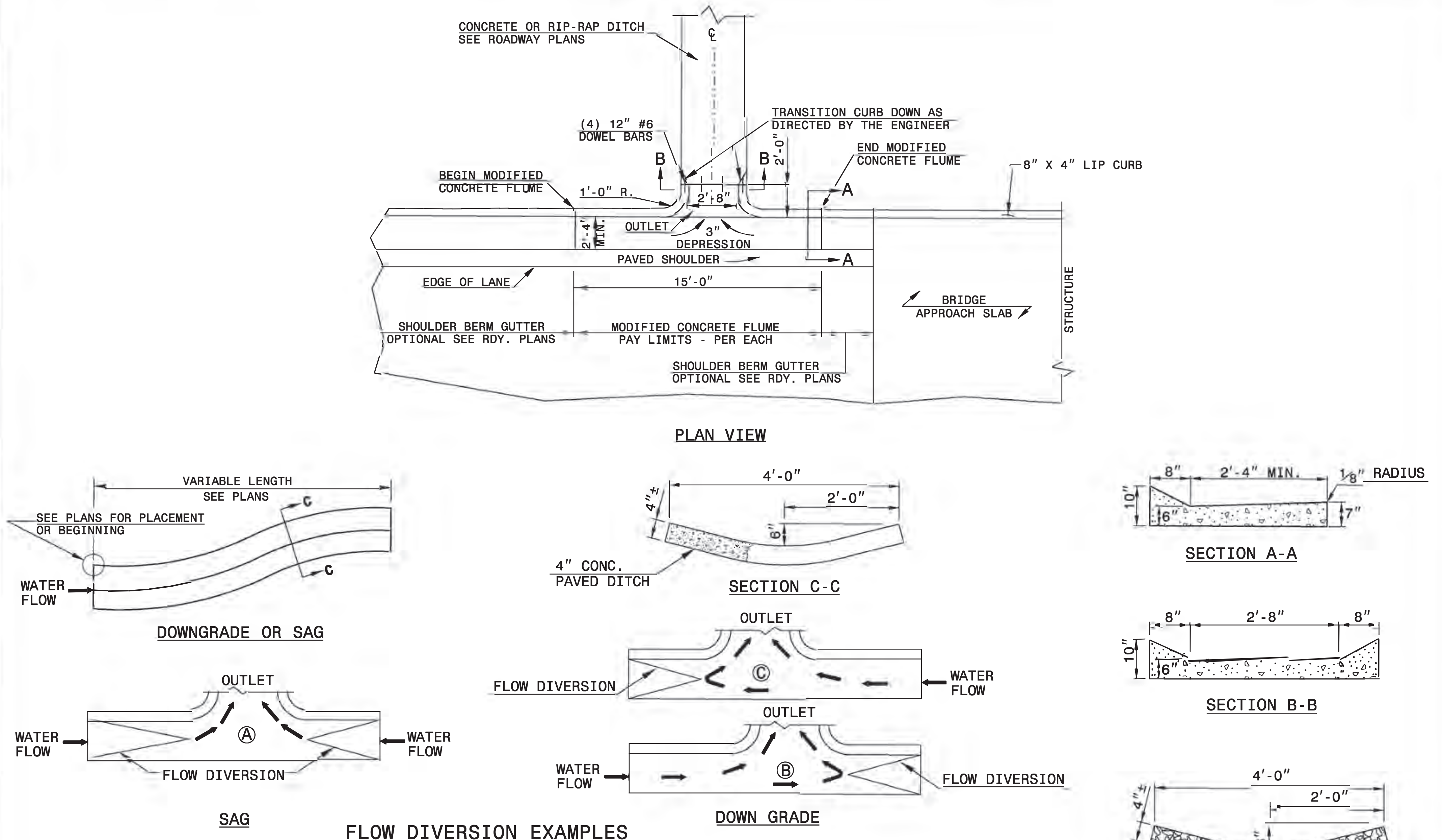
DESIGN DISCHARGE	= 2,100 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2,039.9 FT
BASE DISCHARGE	= 2,900 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2,041.2 FT
OVERTOPPING DISCHARGE	= 1,800 CFS
OVERTOPPING FREQUENCY	= +10 YRS
OVERTOPPING ELEVATION	= 2,039.5 FT
W.S. ELEVATION AT DATE OF SURVEY (AUGUST 2017)	= 2,030.9 FT

BM #1
N 813440 E 911292
–DET– STA. 24+94.17 45.71' RT
ELEVATION = 2038.90'
RR SPIKE IN 30" MAPLE

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.169	2C-1

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH



NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

SHEET 1 OF 1
MODFLMDTCH

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

DocuSigned by: Nicole M. Hackler
10/4/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. Ward DATE: Apr. 2002
MODIFIED BY: J.S. Howerton DATE: October 2017
CHECKED BY: DATE:
FILE SPEC.: w:details\stand\modifiedflume.dgn

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.169	2C-2

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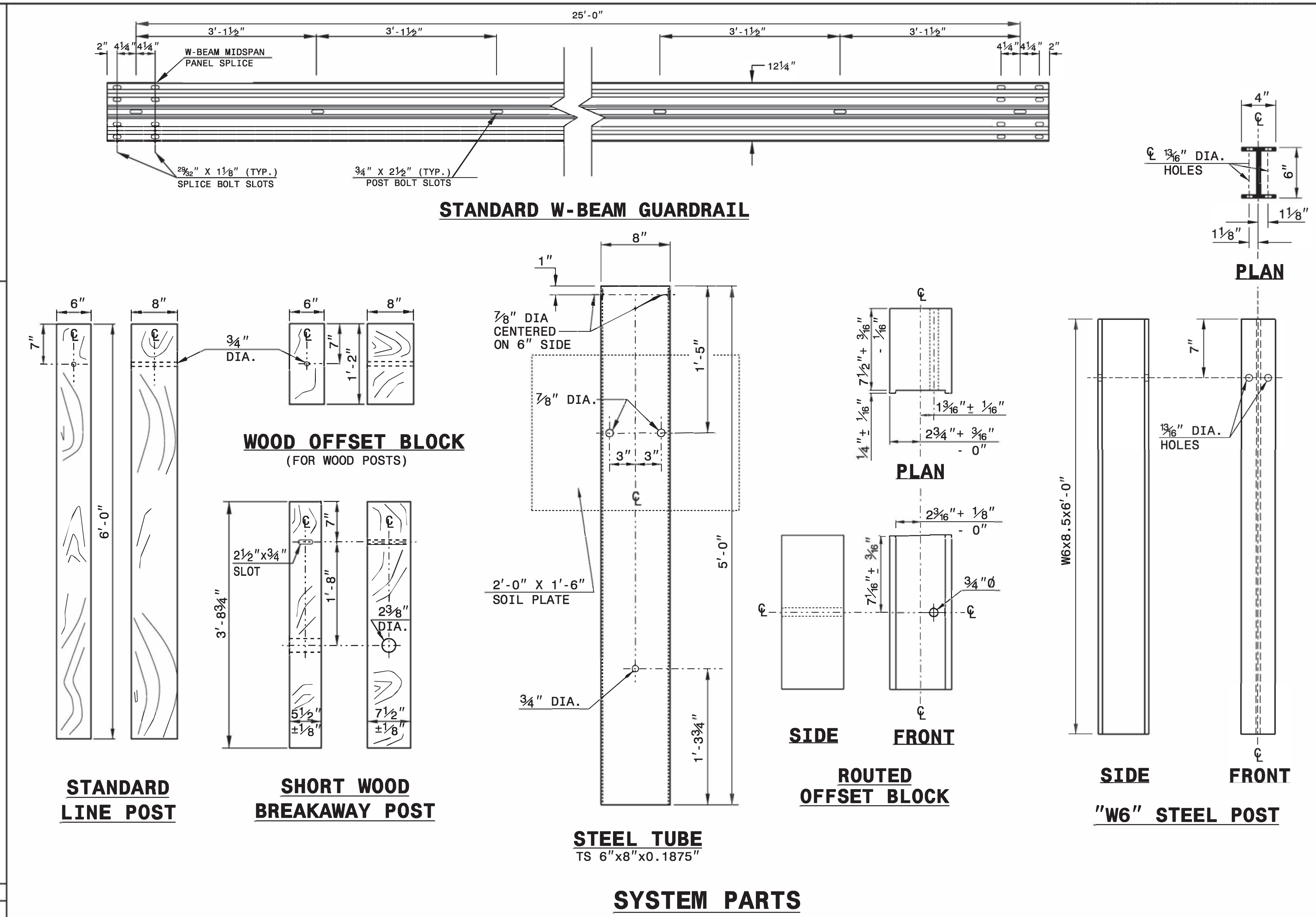
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION



SHEET 6 OF 8
862D02

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

DocuSigned by: Nicole M. Hackler
10/4/2022

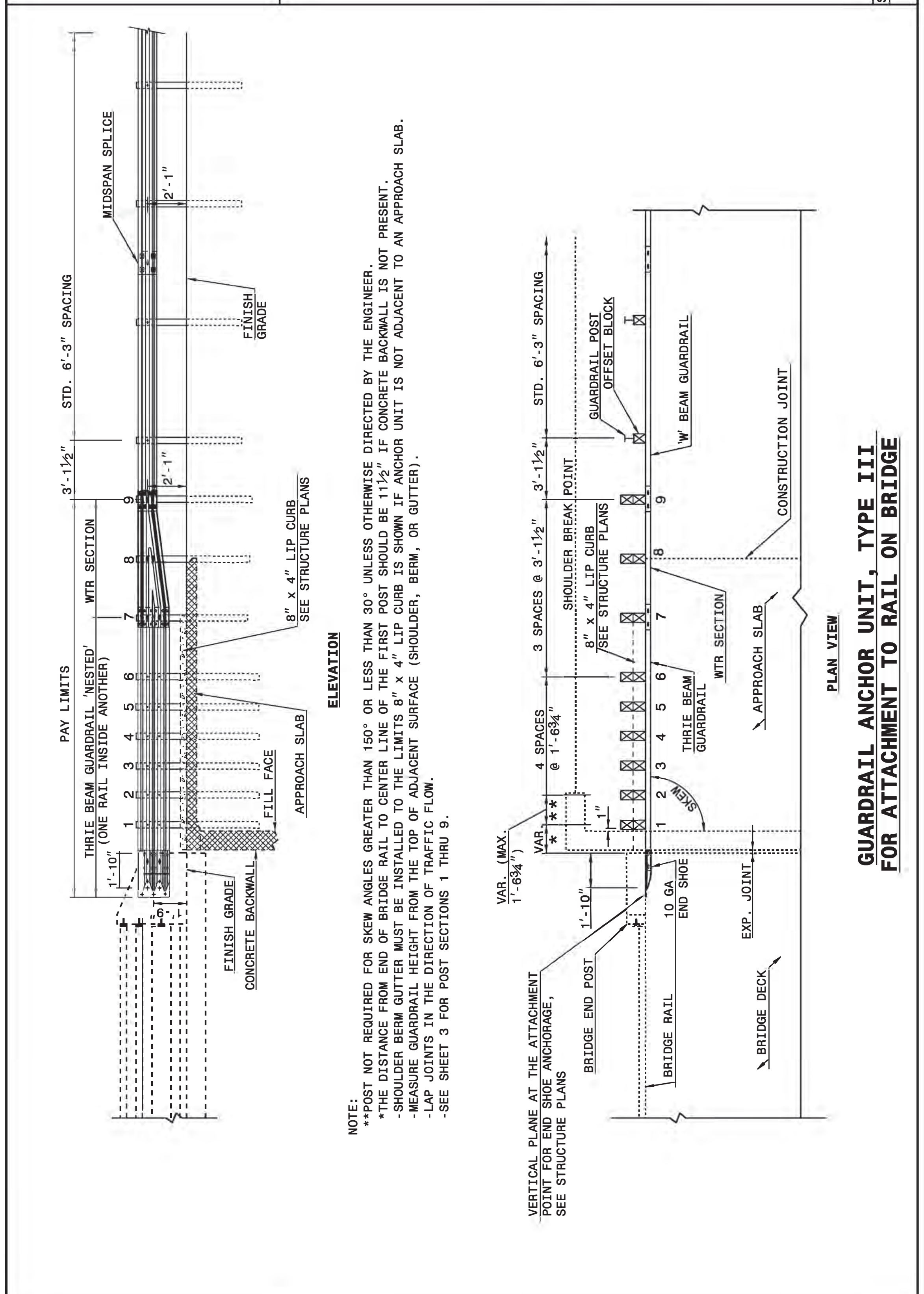
CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J.HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.169	2C-3

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE
SHEET 1 OF 7 862D03

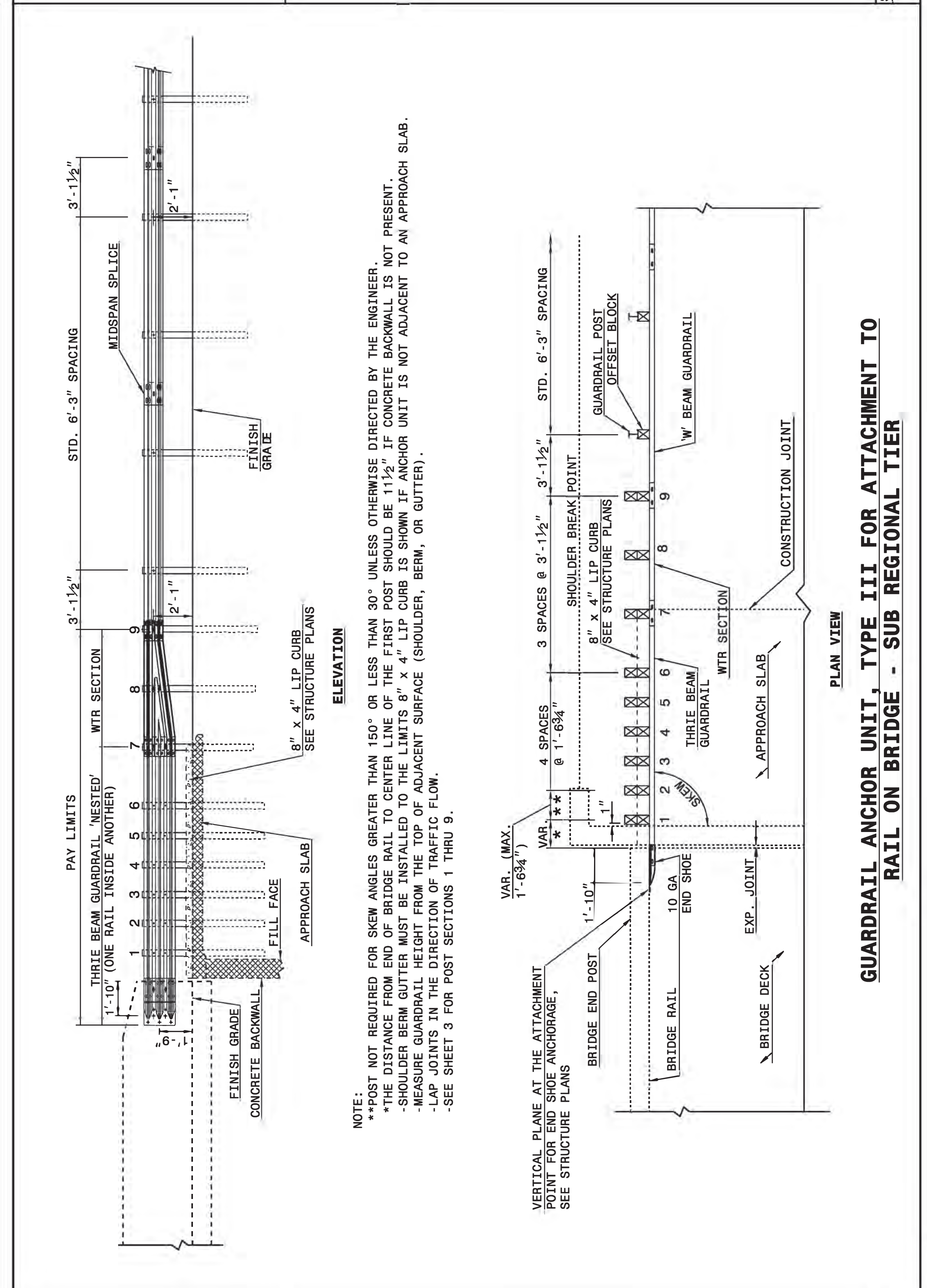


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR **STRUCTURE ANCHOR UNITS** GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7 **862D03**

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER
SHEET 2 OF 7 862D03



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR **STRUCTURE ANCHOR UNITS** GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7 **862D03**

DocuSigned by: Nicole M. Hechler 10/4/2022

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SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

14-DEC-2017 10:36
S:\Contracts\Contracts\Special Details\jhowerton\Standard Drawings\2018 Standard Drawings\Details in Lieu of Standards\Division 8\0862d0301.dgn
jhowerton AT CSD-272595

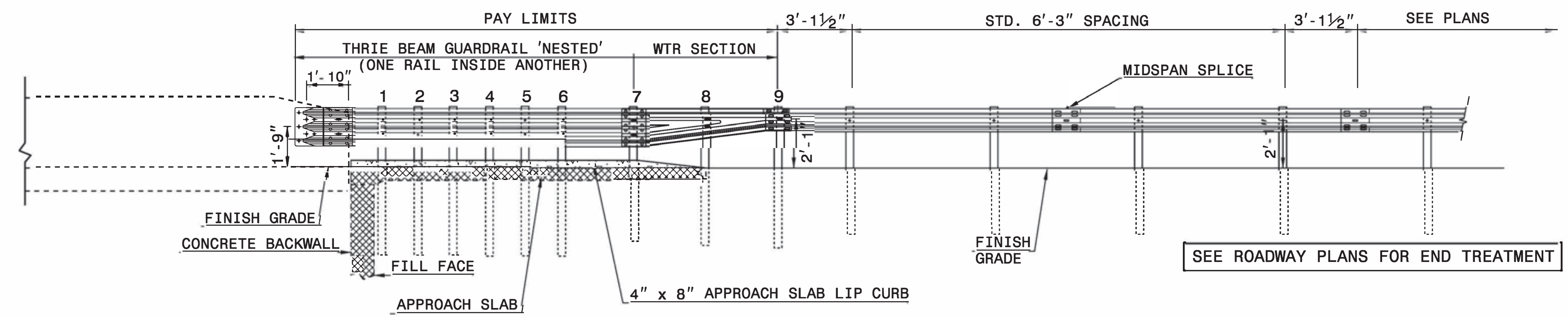
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.169	2C-4

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

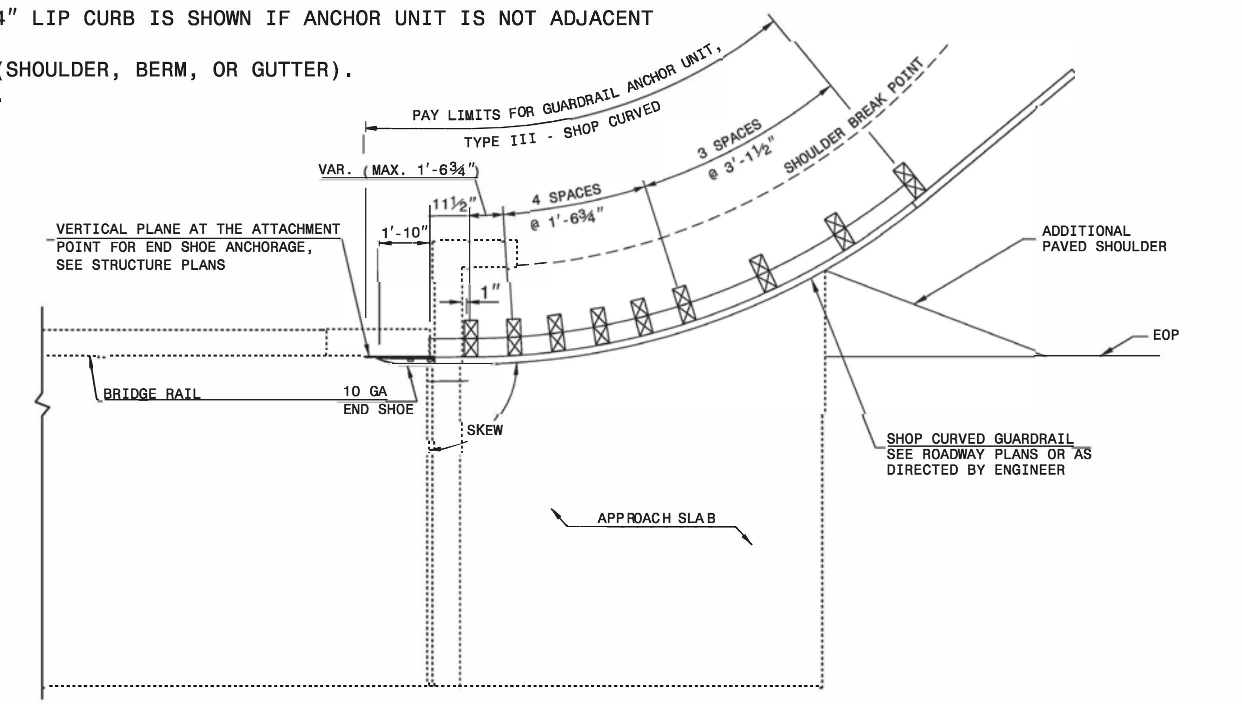
ENGLISH DETAIL DRAWING FOR
TYPE III - SHOP CURVED STRUCTURE ANCHOR UNIT

SHEET 1 OF 1
TYPE III SC



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED FOR ATTACHMENT TO RAIL ON BRIDGE

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
TYPE III - SHOP CURVED STRUCTURE ANCHOR UNIT

SHEET 1 OF 1
TYPE III SC

01-FEB-2018 09:9
S:\Contracts\Contracts\Special Details\jhowerton\Guardrail\31 inch Guardrail\type_iii_sc.dgn
jhowerton AT CSD-292595

DocuSigned by: Nicole M. Heckler
10/4/2022

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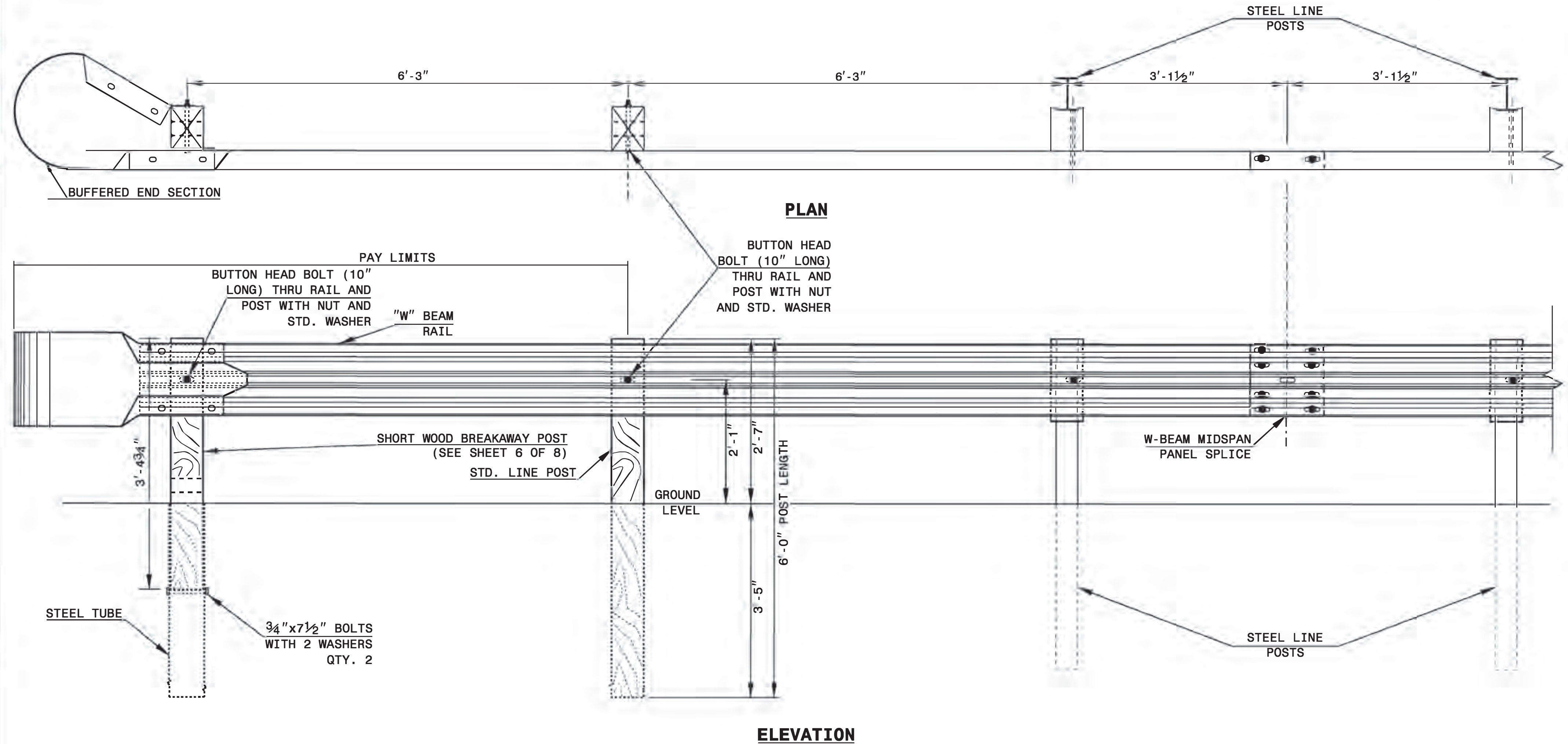
SEE PLATE FOR TITLE

ORIGINAL BY: E.E.Ward DATE: 4-4-02
MODIFIED BY: T.S.Spell DATE: 2-01-18
CHECKED BY: DATE:
FILE SPEC.: \jhowerton\guardrail\31inguardrail\typeiiisc.dgn

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.169	2C-5

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION



TRAILING END UNIT ASSEMBLY

A.T.-1 SYSTEM

SHEET OF

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

DocuSigned by: Nicole M. Hechler
10/4/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

A.T.-1 SYSTEM

ORIGINAL BY:______ DATE:______
MODIFIED BY:______ DATE:______
CHECKED BY:______ DATE:______
FILE SPEC.:______

6/21/00

COMPUTED BY: MY DATE: 2-11-19
CHECKED BY: ACC DATE: 2-11-19

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R.69	3B-1

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

LINE	LOCATION	ASPHALT REMOVAL	ASPHALT BREAK-UP	2.5" ASPHALT MILLING	
-L-	11+90 TO 12+30			80	
-L-	12+90 TO 13+89	200			
-L-	14+50 TO 15+80		330		
-L-	15+80 TO 16+05	72			
-L-	16+60 TO 17+15			110	
	TOTAL	272	330	190	
	SAY	280	330	190	

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
SUMMARY NO.1					
-L- STA. 11+90 TO -L- STA. 13+65.15 (BEGIN BRIDGE)	189		158		31
SUBTOTAL SUMMARY NO.1	189		158		31
SUMMARY NO.2					
-L- STA. 14+36.65 (END BRIDGE) TO -L- STA. 17+15	570		319		251
-DR1- 10+90 TO -DR1- 11+55.10	10		60	50	
SUBTOTAL SUMMARY NO.2	580		379	50	251
PROJECT SUBTOTAL	769		537	50	282
LOSS DUE TO CLEARING & GRUBBING	-15				-15
WASTE IN LIEU OF BORROW				-50	-50
GRAND TOTAL	754		537		217
SAY	760				

CONTINGENCY ITEMS:
INCIDENTAL STONE = 50 TONS
UNDERCUT EXCAVATION = 450 CY
SELECT GRANULAR MATERIAL = 400 CY
GEOTEXTILE FOR SOIL STABILIZATION = 200 SY

Note: Earthwork quantities are calculated by the roadway designer. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Unit.

Note: Approximate quantities only. Unclassified excavation, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the contract lump sum price for "grading".

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".

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE
-L- 13+46.36	RT	401										
-L- 14+52	LT	402			2039.85	2038.10						40
TOTAL												40

STATION	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"
-L- 13+46.36																																		
-L- 14+52																																		
TOTAL																																		

STATION	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	TBDI STD 840.35	TBDI FRAME WITH TWO GRATES 840.29	J.B. STD. 840.31 OR 840.32	M.H. FRAME & COVER STD. 840.54	MODIFIED CONCRETE FLUME		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
-L- 13+46.36																	1						
-L- 14+52																						40	
TOTAL																	1					40	

ABBREVIATIONS

C.B. CATCH BASIN
N.D.I. NARROW DROP INLET
D.I. DROP INLET
G.D.I. GRATED DROP INLET
G.D.I. (N.S.) GRATED DROP INLET (NARROW SLOT)
J.B. JUNCTION BOX
M.H. MANHOLE
T.B.D.I. TRAFFIC BEARING DROP INLET
T.B.G.I. TRAFFIC BEARING GRATE INLET
T.B.J.B. TRAFFIC BEARING JUNCTION BOX

"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 STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	XI	GREU 350 TL-2	GREU 350 TL-3	IA-350 TL-2	TYPE III	TYPE III SHOP CURVED	B-77	AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	13+09	13+72	RT	56.25			13+81		4	7	25		0.5				1			1										
-L-	14+48	15+48	RT	93.75				14+54	4	7		25		0.5			1			1										
-L-	12+90	13+58	LT	68.75				13+58	VARIES	VARIES		25		0.5			1			1										
-L-	14+28	14+38	LT	6.25	43.75		14+26		VARIES	VARIES	6.25										1		1							
			SUBTOTAL	225	43.75																									
	LESS DEDUCTIONS FOR ANCHORS																													
	GREU 350 TL-2 3 @ 25'=			-75																										
	AT-1 1 @ 6.25=			-6.25																										
	TYPE III 4 @ 18.75=			-56.25	-18.75																									
			PROJECT TOTALS:	87.5	25												3			3	1		1							
ADDITIONAL GUARDRAIL POSTS=5 EA.																														
TEMPORARY GUARDRAIL																														
-DET-	23+12	24+85	RT	162.5																										
																			1											
																			1											
			SUBTOTAL	162.5																										
	LESS DEDUCTIONS FOR ANCHORS																													
	GREU 350 TL-2 2 @ 25'=			-50																										
			PROJECT TOTALS:	112.5															2											

COMPUTED BY: DMM	DATE: 11/18/2019
CHECKED BY: JCK	DATE: 11/18/2019

(5-15-18)

PROJECT NO.	SHEET NO.
17BP.13.R.169	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	200
				TOTAL LF:	200

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	Geotextile for Pavement Stabilization SY	Class IV Subgrade Stabilization TONS
CONTINGENCY				
		TOTAL SY/TONS:	0	0*

*Total tons of "Class IV Subgrade Stabilization" is only the estimated quantity for pavement stabilization and may only represent a portion of the subgrade stabilization quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY					100	200	500		
				TOTAL CY/TONS/SY:	100	200**	500**	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
							TOTAL SY:	0

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
					TOTAL SY:	0	0	0*	0**

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
**Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

SUMMARY OF PRE-SPLITTING OF ROCK

LINE	Beginning Rock Cut Slope (H:V)	Approx. Station	Ending Rock Cut Slope (H:V)	Approx. Station	Location LT/RT	Pre-splitting of Rock SY
					TOTAL SY:	0

SUMMARY OF SURCHARGES AND SURCHARGE WAITING PERIODS

LINE	Station	Station	Surcharge Height FT	MONTHS

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
TOTAL GAUGES (EACH):			

SUMMARY OF EMBANKMENT WAITING PERIODS

LINE	Station	Station	MONTHS

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.169	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL — Aaron C. Carver — 10/21/2022

NORTH CAROLINA PROFESSIONAL SEAL — Aaron C. Carver — 10/21/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Mattern & Craig
ENGINEERS • SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

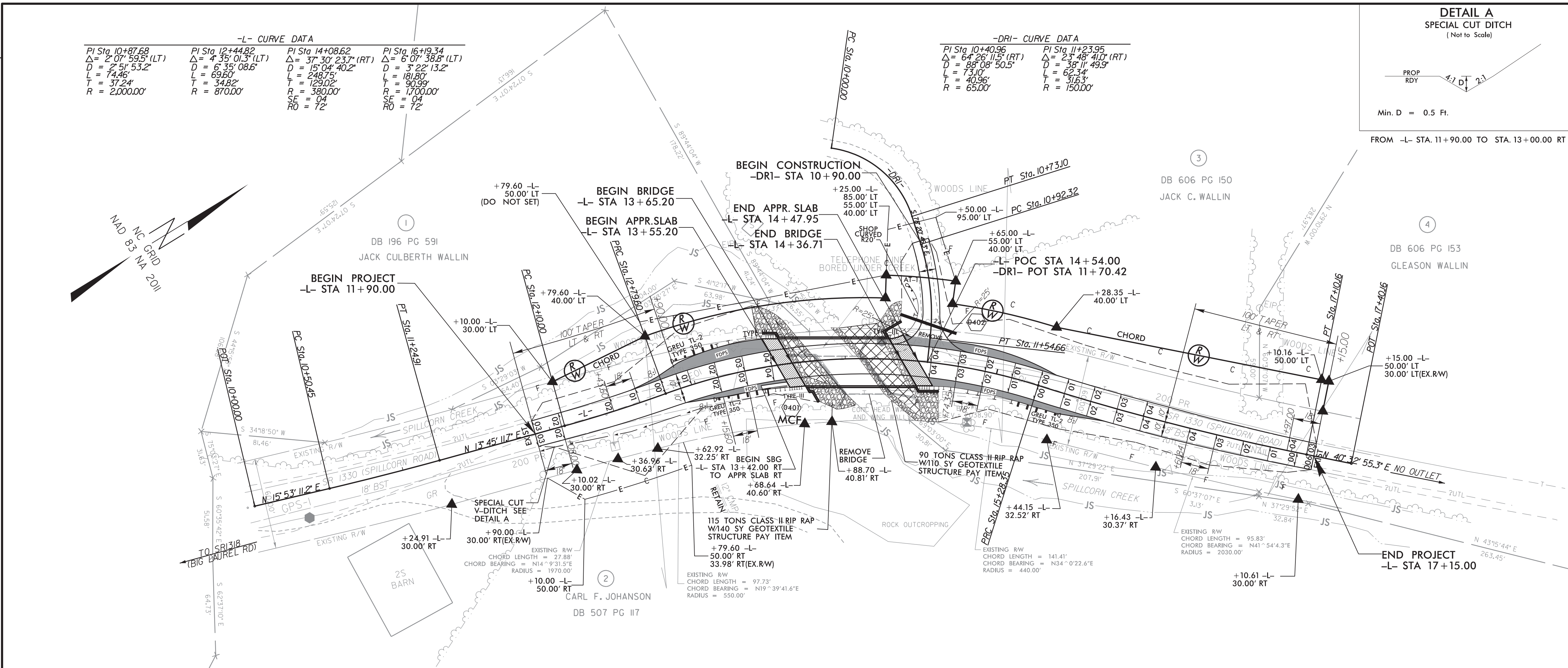
-L- CURVE DATA

PI Sta 10+87.68	PI Sta 12+44.82	PI Sta 14+08.62	PI Sta 16+19.34
Δ = 2°07' 59.5" (LT)	Δ = 4°35' 01.3" (LT)	Δ = 37°30' 23.7" (RT)	Δ = 6°07' 38.8" (LT)
D = 2°51' 53.2"	D = 6°35' 08.6"	D = 15°04' 40.2"	D = 3°22' 13.2"
L = 74.46'	L = 69.60'	L = 248.75'	L = 181.80'
T = 37.24'	T = 34.82'	T = 129.02'	T = 90.99'
R = 2,000.00'	R = 870.00'	R = 380.00'	R = 1,700.00'
		SE = .04	SE = .04
		RO = 72'	RO = 72'

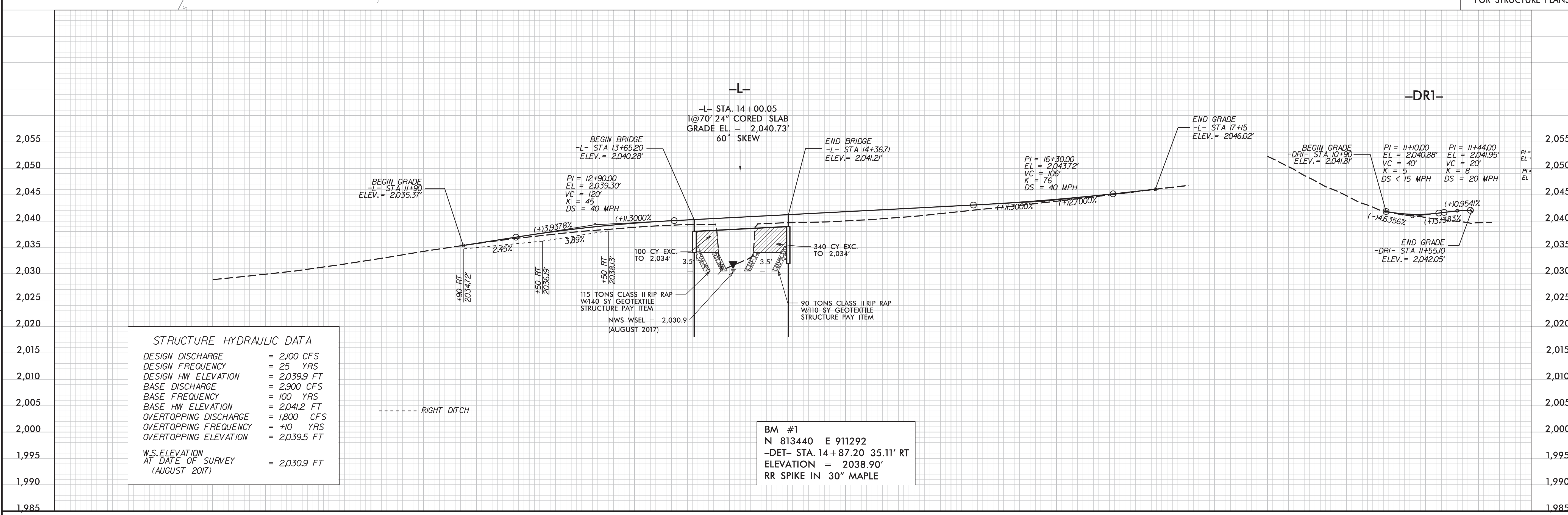
-DR1- CURVE DATA

PI Sta 10+40.96	PI Sta 11+23.95
Δ = 64°26' 11.5" (RT)	Δ = 23°48' 41.0" (RT)
D = 88°08' 50.5"	D = 38°11' 49.9"
L = 73.10'	L = 62.34'
T = 40.96'	T = 31.63'
R = 65.00'	R = 150.00'

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
PROP RDY 4:1 D 2:1
Min. D = 0.5 Ft.
FROM -L- STA. 11+90.00 TO STA. 13+00.00 RT



SEE SHEETS S-1 THRU S-19 FOR STRUCTURE PLANS



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 2,100 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2,039.9 FT
BASE DISCHARGE	= 2,900 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2,041.2 FT
OVERTOPPING DISCHARGE	= 1,800 CFS
OVERTOPPING FREQUENCY	= +10 YRS
OVERTOPPING ELEVATION	= 2,039.5 FT
W.S. ELEVATION AT DATE OF SURVEY (AUGUST 2017)	= 2,030.9 FT

BM #1
N 813440 E 911292
-DET- STA. 14+87.20 35.11' RT
ELEVATION = 2038.90'
RR SPIKE IN 30" MAPLE

REVISIONS

TIP PROJECT: 17BP.13.R.169

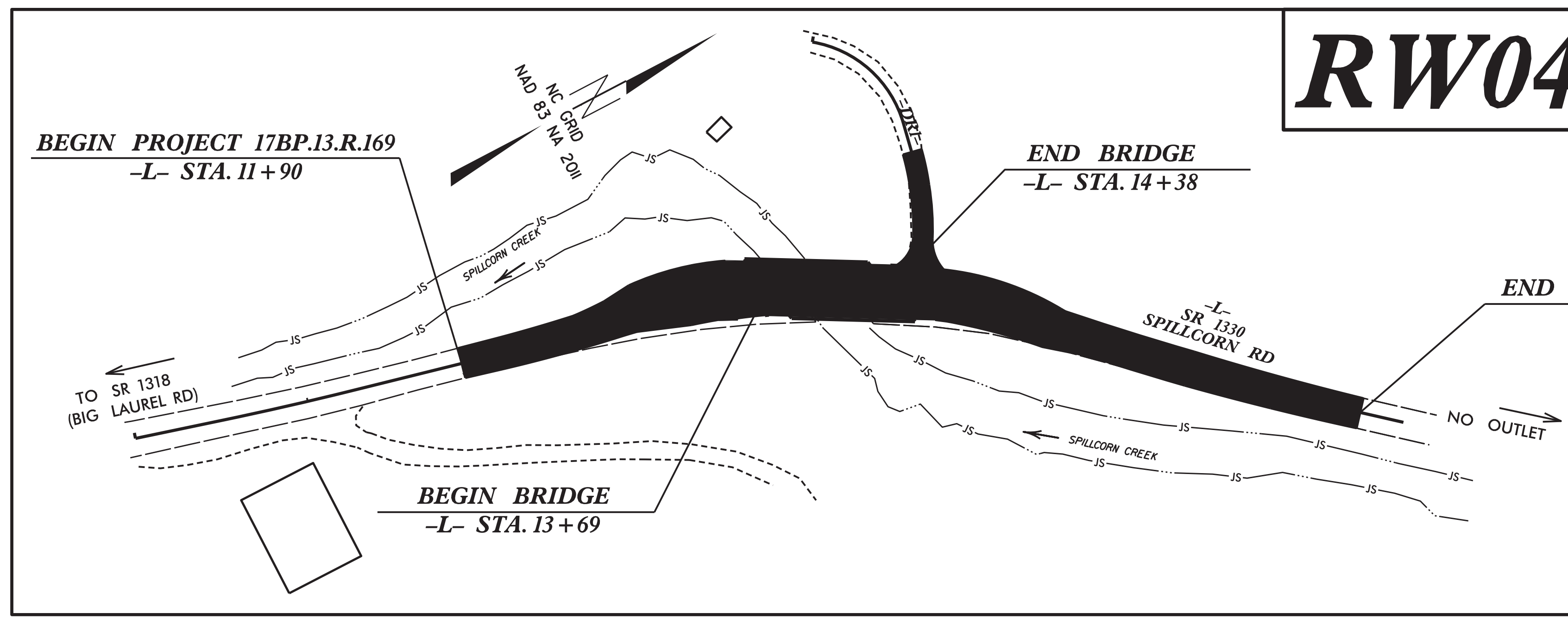
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.169	RW01	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURVEY CONTROL, EXISTING CENTERLINES,
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

MADISON COUNTY

LOCATION: BRIDGE NO. 151 ON SR 1330 (SPILLCORN RD)
OVER SPILLCORN CREEK



GRAPHIC SCALE

30 15 0 30 60

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 813033.3969 (ft) EASTING: 911136.3634 (ft)
ELEVATION: 2029.02 (ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99979504
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS100" TO -L- STATION 10+00 IS
S 41°11'35.7" W 36.81 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared In the Office of:
Mattern & Craig
ENGINEERS • SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: APRIL 16, 2019

LETTING DATE: APRIL 15, 2020

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4473 LAND SURVEYOR JEFF B. HOPPES

DocuSigned by:
Jeff Hoppes
2C3FB0F0CD6D472...

SIGNATURE: Date:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

09/08/99
$$$$SYSTIME$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
17BP13R169	1C-1

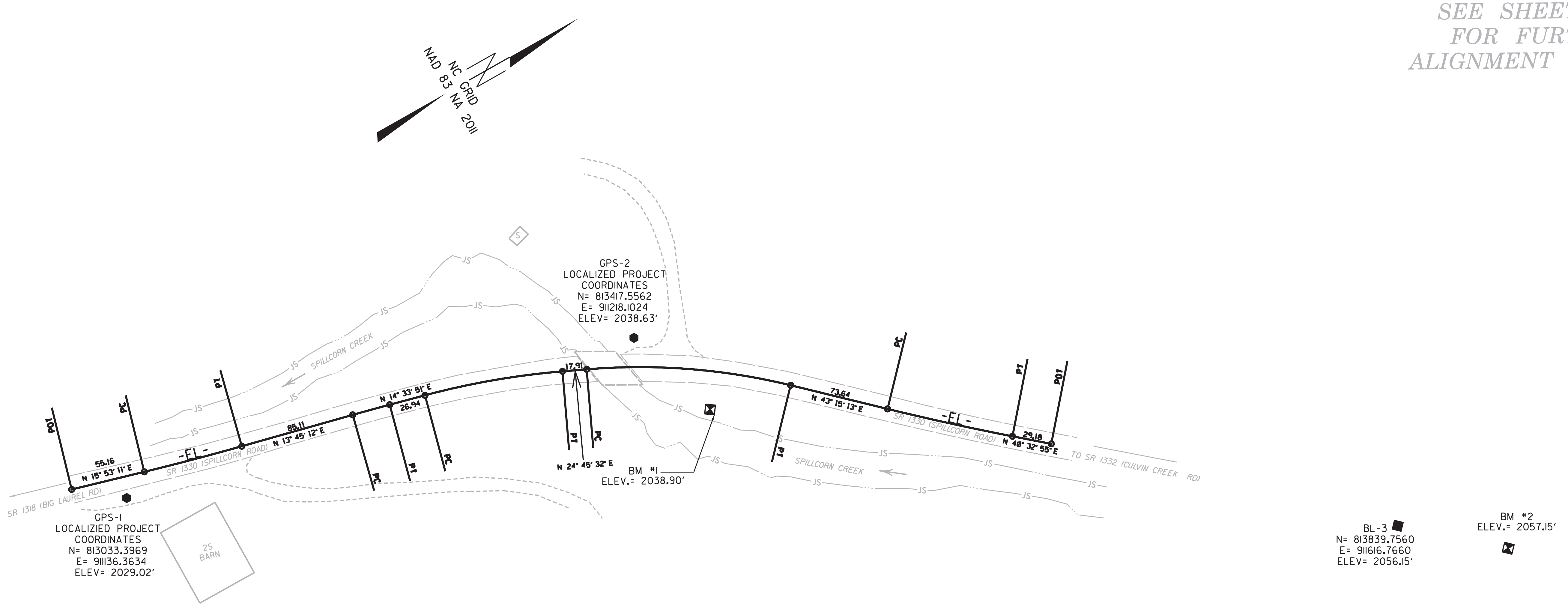
Location and Surveys

PROJECT SURVEYOR

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

SEE SHEET 1C-2 FOR FURTHER ALIGNMENT DETAILS



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY MATTERN AND CRAIG FOR MONUMENT "GPS-1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 813033.3969(ft) EASTING: 911136.3634(ft)
ELEVATION: 2029.02(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99979504
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-1" TO -L- STATION IS

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

NOTE: DRAWING NOT TO SCALE

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

REVISIONS

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP13R169	1C-2

Location and Surveys

PROJECT SURVEYOR

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BASELINE

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	GPS1	813033.3969	911136.3634	2029.02
2	GPS2	813417.5562	911218.1024	2038.63
3	BL3	813839.7560	911616.7660	2056.15

BM1 ELEVATION • 2038.90
N 813440 E 911292
BM2 IS RR SPIKE SET IN BASE OF 30" MAPLE

BM2 ELEVATION • 2057.15
N 813903 E 911671
BM2 IS RR SPIKE SET IN BASE OF 18" ASHE

EXISTING ALIGNMENT

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	813001.171	911110.833							
LINE			N 15°53'11.2" E	55.16					
PC	813054.220	911125.931							
CURVE			N 14°49'11.4" E	74.46	02°07'59.5"(LT)	02°51'53.2"	74.46	37.24	2000.00
PT	813126.202	911144.976							
LINE			N 13°45'11.7" E	85.11					
PC	813208.870	911165.210							
CURVE			N 14°09'31.5" E	28.31	00°48'39.6"(RT)	02°51'53.2"	28.31	14.15	2000.00
PT	813236.319	911172.134							
LINE			N 14°33'51.3" E	26.94					
PC	813262.397	911178.910							
CURVE			N 19°39'41.6" E	103.06	10°11'40.5"(RT)	09°52'42.9"	103.20	51.74	580.00
PT	813359.451	911213.587							
LINE			N 24°45'31.8" E	17.91					
PC	813375.715	911221.087							
CURVE			N 34°00'22.6" E	151.06	18°29'41.6"(RT)	12°11'26.1"	151.71	76.52	470.00
PT	813500.937	911305.571							
LINE			N 43°15'13.4" E	73.64					
PC	813554.571	911356.032							
CURVE			N 41°54'04.3" E	94.41	02°42'18.1"(LT)	02°51'53.2"	94.42	47.22	2000.00
PT	813624.844	911419.086							
LINE			N 40°32'55.3" E	29.18					
POT	813647.018	911438.057							

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

REVISIONS

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP13R169	RW02D-1

Location and Surveys

MATTERN AND CRAIG
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FAX (828) 254-4562
NC LIC. NO. C-1154

PROPOSED ALIGNMENT CONTROL SHEET

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	813005.6978	911112.1213
PC	10+50.45	813054.2204	911125.9309
PT	11+24.91	813126.2018	911144.9759
PC	12+10.00	813208.8504	911165.2049
PRC	12+79.60	813277.0448	911179.0313
PRC	15+28.35	813492.9344	911293.4492
PT	17+10.16	813624.5025	911418.7941
POT	17+40.16	813647.2991	911438.2978

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
17BP13R169	RW03E-1

Location and Surveys

MATTERN AND CRAIG
ENGINEERS & SURVEYORS
12 BROAD STREET
ASHEVILLE NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4473 LAND SURVEYOR JEFF B. HOPPES

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

I, JEFF B. HOPPES, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation, R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 1st day of June, 2019.

DocuSigned by:
Jeff Hoppes
2C3FB0F0CD6D472...

Professional Land Surveyor — L-4473 PLS # — Seal

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L	11+24.91	30.00	813119.0724	911174.1165	
L	11+90.00	-30.00	813196.5559	911131.3101	
L	12+10.02	30.00	813201.7379	911194.3496	MAG NAIL SET
L	12+10.02	-30.00	813216.0024	911136.0698	
L	12+36.96	30.63	813228.7753	911201.1704	
L	12+62.92	32.25	813254.8532	911207.9458	
L	12+79.60	-40.00	813283.4191	911139.5425	
L	13+68.64	40.60	813346.8871	911240.8290	
L	13+88.70	40.81	813363.1506	911248.3296	
L	14+25.00	-40.00	813433.3870	911194.5152	
L	14+25.00	-55.00	813441.1333	911181.6702	
L	14+65.00	-55.00	813479.0286	911207.3351	
L	14+65.00	-40.00	813469.9755	911219.2951	
L	15+28.35	-40.00	813522.0339	911266.0043	
L	15+44.15	32.52	813480.3800	911327.4205	
L	16+16.43	30.37	813534.0146	911377.8815	
L	17+10.61	30.00	813605.3412	911441.8820	POINT NOT SET - FALLS IN CREEK
L	17+10.61	-50.00	813657.3488	911381.0937	
L	17+15.00	-50.00	813660.6859	911383.9488	
L	17+15.00	-30.00	813647.6840	911399.1458	

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

REVISIONS

6/2/99

23-MAY-2019 16:04
I:\3921 NCDOT Survey\3921J Div. 13 R_W Stake\06 Working Folders\Survey\Dwgs\560151\17BP13R169_ls_rw03e-1.dgn
rlzietlow AT SURV ASH JBH01

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.169	RW04

Location and Surveys

MATTERN AND CRAIG
ENGINEERS & SURVEYORS
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(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR SEAL L-5235 RON L. ZIETLOW

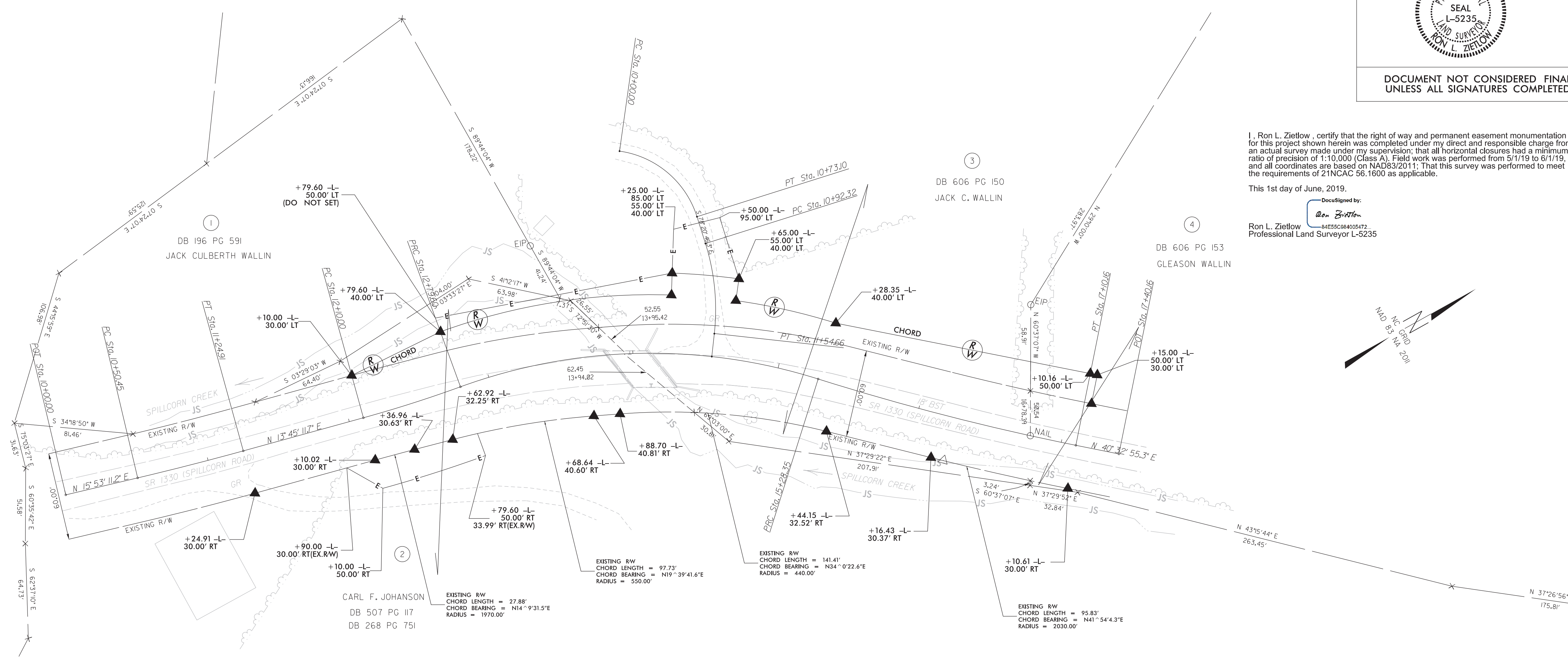
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

I , Ron L. Zietlow , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 5/1/19 to 6/1/19, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 1st day of June, 2019.

DocuSigned by:
Ron Zietlow
84E55C684005472
Ron L. Zietlow
Professional Land Surveyor L-5235



NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 5/1/19 TO 6/1/19.

6/2/99

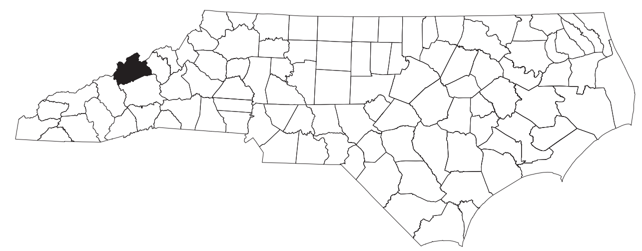
Working Folders\Survey\Dwgs\56015\17BP13R169_rdy_ROW1.dgn
14-OCT-2022 11:33
I:\3921 NCDOT Survey\3921J Div.13 R_W Stake\06
rzietlow AT MC-NBK-L5ST

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

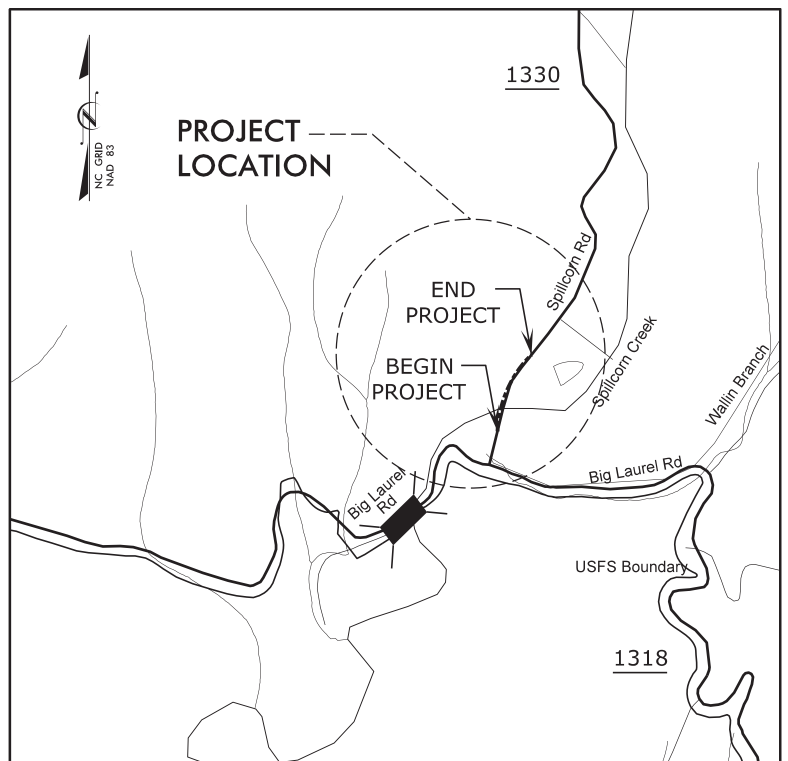
TRANSPORTATION MANAGEMENT PLAN

MADISON COUNTY

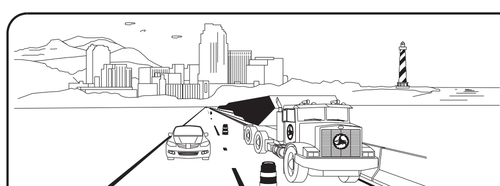
DIVISION 13



LOCATION: BRIDGE NO. 151 OVER SPILLCORN CREEK ON SR 1330 (SPILLCORN ROAD)



VICINITY MAP



WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

PLANS PREPARED BY:

JAMES B. VOSO, PE
PROJECT ENGINEER

MENG YANG, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

MIKE CALLOWAY
DIVISION 13 BRIDGE PROGRAM MANAGER

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

SHEET NO. TMP-1

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VINCINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	DETAIL 1205.12: PAVEMENT MARKING - BRIDGES SHEET 1 OF 1
TMP-1C	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES)
TMP-2	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS - STANDARD DETAILS
TMP-3	PROJECT PHASING NOTES
TMP-4	TEMPORARY TRAFFIC CONTROL, PHASE I DETAILS
TMP-5	TEMPORARY TRAFFIC CONTROL, PHASE II DETAILS
PM-1	PERMANENT PAVEMENT MARKING PLAN

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:

Mattern & Craig
ENGINEERS · SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

APPROVED: DocuSigned by: James B. Voso, PE 140FD60379E041F...

DATE: 10/17/2022

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

TIP PROJECT: 17BP.13.R.169

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.169	TMP-1A

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN 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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER 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
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1253.01	RAISED PAVEMENT MARKERS - SNOWPLOWABLE
1261.01	GUARDRAIL & BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL & BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

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

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

SIGNALS

- EXISTING
- PROPOSED
- TEMP TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES
- WHITE SOLID EDGE LINE
- YELLOW DOUBLE CENTER LINE

PAVEMENT MARKERS

- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION	TOTAL QUANTITY
	PAINT	
P2	WHITE STOPBAR (24")	36 LF
PA	WHITE EDGE LINE (4")	2,160 LF

TEMPORARY RAISED MARKERS

SYMBOL	DESCRIPTION	TOTAL QUANTITY
MF	CRYSTAL & CRYSTAL	52 EA

APPROVED: DocuSigned by: James B. Voso, PE 140FD6D376E041F... DATE: 10/17/2022

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022599 JAMES B. VOSO

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD DRAWINGS & LEGEND

TIP NO.	SHEET NO.
17BP.13.R.169	TMP-1B

APPROVED: DocuSigned by: Matthew V. Springer BC60F6E8B584403...

DATE: 8/30/2019

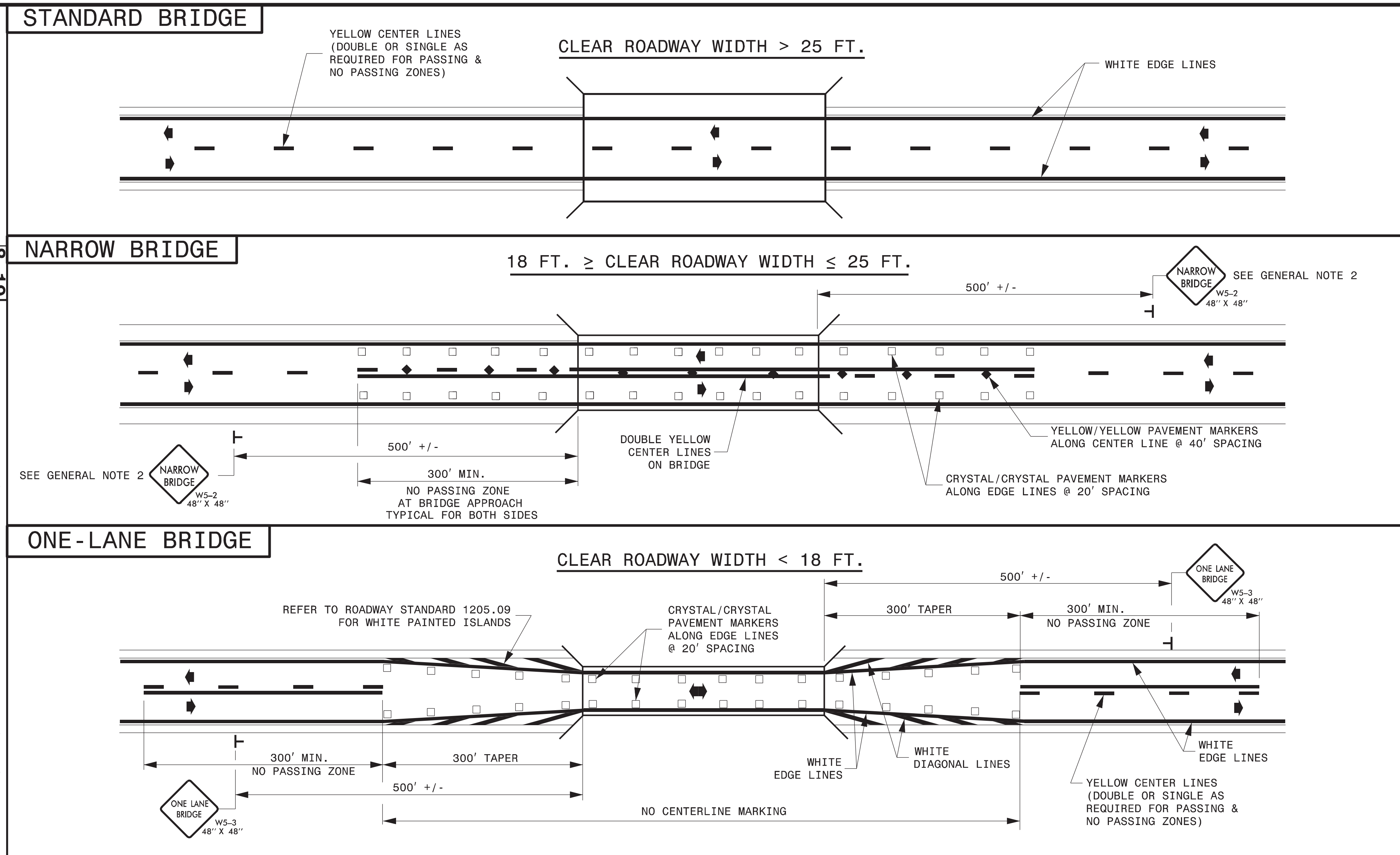
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 042546 ENGINEER MATTHEW V. SPRINGER

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

8-19

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
BRIDGES



GENERAL NOTES:

1- NO PASSING ZONES SHOWN ARE MINIMUMS. APPLY MINIMUM PASSING AND STOPPING SIGHT DISTANCES AS DETERMINED BY THE ENGINEER.

2- FOR BRIDGES WITH 18 TO 25 FEET CLEAR ROADWAY WIDTH, SIGNS MUST BE USED WHEN THE APPROACH PAVEMENT WIDTH IS 2 FOOT OR GREATER THAN THE CLEAR ROADWAY WIDTH.

LEGEND	
DIRECTION OF TRAFFIC FLOW	YELLOW/YELLOW PAVEMENT MARKER
STATIONARY SIGN	CRYSTAL/CRYSTAL PAVEMENT MARKER

SHEET 1 OF 1
1205D12

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

8-19

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
BRIDGES

SHEET 1 OF 1
1205D12

REVISED PAVEMENT MARKING ROADWAY STANDARD DRAWING

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.169	TMP-1C

GENERAL NOTES / LOCAL 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 UNDESIRED 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 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D) 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.

E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F) 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.

G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

LOCAL NOTES:

1) EMERGENCY VEHICLE ACCESS MUST BE MAINTAINED AT ALL TIMES.

2) NOTIFY THE MADISON COUNTY SCHOOL BOARD 30 DAYS PRIOR TO ANY LANE CLOSURES.

3) MAINTAIN ACCESS TO DRIVEWAYS DURING CONSTRUCTION

TRAFFIC PATTERN ALTERATIONS

H) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

I) 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.

J) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

K) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 100 ft IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

L) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

M) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

TRAFFIC CONTROL DEVICES

N) 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.

O) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKING

P) INSTALL TEMPORARY PAVEMENT MARKINGS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1330 (SPILLCORN ROAD)	PAINT	RAISED

Q) 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.

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

S) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS BY THE END OF EACH DAY'S OPERATION.

MISCELLANEOUS

T) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) 100 ft AND 200 ft RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

MANAGEMENT STRATEGIES

PHASE I SHOWS TRAFFIC TO BE MAINTAINED ON THE NORTHBOUND LANE OF SR 1330, BUT REDUCED TO ONE LANE USING TEMPORARY SIGNALS AND PAVEMENT MARKINGS AS SOUTHBOUND SR 1330 IS BEING CONSTRUCTED.

PHASE II SHOWS TRAFFIC TO BE DIRECTED ON THE SOUTHBOUND LANE SR 1330, BUT REDUCED TO ONE LANE USING TEMPORARY SIGNALS AND PAVEMENT MARKINGS AS NORTHBOUND SR 1330 IS BEING CONSTRUCTED.

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APPROVED: DocuSigned by: James B. Vose, PE DATE: 10/17/2022

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NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSE

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN
(MANAGEMENT STRATEGIES & GENERAL NOTES)

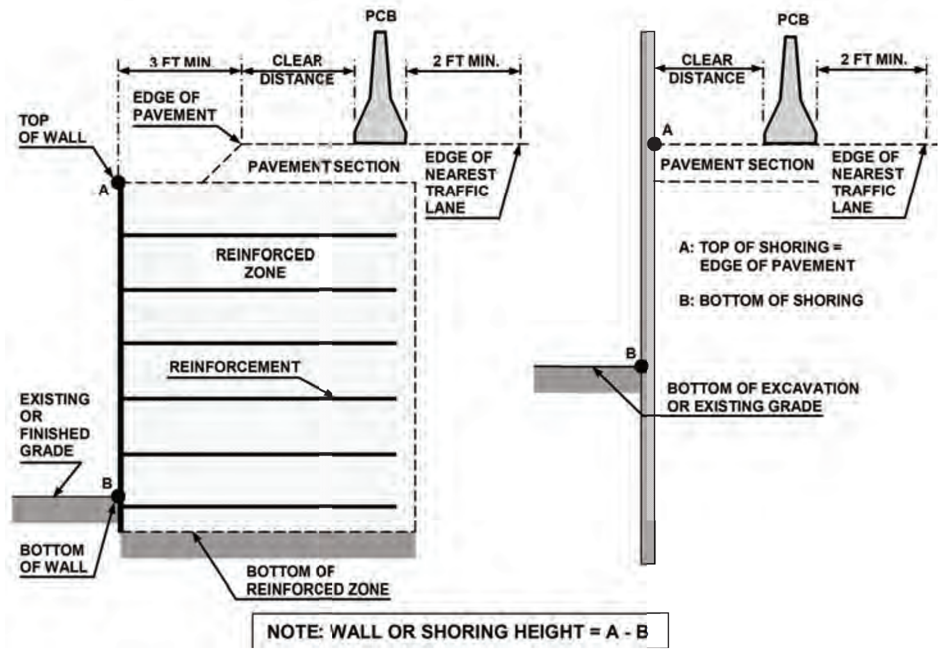

FIGURE A

NOTES

1- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.

2- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).

3- PCB IS REQUIRED IF TEMPORARY SHORING IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT UNIT FOR APPLICABLE PAVEMENT DESIGN).

4- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.

5- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.

6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.

7- PCB REQUIREMENTS FOR TEMPORARY WALLS APPLY TO TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS AND TEMPORARY SOIL NAIL WALLS.

8- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS AND OR AS APPROVED BY THE ENGINEER.

9- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THESE MINIMUM REQUIRED DISTANCES ARE NOT AVAILABLE, CONTACT THE ENGINEER.

10- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS. BARRIER DEFLECTIONS AND RESULTING MINIMUM REQUIRED CLEAR DISTANCES MIGHT VARY SIGNIFICANTLY FOR LARGER HEAVIER VEHICLES, RUNS OF BARRIER LESS THAN 200 FT IN LENGTH AND WET OR DRY PAVEMENT.

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.169	TMP-2

MINIMUM REQUIRED CLEAR DISTANCE, inches

Barrier Type	Pavement Type	Offset * ft	Design Speed, mph					
			<30	31-40	41-50	51-60	61-70	71-80
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40
		8-14	26	28	31	35	38	42
		14-20	27	29	34	36	39	43
		20-26	28	31	35	38	40	44
		26-32	29	32	36	39	42	45
		32-38	30	34	38	41	43	46
		38-44	31	34	41	43	45	48
		44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
		>56	32	36	42	45	47	51
	Concrete	<8	17	18	21	22	25	26
		8-14	19	20	23	25	26	29
		14-20	22	22	24	26	28	31
		20-26	23	24	26	27	30	34
		26-32	24	25	27	28	32	35
		32-38	24	26	27	30	33	36
		38-44	25	26	28	30	34	37
		44-50	26	26	28	32	35	37
		50-56	26	26	28	32	35	38
		>56	26	27	29	32	36	38
Anchored PCB	Asphalt	All Offsets	24 for All Design Speeds					
Anchored PCB	Concrete (including bridge approach slabs)	All Offsets	12 for All Design Speeds					

* See Figure Below

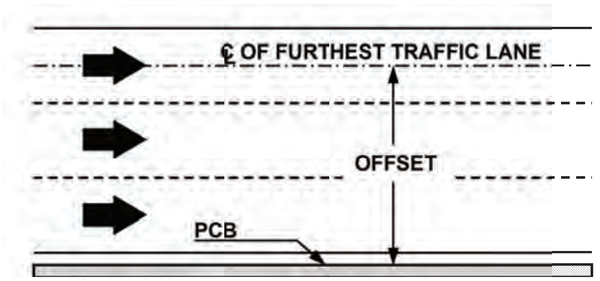

FIGURE B

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DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS

PROJECT PHASING

PHASE I

STEP 1: - ERECT WORK ZONE ADVANCED WARNING SIGNS USING DETAIL DRAWINGS FOR WORK ZONE SIGNS. (SEE RDWY STD. 1101.01)

- INSTALL PORTABLE TRAFFIC SIGNALS AS REQUIRED IN APPROVED TRAFFIC SIGNAL TIMING PLANS. (SEE RDWY STD. 1102.02 SHEET 14 OF 14)

- SHORE EXISTING BRIDGE TO MEET CONSTRCUTION LOADS.

NOTE: STEP 2 SHALL BE COMPLETED IN A CONTINUOUS OPERATION.

STEP 2: USING RDWY STD 1101.02 SHEET 1 OF 14 AND FLAGGERS, PERFORM THE FOLLOWING ON SR 1330:

- REMOVE AS NECESSARY EXISTING PAVEMENT MARKINGS, AND PLACE TEMPORARY PAVEMENT MARKINGS (PAINT), AND MARKERS FROM -L- STA. 10+40 +/- TO -L- STA. 18+65 +/-. (SEE TMP-4)

- INSTALL TEMPORARY CONCRETE BARRIER WITH CRASH CUSHIONS FROM -L- STA. 13+36 +/- TO -L- STA. 14+64 +/-. (SEE TMP-4)

- ACTIVATE PORTABLE TRAFFIC SIGNALS AND DIRECT SR 1330 (SPILLCORN ROAD) TRAFFIC ONTO A ONE LANE, TWO WAY PATTERN IN THE EXISTING NORTHBOUND LANE OF SR 1330 (SPILLCORN ROAD). SEE (TMP-4)

STEP 3: - INSTALL TEMPORARY SHORING BEHIND TEMPORARY CONCRETE BARRIER FROM -L- STA. 13+49 +/- TO -L- STA. 13+85 +/- AND FROM -L- STA. 14+15 +/- TO -L- STA. 14+51 +/-. (SEE TMP-4)

STEP 4: - REMOVE EXISTING BRIDGE RAIL (LEFT SIDE) ON BRIDGE 151. SAWCUT AND REMOVE LEFT SIDE OF EXISTING BRIDGE PER STRUCTURE PLANS.

STEP 5: - CONSTRUCT STRUCTURES PER THE STRUCTURE PLANS STAGE 1.

- CONSTRUCT -L- (SR 1330 SPILLCORN ROAD) FROM -L- STA 11+90 TO -L- STA 17+15 NORTHBOUND LANE (LEFT SIDE) EXCLUDING FINAL PAVEMENT LAYER.

STEP 6: - INSTALL GUARDRAIL FROM -L- STA. 12+90 +/- LT BEGIN BRIDGE AND END BRIDGE TO -L- STA. 14+38 +/- (SEE RDWY PLAN 2B-1 AND PLAN, TMP-4)

- INSTALL TEMPORARY GUARDRAIL FROM -L- STA. 13+11 +/- TO -L- STA. 14+79 +/- (SEE RDWY PLAN 2B-1 AND PLAN, TMP-4).

PHASE II

NOTE: STEP 1 SHALL BE COMPLETED IN A CONTINUOUS OPERATION.

STEP 1: USING RDWY STD 1101.02 SHEET 1 OF 14 AND FLAGGERS, PERFORM THE FOLLOWING ON SR 1330:

- RETAIN TEMPORARY SHORING CONSTRUCTED IN PHASE I, STEP 3.

- REMOVE TEMPORARY CONCRETE BARRIER INSTALLED IN PHASE I, STEP 2.

- WEDGE ASPHALT ON SR 1330 (SPILLCORN ROAD) FROM -L- STA 11+90 +/- TO 12+63 +/- AND FROM -L- STA 15+50 +/- TO -L- STA 17+15 +/-. (SEE TMP-5)

- REMOVE AS NECESSARY, PAVEMENT MARKINGS AND MARKERS PLACED IN STEP 2, PHASE I. (SEE TMP-5) PLACE TEMPORARY PAVEMENT MARKINGS (PAINT) AND MARKERS FROM -L- STA. 10+90 +/- TO -L- STA. 18+15 +/-.

- ACTIVATE PORTABLE TRAFFIC SIGNALS AND DIRECT SR 1330 (SPILLCORN ROAD) TRAFFIC INTO A ONE LANE, TWO-WAY PATTERN IN THE SOUTHBOUND LANE OF SR 1330 (SPILLCORN ROAD). (SEE TMP-5)

STEP 2: - REMOVE NORTHBOUND SIDE (RIGHT SIDE) OF EXISTING STRUCTURE (SEE STRUCTURE PLANS).

STEP 3: - CONSTRUCT STRUCTURE PER THE STRUCTURE PLANS STAGE 2.

- REMOVE SHORING FROM PHASE I, STEP 3 AS NECESSARY.

- CONSTRUCT -L- SR 1330 (SPILLCORN ROAD) FROM STA 11+90 TO STA 17+15 NORTHBOUND LANE (RIGHTSIDE) EXCLUDING FINAL PAVEMENT LAYER AND REMOVE TEMPORARY GUARDRAIL INSTALLED IN PHASE I, STEP 5.

- INSTALL GUARDRAIL FROM -L- STA 13+09 +/- TO BEGIN BRIDGE AND END BRIDGE TO -L- STA 15+48 +/- (SEE RDY PLAN SHEET 4 AND TMP-5)

STEP 4: USING RDWY STD 1101.02 SHEET 1 OF 14 AND FLAGGERS, PERFORM THE FOLLOWING ON SR 1330:

- PLACE THE FINAL LAYER OF SURFACE COURSE, FINAL PAVEMENT MARKINGS (PAINT), AND PAVEMENT MARKERS ON THE ENTIRE PROJECT. (SEE PM-1)

STEP 5 - REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES AND SIGNALS.

- OPEN SR 1330 (SPILLCORN ROAD) TO 2-LANE, 2-WAY TRAFFIC.

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APPROVED: DocuSigned by: James B. Voso, PE

DATE: 10/17/2022

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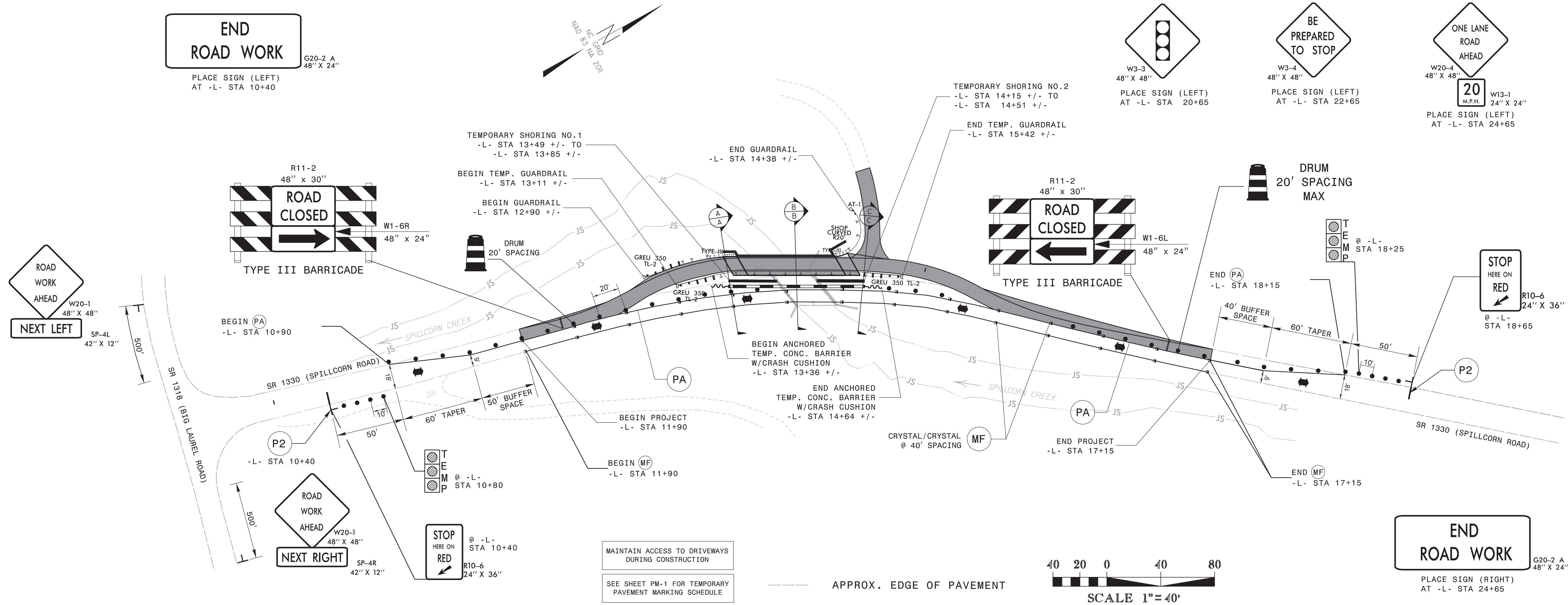
NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

PHASING

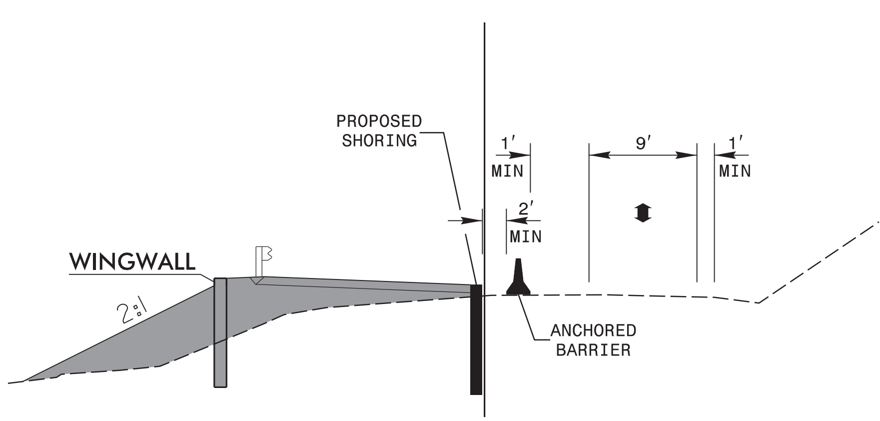
PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.169	TMP-4



SECTION A-A

-L- STA 13+50

NOT TO SCALE



SECTION B-B

-L- STA 14+00

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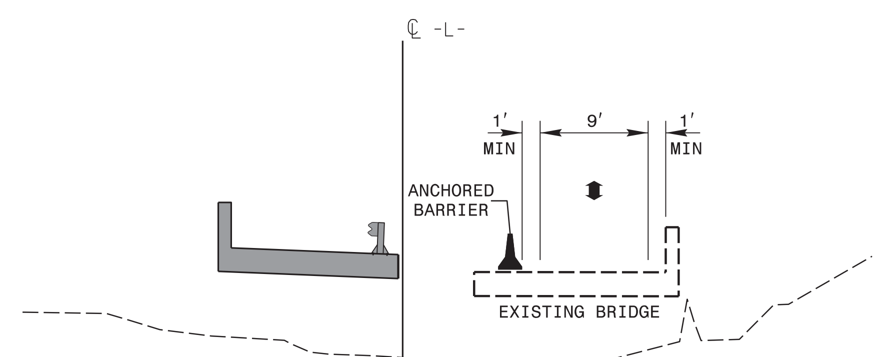

SECTION C-C

-L- STA 14+50

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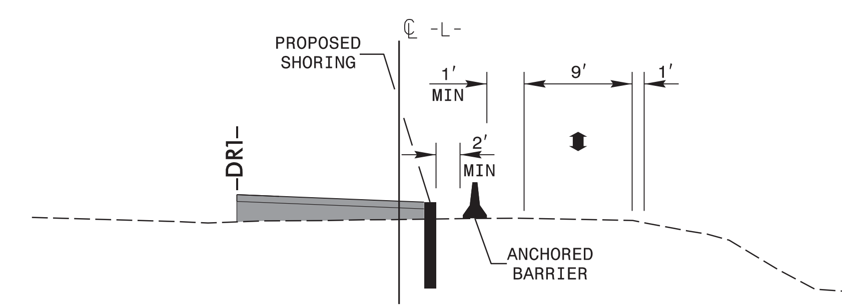

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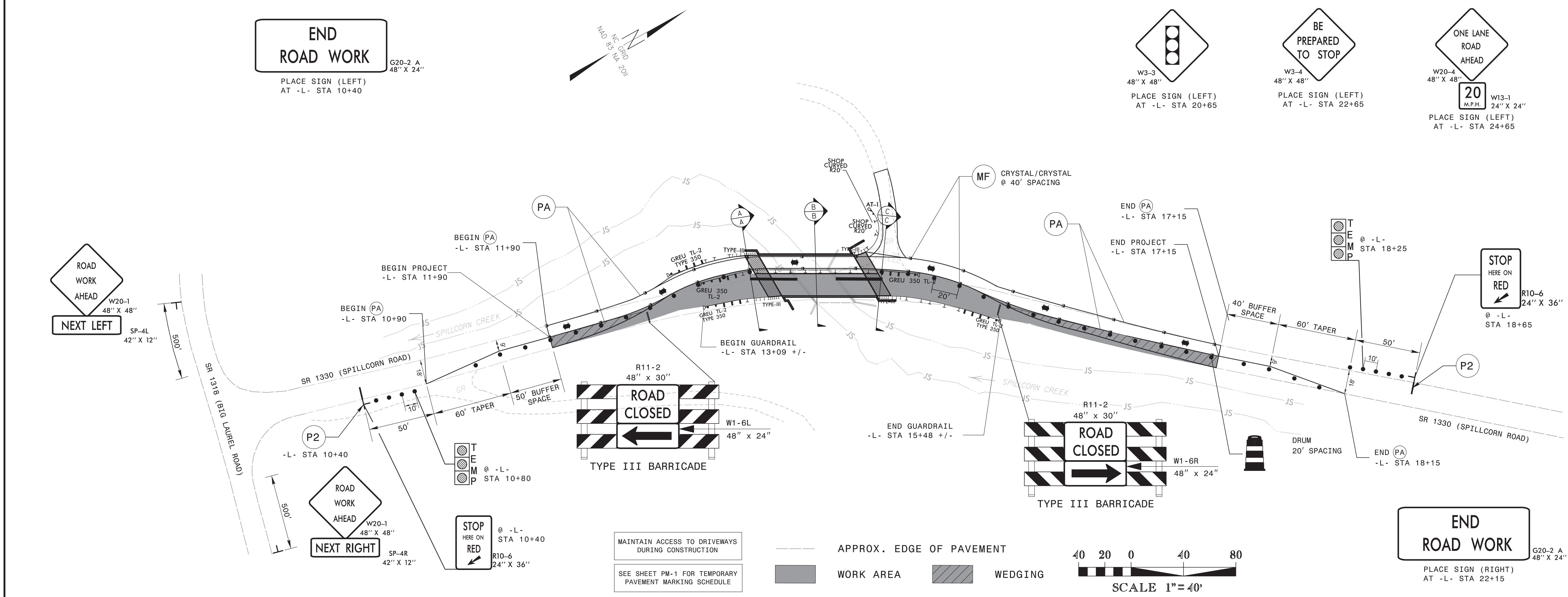
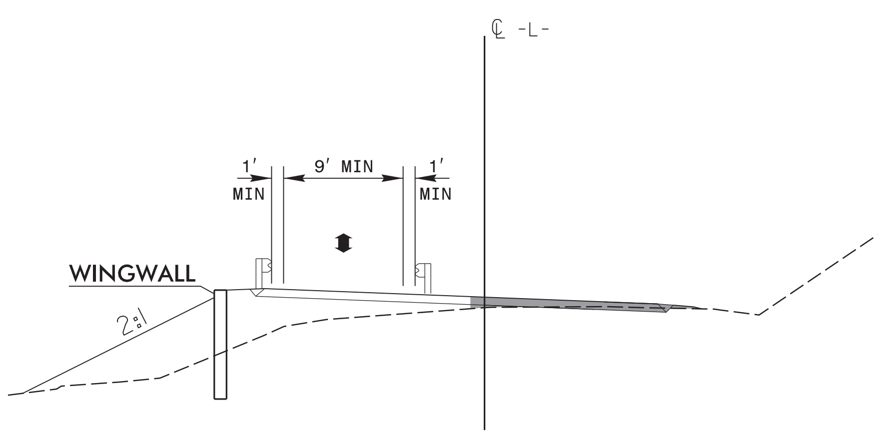
PHASE I DETAILS



SECTION A-A

-L- STA 13+50

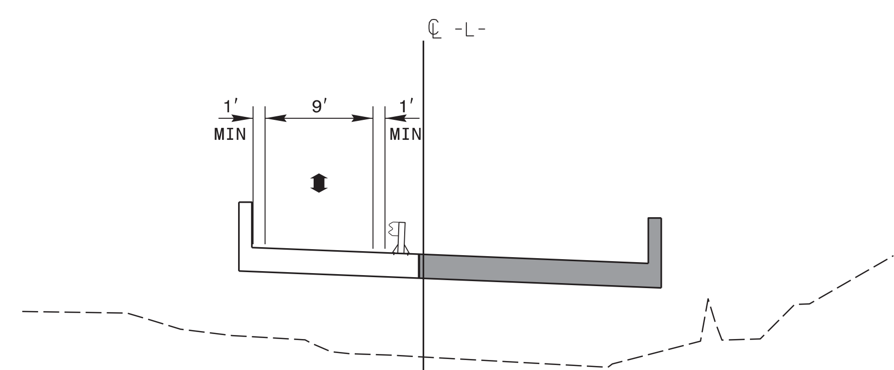
NOT TO SCALE



SECTION B-B

-L- STA 14+00

NOT TO SCALE



SECTION C-C

-L- STA 14+50

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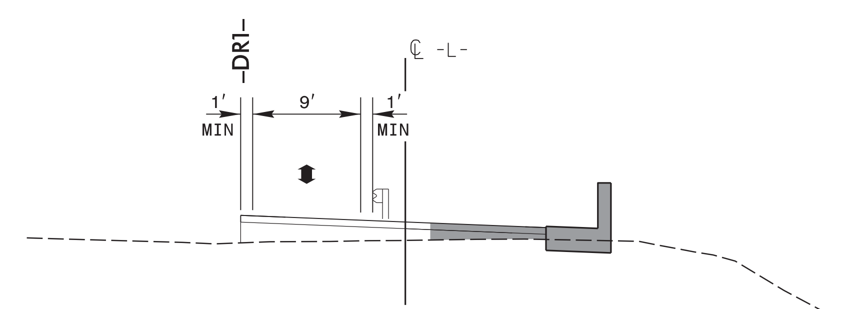

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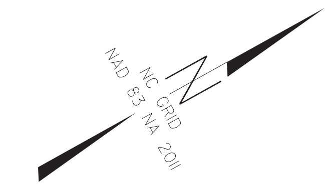
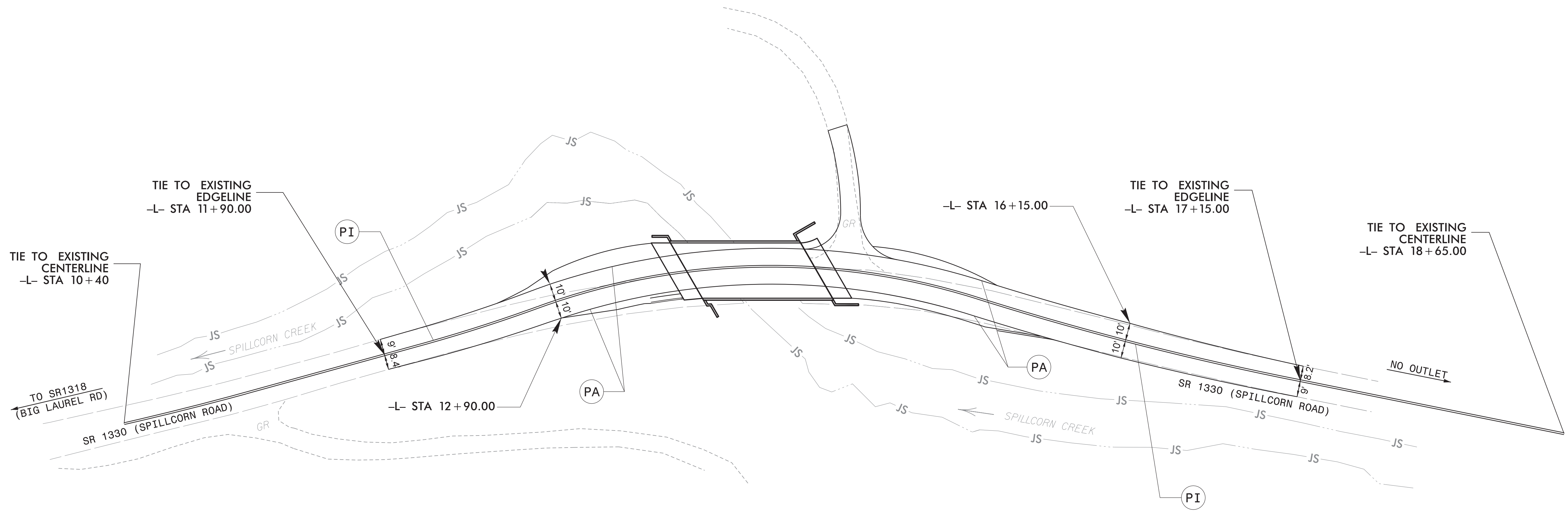
PHASE II DETAILS

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.169	PM-1

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	QUANTITY BREAKDOWN	PAY ITEM	TOTAL QUANTITY
		PAVEMENT MARKING LINES		
PA	WHITE SOLID EDGE LINE	1,050 FT	PAINT (4")	2,100 FT
PI	YELLOW DOUBLE CENTER LINE	1,650 FT	PAINT (4")	3,300 FT





NOTE: FINAL PAVEMENT MARKINGS = 2 COATS OF PAINT

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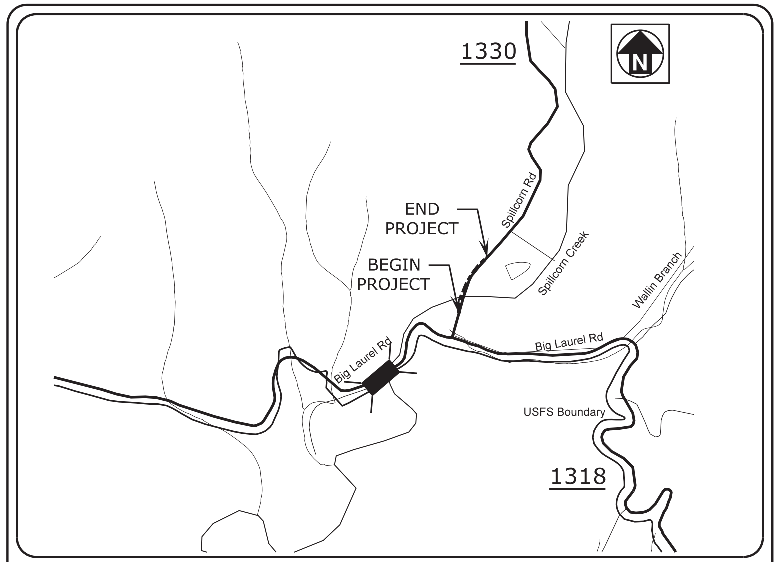
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

PERMANENT PAVEMENT MARKING PLAN

TIP PROJECT: 17BP.13.R.169

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.169	EC-1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
17BP.13.PE.169	N/A	P.E.
17BP.13.ROW.169	N/A	R/W & UTIL
17BP.13.R.169	N/A	CONST



VICINITY MAP

NOT TO SCALE

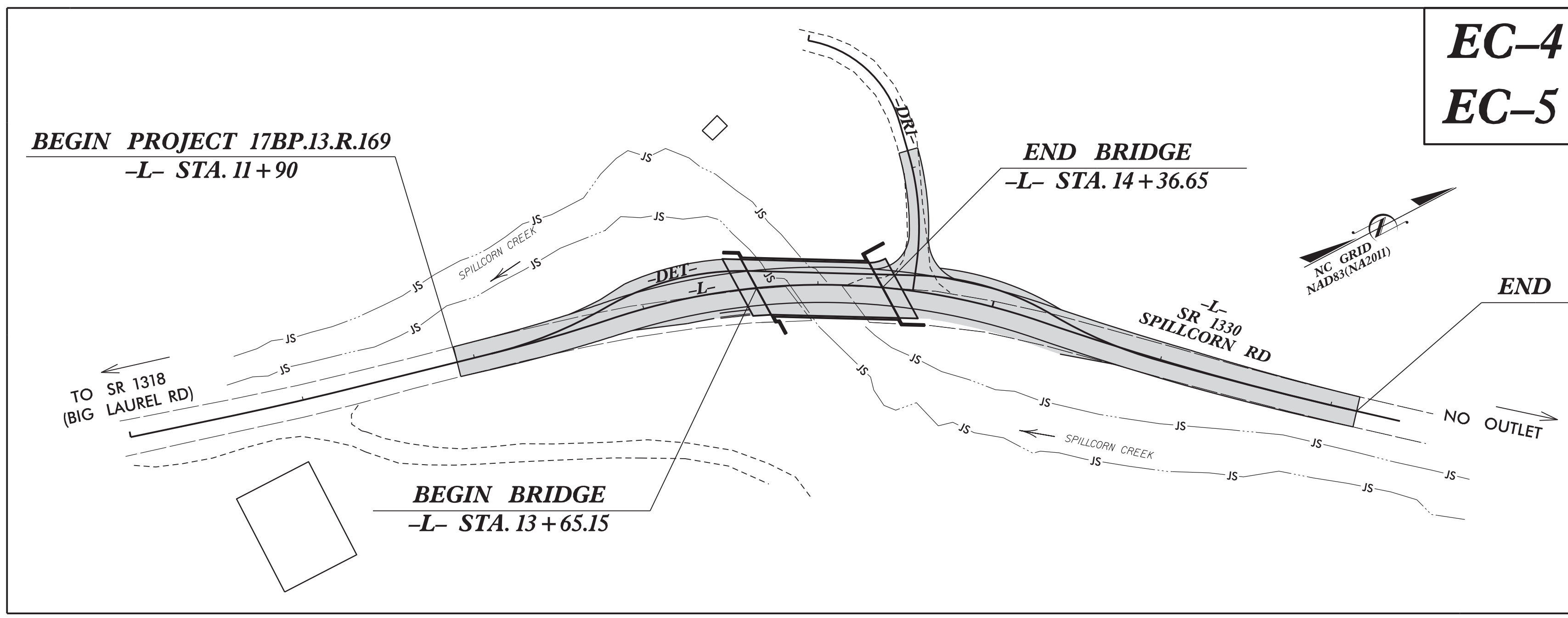
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

MADISON COUNTY

LOCATION: BRIDGE NO. 151 ON SR 1330 (SPILLCORN RD) OVER SPILLCORN CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE



EROSION AND SEDIMENT CONTROL MEASURES

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

HIGH QUALITY WATER(S) EXIST ON THIS PROJECT

High Quality Water Zone(s) Exist From Sta. 11+90 to Sta. 17+15
Refer To E. C. Special Provisions for Special Considerations.

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 APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

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Prepared In the Office of:
MATTERN & CRAIG
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FOR NCDOT DIVISION OF HIGHWAYS

Designed by:

MENG YANG, PE	4149
NAME	LEVEL III CERTIFICATION NO.

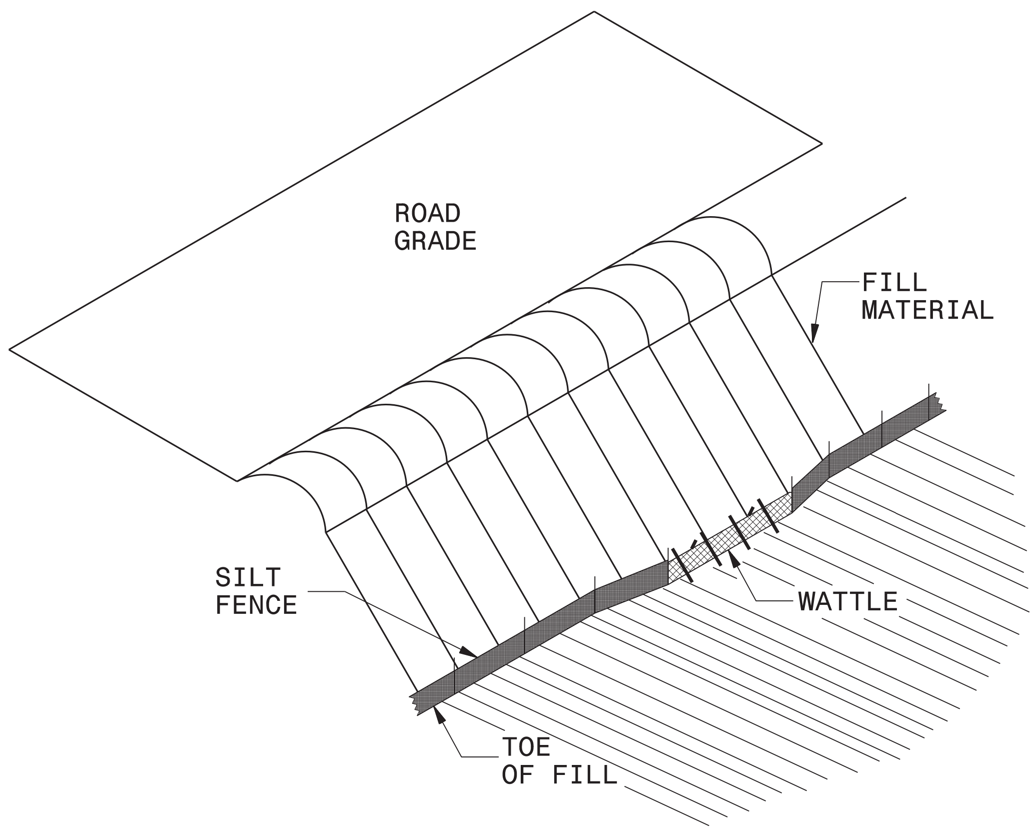
Roadway Standard Drawings

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 revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

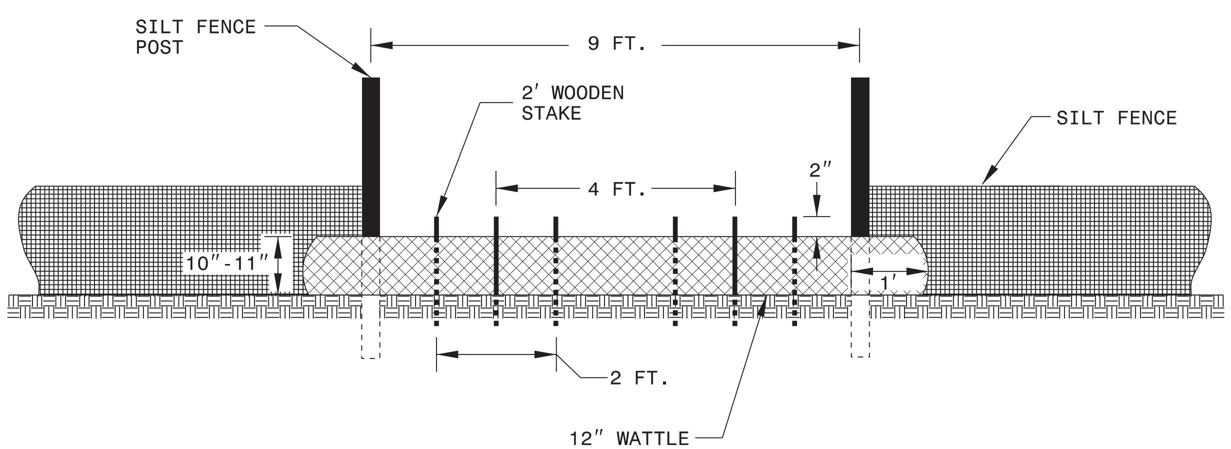
1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type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

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ69	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE WATTLE BREAK DETAIL



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

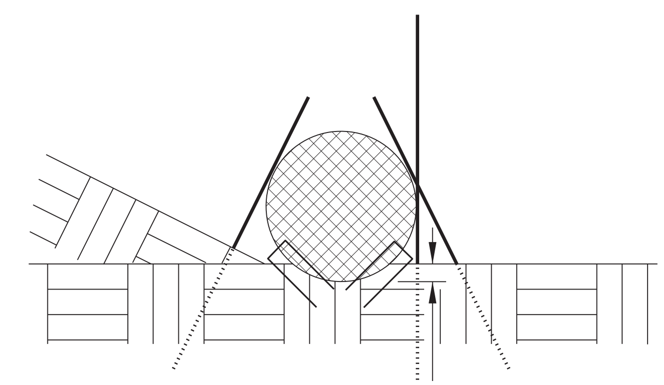
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

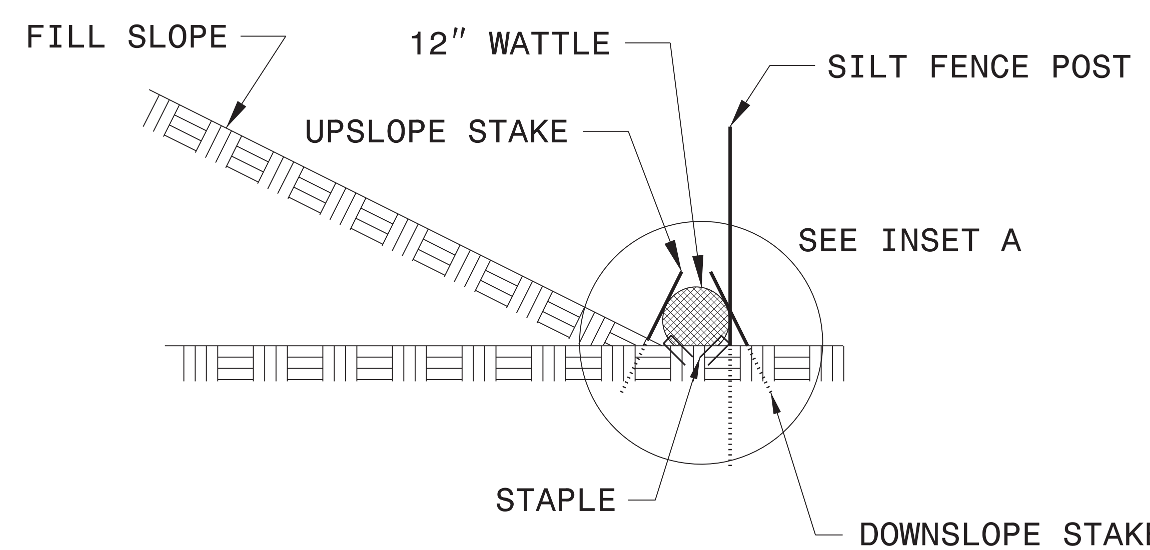
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ69	EC-3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
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.

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	11+90	13+00	RT	40
				SUBTOTAL	40
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					1,640
				TOTAL	1,680
				SAY	1,700

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
				SUBTOTAL	
		ADDITIONAL PSRM TO BE INSTALLED			
				TOTAL	
				SAY	

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ69	EC-4/CONS.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Mattern & Craig
ENGINEERS • SURVEYORS

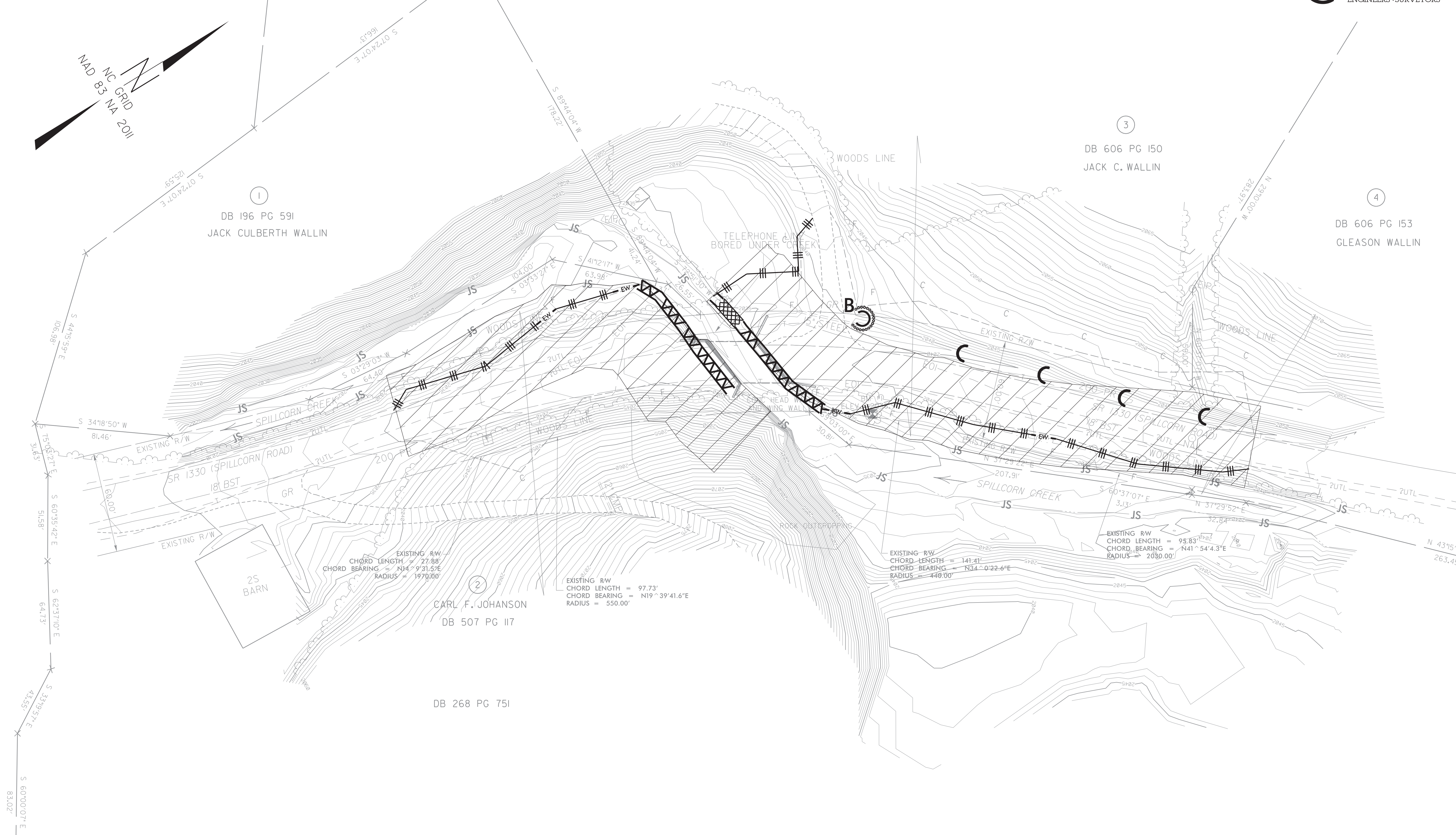
ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

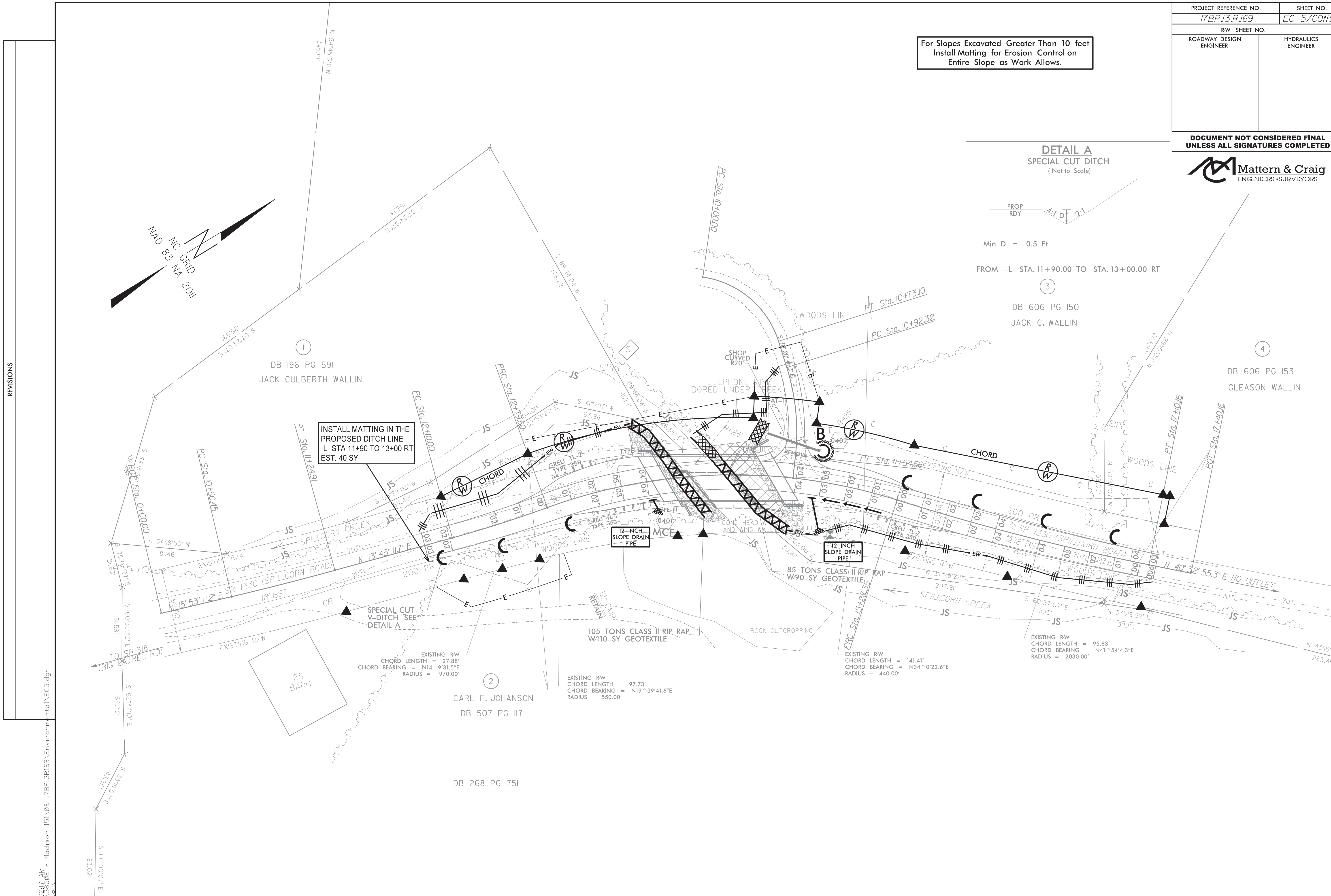
REVISIONS



PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ69	EC-5/CONS.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Mattern & Craig
ENGINEERS • SURVEYORS



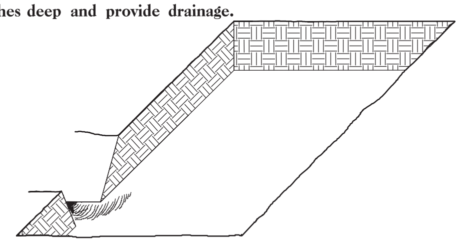
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.169	RF-1	1
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

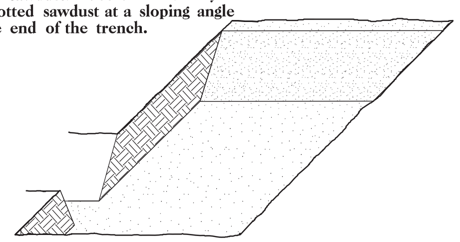
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

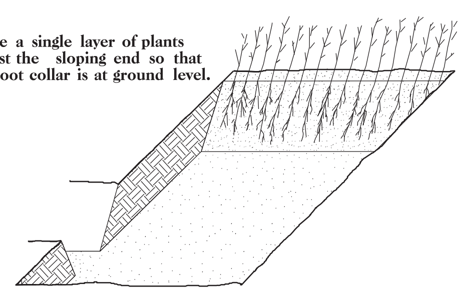
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



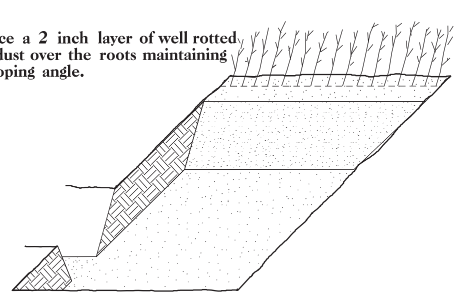
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

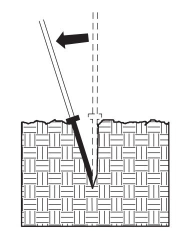


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

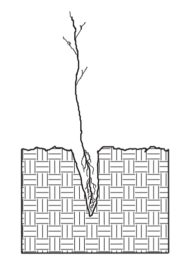


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

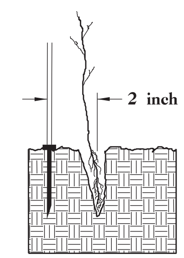
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



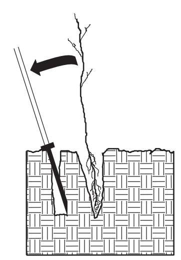
1. Insert planting bar as shown and pull handle toward planter.



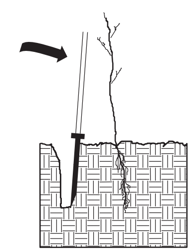
2. Remove planting bar and place seedling at correct depth.



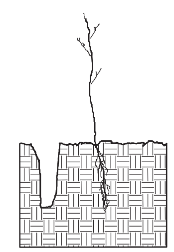
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.

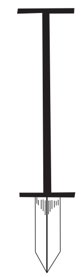


6. Leave compaction hole open. Water thoroughly.

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.

KBC 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 BR
25%	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

REFORESTATION DETAIL SHEET

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

CONTRACT:

PROJECT: 17BP.13.R.169

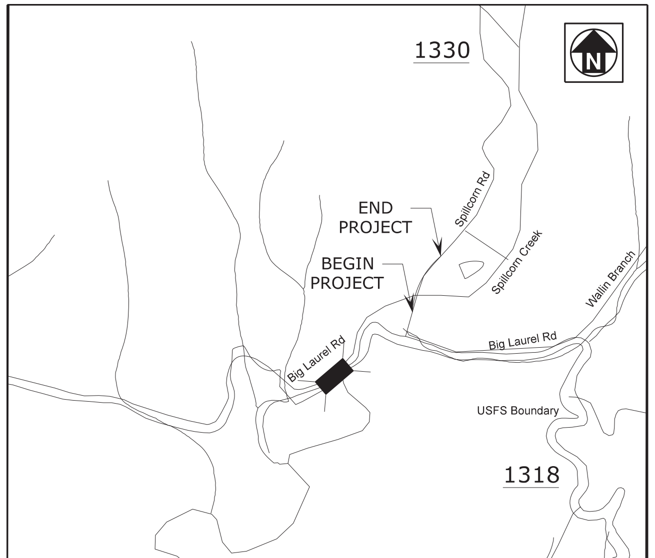
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

T.I.P. NO.	SHEET NO.
17BP.13.R.169	UO–01

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MADISON COUNTY

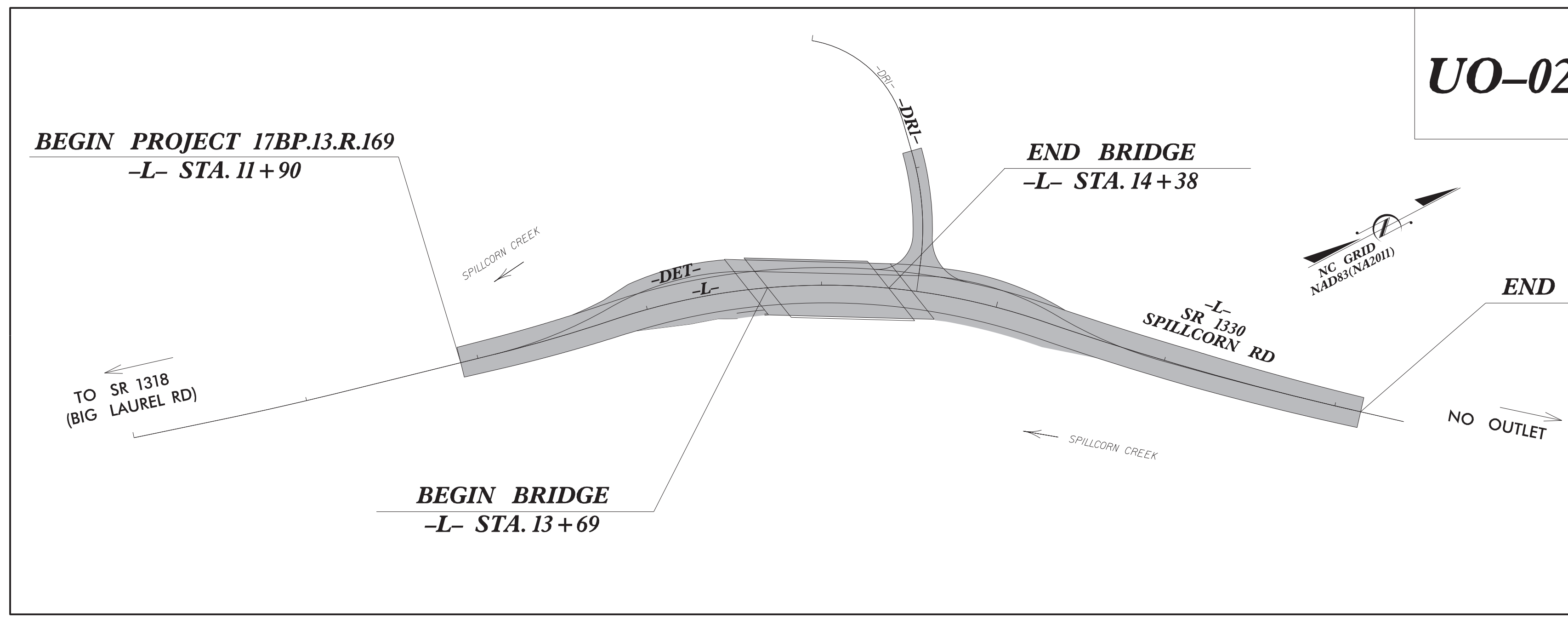
NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.



VICINITY MAP
(NOT TO SCALE)

LOCATION: BRIDGE NO. 151 ON SR 1330 (SPILLCORN RD) OVER SPILLCORN CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE



PLANS PREPARED BY:

GRAPHIC SCALES

40 20 0 40 80
PLANS

40 20 0 40 80
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO–01	TITLE SHEET
UO–02	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

FRONTIER – TELECOMMUNICATIONS

PREPARED IN THE OFFICE OF:

T2 utility engineers

KEVIN L ROGERS — PROJECT UTILITY COORDINATOR

DIVISION OF HIGHWAYS
UTILITIES UNIT
DIV ADDRESS
55 ORANGE STREET
ASHEVILLE, NC 28801

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

R. KEITH RADCLIFF	DIVISION UTILITY ENGINEER
JOHN D. METCALF	DIVISION UTILITY COORDINATOR
MIKE CALLOWAY	BRIDGE PROGRAM MANAGER

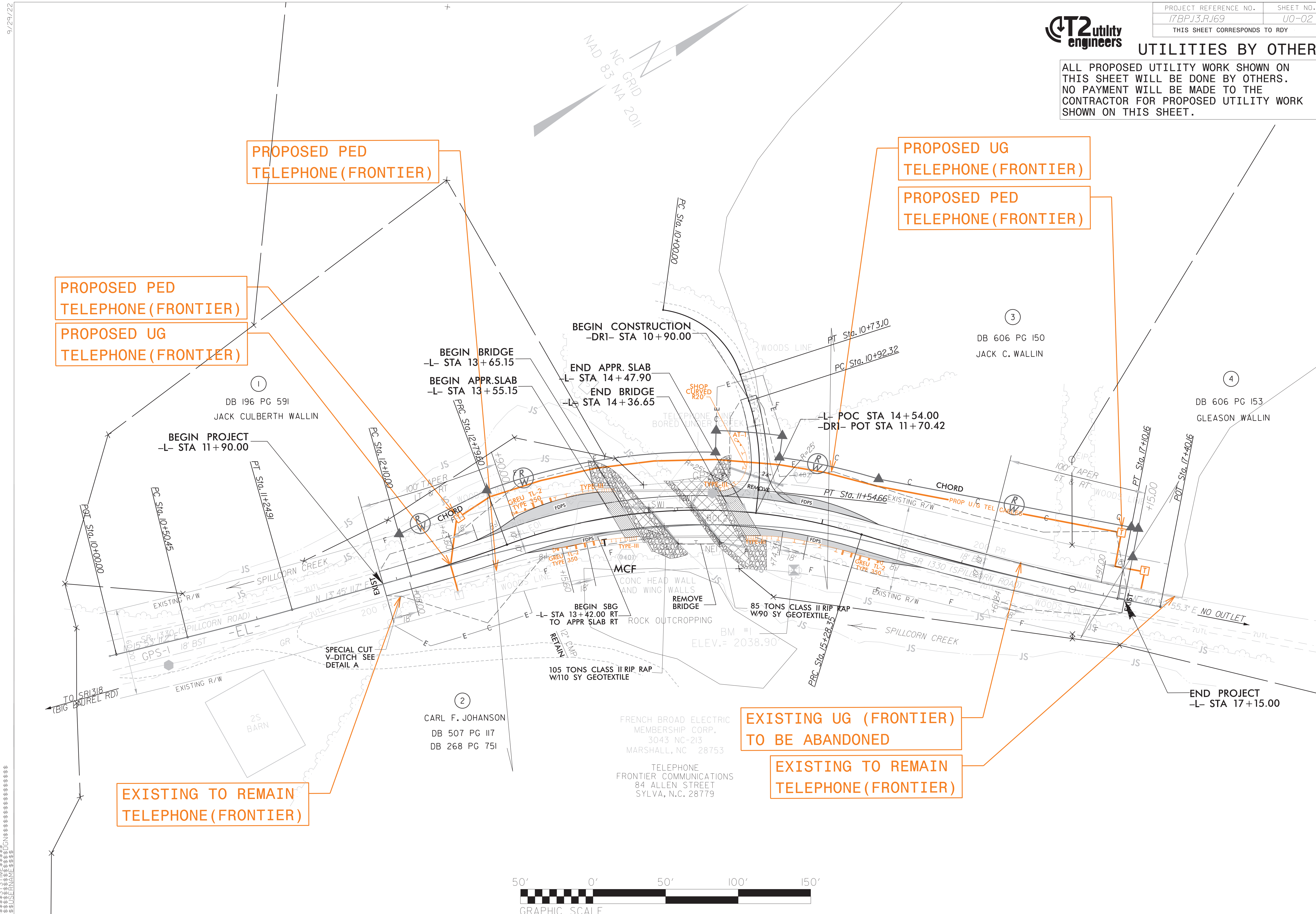
PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.169	U0-02

THIS SHEET CORRESPONDS TO RDY

T2 utility engineers

UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.



COMPUTED BY: MY	DATE: 2/11/2019
CHECKED BY: ACC	DATE: 2/11/2019

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R.69	X-1A

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

CROSS SECTION SUMMARY

IN CUBIC YARDS

-L- LOCATION	UNCLASSIFIED EXCAVATION	EMBT
11+90	0	0
12+00	4	1
12+50	95	5
13+00	85	54
13+50	3	66
13+65.15 (BEGIN BRIDGE)	2	11
14+36.65 (END BRIDGE)	0	0
14+50	0	16
15+00	26	87
15+50	67	91
16+00	85	52
16+50	106	20
17+00	202	9
17+15	84	2

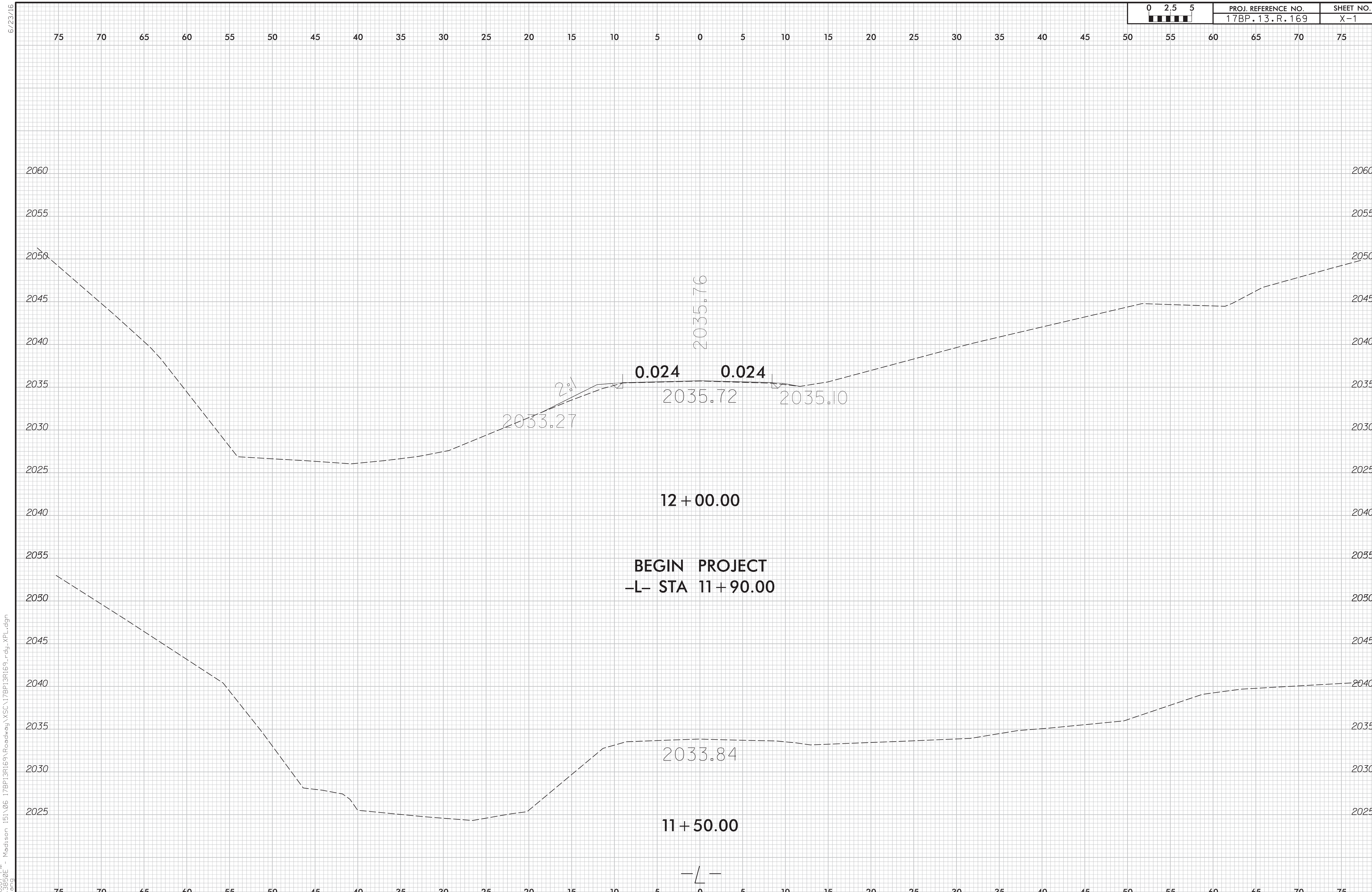
NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT.

-DR1- LOCATION	UNCLASSIFIED EXCAVATION	EMBT
10+90	0	0
11+00	3	0
11+50	7	43
11+55.10	0	9

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT.

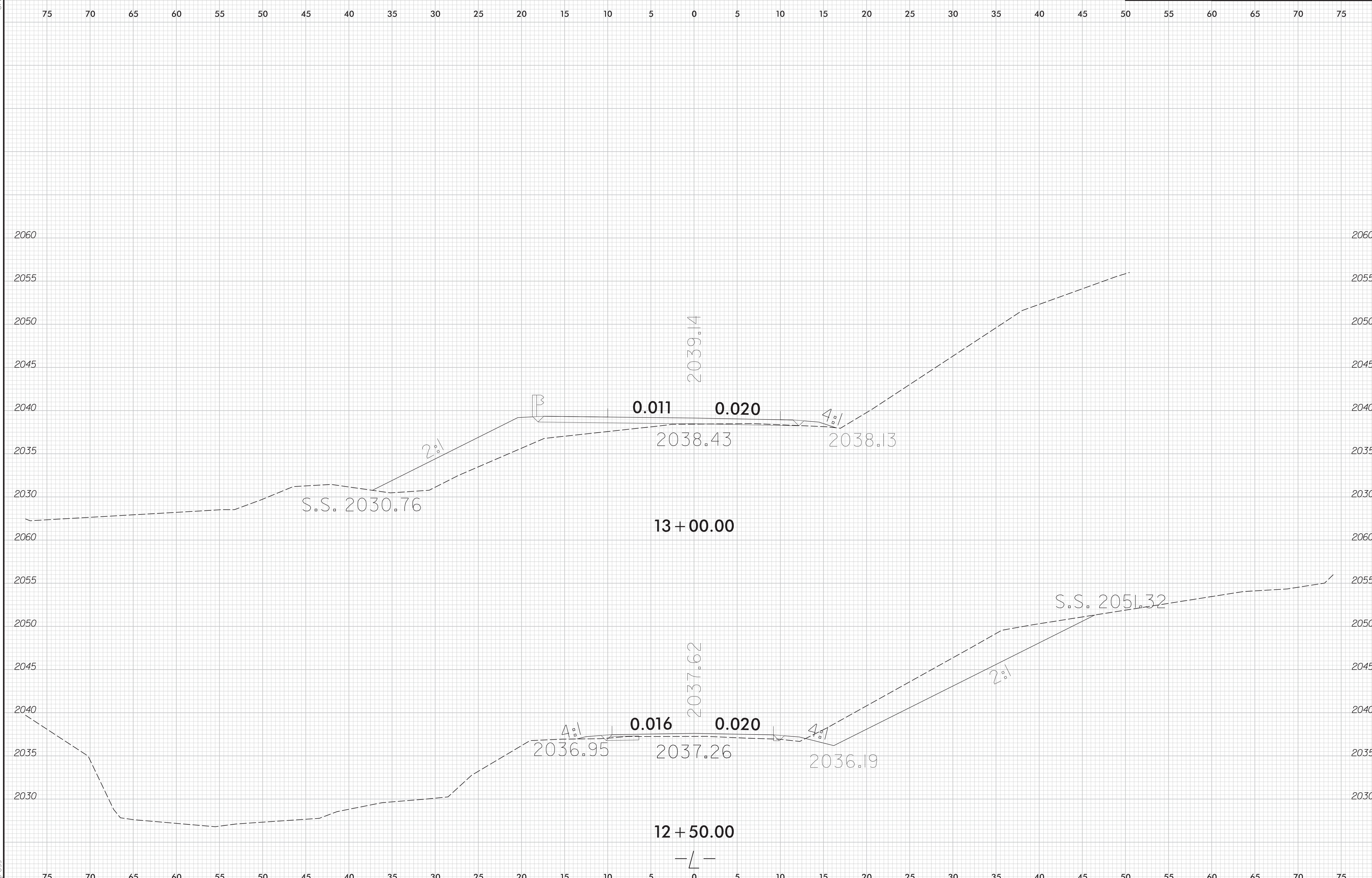
Approximate quantities only. Unclassified excavation, fine grading, clearing and grubbing, breaking of existing pavement, and removal of existing pavement will be paid for at the contract lump sum price for "grading".

6/23/16


0 2.5 5
PROJ. REFERENCE NO.
17BP.13.R.169
SHEET NO.
X-1
2035.76
0.024
0.024
2:1
2035.72
2035.10
2033.27
12+00.00
BEGIN PROJECT
-L- STA 11+90.00
2033.84
11+50.00
-L-

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.169	X-2



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bgross

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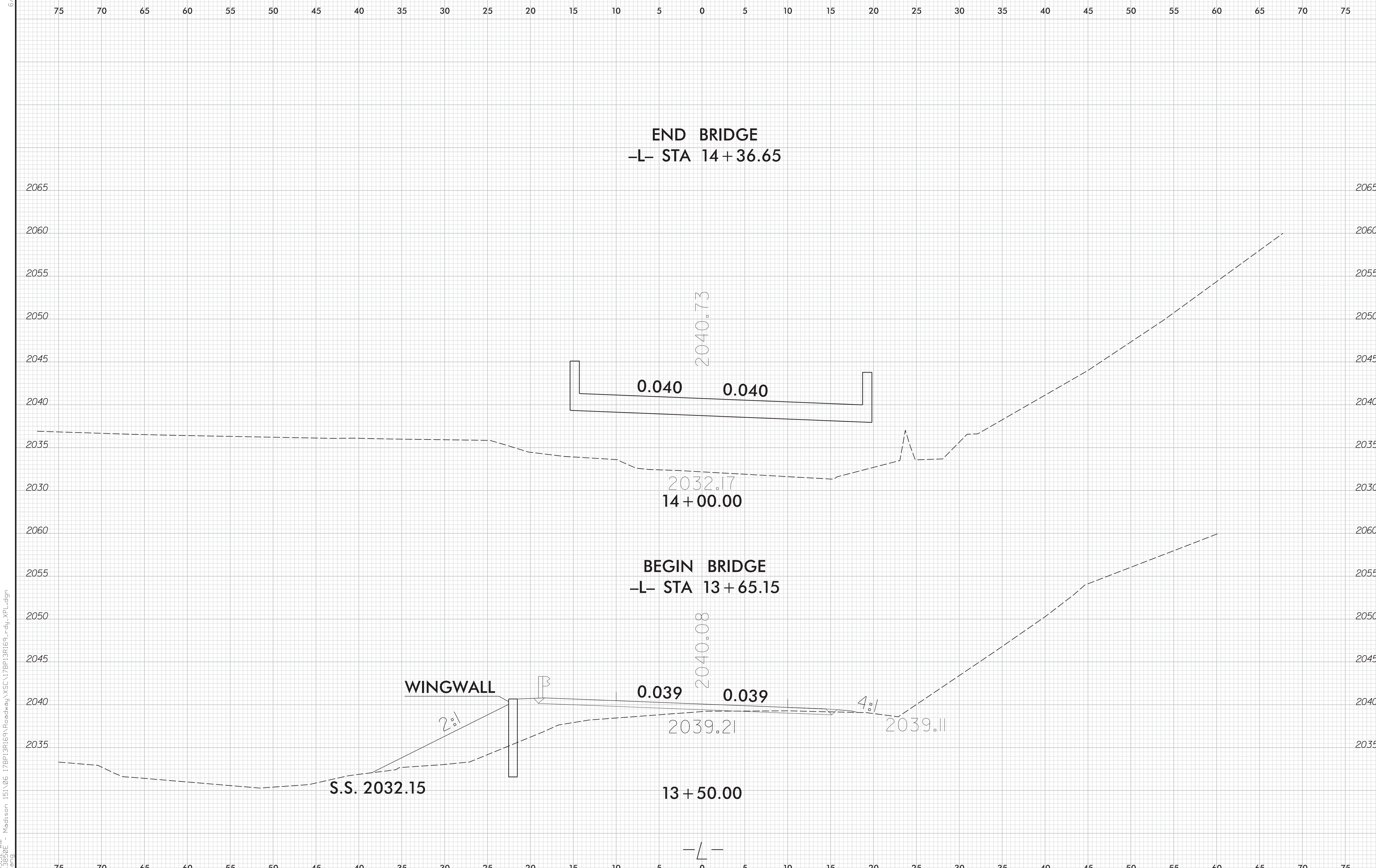

6/23/16

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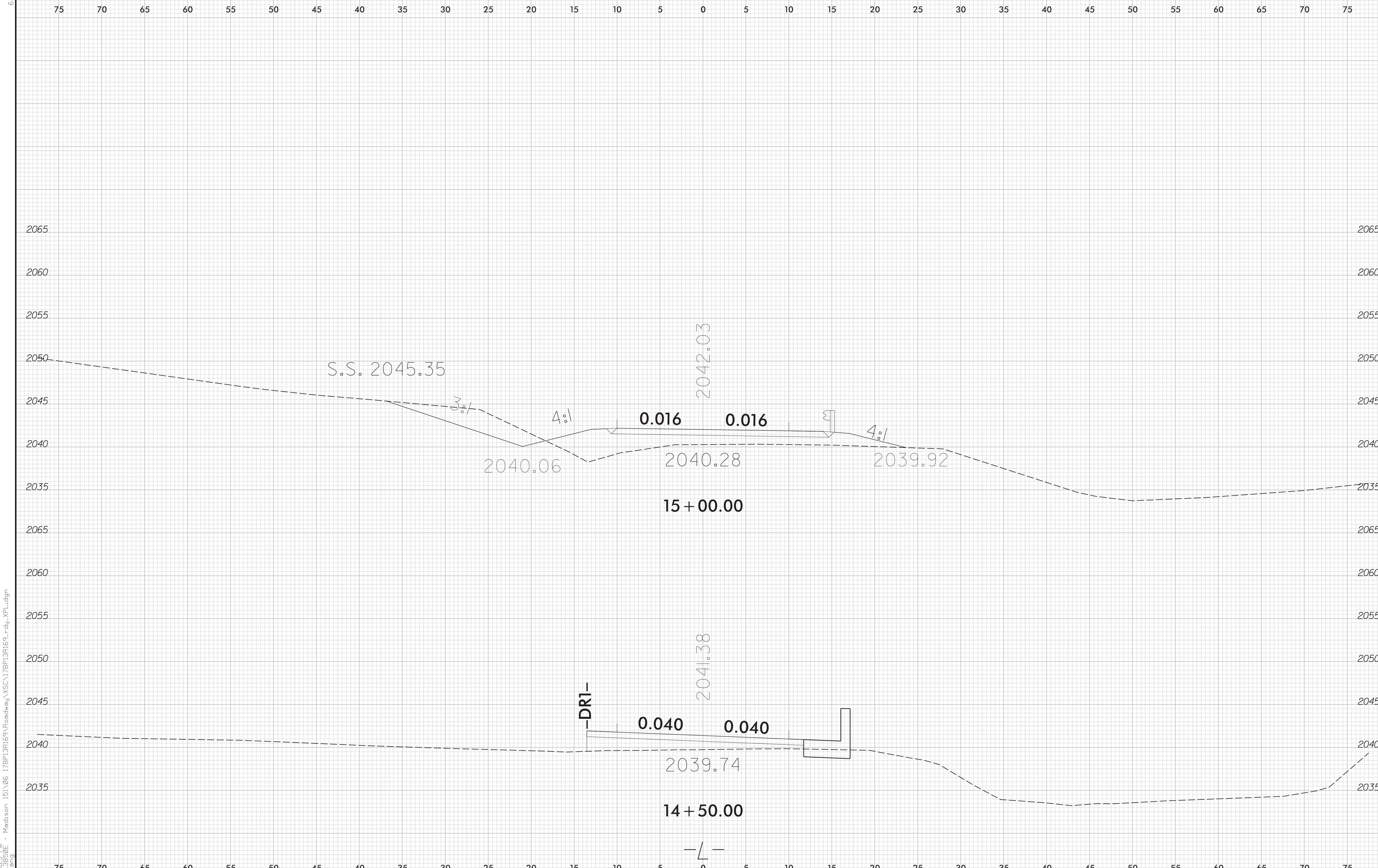
myang

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.169	X-4



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hyang

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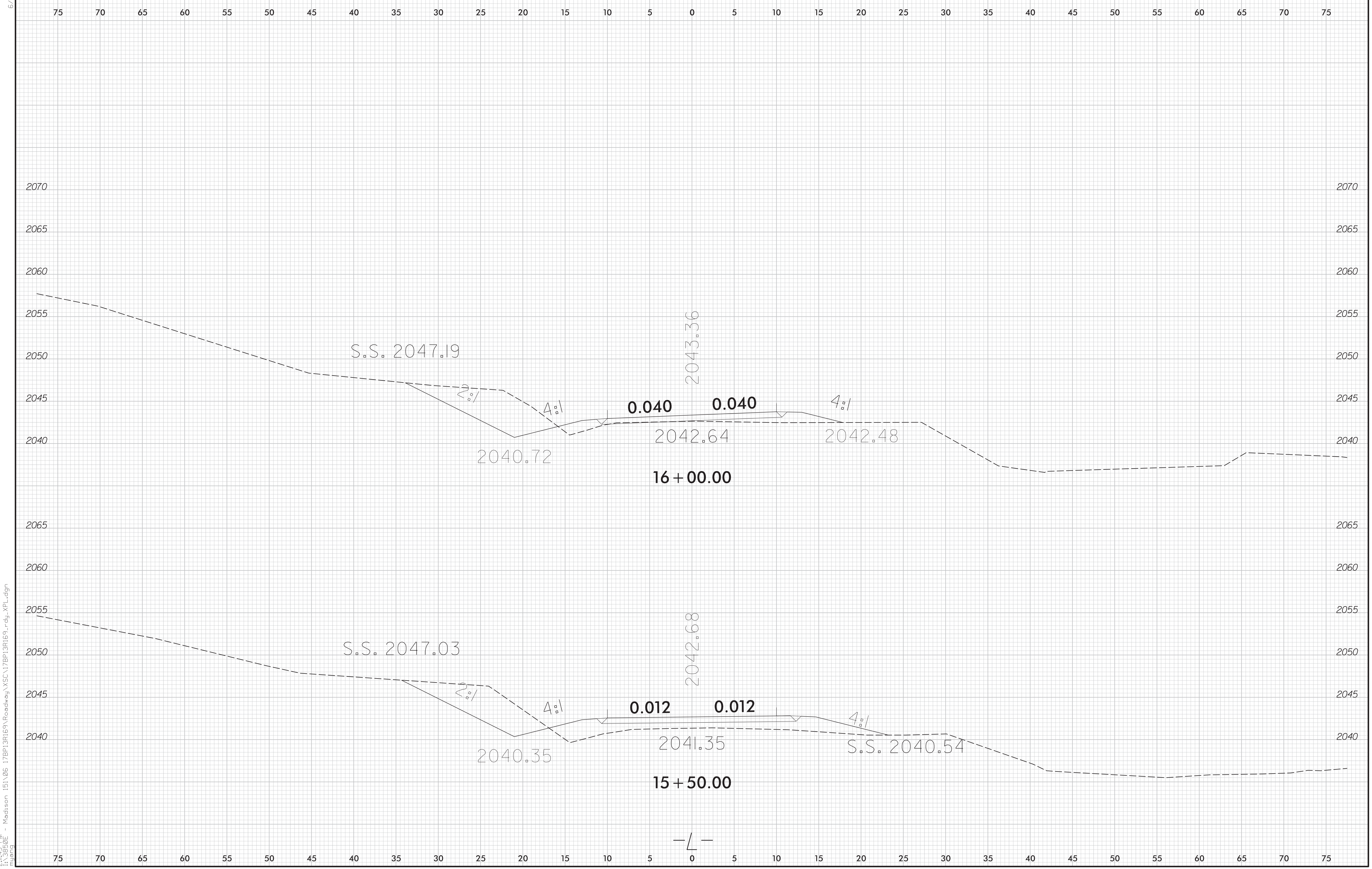

6/23/16

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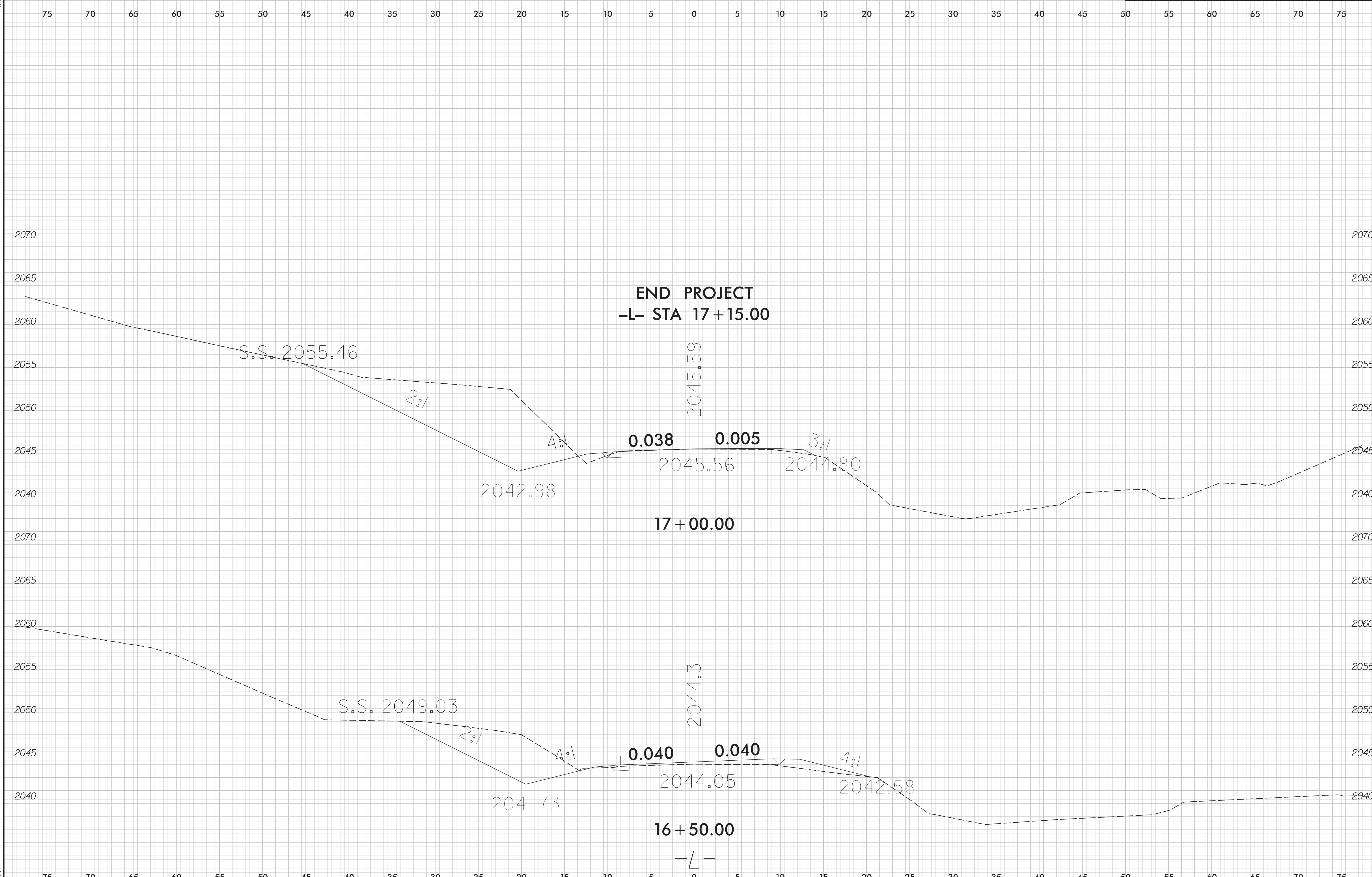

6/23/16

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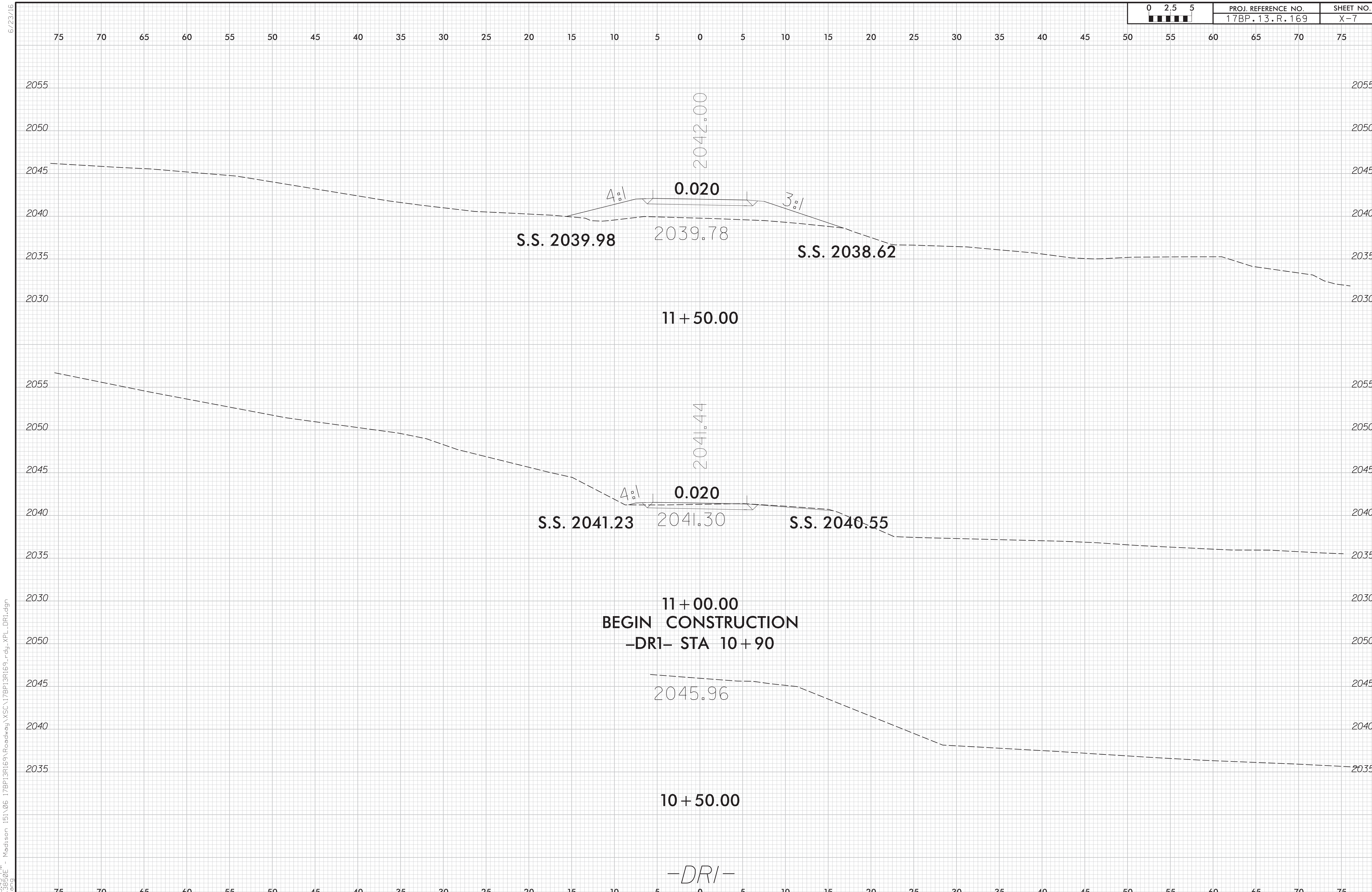
bgross

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.169	X-7



6/23/16

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myang

13+00 13+50 14+00 14+50 15+00 15+50

VERTICAL CURVE DATA -L-

(+) 3.9378% (+) 1.3000%

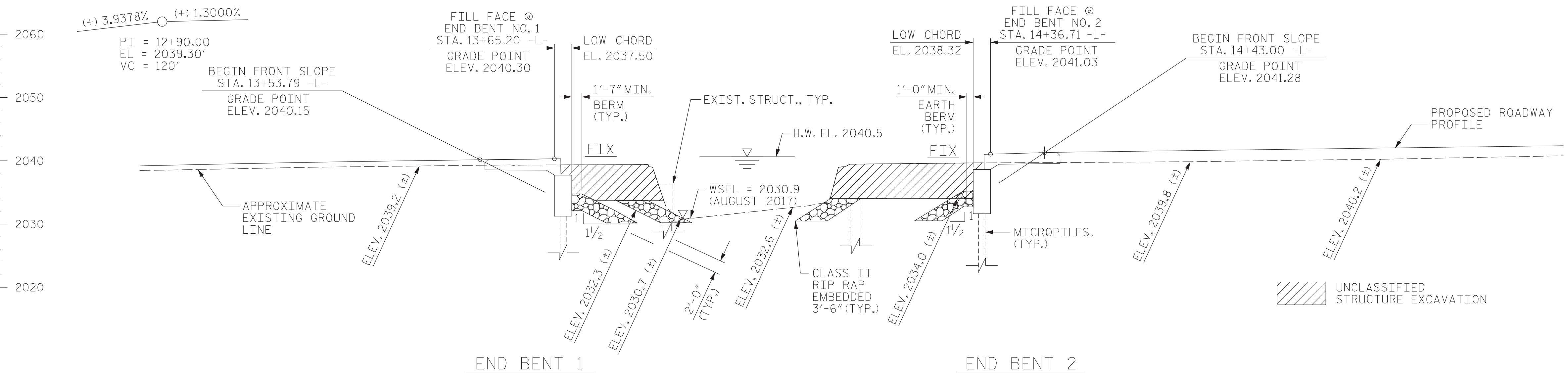
PI = 12+90.00
EL = 2039.30′
VC = 120′

VERTICAL CURVE DATA -L-

(+) 1.3000% (+) 2.7000%

PI = 16+30.00
EL = 2043.72′
VC = 106′

SPAN A



SECTION ALONG -L-

(SECTIONS AT END BENTS ARE AT RIGHT ANGLES)

HYDRAULIC DATA

DESIGN DISCHARGE	2100 CFS
FREQUENCY OF DESIGN FLOOD	25 YR.
DESIGN HIGH WATER ELEVATION	2039.5
DRAINAGE AREA	9.82 SQ. MI.
BASE DISCHARGE (Q 100)	2900 CFS
BASE HIGH WATER ELEVATION	2040.5

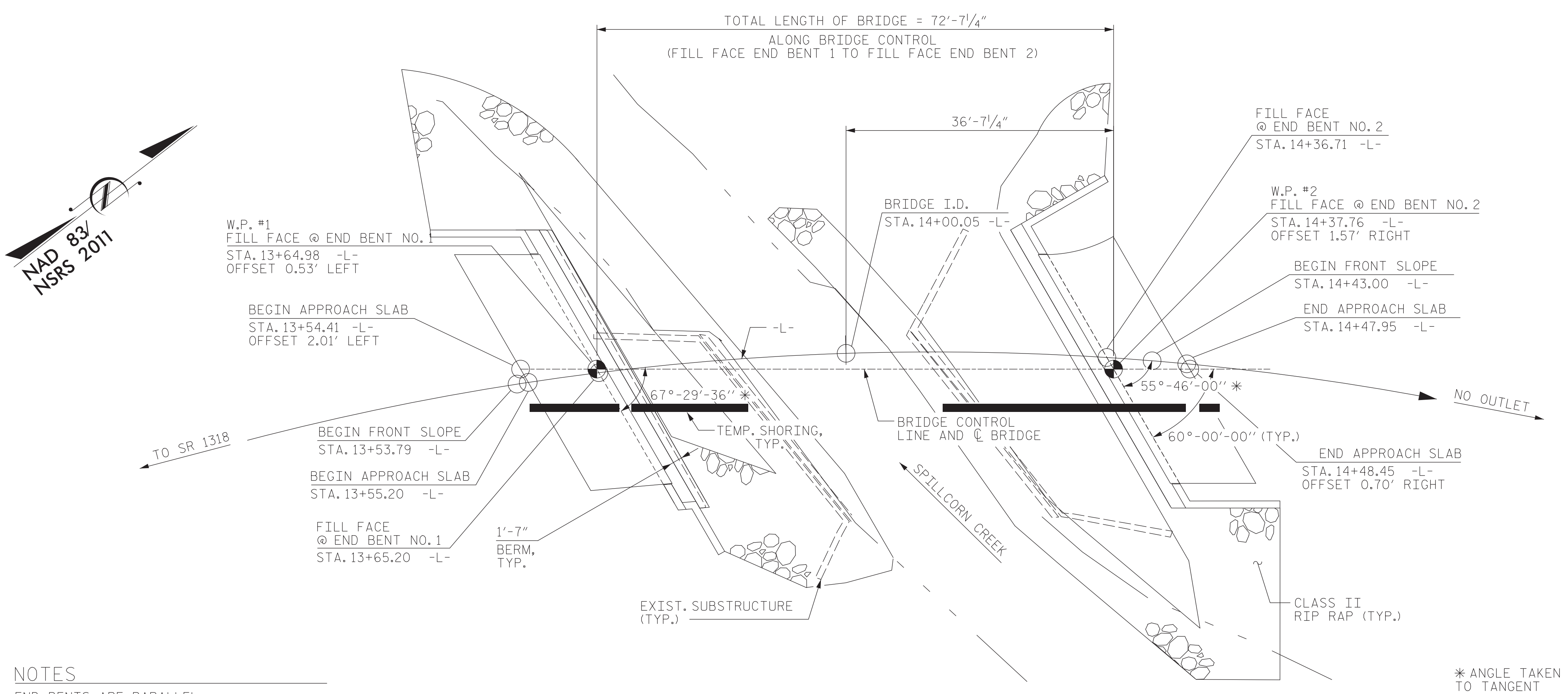
OVERTOPPING DATA

OVERTOPPING DISCHARGE	2000 CFS
FREQUENCY OF OVERTOPPING FLOOD	10+ YR.
OVERTOPPING FLOOD ELEVATION	2039.4

OVERTOPPING OCCURS AT ROADWAY LOWPOINT
(-L- STA. 13+50 +/-)

HORIZONTAL CURVE DATA -L-

PI STA. 14+08.62
Δ = 37° 30′ 23.7″ (RT)
D = 15° 04′ 40.2″
L = 248.75′
T = 129.02′
R = 380.00′



PLAN

✳ ANGLE TAKEN TO TANGENT

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

NOTES

END BENTS ARE PARALLEL.
PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.
BEAMS ARE PARALLEL TO BRIDGE CONTROL LINE.

PROJECT NO. 17BP.13.R.169
MADISON COUNTY
STATION: 14+00.05 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 151

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Timothy J. Townsend
NORTH CAROLINA PROFESSIONAL ENGINEER 34955 TIMOTHY J. TOWNSEND
10/26/2022

Mattern & Craig
ENGINEERS•SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

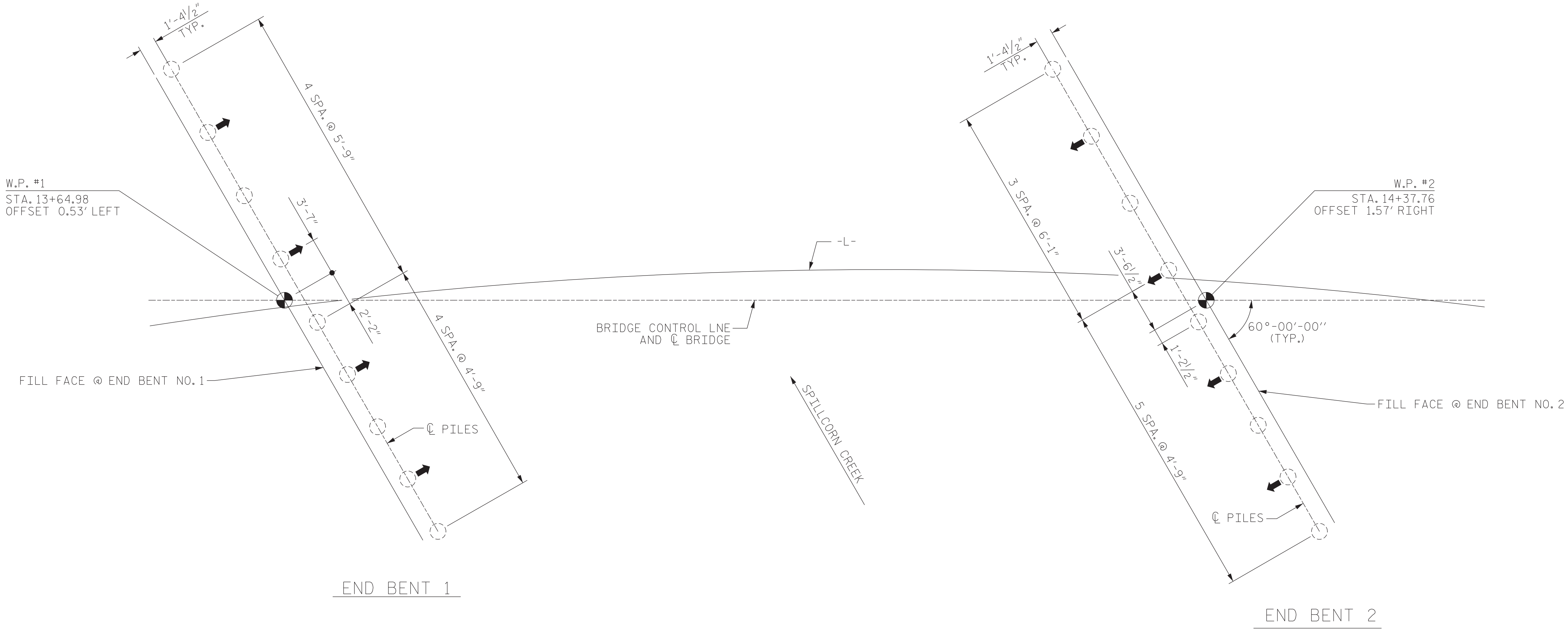
GENERAL DRAWING

BRIDGE 151 ON SR 1330 (SPILLCORN ROAD) OVER SPILLCORN CREEK BETWEEN SR 1318 AND DEAD END

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-1
1			3				TOTAL SHEETS
2			4				19

DRAWN BY : KES DATE : 10-22
CHECKED BY : TJT DATE : 10-22
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

TIME: $TIME$
DATE: $DATE$
FILE: $FILE$



FOUNDATION LAYOUT PLAN

ALL PILES ARE MICROPILES

⬆ INDICATES MICROPILES BATTERED AT 20 DEGREES

PROJECT NO. 17BP.13.R.169

MADISON COUNTY

STATION: 14+00.05 -L-

SHEET 2 OF 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Timothy J. Townsend

BBC1881FA1E482...

NORTH CAROLINA 34955 ENGINEER TIMOTHY J. TOWNSEND

10/26/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FOUNDATION LAYOUT

Mattern & Craig
ENGINEERS•SURVEYORS
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ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

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

SHEET NO. S-2

TOTAL SHEETS 19

DRAWN BY : KES DATE : 10-22
CHECKED BY : TJT DATE : 10-22

DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

DATE: $DATE$
FILE: $FILE$
TIME: $TIME$

SUMMARY OF MICROPILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Minimum Micropile Casing Size	Factored Vertical Resistance per Pile TONS	Factored Lateral Resistance per Pile TONS	Estimated Micropile Length FT	Minimum Reinforcing Casing Penetration Into Rock per Pile Lin FT	Scour Critical Elevation FT	No Reinforcing Casing Joints Between Elevations FT - FT	Galvanizing Exposed Reinforcing Casing Required?
End Bent No. 1 Piles 1-6	9-5/8" O.D. w/ 0.5 Wall	60	11	20	10.0			
End Bent No. 1 Piles 7-9	9-5/8" O.D. w/ 0.5 Wall	60	11	15	10.0			
End Bent No. 2 Piles 1-9	9-5/8" O.D. w/ 0.5 Wall	60	11	20	10.0			

NOTES

1. The Micropile and Spread Footing Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer Michael H. Stephens, P.E., License No. 028893 on 08-03-2022.

FOUNATION NOTES

1) FOR MICROPILES, SEE MICROPILES PROVISION.

2) 4 BATTERED MICROPILES INSTALLED WITH AN INCLINATION OF 20 DEGREES ARE REQUIRED AT EACH END BENT. SEE STRUCTURE DRAWINGS FOR BATTERED PILE LOCATIONS.

3) OVERBURDEN DRILLING SYSTEM THAT ADVANCES THE DRILL STRING AND CASING SIMULTANEOUSLY IS REQUIRED FOR ALL MICROPILES.

4) MICROPILE LOAD TESTING IS NOT REQUIRED.

5) MICROPILE ESTIMATED LENGTHS ARE BASED ON NCDOT GEOTECHNICAL DESIGN ASSUMPTION AND IS FOR INFORMATION PURPOSES ONLY. CONTRACTOR TO VERIFY MICROPILE LENGTHS FOR ESTIMATING PURPOSES.

PROJECT NO. 17BP.13.R.169

MADISON COUNTY

STATION: 14+00.05 -L-

SHEET 3 OF 4

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DocuSigned by: Timothy J. Townsend

NORTH CAROLINA ENGINEER 34955 TIMOTHY J. TOWNSEND

10/26/2022

Mattern & Craig
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES AND NOTES

REVISIONS								SHEET NO.
NO.	BY:	DATE:		NO.	BY:	DATE:		S-3
1				3				TOTAL SHEETS
2				4				19

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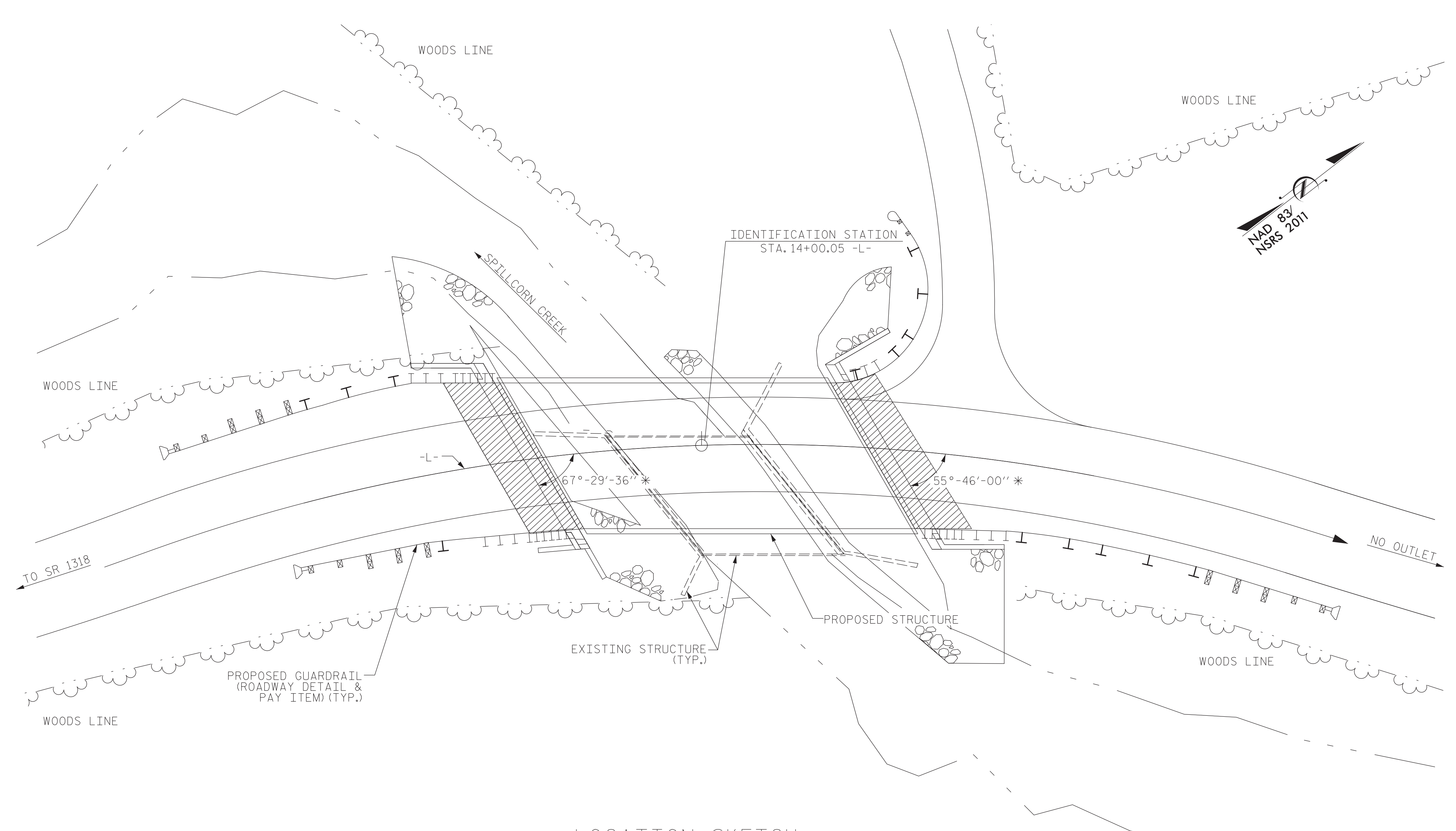
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

DATE: $DATE$ FILE: $FILE$ TIME: $TIME$

B.M. #1: RR SPIKE SET IN 30" MAPLE -L- STA. 14+87.19 35.12' RT ELEV. 2038.90'



LOCATION SKETCH

NOTE: NO KNOWN UTILITY CONFLICTS

✱ ANGLE TAKEN TO TANGENT

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 14+00.05 -L-".

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 6'-0" LEFT AND 31'-0" RIGHT AT END BENT 1 AND 40'-0" LEFT AND 28'-0" RIGHT AT END BENT 2, FROM THE CENTERLINE ROADWAY, AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 1 SIMPLE SPAN AT 31'-4"; 24'-2" CLEAR ROADWAY WIDTH, TIMBER DECK ON STEEL BEAMS ON CONCRETE ABUTMENTS AND LOCATED APPROXIMATELY 10 FEET UPSTREAM FROM PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 EVALUATING SCOUR AT BRIDGES."

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.

TEMPORARY SHORING WILL BE REQUIRED IN AREAS INDICATED IN THE PLAN VIEW.

FOR TEMPORARY SHORING, SEE SPECIAL PROVISIONS.

FOR SHORING OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	VERTICAL CONCRETE BARRIER RAIL	PLAIN RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNITS		9⅝" DIA. MICROPILES		SHORING OF EXISTING STRUCTURE
	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LIN. FT.	TONS	SQ. YD.	LUMP SUM	NO.	LIN. FT.	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE					LUMP SUM		140				11	770			
END BENT NO. 1			LUMP SUM	40.1		4286		115	140	LUMP SUM			9	165	
END BENT NO. 2			LUMP SUM	39.9		4707		90	110	LUMP SUM			9	180	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	80.0	LUMP SUM	8993	140	205	250	LUMP SUM	11	770	18	345	LUMP SUM

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MADISON COUNTY

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SHEET 4 OF 4

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 34955 TIMOTHY J. TOWNSEND
10/26/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL NOTES, LOCATION SKETCH, AND TOTAL BILL OF MATERIALS

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FILE: $FILE$

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT					
							LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.06	--	1.75	0.248	1.14	70′	EL	34.423	0.655	1.06	70′	EL	6.885	0.80	0.248	1.11	70′	EL	34.423	
		HL-93(Opr)	N/A	--	1.374	--	1.35	0.248	1.48	70′	EL	34.423	0.655	1.37	70′	EL	6.885	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.32	47.508	1.75	0.248	1.48	70′	EL	34.423	0.655	1.32	70′	EL	6.885	0.80	0.248	1.44	70′	EL	34.423	
		HS-20(Opr)	36.000	--	1.711	61.585	1.35	0.248	1.91	70′	EL	34.423	0.655	1.71	70′	EL	6.885	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.204	43.258	1.4	0.248	4.12	70′	EL	34.423	0.655	3.9	70′	EL	6.885	0.80	0.248	3.20	70′	EL	34.423	
		SNGARBS2	20.000	--	2.403	48.063	1.4	0.248	3.09	70′	EL	34.423	0.655	2.78	70′	EL	6.885	0.80	0.248	2.40	70′	EL	34.423	
		SNAGRIS2	22.000	--	2.282	50.21	1.4	0.248	2.94	70′	EL	34.423	0.655	2.58	70′	EL	6.885	0.80	0.248	2.28	70′	EL	34.423	
		SNCOTTS3	27.250	--	1.595	43.463	1.4	0.248	2.05	70′	EL	34.423	0.655	1.95	70′	EL	6.885	0.80	0.248	1.59	70′	EL	34.423	
		SNAGGRS4	34.925	--	1.339	46.755	1.4	0.248	1.72	70′	EL	34.423	0.655	1.62	70′	EL	6.885	0.80	0.248	1.34	70′	EL	34.423	
		SNS5A	35.550	--	1.309	46.526	1.4	0.248	1.68	70′	EL	34.423	0.655	1.65	70′	EL	6.885	0.80	0.248	1.31	70′	EL	34.423	
		SNS6A	39.950	--	1.203	48.069	1.4	0.248	1.55	70′	EL	34.423	0.655	1.5	70′	EL	6.885	0.80	0.248	1.20	70′	EL	34.423	
		SNS7B	42.000	--	1.146	48.129	1.4	0.248	1.47	70′	EL	34.423	0.655	1.48	70′	EL	6.885	0.80	0.248	1.15	70′	EL	34.423	
	TTST	TNAGRIT3	33.000	--	1.468	48.444	1.4	0.248	1.89	70′	EL	34.423	0.655	1.79	70′	EL	6.885	0.80	0.248	1.47	70′	EL	34.423	
		TNT4A	33.075	--	1.475	48.79	1.4	0.248	1.9	70′	EL	34.423	0.655	1.74	70′	EL	6.885	0.80	0.248	1.48	70′	EL	34.423	
		TNT6A	41.600	--	1.208	50.272	1.4	0.248	1.55	70′	EL	34.423	0.655	1.58	70′	EL	6.885	0.80	0.248	1.21	70′	EL	34.423	
		TNT7A	42.000	--	1.216	51.061	1.4	0.248	1.56	70′	EL	34.423	0.655	1.55	70′	EL	6.885	0.80	0.248	1.22	70′	EL	34.423	
		TNT7B	42.000	--	1.261	52.955	1.4	0.248	1.62	70′	EL	34.423	0.655	1.44	70′	EL	6.885	0.80	0.248	1.26	70′	EL	34.423	
		TNAGRIT4	43.000	--	1.197	51.476	1.4	0.248	1.54	70′	EL	34.423	0.655	1.4	70′	EL	6.885	0.80	0.248	1.20	70′	EL	34.423	
		TNAGT5A	45.000	--	1.128	50.745	1.4	0.248	1.45	70′	EL	34.423	0.655	1.39	70′	EL	6.885	0.80	0.248	1.13	70′	EL	34.423	
		TNAGT5B	45.000	3	1.113	50.088	1.4	0.248	1.43	70′	EL	34.423	0.655	1.33	70′	EL	6.885	0.80	0.248	1.11	70′	EL	34.423	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.
2.
3.
4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

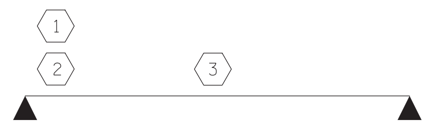
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING ∗∗

∗∗ SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN A

PROJECT NO. 17BP.13.R.169

MADISON COUNTY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY

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DATE: $DATE$
FILE: $FILE$
TIME: $TIME$

STD. NO. 24LRFR1_60&120S_70L

STAGED CONSTRUCTION NOTES

EXISTING BRIDGE INFORMATION BASED ON BEST INFORMATION AVAILABLE.

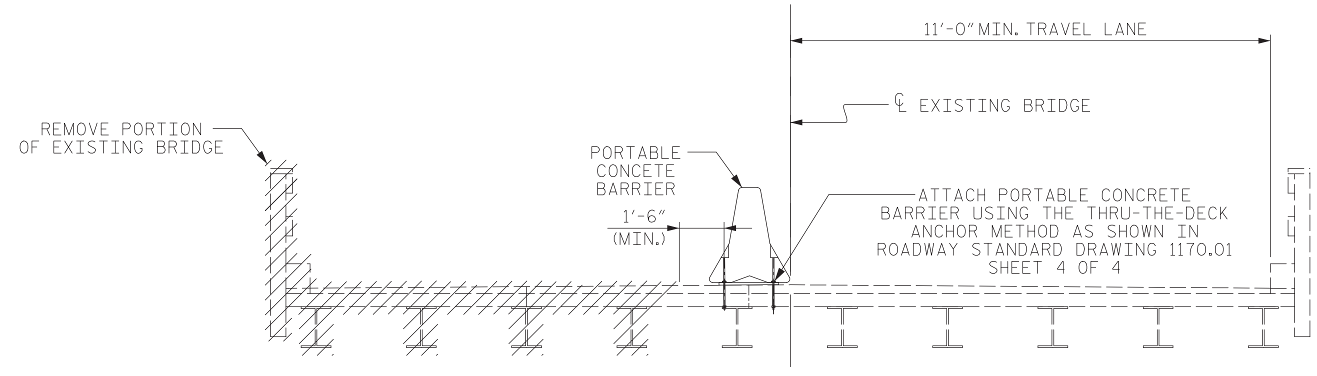
FOR PORTABLE CONCRETE BARRIER, SEE ROADWAY STANDARD DRAWING 1170.01.

FOR TEMPORARY GAURDRAIL, SEE ROADWAY STANDARD DRAWING 862.03.

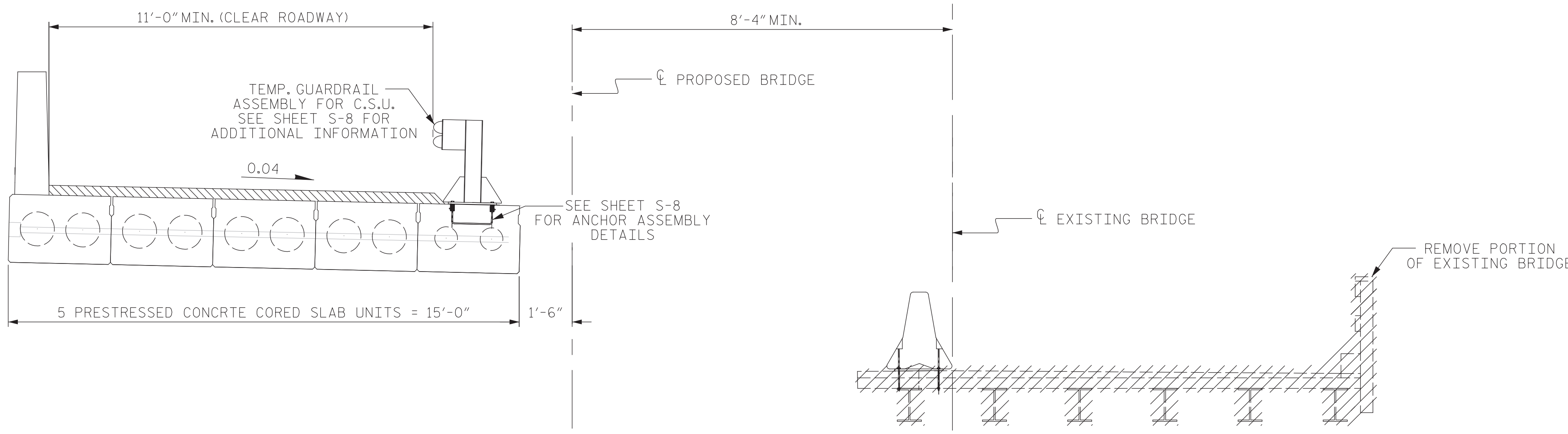
SEE ROADWAY PAY ITEMS FOR THE COST OF THE PORTABLE CONCRETE BARRIER AND TEMPORARY GUARDRAIL.

FOR TRAFFIC STAGING, SEE TRAFFIC CONTROL PLANS.

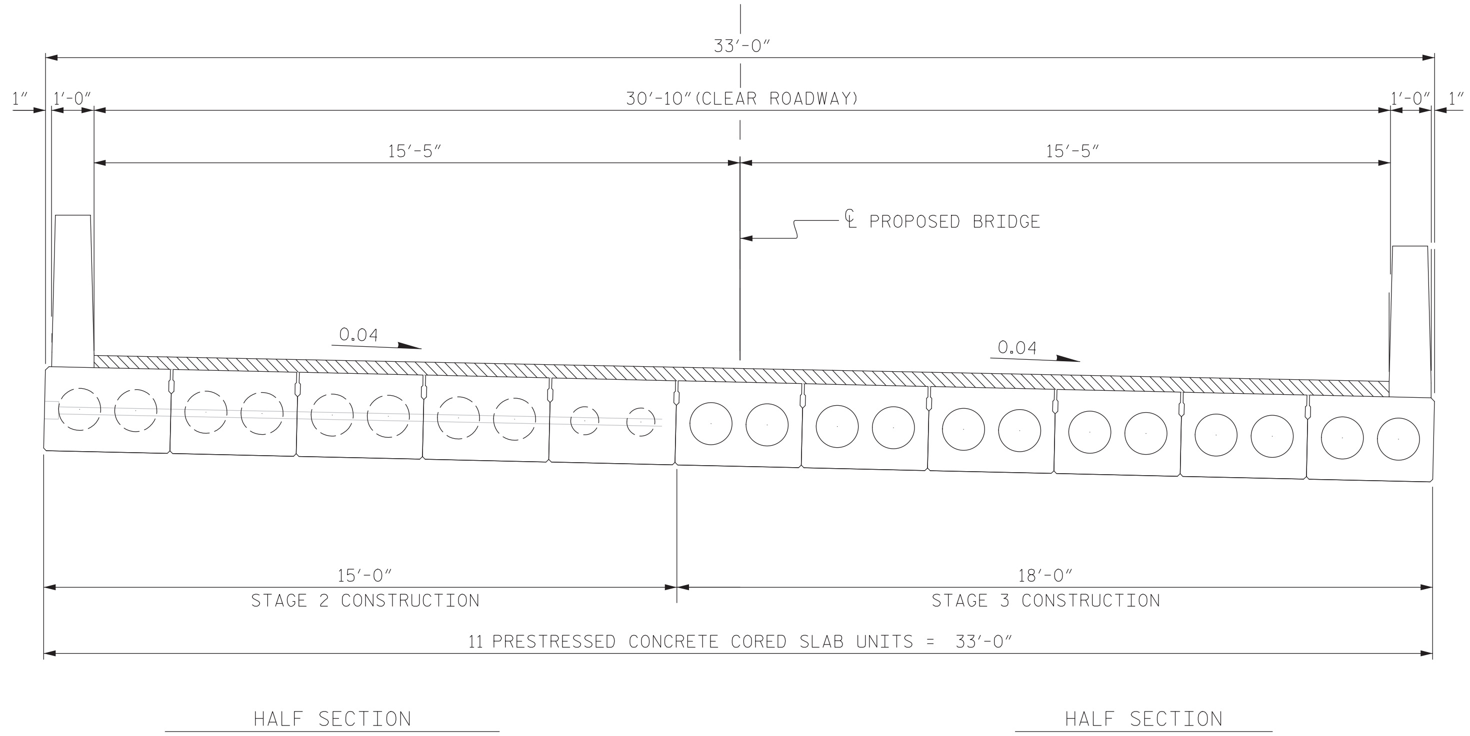
AFTER THE REMOVAL OF THE TEMPORARY GUARDRAIL, THE HOLES LEFT IN THE PRESTRESSED CONCRETE CORED SLAB SHALL BE FILLED WITH AN EPOXY BASED GROUT.



STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION



STAGE 3 CONSTRUCTION

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BRIDGE CONSTRUCTION STAGING FOR MAINTENANCE OF TRAFFIC

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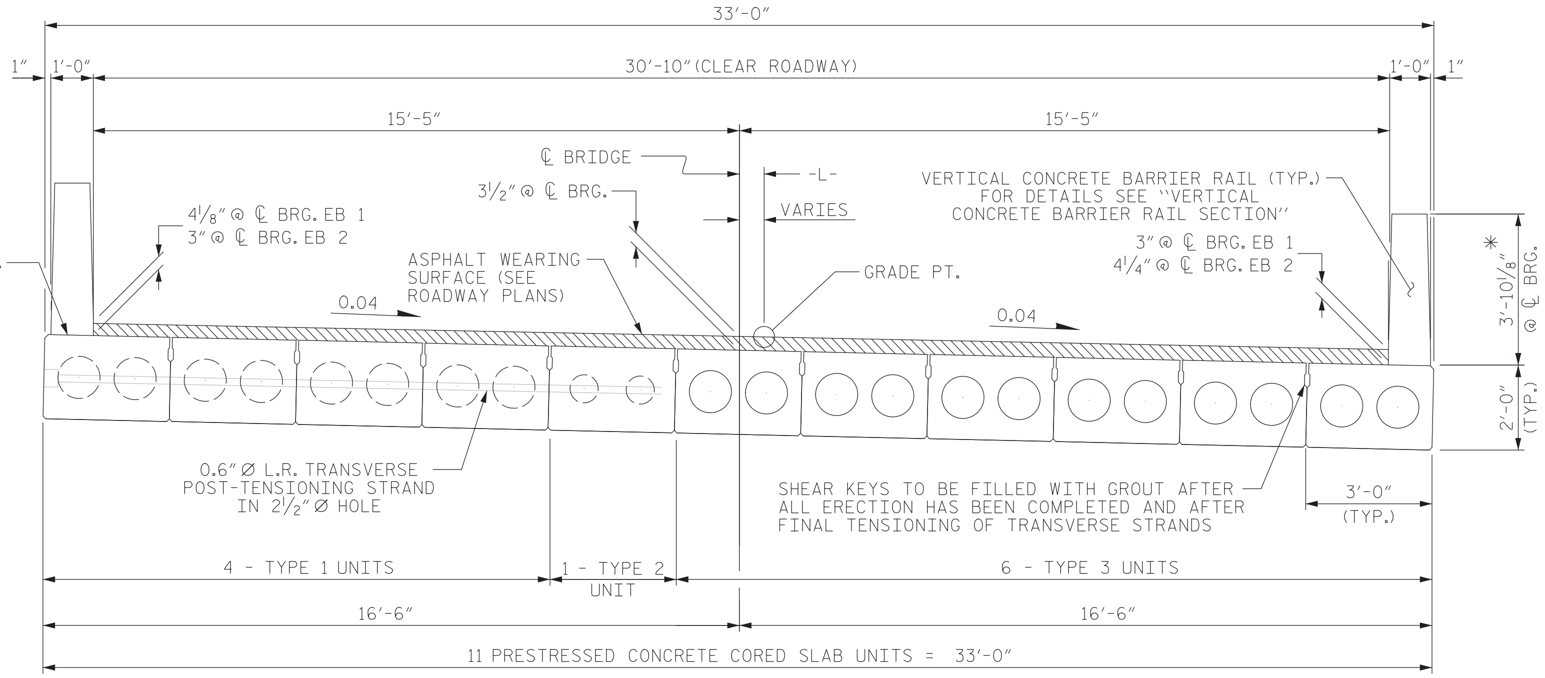
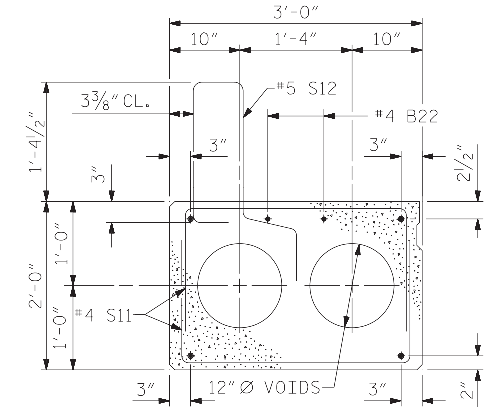


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

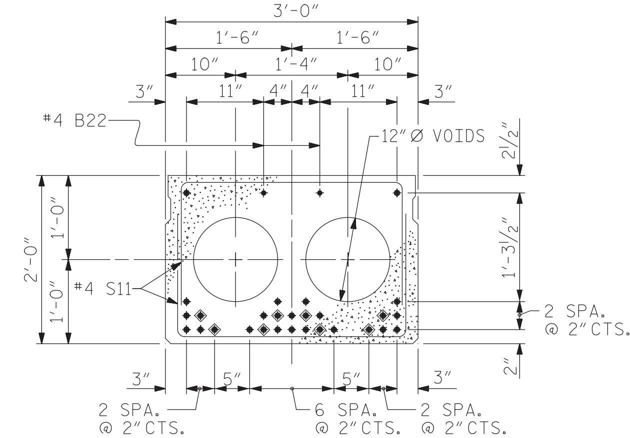
TYPICAL SECTION

HALF SECTION
THROUGH VOIDS

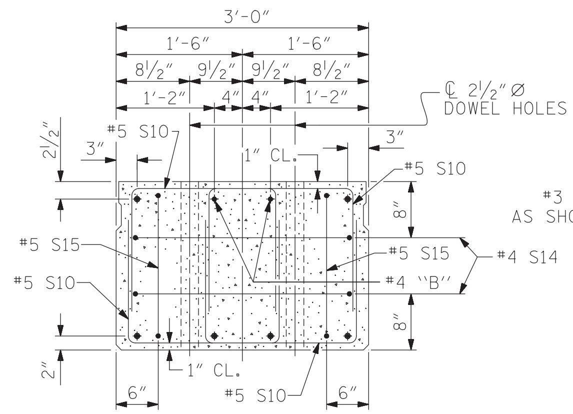
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



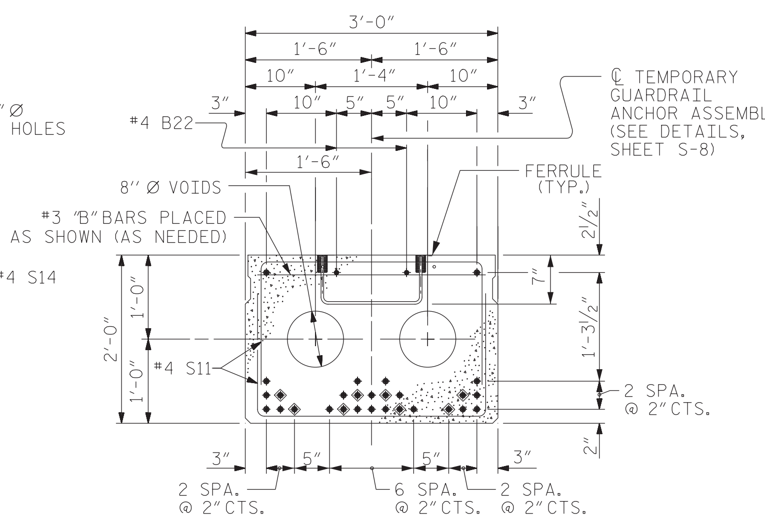
EXTERIOR SLAB SECTION
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION (TYPE 1 & TYPE 3)
(28 STRANDS REQUIRED)



END ELEVATION
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



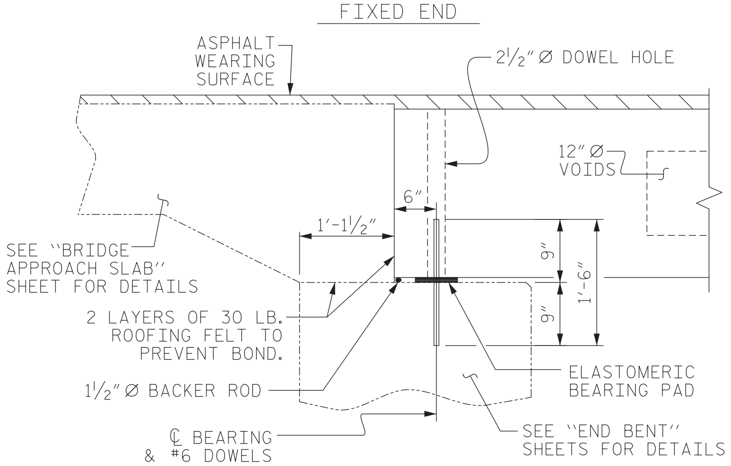
INTERIOR SLAB SECTION (TYPE 2)
(28 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

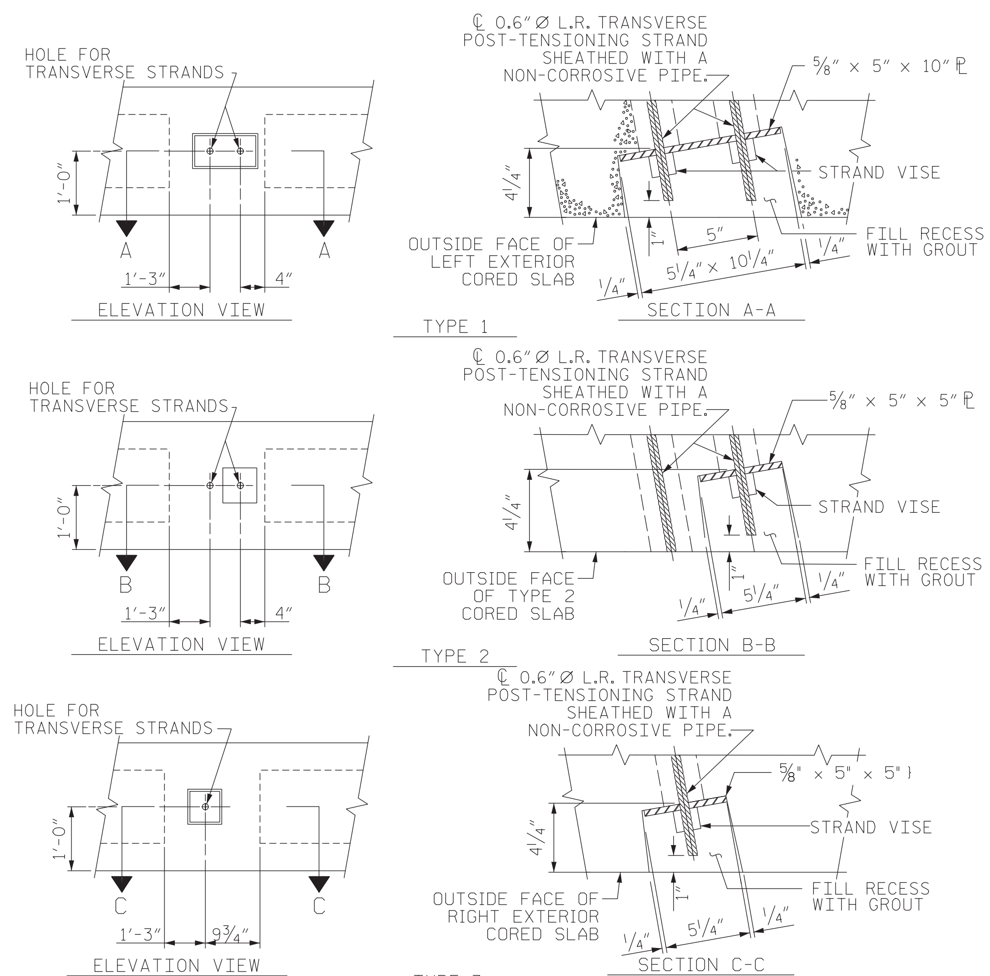
◈ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

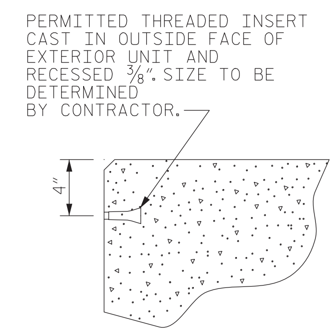
FIXED END



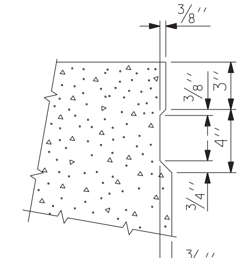
SECTION AT END BENT



GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS



THREADED INSERT DETAIL



SHEAR KEY DETAIL
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

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3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT

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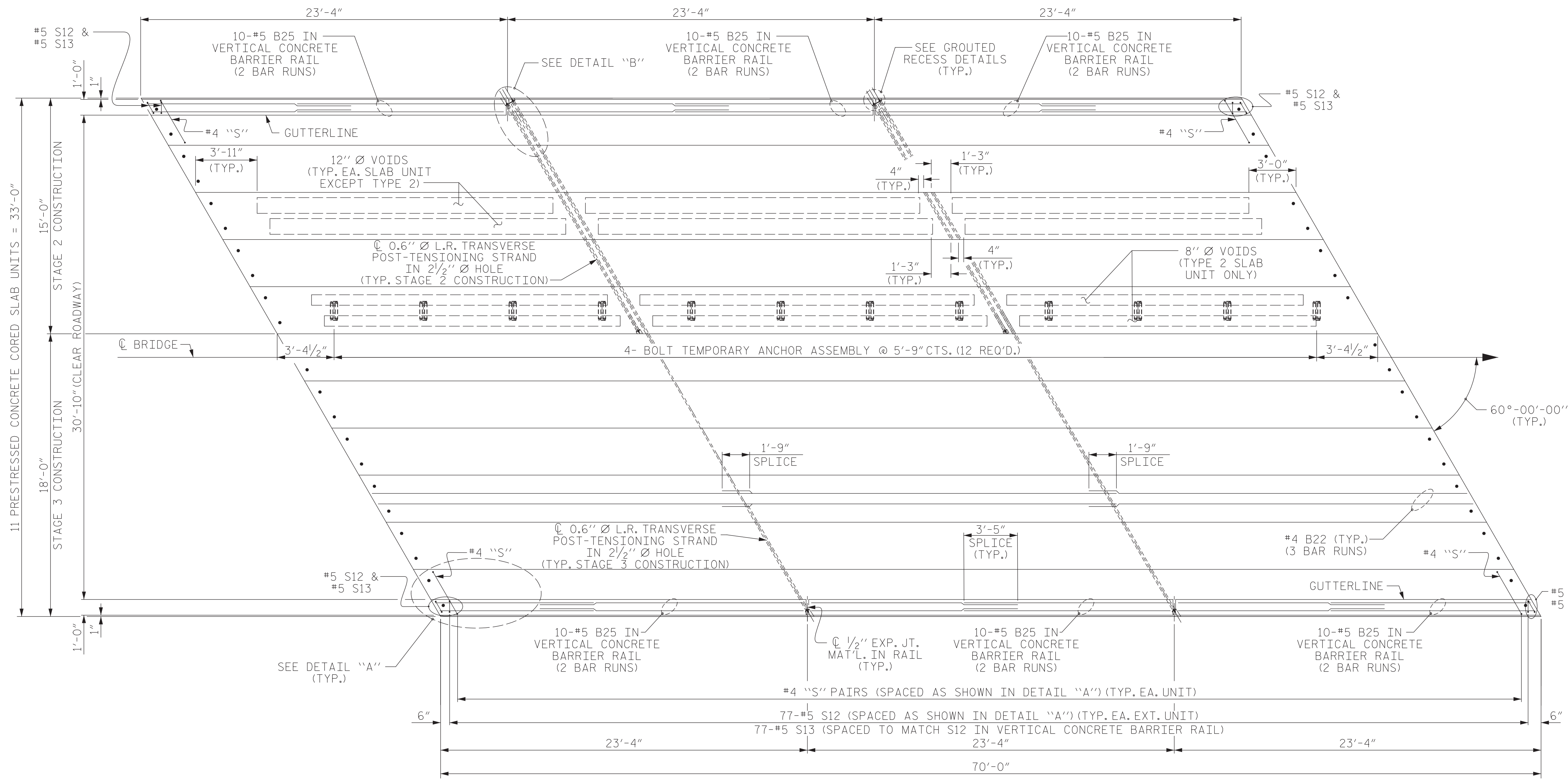


PLAN OF UNIT

ANCHOR ASSEMBLY NOTES

THE STRUCTURAL TEMPORARY ANCHOR ASSEMBLY SHALL CONSIST OF THEFOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OFAASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2"

B. 4 - 1" Ø X 2¼" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THECONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1" Ø X 2¼" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THISALTERNATE SHALL BE APPROVED BY THE ENGINEER.

C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 5/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

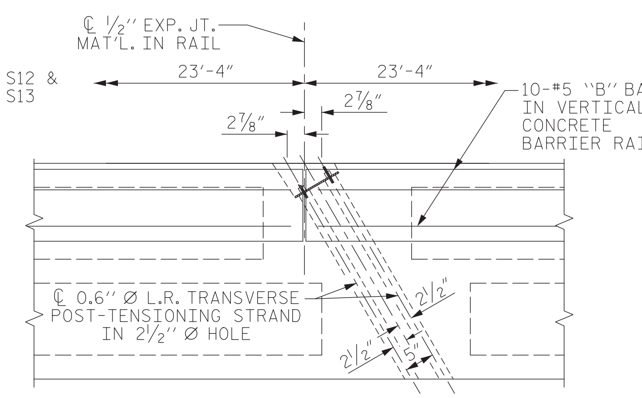
TEMPORARY GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED INTHE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY COMPLETE IN PLACE SHALL BE INCLUDED IN THE UNIT CONTRACT BID FOR 3'-0"X 1'-9" PRESTRESSED CONCRETE CORED SLABS.

FERRULES TO BE PLUGGED DURING CASTING OF THE CORED SLAB UNITS AS RECOMMENDED BY THE MANUFACTURER.

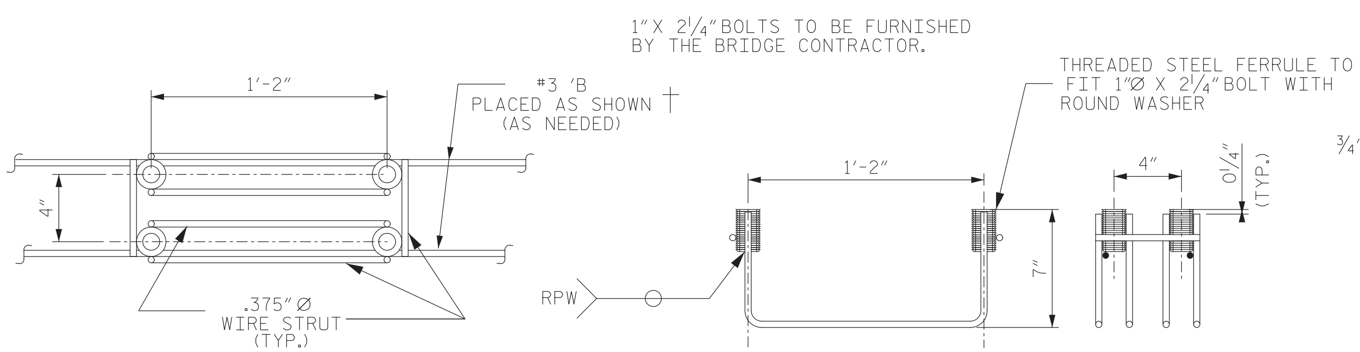
AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAYBE USED.

TEMPORARY GUARDRAIL IS A ROADWAY DETAIL AND PAY ITEM.



DETAIL "B"

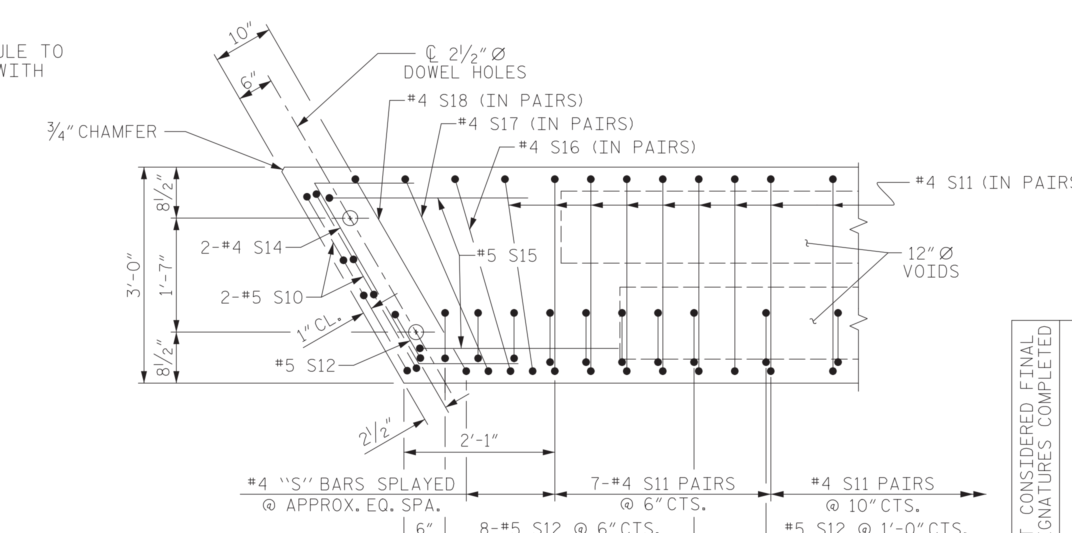
#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUTED RECESS AND 2½" Ø TRANSVERSE POST-TENSIONING STRAND HOLES



TEMPORARY GUARDRAIL ANCHOR ASSEMBLY

** ASSEMBLIES REQUIRED IN THE TYPE 2 CORED SLAB

† THE #3 BARS ARE INCIDENTAL AND THEIR COST SHALL BE INCLUDED IN THE PRICE BID FOR THE PRESTRESSED CONCRETE CORED SLABS



DETAIL "A"

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.

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NORTH CAROLINA PROFESSIONAL ENGINEER 34955 TIMOTHY J. TOWNSEND
10/26/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 70' UNIT
30'-10" CLEAR ROADWAY
60° SKEW

Mattern & Craig ENGINEERS•SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

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2			4				19

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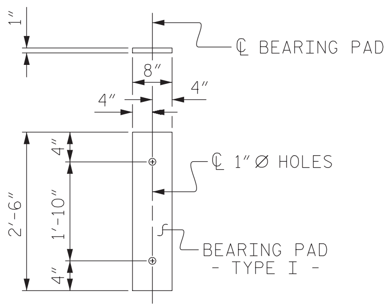
TIME: $TIME$



FIXED END
(TYPE I - 22 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT (TYPE 1 & 3)		INTERIOR UNIT (TYPE 2)	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98	24'-6"	98
S10	8	#5	3	5'-0"	42	5'-0"	42	5'-0"	42
S11	170	#4	3	5'-10"	662	5'-10"	662	5'-10"	662
✱S12	79	#5	1	5'-7"	460				
S14	4	#4	4	5'-11"	16	5'-11"	16	5'-11"	16
S15	4	#5	3	7'-1"	30	7'-1"	30	7'-1"	30
S16	4	#4	3	5'-11"	16	5'-11"	16	5'-11"	16
S17	4	#4	3	6'-1"	16	6'-1"	16	6'-1"	16
S18	4	#4	3	6'-3"	17	6'-3"	17	6'-3"	17
REINFORCING STEEL LBS.					897		897		897
✱EPOXY COATED REINFORCING STEEL LBS.					460				
7000 P.S.I. CONCRETE CU. YDS.					12.0		12.0		14.3
0.6" Ø L.R. STRANDS No.					28		28		28

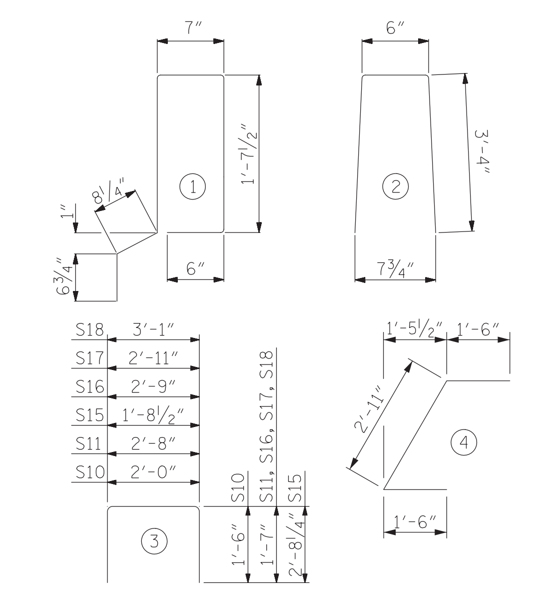
CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S. TYPE 1	1	70'-0"	70'-0"
INTERIOR C.S. TYPE 1	3	70'-0"	210'-0"
INTERIOR C.S. TYPE 2	1	70'-0"	70'-0"
INTERIOR TYPE 3	5	70'-0"	350'-0"
EXTERIOR TYPE 3	1	70'-0"	70'-0"
TOTAL	11	70'-0"	770'-0"

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
LEFT	1¾"	3'-7¾"
RIGHT	1¾"	3'-7¾"

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	70' UNIT					
✱B25	120	120	#5	STR	13'-8"	1711
✱S13	158	158	#5	2	7'-2"	1181
✱EPOXY COATED REINFORCING STEEL				LBS.		2892
CLASS AA CONCRETE				CU.YDS.		18.1
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		140.29

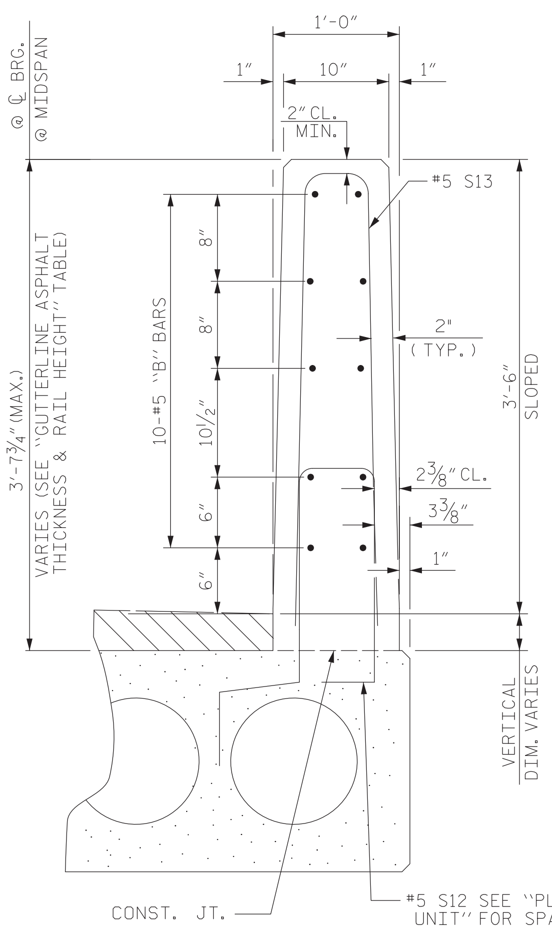
GRADE 270 STRANDS

	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

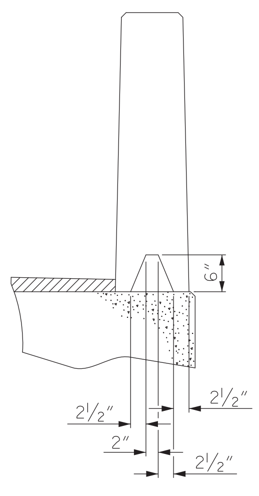
DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 2'-0"
70' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2¼" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✱✱	¾" ↓
FINAL CAMBER	1½" ↑

✱✱ INCLUDES FUTURE WEARING SURFACE

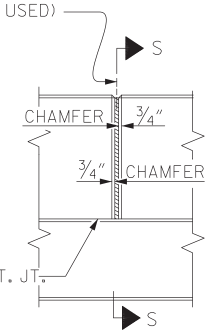


SECTION THRU RAIL



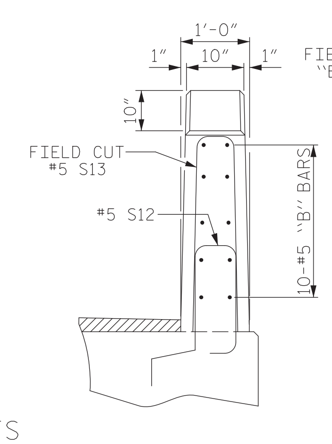
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

℄ ½" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED)

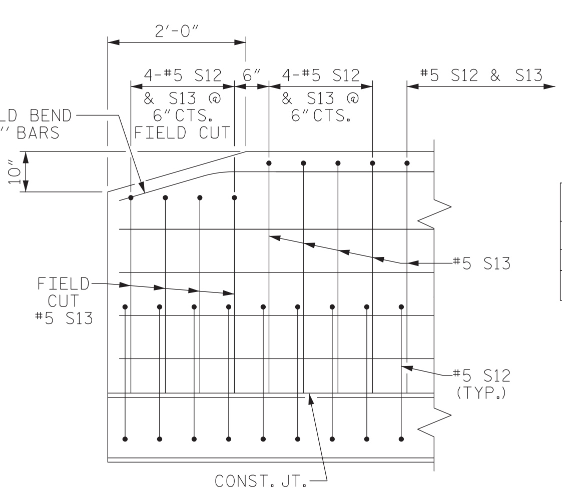


ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL DETAILS



END VIEW



SIDE VIEW

END OF RAIL DETAILS

CONCRETE RELEASE STRENGTH

UNIT	PSI
70' UNITS	5500

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Timothy J. Townsend
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ENGINEER
TIMOTHY J. TOWNSEND
10/26/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT

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NC LIC. NO. C-1154

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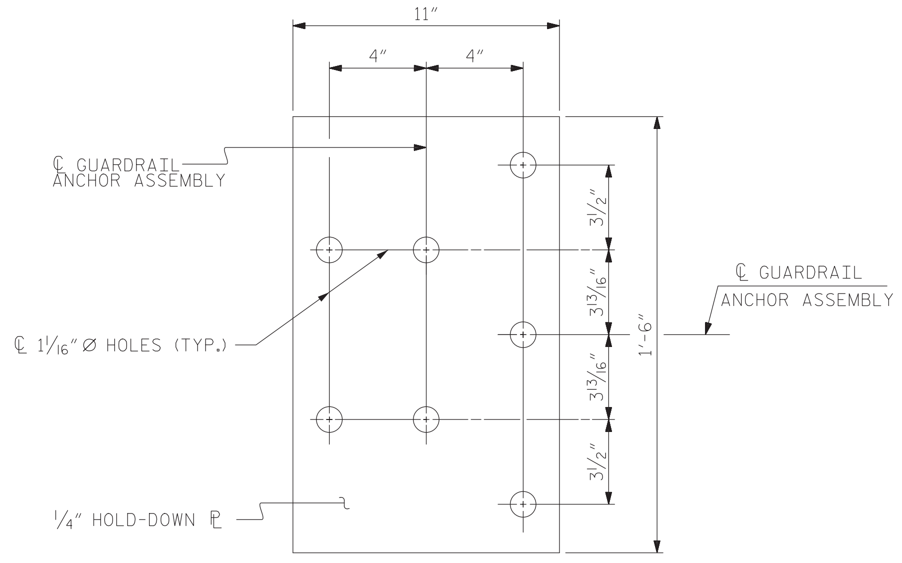
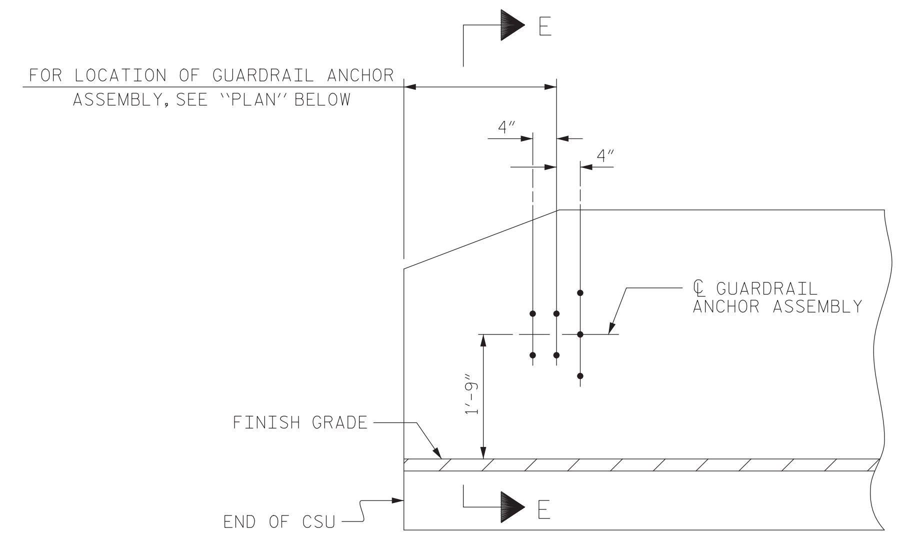


PLAN



ELEVATION

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4″ HOLD DOWN PLATE AND 7 - 7/8″ Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8″ Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

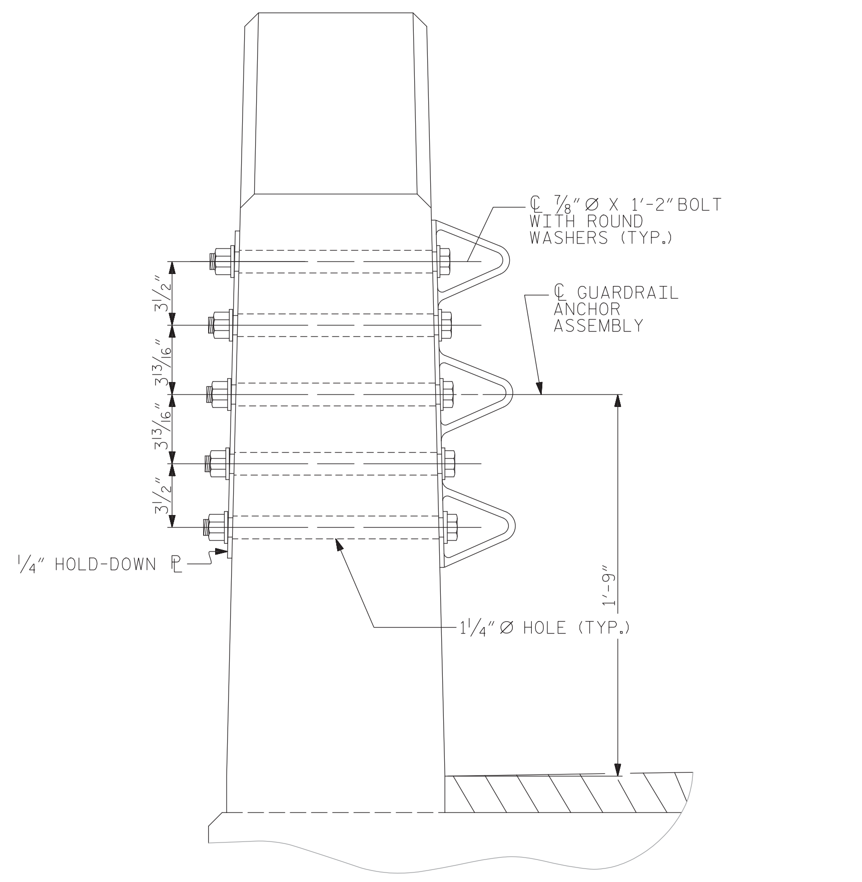
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

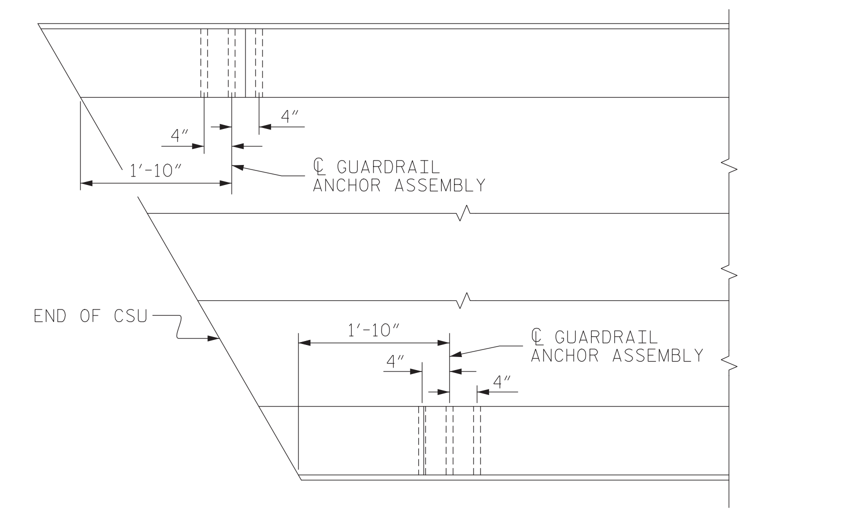
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SECTION E-E

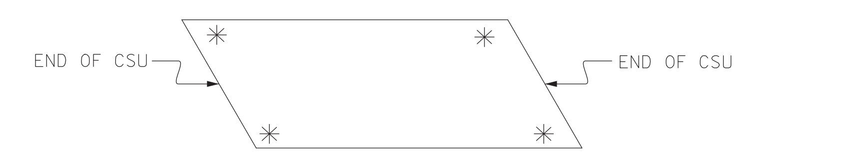
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

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10/26/2022

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STATE OF NORTH CAROLINA
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RALEIGH

GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

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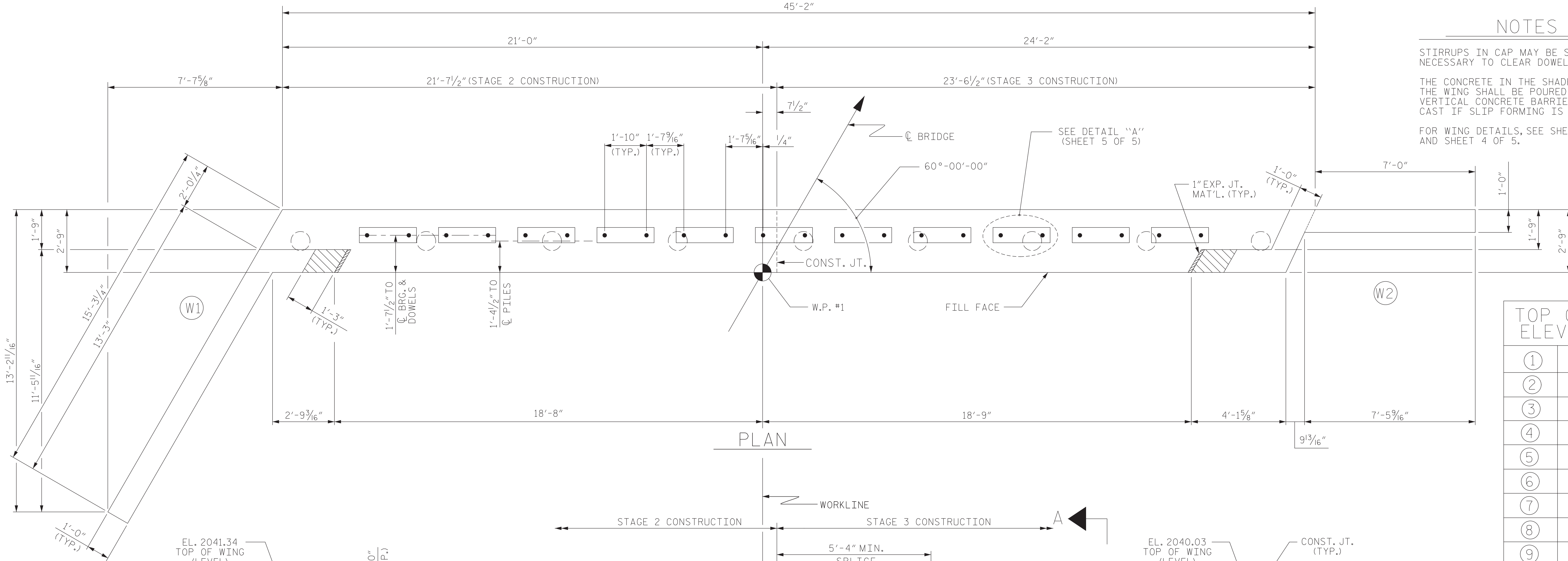
NOTES

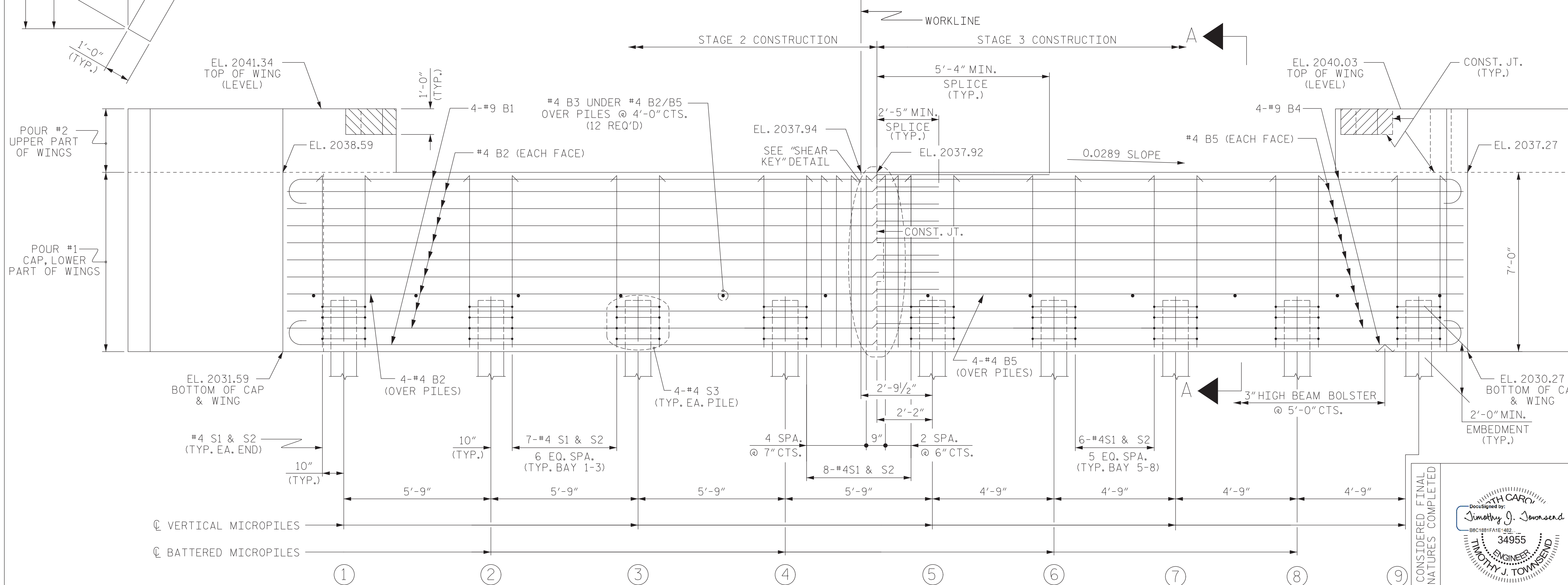
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR WING DETAILS, SEE SHEET 3 OF 5 AND SHEET 4 OF 5.



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.

TOP OF PILE ELEVATIONS	
1	2033.52
2	2033.35
3	2033.19
4	2033.02
5	2032.85
6	2032.72
7	2032.58
8	2032.44
9	2032.31

PROJECT NO. 17BP.13.R.169
MADISON COUNTY
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SHEET 1 OF 5

STATE OF NORTH CAROLINA
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RALEIGH

SUBSTRUCTURE
END BENT No. 1

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1			3			TOTAL SHEETS	19
2			4				

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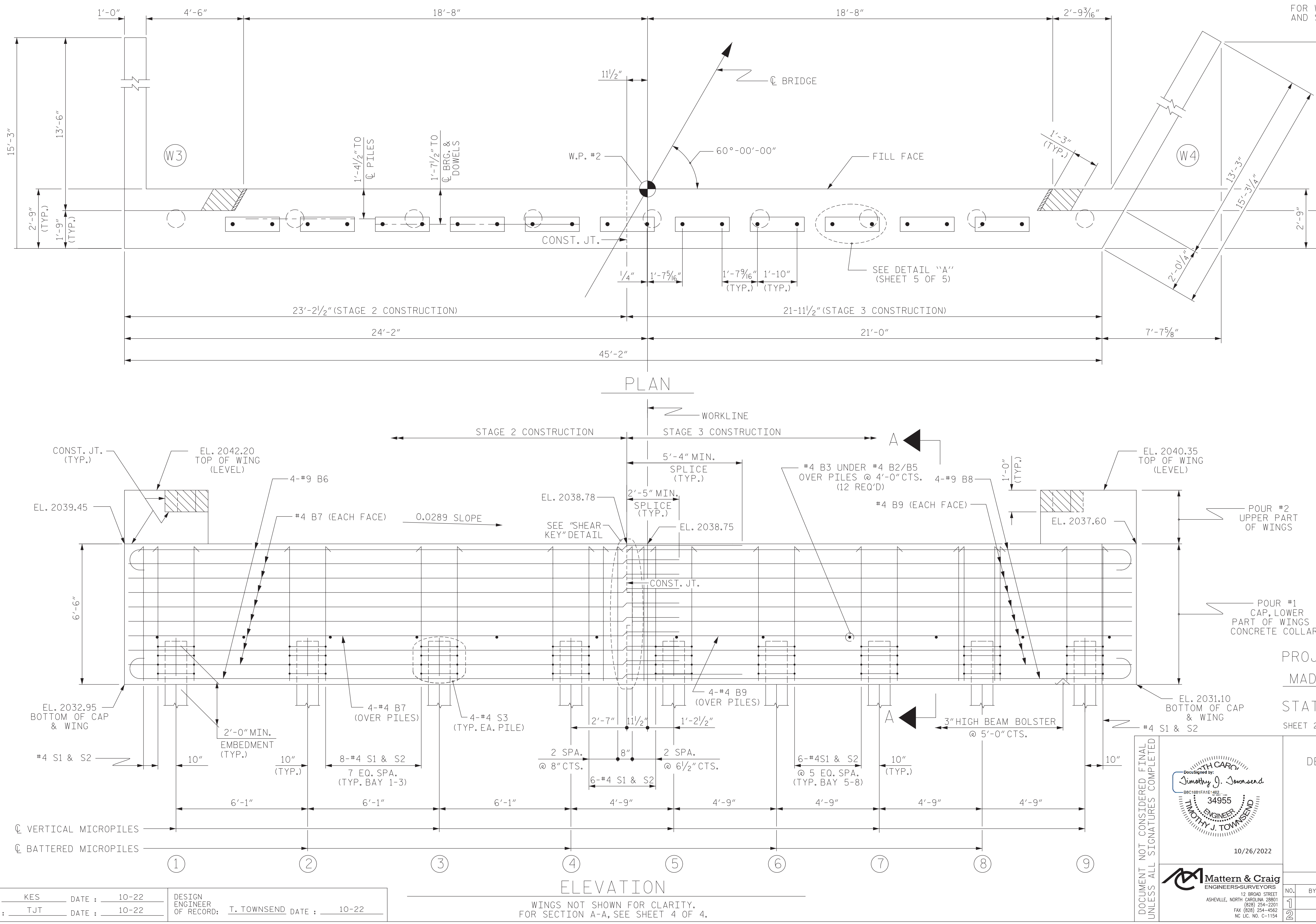
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR WING DETAILS, SEE SHEET 3 OF 5 AND SHEET 4 OF 5.



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.

TOP OF PILE ELEVATIONS	
1	2034.38
2	2034.21
3	2034.03
4	2033.85
5	2033.72
6	2033.58
7	2033.44
8	2033.31
9	2033.17

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SHEET 2 OF 5

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SUBSTRUCTURE

END BENT No. 2

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

SHEET NO. S-12

TOTAL SHEETS 19

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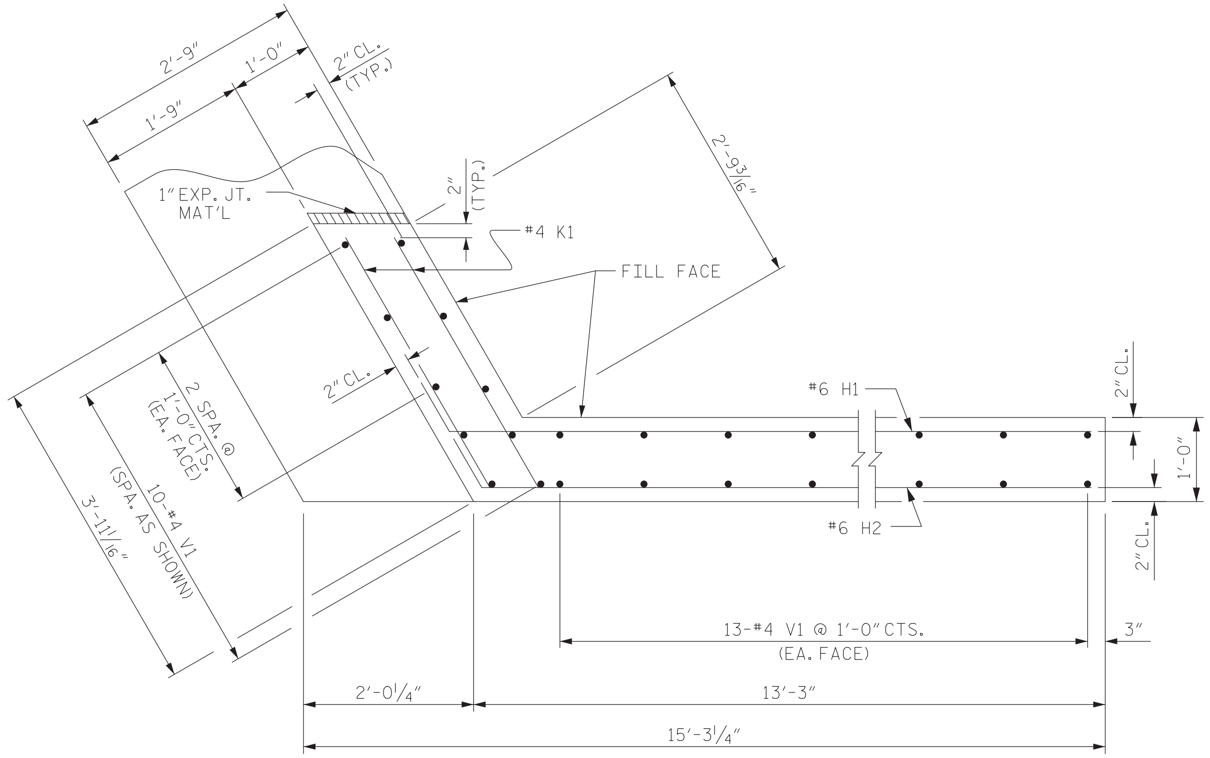
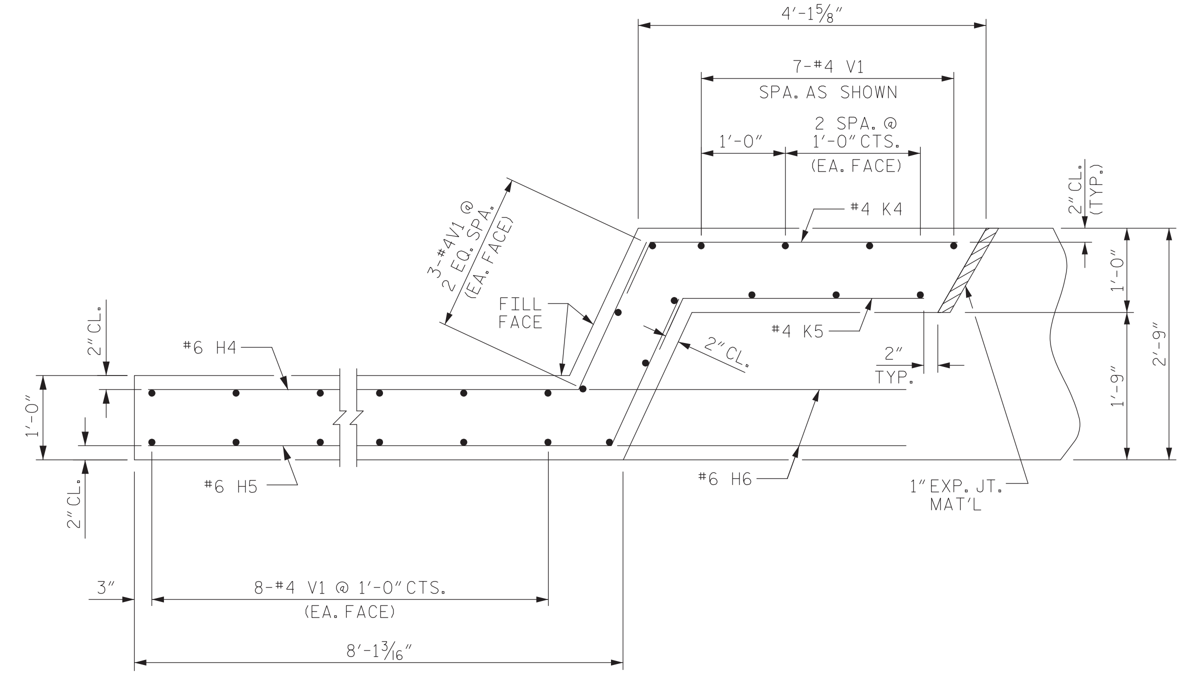
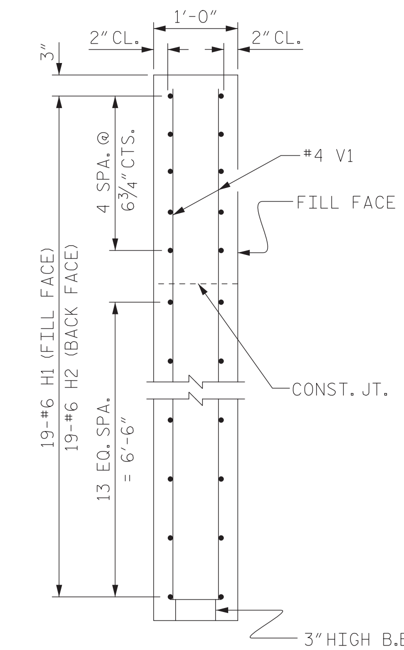


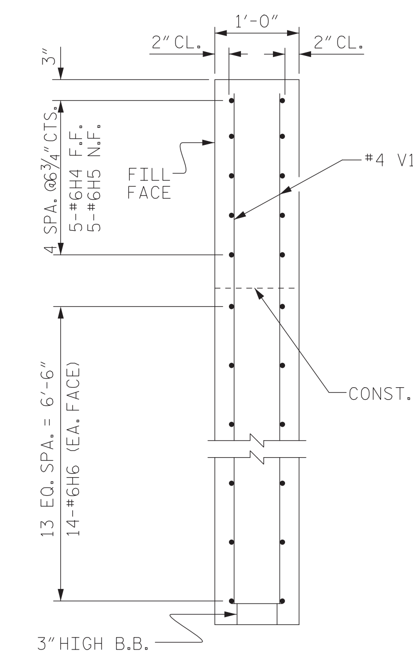
PLAN OF WING W1



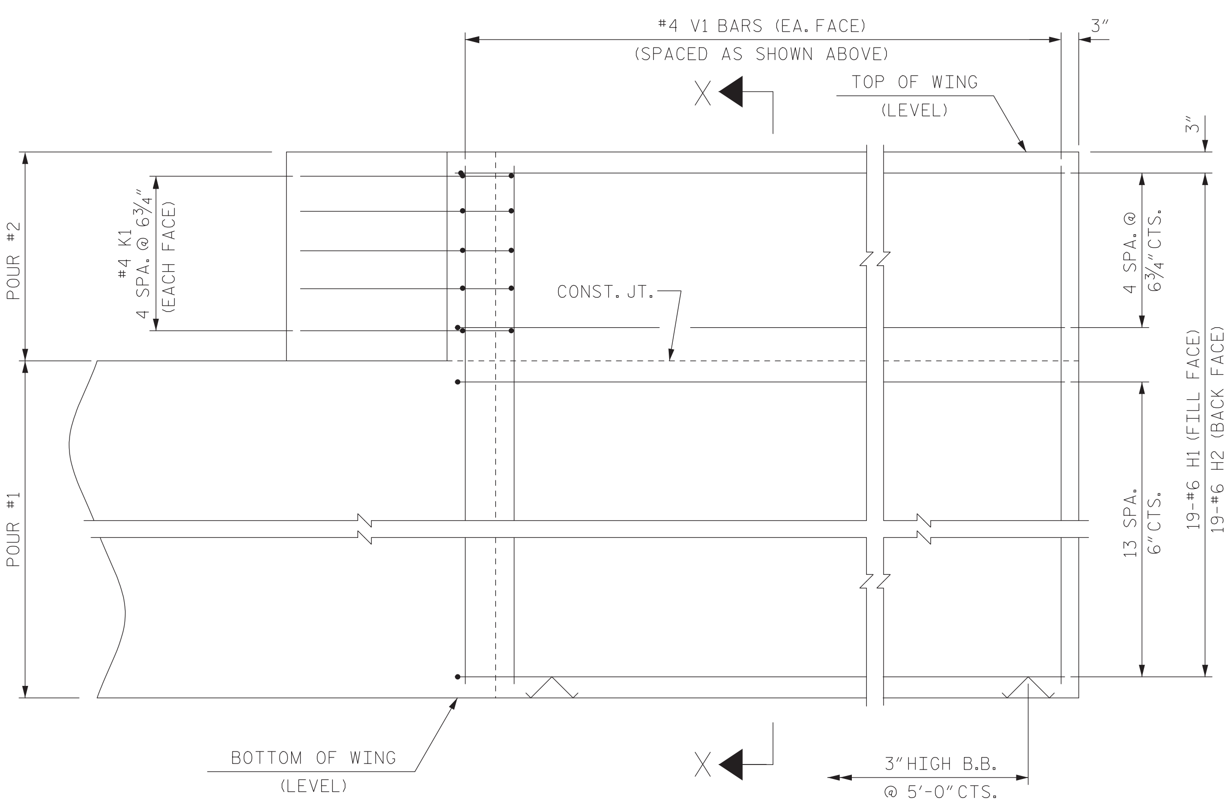
PLAN OF WING W2



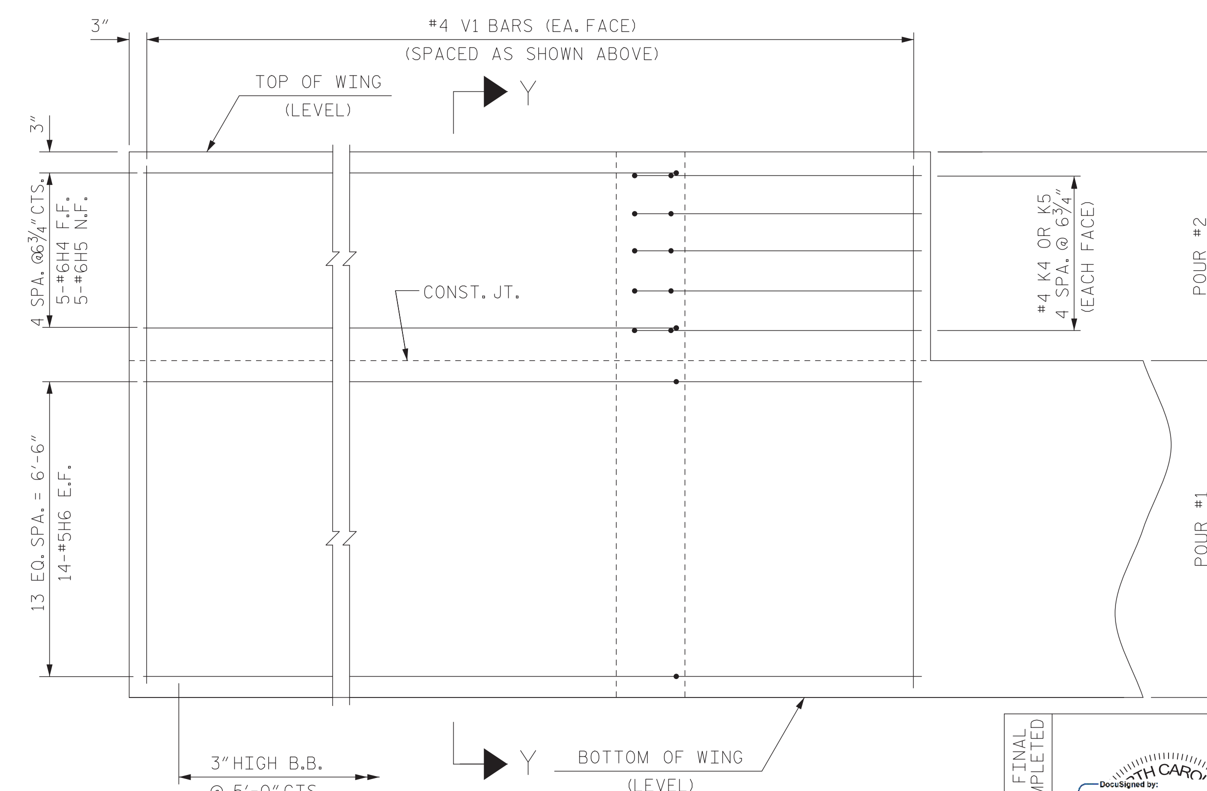
SECTION X-X



SECTION Y-Y



ELEVATION OF WING W1



ELEVATION OF WING W2

WING DETAILS

PROJECT NO. 17BP.13.R.169
MADISON COUNTY
STATION: 14+00.05 -L-

SHEET 3 OF 5

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 34955 TIMOTHY J. TOWNSEND
10/26/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT
WING DETAILS

Mattern & Craig
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(828) 254-2201
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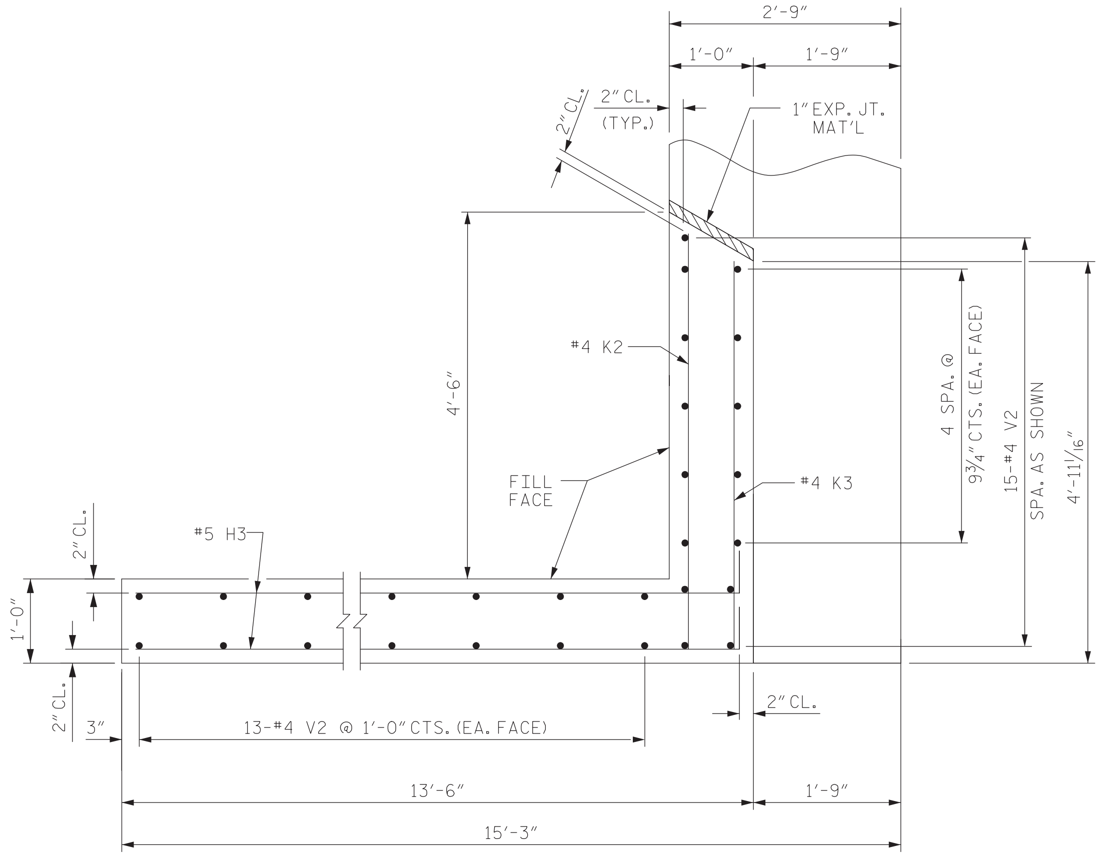
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			19

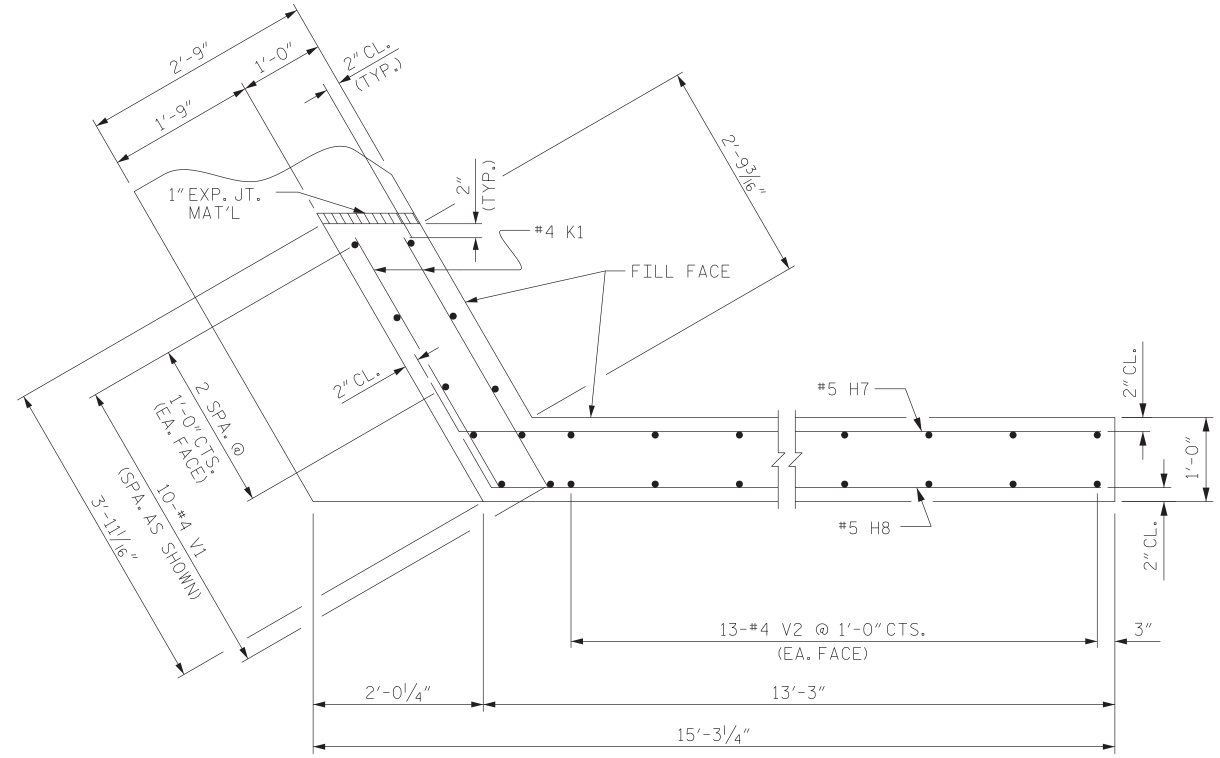
DRAWN BY : KES DATE : 10-22
CHECKED BY : TJT DATE : 10-22
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

DATE: $DATE$
FILE: $FILE$
TIME: $TIME$

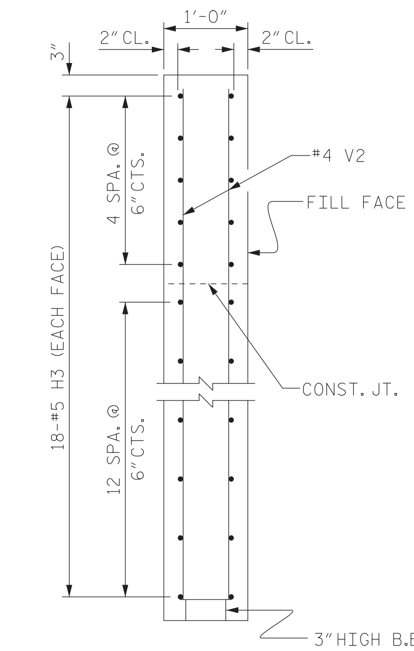
STD. NO. EB_33_60S4



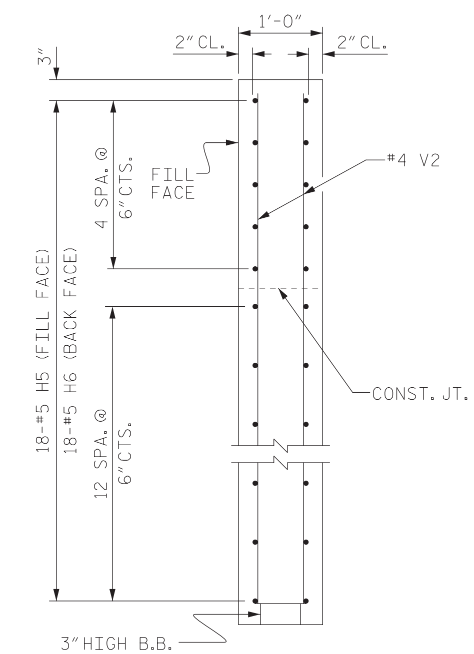
PLAN OF WING (W3)



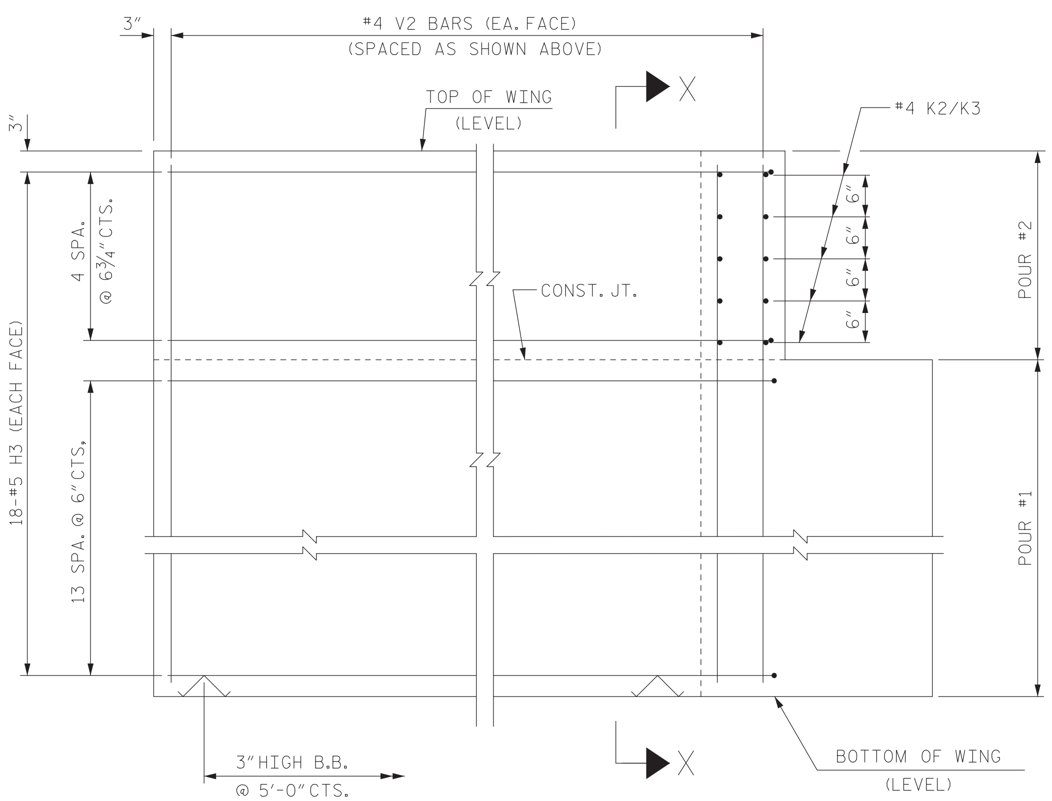
PLAN OF WING (W4)



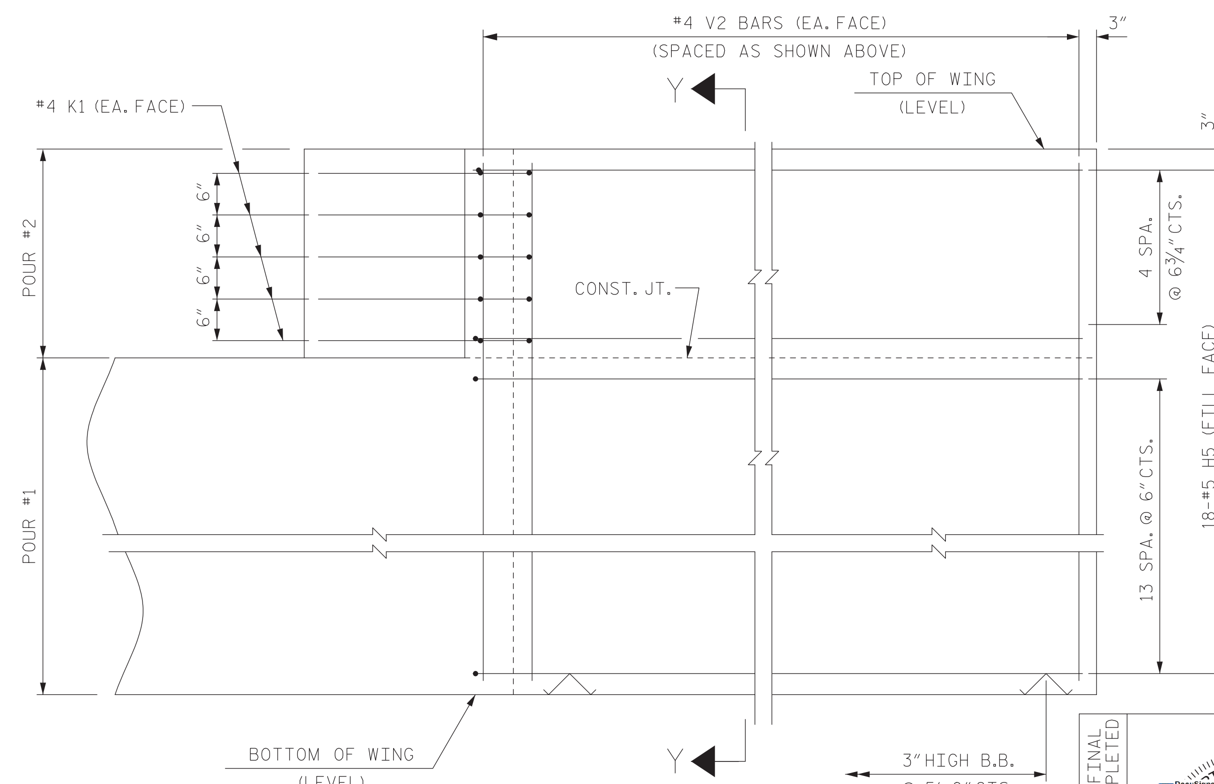
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W3)



ELEVATION OF WING (W4)

WING DETAILS

PROJECT NO. 17BP.13.R.169

MADISON COUNTY

STATION: 14+00.05 -L-

SHEET 4 OF 5

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

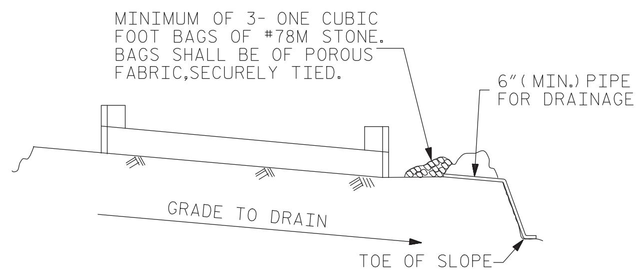
END BENT 2
WING DETAILS

REVISIONS								SHEET NO. S-14
NO.	BY:	DATE:	NO.	BY:	DATE:			TOTAL SHEETS 19
1			3					
2			4					

DRAWN BY : KES	DATE : 10-22	DESIGN ENGINEER OF RECORD: T. TOWNSEND	DATE : 10-22
CHECKED BY : TJT	DATE : 10-22		

TIME: $TIME$
DATE: $DATE$
FILE: $FILE$

STD. NO. EB_33_60S4

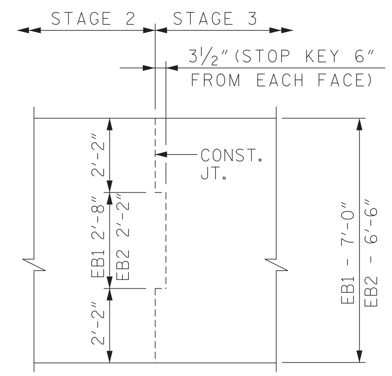


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

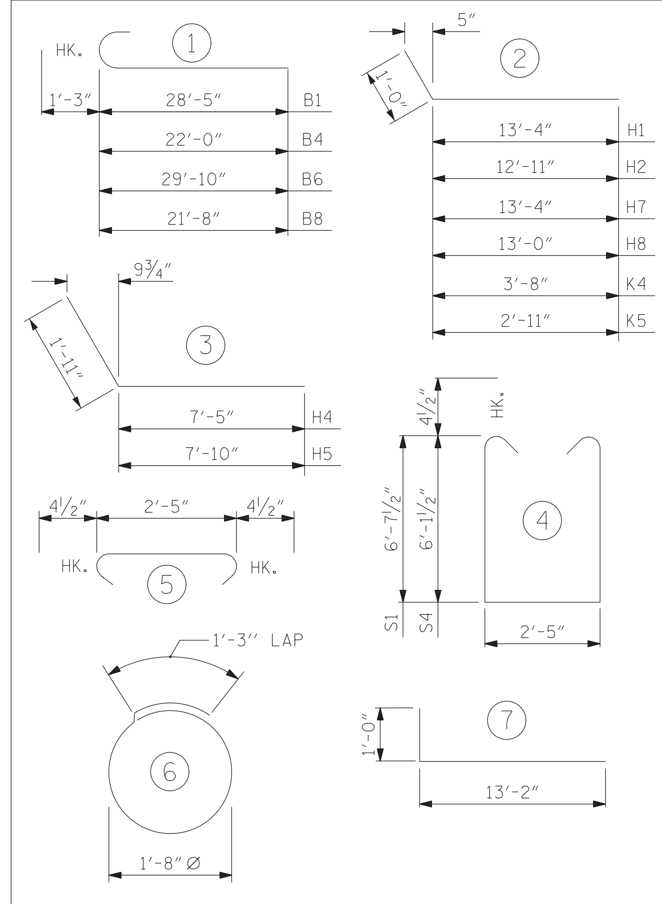
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



SHEAR KEY DETAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

STAGE 2 CONSTRUCTION — FOR END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	29′-8″	807
B2	22	#4	STR	25′-6″	375
B3	6	#4	STR	2′-5″	10
D1	11	#6	STR	1′-6″	25
H1	19	#6	2	14′-4″	409
H2	19	#6	2	13′-11″	397
K1	8	#4	STR	3′-3″	22
S1	27	#4	4	16′-5″	296
S2	27	#4	5	3′-2″	57
S3	16	#4	6	6′-6″	69
V1	36	#4	STR	9′-5″	226
REINFORCING STEEL					2,693

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP & LOWER PART OF WINGS 18.8 C.Y.

POUR #2 UPPER PART OF WINGS 1.7 C.Y.

TOTAL CLASS A CONCRETE 20.5 C.Y.

STAGE 3 CONSTRUCTION — FOR END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B3	6	#4	STR	2′-5″	10
B4	8	#9	1	23′-3″	632
B5	22	#4	STR	22′-0″	323
D1	11	#6	STR	1′-6″	25
H4	5	#6	3	9′-4″	70
H5	5	#6	3	9′-9″	73
H6	20	#6	STR	11′-4″	477
K4	5	#4	2	4′-8″	16
K5	5	#4	2	3′-11″	13
S1	28	#4	4	16′-5″	307
S2	28	#4	5	3′-2″	59
S3	20	#4	6	6′-6″	87
V1	29	#4	STR	9′-2″	182
REINFORCING STEEL					2,274

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP & LOWER PART OF WINGS 18.2 C.Y.

POUR #2 UPPER PART OF WINGS 1.4 C.Y.

TOTAL CLASS A CONCRETE 19.6 C.Y.

STAGE 2 CONSTRUCTION — FOR END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B3	6	#4	STR	2′-5″	10
B6	8	#9	1	31′-1″	845
B7	20	#4	STR	27′-0″	361
D1	11	#6	STR	1′-6″	25
H3	36	#6	7	14′-2″	766
K2	4	#4	STR	4′-11″	13
K3	4	#4	STR	4′-7″	12
S2	28	#4	5	3′-2″	59
S3	16	#4	6	6′-6″	69
S4	28	#4	4	15′-5″	288
V2	41	#4	STR	8′-11″	244
REINFORCING STEEL					2,692 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP & LOWER PART OF WINGS 18.4 C.Y.

POUR #2 UPPER PART OF WINGS 1.8 C.Y.

TOTAL CLASS A CONCRETE 20.2 C.Y.

STAGE 3 CONSTRUCTION — FOR END BENT 2

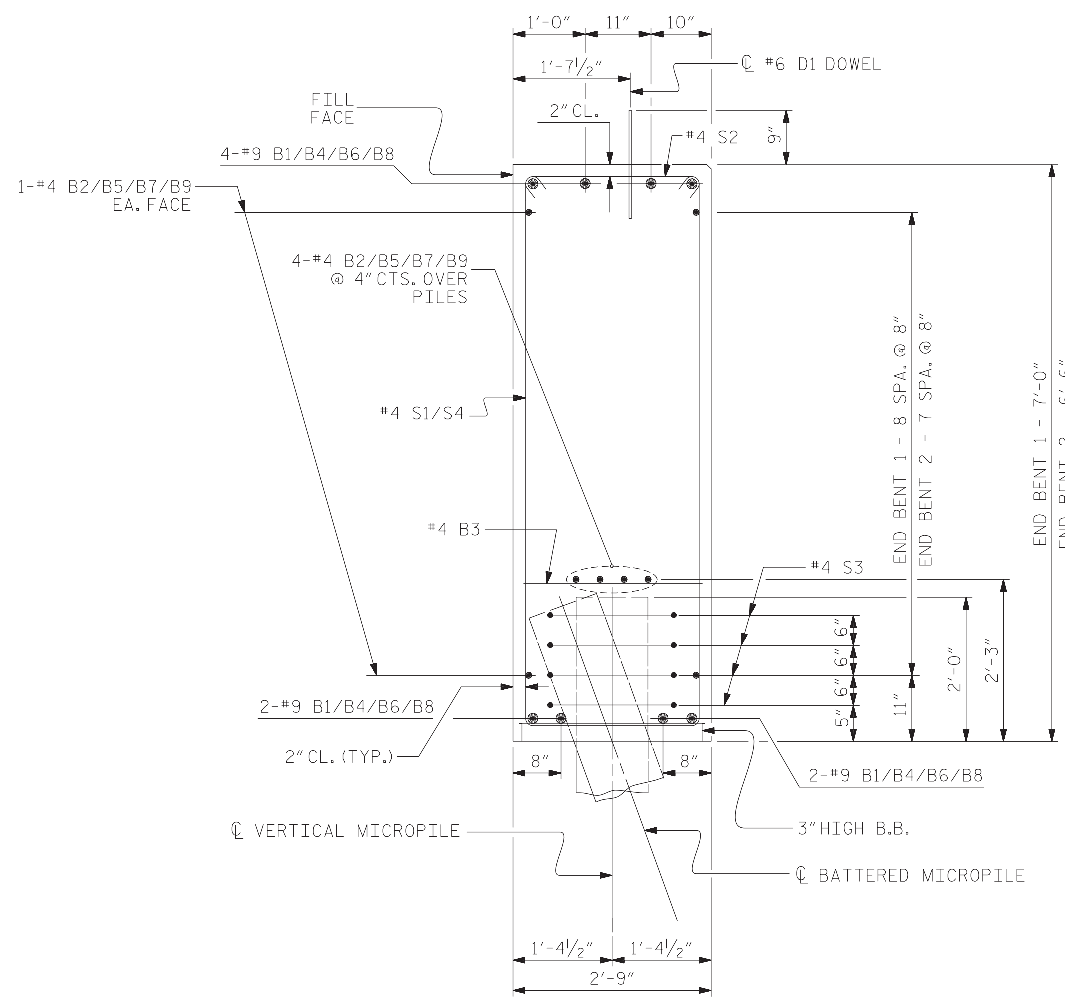
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B3	6	#4	STR	2′-5″	10
B8	8	#9	1	22′-11″	623
B9	20	#4	STR	21′-8″	289
D1	11	#6	STR	1′-6″	25
H7	18	#5	2	14′-4″	388
H8	18	#5	2	14′-0″	379
K1	8	#4	STR	3′-3″	17
S2	28	#4	5	3′-2″	59
S3	20	#4	6	6′-6″	87
S4	28	#4	4	15′-5″	288
V2	36	#4	STR	8′-11″	214
REINFORCING STEEL					2,379 LBS.

CLASS A CONCRETE BREAKDOWN

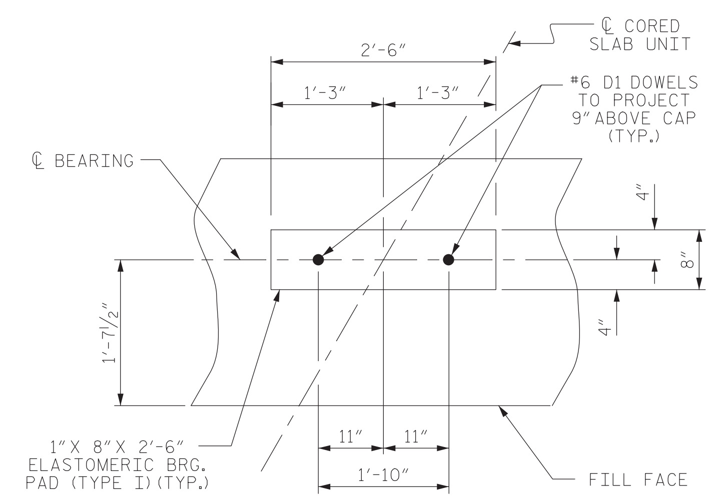
POUR #1 CAP & LOWER PART OF WINGS 18.0 C.Y.

POUR #2 UPPER PART OF WINGS 1.7 C.Y.

TOTAL CLASS A CONCRETE 19.7 C.Y.



SECTION A-A



DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

PROJECT NO. 17BP.13.R.169

MADISON COUNTY

STATION: 14+00.05 -L-

SHEET 5 OF 5

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NC LIC. NO. C-1154

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

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

SHEET NO. S-15

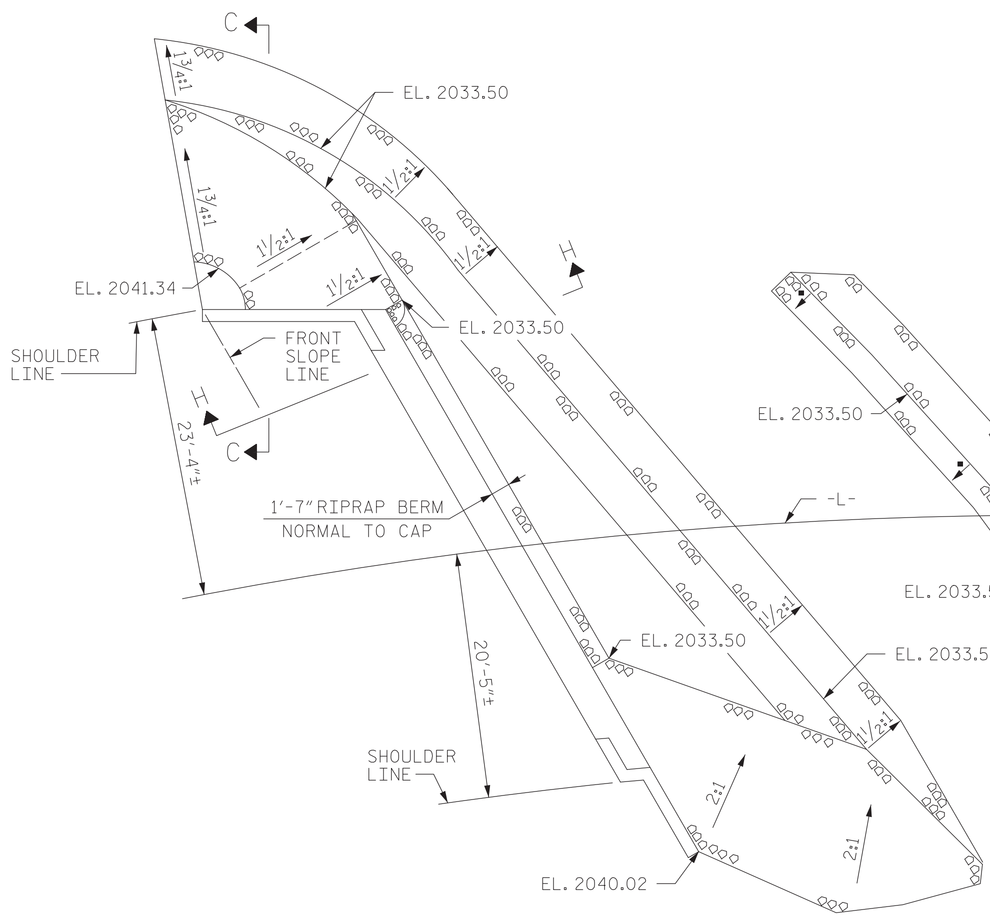
TOTAL SHEETS 19

DRAWN BY : KES DATE : 10-22

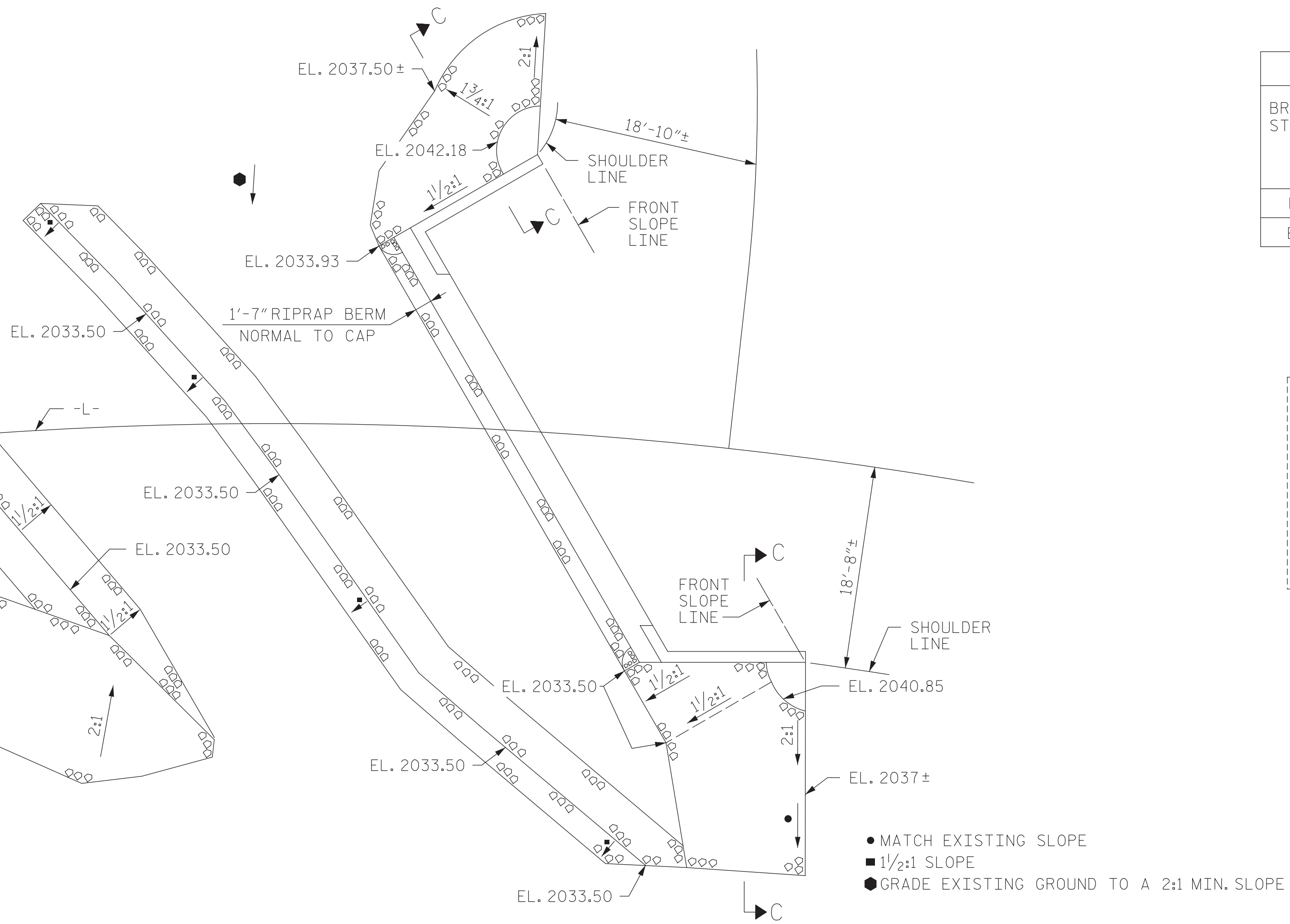
CHECKED BY : TJT DATE : 10-22

DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

DATE: $DATE$ FILE: $FILE$ TIME: $TIME$

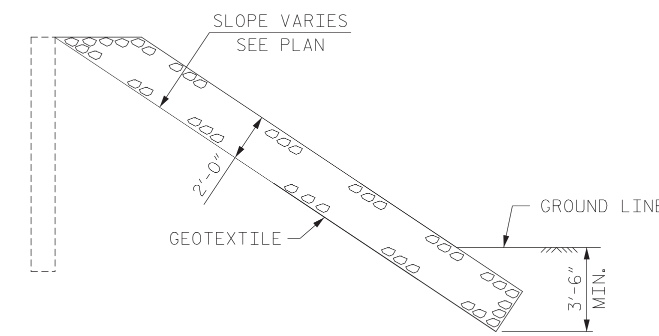


END BENT NO. 1

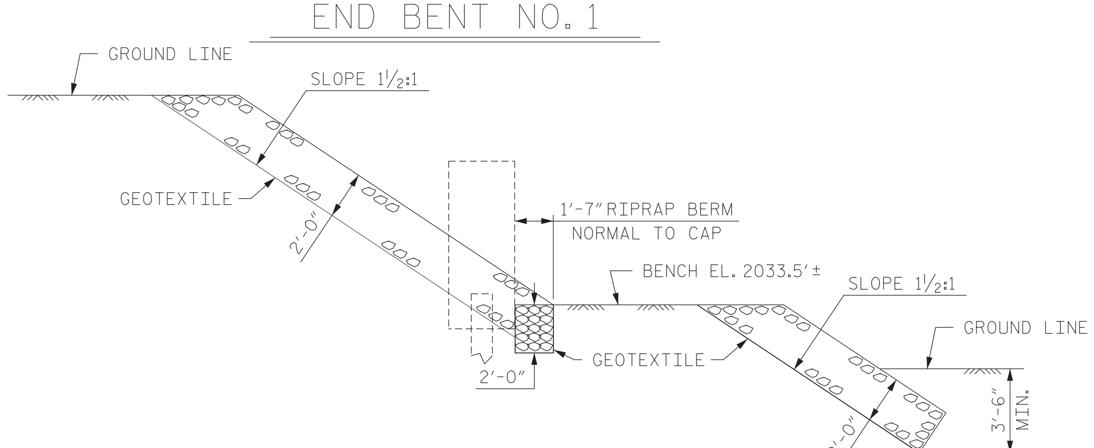


END BENT NO. 2

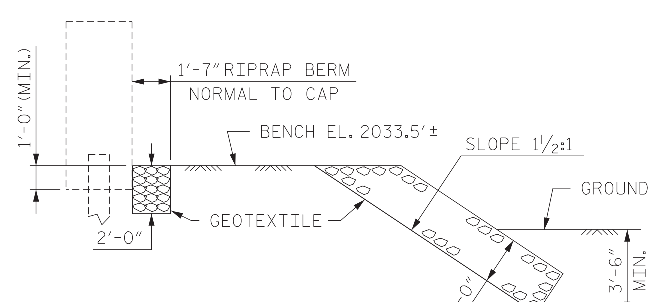
ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+00.05	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	115	140
END BENT 2	90	110



SECTION C-C



SECTION H-H



℄ SECTION

BERM RIP RAPPED

PROJECT NO. 17BP.13.R.169

MADISON COUNTY

STATION: 14+00.05 -L-

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			19

DRAWN BY : KES DATE : 10-22
CHECKED BY : TJT DATE : 10-22
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

TIME: $TIME$
DATE: $DATE$
FILE: $FILE$

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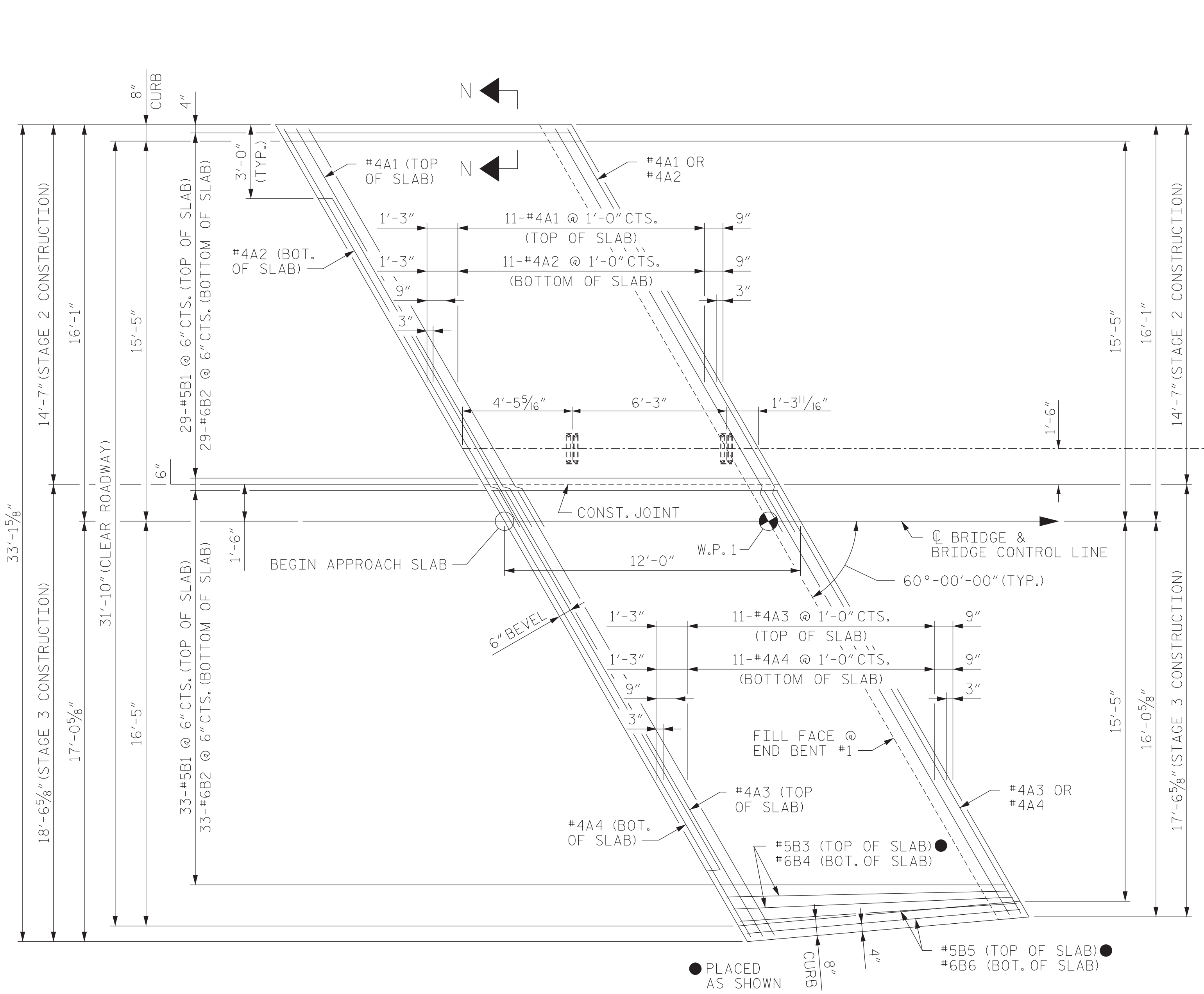
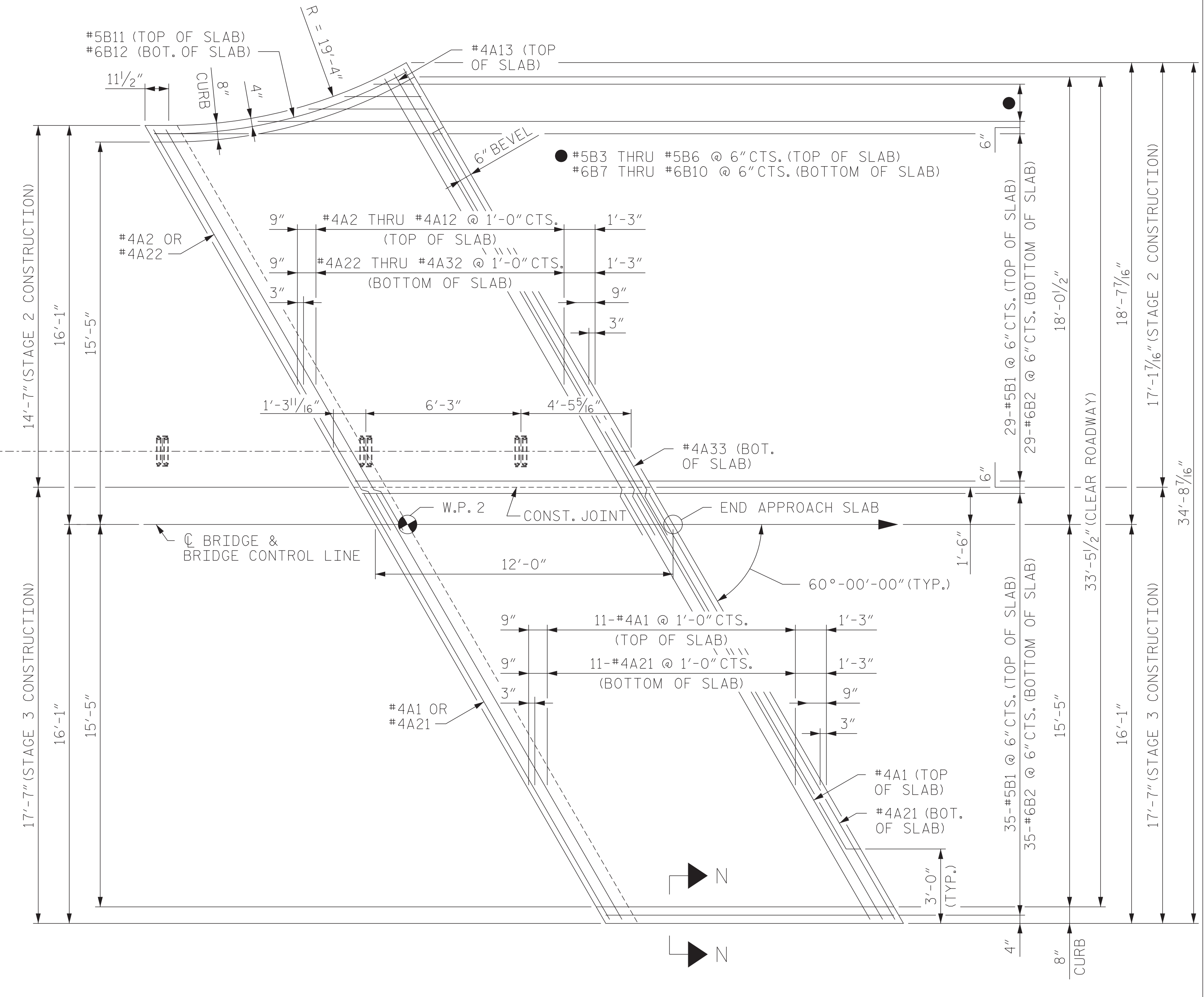
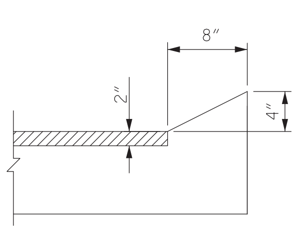


PLAN @ END BENT #1



PLAN @ END BENT #2



SECTION N-N

CURB DETAILS

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

PROJECT NO. 17BP.13.R.169

MADISON COUNTY

STATION: 14+00.05 -L-

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER)

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

SHEET NO. S-17
TOTAL SHEETS 19

DRAWN BY : KES DATE : 10-22
CHECKED BY : TJT DATE : 10-22
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

DATE: $DATE$
FILE: $FILE$
TIME: $TIME$

BILL OF MATERIAL
APPROACH SLAB AT EB #1
STAGE 2 CONSTRUCTION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
∗ A1	13	#4	STR	20′-10″	174
A2	13	#4	STR	19′-8″	171
∗ B1	29	#5	STR	11′-1″	335
B2	29	#6	STR	11′-7″	505
REINFORCING STEEL				LBS.	676
∗ EPOXY COATED REINFORCING STEEL				LBS.	509
CLASS AA CONCRETE				C. Y.	9.0

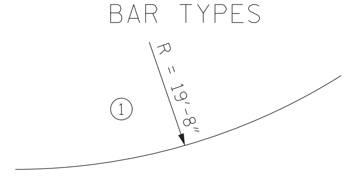
STAGE 3 CONSTRUCTION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
∗ A3	13	#4	STR	20′-0″	174
A4	13	#4	STR	20′-0″	174
∗ B1	33	#5	STR	11′-1″	381
B2	33	#6	STR	11′-7″	574
∗ B3	2	#5	STR	11′-1″	23
B4	2	#6	STR	11′-1″	33
∗ B5	2	#5	STR	11′-4″	24
B6	2	#6	STR	11′-4″	34
REINFORCING STEEL				LBS.	815
∗ EPOXY COATED REINFORCING STEEL				LBS.	602
CLASS AA CONCRETE				C. Y.	11.0

BILL OF MATERIAL
APPROACH SLAB AT EB #2
STAGE 2 CONSTRUCTIONS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
∗ A2	2	#4	STR	18′-10″	25
∗ A3	1	#4	STR	18′-10″	13
∗ A4	1	#4	STR	18′-11″	13
∗ A5	1	#4	STR	19′-0″	13
∗ A6	1	#4	STR	19′-2″	13
∗ A7	1	#4	STR	19′-5″	13
∗ A8	1	#4	STR	19′-8″	13
∗ A9	1	#4	STR	20′-0″	13
∗ A10	1	#4	STR	20′-4″	14
∗ A11	1	#4	STR	20′-9″	14
∗ A12	1	#4	STR	20′-11″	14
∗ A13	1	#4	STR	21′-5″	14
A22	2	#4	STR	18′-6″	25
A23	1	#4	STR	18′-6″	12
A24	1	#4	STR	18′-7″	12
A25	1	#4	STR	18′-8″	12
A26	1	#4	STR	18′-10″	13
A27	1	#4	STR	19′-1″	13
A28	1	#4	STR	19′-4″	13
A29	1	#4	STR	19′-8″	13
A30	1	#4	STR	20′-0″	13
A31	1	#4	STR	20′-5″	14
A32	1	#4	STR	20′-7″	14
A33	1	#4	STR	21′-4″	14
∗ B1	29	#5	STR	11′-1″	335
B2	29	#6	STR	11′-7″	505
∗ B3	1	#5	STR	7′-1″	7
∗ B4	1	#6	STR	4′-9″	7
∗ B4	1	#5	STR	3′-1″	3
∗ B6	1	#6	STR	1′-7″	2
B7	1	#5	STR	7′-1″	7
B8	1	#6	STR	4′-9″	7
B9	1	#5	STR	3′-1″	3
B10	1	#6	STR	1′-7″	2
∗ B11	1	#5	1	10′7″	11
B12	1	#6	1	10′-7″	16
REINFORCING STEEL				LBS.	708
∗ EPOXY COATED REINFORCING STEEL				LBS.	537
CLASS AA CONCRETE				C. Y.	9.4

BAR TYPES

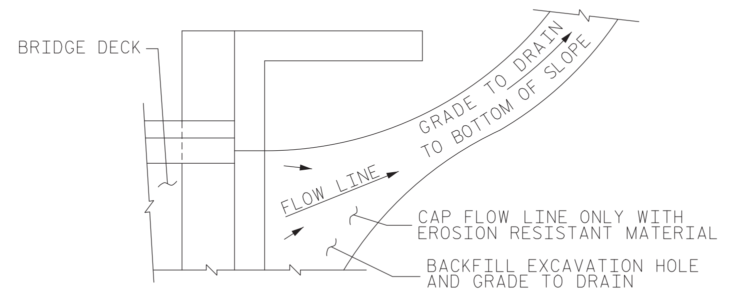


STAGE 3 CONSTRUCTION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
∗ A1	13	#4	STR	20′-0″	174
A2	13	#4	STR	20′-0″	174
∗ B1	35	#5	STR	11′-1″	405
B2	35	#6	STR	11′-7″	609
REINFORCING STEEL				LBS.	815
∗ EPOXY COATED REINFORCING STEEL				LBS.	602
CLASS AA CONCRETE				C. Y.	11.0

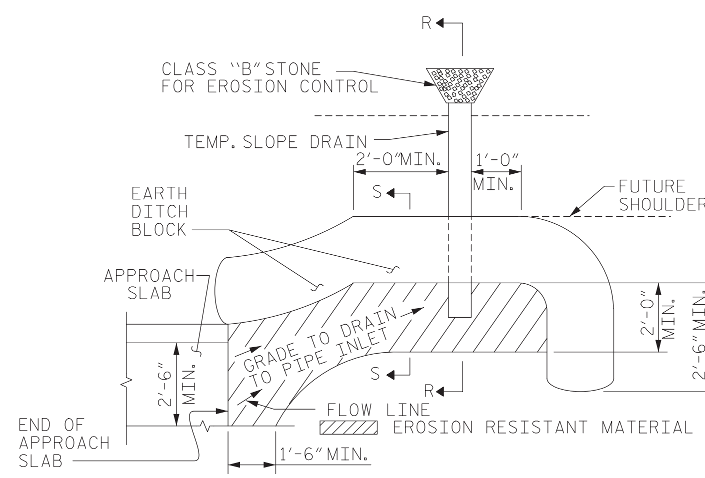
SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	1′-11″	1′-7″
#5	2′-5″	2′-0″
#6	3′-7″	2′-5″



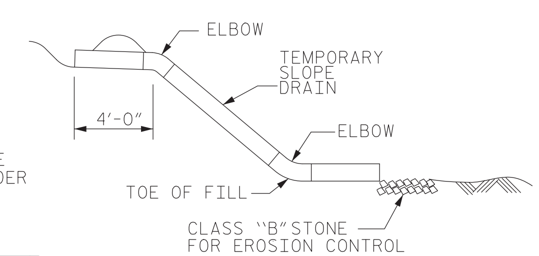
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

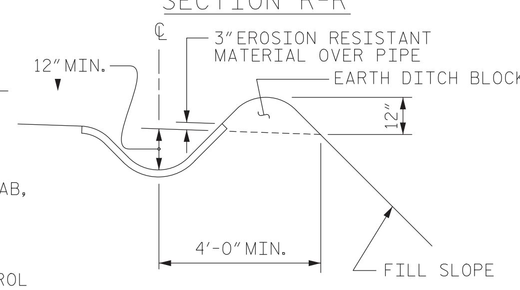


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2″ DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW



SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4″ Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

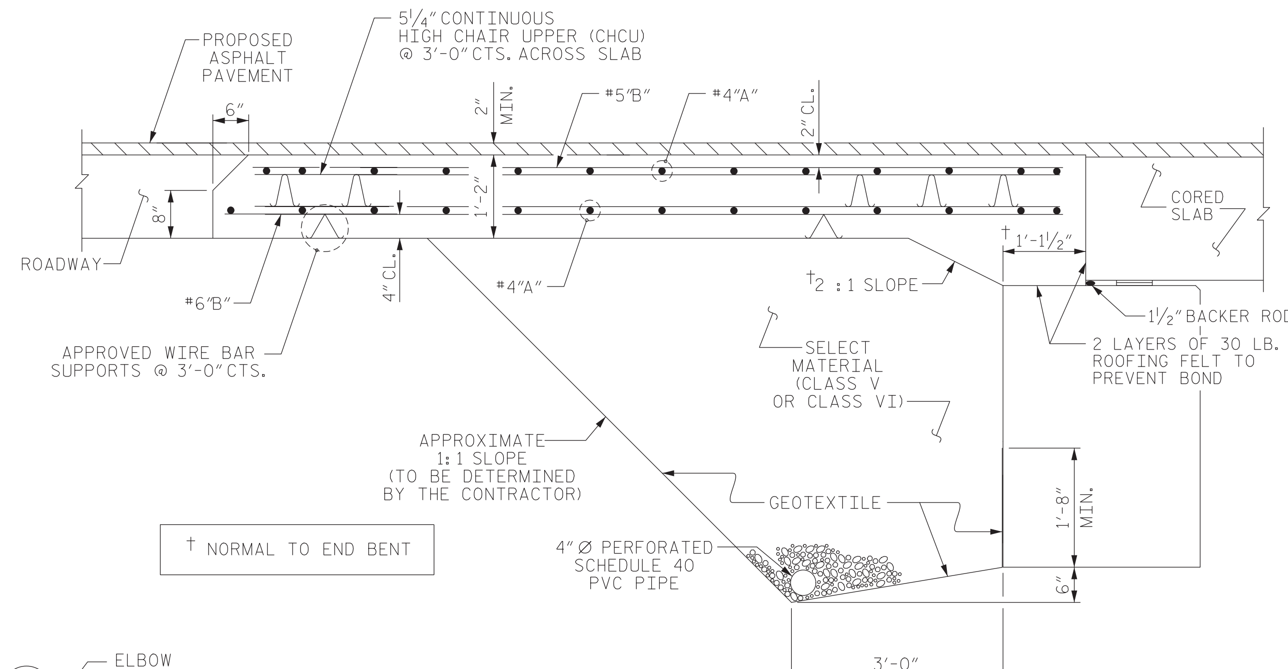
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4″ Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH FILL)

PROJECT NO. 17BP.13.R.169

MADISON COUNTY

STATION: 14+00.05 -L-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Timothy J. Townsend
BBC1891FA1E482...
NORTH CAROLINA
34955
ENGINEER
TIMOTHY J. TOWNSEND

10/26/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE

Mattern & Craig
ENGINEERS•SURVEYORS
12 BROAD STREET
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(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

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

SHEET NO. S-18

TOTAL SHEETS 19

DRAWN BY : KES DATE : 10-22

CHECKED BY : TJT DATE : 10-22

DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

TIME: $TIME$

DATE: $DATE$
FILE: $FILE$

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1 1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8"Ø SHEAR STUDS FOR THE 3/4"Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8"Ø STUDS FOR 4 - 3/4"Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8"Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4"Ø STUDS BASED ON THE RATIO OF 3 - 7/8"Ø STUDS FOR 4 - 3/4"Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

PROJECT NO. 17BP.13.R.169

MADISON COUNTY

STATION: 14+00.05 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD NOTES

Mattern & Craig
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FAX (828) 254-4562
NC LIC. NO. C-1154

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S-19
1			3					TOTAL SHEETS
2			4					19

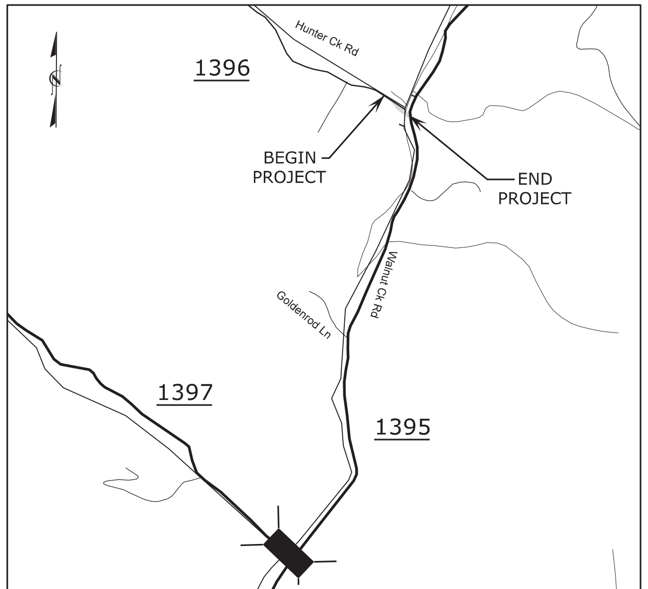
DRAWN BY : KES DATE : 9-22
CHECKED BY : TJT DATE : 9-22
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 9-22

TIME: $TIME$
DATE: $DATE$
FILE: $FILE$

STD. NO. SN

CONTRACT: DM00334 PROJECT: 17BP.13.R.171

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



VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

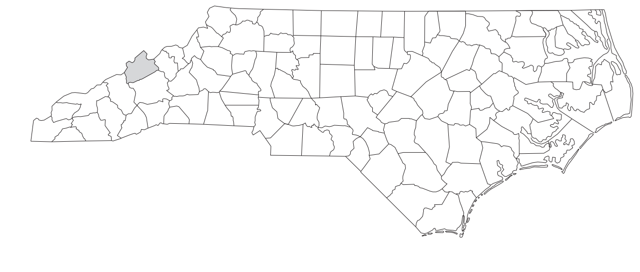
MADISON COUNTY

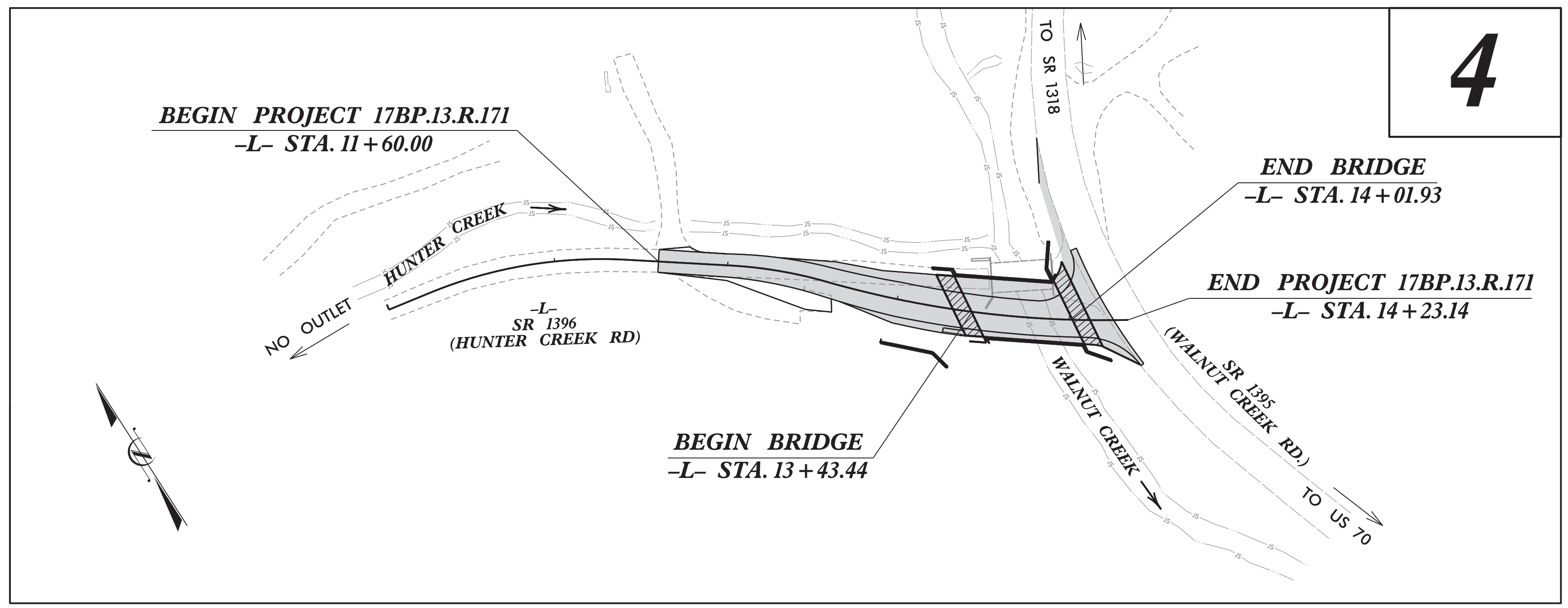
LOCATION: BRIDGE NO. 66 ON SR 1396 (HUNTER CREEK ROAD) OVER WALNUT CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.171	1	

STATE PROJECT NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.13.PE.171	N/A	P.E.
17BP.13.ROW.171	N/A	RW & UTIL
17BP.13.R.171	N/A	CONST





PLANS PREPARED BY:

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

30 15 0 30 60
PLANS

30 15 0 30 60
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT (2017) = 250

V = 15 MPH

FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.13.R.171 = 0.039 MILES

LENGTH STRUCTURE PROJECT 17BP.13.R.171 = 0.011 MILES

TOTAL LENGTH PROJECT 17BP.13.R.171 = 0.050 MILES

Prepared In the Office of:
MATTERN & CRAIG
12 BROAD ST.
ASHEVILLE, NC 28801
FOR NCDOT DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 2, 2021

LETTING DATE:
DECEMBER 21, 2022

AARON CARVER, PE
PROJECT ENGINEER

MENG YANG, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT:
MIKE CALLOWAY
DIVISION 13 BRIDGE PROGRAM MANAGER

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CARVER

DocuSigned by: Aaron Carver 8250B42A220F49C...

11/29/2022

P.E.

SIGNATURE:

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CARVER

DocuSigned by: Aaron Carver 8250B42A220F49C...

11/29/2022

P.E.

SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL
DocuSigned by: Aaron Carver
AARON C. CARVER
10/17/2022

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL PLAN SHEET SYMBOLS
2A-1	PAVEMENT SCHEDULE & TYPICAL SECTIONS
2B-1	ON-SITE DETOUR SHEET
2C-1	GUARDRAIL INSTALLATION IN LIEU OF STD 862.02 SHEET 6 OF 8
2C-2	GUARDRAIL INSTALLATION IN LIEU OF STD 862.03 SHEET 1 OF 7 AND SHEET 2 OF 7
2C-3	TYPE III - SHOP CURVED ANCHOR UNIT
2G-1	STANDARD CAST-IN-PLACE GRAVITY RETAINING WALL
3B-1	SUMMARY OF DRAINAGE QUANTITIES, SUMMARY OF GUARDRAIL, SUMMARY OF PAVEMENT REMOVAL, AND SUMMARY OF EARTHWORK
3G-1	GEOTECHNICAL SUMMARY SHEET
4	PLAN SHEET & PROFILE SHEET
RW01 thru RW04	RIGHT OF WAY SHEETS
TMP-1 thru TMP-5	TRAFFIC MANAGEMENT PLANS
PM-1	PAVEMENT MARKING PLAN
EC-1 thru EC-5	EROSION CONTROL PLANS
UC-1 thru UC-5	UTILITIES CONSTRUCTION PLANS
UO-1 thru UO-2	UTILITIES BY OTHERS PLANS
X-0	CROSS-SECTION SUMMARY SHEET
X-1 thru X-2	CROSS SECTION SHEETS
S-1 thru S-20	STRUCTURE PLANS

GENERAL NOTES

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

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.

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

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.

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 THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
POWER - FRENCH BROAD ELECTRIC MEMBERSHIP CORP.
PHONE - CHARTER SPECTRUM COMMUNICATIONS
WATER - TOWN OF MARSHALL

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

STANDARD DRAWINGS

EFF. 01-16-2018
REV.

2018 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, 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 II
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 II Modified Approach Fill
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	
815.02	Subsurface Drain
840.25	Anchorage for Frames
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
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 Unit
876.02	Guide for Rip Rap at Pipe Outlets

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R171	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

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
- 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 — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- 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 Easment 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 — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- 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
- 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 — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- 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 — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- 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 — W
- 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 — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- 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

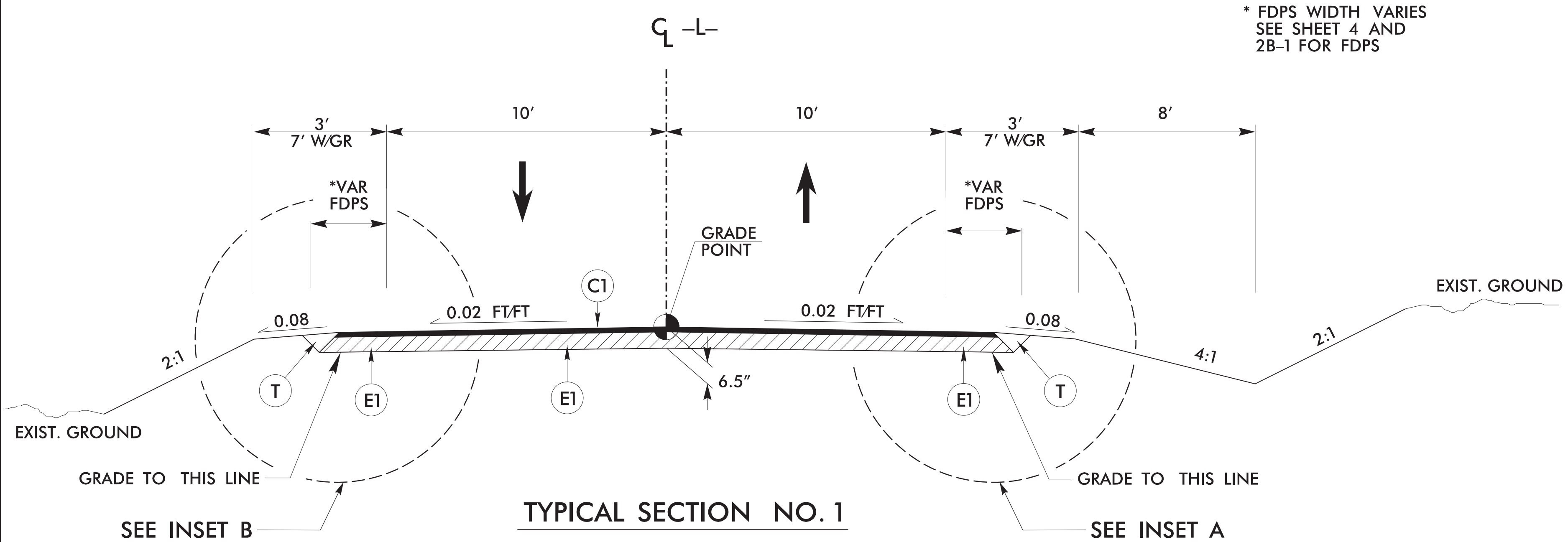
MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- 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.

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.171	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL — DocuSigned by: Aaron Carver — 9/30/2022	SEAL — DocuSigned by: Clark S. Morrison — 9/30/2022

Mattern & Craig
ENGINEERS • SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

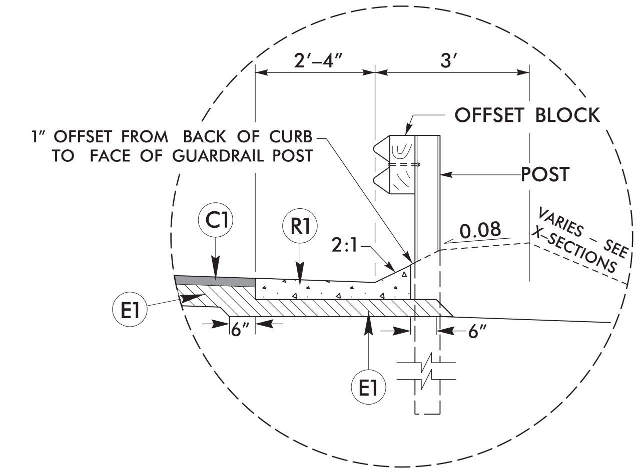
* FDPS WIDTH VARIES SEE SHEET 4 AND 2B-1 FOR FDPS



TYPICAL SECTION NO. 1

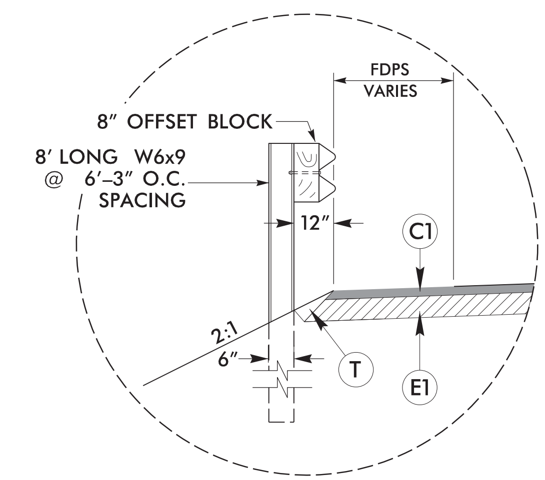
USE TYPICAL SECTION NO. 1

-L- STA. 11+60 TO -L- STA. 13+43.44 (BEGIN BRIDGE)
-L- STA. 14+01.93 (END BRIDGE) TO -L- STA. 14+23.14



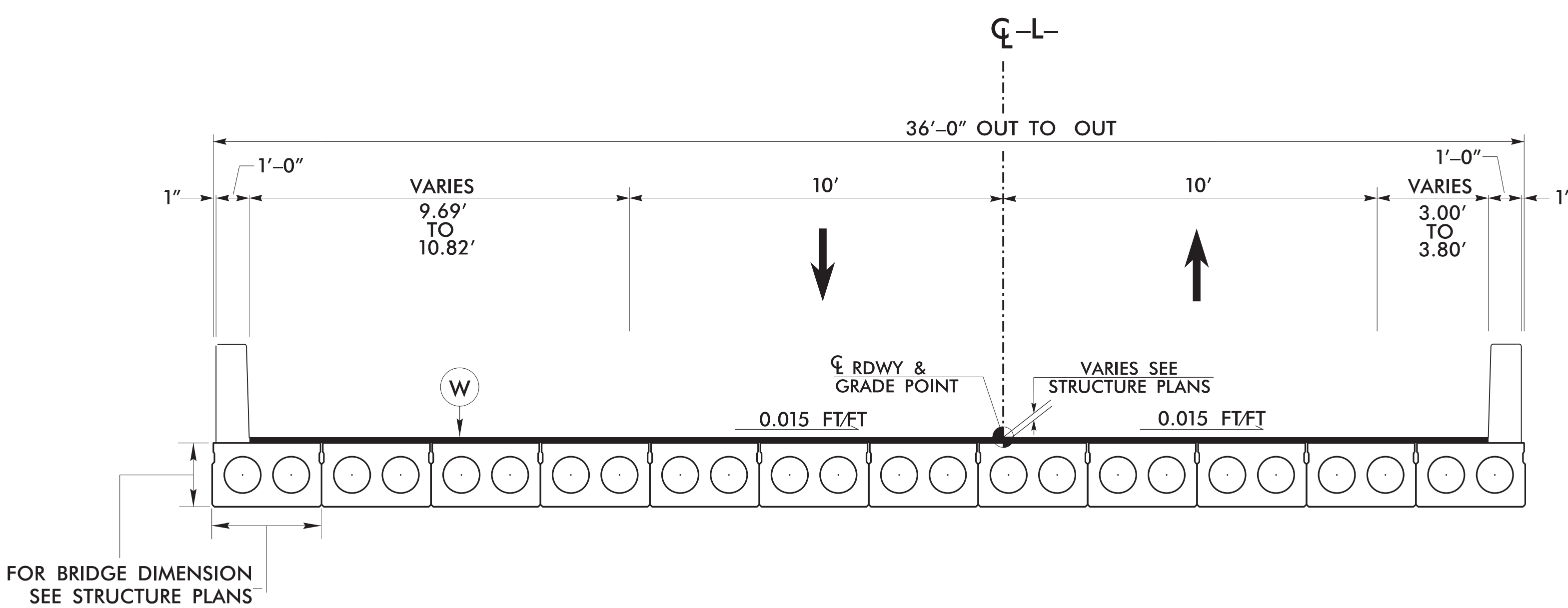
INSET A

SBG -L- STA. 13+28 RT TO BEGIN APPROACH SLAB



INSET B

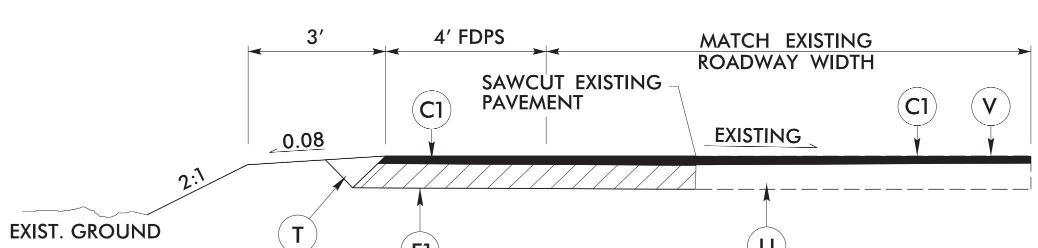
-L- STA. 12+60 LT TO -L- STA. 13+30 LT



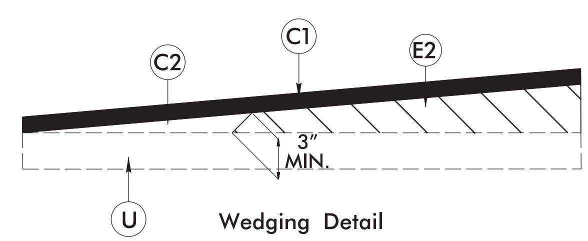
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 13+43.44 (BEGIN BRIDGE) TO
-L- STA. 14+01.93 (END BRIDGE)



SR 1395 WALNUT CREEK ROAD PAVEMENT REPAIR AND MILLING DETAIL



Wedging Detail

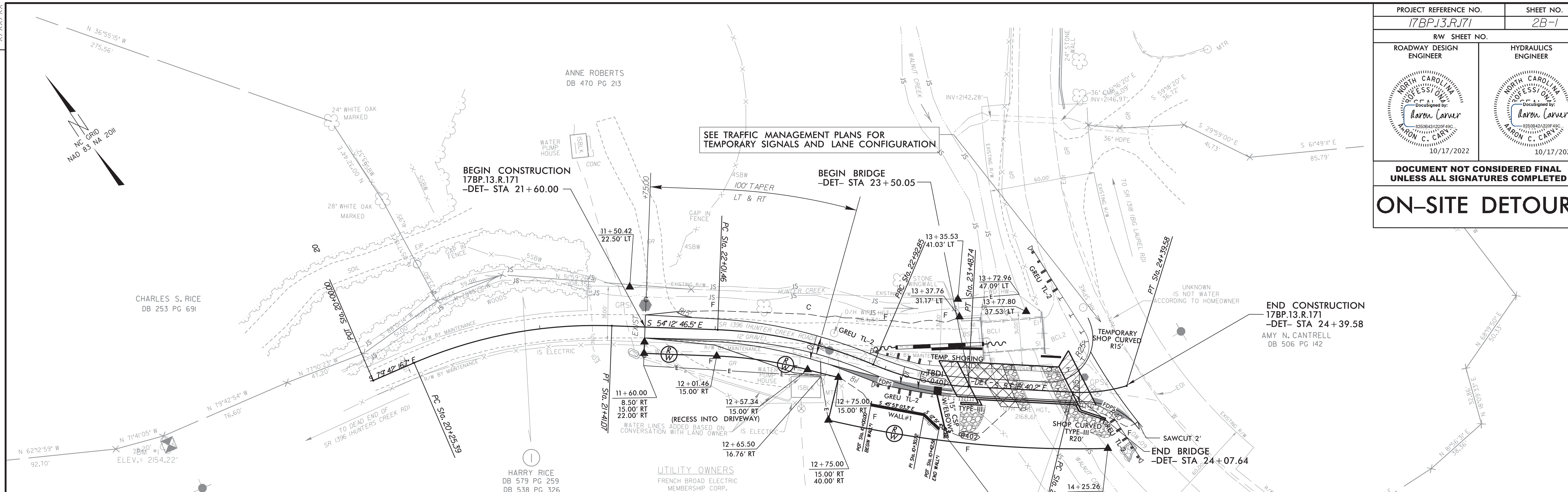
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, 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 5½" IN DEPTH.
R1	SHOULDER BERM GUTTER (NCDOT STANDARD DRAWING NO. 846.01)
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING BITUMINOUS PAVEMENT. 2.5" DEPTH.
W	PROPOSED WEDGING (SEE APPROPRIATE DETAILS)

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.171	2B-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL — AARON C. CARY — DocuSigned by: Aaron Carver — 10/17/2022	NORTH CAROLINA PROFESSIONAL SEAL — AARON C. CARY — DocuSigned by: Aaron Carver — 10/17/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

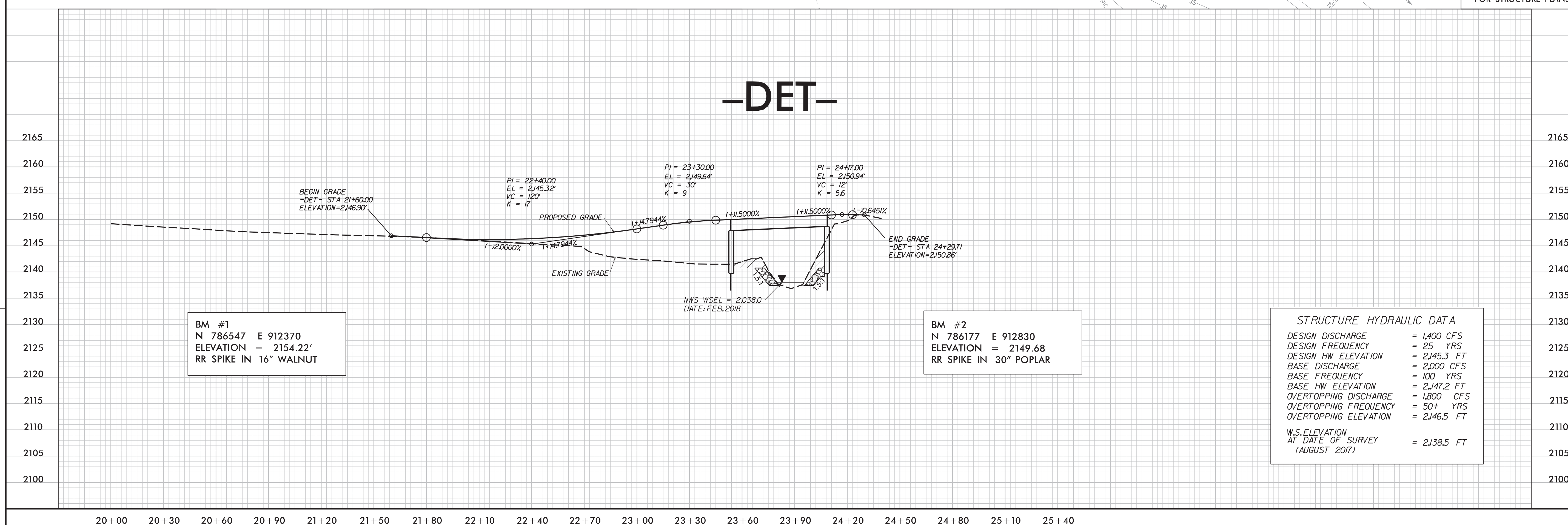
ON-SITE DETOUR



-DET- CURVE DATA

PI Sta 20+84.20	PI Sta 22+47.67	PI Sta 23+21.08	PI Sta 24+24.23
Δ = 25° 29' 30.2" (RT)	Δ = 20° 56' 47.6" (RT)	Δ = 20° 00' 41.3" (LT)	Δ = 19° 45' 02.4" (LT)
D = 22° 02' 12.6"	D = 22° 55' 05.9"	D = 35° 48' 35.5"	D = 63° 39' 43.1"
L = 115.68'	L = 91.40'	L = 55.88'	L = 31.02'
T = 58.81'	T = 46.21'	T = 28.23'	T = 15.67'
R = 260.00'	R = 250.00'	R = 160.00'	R = 90.00'

-DET-



BM #1
N 786547 E 912370
ELEVATION = 2154.22'
RR SPIKE IN 16" WALNUT

BM #2
N 786177 E 912830
ELEVATION = 2149.68
RR SPIKE IN 30" POPLAR

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 1,400 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2,145.3 FT
BASE DISCHARGE	= 2,000 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2,147.2 FT
OVERTOPPING DISCHARGE	= 1,800 CFS
OVERTOPPING FREQUENCY	= 50+ YRS
OVERTOPPING ELEVATION	= 2,146.5 FT
W.S. ELEVATION AT DATE OF SURVEY (AUGUST 2017)	= 2,138.5 FT

REVISIONS

X/XX/XX

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.171	2C-1

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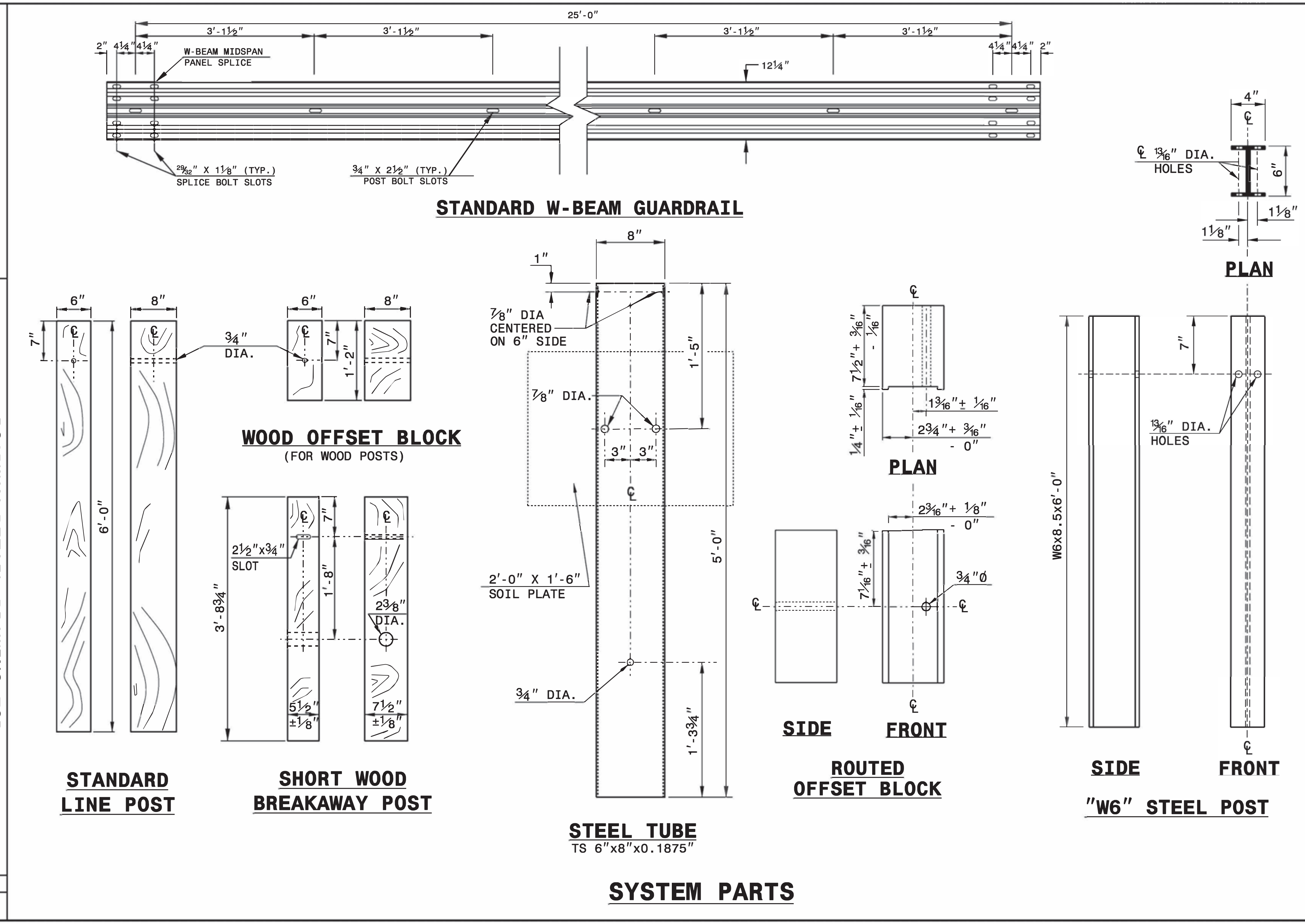
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

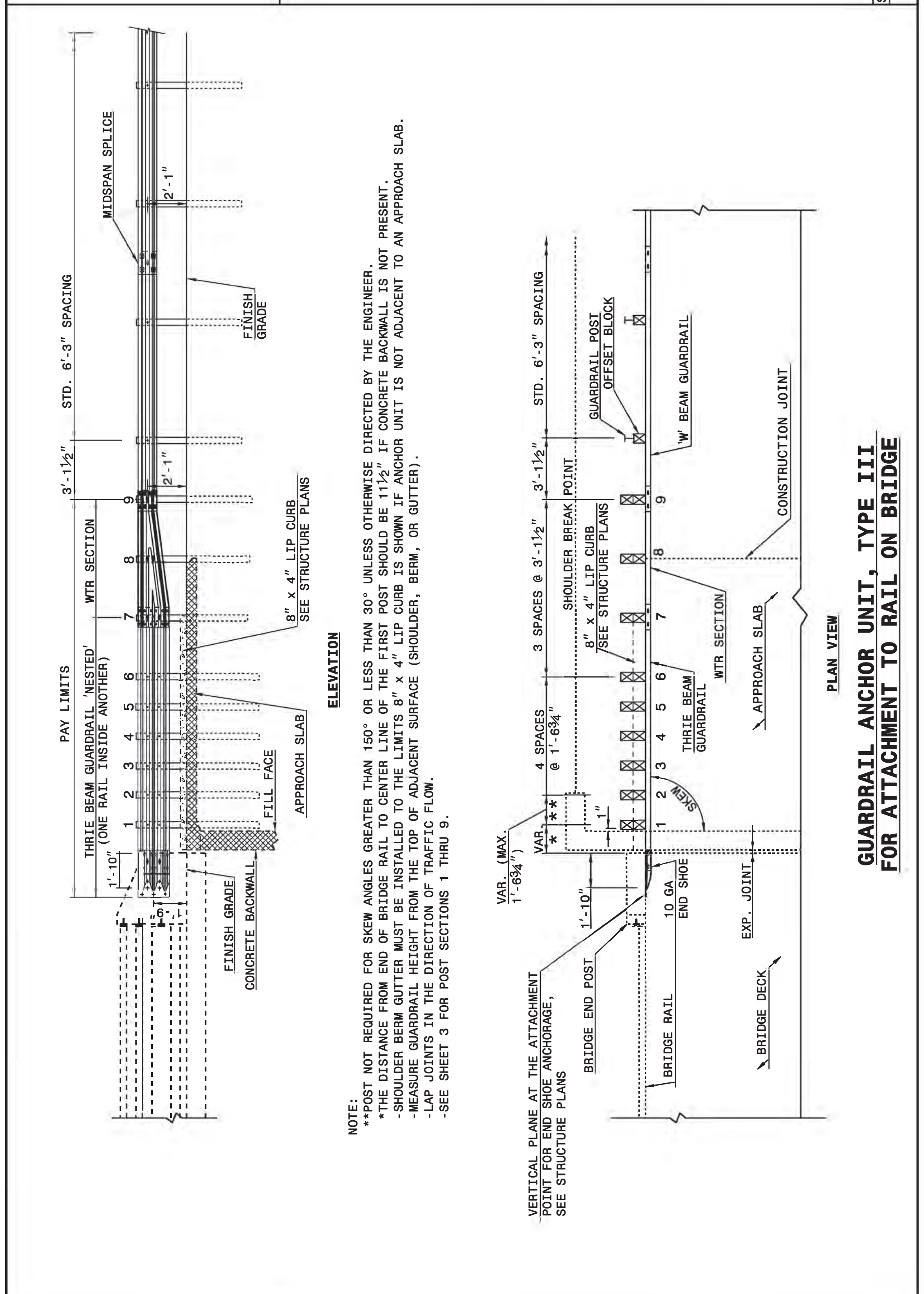
SEE TITLE BLOCK

ORIGINAL BY: J.HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

DocuSigned by: Nicole M. Hackler
10/3/2022

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.171	2C-2

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE
SHEET 1 OF 7 862D03

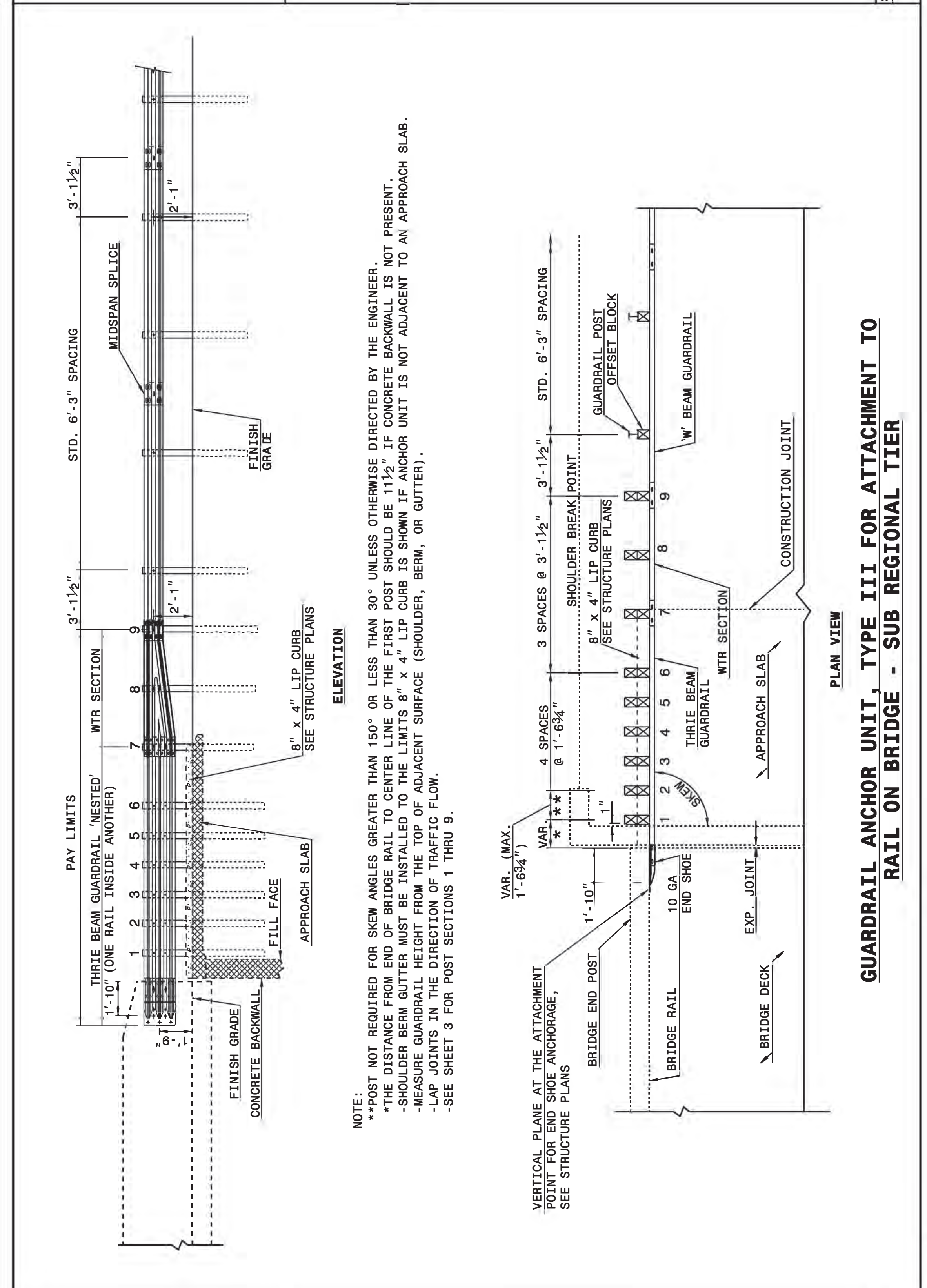


STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER
SHEET 2 OF 7 862D03



STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03

DocuSigned by: Nicole M. Hackler
10/3/2022

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CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

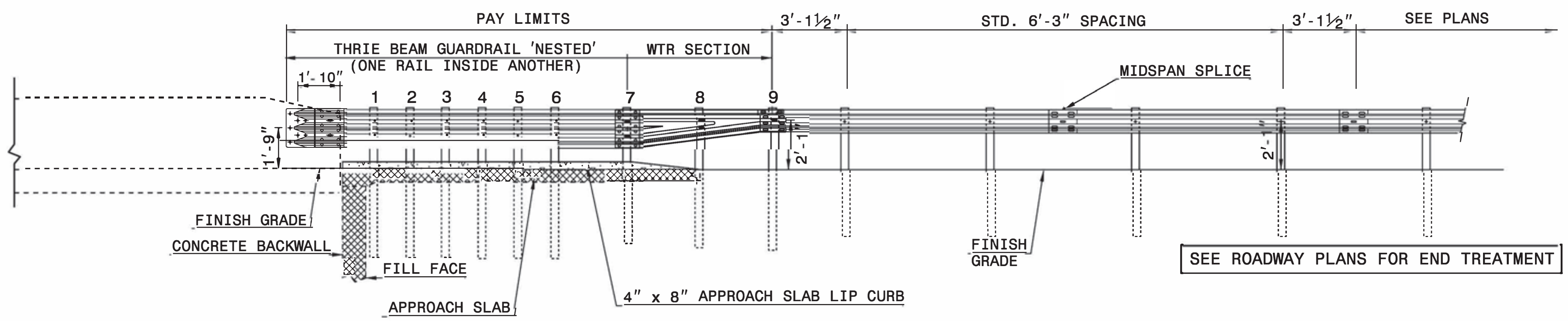
SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

5/14/99

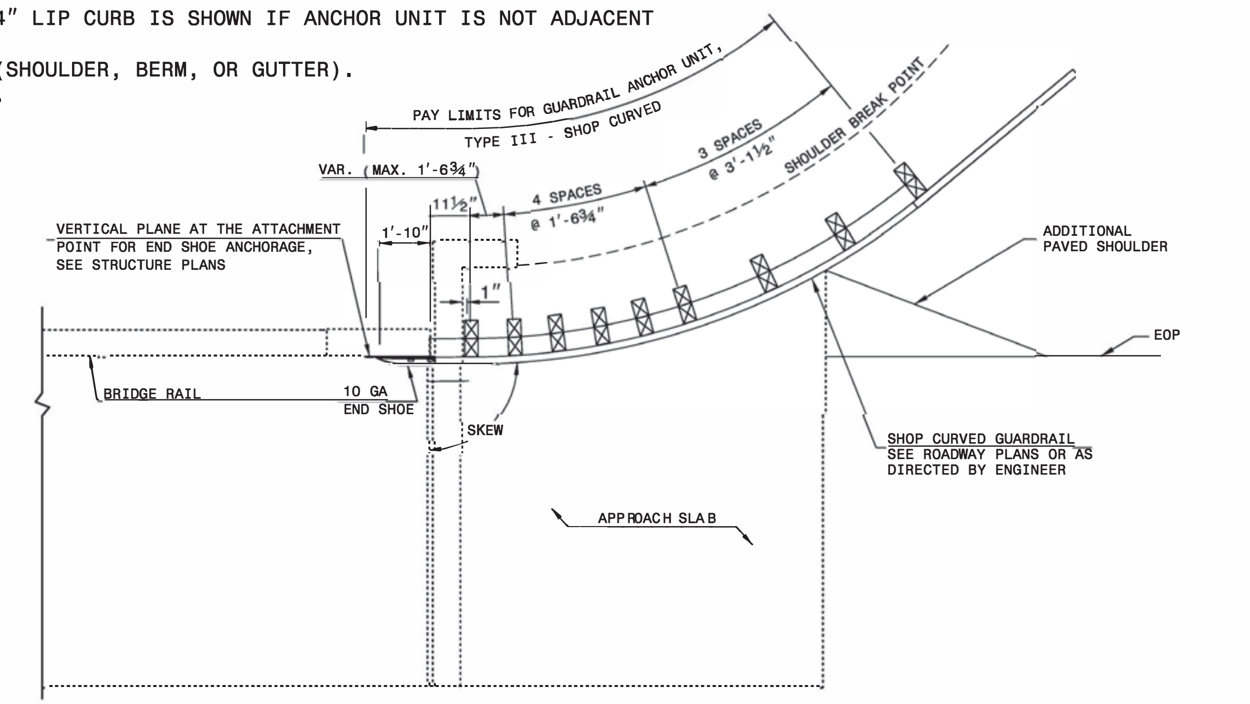
PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.171	2C-3

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED FOR ATTACHMENT TO RAIL ON BRIDGE

ENGLISH DETAIL DRAWING FOR
TYPE III - SHOP CURVED STRUCTURE ANCHOR UNIT

SHEET 1 OF 1
TYPE III SC

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
TYPE III - SHOP CURVED STRUCTURE ANCHOR UNIT

SHEET 1 OF 1
TYPE III SC

DocuSigned by: Nicole M. Heckler
10/3/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: E.E.Ward DATE: 4-4-02
MODIFIED BY: T.S.Spell DATE: 2-01-18
CHECKED BY: DATE:
FILE SPEC.: \jhowerton\guardrail\31inguardrail\typeiiisc.dgn

01-FEB-2018 09:49
S:\Contracts\Contracts\Special Details\jhowerton\Guardrail\31 inch Guardrail\type_iii_sc.dgn
jhowerton AT CSD-292595

GEOTECHNICAL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 29869 ENGINEER SHANE C. CLARK
DocuSigned by: Shane Clark 1F4E87E636AD4EA... 10/12/2022 DATE

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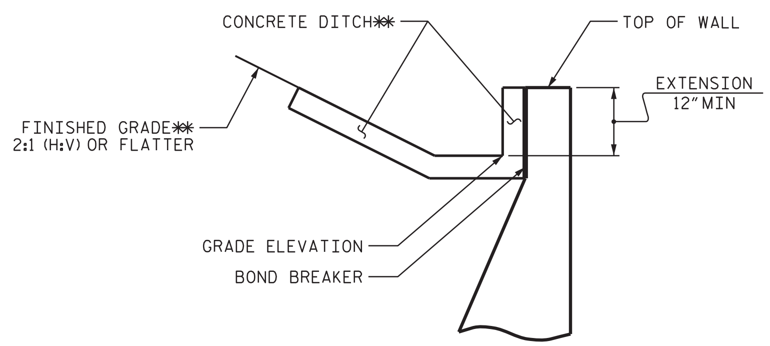
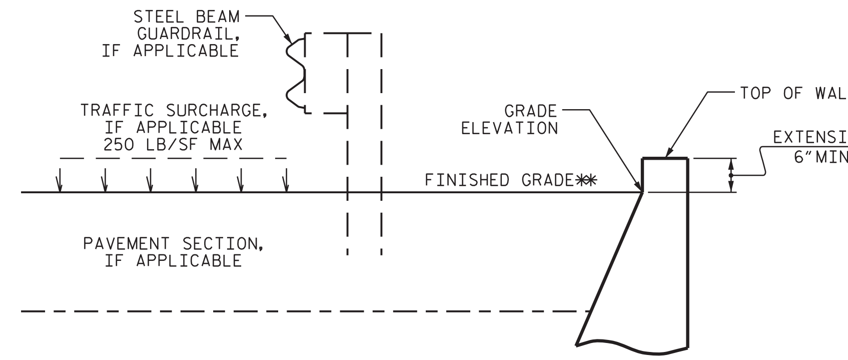


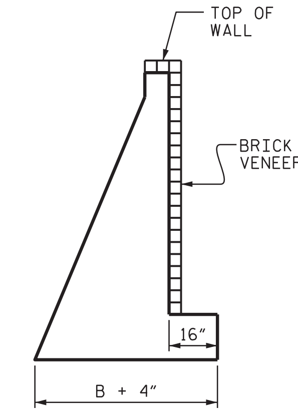
SLOPE CASE

**SEE ROADWAY PLANS FOR CONCRETE DITCH AND FINISHED GRADE DETAILS.



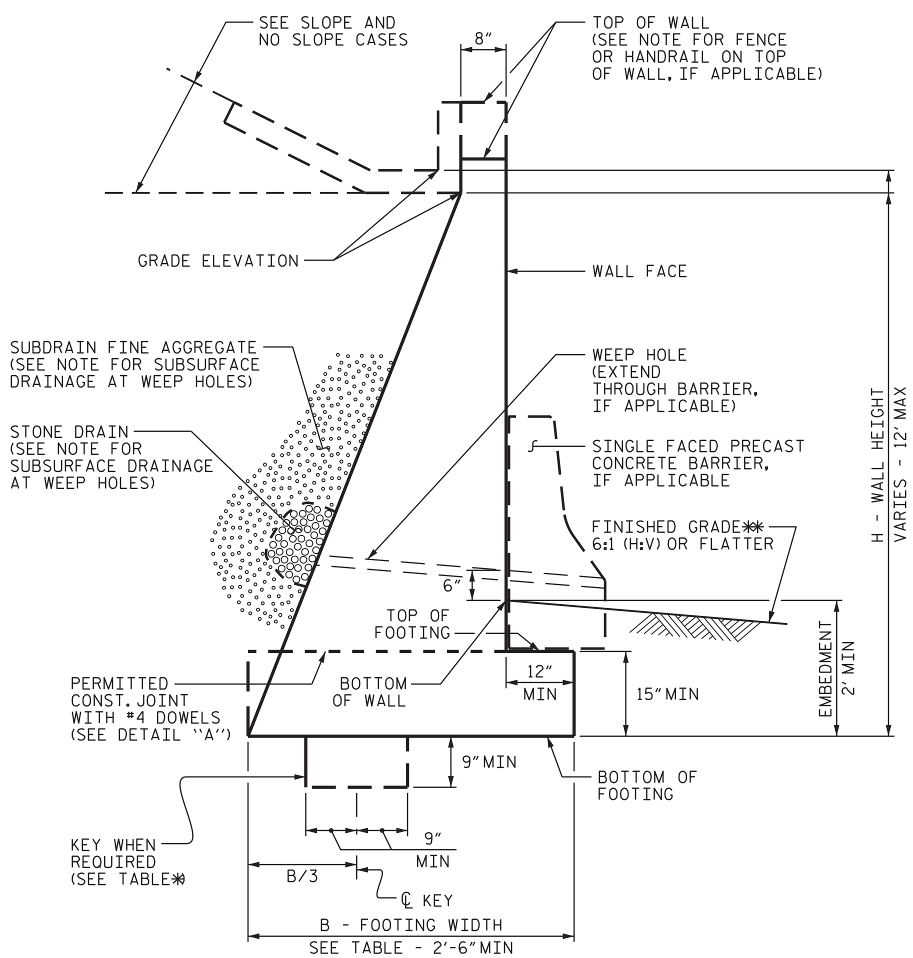
NO SLOPE CASE

**SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



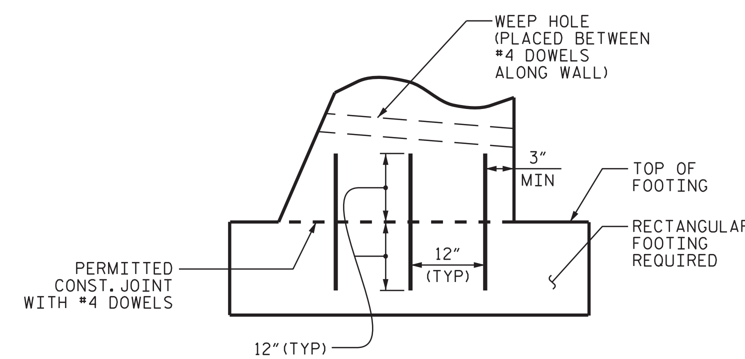
BRICK VENEER DETAIL

(WHEN APPLICABLE)



STANDARD CIP GRAVITY WALL

**SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



DETAIL "A"

H (FT)	3 - < 6	6 - 9	> 9 - 12
SLOPE CASE	.66	.70*	.75*
NO SLOPE CASE WITH TRAFFIC SURCHARGE	.80	.75*	.70*
NO SLOPE CASE WITHOUT TRAFFIC SURCHARGE	.60	.60	.60

B/H RATIO (B = 2′-6″ MIN)

*KEY IS REQUIRED FOR "SLOPE CASE" OR "NO SLOPE CASE WITH TRAFFIC SURCHARGE" WHEN H IS 6′ OR GREATER.

NOTES:

FOR STANDARD CAST-IN-PLACE (CIP) GRAVITY RETAINING WALLS, SEE CAST-IN-PLACE GRAVITY RETAINING WALLS PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

FOR FENCES OR HANDRAILS ON TOP OF WALLS, SEE ROADWAY PLANS FOR FENCE OR HANDRAIL ATTACHMENT DETAILS.

FOR SUBSURFACE DRAINAGE AT WEEP HOLES, SEE ARTICLE 414-8 OF THE STANDARD SPECIFICATIONS.

STANDARD CIP GRAVITY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, γ = 120 LB/CF
FRICTION ANGLE, ϕ = 35 DEGREES
(GROUNDWATER WITHIN 7′ OF BOTTOM OF FOOTING)
FRICTION ANGLE, ϕ = 30 DEGREES
(GROUNDWATER MORE THAN 7′ BELOW BOTTOM OF FOOTING)
COHESION, c = 0 LB/SF

DO NOT USE STANDARD CIP GRAVITY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE BOTTOM OF FOOTING.

DO NOT USE STANDARD CIP GRAVITY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW WALLS.

BEFORE BEGINNING STANDARD CIP GRAVITY WALL CONSTRUCTION, SURVEY WALL LOCATIONS AND SUBMIT WALL PROFILE VIEWS (WALL ENVELOPES) FOR REVIEW. FOR WALL ENVELOPES, INCLUDE BOTTOM OF WALL, EXISTING GROUND AND GRADE ELEVATIONS AND OTHER ELEVATIONS AS NEEDED AT INTERVALS OF 25′ OR LESS ALONG WALLS. DO NOT START WALL CONSTRUCTION UNTIL WALL ENVELOPES ARE ACCEPTED.

FOR BRICK VENEERS, SUBMIT BRICK SAMPLES FOR APPROVAL BEFORE BEGINNING STANDARD CIP GRAVITY WALL CONSTRUCTION.

DO NOT PLACE CONCRETE FOR FOOTINGS UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

WHEN CONSTRUCTING STANDARD CIP GRAVITY WALLS WITH A CONSTRUCTION JOINT AS SHOWN IN DETAIL "A", PROVIDE A MINIMUM OF 3 EQUALLY SPACED #4 DOWELS AT INTERVALS OF 1′-6″ ALONG WALLS.

PROJECT NO.: 17BP.13.R.171
MADISON COUNTY
STATION: 13+00 RT

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 453.01

STANDARD CAST-IN-PLACE (CIP) GRAVITY RETAINING WALL

SHEET NO. 2G-1

DATE: 5-16-17

6/21/00

COMPUTED BY: BGR	DATE: 2-21-19
CHECKED BY: ACC	DATE: 2-21-19

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R171	3B-1

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS					
LINE	LOCATION	ASPHALT REMOVAL	ASPHALT BREAK-UP		
-L-	13+35 TO 13+53 (BEGIN EXISTING BRIDGE)	21			
-L-	13+90 (END EXISTING BRIDGE) TO 14+25	60			
-SR 1395-	PAVEMENT REPAIR DUE TO TEMPORARY GUARDRAIL	34			
-SR 1395-	SAWCUT REPAIR AREA	12			
	TOTAL	127			
	SAY	130			

SUMMARY OF EARTHWORK

IN CUBIC YARDS					
LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
SUMMARY NO.1					
-L- STA 11+60 TO -L- STA 13+43.44 (BEGIN BRIDGE)	11		723	712	
SUMMARY NO.2					
-L- STA. 14+01.93 (END BRIDGE) TO -L- STA 14+23.14			17	17	
PROJECT SUBTOTAL	11		740	729	
LOSS DUE TO CLEARING & GRUBBING	-10			10	
EST 5% TO REPLACE TOPSOIL AN BORROW PIT				37	
GRAND TOTAL	1		740	776	
SAY	5			800	

CONTINGENCY ITEMS:
INCIDENTAL STONE = 50 TONS
UNDERCUT EXCAVATION = 450 CY
SELECT GRANULAR MATERIAL = 400 CY
GEOTEXTILE FOR SOIL STABILIZATION = 200 SY

Note: Earthwork quantities are calculated by the roadway designer. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Unit.

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

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".

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	TBDI STD 840.35	TBDI FRAME WITH GRATE STD. 840.29	J.B. STD. 840.31 OR 840.32	M.H. FRAME & COVER STD. 840.54	MODIFIED CONCRETE FLUME		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
13+31	RT	401		2149.8	2146.6																																												1										1	1									
		401	402		2146.6	2140.8																				24																																								2@15"				
TOTAL																					24																												1										1	1					2@15"				

ABBREVIATIONS

- C.B. CATCH BASIN
- N.D.I. NARROW DROP INLET
- D.I. DROP INLET
- G.D.I. GRATED DROP INLET
- G.D.I. (N.S.) GRATED DROP INLET (NARROW SLOT)
- J.B. JUNCTION BOX
- M.H. MANHOLE
- T.B.D.I. TRAFFIC BEARING DROP INLET
- T.B.G.I. TRAFFIC BEARING GRATE INLET
- T.B.J.B. TRAFFIC BEARING JUNCTION BOX

"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 STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	XI	GREU TL-2	GREU TL-3	IA-TL-2	TYPE III	TYPE III SHOP CURVED	B-77	AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	12+58	13+30	LT	68.75				13+30	4	7		25		0.5			1			1										8FT W6X9 POSTS
-L-	13+90	13+78	LT	37.5	18.75		13+90		4	7	25		0.5				1				1									
-L-	12+94	13+52	RT	56.25			13+52		4	7	25		0.5				1			1										
-L-	14+09	14+33	RT	25	18.75			14+09	4	7		25		0.5			1				1									
			SUBTOTAL	187.5	37.5																									
			LESS DEDUCTIONS FOR ANCHORS																											
			GREU TL-2 4 @ 25'=	-100.00																										
			TYPE III 4 @ 18.75=	-37.5	-37.5																									
			PROJECT TOTALS:	50													4			2	2									
ADDITIONAL GUARDRAIL POSTS=5 EA.																														
TEMPORARY GUARDRAIL																														
-DET-	22+89	24+19	LT	162.5	37.5		23+18	24+00	1	4	25	25	0.5	0.5			2													
			SUBTOTAL	162.5													2													
			LESS DEDUCTIONS FOR ANCHORS																											
			GREU TL-2 2 @ 25'=	-50																										
			PROJECT TOTALS:	112.5	37.5												2													

COMPUTED BY: DMM_______ DATE: 10/15/2019___
CHECKED BY: JCK___________ DATE: 10/15/2019_

(5-15-18)

PROJECT NO.	SHEET NO.
SF-560066	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	200
				TOTAL LF:	200

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	Geotextile for Pavement Stabilization SY	Class IV Subgrade Stabilization TONS
CONTINGENCY				
		TOTAL SY/TONS:	0	0*

*Total tons of "Class IV Subgrade Stabilization" is only the estimated quantity for pavement stabilization and may only represent a portion of the subgrade stabilization quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY					100	200	500		
				TOTAL CY/TONS/SY:	100	200**	500**	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
							TOTAL SY:	0

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
					TOTAL SY:	0		0*	

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
**Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

SUMMARY OF PRE-SPLITTING OF ROCK

LINE	Beginning Rock Cut Slope (H:V)	Approx. Station	Ending Rock Cut Slope (H:V)	Approx. Station	Location LT/RT	Pre-splitting of Rock SY
					TOTAL SY:	0

SUMMARY OF SURCHARGES AND SURCHARGE WAITING PERIODS

LINE	Station	Station	Surcharge Height FT	MONTHS

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
	TOTAL GAUGES (EACH):		

SUMMARY OF EMBANKMENT WAITING PERIODS

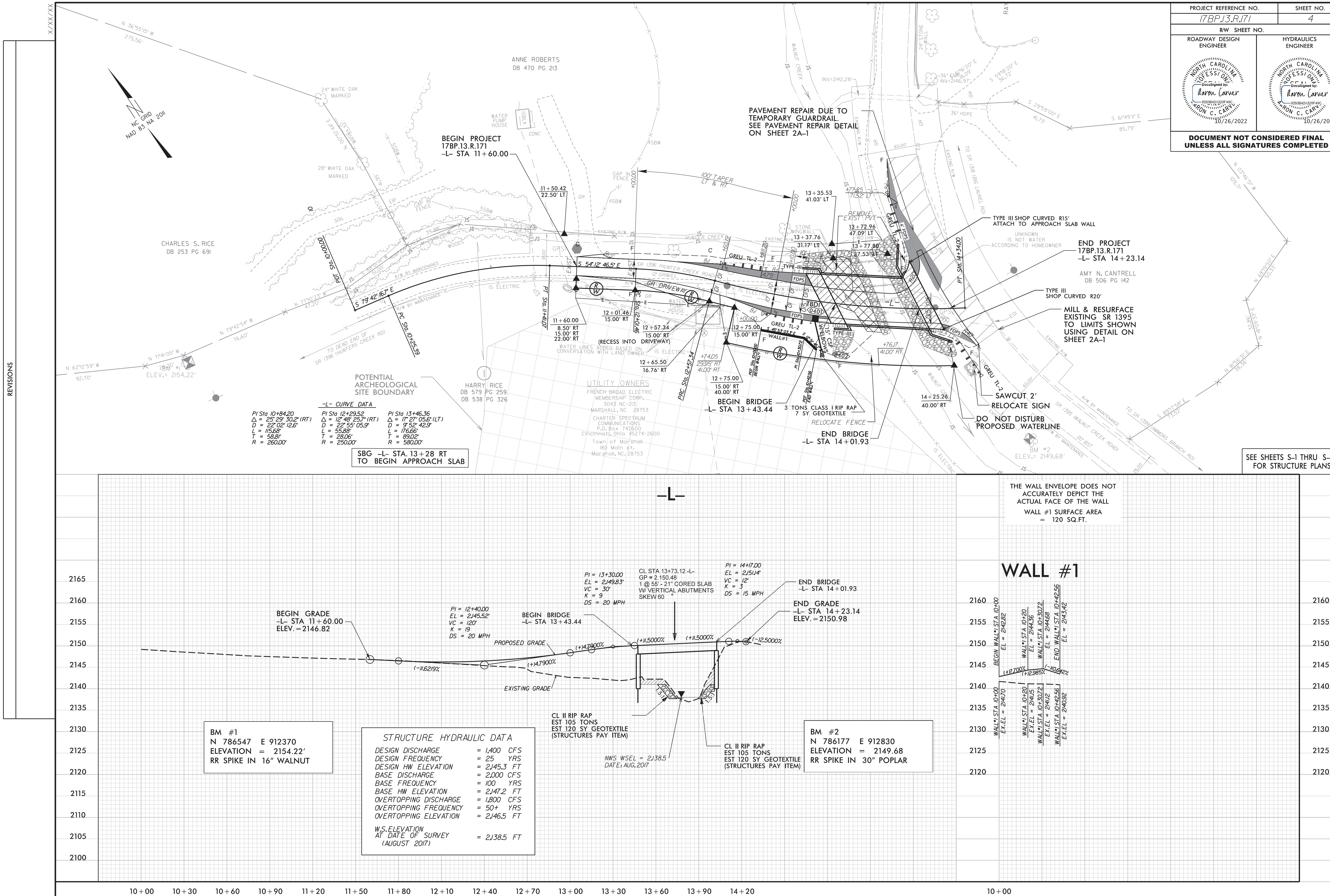
LINE	Station	Station	MONTHS

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.171	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Aaron Carver 10/26/2022	Aaron Carver 10/26/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TIP PROJECT: 17BP.13.R.171

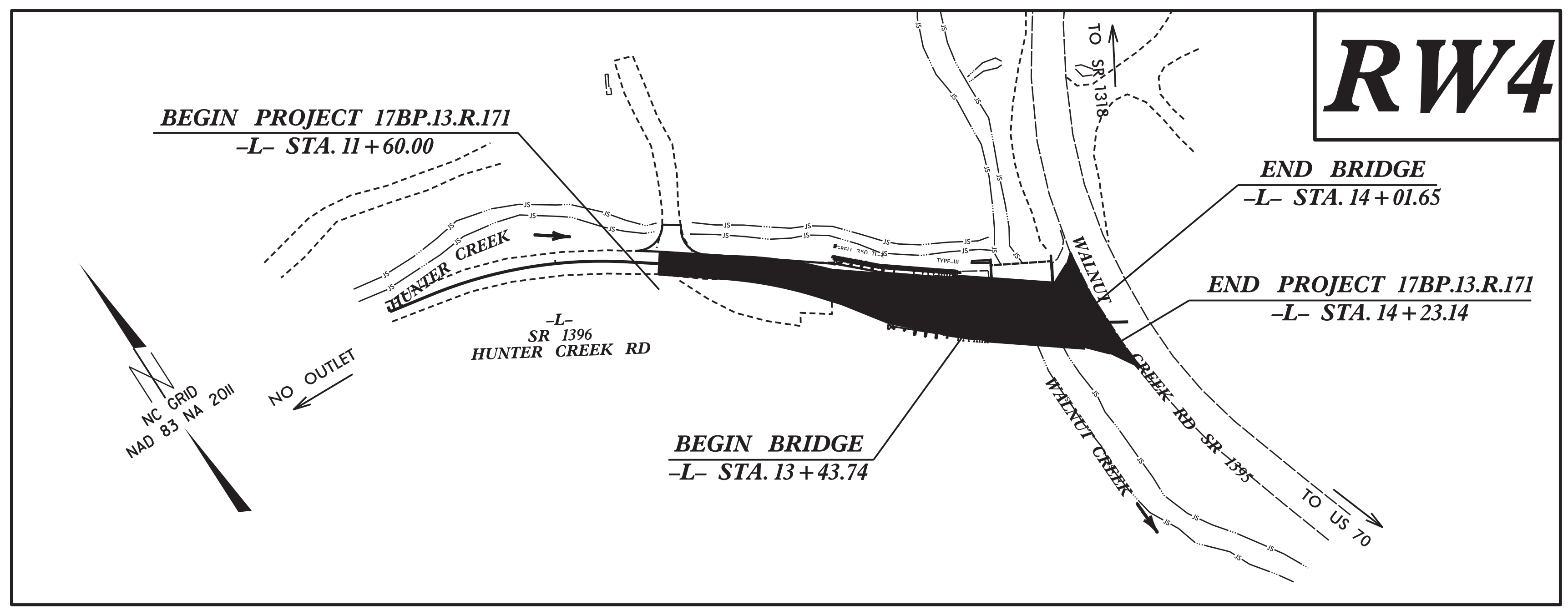
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.171	RW01	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURVEY CONTROL, EXISTING CENTERLINES,
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

MADISON COUNTY

LOCATION: BRIDGE NO. 66 ON SR 1396 (HUNTER CREEK ROAD) OVER WALNUT CREEK



GRAPHIC SCALE

30 15 0 30 60

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 786462.6000 (ft) EASTING: 912639.7053 (ft)
ELEVATION: 2146.51 (ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999761333
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS1" TO -L- STATION 10+00 IS
N 71°48'42.6" w 160.98 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared In the Office of:

Mattern & Craig
ENGINEERS·SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 18, 2019

LETTING DATE: JUNE 17, 2020

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4473 LAND SURVEYOR JEFF B. HOPPES

DocuSigned by:
Jeff Hoppes
2C3FB0F0CD6D472...

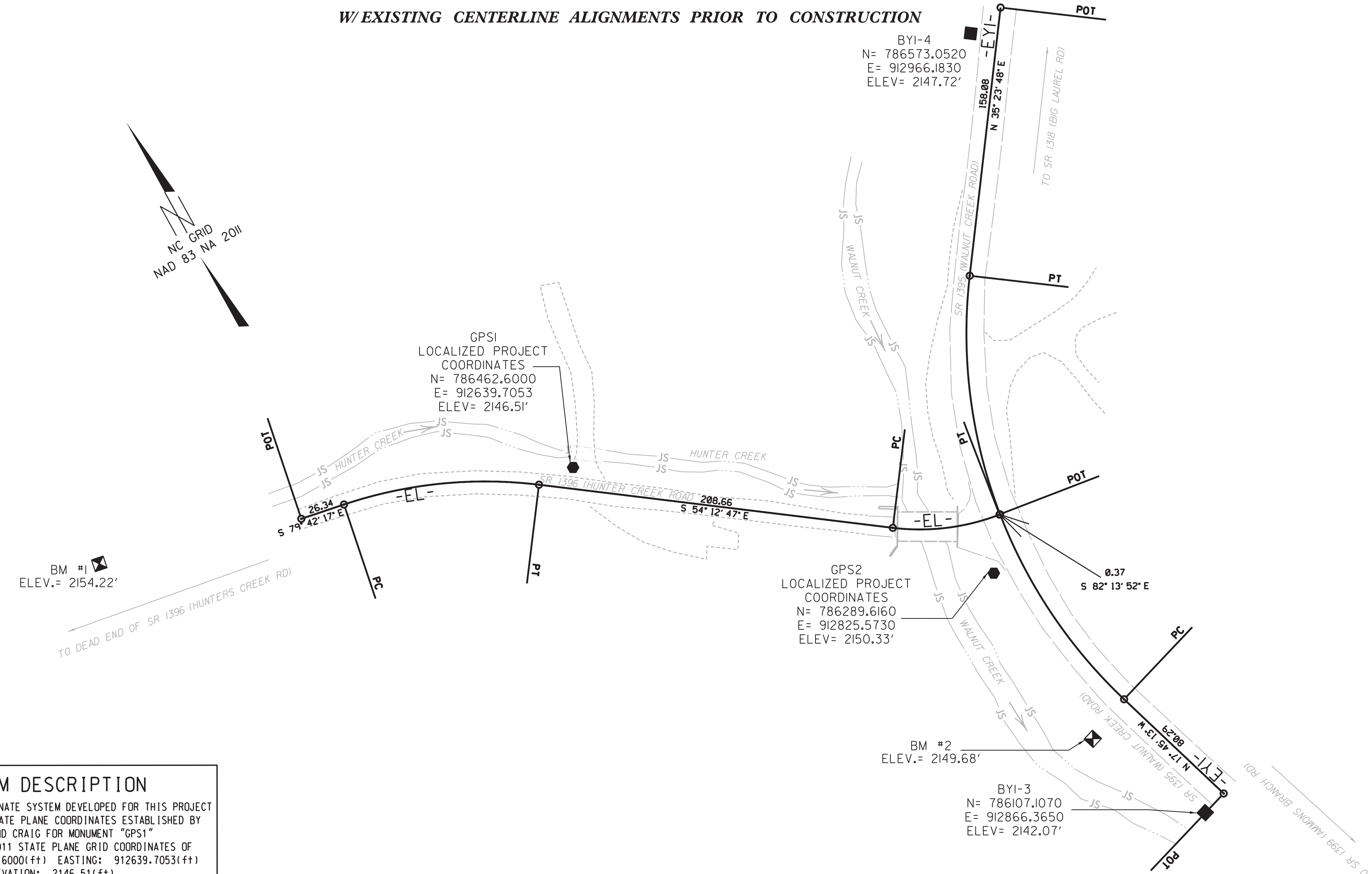
SIGNATURE: Date:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
17BP13R171	1C-1
Location and Surveys	

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY MATTERN AND CRAIG FOR MONUMENT "GPS1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 786462.6000(ft) EASTING: 912639.7053(ft)
ELEVATION: 2146.51(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .999761333
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS1" TO -L- STATION IS

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

NOTE: DRAWING NOT TO SCALE

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP13R171	1C-2
Location and Surveys	

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BASELINE

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	GPS1	786462.6000	912639.7053	2146.51
2	GPS2	786289.6160	912825.5730	2150.33

BY1

POINT	DESC.	NORTH	EAST	ELEVATION
3	BY1-3	786107.1070	912866.3650	2142.07
Y1	GPS2	786289.6160	912825.5730	2150.33
4	BY1-4	786573.0520	912966.1830	2147.72

BM1 ELEVATION = 2154.22
N 786547 E 912370
BM1 IS RR SPIKE SET IN BASE OF 16" WALNUT

BM2 ELEVATION = 2149.68
N 786177 E 912830
BM2 IS RR SPIKE SET IN BASE OF 30" POPLAR

EXISTING -L- ALIGNMENT

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	786513.017	912485.837							
LINE			S 79°42'17" E	26.34					
PC	786508.309	912511.753							
CURVE			S 66°57'32" E	114.73	25°29'30"(RT)	22°02'13"	115.68	58.81	260.00
PT	786463.406	912617.326							
LINE			S 54°12'47" E	208.66					
PC	786341.385	912786.594							
CURVE			S 68°13'19" E	62.94	28°01'06"(LT)	44°04'25"	63.57	32.43	130.00
PT	786318.033	912845.042							
LINE			S 82°13'52" E	0.37					
POT	786317.984	912845.405							

EXISTING -Y1- ALIGNMENT

EY1

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	786111.690	912881.228							
LINE			N 17°45'13" W	80.29					
PC	786188.154	912856.746							
CURVE			N 08°49'17" E	263.95	53°09'01"(RT)	19°25'20"	273.66	147.57	295.00
PT	786448.981	912897.225							
LINE			N 35°23'48" E	158.08					
POT	786577.843	912988.791							

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS

6/2/99

6/2/99

REVISIONS

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rlzietlow AT MC-WKS-L555

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
17BP13R171	RW02D-1

Location and Surveys

MATTERN AND CRAIG
ENGINEERS & SURVEYORS
12 BROAD STREET
ASHEVILLE NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	786512.8475	912486.7701
PC	10+25.39	786508.3095	912511.7528
PT	11+41.07	786463.4065	912617.3263
PC	12+01.46	786428.0927	912666.3133
PRC	12+57.34	786390.6407	912707.6307
PT	14+34.00	786277.8339	912842.6974

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
17BP13R171	RW03E-1

Location and Surveys

MATTERN AND CRAIG
ENGINEERS & SURVEYORS
12 BROAD STREET
ASHEVILLE NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4473 LAND SURVEYOR JEFF B. HOPPES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, JEFF B. HOPPES, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation, R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 5th day of June, 2019.

DocuSigned by:
Jeff Hoppes
2C3FB0F0CD6D472...

Professional Land Surveyor   L-4473 PLS #   Seal

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L	11+50.42	-22.50	786476.1917	912638.0671	NOT SET FALLS IN CREEK
L	11+60.00	15.00	786440.1683	912623.9113	
L	11+60.00	8.50	786445.4411	912627.7123	
L	12+01.46	15.00	786415.9248	912657.5417	
L	12+57.34	15.00	786380.7199	912696.3800	
L	12+75.00	15.00	786367.3157	912708.5676	
L	12+75.00	40.00	786350.2178	912690.3286	
L	13+35.53	-41.03	786366.6801	912789.9809	NOT SET FALLS IN CREEK
L	13+37.76	-31.17	786357.8449	912785.1275	
L	13+77.80	-37.53	786339.2748	912818.5052	
L	14+25.26	40.00	786248.4914	912814.0494	

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

REVISIONS

6/2/99
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PROJECT REFERENCE NO.	SHEET NO.
17BPR13171	RW04

Location and Surveys

MATTERN AND CRAIG
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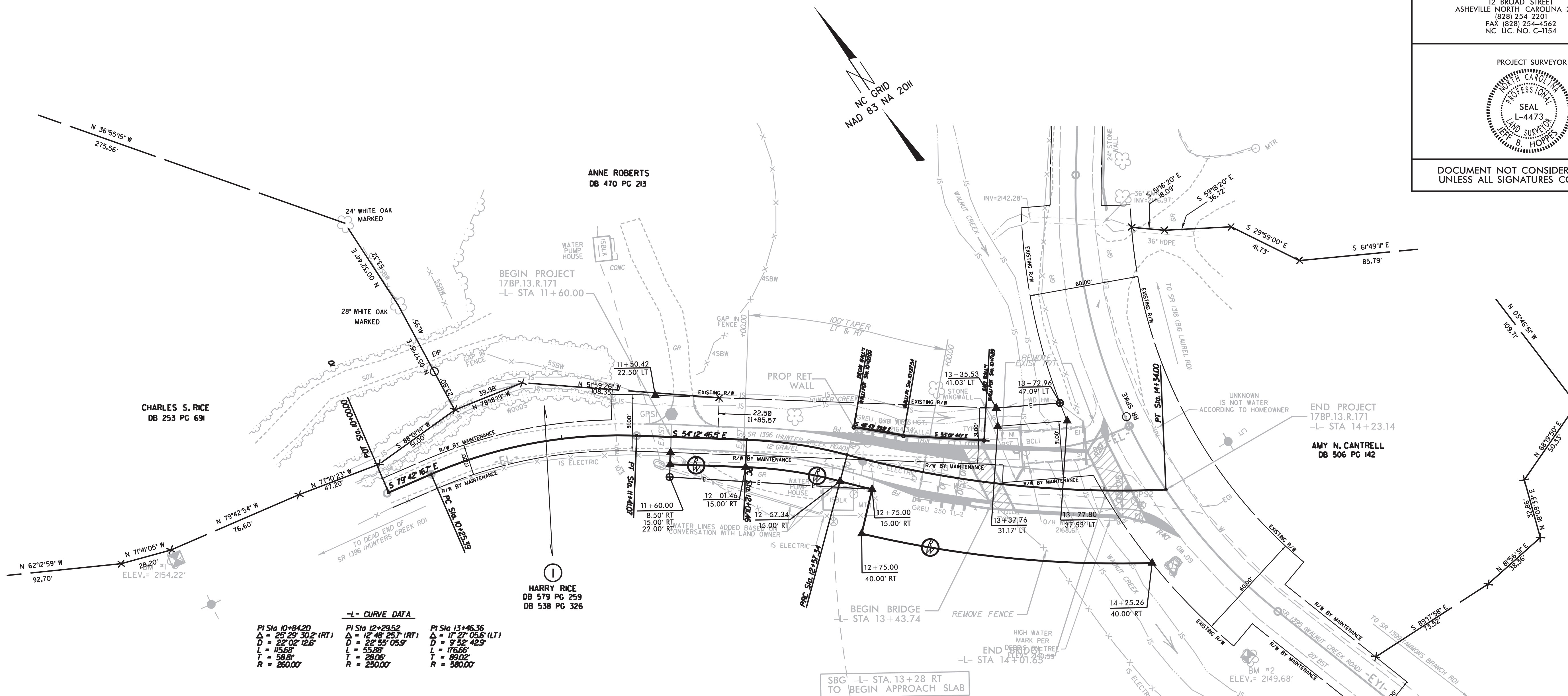
12 BROAD STREET
ASHEVILLE NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4473 LAND SURVEYOR JEFF B. HOPPES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS



I, JEFF B. HOPPES, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 5th day of June, 2019.

DocuSigned by:
Jeff Hoppes
2C3FB0F0CD6D472...

Professional Land Surveyor L-4473 PLS # Seal

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

6/2/99
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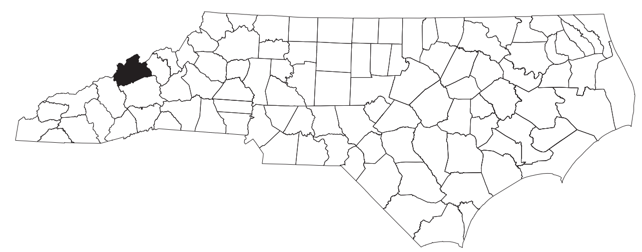
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

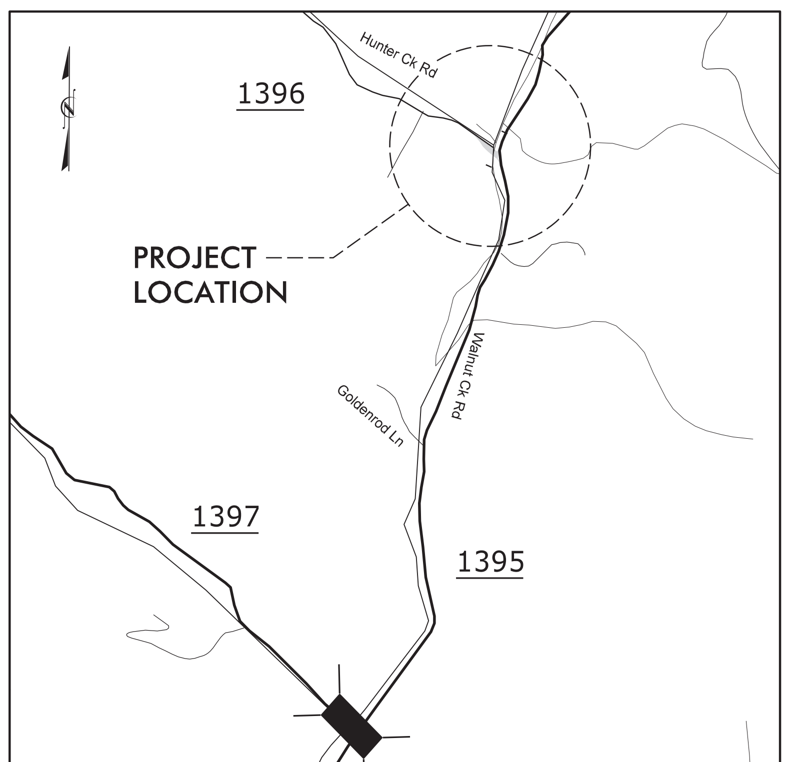
TRANSPORTATION MANAGEMENT PLAN

MADISON COUNTY

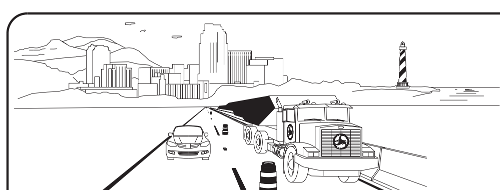
DIVISION 13



LOCATION: BRIDGE NO. 66 ON SR 1396 (HUNTER CREEK ROAD) OVER WALNUT CREEK



VICINITY MAP



WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

PLANS PREPARED BY:

JAMES B. VOSO, PE
PROJECT ENGINEER

MENG YANG, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

MIKE CALLOWAY
DIV 13 BRIDGE PROGRAM MANAGER

DIVISION OF HIGHWAYS — STATE OF NORTH CAROLINA — DEPARTMENT OF TRANSPORTATION — WORK ZONE TRAFFIC CONTROL

SHEET NO. TMP-1

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	DETAIL 1205D04: PAVEMENT MARKINGS - INTERSECTIONS SHEET 2 OF 2
TMP-1C	DETAIL 1205D12: PAVEMENT MARKINGS - BRIDGES SHEET 1 OF 1
TMP-1D	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES)
TMP-2	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS - STANDARD DETAILS
TMP-2A	STANDARD TEMPORARY SHORING
TMP-3	PROJECT PHASING NOTES
TMP-4	TEMPORARY TRAFFIC CONTROL, PHASE I DETAILS
TMP-5	TEMPORARY TRAFFIC CONTROL, PHASE II DETAILS
PM-1	PERMANENT PAVEMENT MARKING PLAN

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:

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DATE: 10/13/2022

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

TIP PROJECT: 17BP.13.R.171

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.171	TMP-1A

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN 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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER 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 - III
1150.01	FLAGGING DEVICES
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - DIVIDED AND UNDIVIDED ROADWAYS
1261.01	GUARDRAIL & BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL & BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

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

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

TEMPORARY SIGNING

PORTABLE SIGN
STATIONARY SIGN
STATIONARY OR PORTABLE SIGN

SIGNALS

EXISTING
PROPOSED
TEMP
TEMPORARY

PAVEMENT MARKINGS

EXISTING LINES
TEMPORARY LINES
WHITE SOLID EDGE LINE
YELLOW DOUBLE CENTER LINE

PAVEMENT MARKERS

YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

APPROVED: James B. Voso, PE DATE: 10/13/2022

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140FD6037GE041F...

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NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD
DRAWINGS & LEGEND

TIP NO.	SHEET NO.
17BP.13.R.174	TMP-1B

APPROVED: Matthew V. Springer (DocuSigned by: BC60F6E8B584403...)

DATE: 8/13/2019

SEAL

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STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

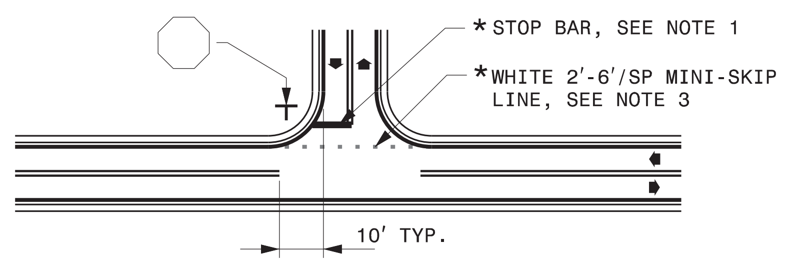
8-19

ENGLISH DETAIL DRAWING FOR PAVEMENT MARKINGS INTERSECTIONS

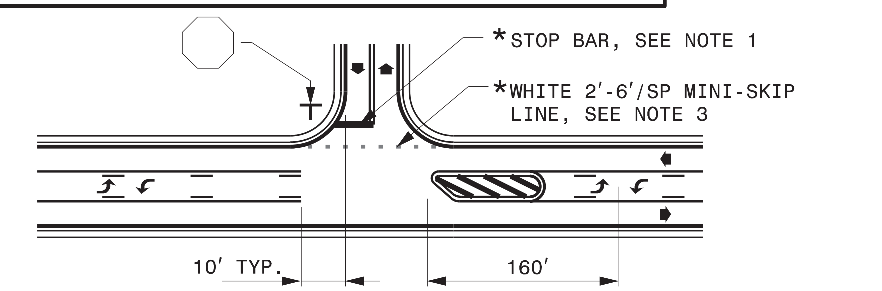
SHEET 2 OF 2

1205D04

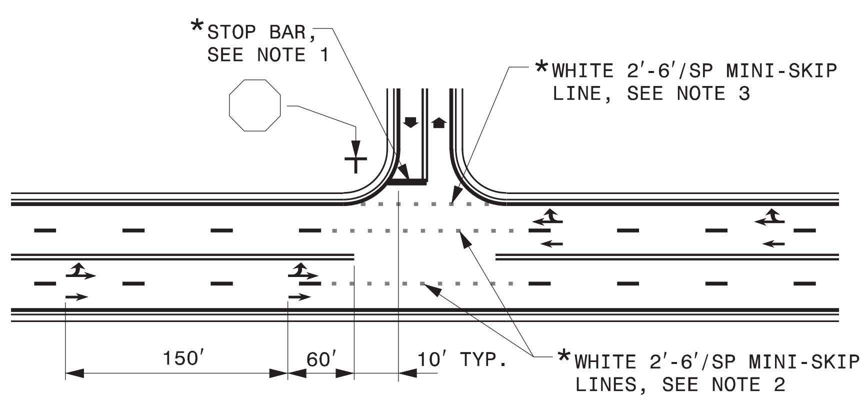
TWO-LANE, TWO-WAY ROADWAY



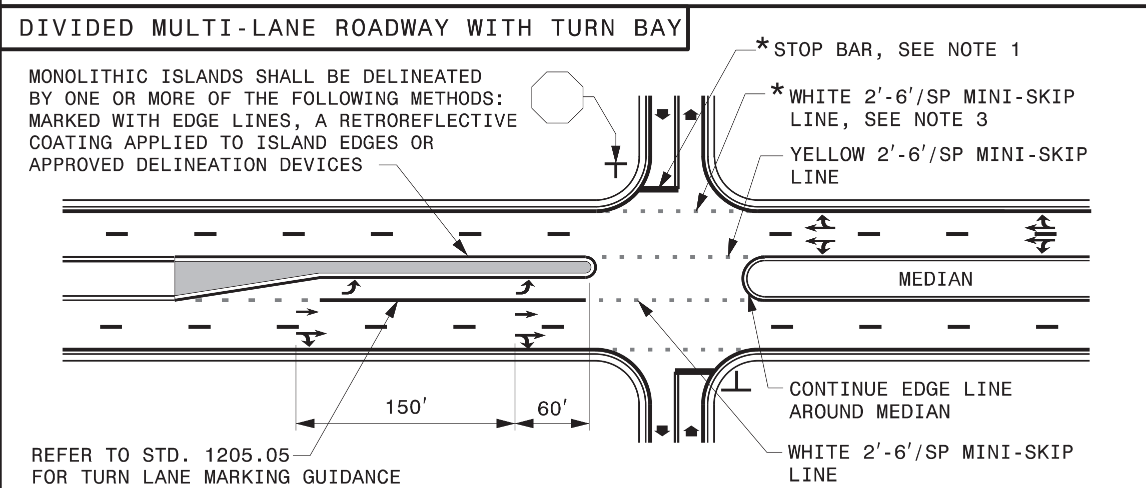
TWO-LANE, TWO-WAY ROADWAY WITH TWO-WAY LEFT TURN LANE



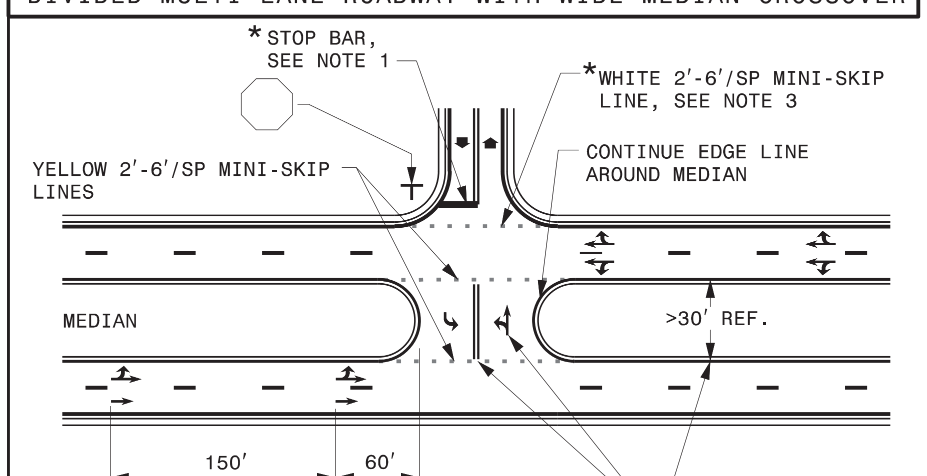
UNDIVIDED MULTI-LANE ROADWAY



DIVIDED MULTI-LANE ROADWAY WITH TURN BAY



DIVIDED MULTI-LANE ROADWAY WITH WIDE MEDIAN CROSSOVER



USE DOUBLE YELLOW CENTER LINE AND ARROW SYMBOLS IN MEDIAN CROSSOVER WHEN WIDTH OF MEDIAN EXCEEDS 30 FT, OTHERWISE THEY ARE NOT REQUIRED.

GENERAL NOTES:

1- PLACEMENT OF STOP BARS AT NON-SIGNALIZED INTERSECTIONS IS OPTIONAL AND USED WHERE IT IS IMPORTANT TO INDICATE THE POINT WHICH VEHICLES ARE REQUIRED TO STOP. PLACE STOP BARS NO LESS THAN 4 FEET AND NO MORE THAN 30 FEET FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY. USE 10 FEET AS THE TYPICAL SETBACK DISTANCE OR AS DIRECTED BY THE ENGINEER.

2- MINI-SKIP LANE LINE EXTENSIONS SHOULD BE USED AT INTERSECTIONS THAT HAVE REDUCED VISIBILITY CONDITIONS SUCH AS OFFSET, SKEWED, OR CURVED ROADWAYS.

3- MINI-SKIP EDGE LINE EXTENSIONS MAY BE PLACED THROUGH INTERSECTIONS AND MAJOR DRIVEWAYS.

4- REFER TO ROADWAY STANDARD DRAWINGS 1205.01, 1205.02, 1205.05, 1205.08 AND 1205.09 FOR ADDITIONAL PAVEMENT MARKING GUIDANCE.

LEGEND

- STOP SIGN
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW
- PAVEMENT MARKING SYMBOLS
- * OPTIONAL

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ENGLISH DETAIL DRAWING FOR PAVEMENT MARKINGS INTERSECTIONS

SHEET 2 OF 2

1205D04

REVISED PAVEMENT MARKING ROADWAY STANDARD DRAWING

TIP NO.	SHEET NO.
17BP.13.R.171	TMP-1C

DocuSigned by: Matthew V. Springer

APPROVED:

DATE: 8/30/2019

BC60F6E8B584403...

SEAL

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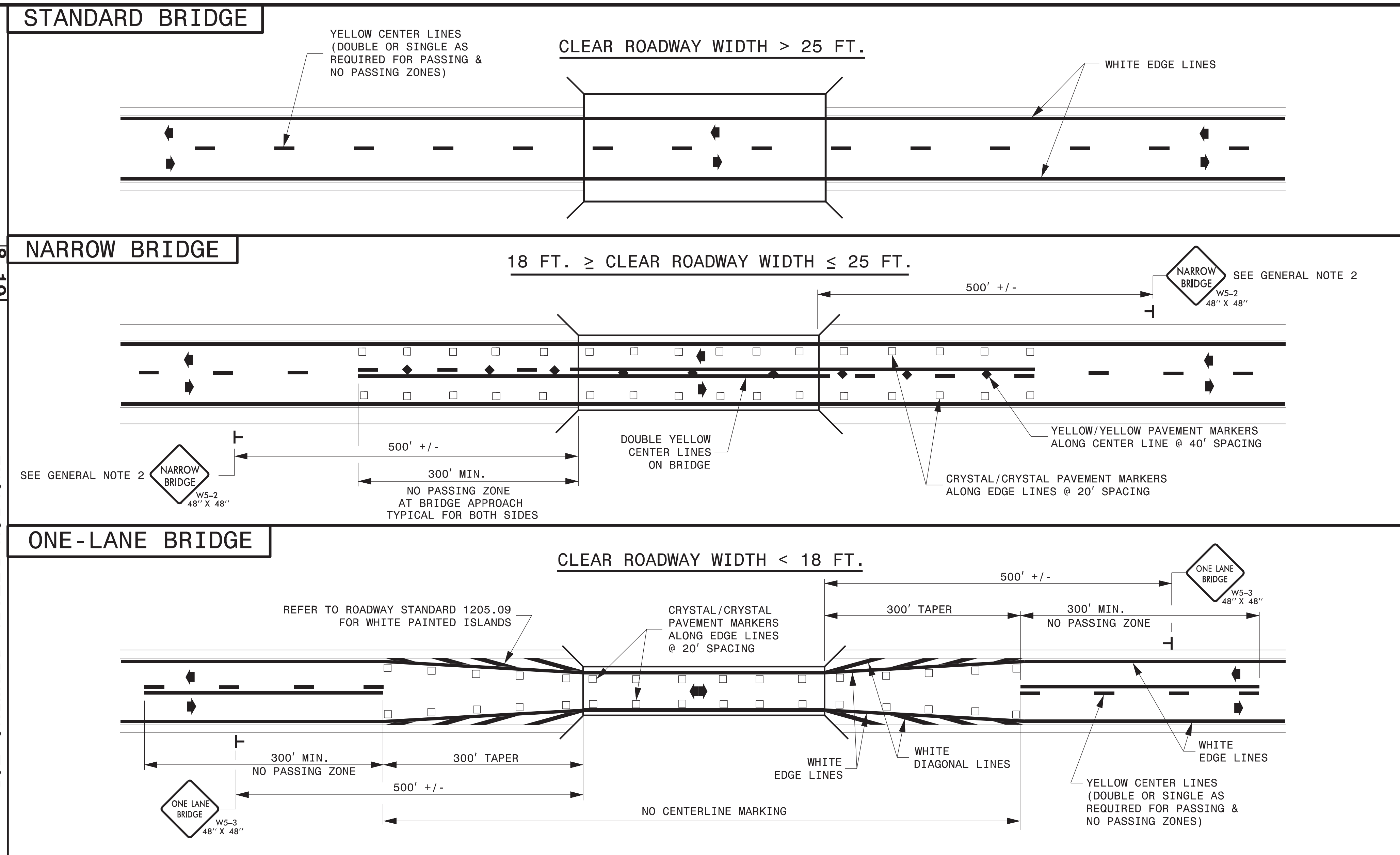
RALEIGH, N.C.

8-19

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
BRIDGES



GENERAL NOTES:

1- NO PASSING ZONES SHOWN ARE MINIMUMS. APPLY MINIMUM PASSING AND STOPPING SIGHT DISTANCES AS DETERMINED BY THE ENGINEER.

2- FOR BRIDGES WITH 18 TO 25 FEET CLEAR ROADWAY WIDTH, SIGNS MUST BE USED WHEN THE APPROACH PAVEMENT WIDTH IS 2 FOOT OR GREATER THAN THE CLEAR ROADWAY WIDTH.

LEGEND	
DIRECTION OF TRAFFIC FLOW	YELLOW/YELLOW PAVEMENT MARKER
STATIONARY SIGN	CRYSTAL/CRYSTAL PAVEMENT MARKER

SHEET 1 OF 1
1205D12

STATE OF NORTH CAROLINA
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

8-19

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
BRIDGES

SHEET 1 OF 1
1205D12

08/30/19
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User:dstokes

REVISED PAVEMENT MARKING ROADWAY STANDARD DRAWING

GENERAL NOTES / LOCAL 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 UNDESIRED 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 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D) 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.

E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F) 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.

G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

H) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION

SIGNING

I) 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.

J) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

K) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 100 ft IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

L) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

M) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

TRAFFIC CONTROL DEVICES

N) 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 AT OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

O) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

LOCAL NOTES:

1) EMERGENCY VEHICLE ACCESS MUST BE MAINTAINED AT ALL TIMES.

2) NOTIFY THE MADISON COUNTY SCHOOL BOARD 30 DAYS PRIOR TO ANY LANE CLOSURES.

3) MAINTAIN ACCESS TO DRIVEWAYS DURING CONSTRUCTION

PAVEMENT MARKING

P) INSTALL TEMPORARY PAVEMENT MARKINGS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1395 (WALNUT CREEK RD)	PAINT	NONE

Q) 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.

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

S) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS BY THE END OF EACH DAY'S OPERATION.

MISCELLANEOUS

T) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) 100 ft AND 200 ft RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

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MANAGEMENT STRATEGIES

PHASE I SHOWS TRAFFIC TO BE MAINTAINED ON SR 1396 IN THE EXISTING TRAFFIC PATTERN WHILE TRAFFIC ON SR 1395 IS TO BE MAINTAINED ON THE EXISTING ROAD BUT REDUCED TO ONE LANE IN THE NORTH BOUND DIRECTION.TEMPORARY TRAFFIC SIGNALS WILL BE UTILIZED ON SR 1395 AND SR 1396 DURING CONSTRUCTION TO CONTROL TRAFFIC.

PHASE II SHOWS TRAFFIC FROM SR 1396 TO BE SHIFTED TO THE NEW ALIGNMENT USING TEMPORARY SIGNALS WHILE THE LEFT SIDE OF THE ROAD IS CONSTRUCTED. THE REDUCED LANE ON SR 1395 FROM PHASE I WILL BE MAINTAINED AND TEMPORARY TRAFFIC SIGNALS WILL BE UTLIZED TO CONTROL TRAFFIC.

APPROVED: DocuSigned by: James B. Voso, PE 140FD60379E041F... DATE: 10/13/2022

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN
(MANAGEMENT STRATEGIES & GENERAL NOTES)

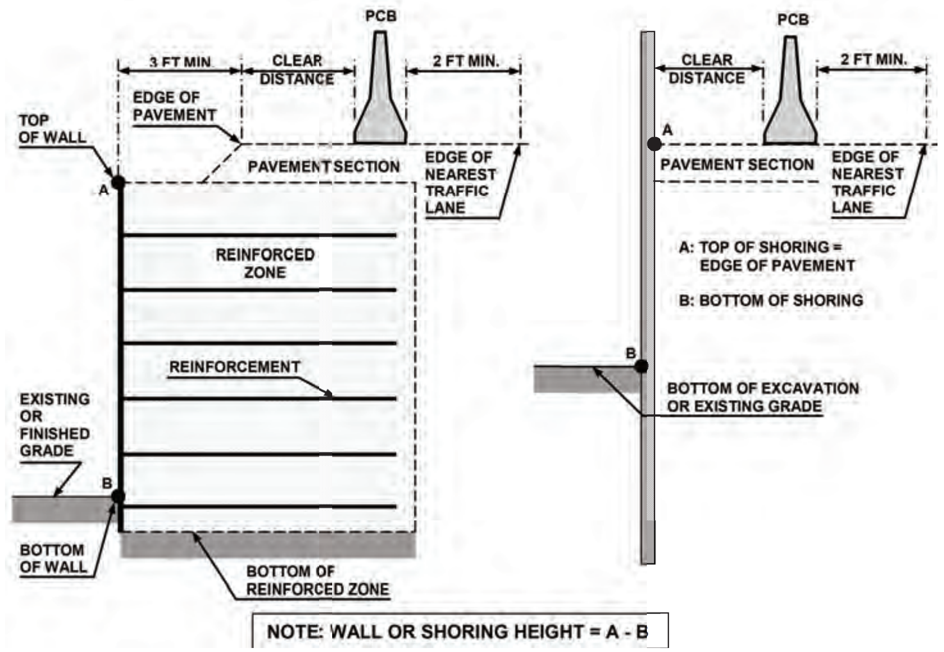

FIGURE A

NOTES

1- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.

2- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).

3- PCB IS REQUIRED IF TEMPORARY SHORING IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT UNIT FOR APPLICABLE PAVEMENT DESIGN).

4- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.

5- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.

6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.

7- PCB REQUIREMENTS FOR TEMPORARY WALLS APPLY TO TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS AND TEMPORARY SOIL NAIL WALLS.

8- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS AND OR AS APPROVED BY THE ENGINEER.

9- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THESE MINIMUM REQUIRED DISTANCES ARE NOT AVAILABLE, CONTACT THE ENGINEER.

10- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS. BARRIER DEFLECTIONS AND RESULTING MINIMUM REQUIRED CLEAR DISTANCES MIGHT VARY SIGNIFICANTLY FOR LARGER HEAVIER VEHICLES, RUNS OF BARRIER LESS THAN 200 FT IN LENGTH AND WET OR DRY PAVEMENT.

MINIMUM REQUIRED CLEAR DISTANCE, inches

Barrier Type	Pavement Type	Offset * ft	Design Speed, mph					
			<30	31-40	41-50	51-60	61-70	71-80
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40
		8-14	26	28	31	35	38	42
		14-20	27	29	34	36	39	43
		20-26	28	31	35	38	40	44
		26-32	29	32	36	39	42	45
		32-38	30	34	38	41	43	46
		38-44	31	34	41	43	45	48
		44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
		>56	32	36	42	45	47	51
	Concrete	<8	17	18	21	22	25	26
		8-14	19	20	23	25	26	29
		14-20	22	22	24	26	28	31
		20-26	23	24	26	27	30	34
		26-32	24	25	27	28	32	35
		32-38	24	26	27	30	33	36
		38-44	25	26	28	30	34	37
		44-50	26	26	28	32	35	37
		50-56	26	26	28	32	35	38
		>56	26	27	29	32	36	38
Anchored PCB	Asphalt	All Offsets	24 for All Design Speeds					
Anchored PCB	Concrete (including bridge approach slabs)	All Offsets	12 for All Design Speeds					

* See Figure Below

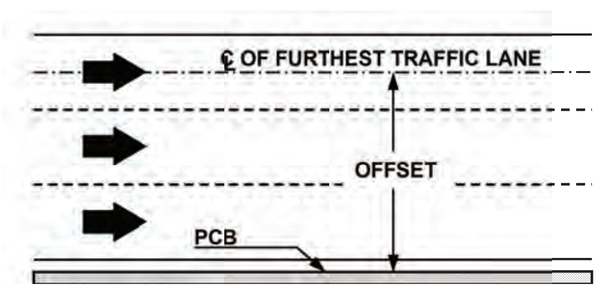

FIGURE B

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APPROVED: James B. Viso, PE

DATE: 10/13/2022

SEAL

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DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

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PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS

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myang

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.171	TMP-2A

GEOTECHNICAL ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 29869 ENGINEER SHANE C CLARK
DocuSigned by: Shane Clark 1F4E87E636AD4EA... 10/4/2022 DATE

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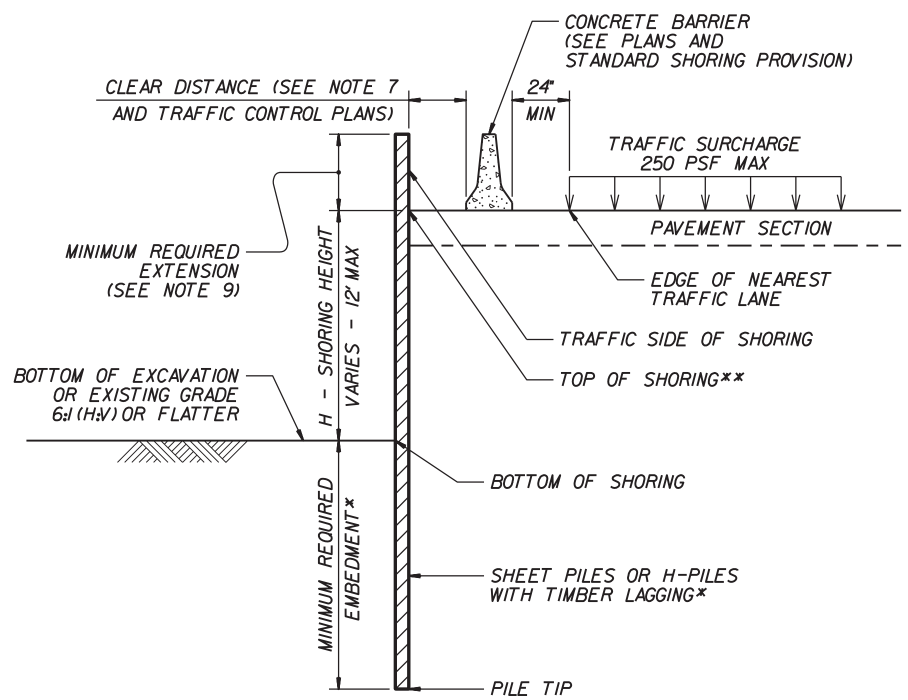
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT: SHEET PILES: MINIMUM REQUIRED EMBEDMENT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT: SHEET PILES: MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT: H-PILES WITH TIMBER LAGGING: MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10): HP 10x42	HP 12x53	HP 14x73	SURCHARGE CASE WITH TRAFFIC IMPACT: SHEET PILES: MINIMUM REQUIRED EMBEDMENT (FT)	SURCHARGE CASE WITH TRAFFIC IMPACT: SHEET PILES: MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	SURCHARGE CASE WITH TRAFFIC IMPACT: H-PILES WITH TIMBER LAGGING: MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10): HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN 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 "--".

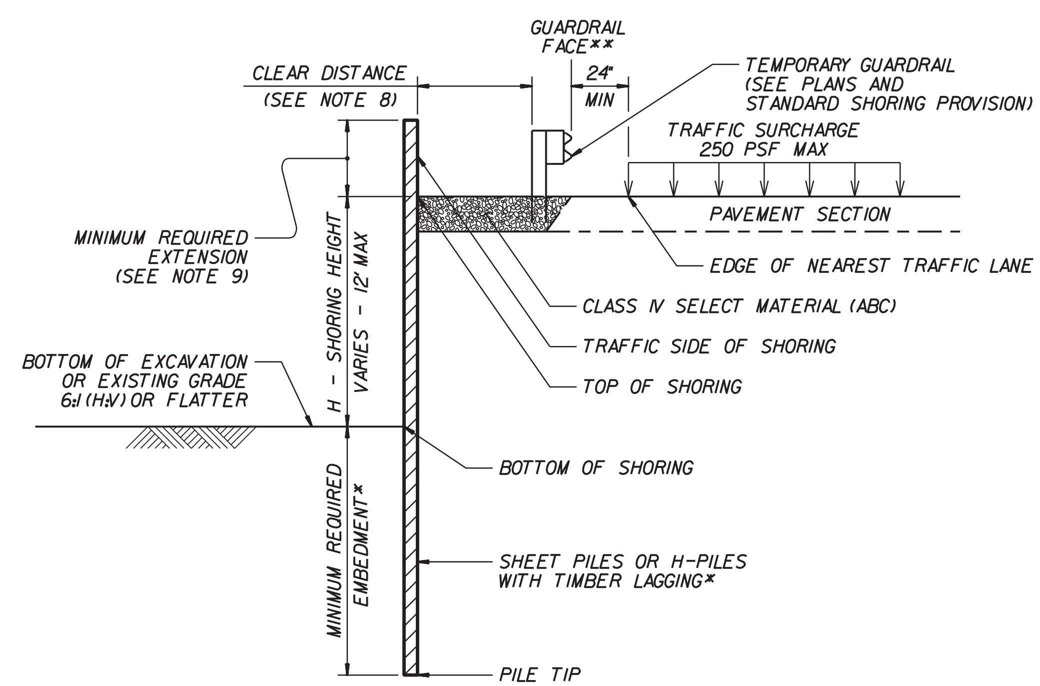
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. 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.
7. 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".
8. 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".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. 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.
11. 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. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT

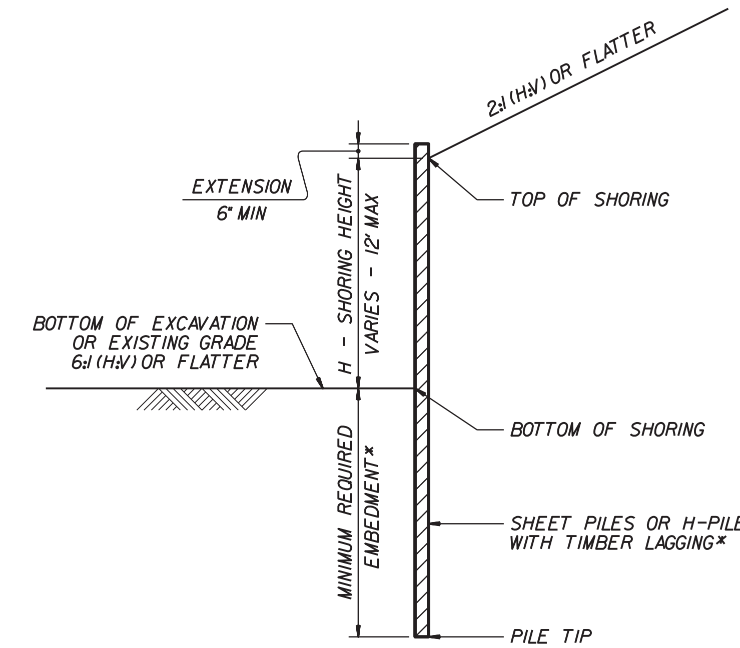


TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.171	TMP-3

PROJECT PHASING

PHASE I

STEP 1: - ERECT WORK ZONE ADVANCED WARNING SIGNS USING DETAIL DRAWINGS FOR WORK ZONE SIGNS. (SEE RDWY STD. 1101.01)

- INSTALL PORTABLE TRAFFIC SIGNALS AS REQUIRED IN APPROVED TRAFFIC SIGNAL TIMING PLANS. (SEE RDWY STD. 1101.02 SHEET 14 OF 14)

STEP 2: - USING DETAIL DRAWINGS 1101.02 SHEET 1 OF 14 AND FLAGGERS PERFORM THE FOLLOWING WORK:

- ALONG SR 1396 (HUNTER CREEK RD.), PLACE 8" ABC AS NECESSRY AND SHOWN ON TMP-4.
- INSTALL TEMPORARY SHORING FROM -L- STA. 13+24 +/- TO -L- STA. 13+54 +/- AS SHOWN IN TMP-4.
- INSTALL PCB W/CRASH CUSHIONS FROM -L- STA 12+88 TO -L- STA 13+68 (SEE TMP-4).
- INSTALL TEMPORARY SHORING FROM -L- STA. 13+87 +/- TO -L- STA. 14+00 +/- AS SHOWN IN TMP-4.

NOTE: STEP 3 SHALL BE COMPLETED IN A CONTINUOUS OPERATION.

STEP 3: - USING DETAIL DRAWINGS 1101.02 SHEET 1 OF 14 AND FLAGGERS PERFORM THE FOLLOWING WORK:

- REMOVE AS NECESSARY EXISTING PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKINGS (PAINT), FROM -EY- STA. 9+90 -EY- TO STA. 14+40 ON SR 1395 (WALNUT CREEK RD). (SEE TMP-4)
- ACTIVATE PORTABLE TRAFFIC SIGNALS AND DIRECT SR 1395 (WALNUT CREEK RD) TRAFFIC INTO ONE LANE, TWO WAY PATTERN IN THE EXISTING NORTHBOUND LANE OF SR 1395 (WALNUT CREEK RD); DIRECT SR 1396 (HUNTER CREEK RD.) INTO A ONE LANE, TWO WAY PATTERN (SEE TMP-4).

STEP 4: - SAW CUT AND REMOVE THE EXISTING WING WALL ON THE RIGHT SIDE OF THE BRIDGE APPROACH HEADING EASTBOUND SR 1396 (HUNTER CREEK RD).

STEP 5: - CONSTRUCT STRUCTURES PER THE STRUCTURES PLAN STAGE 2.

- CONSTRUCT RETAINING WALL.
- CONSTRUCT SR 1396 (HUNTER CREEK RD) -L- STA. 11+60 TO -L- STA. 14+23 +/- EASTBOUND LANE (RIGHT SIDE) UP TO, BUT NOT INCLUDING THE FINAL SURFACE LAYER.

STEP 6: - INSTALL GUARDRAIL FROM -L- STA. 12+94 +/- RT TO -L- STA. 13+52 +/- RT AND 14+07 +/- RT TO -L- STA. 14+34 +/- RT. (SEE PSH 4 AND TMP-5).

PHASE II

NOTE: STEP 1 SHALL BE COMPLETED IN A CONTINUOUS OPERATION.

STEP 1: USING RDWY STD 1101.02 SHEET 1 OF 14 AND FLAGGERS, PERFORM THE FOLLOWING ON SR 1396 (HUNTER CREEK RD):

- RETAIN TEMPORARY SHORING CONSTRUCTED IN PHASE I.
- INSTALL TEMPORARY GUARDRAIL FROM -L- STA. 12+90 +/- LT TO -L- STA. 13+79 +/- LT (SEE SECTION DETAILS AND PLAN, TMP-5).
- ACTIVATE PORTABLE TRAFFIC SIGNALS AND DIRECT SR 1396 (HUNTER CREEK RD) TRAFFIC INTO A ONE LANE, TWO WAY PATTERN IN THE PROPOSED EASTBOUND LANE OF SR 1396 (HUNTER CREEK RD). (SEE TMP-5)

STEP 2: CONSTRUCT STRUCTURE PER THE STRUCTURES PLAN STAGE 3:

- REMOVE TEMPORARY SHORING FROM -L- STA. 13+24 +/- TO -L- STA. 13+54 +/- AND FROM -L- STA. 13+87 +/- TO -L- STA. 14+00 +/-.
- CONSTRUCT SR 1396 (HUNTER CREEK RD) -L- STA. 11+60 TO -L- STA. 14+23 +/- WESTBOUND LANE (LEFT SIDE) UP TO, BUT NOT INCLUDING THE FINAL SURFACE LAYER. REMOVE TEMPORARY SHORING AS NECESSARY(SEE TMP-5).

STEP 3: USING RDWY STD 1101.02 SHEET 1 OF 14 AND FLAGGERS, PERFORM THE FOLLOWING ON SR 1396:

- INSTALL PROPOSED GUARDRAIL FROM -L- STA. 13+92 +/- LT TO -L- STA. 13+79 +/- LT, REMOVE TEMPORARY GUARDRAIL INSTALLED IN PHASE I STEP 7, (SEE TMP-5).
- REPAIR DAMAGED PAVEMENT ON SR 1395 (WALNUT CREEK RD) FROM TEMPORARY GUARDRAILL INSTALLATION. (SEE RDY SHEET 4)
- MILL AND RESURFACE EXISTING SR 1395 (WALNUT CREEK RD) TO LIMITS SHOWN. (SEE RDY SHEET 4)
- PLACE THE FINAL SURFACE LAYER AND FINAL PAVEMENT MARKINGS (PAINT). (SEE PMP-1)

STEP 4: REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES AND TEMPORARY SIGNALS ON SR 1396 (HUNTER CREEK RD).

- OPEN SR 1396 (HUNTER CREEK RD) TO 2-LANE, 2-WAY TRAFFIC.

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NC LIC. NO. C-1154

APPROVED: DocuSigned by: James B. Voso, PE 140FD6037 9E041F...

DATE: 10/13/2022

SEAL

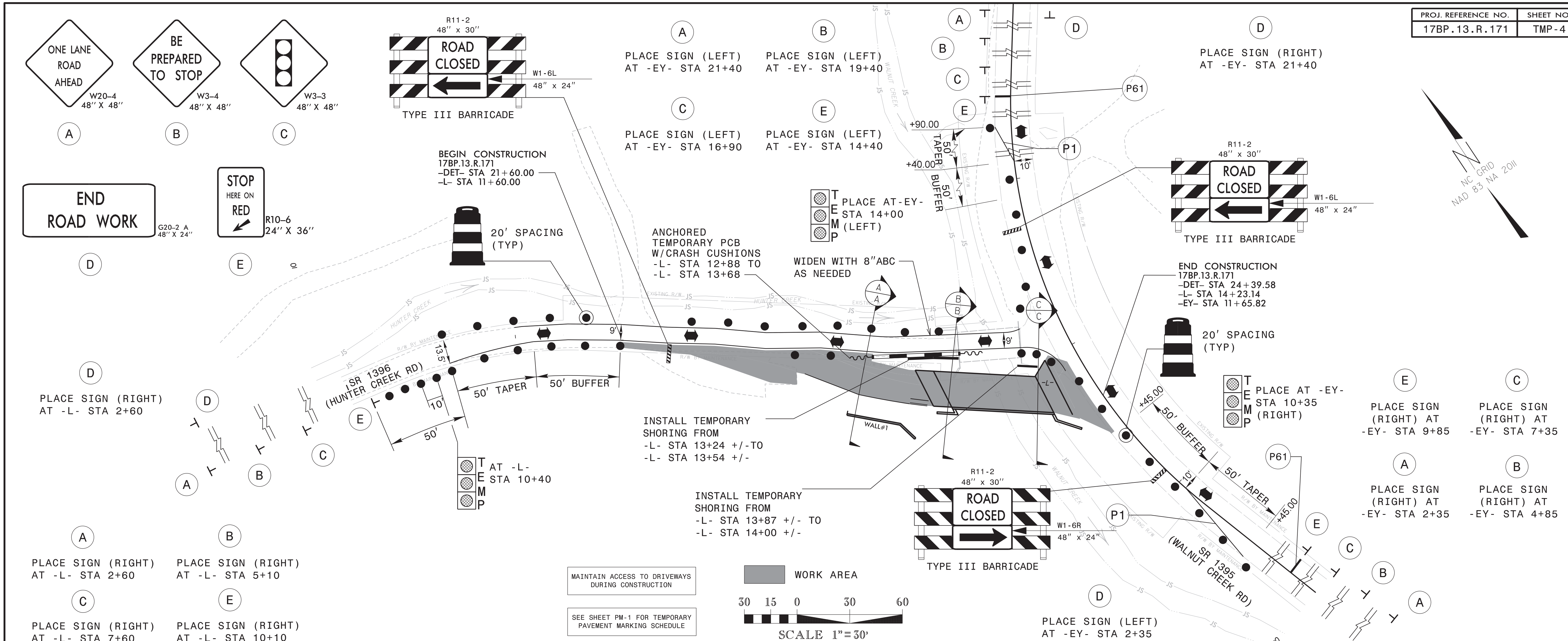
NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

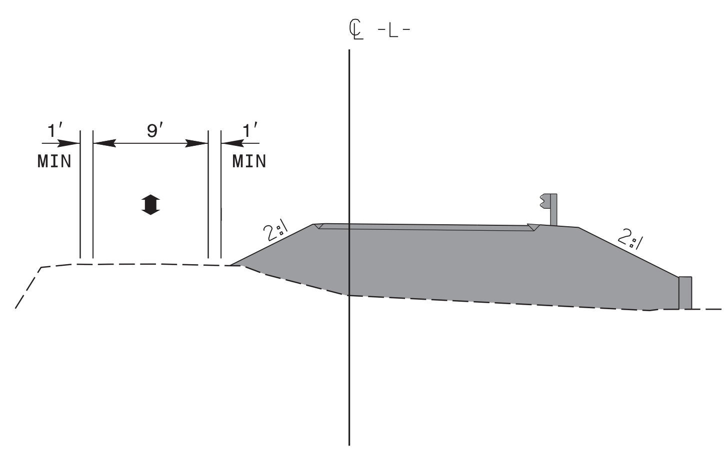
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

PHASING

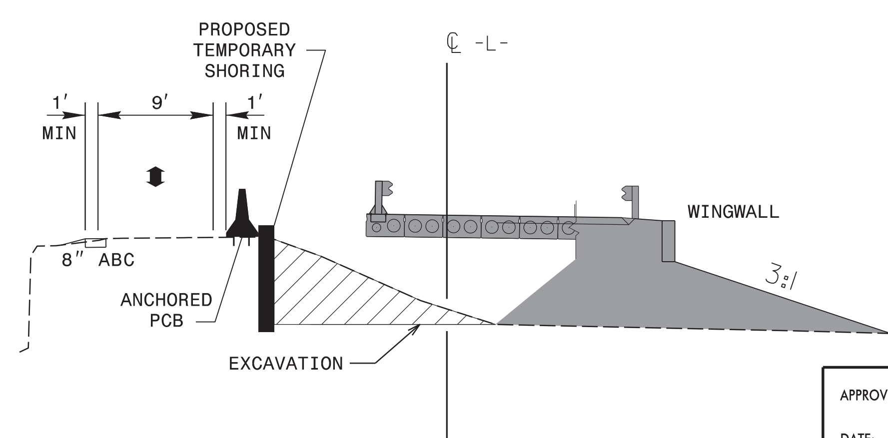
PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.171	TMP-4



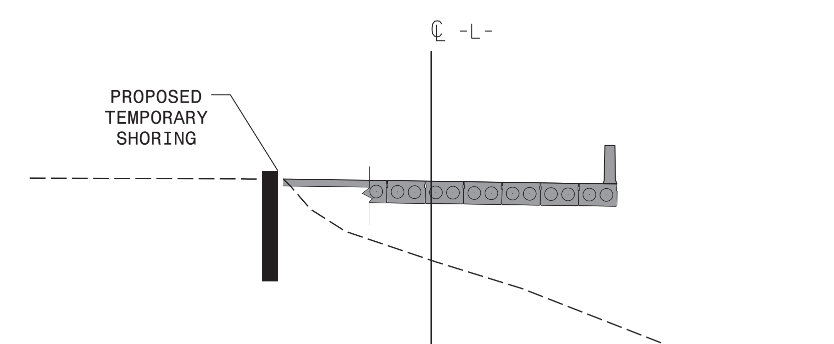
SECTION A-A
-L- STA 13+00
NOT TO SCALE



SECTION B-B
-L- STA 13+50
NOT TO SCALE



SECTION C-C
-L- STA 14+00
NOT TO SCALE



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APPROVED: James B. Voso, PE
DATE: 10/13/2022
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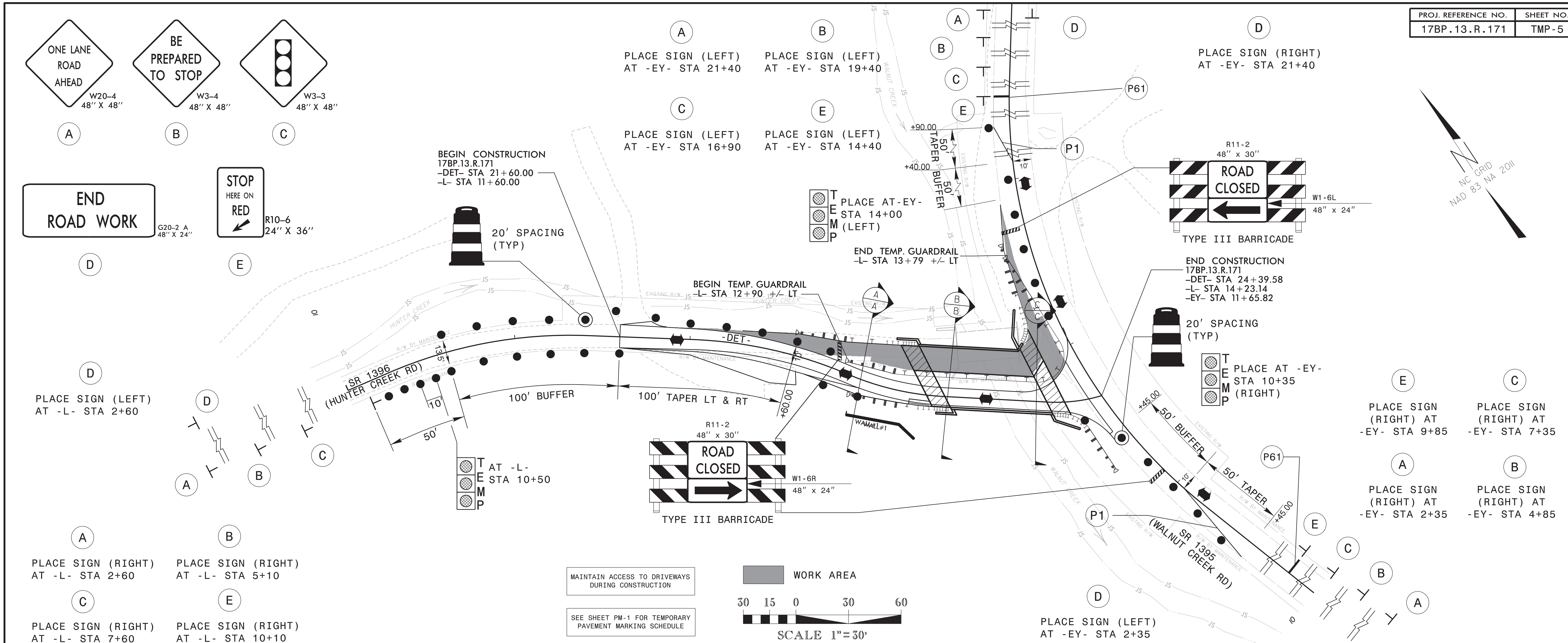
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

PHASE I DETAILS

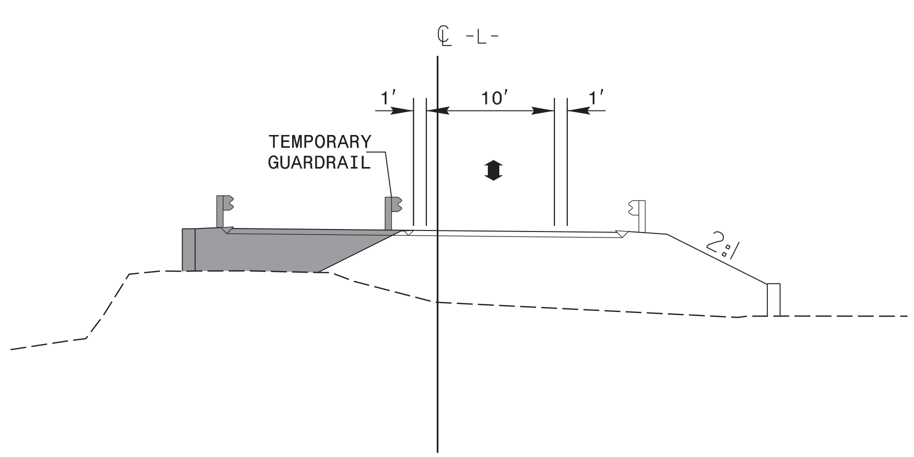
PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.171	TMP-5



SECTION A-A

-L- STA 13+00

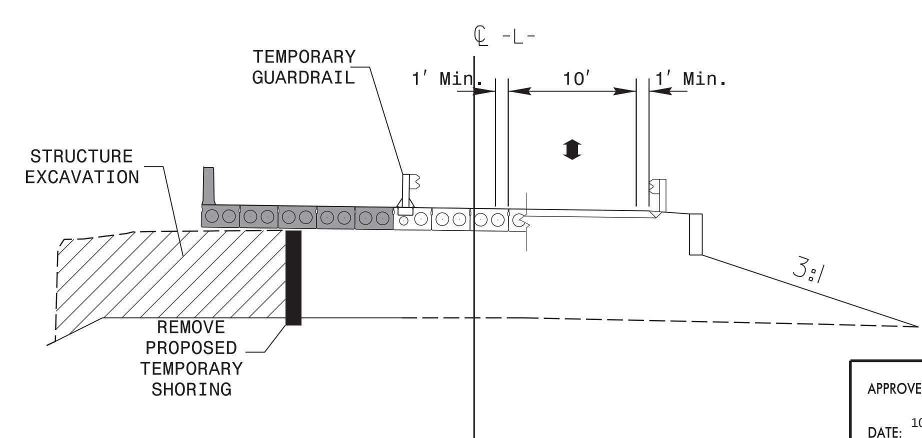
NOT TO SCALE



SECTION B-B

-L- STA 13+50

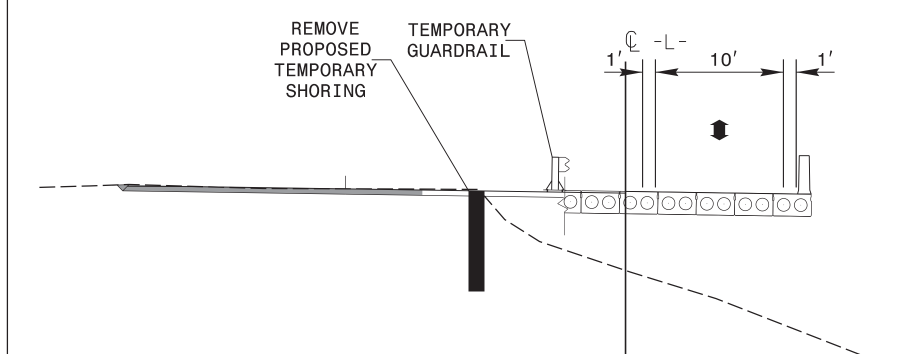
NOT TO SCALE



SECTION C-C

-L- STA 14+00

NOT TO SCALE



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DATE: 10/13/2022

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

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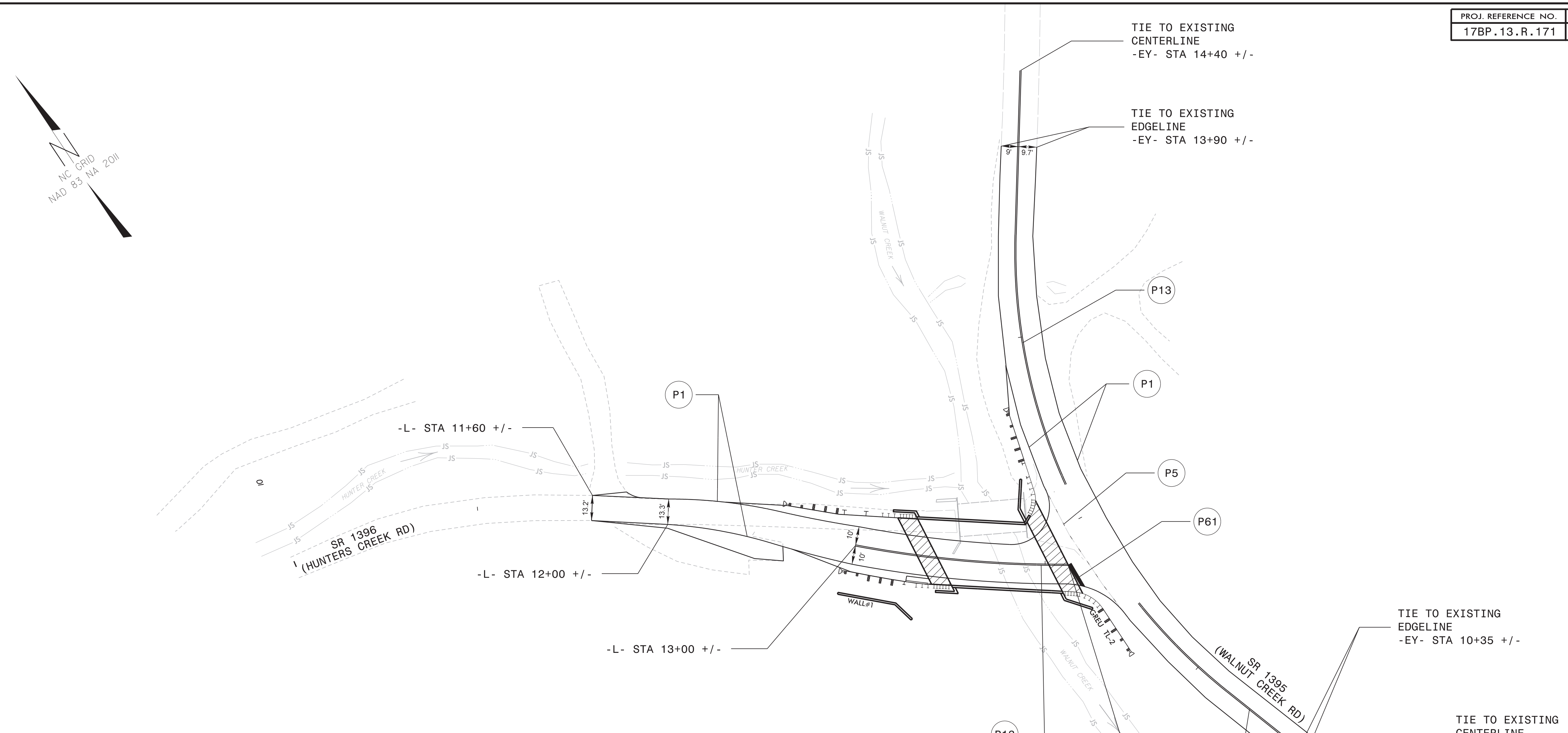
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

PHASE II DETAILS

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.171	PM-1



FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	QUANTITY BREAKDOWN	PAY ITEM	TOTAL QUANTITY
		PAVEMENT MARKING LINES		
P1	WHITE SOLID EDGE LINE	1,150 FT	PAINT (4")	2,300 FT
P13	YELLOW DOUBLE CENTER LINE	780 FT	PAINT (4")	1,520 FT
P5	2'-6' MINI-SKIP LINE	20 FT	PAINT (4")	40 FT
P61	WHITE STOPBAR (24")	14 FT	PAINT (4")	28 FT

30 15 0 30 60
SCALE 1"=30'

NOTE: FINAL PAVEMENT MARKINGS = 2 COATS OF PAINT

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APPROVED: James B. Voso, PE
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022599 JAMES B. VOSO

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DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

PERMANENT PAVEMENT MARKING PLAN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.171	EC-1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
17BP.13.R.171	N/A	P.E.
17BP.13.R.171	N/A	R/W & UTIL
17BP.13.R.171	N/A	CONST

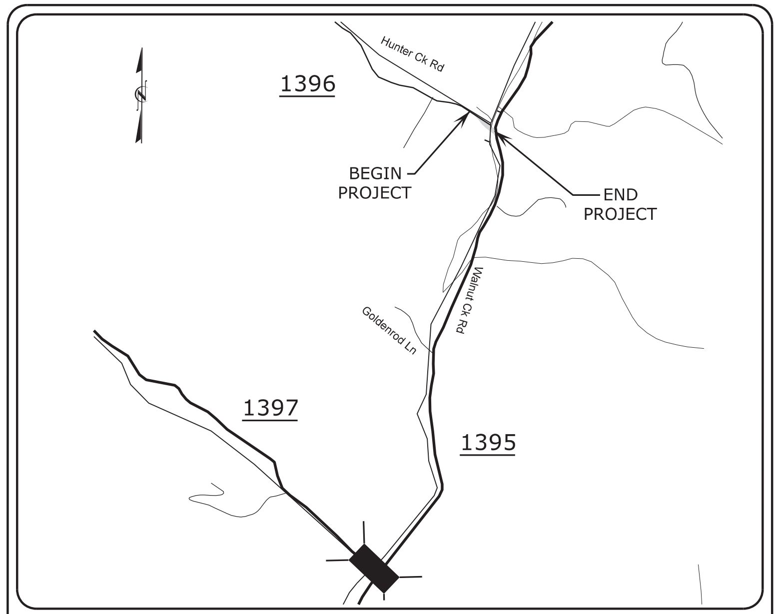
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

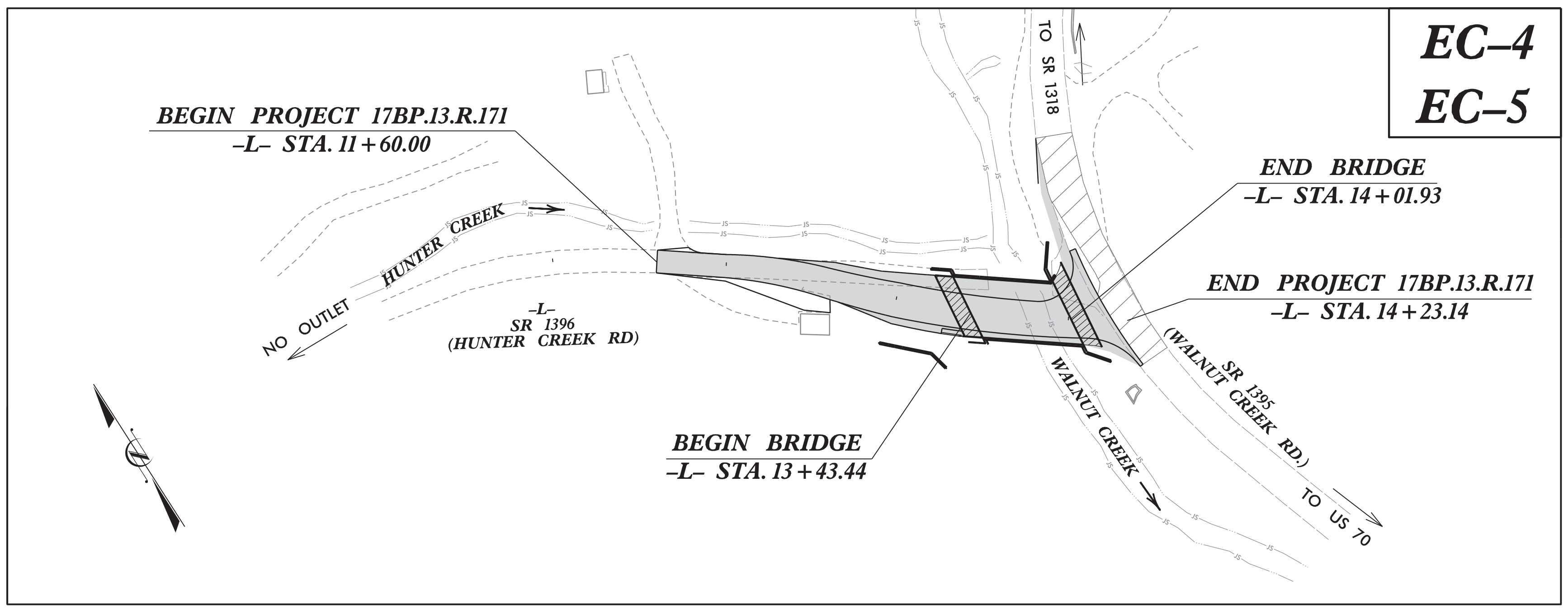
MADISON COUNTY

LOCATION: BRIDGE NO. 66 ON SR 1396 (HUNTER CREEK ROAD) OVER WALNUT CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE



VICINITY MAP
NOT TO SCALE

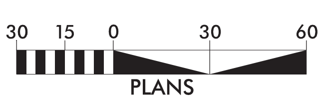


EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle/ Coir Fiber Wattle	EW / CFW
	Wattle/ Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

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

GRAPHIC SCALE



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

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Prepared In the Office of:

MATTERN & CRAIG
12 BROAD ST.
ASHEVILLE, NC 28801
FOR NCDOT DIVISION OF HIGHWAYS

Designed by:

MENG YANG, PE	*4149*
NAME	*LEVEL III CERTIFICATION NO.*

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 revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

REVISIONS

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
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.

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
				SUBTOTAL	
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					350
				TOTAL	350
				SAY	350

PERMANENT SOIL REINFORCEMENT MAT

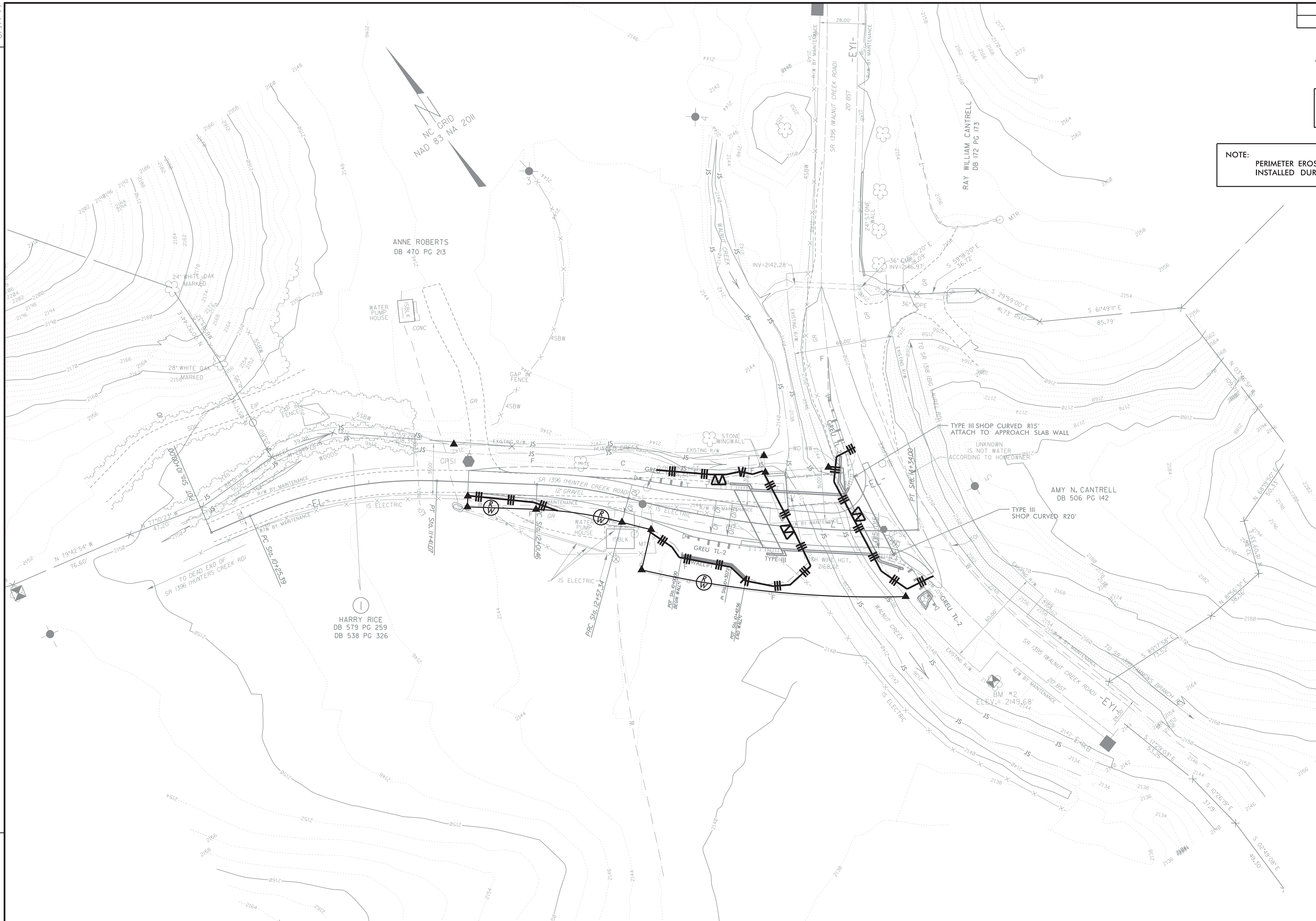
CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
				SUBTOTAL	
		ADDITIONAL PSRM TO BE INSTALLED			
				TOTAL	
				SAY	

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R171	EC-4/CONS.4

Mattern & Craig
ENGINEERS • SURVEYORS

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

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



REVISIONS

8/17/99

2:04:21 PM
Madison 66\06 17BP13R171\Environmental\EC4.dgn

8/17/99

REVISIONS

T.I.P. NO.	SHEET NO.
17BP.13.R.171	UC–1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

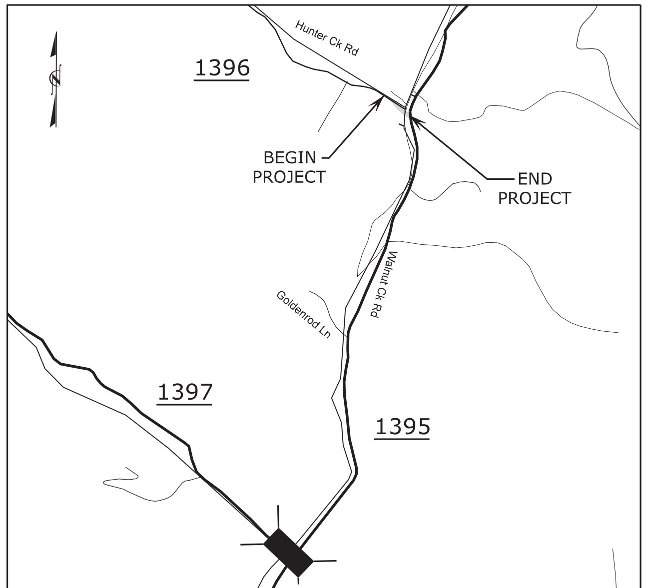
UTILITY CONSTRUCTION PLANS
MADISON COUNTY

LOCATION: BRIDGE NO. 66 ON SR 1396 (HUNTER CREEK ROAD) OVER WALNUT CREEK

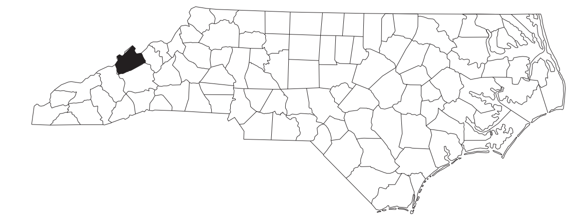
TYPE OF WORK: BURIED WATER RELOCATION

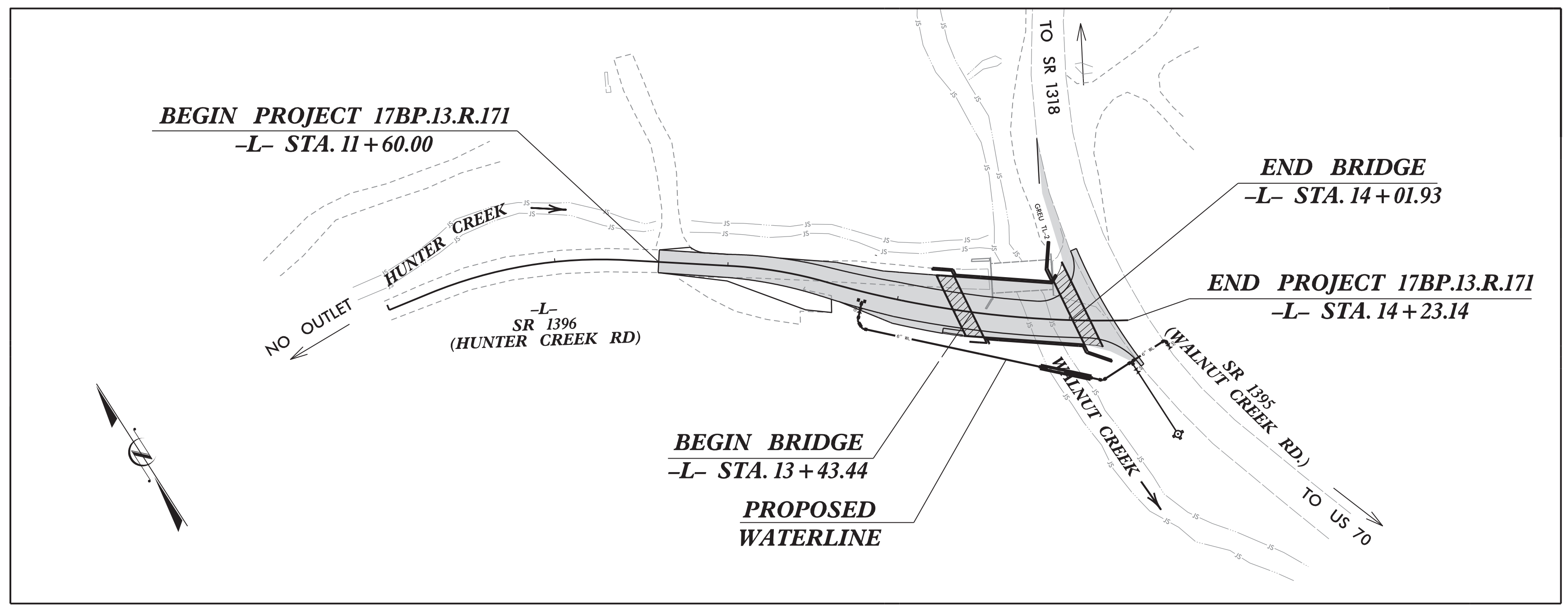
PROJECT: 17BP.13.R.171

CONTRACT: DM00336



VICINITY MAP
(NOT TO SCALE)





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GRAPHIC SCALE

30 15 0 30 60

PLANS

INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UC–1	TITLE SHEET
UC–2	UTILITY SYMBOLOGY
UC–3	NOTES
UC–3A	DETAILS
UC–4	UTILITY CONSTRUCTION SHEET
UC–5	UTILITY STAGING PLAN

WATER AND SEWER OWNERS ON PROJECT

(A) WATER – TOWN OF MARSHALL

PREPARED IN THE OFFICE OF
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FOR NCDOT DIVISION OF HIGHWAYS

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SEAL

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DocuSigned by:

10/17/2022

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PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.171	UC-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown)
- 11¼ Degree Bend
- 22½ Degree Bend
- 45 Degree Bend
- 90 Degree Bend
- Plug
- Tee
- Cross
- Reducer
- Gate Valve — GV
- Butterfly Valve — BV
- Tapping Valve — TGV
- Line Stop — LS
- Line Stop with Bypass — LS/BP
- Blow Off — BO
- Fire Hydrant — PFH
- Relocate Fire Hydrant — RFH
- Remove Fire Hydrant — REM FH
- Water Meter — PWM
- Relocate Water Meter — RWM
- Remove Water Meter — REM WM
- Water Pump Station — PS(W)
- RPZ Backflow Preventer — PRPZ
- DCV Backflow Preventer — PBFP
- Relocate RPZ Backflow Preventer — RRPZ
- Relocate DCV Backflow Preventer — RBFP

PROPOSED SEWER SYMBOLS

- Gravity Sewer Line (Sized as Shown)
- Force Main Sewer Line (Sized as Shown)
- Manhole (Sized per Note)
- Sewer Pump Station — PS(SS)

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal — TEL PED
- Utility Line by Others (Type as Shown)
- Trenchless Installation
- Encasement by Open Cut
- Encasement
- Thrust Block
- Air Release Valve — AR
- Utility Vault — UV
- Concrete Pier — CP
- Steel Pier — SP
- Plan Note — NOTE
- Pay Item Note — PAY ITEM

EXISTING UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Utility Pole
- Utility Pole with Base
- H-Frame Pole
- Power Transmission Line Tower
- Water Manhole
- Power Manhole
- Telephone Manhole
- Sanitary Sewer Manhole
- Hand Hole for Cable
- Power Transformer
- Telephone Pedestal
- CATV Pedestal
- Gas Valve
- Gas Meter
- Located Miscellaneous Utility Object
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.
- *Underground Power Line
- *Underground Telephone Cable
- *Underground Telephone Conduit
- *Underground Fiber Optics Telephone Cable
- *Underground TV Cable
- *Underground Fiber Optics TV Cable
- *Underground Gas Pipeline
- Aboveground Gas Pipeline — A/G Gas
- *Underground Water Line
- Aboveground Water Line — A/G Water
- *Underground Gravity Sanitary Sewer Line
- Aboveground Gravity Sanitary Sewer Line — A/G Sanitary Sewer
- *Underground SS Forced Main Line
- Underground Unknown Utility Line
- SUE Test Hole
- Water Meter
- Water Valve
- Fire Hydrant
- Sanitary Sewer Cleanout

*For Existing Utilities
- Utility Line Drawn from Record (Type as Shown)
- Designated Utility Line (Type as Shown)

5/14/99

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PROJECT SPECIFIC NOTES:

A. The Contractor shall comply with the latest revisions of North Carolina Occupational Safety and Health Standards for the Construction Industry as well as all Local and State erosion and sedimentation control ordinances, laws and requirements.

B. The proposed utility construction shall meet the applicable requirements of the NC Department of Transportation's "Standard Specifications for Roads and Structures" dated January 2018. All utility materials shall be approved prior to delivery to the project. See 1500-7, "Submittals and Records" in section 1500 of the NCDOT Standard Specifications.

C. The existing utilities belong to Town of Marshall. The utility Owner owns the existing utility facilities and will own the new utility facilities after acceptance by the Department. The Department owns the construction contract and has administrative authority. Communications and decisions between the contractor and utility Owner are not binding upon the Department or this contract unless authorized by the Engineer. Agreements between the utility Owner and contractor for the work that is not part of this contract or is secondary to this contract are allowed, but are not binding upon the Department.

D. All water lines to be installed within compliance of the rules and regulations of the North Carolina Department of Environmental Quality, Division of Water Resources, Public Water Supply Section. All sewer lines to be installed within compliance of the rules and regulations of the North Carolina Department of Environment Quality, Division of Water Resources, Water Quality Section. Perform all work in accordance with the applicable plumbing codes.

E. Provide access for the Department personnel and the Owner's representatives to all phases of construction. Notify Department personnel and the utility Owner two weeks prior to commencement of any work and one week prior to service interruption. Keep utility Owners' representatives informed of work progress and provide opportunity for inspection of construction and testing.

F. The plans depict the best available information for the location, size, and type of material for all existing utilities. Make investigations for determining the exact location, size, and type material of the existing facilities as necessary for the construction of the proposed utilities and for avoiding damage to existing facilities. Repair any damage incurred to existing facilities to the original or better condition at no additional cost to the department.

G. Make final connections of the new work to the existing system where indicated on the plans, as required to fit the actual conditions, or as directed. All proposed waterline to be constructed with restrained joint. MEGALUG, or engineered approved equal.

H. Make connections between existing and proposed utilities at times most convenient to the public, without endangering the utility service, and in accordance with the utility Owner's requirements. Make connections on weekends, at night, and on holidays if necessary.

WATER SYSTEM INSTALLATION NOTES:

MATERIALS - GENERAL

A. The Contractor shall excavate all materials encountered to the lines and grades indicated, the trenches and ditches, detailed on the drawings along the alignments shown on the drawings.

B. All materials and appurtenances required for the work shall be new, of first-class quality and shall be furnished, delivered, erected, connected and finished in every detail as specified or indicated. All materials found defective, regardless of the circumstances, shall be replaced with new material. All materials and appurtenances shall be per the locality's standard manufacturer and model.

C. Comply with all codes, laws, ordinances and regulations of governmental authorities including, but not limited to, local municipalities and sanitary districts having jurisdiction over this part of the work.

PIPE SELECTION

A. Water pipe shall be ductile cast iron and shall conform with AWWA C151/ANSI 21.51 and fittings shall conform with ANSI/AWWA C110, or C153 (compact fittings). The pipe and fittings shall be asphalt coated and cement lined in accordance with AWWA C104/ANSI 21.40. The pipe thickness shall conform with AWWA C 150/ANSI 21.50 and shall be Class 350, as a minimum. Fittings for water pipe shall be mechanical or push-on joint. Fittings shall be either ductile iron or gray iron.

B. Water service shall be copper tubing and shall conform to AWWA C800 and shall be Type "K" or Type "L". Tubing shall be the size indicated, suitable for 250 PSI working pressure.

C. Brass service pipe and fittings shall be UNS No. 83600, have a minimum working pressure rating of 150 psi and shall conform to AWWA C800 and ASTM B62

JOINTS AND COUPLINGS

A. Ductile iron pipe and fittings for buried service shall be either mechanical or bell and spigot type joints as specified or indicated. Joints shall be made with a single watertight rubber gasket manufactured in accordance with AWWA C111/ANSI 21.11. The joints shall be made in strict accordance with the recommendations of the pipe manufacturer. Joints for above ground or in-vault service shall be flanged joints in accordance with AWWA C115.

B. Joints for copper tubing shall be couplings manufactured by Ford Meter Box Company, Mueller, McDonald or equal.

C. Brass fittings shall be stamped or embossed with the manufacturer's name. All brass fittings surfaces in contact with potable water shall comply with ANSI/NSF Standard 61.

WATER SYSTEM APPURTENANCES

A. Gate Valves and Blowoff Valves:

1. Gate valves and blowoff gate valves shall be compression resilient seated valves conforming to AWWA C515. The valve shall be designed so that no sliding or shear on the resilient seating surface is present when compressed to a drop tight shut off. Valve shall seal equally well in either direction. Valve shall provide fully open waterway. Valve shall have O-ring sealing and a fusion bonded epoxy coating inside and out. Valve shall be permanently lubricated. Valve shall have a manganese bronze stem and nut with anti-thrust washers. Operating nut shall be 2-inch square.

2. Each gate valve shall be provided with a valve box constructed of cast iron with a round base. The valve box shall be the sliding (screw) type with a five-inch shaft and the cover shall be slotted for easy removal. Covers shall have the word "WATER" cast into them.

B. Fire hydrant laterals shall include 6-inch ductile-iron pipe, as specified, 6-inch gate valve with valve box (vault), frame and cover. Fire hydrants shall conform to AWWA C 502 (latest revision) and shall be dry top, dry barrel, compression type with double O-ring seals suitable for 150 psi working pressure. Hydrants shall be designed for water mains having three (3) feet minimum cover; however, each proposed location shall be coordinated by the Contractor as to the exact setting depth required.

C. Hydrants shall be equipped with a 5 1/4-inch valve opening, and a 7-inch minimum inside diameter standpipe. Each hydrant shall have a 6-inch mechanical joint shoe, two (2) 2-1/2" inch hose nozzles with National Standard threads connection and one (1) 4-1/2" inch pumper nozzle with National Standard threads connection. Prior to ordering hydrants, Contractor shall confirm with local fire department that nozzles, threads, and operating nut suit their standards. Each hydrant shall be provided with one operating wrench for its operating stem nut. The direction of rotation shall be counterclockwise. The operating stem nut shall be a 5-sided nut with a flat to point dimension of one and one half (1-1/2) inches. Hydrants shall be coated and painted in accordance with AWWA C502, with colors to suit the Owner's standard. The upper and lower operating stems shall be joined by a safety coupling, located to prevent damage to hydrant valve when upper standpipe is damaged.

D. Restrained Joints shall be used for all fittings, valves and transitions. Minimum restrained lengths shall be as specified on Mattern & Craig Supplementary Drawing MCW-7. Each restrained joint shall be follower gland type, suitable for a 250 PSI working pressure and a 500 PSI water hammer (surge) pressure. Glands shall be single piece, except where required to be split for application on existing pipe. Material shall be ductile iron. Joint shall be designed to restrain standard mechanical joints. Rated pressure shall include a 2:1 safety factor. Joint shall be Ebaa Iron Megalug, Tyton Joint by US Pipe, or equal. Gasket type restraints are not acceptable.

E. Tapping sleeves shall be manufactured from gray iron, meeting or exceeding ASTM A126 Grade B, or ductile iron, meeting ASTM A536 Grade 65-45-12. As an alternative, tapping sleeves can be all stainless steel (18-8 Type 304) style FAST as manufactured by Ford Meter Box Co. or equal. Tapping sleeves shall have mechanical joint ends and flanged outlets conforming to Class 125, ANSI B16.1. Outside coating of iron sleeves shall be asphaltic coating. Tapping valves shall meet the requirements of ANSI/AWWA C515. Tapping sleeves and tapping valves shall be supplied by the same manufacturer.

LAYING PIPE AND INSTALLING APPURTENANCES

A. The water pipe shall be laid and maintained at the required lines and grades with fittings and valves at the required locations. Under no circumstances shall water system materials be dropped or dumped into the trenches. All pipe shall be installed with the bell ends facing the direction of laying or flow and in accordance with the recommendations of the pipe manufacturers. The cutting of pipe for inserting valves, fittings or closure pieces shall be done in a neat and workmanlike manner, without damage to the pipe, so as to leave a smooth end at right angles to the axis of the pipe. Care shall be taken to avoid damaging the lining. Flame cutting of pipe with oxyacetylene torch will not be permitted.

B. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the trench. During laying operations, no debris, tools, clothing or other materials shall be placed in the pipe. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or other means approved by the Engineer. This provision shall apply during the noon hour as well as overnight. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry.

C. Before joints are made the pipe shall be well bedded on a firm foundation and no pipe shall be brought into position until the preceding length has been thoroughly embedded and secured in place. Any defects due to settlement shall be made good by the Contractor at his expense. Bell holes shall be dug sufficiently large to insure the making of proper joints.

D. All tees, bends, plugs and abrupt change in direction of the water lines three (3) inches and larger in diameter shall be restrained as indicated above, except hydrants and their isolation gate valves shall be harnessed to the main water pipe and shall be harnessed such that the hydrant could be removed and the valve would still be harnessed to the main water pipe.

E. The trench may be curved to change direction or to avoid obstructions within the limits of the curvature of the pipe (joint deflections) as recommended by the pipe manufacturer. Where necessary to maintain the required curvature, short sections of pipe or fittings shall be provided. Restraint shall be provided for these short sections of pipe or where fittings are provided for the water pipe.

All fittings, valves and hydrants shall be supported by concrete independently of the pipe. All bends, tees, and changes in direction or changes in pipe size shall be provided with harnessing. Joints between the pipe and the mechanical joint fittings shall be made in accordance with the pipe manufacturer's requirements with a lubricant supplied by the pipe manufacturer. Nuts shall be tightened on alternate sides of the gland until the pressure on the gland is equally distributed. All nuts shall be tightened to the torque listed below:

BOLT SIZE (IN)	TORQUE (FT-LBS)
5/8	40 - 60
3/4	60 - 90
1	70 -100

F. Valves shall be installed in accordance with ANSI/AWWA C 600 with the operator's stems in the vertical plane through the pipe axis and perpendicular to the pipe axis. Valves shall be located where shown on the drawings and shall be supported on a concrete cradle so that no load transfers to the pipe. Valves shall be thoroughly cleaned before installation and shall be checked for satisfactory operation. All underground valves shall be equipped with valve boxes. Valve boxes shall be set in alignment with the valve stem centered on the valve nut, and shall be set to prevent transmitting shock or stress to the valve. The cover shall be set flush with the finished ground surface or pavement.

G. Fire hydrants shall be installed in accordance with ANSI/AWWA C 600 where indicated on the drawings in accordance with the details. The hydrants shall be set plumb at the elevation of existing or finished grade, whichever is higher and shall be supported on a concrete cradle so that the drain line is not obstructed and so that no load transfers to the pipe. The pumper nozzles shall be placed perpendicular to the street line with nozzles at least 18 inches above grade. Hydrant shall be harnessed as hereinbefore specified and as indicated. Drainage fill shall be provided at the base of the hydrant; as detailed.

CONNECTIONS TO EXISTING SYSTEM

A. Provide the connections to the existing system under a pressure condition or non-pressure condition, as indicated, complying with the Municipality's requirements for the time of day such work can be done. If the Municipality's forces perform the work, arrange for the work to be done.

STREAM CROSSING

A. The Contractor shall construct the stream crossing in the "dry" by providing a temporary cofferdam or bulkhead of non-erodible material. The cofferdam shall not obstruct more than one-half of the water surface at any time and shall not extend more than three (3) feet above the normal water surface. The Contractor shall not be allowed to operate construction equipment on the native stream bottom, except during removal of the cofferdam. The Contractor shall be advised that the level in the stream fluctuates rapidly.

B. Non-erodible material shall be defined as burlap sand-filled bags. Lose earth material for the cofferdam may not be used. A bulkhead may be constructed in lieu of the cofferdam. The bulkhead shall be made of concrete barriers wood, steel or some like material suitable to withstand the hydraulic forces to permit construction in a dry trench.

C. Construct the crossings as indicated and then remove the cofferdam, bulkhead, or whatever equipment or material that was used to construct the crossing. The bottom of the stream in the construction area shall be restored to its original cross section. All disturbed areas on the banks of the stream shall be restored or armored in accordance with the Plans.

D. Comply with all terms and conditions of all permits issued by the Corps of Engineers and the North Carolina Department of Environmental Quality, Division of Energy, Mineral and Land Resources for this work.

DISINFECTION

E. All pipe shall be disinfected, tested and flushed in accordance with AWWA Standard C651 (latest revision), Section 4.4.3, the Continuous Feed Method. The Contractor, upon his request, will be provided with a copy of AWWA C651, standard for disinfecting water mains.

F. Contractor shall provide all materials, equipment, necessary taps and perform all work required for the sterilization, testing and flushing of the water main. All tests shall be performed only by an approved independent laboratory, paid for by the Contractor. The water main or valved off section that has been completed shall be filled, tested and flushed. Test locations shall be subject to the discretion of the Engineer and as valves and blow-offs permit. Flushing velocities shall be 2.5 feet per second minimum.

G. As soon as the main or valved off section has been laid and sufficiently backfilled for safety, water shall be turned on and the main allowed to fill slowly. The water flowing into the section shall not have a velocity greater than 1 foot per second. Care shall be exercised not to flush the main at this time. Air only shall be allowed to escape. The water shall then remain in contact with the pipe for 24 hours. All valves and appurtenances shall be operated while the chlorinated water is in the main. No tested section of water line shall be approved to deliver water service until a favorable laboratory report has been achieved. Any tested section of water line failing to meet the requirements specified shall be repaired by the Contractor and retested until the results are within the limits specified.

H. During the disinfection process, valves shall be manipulated to prevent the treatment dosage from falling back into the line supplying the water. The application shall not cease until the entire section is filled with the chlorine solution. The chlorinated water shall be retained in the main for at least 24 hours, during which time all valves and hydrants in the system shall be operated in order to disinfect the appurtenances. At the end of this 24-hour period, the treated water shall be tested and shown to contain no less than 10 milligrams per liter of available chlorine throughout the section.

I. After the retention period, the heavily chlorinated water shall be flushed from the system with potable water until the chlorine concentration in the water leaving the system is no higher than that generally prevailing in the system, or less than one milligram per liter. The heavily chlorinated water shall not be allowed to flow into adjacent natural waterways. The chlorine residual determinations shall be made to ascertain that the heavily chlorinated water has been removed from the system. The disposal of the heavily chlorinated water shall be in accordance with Section 6 (and Appendix B) of AWWA C651.

J. After final flushing, and before the water system is placed in service, at least two consecutive bacteriologically satisfactory samples shall be collected from the end of the section and from each appurtenance. In no case shall the interval between bacteriological stations exceed 1000 feet. The samples shall be collected at least 24 hours apart. The samples shall be analyzed by a certified laboratory. Samples shall be tested for bacteriological quality and shall show the absence of coliform organisms. If the initial disinfection fails to produce satisfactory samples, disinfection shall be repeated until satisfactory samples have been obtained. The Contractor shall arrange for and pay for all sampling and testing.

TESTING

A. All testing will be performed in accordance with the AWWA C600, current revision. After placing all harnessing and all valve support concrete (if applicable), sufficient backfill shall be placed prior to filling the pipe with water and field testing to prevent lifting of the pipe. When local conditions require that the trenches be backfilled immediately after the pipe has been laid, the testing shall be carried out after backfilling has been completed but prior to placement of the permanent surface. At least seven (7) days shall elapse after the last valve support or hydrant block has been cast (Type I Portland Cement) prior to testing, unless high early strength concrete (Type III) is used, in which case three (3) days shall elapse.

B. Pressure Test: After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure test.

1. Test pressure restrictions. Test pressures shall: not be less than 1.25 times the stated working pressure measured at the highest elevation along the test section and not less than 1.5 times the stated working pressure at the lowest elevation of the test section; not exceed thrust restraint design pressures or 1.5 times the pressure rating of the pipe or joint, whichever is less (as specified by the manufacturer); be of at least 2-hour duration; not vary by more than + 5 psi; and not exceed the working rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.

2. Each valved section of pipe shall be filled with properly disinfected water slowly and the specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer.

3. Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants.

4. All exposed pipe, fittings, valves, hydrants and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves, or hydrants that are discovered following the pressure test shall be repaired or replaced with sound material and the test shall be repeated until it is satisfactory to the Engineer.

C. A leakage test shall be conducted concurrently with the pressure test. Leakage shall be defined as the quantity of water (makeup water) that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD(P)^{1/2}}{148{,}000}$$

in which L is the allowable leakage (makeup water), in gallons per hour; S is the length of pipeline tested in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge. When testing against closed metal-seated valves, an additional leakage per enclosed valve of 0.0078 gal/hr/in. of nominal valve size shall be allowed. When hydrants are in the test section, the test shall be made on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than the allowable amount, the Contractor shall, at his own expense, locate and repair the defective material until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

D. All pipe and joints of the water line entering or crossing streams shall be tested in place and shall exhibit zero leakage. Minimum strength of concrete cast for encasement shall be equal to or greater than 75 percent of the 28-day compressive strength prior to backfilling crossing trench. 3 cylinders shall be made during the placement and shall be left in same environment as concrete placed. One cylinder shall be tested at 3 days, one at 7 days and the third at 28 days to verify adequacy.

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PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.171	UC-3A

DESIGNED BY: BRN
DRAWN BY: BGR
CHECKED BY: AAC
APPROVED BY: JBV
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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NORTH CAROLINA PROFESSIONAL ENGINEER BRIAN R. NEW
DocuSigned by:
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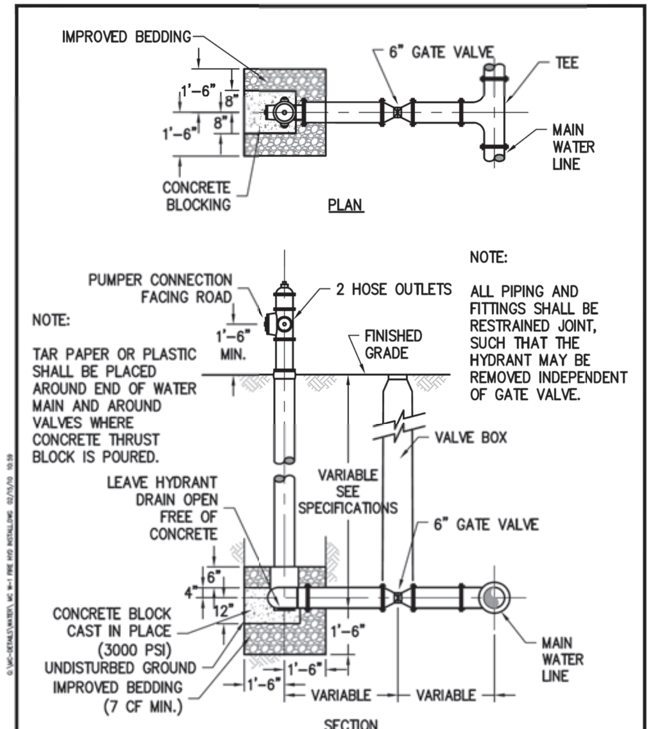
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT TYPICAL DETAILS

FIRE HYDRANT INSTALLATION



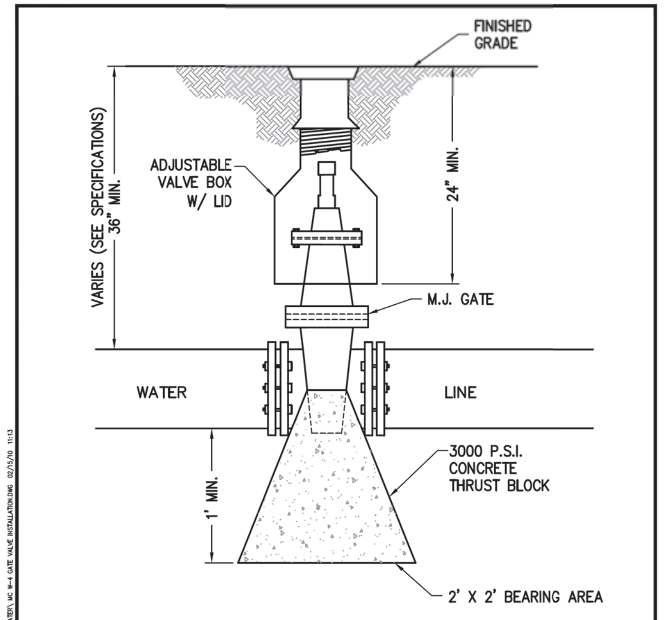
NOTE:
TAR PAPER OR PLASTIC SHALL BE PLACED AROUND END OF WATER MAIN AND AROUND VALVES WHERE CONCRETE THRUST BLOCK IS POURED.

NOTE:
ALL PIPING AND FITTINGS SHALL BE RESTRAINED JOINT, SUCH THAT THE HYDRANT MAY BE REMOVED INDEPENDENT OF GATE VALVE.

SCALE: NOT TO SCALE

Mattern & Craig CONSULTING ENGINEERS • SURVEYORS | FIRE HYDRANT INSTALLATION | DETAIL NUMBER MC W-1 | Date: JUNE 2008 | Revision: SSS

TYPICAL GATE VALVE INSTALLATION



NOTES: 1. IN REMOTE AREAS, VALVE BOXES SHALL EXTEND SIX(6) INCHES ABOVE GRADE
2. TAR PAPER OR PLASTIC SHALL BE PLACED AROUND END OF WATER MAIN AND AROUND VALVES WHERE CONCRETE ANCHOR BLOCK IS POURED.

SCALE: NOT TO SCALE

Mattern & Craig CONSULTING ENGINEERS • SURVEYORS | TYPICAL GATE VALVE INSTALLATION | DETAIL NUMBER MC W-4 | Date: JUNE 2008 | Revision: SSS

MINIMUM REQUIRED HORIZONTAL PIPE RESTRAINT LENGTH

Pipe Size	Fitting Type	Test Pressure < 151psi DI	< 151psi PVC	151-225psi DI	151-225psi PVC	226-300psi DI	226-300psi PVC
4"	Tee	6	12	15	26	23	41
	Dead End	16	30	24	44	32	59
	90°	12	16	18	24	24	32
	45°	5	7	8	10	10	13
	22.5°	2	3	4	5	5	6
	11.25°	2	2	2	3	3	3
6"	Tee	13	24	25	44	36	65
	Dead End	23	42	34	63	46	84
	90°	17	23	26	34	34	45
	45°	7	9	11	14	14	19
	22.5°	3	4	5	7	7	9
	11.25°	2	3	3	4	4	5
8"	Tee	21	38	36	65	52	93
	Dead End	30	55	46	83	61	111
	90°	22	30	34	44	45	59
	45°	9	12	14	18	19	25
	22.5°	4	6	7	9	9	12
	11.25°	3	3	4	5	5	6
10"	Tee	27	48	45	81	63	114
	Dead End	37	67	55	100	73	134
	90°	27	36	40	53	54	71
	45°	11	15	17	22	22	29
	22.5°	5	7	8	11	11	14
	11.25°	3	4	4	6	6	7
12"	Tee	33	60	55	100	77	139
	Dead End	44	80	65	119	87	159
	90°	32	42	48	63	64	84
	45°	13	17	20	26	26	35
	22.5°	6	8	10	13	13	17
	11.25°	3	4	5	7	7	9
14"	Tee	40	72	65	117	90	162
	Dead End	50	92	75	137	100	183
	90°	36	48	55	72	73	96
	45°	15	20	23	30	30	40
	22.5°	7	10	11	14	14	19
	11.25°	3	4	6	7	7	10
16"	Tee	47	84	75	135	103	186
	Dead End	57	104	85	156	113	208
	90°	41	54	62	82	82	109
	45°	17	23	26	34	34	45
	22.5°	8	11	12	16	16	22
	11.25°	4	5	6	8	8	11
18"	Tee	53	95	84	152	116	209
	Dead End	63	116	95	174	126	232
	90°	46	60	69	90	91	121
	45°	19	25	28	37	38	50
	22.5°	9	12	14	18	18	24
	11.25°	4	6	7	9	9	12

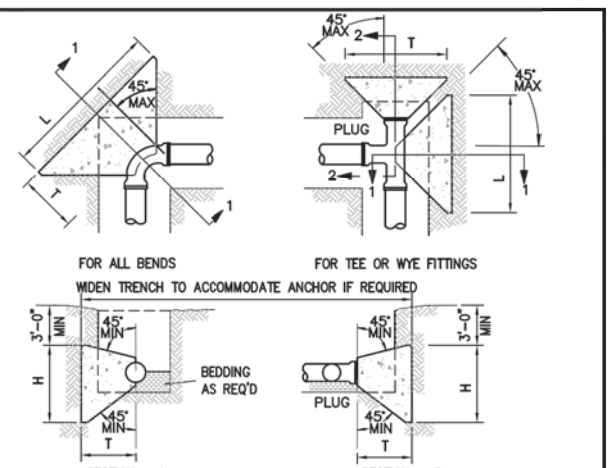
NOTES:

1. LENGTHS SHOWN ARE IN FEET.
2. WHERE TEST PRESSURES EXCEED 300 PSI. CONSULT WITH MFR. REP.
3. IN AREAS OF POOR SOILS, CONFIRM LENGTHS WITH ENGINEER.
4. AS AN ALTERNATE, THRUST BLOCKS IN ACCORDANCE WITH MC W-7A MAY BE USED WHEN APPROVED BY THE ENGINEER.

SCALE: NOT TO SCALE

Mattern & Craig CONSULTING ENGINEERS • SURVEYORS | MINIMUM REQUIRED HORIZONTAL PIPE RESTRAINT LENGTH | DETAIL NUMBER MC W-7 | Date: JUNE 2008 | Revision: SSS

THRUST BLOCK



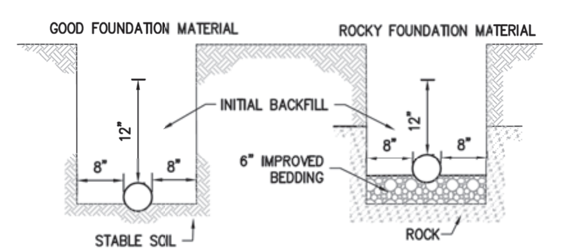
PIPE SIZE	DEGREE OF BEND	BEND DIMENSIONS (FEET) L	H	T	VOL. CU.YD.	TEE AND PLUGS (FEET) L	H	T	VOL. CU.YD.
4" & 6"	90 45 22 1/2 11 1/4	2.50 2.00 1.50 1.50	2.50 2.25 2.00 2.00	3.01 2.60 2.52 2.50	0.24 0.15 0.10 0.10	2.00	2.25	2.50	0.15
8"	90 45 22 1/2 11 1/4	3.66 2.66 1.66 1.66	3.16 2.66 2.16 2.16	3.21 2.77 2.69 2.67	0.46 0.26 0.13 0.13	3.16	2.91	2.66	0.32
10" & 12"	90 45 22 1/2 11 1/4	4.83 3.33 2.33 1.83	3.83 3.58 2.58 2.33	3.42 2.95 2.86 2.84	0.82 0.43 0.24 0.18	3.83	4.00	2.83	0.52
14"	90 45 22 1/2 11 1/4	5.83 4.00 3.16 2.00	4.00 4.00 4.00 3.33	3.63 3.11 3.03 3.01	1.10 0.65 0.50 0.26	4.00	4.5	3.00	0.70

1. THRUST BLOCKS ARE REQUIRED WHENEVER THE PIPELINE: CHANGES DIRECTION, CHANGES SIZE, DEAD ENDS AND AT VALUES.
2. USE 3000 P.S.I. CONCRETE
3. NO CONCRETE SHALL BE POURED ON ANY PART OF THE JOINT.
4. TAR PAPER OR PLASTIC SHALL BE PLACED AROUND END OF WATER MAIN AND AROUND VALVES WHERE CONCRETE ANCHOR BLOCK IS POURED.

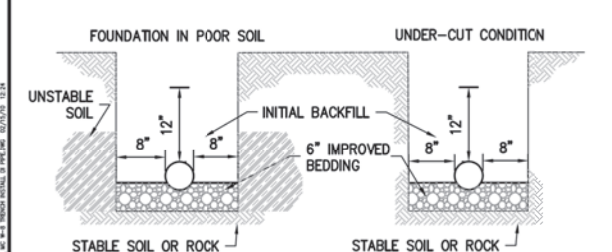
SCALE: NOT TO SCALE

Mattern & Craig CONSULTING ENGINEERS • SURVEYORS | THRUST BLOCK | DETAIL NUMBER MC W-7A | Date: JUNE 2008 | Revision: SLD

TRENCH INSTALLATION DUCTILE IRON PIPE



SCRAPE THE BOTTOM OF THE TRENCH. REMOVE ALL STONES TO INSURE THE PIPE DOESN'T REST ON ROCK AND THEN COMPACT THE SOIL OR PROVIDE 4" OF IMPROVED BEDDING.



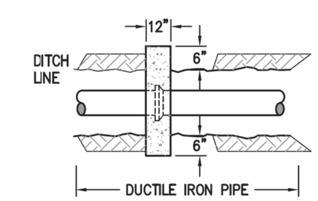
NOTE:
1. NO ROCKS SHALL BE ALLOWED WITHIN 12" OF THE WATER LINES.
2. NO ROCKS LARGER THAN 5" IN ANY DIMENSION SHALL BE ALLOWED ABOVE THE INITIAL.
3. THE INITIAL BACKFILL SHALL BE PLACED AND COMPACTED IN 6" LIFTS.
4. NO ORGANIC OR FROZEN MATERIAL OR DEBRIS SHALL BE ALLOWED IN THE TRENCH.
5. BELL HOLES SHALL BE DUG OUT IN ALL CASES.

SCALE: NOT TO SCALE

Mattern & Craig CONSULTING ENGINEERS • SURVEYORS | TRENCH INSTALLATION DUCTILE IRON PIPE | DETAIL NUMBER MC W-8 | Date: JUNE 2008 | Revision: SLD

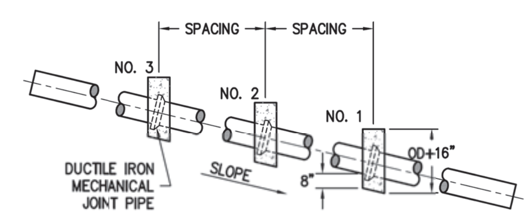
TYPICAL ANCHOR DETAIL FOR WATER LINES GRADES 20% OR GREATER

ANCHOR IN SIDE OF DITCH



PLAN

NOTE:
CONCRETE SHALL BE 3000 PSI COMPRESSIVE STRENGTH @ 28 DAYS



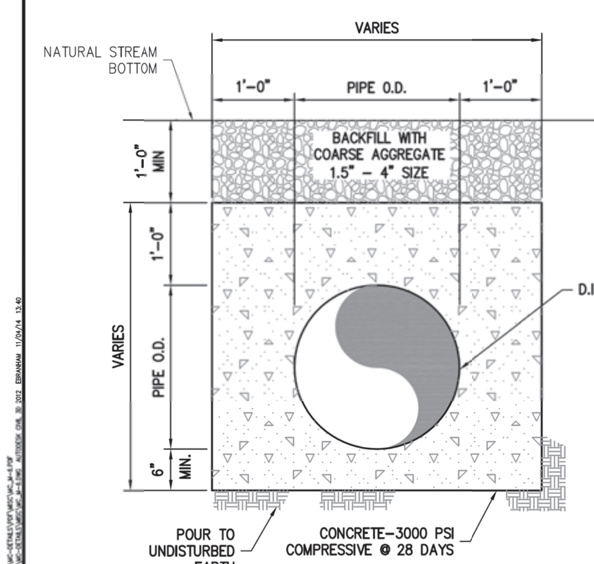
PROFILE

GRADE	SPACING
20% TO 35%	NOT OVER 36'
35% TO 50%	NOT OVER 24'
50% OR GREATER	NOT OVER 16'

SCALE: NOT TO SCALE

Mattern & Craig ENGINEERS • SURVEYORS | TYPICAL ANCHOR DETAIL FOR WATER LINES GRADES 20% OR GREATER | DETAIL NUMBER MC W-19 | Date: NOV 2014 | Revision: ____

SINGLE PIPE ENCASEMENT STREAM CROSSING



SCALE: NOT TO SCALE

Mattern & Craig ENGINEERS • SURVEYORS | SINGLE PIPE ENCASEMENT STREAM CROSSING | DETAIL NUMBER MC M-6 | Date: NOV 2014 | Revision: ____

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.171	UC-4

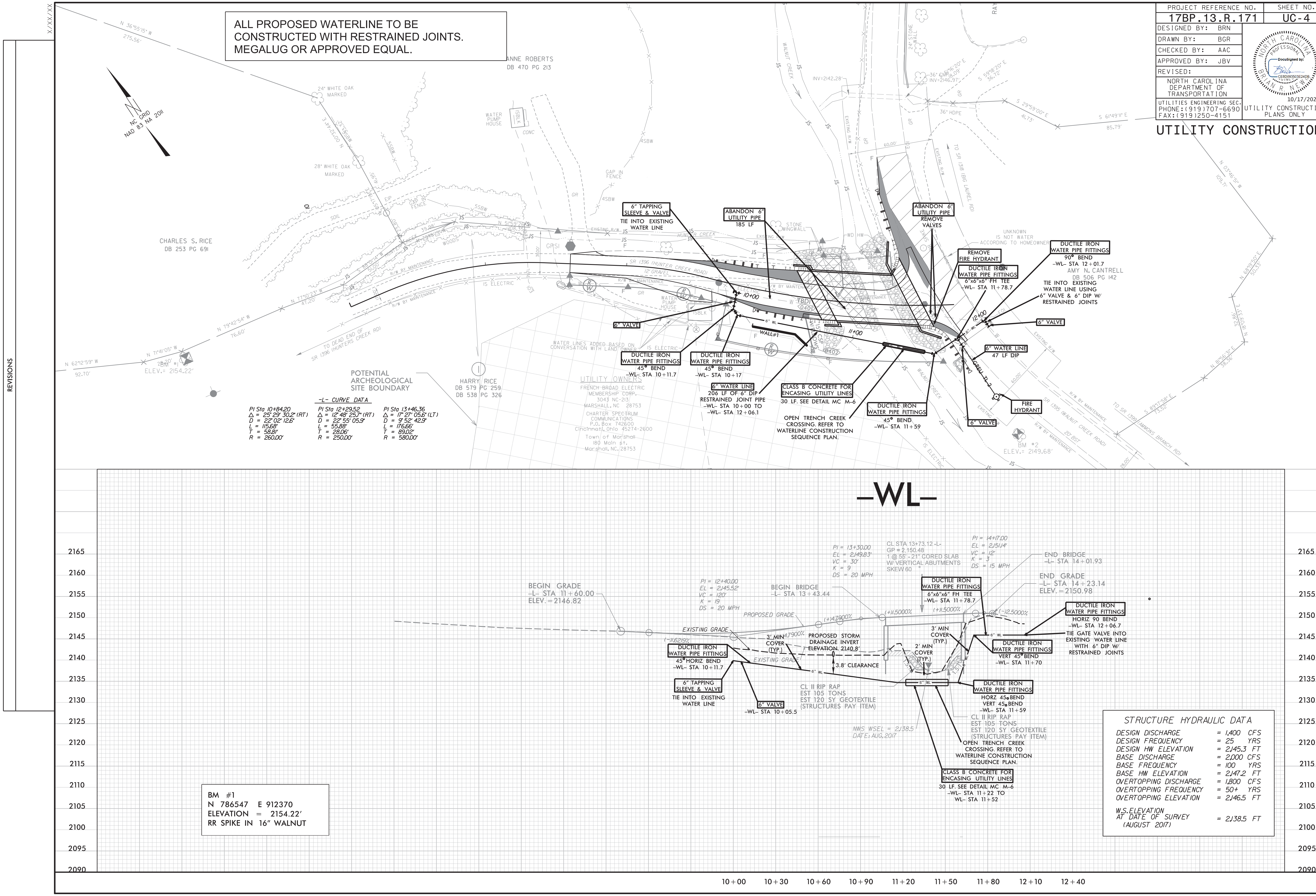
DESIGNED BY: BRN
DRAWN BY: BGR
CHECKED BY: AAC
APPROVED BY: JBV
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE: (919)707-6690
FAX: (919)250-4151

10/17/2022
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

ALL PROPOSED WATERLINE TO BE CONSTRUCTED WITH RESTRAINED JOINTS. MEGALUG OR APPROVED EQUAL.



PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.171	UC-5

DESIGNED BY: BRN
DRAWN BY: BGR
CHECKED BY: AAC
APPROVED BY: JBV
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

UTILITIES ENGINEERING SEC.
PHONE: (919)707-6690
FAX: (919)250-4151

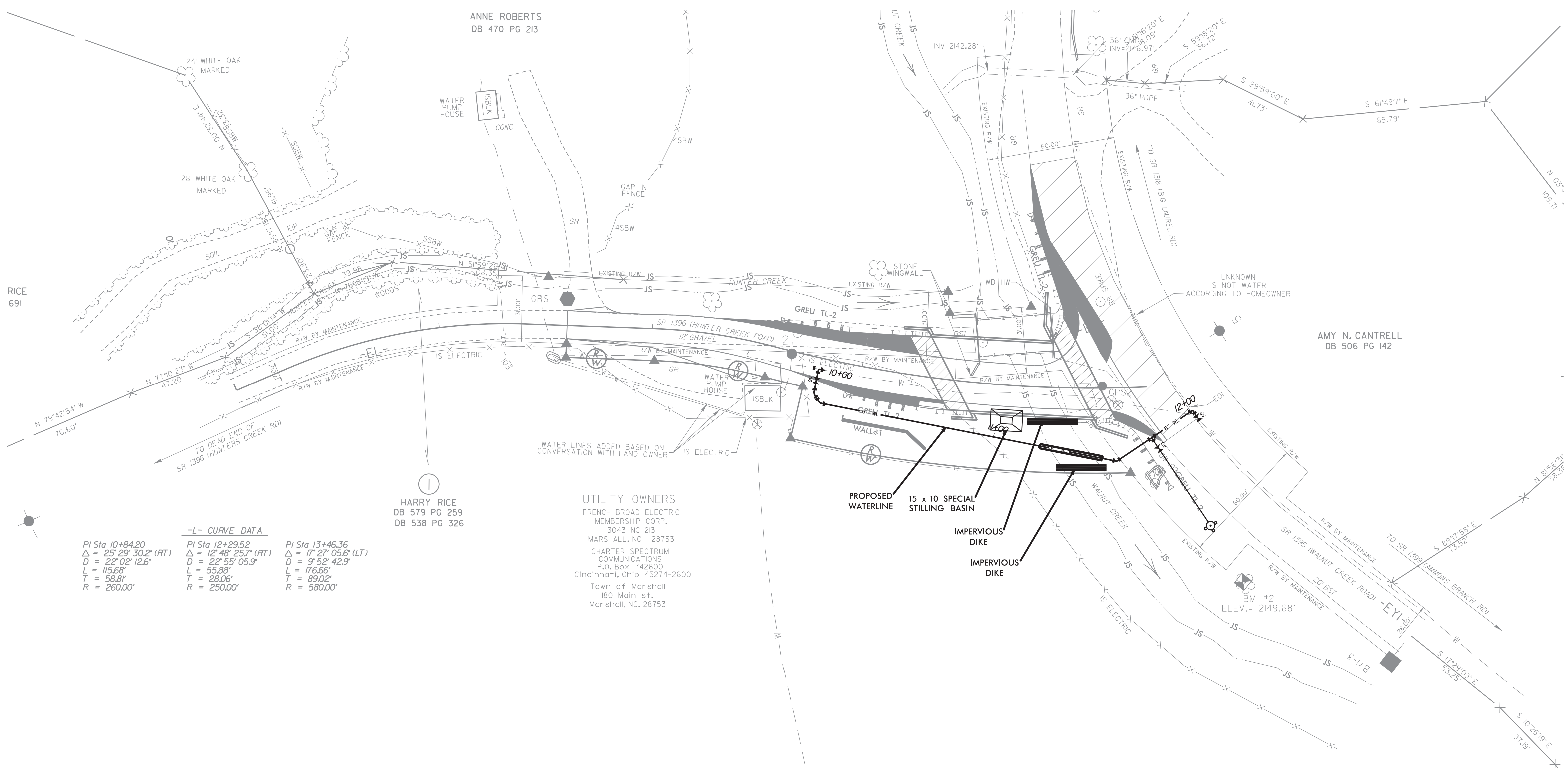
NORTH CAROLINA PROFESSIONAL SEAL BRIAN R. NEW
10/17/2022

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

WATERLINE CONSTRUCTION SEQUENCE STA. 12+61.27 -L-

1. CONTRACTOR TO CONTACT TOWN OF MARSHALL & DON BYERS, BYERS ENVIRONMENTAL 828-577-9916 AT LEAST 72 HOURS PRIOR TO WATERLINE CONSTRUCTION. MAINTAIN EXISTING WATERLINE DURING CONSTRUCTION AND COMPLETE TIE-INS UNDER THE DIRECTION OF DON BYERS WHO WILL COORDINATE WITH THE TOWN AND MANAGE ANY SYSTEM-SIDE VALVE CLOSURE & PUMP HOUSE MAINTENANCE SEQUENCE DURING NEW WATERLINE TAPS.
2. SET UP BYPASS PUMP AND TEMPORARY PIPING ACCORDING TO THE NCDOT "BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES" MANUAL.
3. CONSTRUCT IMPERVIOUS DIKES.
4. UTILIZE SPECIAL STILLING BASIN AS STILLING BASIN DURING PUMPING OPERATIONS.
5. CONSTRUCT PROPOSED WATERLINE AND CHANNEL RESTORATION UP TO THE IMPERVIOUS DIKES.
6. UPON COMPLETION OF THE CONCRETE ENCASEMENT, ENSURE THAT A MINIMUM STRENGTH OF CONCRETE IS EQUAL TO OR GREATER THAN 75 PERCENT OF THE 28-DAY COMPRESSIVE STRENGTH PRIOR TO BACKFILLING CROSSING TRENCH, REMOVAL OF IMPERVIOUS DIKES, OR TERMINATING THE BYPASS PUMPING PRIOR TO COMPLETION OF THE BRIDGE AND REMAINING CHANNEL RESTORATION.



9/29/22

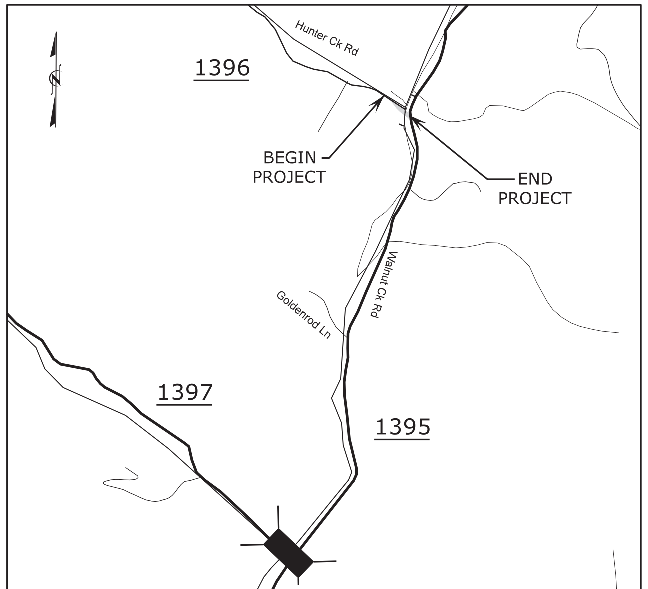
PROJECT: 17BP.13.R.171

T.I.P. NO.	SHEET NO.
17BP.13.R.171	UO-01

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MADISON COUNTY

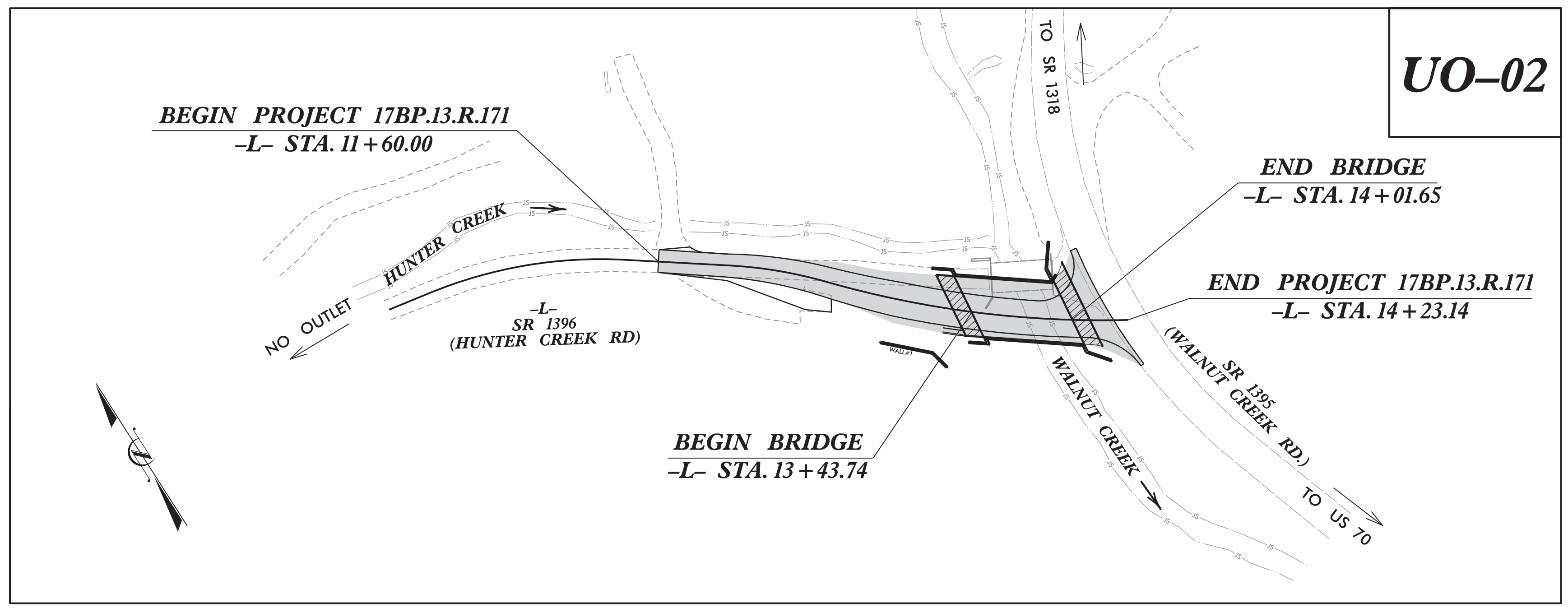
NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.



VICINITY MAP
(NOT TO SCALE)

LOCATION: BRIDGE NO. 66 ON SR 1396 (HUNTER CREEK ROAD) OVER WALNUT CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

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

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

GRAPHIC SCALES

40 20 0 40 80
PLANS

40 20 0 40 80
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO-01	TITLE SHEET
UO-02	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

FRENCH BROAD ELECTRIC - POWER

FRONTIER - TELECOMMUNICATIONS

PREPARED IN THE OFFICE OF:

T2 utility engineers

KEVIN L ROGERS — PROJECT UTILITY COORDINATOR

DIVISION OF HIGHWAYS
UTILITIES UNIT
DIV ADDRESS
55 ORANGE STREET
ASHEVILLE, NC 28801

R. KEITH RADCLIFF — DIVISION UTILITY ENGINEER
JOHN D. METCALF — DIVISION UTILITY COORDINATOR
MIKE CALLOWAY — BRIDGE PROGRAM MANAGER

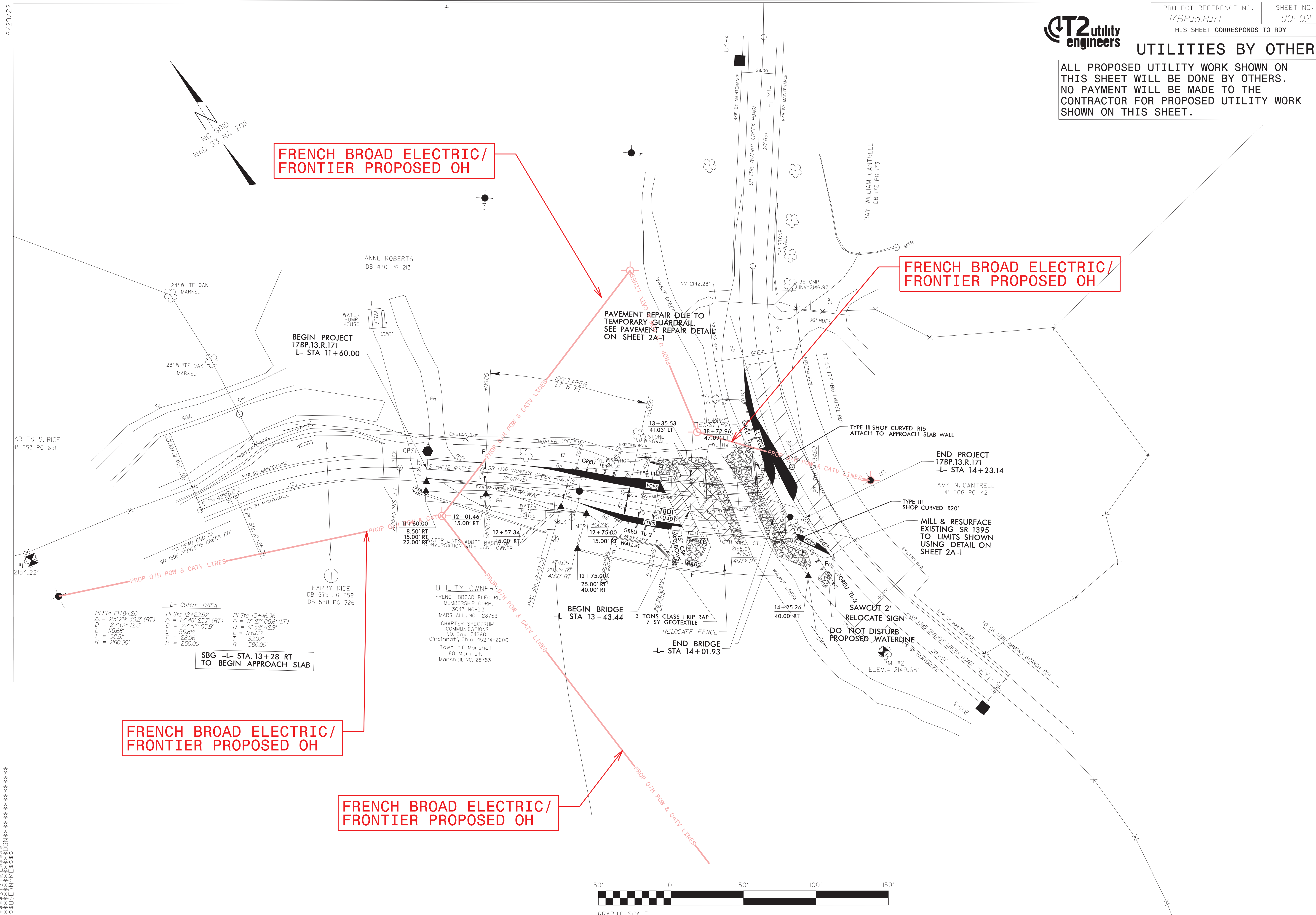
PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.171	UO-02

THIS SHEET CORRESPONDS TO RDY

T2 utility engineers

UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.



9/29/22

$$$$SYSTIME$$$$ $$$$DGN$$$$ $$$$USERNAME$$$$

COMPUTED BY: MY	DATE: 5/24/19
CHECKED BY: ACC	DATE: 5/24/19

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.71	X-0

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

CROSS SECTION SUMMARY

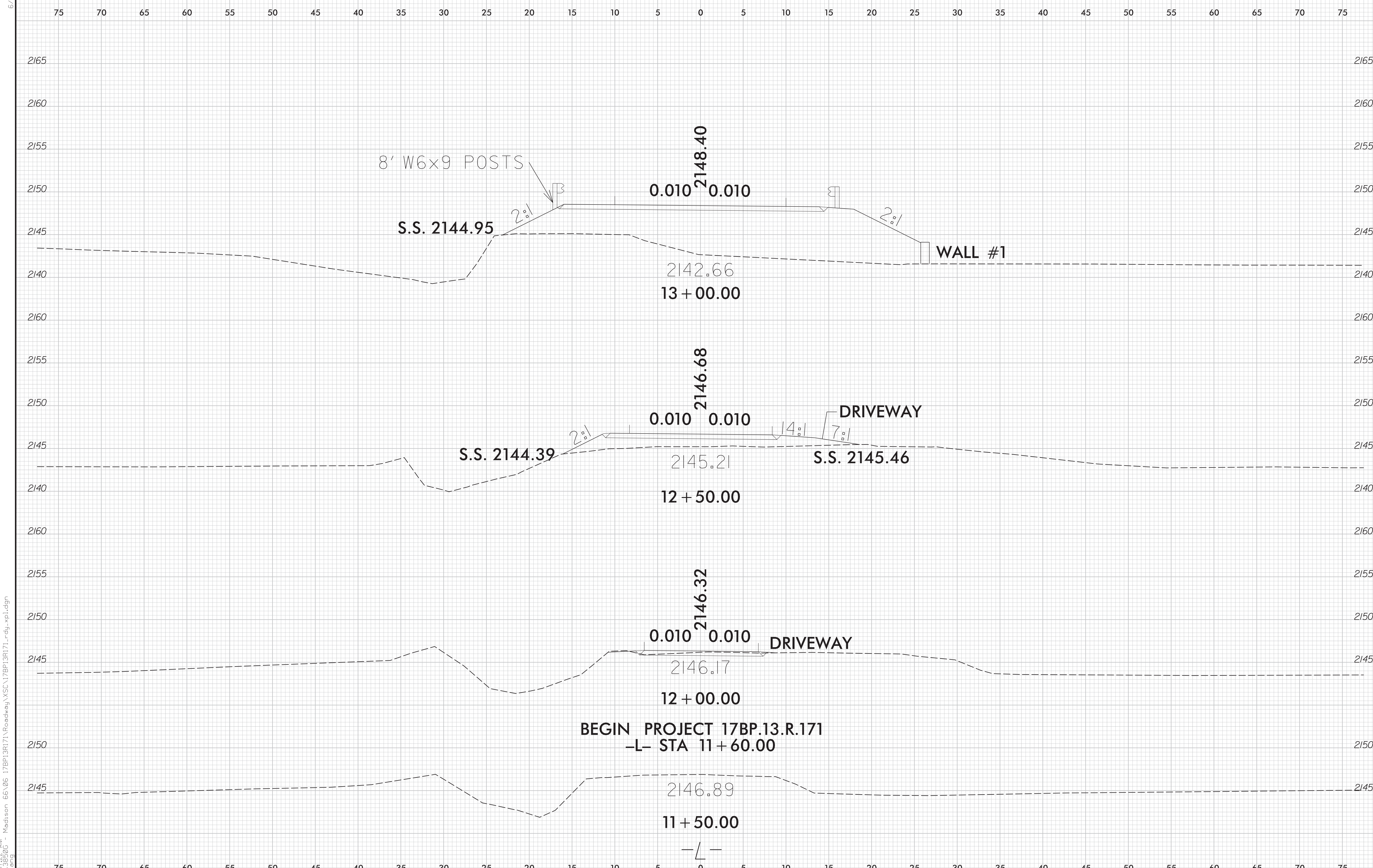
IN CUBIC YARDS

-L- LOCATION	UNCLASSIFIED EXCAVATION	EMBT
11+60	0	0
12+00	7	0
12+50	4	30
13+00	0	237
13+43.44 (BEGIN BRIDGE)	0	361
14+01.93 (END BRIDGE)	0	0
14+23.14	0	15

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT.

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

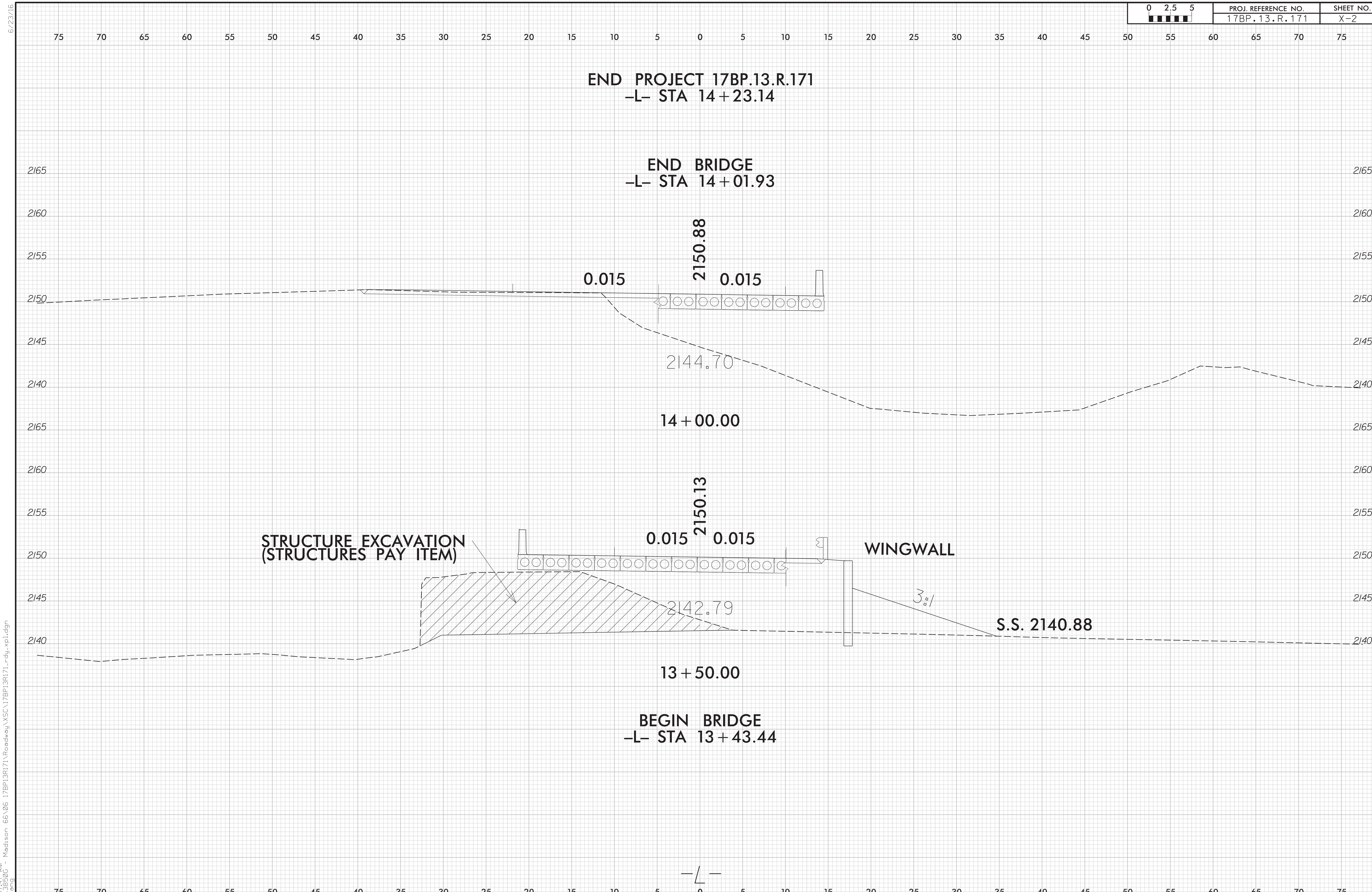
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.171	X-1



6/23/16

10:17:22 AM
I:\3860G - Madison 66V06 17BP13R171\Roadway\XSC\17BP13R171_rdy_xpl.dgn

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.171	X-2



6/23/16
10:17:47 AM
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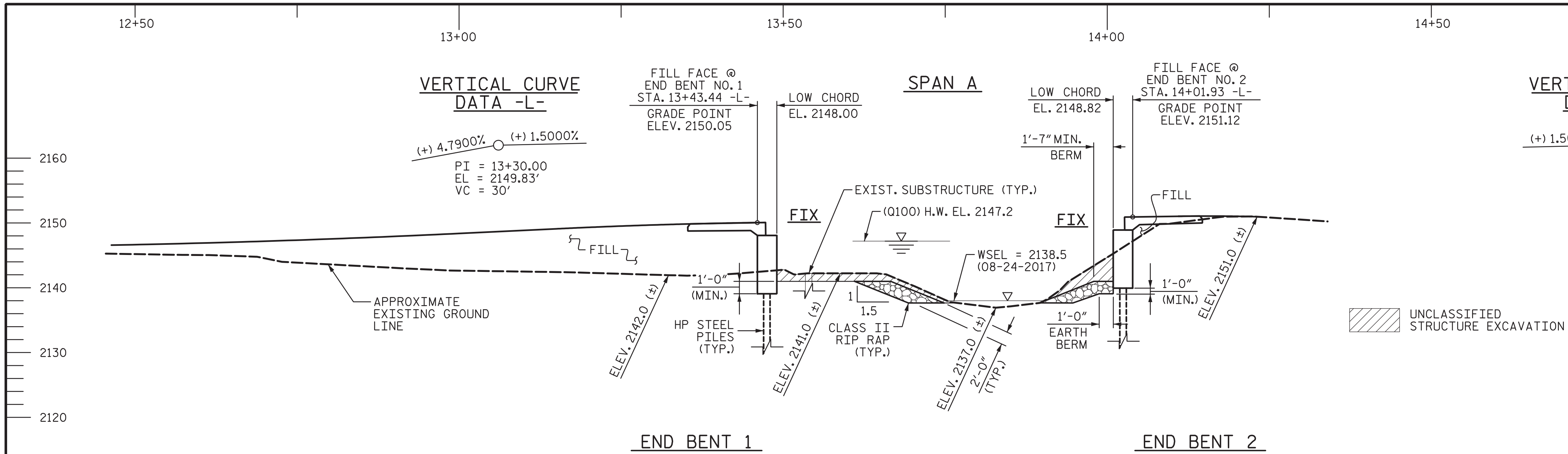
myang



SECTION ALONG -L-

(SECTIONS AT END BENTS ARE AT RIGHT ANGLES)

HYDRAULIC DATA

DESIGN DISCHARGE	1400 CFS
FREQUENCY OF DESIGN FLOOD	25 YR.
DESIGN HIGH WATER ELEVATION	2145.3
DRAINAGE AREA	5.86 SQ. MI.
BASE DISCHARGE (Q 100)	2000 CFS
BASE HIGH WATER ELEVATION	2147.2

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

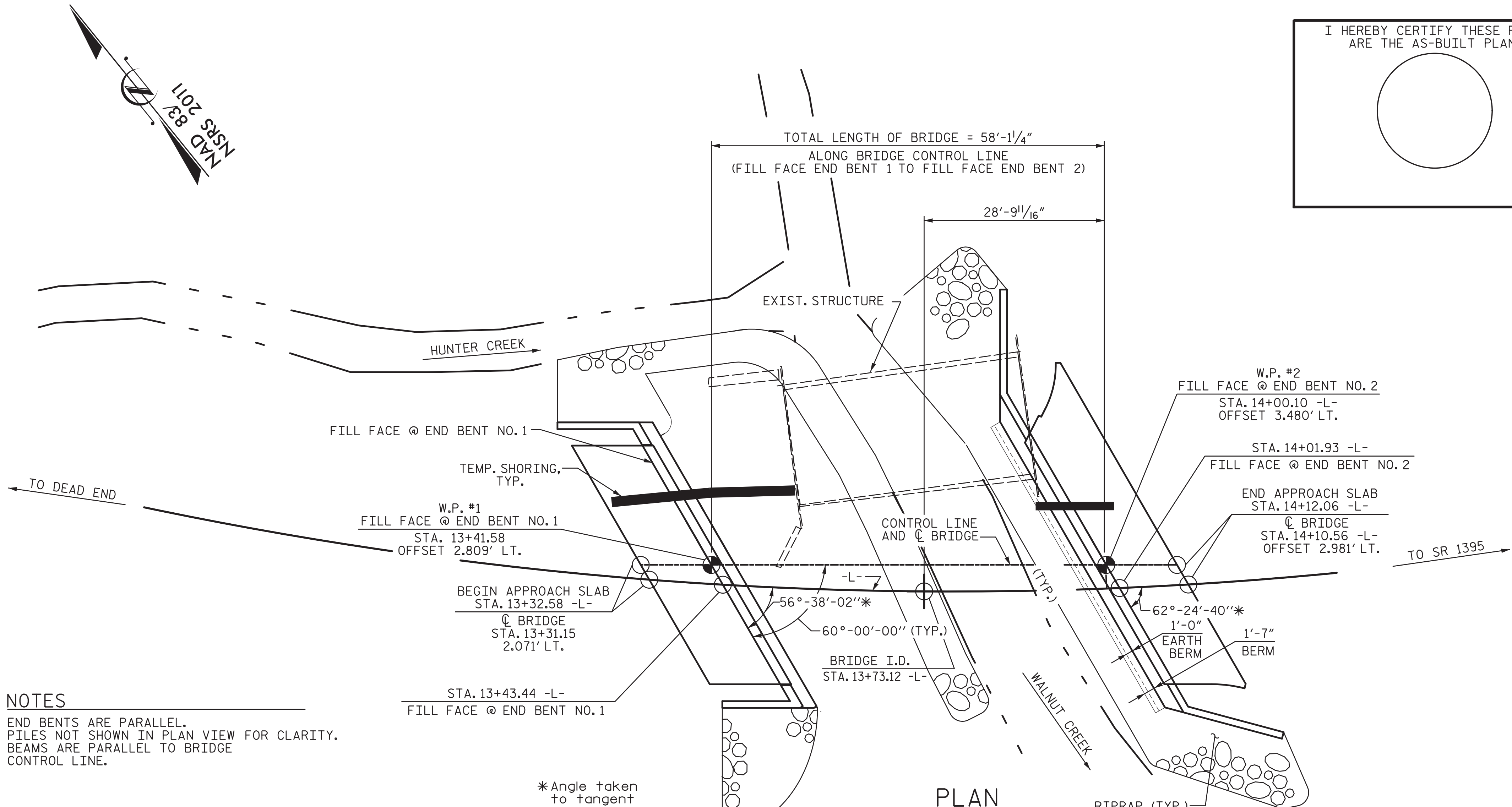
OVERTOPPING DATA

OVERTOPPING DISCHARGE	1800 CFS
FREQUENCY OF OVERTOPPING FLOOD	50+ YR.
OVERTOPPING FLOOD ELEVATION	2146.5

OVERTOPPING OCCURS AT ROADWAY LOWPOINT (-L- STA. 12+10 +/-)

HORIZONTAL CURVE DATA -L-

PI STA. 13+46.36
Δ = 17° 27' 05.6" (LT)
D = 9° 52' 42.9"
L = 176.66'
T = 89.02'
R = 580.00'



PLAN

NOTES

END BENTS ARE PARALLEL.
PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.
BEAMS ARE PARALLEL TO BRIDGE CONTROL LINE.

PROJECT NO. 17BP.13.R.171
MADISON COUNTY
STATION: 13+73.12 -L-
SHEET 1 OF 4 REPLACES BRIDGE NO. 66

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Timothy J. Townsend
NORTH CAROLINA PROFESSIONAL ENGINEER 34955 TIMOTHY J. TOWNSEND
10/12/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

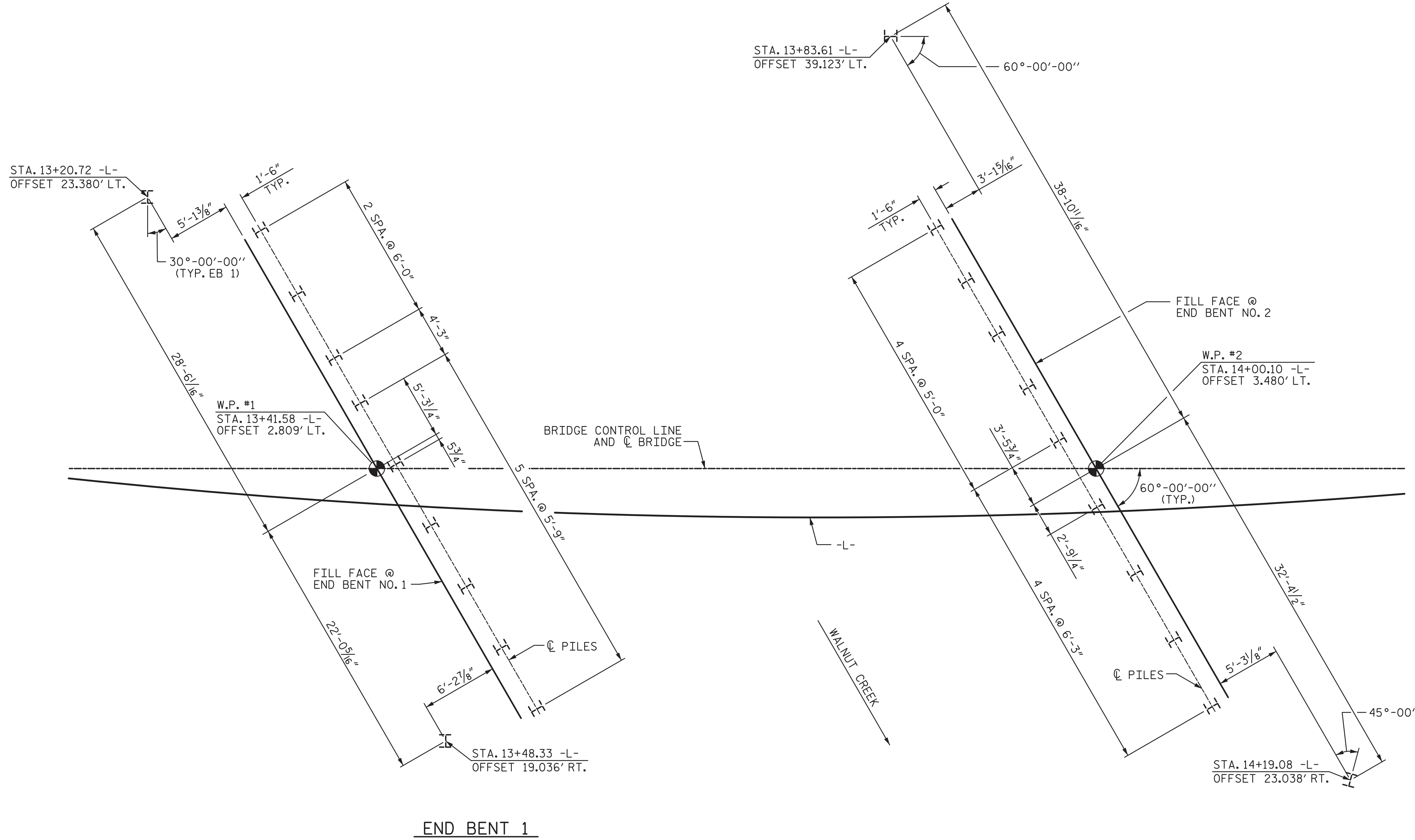
GENERAL DRAWING

BRIDGE 66 ON SR 1396 (HUNTER CREEK ROAD) OVER WALNUT CREEK BETWEEN SR 1395 AND END SR 1396

Mattern & Craig ENGINEERS•SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			20

DRAWN BY :	KES	DATE :	10-22	DESIGN ENGINEER OF RECORD:	T. TOWNSEND DATE : 10-22
CHECKED BY :	TJT	DATE :	10-22		



END BENT 2

FOUNDATION LAYOUT PLAN

ALL PILES ARE HP 14 X 73 STEEL PILES

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

SHEET 2 OF 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Timothy J. Townsend

NORTH CAROLINA PROFESSIONAL ENGINEER 34955 TIMOTHY J. TOWNSEND

10/12/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FOUNDATION LAYOUT

Mattern & Craig ENGINEERS•SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			20

DRAWN BY : KES DATE : 10-22
CHECKED BY : TJT DATE : 10-22
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent 1, Piles 1-4	46	See Structure Plans	20	2140	2123.0	76					2123.0	8.0	9.0
End Bent 1, Piles 5-9	46	See Structure Plans	20	2140	2123.0	76					2123.0	7.0	10.0
End Bent 2, Piles 1-9	48	See Structure Plans	10	2140	2133.0	79					2133.0	7.0	0.0

*Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.

$$^{**}RDR = \frac{Factored\ Resistance + Factored\ Downdrag\ Load + Factored\ Dead\ Load}{Dynamic\ Resistance\ Factor} + Nominal\ Downdrag\ Resistance + \frac{Nominal\ Scour\ Resistance}{Scour\ Resistance\ Factor}$$

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-4	46						1.00
End Bent 1, Piles 5-9	46						1.00
End Bent 2, Piles 1-9	48						1.00
							1.00
							1.00
							1.00

*Factored Dead Load is factored weight of pile above the ground line.

FOUNDATION NOTES

1. For piles, see Piles Provision and Section 450 of the Standard Specifications.

2. Drilled-in Piles are Required for the piles at End Bent No. 1. Excavate holes at Pile Locations to Elevation 2123 ft and with a minimum of 7 ft rock/weathered rock socket. For Pile Excavation,see Section 450 of the Standard Specifications.

3. Drilled-in Pile are Required at each wing at End Bent No. 1. Excavate holes at Pile Locations to Elevation 2123 ft and with a minimum of 7 ft rock/weathered rock socket. For Pile Excavation,see Section 450 of the Standard Specifications.

4. Drilled-in Piles are Required for the piles at End Bent No. 2. Excavate holes at Pile Locations to Elevation 2133 ft and with a minimum of 7 ft rock/weathered rock socket. For Pile Excavation,see Section 450 of the Standard Specifications.

5. Drilled-in Pile are Required at each wing at End Bent No. 2. Excavate holes at Pile Locations to Elevation 2133 ft and with a minimum of 7 ft rock/weathered rock socket. For Pile Excavation,see Section 450 of the Standard Specifications.

6. Concrete is required to fill holes for Pile Excavation at End Bent Nos. 1 and 2.

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Shiping Yang, #031361) on 10-10-2022.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer will determine the need for PDA Testing and Pipe Pile Plates when PDAs or plates may be required.

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

SHEET 3 OF 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Timothy J. Townsend

NORTH CAROLINA ENGINEER 34955 TIMOTHY J. TOWNSEND

10/12/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES AND NOTES

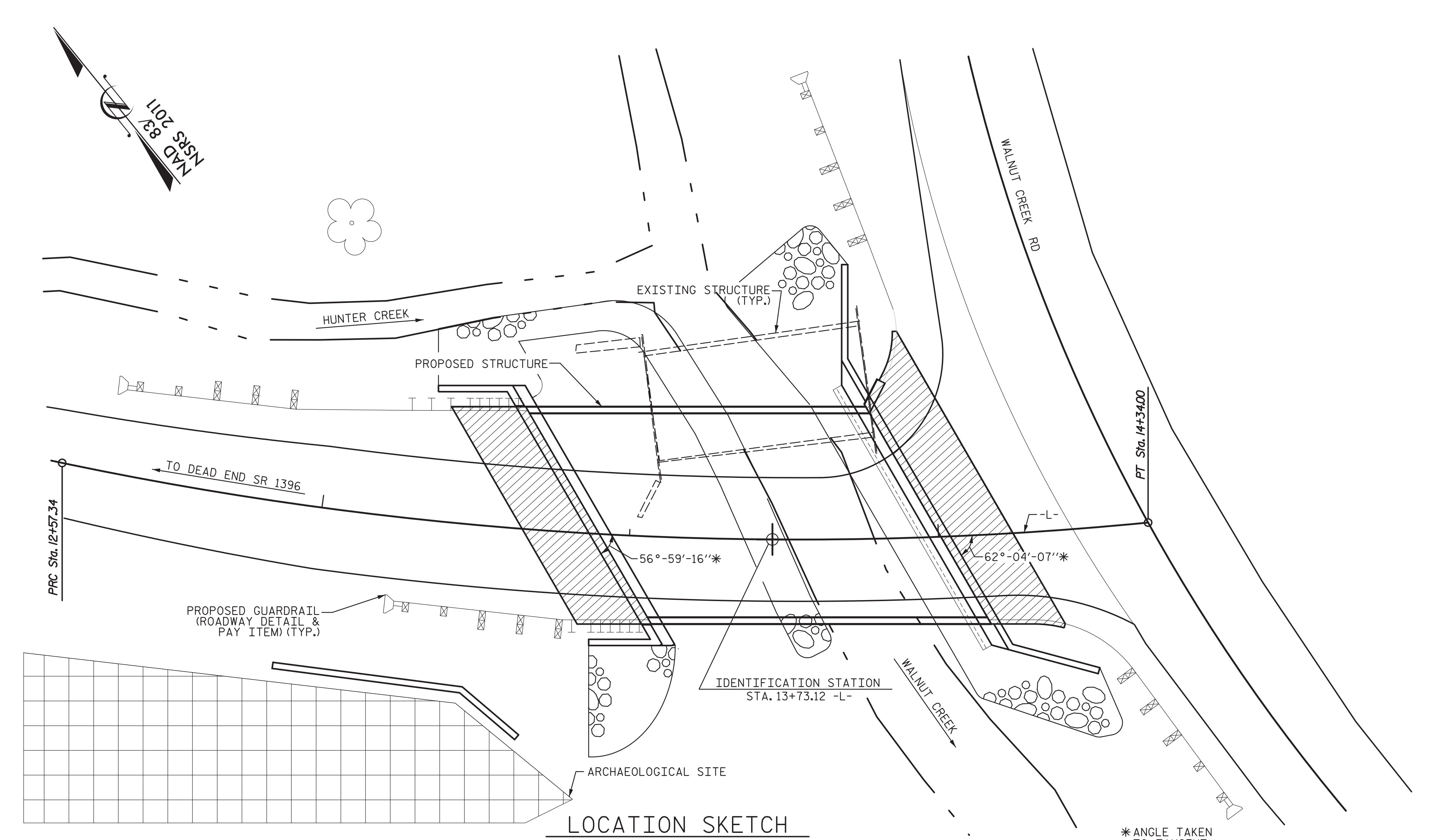
Mattern & Craig ENGINEERS•SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-3
1			3				TOTAL SHEETS
2			4				20

DRAWN BY : KES DATE : 10-22
CHECKED BY : TJT DATE : 10-22
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

DATE: 10/11/2022 2:46:37 PM TIME: 2:46:37 PM
FILE: I:\3850G - Div 13 Bridge 66 (Madison Co)\Dwg\Sheets\401.005_17BP.13.R.171_SMU_PF_003_560066.dgn

B.M. #2: RR SPIKE SET IN 30" POPLAR -L- STA. 14+34.00 93.4' RT ELEV. 2149.68' N 786177 E 912830



LOCATION SKETCH

NOTE: FOR UTILITY CONFLICTS, SEE UTILITY PLANS

*ANGLE TAKEN TO TANGENT

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 1 SPAN AT 35'-5", 15'-6" CLEAR ROADWAY WIDTH, TIMBER DECK ON STEEL BEAMS, ON CONCRETE CAP AT END BENT 1 AND TIMBER POST AND BEAM AT END BENT 2, SHALL BE REMOVED. THE EXISTING BRIDGE IS CURRENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COSTS INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET S-20.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 13+70.81 -L-."

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

ASPHALT WEARING SURFACE IS INCLUDED IN THE ROADWAY QUANTITY ON ROADWAY PLANS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA (ON SHEET 1 OF 4) SHALL BE EXCAVATED FOR A DISTANCE FROM THE CENTERLINE OF ROADWAY TO 32.1' +/- (LEFT) AND 26.0' +/- (RIGHT) AT END BENT 1, 42.1' +/- (LEFT) AND 28.1' +/- (RIGHT) AT END BENT 2, AND TO AN ELEVATION OF 2141.0 +/- AT BOTH END BENTS AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.

TEMPORARY SHORING WILL BE REQUIRED IN AREAS INDICATED IN THE PLAN VIEW.

FOR TEMPORARY SHORING, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 13+70.81 -L-	ASBESTOS ASSESSMENT	PDA TESTING	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE SETUP	HP 14X73 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	PLAIN RIP RAP CLASS II (2'-0" THICK)
	LUMP SUM	LUMP SUM	EACH	LIN. FT.	LIN. FT.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EACH	NO.	LIN. FT.	LIN. FT.	TONS
SUPERSTRUCTURE								LUMP SUM					110	
END BENT NO. 1			1	105	82	LUMP SUM	57.2		6,770	11	11	220		105
END BENT NO. 2			1		77	LUMP SUM	70.9		8,775	11	11	110		105
TOTAL	LUMP SUM	LUMP SUM	2	105	159	LUMP SUM	128.1	LUMP SUM	15,545	22	22	330	110	210

TOTAL BILL OF MATERIAL

	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNITS	
	SQ. YD.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE			12	660
END BENT NO. 1	120	LUMP SUM		
END BENT NO. 2	120	LUMP SUM		
TOTAL	240	LUMP SUM	12	660

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL NOTES, LOCATION SKETCH, AND TOTAL BILL OF MATERIAL

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B8C1881FA1E482...
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 34955 TIMOTHY J. TOWNSEND
10/12/2022

Mattern & Craig ENGINEERS•SURVEYORS
12 BROAD STREET ASHEVILLE, NORTH CAROLINA 28801 (828) 254-2201 FAX (828) 254-4562 NC LIC. NO. C-1154

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2			4		

SHEET NO. S-4
TOTAL SHEETS 20

DRAWN BY : KES DATE : 10-22
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LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT					
							LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.163	--	1.75	0.249	1.36	A	EL	26.923	0.659	1.21	A	EL	10.769	0.80	0.249	**1.16**	A	EL	**26.923**	
		HL-93(Opr)	N/A	--	1.564	--	1.35	0.249	1.76	A	EL	26.923	0.659	1.56	A	EL	10.769	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.424	51.265	1.75	0.249	1.7	A	EL	26.923	0.659	**1.42**	A	EL	**10.769**	0.80	0.249	1.46	A	EL	26.923	
		HS-20(Opr)	36.000	--	1.846	66.455	1.35	0.249	2.2	A	EL	26.923	0.659	1.85	A	EL	10.769	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.057	41.264	1.4	0.249	4.46	A	EL	26.923	0.659	3.96	A	EL	10.769	0.80	0.249	3.06	A	EL	26.923	
		SNGARBS2	20.000	--	2.374	47.473	1.4	0.249	3.46	A	EL	26.923	0.659	2.9	A	EL	10.769	0.80	0.249	2.37	A	EL	26.923	
		SNAGRIS2	22.000	--	2.291	50.392	1.4	0.249	3.34	A	EL	26.923	0.659	2.72	A	EL	10.769	0.80	0.249	2.29	A	EL	26.923	
		SNCOTTS3	27.250	--	1.524	41.521	1.4	0.249	2.22	A	EL	26.923	0.659	1.98	A	EL	10.769	0.80	0.249	1.52	A	EL	26.923	
		SNAGGRS4	34.925	--	1.31	45.74	1.4	0.249	1.91	A	EL	26.923	0.659	1.71	A	EL	10.769	0.80	0.249	1.31	A	EL	26.923	
		SNS5A	35.550	--	1.278	45.439	1.4	0.249	1.86	A	EL	26.923	0.659	1.76	A	EL	10.769	0.80	0.249	1.28	A	EL	26.923	
		SNS6A	39.950	--	1.189	47.481	1.4	0.249	1.73	A	EL	26.923	0.659	1.63	A	EL	10.769	0.80	0.249	1.19	A	EL	26.923	
		SNS7B	42.000	--	1.132	47.562	1.4	0.249	1.65	A	EL	26.923	0.659	1.64	A	EL	10.769	0.80	0.249	1.13	A	EL	26.923	
	TTST	TNAGRIT3	33.000	--	1.454	47.984	1.4	0.249	2.12	A	EL	26.923	0.659	1.92	A	EL	10.769	0.80	0.249	1.45	A	EL	26.923	
		TNT4A	33.075	--	1.465	48.451	1.4	0.249	2.14	A	EL	26.923	0.659	1.85	A	EL	10.769	0.80	0.249	1.46	A	EL	26.923	
		TNT6A	41.600	--	1.213	50.478	1.4	0.249	1.77	A	EL	26.923	0.659	1.81	A	EL	10.769	0.80	0.249	1.21	A	EL	26.923	
		TNT7A	42.000	--	1.228	51.576	1.4	0.249	1.79	A	EL	26.923	0.659	1.67	A	EL	10.769	0.80	0.249	1.23	A	EL	26.923	
		TNT7B	42.000	--	1.282	53.827	1.4	0.249	1.87	A	EL	26.923	0.659	1.58	A	EL	10.769	0.80	0.249	1.28	A	EL	26.923	
		TNAGRIT4	43.000	--	1.213	52.158	1.4	0.249	1.77	A	EL	26.923	0.659	1.52	A	EL	10.769	0.80	0.249	1.21	A	EL	26.923	
		TNAGT5A	45.000	--	1.136	51.134	1.4	0.249	1.66	A	EL	26.923	0.659	1.55	A	EL	10.769	0.80	0.249	1.14	A	EL	26.923	
		TNAGT5B	45.000	3	1.116	50.224	1.4	0.249	1.63	A	EL	26.923	0.659	1.44	A	EL	10.769	0.80	0.249	**1.12**	A	EL	**26.923**	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.
2.
3.
4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

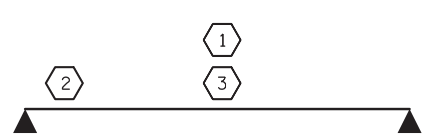
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING ✱✱

✱✱ SEE CHART FOR VEHICLE TYPE

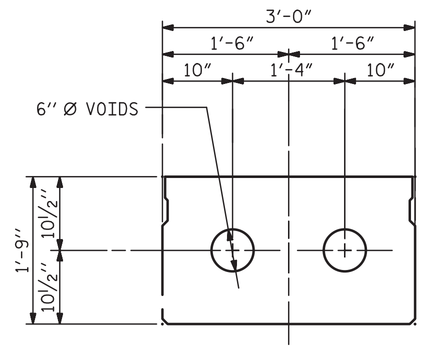
GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN 'A'



INTERIOR SLAB SECTION (TYPE 2)

A = 692.3 In.
Wt. = 721 plf
I = 27,304 In.
c = 10.60 In.
c = 10.40 In.
S = 2,576 In.
S = 2,625 In.

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 55' CORED SLAB UNIT 60° SKEW & 120° SKEW (NON-INTERSTATE TRAFFIC)

REVISIONS								SHEET NO.
NO.	BY:	DATE:		NO.	BY:	DATE:		S-5
1				3				TOTAL SHEETS
2				4				20

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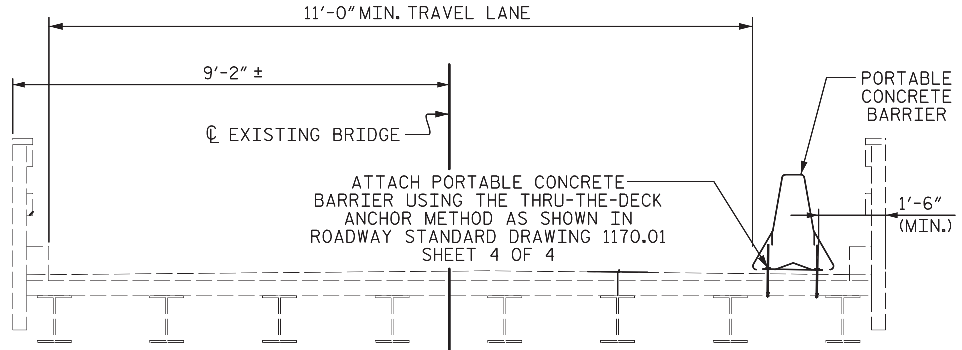
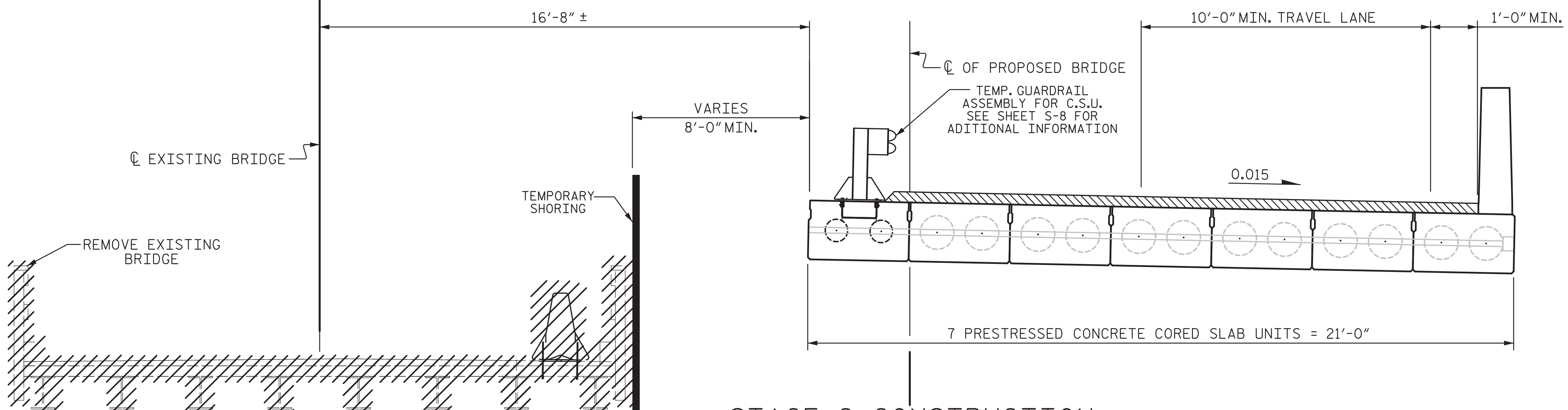
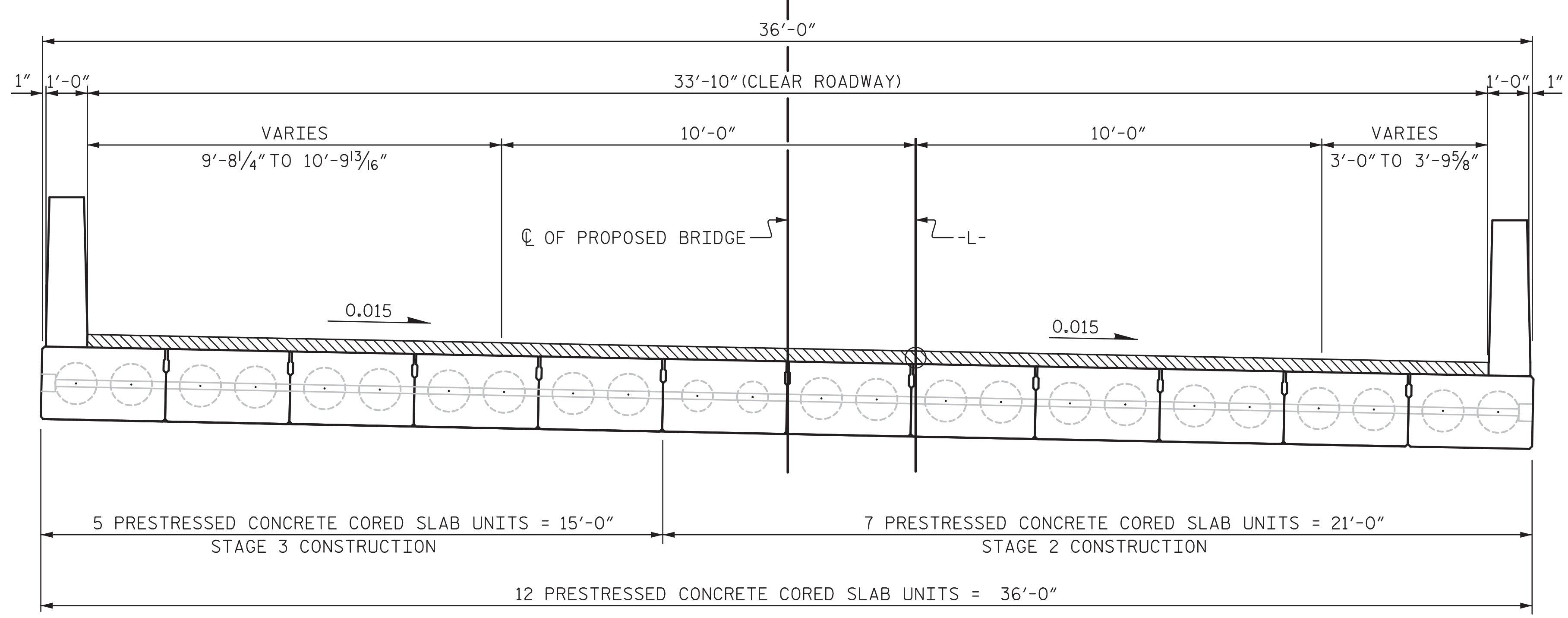


STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION



STAGE 3 CONSTRUCTION

STAGED CONSTRUCTION NOTES

EXISTING BRIDGE INFORMATION BASED ON BEST INFORMATION AVAILABLE.

FOR PORTABLE CONCRETE BARRIER, SEE ROADWAY STANDARD DRAWING 1170.01.

FOR TEMPORARY GUARDRAIL, SEE ROADWAY STANDARD DRAWING 862.03.

SEE ROADWAY PAY ITEMS FOR THE COST OF THE PORTABLE CONCRETE BARRIER AND TEMPORARY GUARDRAIL.

FOR TRAFFIC STAGING, SEE TRAFFIC CONTROL PLANS.

AFTER THE REMOVAL OF THE TEMPORARY GUARDRAIL, THE HOLES LEFT IN THE PRESTRESSED CONCRETE CORED SLAB SHALL BE FILLED WITH AN EPOXY BASED GROUT.

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

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NORTH CAROLINA PROFESSIONAL ENGINEER 34955 TIMOTHY J. TOWNSEND

DocuSigned by: Timothy J. Townsend

10/12/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE CONSTRUCTION STAGING FOR MAINTENANCE OF TRAFFIC

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REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-6
1			3				TOTAL SHEETS
2			4				20

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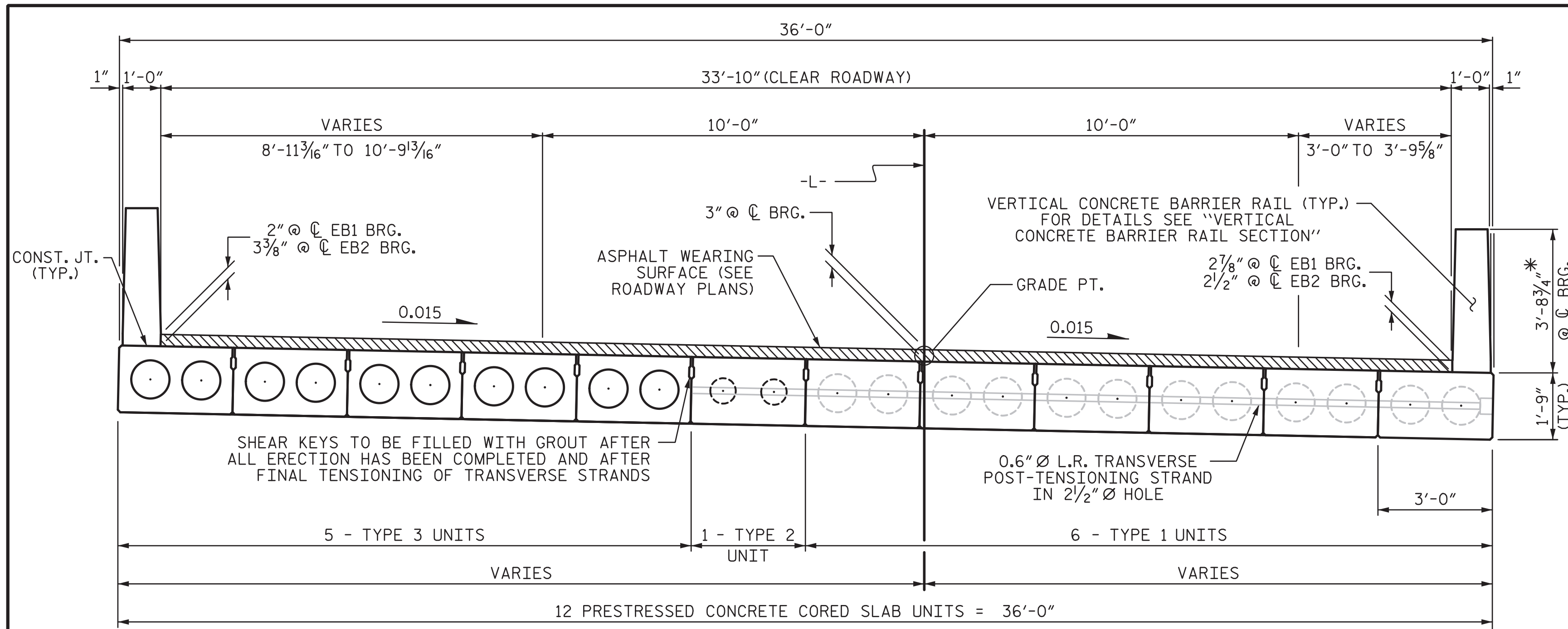
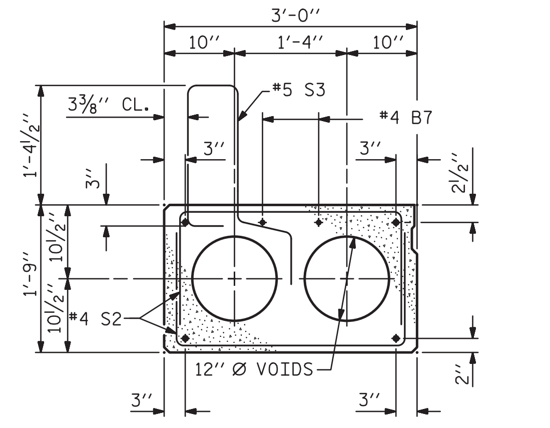


HALF SECTION
THROUGH VOIDS

HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

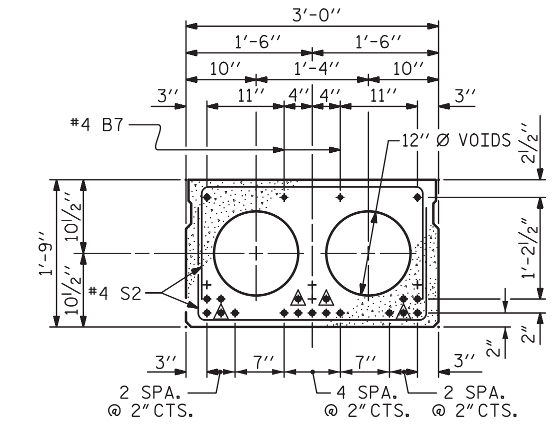
TYPICAL SECTION

* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



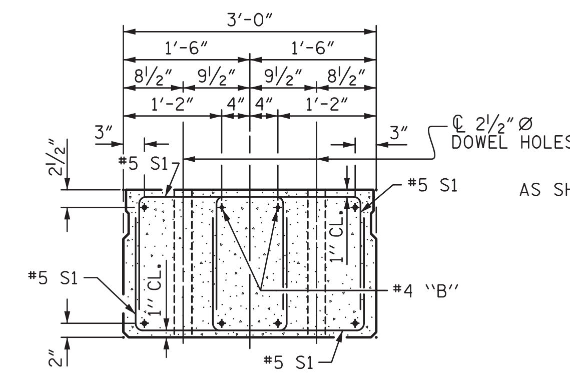
EXTERIOR SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



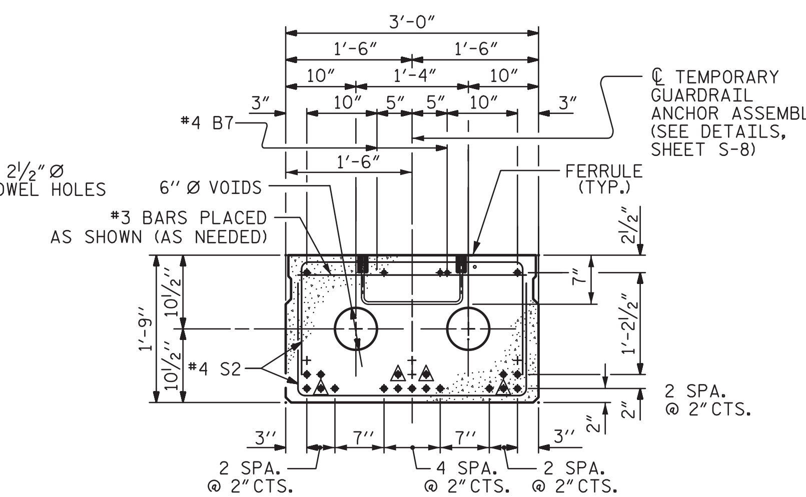
INTERIOR SLAB SECTION (TYPE 1 AND 3)

(19 STRANDS REQUIRED)



END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



INTERIOR SLAB SECTION (TYPE 2)

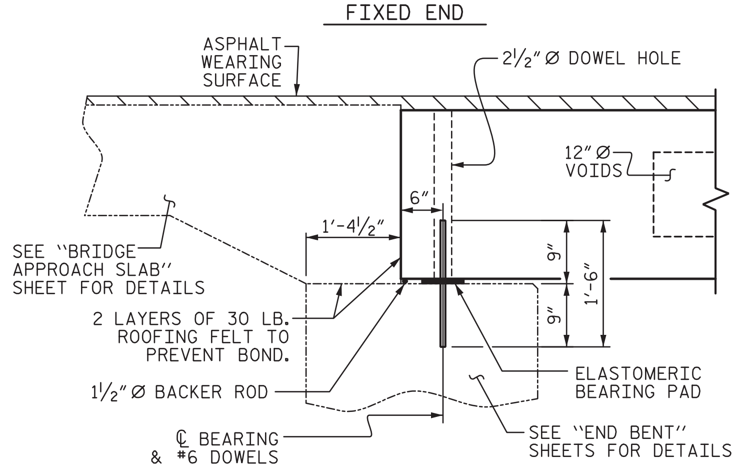
(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

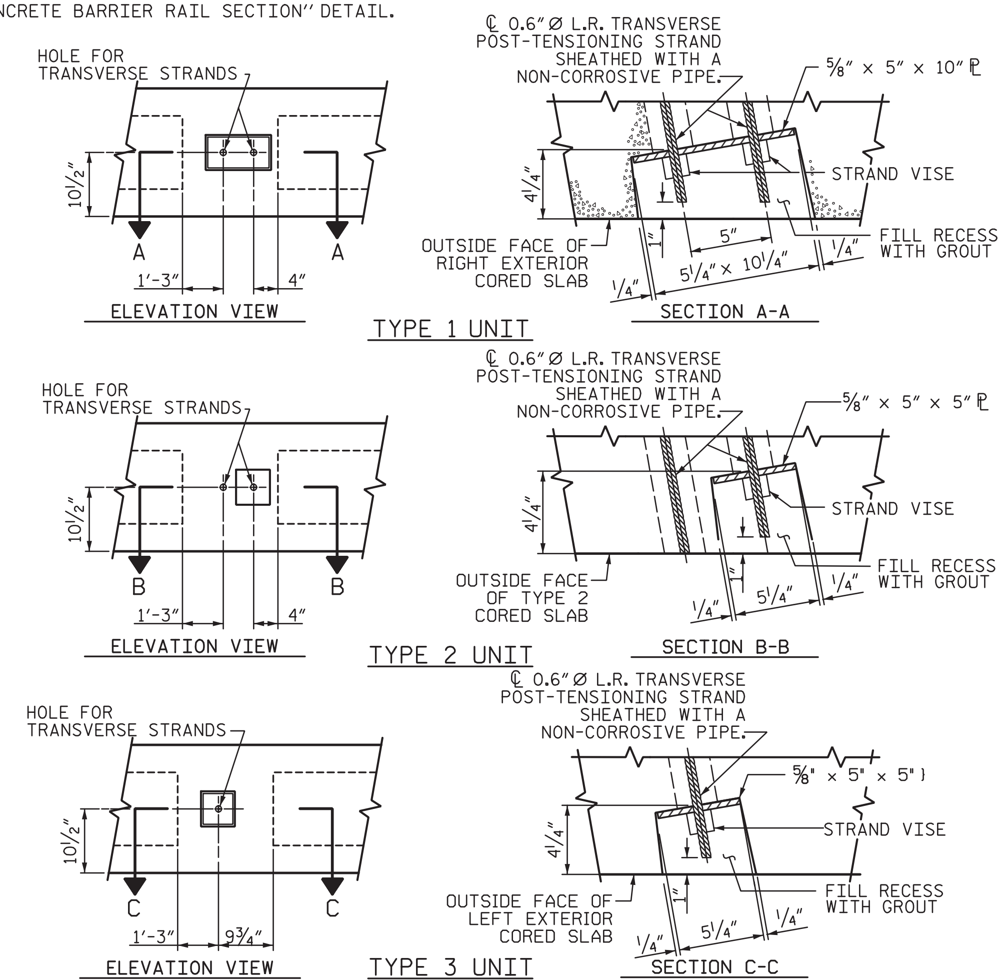
▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

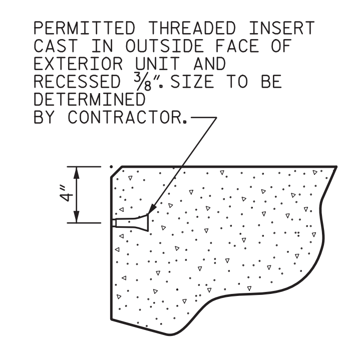
FIXED END



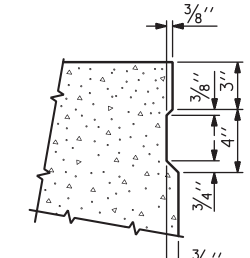
SECTION AT END BENT



GROUTED RECESS AT END OF POST-TENSIONED STRAND·CORED SLABS



THREADED INSERT DETAIL



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

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10/12/2022

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NC LIC. NO. C-1154

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 60° SKEW

REVISIONS

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

SHEET NO. S-7
TOTAL SHEETS 20

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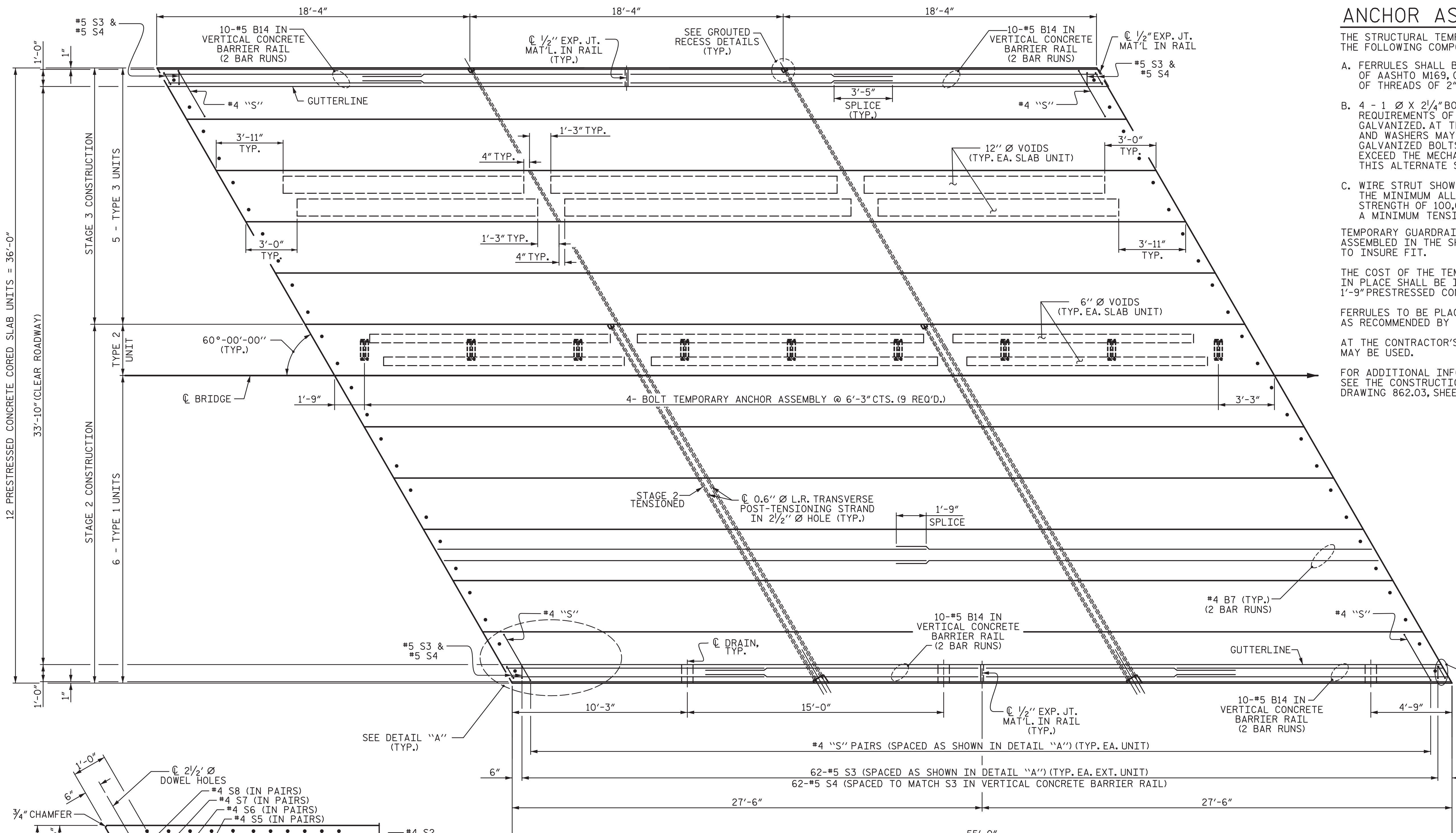
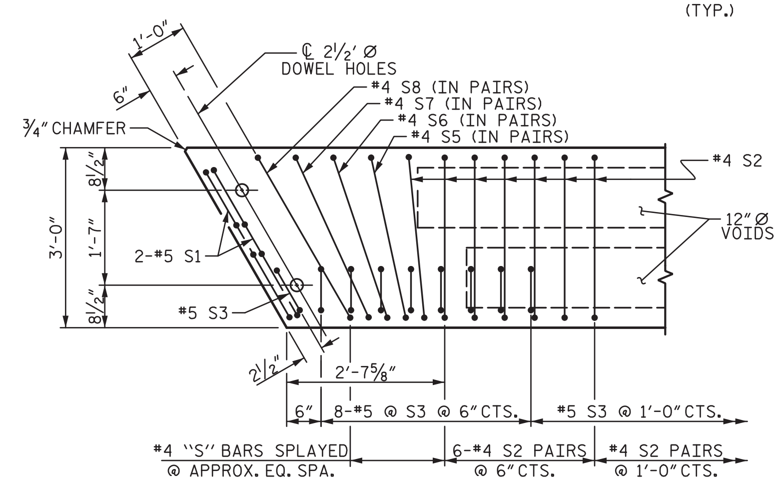
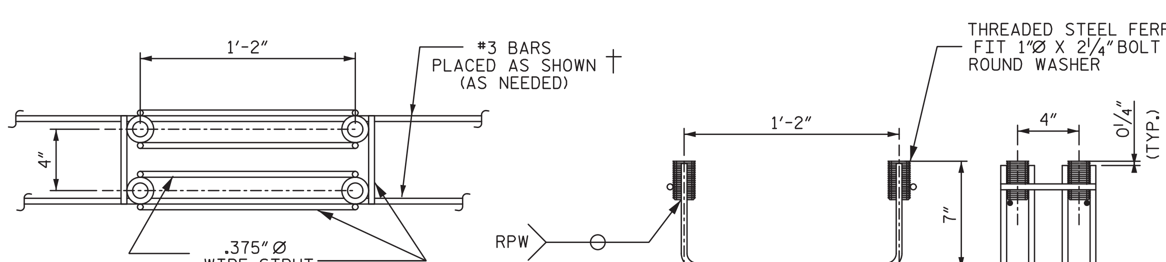


PLAN OF UNIT



DETAIL "A"

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.



1" X 2 1/4" BOLTS TO BE FURNISHED BY THE BRIDGE CONTRACTOR.

† THE #3 BARS ARE INCIDENTAL AND THEIR COST SHALL BE INCLUDED IN THE PRICE BID FOR THE PRESTRESSED CONCRETE CORED SLABS

TEMPORARY GUARDRAIL ANCHOR ASSEMBLY

** ASSEMBLIES REQUIRED IN THE TYPE 2 CORED SLAB

ANCHOR ASSEMBLY NOTES

THE STRUCTURAL TEMPORARY ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2"

B. 4 - 1 Ø X 2 1/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOTLS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1" Ø X 2 1/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

C. WIRE STRUT SHOWN IN THIS CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

TEMPORARY GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY COMPLETE IN PLACE SHALL BE INCLUDED IN THE UNIT CONTRACT BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS.

FERRULES TO BE PLACED DURING CASTING OF THE CORED SLAB UNITS AS RECOMMENDED BY THE MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

FOR ADDITIONAL INFORMATION CONCERNING THE TEMPORARY GUARDRAIL, SEE THE CONSTRUCTION STAGING SHEET AND ROADWAY STANDARD DRAWING 862.03, SHEET 7 OF 7.

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

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NORTH CAROLINA PROFESSIONAL ENGINEER TIMOTHY J. TOWNSEND 34955

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10/12/2022

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 55' UNIT 33'-10" CLEAR ROADWAY 60° SKEW

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S-8
1			3					TOTAL SHEETS
2			4					20

DRAWN BY : KES DATE : 10-22
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DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

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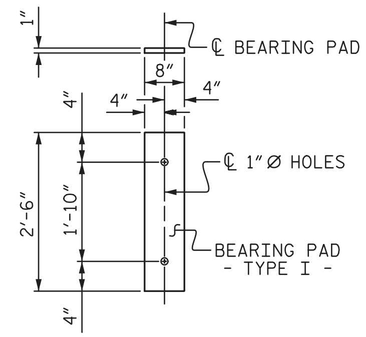


FIXED END
(TYPE I - 24 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

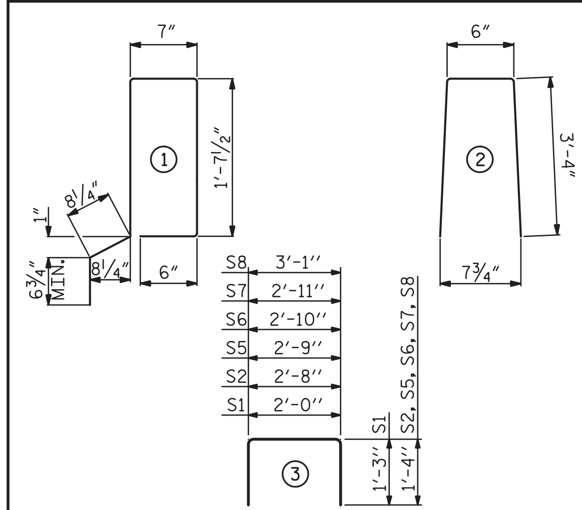
BILL OF MATERIAL FOR ONE 55′ CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT TYPE 1		INTERIOR UNIT TYPE 2	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28′-3″	75	28′-3″	75	28′-3″	75
S1	8	#5	3	4′-6″	38	4′-6″	38	4′-6″	38
S2	112	#4	3	5′-4″	399	5′-4″	399	5′-4″	399
✱ S3	64	#5	1	5′-7″	373				
S5	4	#4	3	5′-5″	14	5′-5″	14	5′-5″	14
S6	4	#4	3	5′-6″	15	5′-6″	15	5′-6″	15
S7	4	#4	3	5′-7″	15	5′-7″	15	5′-7″	15
S8	4	#4	3	5′-9″	15	5′-9″	15	5′-9″	15
REINFORCING STEEL LBS.					571		571		571
✱ EPOXY COATED REINFORCING STEEL LBS.					373				
6500 P.S.I. CONCRETE CU. YDS.					8.0		8.0		9.8
0.6″ Ø L.R. STRANDS No.					19		19		19

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS @ MIDSPAN		RAIL HEIGHT @ MIDSPAN	
	LEFT GL	RIGHT GL	LEFT GL	RIGHT GL
55′ UNITS	2⅛″	1⅝″	3′-8⅛″	3′-7⅝″

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
55′ UNIT			
EXTERIOR C.S. TYPE 1	1	55′-0″	55′-0″
INTERIOR C.S. TYPE 1	5	55′-0″	275′-0″
INTERIOR C.S. TYPE 2	1	55′-0″	55′-0″
INTERIOR C.S. TYPE 3	4	55′-0″	220′-0″
EXTERIOR C.S. TYPE 3	1	55′-0″	55′-0″
TOTAL	12		660′-0″

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	55′ UNIT					
✱B14	80	80	#5	STR	15′-6″	1293
✱ S4	128	128	#5	2	7′-2″	957
✱ EPOXY COATED REINFORCING STEEL				LBS.		2250
CLASS AA CONCRETE				CU.YDS.		14.1
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		110.29

GRADE 270 STRANDS

	0.6″ Ø L.R.
AREA (SQUARE INCHES)	
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

DEAD LOAD DEFLECTION AND CAMBER

	3′-0″ x 1′-9″
55′ CORED SLAB UNIT	0.6″ Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1½″ ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✱✱	⅜″ ↓
FINAL CAMBER	1⅛″ ↑

✱✱ INCLUDES FUTURE WEARING SURFACE

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½″ Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½″ IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

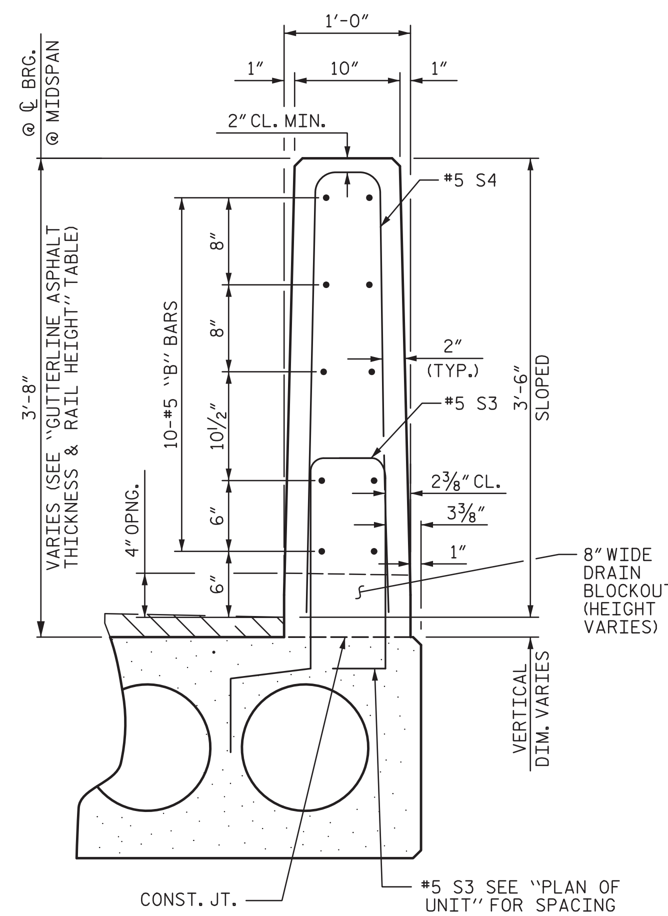
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

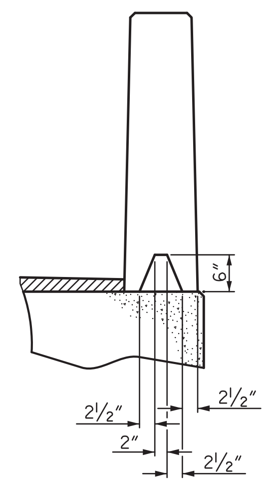
THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4′-0″ CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

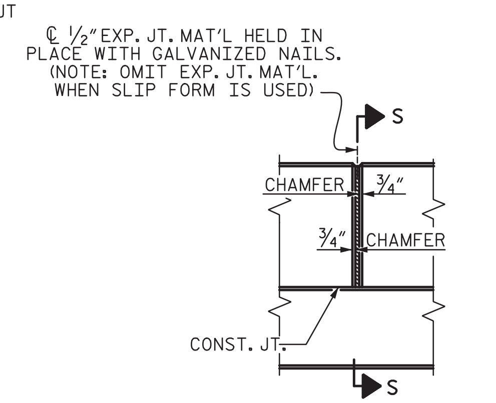
THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



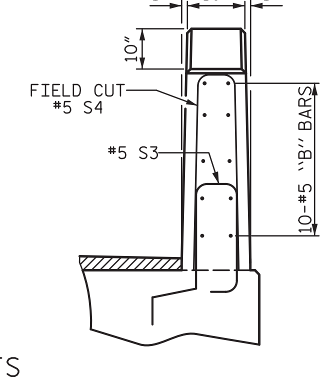


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

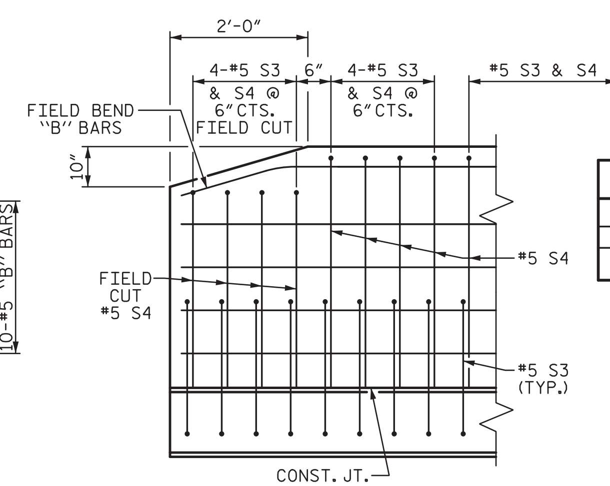


ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL SECTION



END VIEW



SIDE VIEW

END OF RAIL DETAILS

CONCRETE RELEASE STRENGTH

UNIT	PSI
55′ UNITS	4900

PROJECT NO. 17BP.13.R.171
MADISON COUNTY
STATION: 13+73.12 -L-

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DocuSigned by: Timothy J. Townsend
B8C1881FA1E482...
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 34955 TIMOTHY J. TOWNSEND
10/12/2022

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3′-0″ X 1′-9″
PRESTRESSED CONCRETE
CORED SLAB UNIT
60° SKEW

REVISIONS								SHEET NO.
NO.	BY:	DATE:		NO.	BY:	DATE:		S-9
1				3				TOTAL SHEETS
2				4				20

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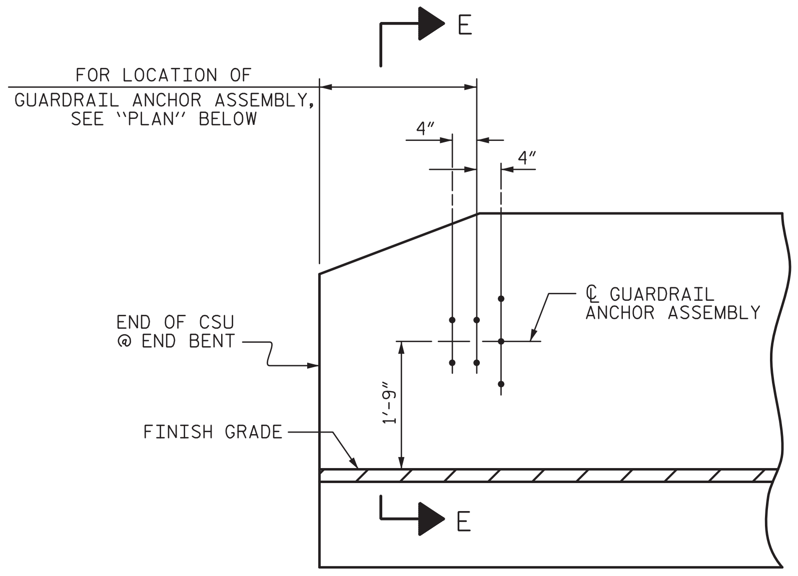
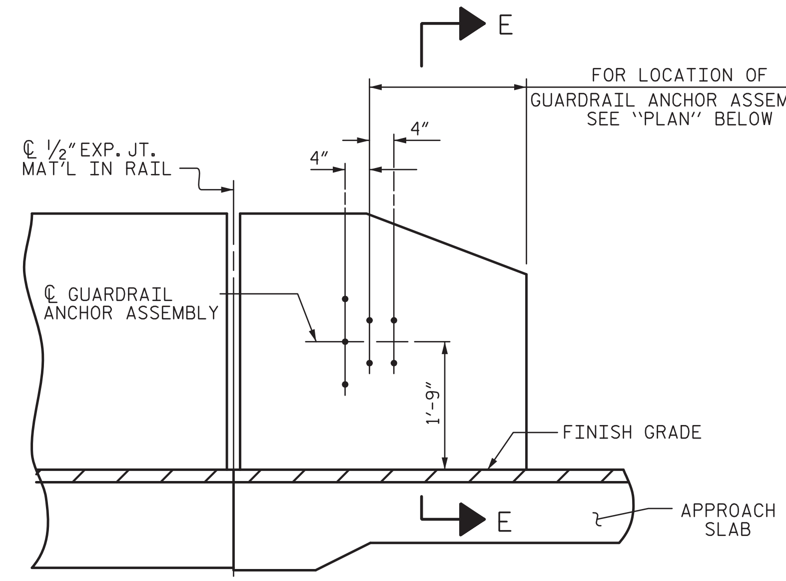


ELEVATION
END BENT #1 SHOWN,
END BENT #2 RIGHT SIMILAR.



ELEVATION
END BENT #2 LEFT SHOWN.

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

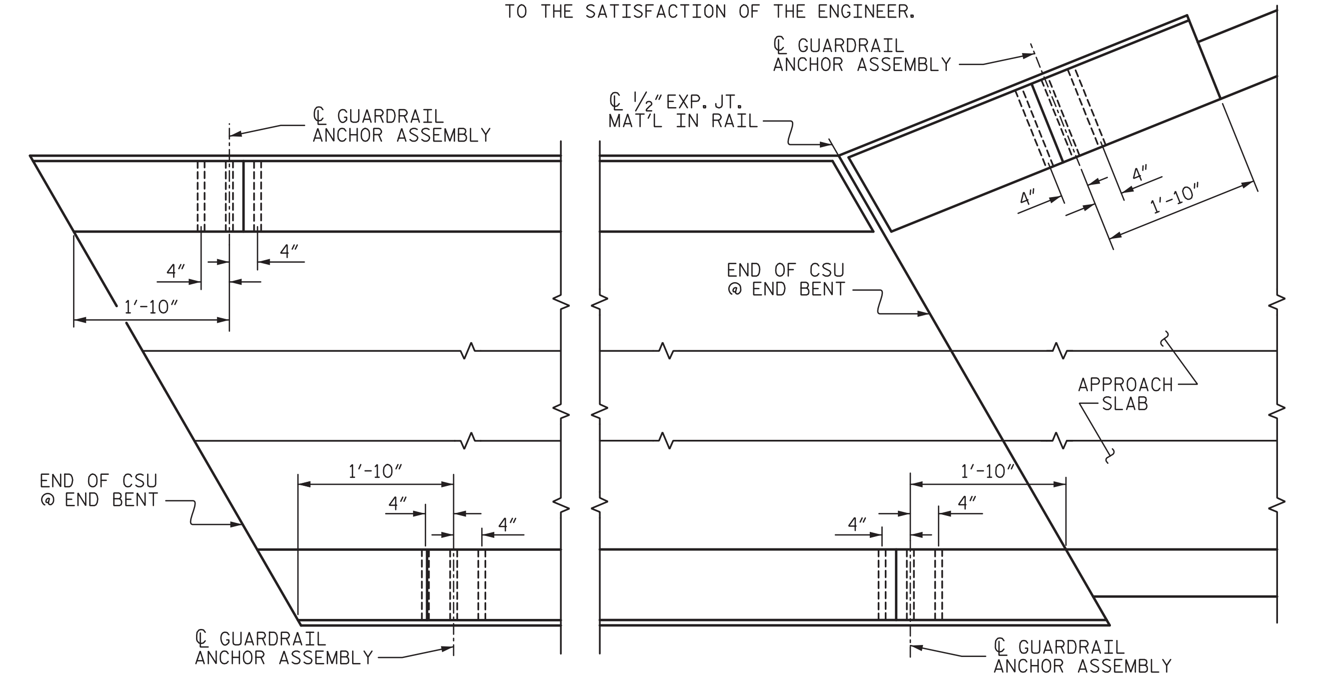
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

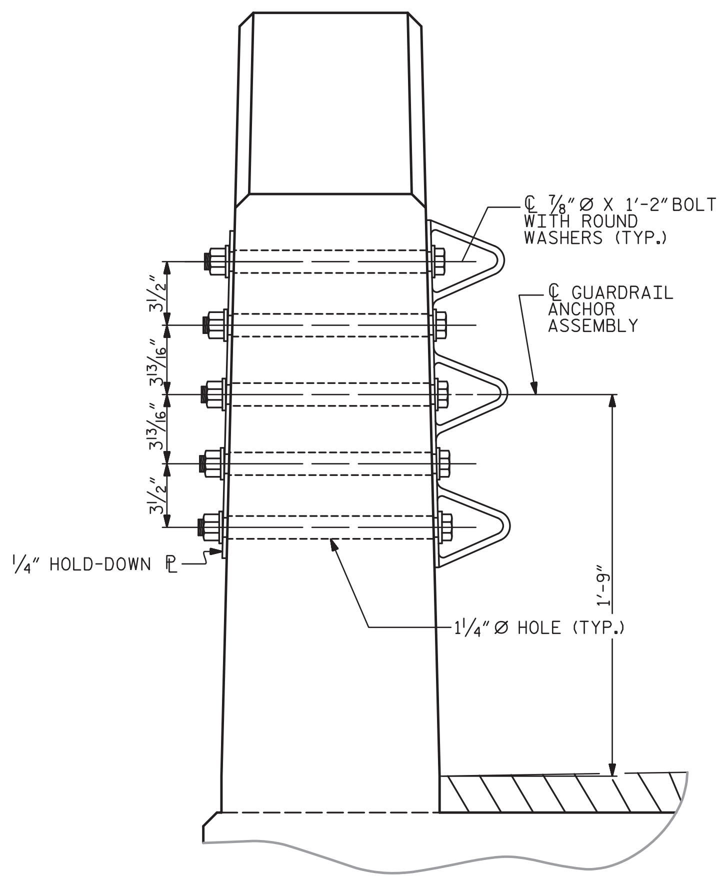
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

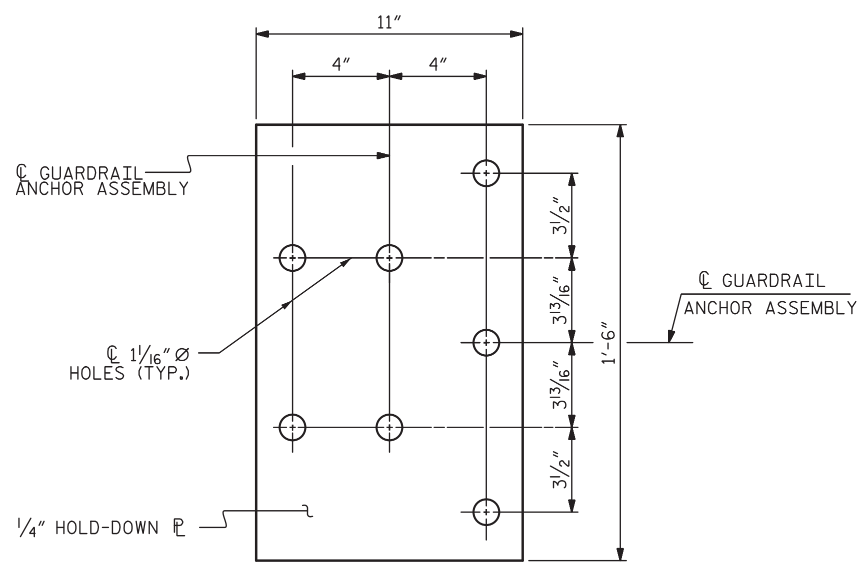


PLAN

LOCATION OF
ANCHORS FOR GUARDRAIL



SECTION E-E



PLAN

GUARDRAIL ANCHOR
ASSEMBLY DETAILS

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

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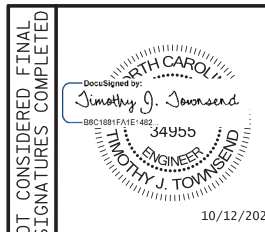

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE
DETAILS
FOR VERTICAL CONCRETE
BARRIER RAIL

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

SHEET NO. S-10
TOTAL SHEETS 20

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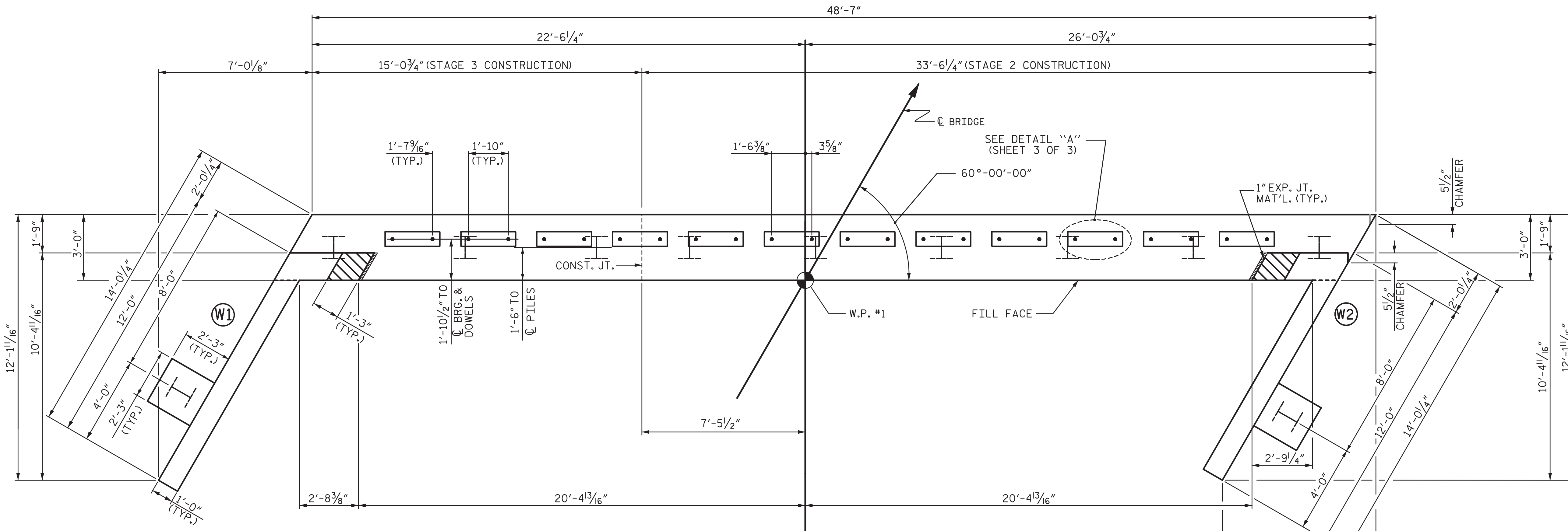
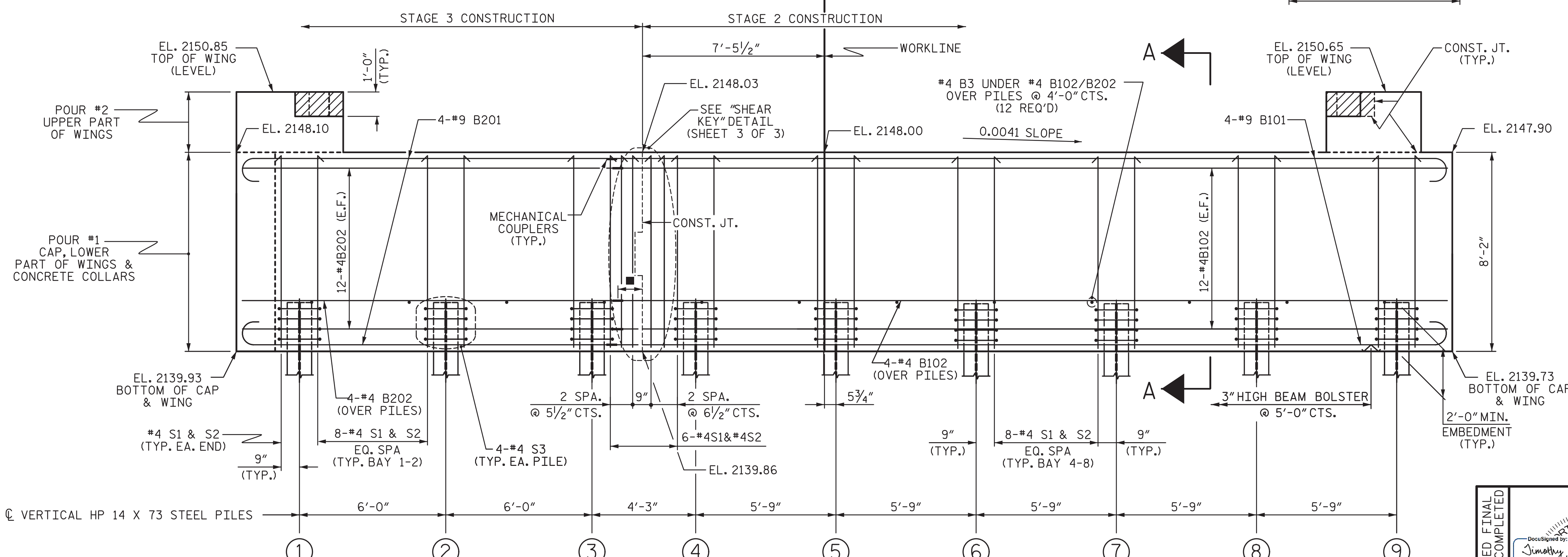


PLAN



■ 1'-0" MIN. PROJECTION (TYP. #4 BARS)
1'-3" MIN. PROJECTION (TYP. #9 BARS)

ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 OF 3.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

TOP OF PILE ELEVATIONS	
1	2141.92
2	2141.90
3	2141.87
4	2141.85
5	2141.83
6	2141.81
7	2141.79
8	2141.76
9	2141.74

PROJECT NO. 17BP.13.R.171
MADISON COUNTY
STATION: 13+73.12 -L-
SHEET 1 OF 3

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Timothy J. Townsend
NORTH CAROLINA 34955 ENGINEER TIMOTHY J. TOWNSEND
10/12/2022

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
PLAN & ELEVATION

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

SHEET NO. S-11
TOTAL SHEETS 20

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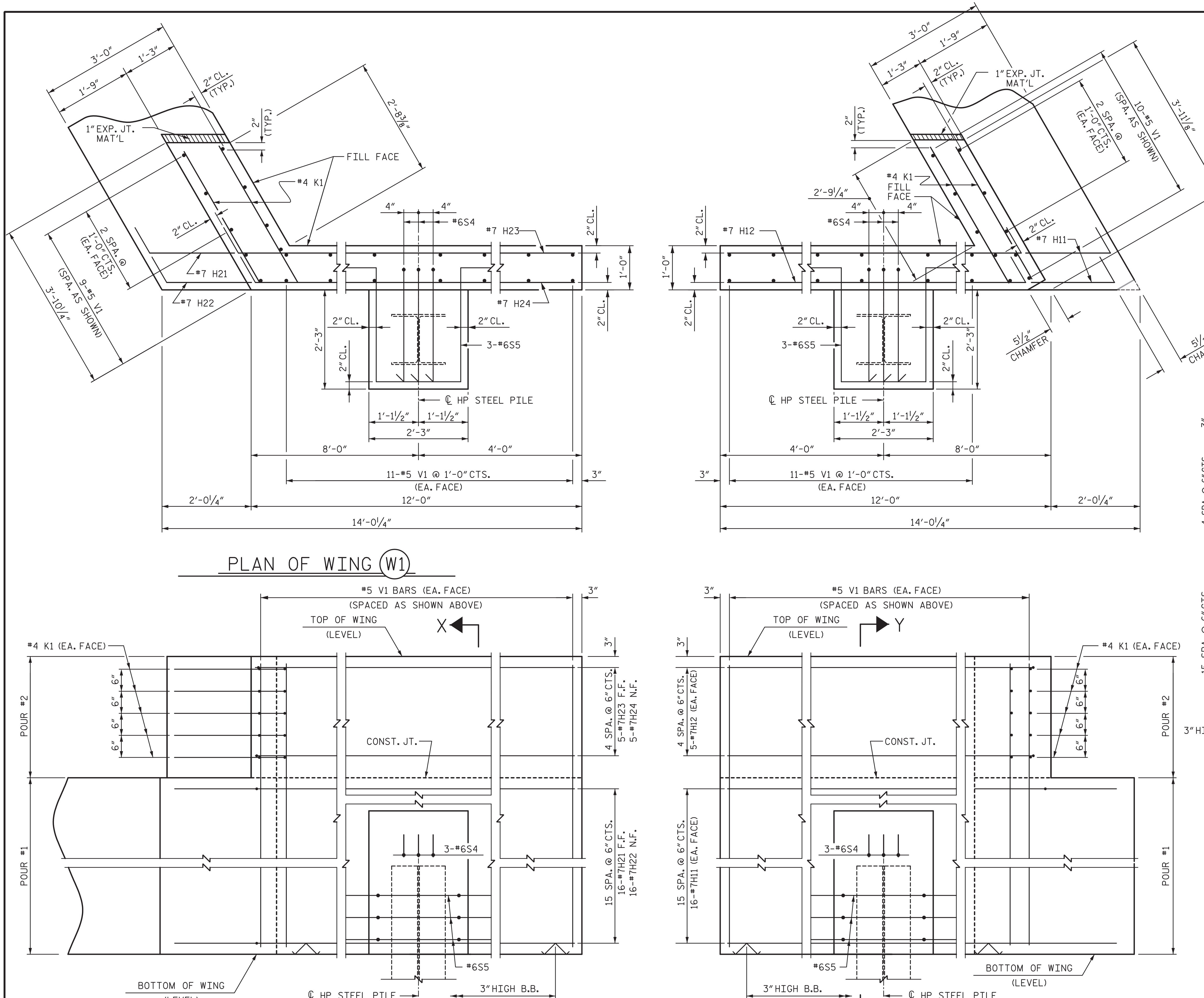
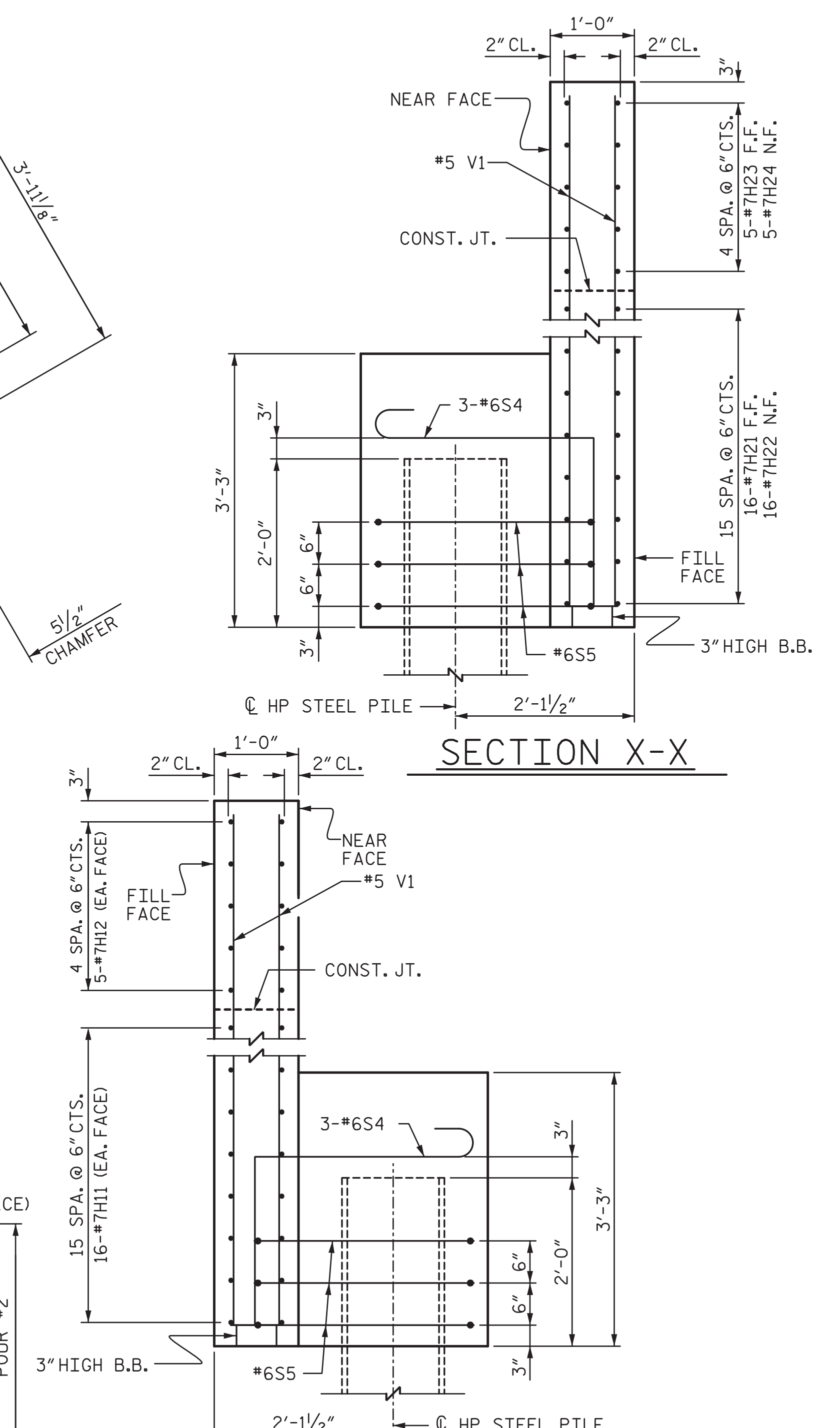


PLAN OF WING W1

ELEVATION OF WING W1

ELEVATION OF WING W2



SECTION X-X

SECTION Y-Y

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

SHEET 2 OF 3

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NORTH CAROLINA ENGINEER 34955 TIMOTHY J. TOWNSEND

10/12/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1
WING DETAILS

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

SHEET NO. S-12

TOTAL SHEETS 20

WING DETAILS

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BILL OF MATERIAL
END BENT #1
STAGE 2 CONSTRUCTION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B101	8	#9	1	35′-7″	968
B102	28	#4	STR	34′-0″	636
B3	8	#4	STR	2′-8″	14
D1	17	#6	STR	1′-6″	38
H11	32	#7	5	14′-2″	927
H12	10	#7	5	12′-2″	249
K1	10	#4	STR	3′-3″	22
S1	44	#4	3	19′-0″	588
S2	44	#4	2	3′-5″	100
S3	24	#4	6	7′-7″	122
S4	3	#6	7	5′-4″	24
S5	3	#6	8	9′-1″	41
V1	32	#5	STR	10′-6″	350
REINFORCING STEEL					4,049 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	34.6 CY
POUR #2	UPPER PART OF WINGS	1.8 CY
TOTAL CLASS A CONCRETE		36.4 CY

BILL OF MATERIAL
END BENT #1
STAGE 3 CONSTRUCTION

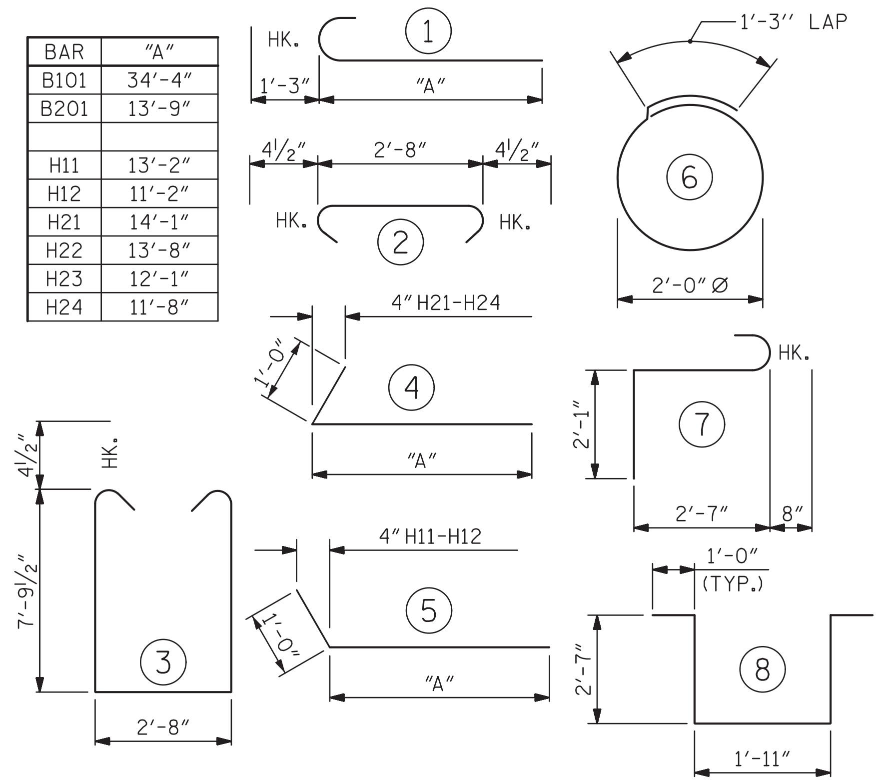
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B201	8	#9	1	15′-0″	408
B202	28	#4	STR	14′-3″	267
B3	4	#4	STR	2′-8″	7
D1	7	#6	STR	1′-6″	16
H21	16	#7	4	15′-1″	493
H22	16	#7	4	14′-8″	480
H23	5	#7	4	13′-1″	134
H24	5	#7	4	12′-8″	129
K1	10	#4	STR	3′-3″	22
S1	20	#4	3	19′-0″	254
S2	20	#4	2	3′-5″	46
S3	12	#4	6	7′-7″	61
S4	3	#6	7	5′-4″	24
S5	3	#6	8	9′-1″	41
V1	31	#5	STR	10′-6″	339
REINFORCING STEEL					2,721 LBS.

CLASS A CONCRETE BREAKDOWN

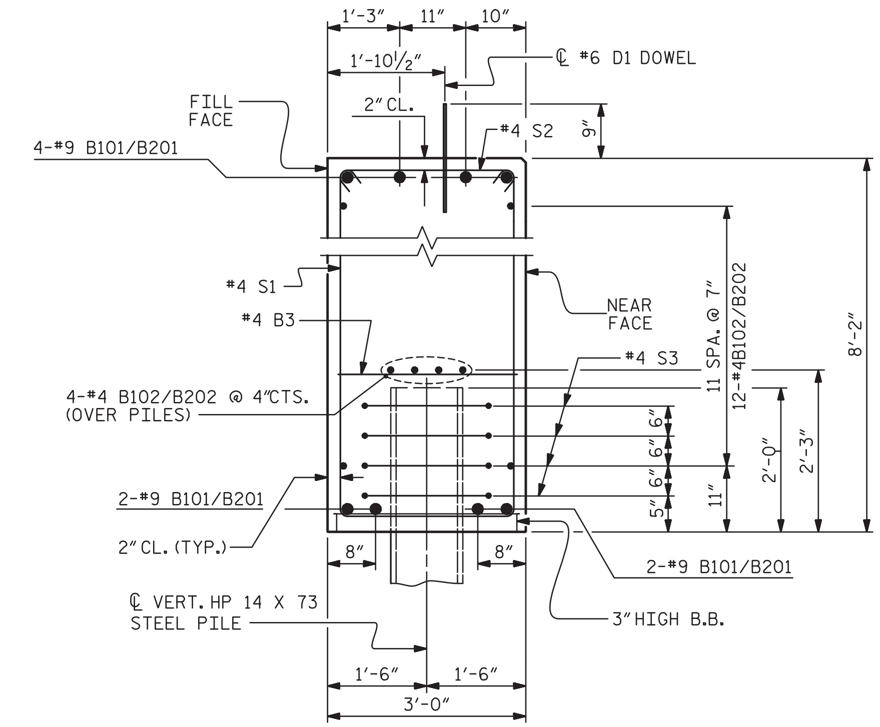
POUR #1	CAP, LOWER PART OF WINGS & COLLARS	19.1 CY
POUR #2	UPPER PART OF WINGS	1.7 CY
TOTAL CLASS A CONCRETE		20.8 CY

BAR TYPES

BAR	"A"
B101	34′-4″
B201	13′-9″
H11	13′-2″
H12	11′-2″
H21	14′-1″
H22	13′-8″
H23	12′-1″
H24	11′-8″

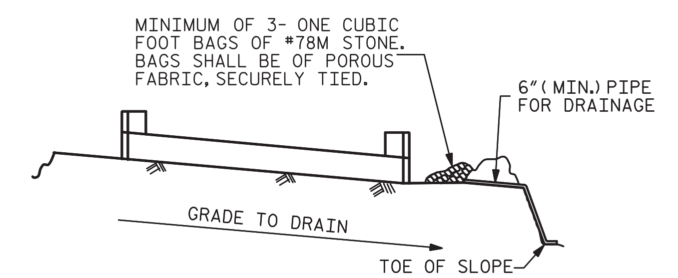


ALL BAR DIMENSIONS ARE OUT TO OUT.



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

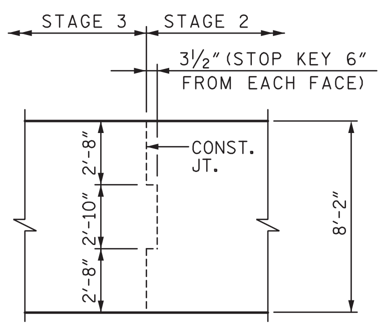


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

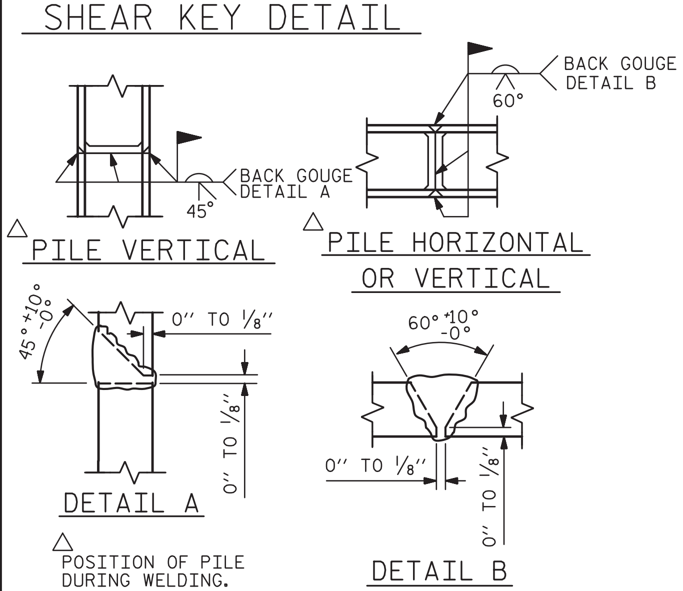
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

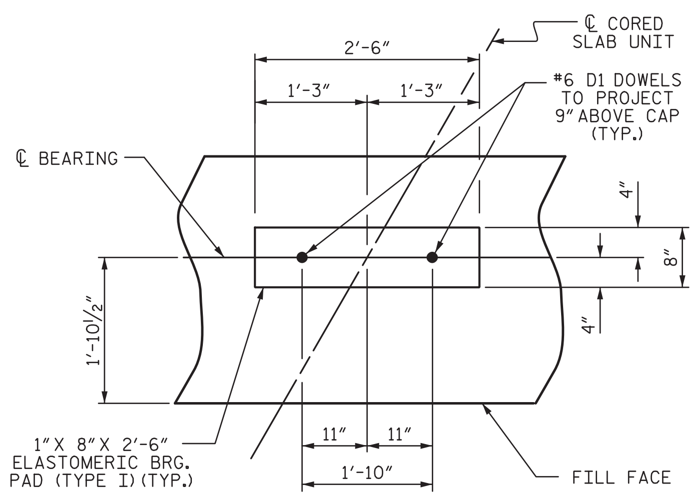


SHEAR KEY DETAIL

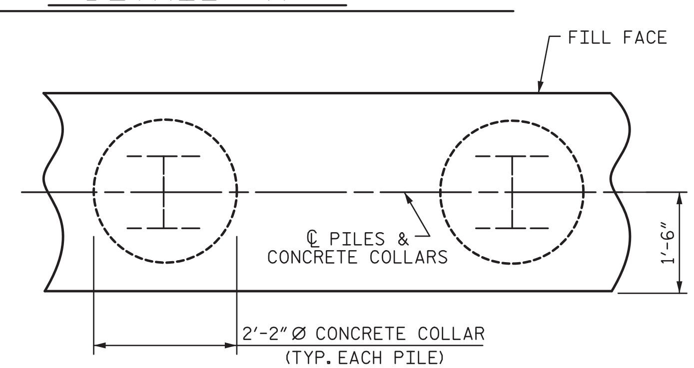


△ POSITION OF PILE DURING WELDING.

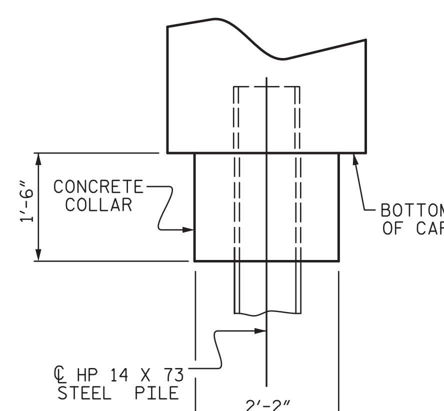
PILE SPLICE DETAILS



DETAIL "A"



PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

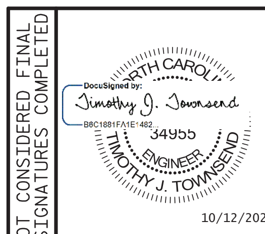
PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

SHEET 3 OF 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



10/12/2022

Mattern & Craig ENGINEERS•SURVEYORS 12 BROAD STREET ASHEVILLE, NORTH CAROLINA 28801 (828) 254-2201 FAX (828) 254-4562 NC LIC. NO. C-1154

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
DETAILS

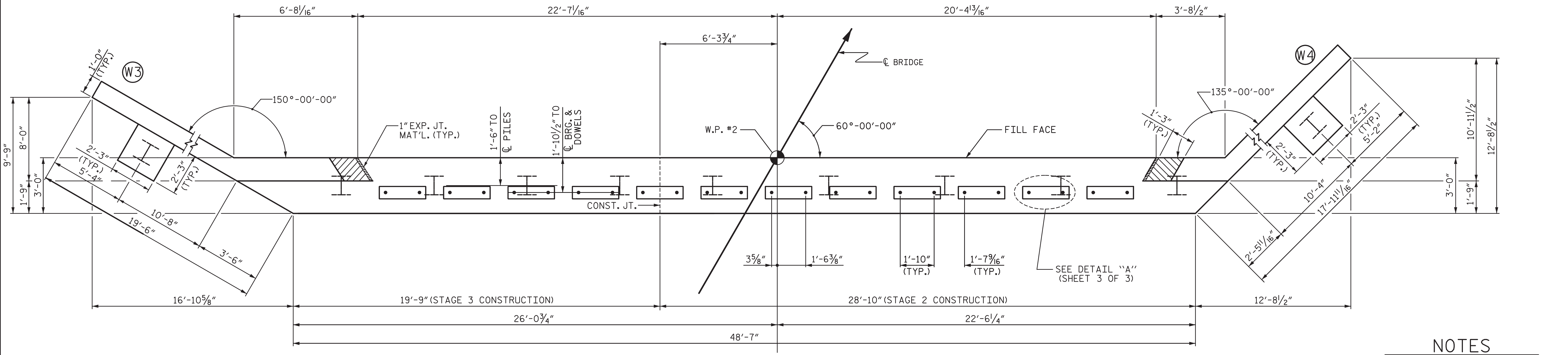
REVISIONS

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

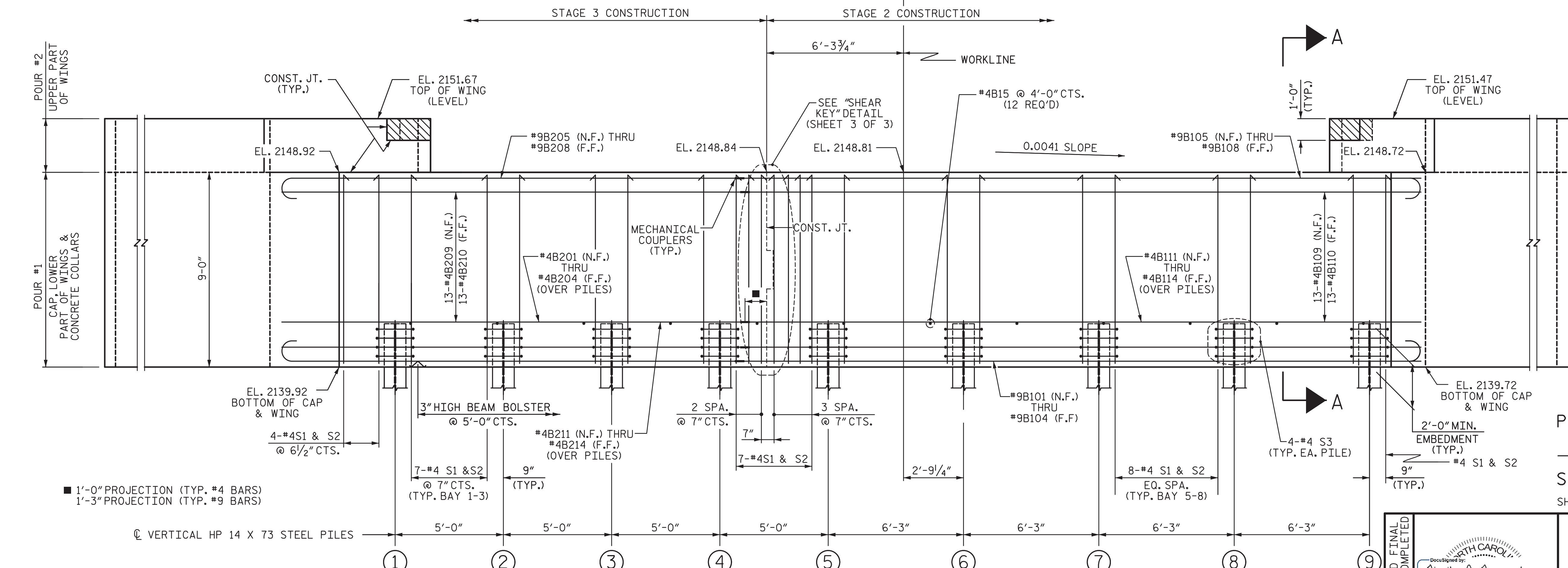
SHEET NO. S-13
TOTAL SHEETS 20

DRAWN BY : KES	DATE : 10-22	DESIGN ENGINEER OF RECORD: T. TOWNSEND	DATE : 10-22
CHECKED BY : TJT	DATE : 10-22		

DATE: 10/11/2022 2:46:52 PM TIME: 2:46:52 PM
FILE: I:\3850G - Div 13 Bridge 66 (Madison Co)\Dwg\Sheets\401.025.17BP.13.R.171.SMU.E1.013_560066.dgn



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 3 OF 3.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.
"U" BARS NOT SHOWN FOR CLARITY.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

TOP OF PILE ELEVATIONS	
1	2141.91
2	2141.89
3	2141.87
4	2141.85
5	2141.83
6	2141.80
7	2141.77
8	2141.75
9	2141.72

PROJECT NO. 17BP.13.R.171
MADISON COUNTY
STATION: 13+73.12 -L-
SHEET 1 OF 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Timothy J. Townsend
NORTH CAROLINA ENGINEER 34955 TIMOTHY J. TOWNSEND
10/12/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2
PLAN & ELEVATION

Mattern & Craig ENGINEERS•SURVEYORS
12 BROAD STREET ASHEVILLE, NORTH CAROLINA 28801 (828) 254-2201 FAX (828) 254-4562 NC LIC. NO. C-1154

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			20

DRAWN BY : KES DATE : 10-22
CHECKED BY : TJT DATE : 10-22
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

DATE: 10/11/2022 2:46:53 PM TIME: 2:46:53 PM
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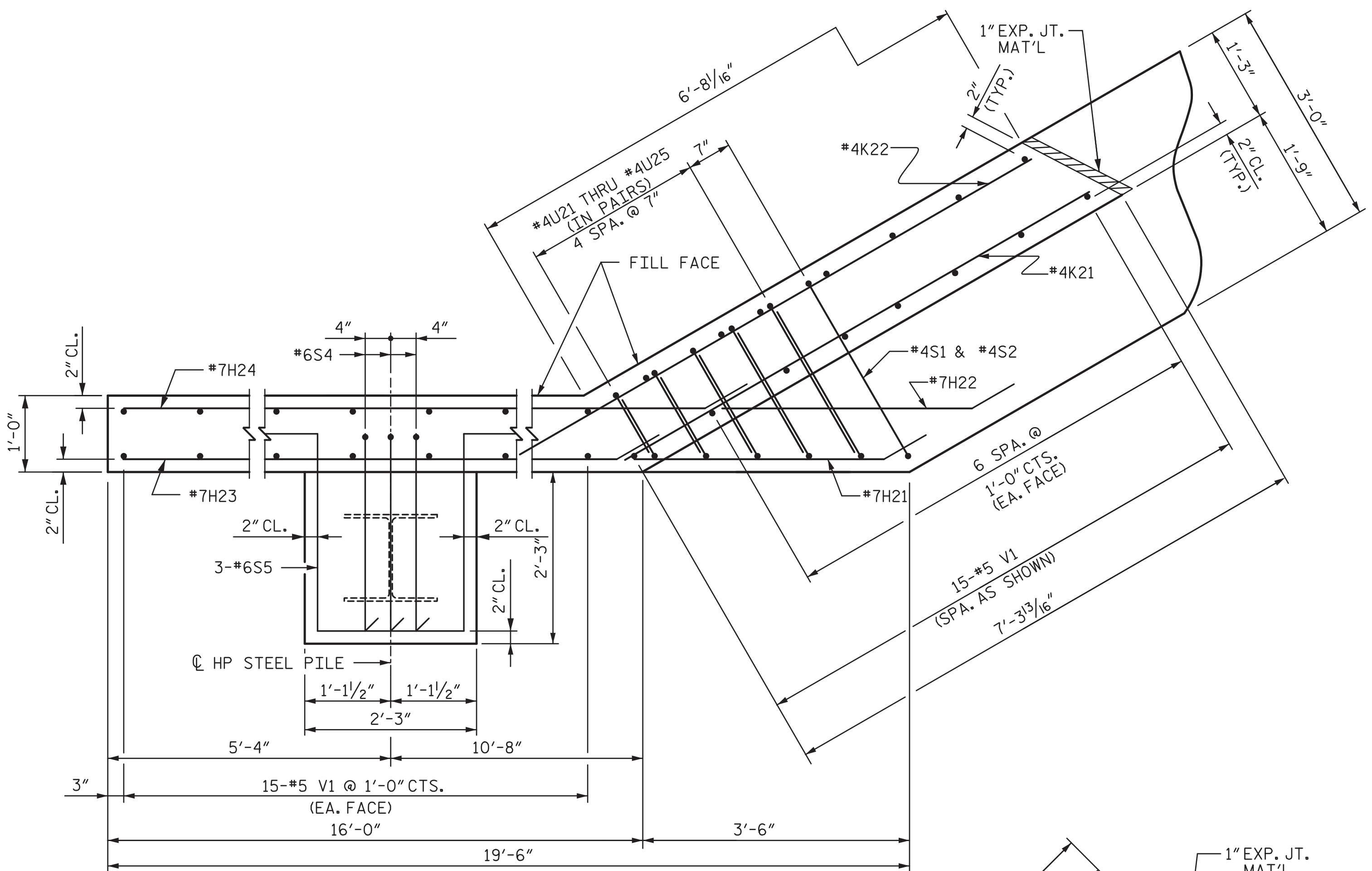
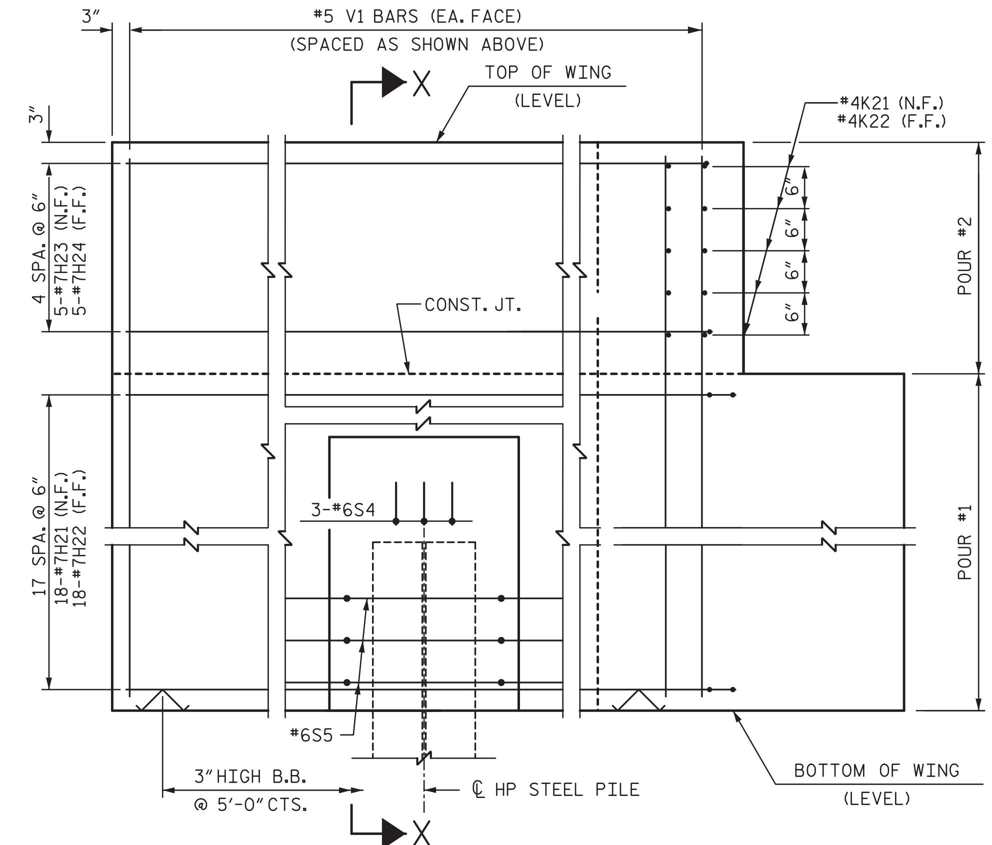
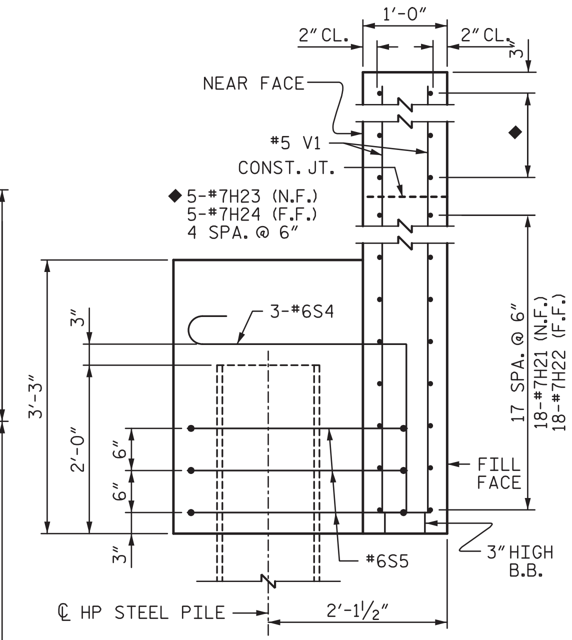


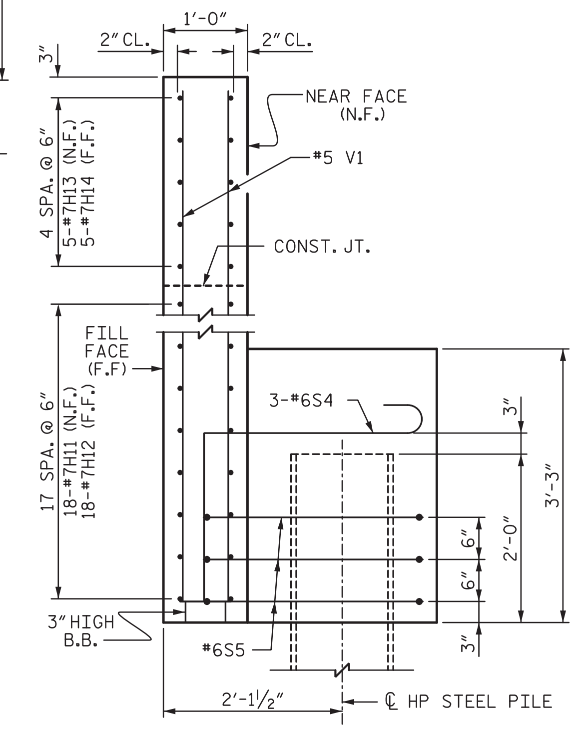
PLAN OF WING W3



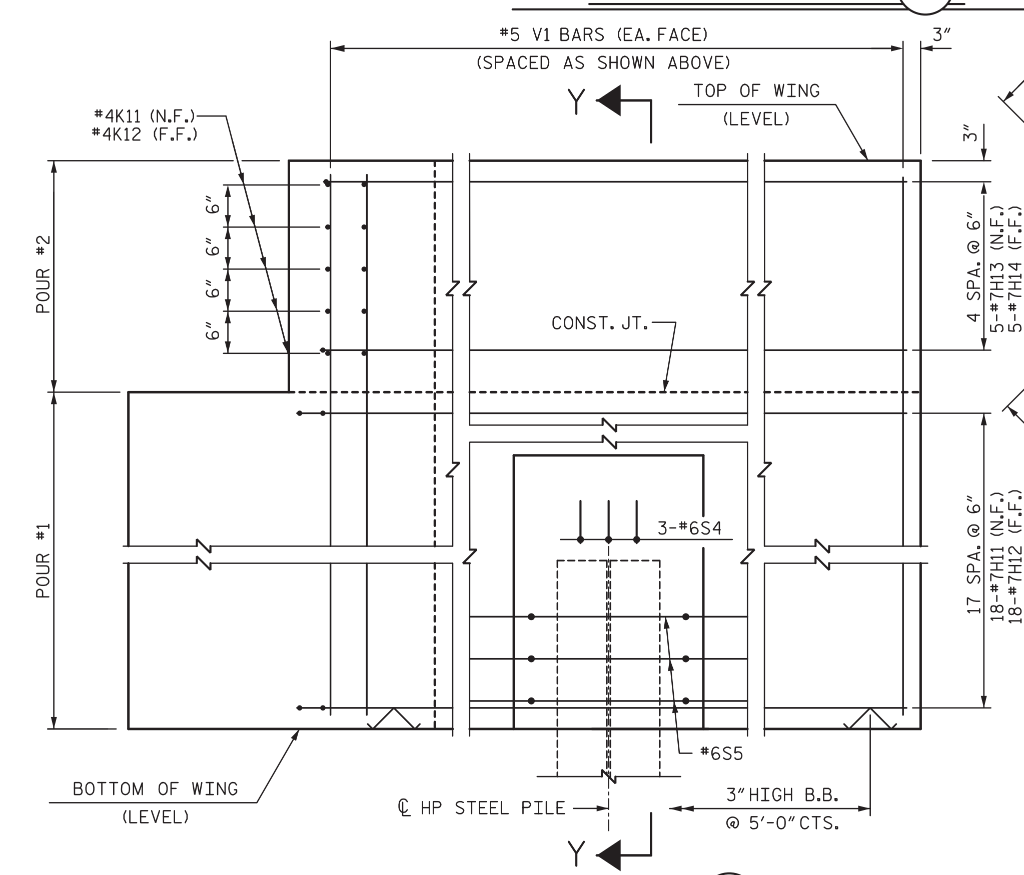
ELEVATION OF WING W3



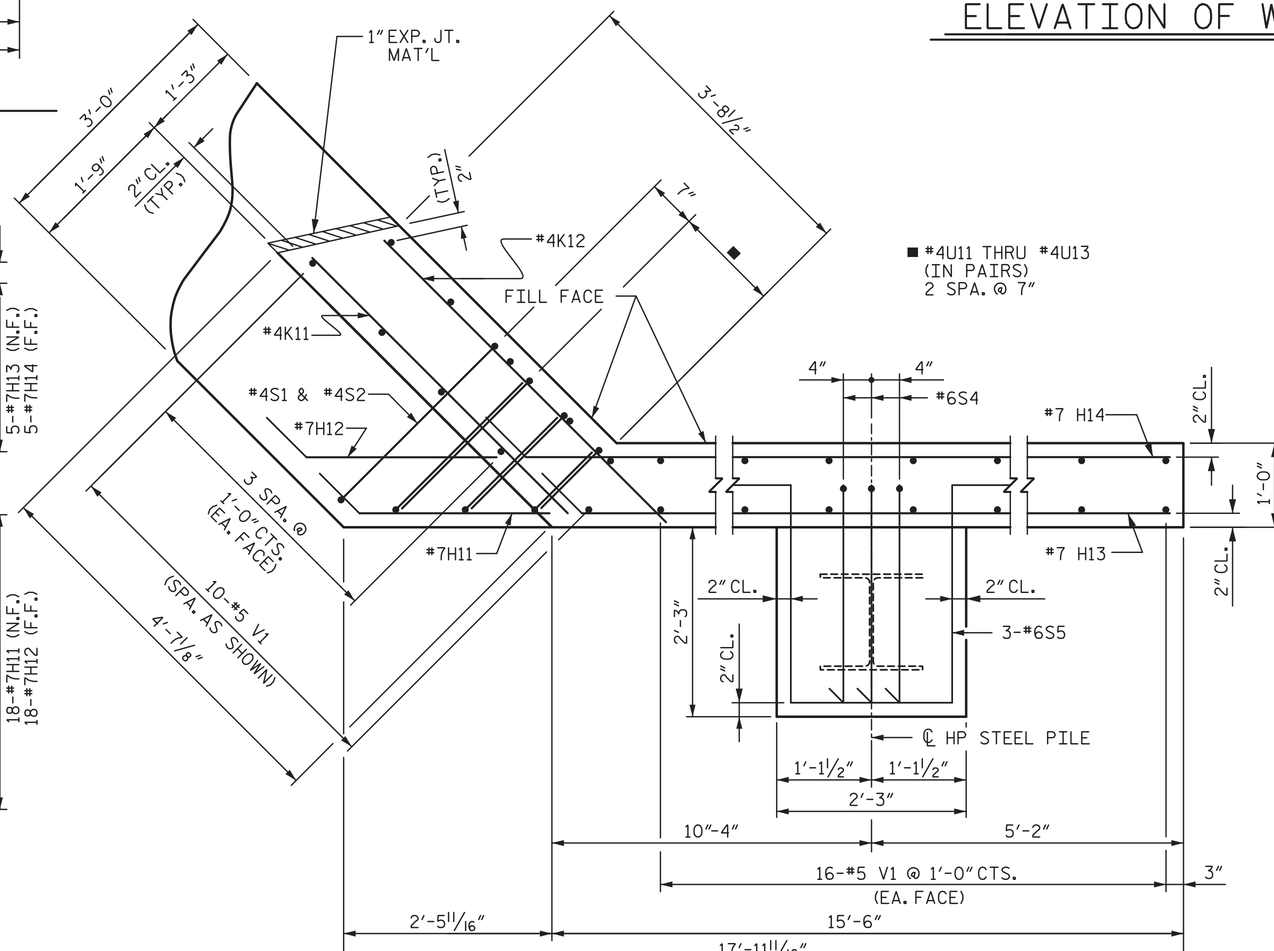
SECTION X-X



SECTION Y-Y



ELEVATION OF WING W4



PLAN OF WING W4

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

SHEET 2 OF 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Timothy J. Townsend
B6C1881FA1E1462...

NORTH CAROLINA ENGINEER 34955 TIMOTHY J. TOWNSEND

10/12/2022

Mattern & Craig ENGINEERS•SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
WING DETAILS

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

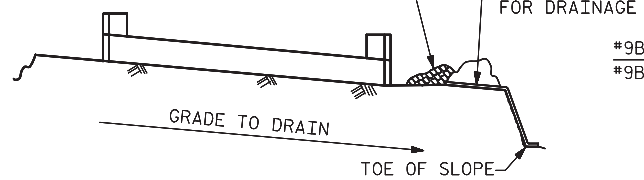
SHEET NO. S-15

TOTAL SHEETS 20

WING DETAILS

DRAWN BY : KES	DATE : 10-22	DESIGN ENGINEER OF RECORD: T. TOWNSEND	DATE : 10-22
CHECKED BY : TJT	DATE : 10-22		

DATE: 10/11/2022 2:46:54 PM TIME: 2:46:54 PM
FILE: I:\3850G - Div 13 Bridge 66 (Madison Co)\Dwg\Sheets\401.029.17BP.13.R.171.SMU_E2_015_560066.dgn

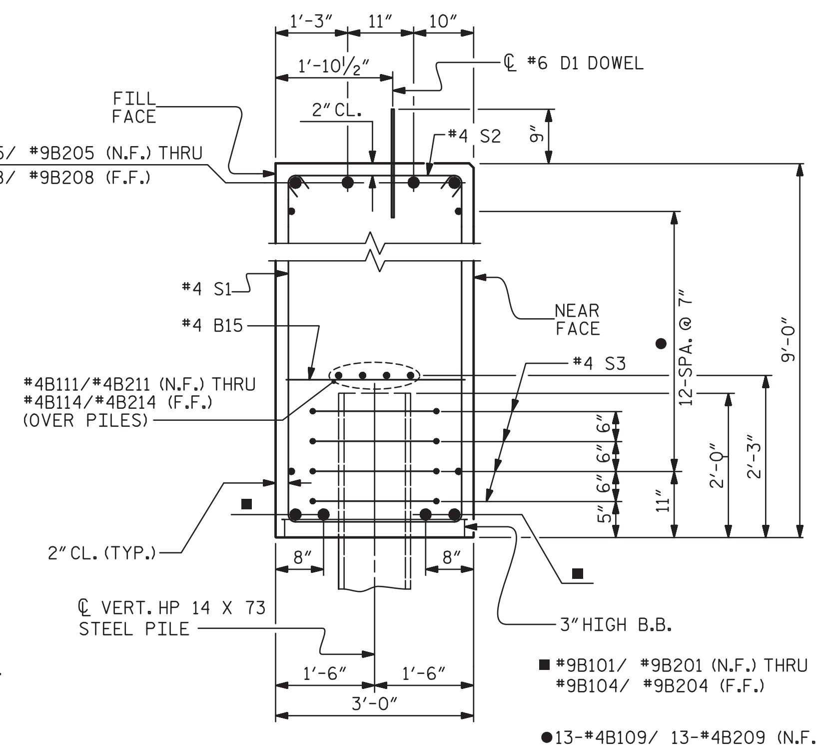


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

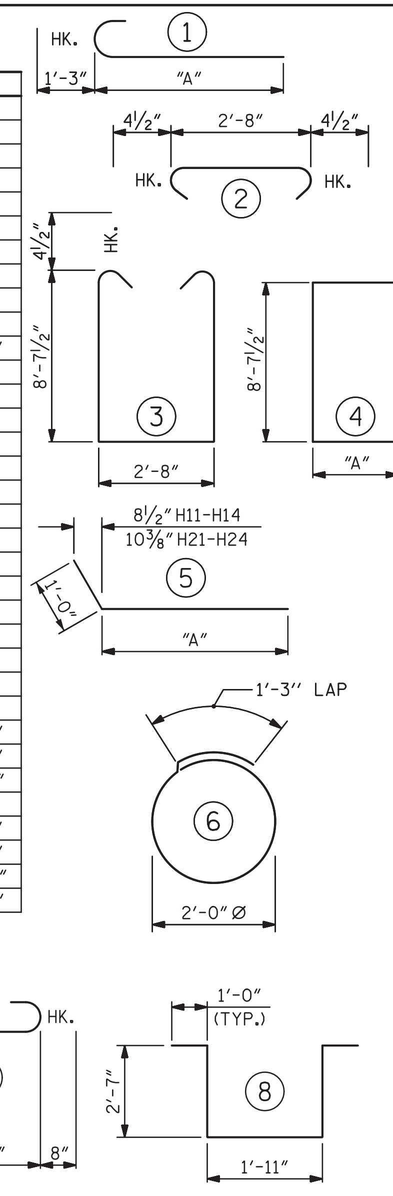


SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

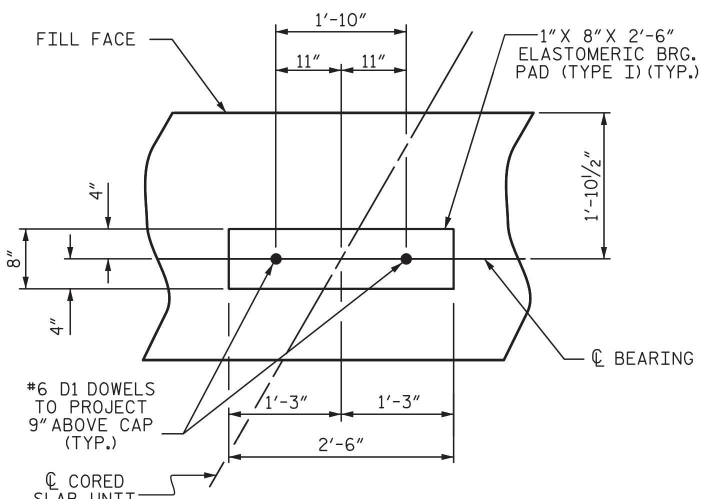
BAR TYPES

BAR	"A"
B101	30'-0"
B102	30'-4"
B103	32'-0"
B104	32'-5"
B105	30'-0"
B106	30'-6"
B107	31'-5"
B108	32'-5"
B201	18'-4"
B202	19'-4"
B203	20'-11"
B204	22'-8"
B205	18'-4"
B206	19'-0"
B207	21'-11"
B208	22'-8"
H11	17'-8"
H12	18'-3"
H13	15'-2"
H14	15'-9"
H21	19'-2"
H22	20'-2"
H23	15'-8"
H24	16'-8"
U11	1'-0¼"
U12	1'-6¼"
U13	2'-0¼"
U21	10¼"
U22	1'-2¼"
U23	1'-6¼"
U24	1'-10¼"
U25	2'-2¼"

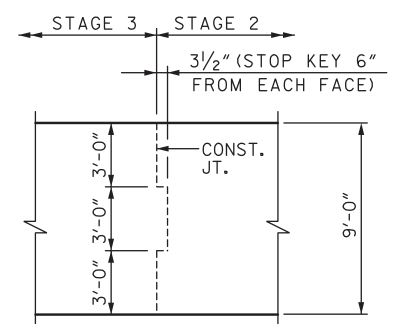


ALL BAR DIMENSIONS ARE OUT TO OUT.

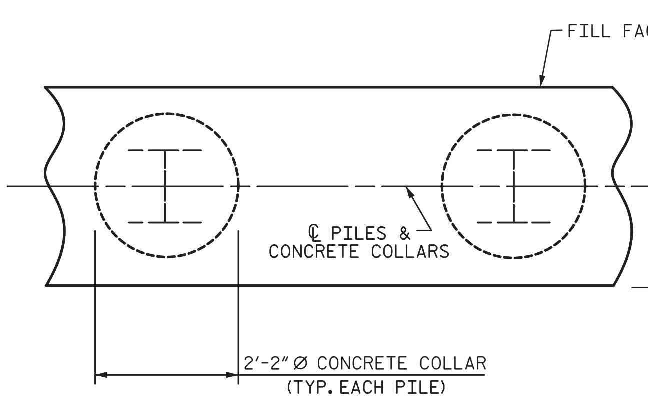
BILL OF MATERIAL CONSTRUCTION STAGE 2						BILL OF MATERIAL CONSTRUCTION STAGE 3					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B101	1	#9	1	31'-3"	106	B201	1	#9	1	19'-7"	67
B102	1	#9	1	31'-7"	107	B202	1	#9	1	20'-7"	70
B103	1	#9	1	33'-3"	113	B203	1	#9	1	22'-2"	75
B104	1	#9	1	33'-8"	114	B204	1	#9	1	23'-11"	81
B105	1	#9	1	31'-3"	106	B205	1	#9	1	19'-7"	67
B106	1	#9	1	31'-9"	108	B206	1	#9	1	20'-3"	69
B107	1	#9	1	32'-8"	111	B207	1	#9	1	23'-2"	79
B108	1	#9	1	33'-8"	114	B208	1	#9	1	23'-11"	81
B109	13	#4	STR	29'-9"	258	B209	13	#4	STR	18'-8"	162
B110	13	#4	STR	32'-3"	280	B210	13	#4	STR	23'-0"	200
B111	1	#4	STR	30'-6"	20	B211	1	#4	STR	20'-0"	13
B112	1	#4	STR	30'-9"	21	B212	1	#4	STR	20'-6"	14
B113	1	#4	STR	31'-2"	21	B213	1	#4	STR	21'-1"	14
B114	1	#4	STR	31'-6"	21	B214	1	#4	STR	21'-8"	14
B15	7	#4	STR	2'-8"	12	B15	5	#4	STR	2'-8"	9
D1	14	#6	STR	1'-6"	32	D1	10	#6	STR	1'-6"	23
H11	18	#7	5	18'-8"	687	H21	18	#7	5	20'-2"	742
H12	18	#7	5	19'-3"	708	H22	18	#7	5	21'-2"	779
H13	5	#7	5	16'-2"	165	H23	5	#7	5	16'-8"	170
H14	5	#7	5	16'-9"	171	H24	5	#7	5	17'-8"	181
K11	5	#4	STR	4'-2"	14	K21	5	#4	STR	6'-11"	23
K12	5	#4	STR	4'-6"	15	K22	5	#4	STR	7'-10"	26
S1	37	#4	3	20'-8"	511	S1	28	#4	3	20'-8"	387
S2	37	#4	2	3'-5"	84	S2	28	#4	2	3'-5"	64
S3	20	#4	6	7'-7"	101	S3	16	#4	6	7'-7"	81
S4	3	#6	7	5'-4"	24	S4	3	#6	7	5'-4"	24
S5	3	#6	8	9'-1"	41	S5	3	#6	8	9'-1"	41
U11	2	#4	4	10'-8"	14	U21	2	#4	4	10'-4"	14
U12	2	#4	4	11'-8"	16	U22	2	#4	4	11'-0"	15
U13	2	#4	4	12'-8"	17	U23	2	#4	4	11'-8"	16
						U24	2	#4	4	12'-4"	16
V1	40	#5	STR	11'-4"	473	U25	2	#4	4	13'-0"	17
						V1	47	#5	STR	11'-4"	556
REINFORCING STEEL					4,585 LBS.	REINFORCING STEEL					4,190 LBS.
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR#1 CAP, LOWER PART OF WINGS & COLLARS					37.25 C.Y.	POUR#1 CAP, LOWER PART OF WINGS & COLLARS					28.9 C.Y.
POUR#2 UPPER PART OF WINGS					2.1 C.Y.	POUR#2 UPPER PART OF WINGS					2.5 C.Y.
TOTAL CLASS A CONCRETE					39.3 C.Y.	TOTAL CLASS A CONCRETE					31.6 C.Y.



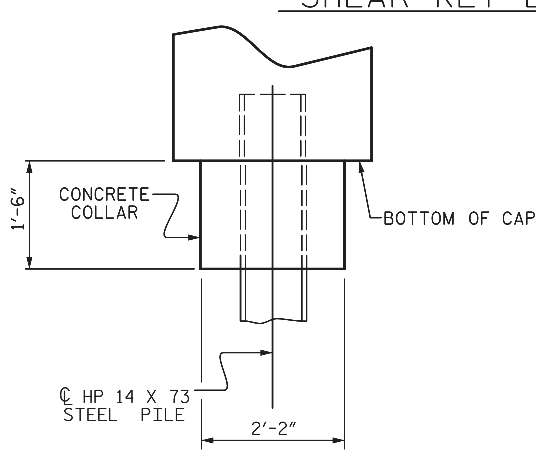
DETAIL "A"



SHEAR KEY DETAIL

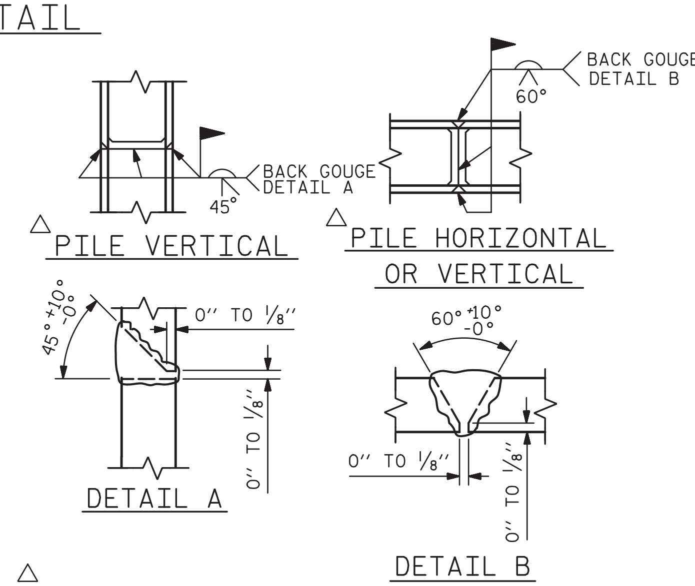


PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

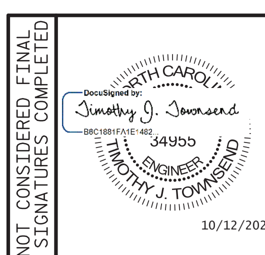
PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

SHEET 3 OF 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



Mattern & Craig ENGINEERS•SURVEYORS 12 BROAD STREET ASHEVILLE, NORTH CAROLINA 28801 (828) 254-2201 FAX (828) 254-4562 NC LIC. NO. C-1154

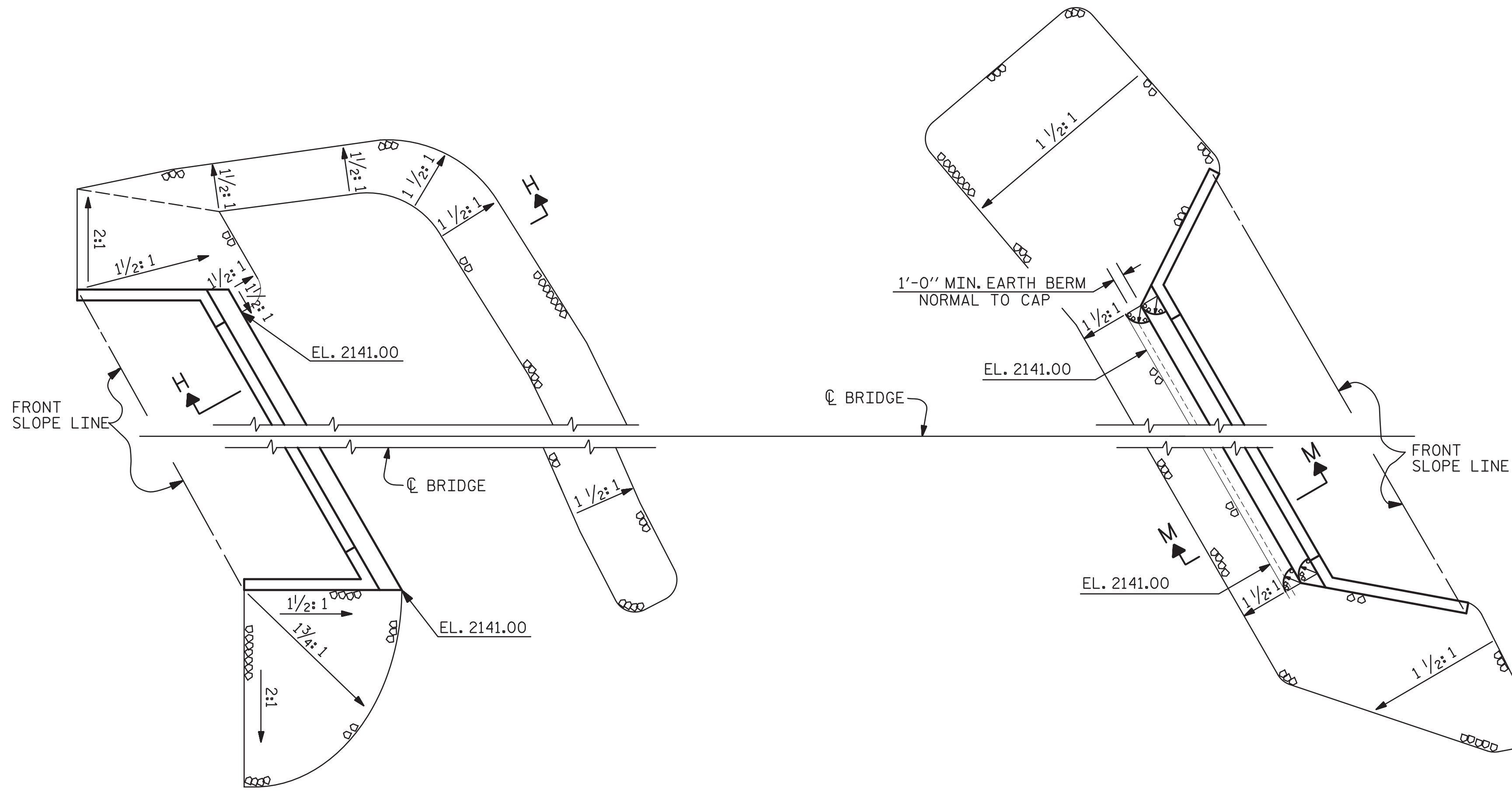
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
DETAILS

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S-16
1			3					TOTAL SHEETS
2			4					20

DRAWN BY :	KES	DATE :	10-22	DESIGN ENGINEER OF RECORD:	T. TOWNSEND DATE : 10-22
CHECKED BY :	TJT	DATE :	10-22		

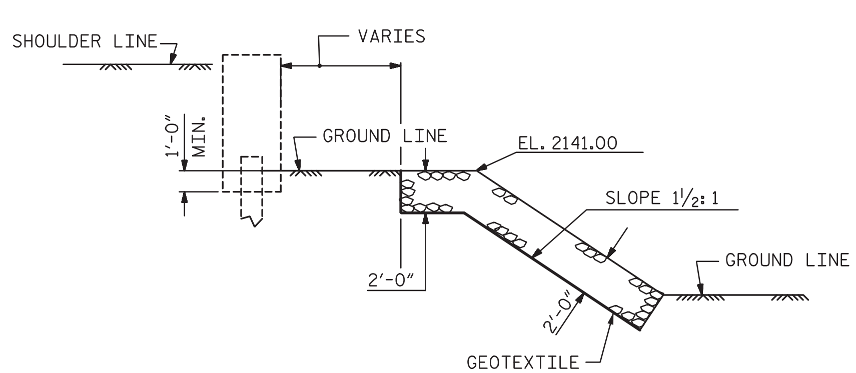
NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



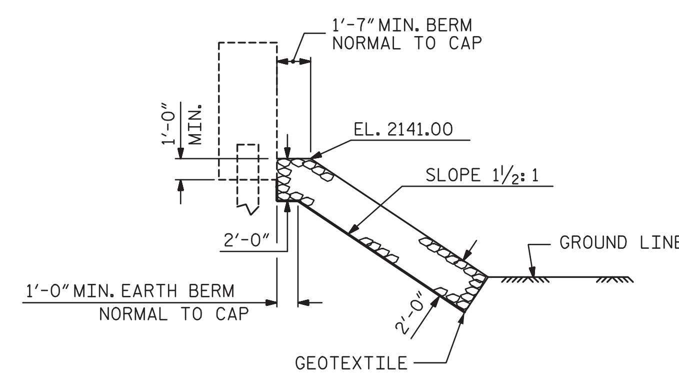
END BENT 1

END BENT 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+73.12	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	105	120
END BENT 2	105	120



SECTION H-H



SECTION M-M

BERM RIP RAPPED

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Timothy J. Townsend
NORTH CAROLINA 34955 ENGINEER TIMOTHY J. TOWNSEND
10/12/2022

Mattern & Craig ENGINEERS-SURVEYORS
12 BROAD STREET ASHEVILLE, NORTH CAROLINA 28801 (828) 254-2201 FAX (828) 254-4562 NC LIC. NO. C-1154

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			20

DRAWN BY : KES DATE : 10-22
CHECKED BY : TJT DATE : 10-22
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

DATE: 10/11/2022 2:46:56 PM TIME: 2:46:56 PM
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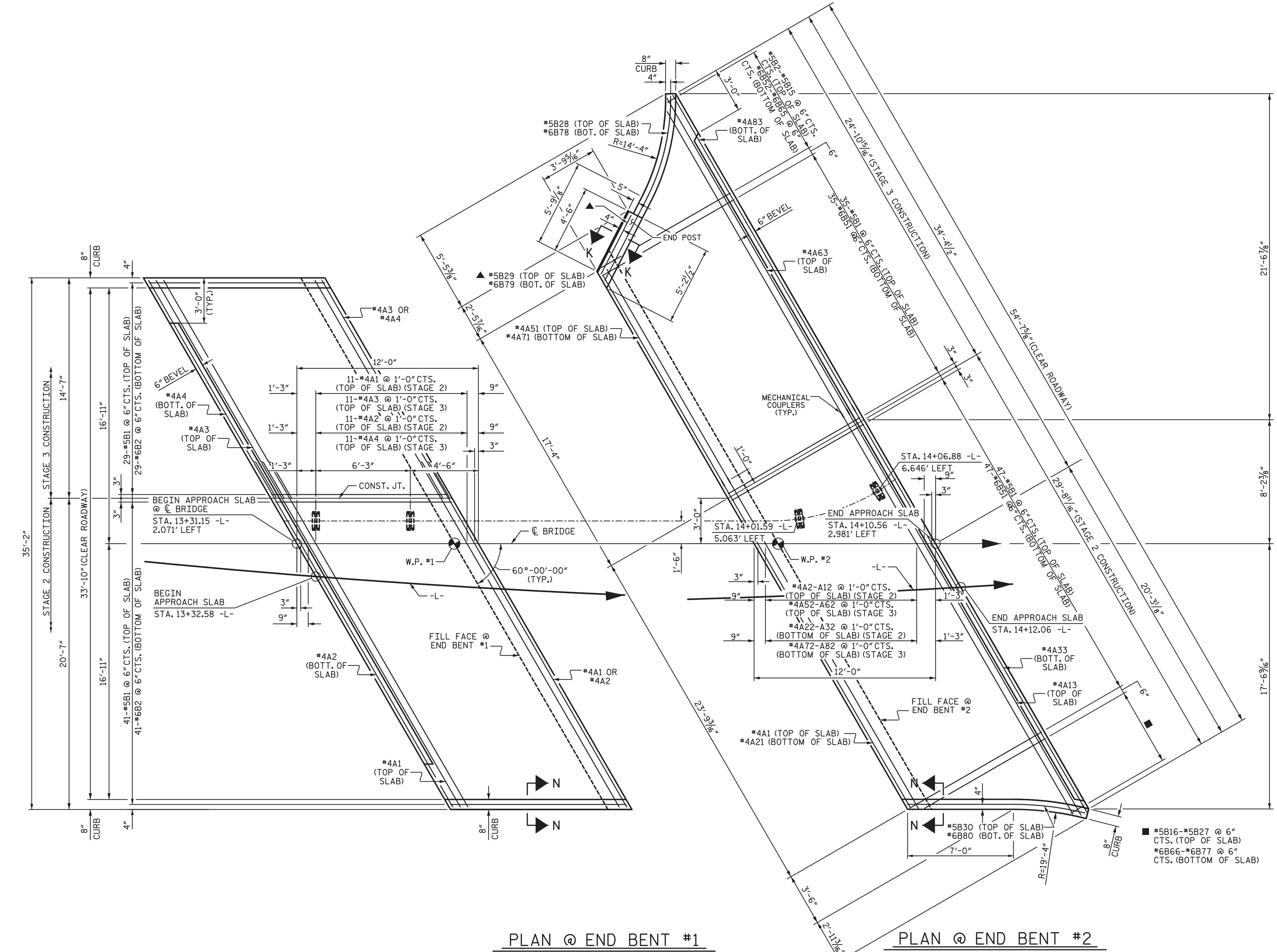
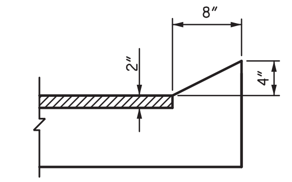


PLAN @ END BENT #1

PLAN @ END BENT #2



SECTION N-N

CURB DETAILS

NOTE:

#5B28-30 AND #6B78-80 SHALL BE FIELD BENT.

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

SHEET 1 OF 2

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

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DocuSigned by: Timothy J. Townsend
NORTH CAROLINA PROFESSIONAL SEAL 34955 ENGINEER TIMOTHY J. TOWNSEND
10/12/2022

Mattern & Craig ENGINEERS•SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 60° SKEW

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

SHEET NO. S-18
TOTAL SHEETS 20

DRAWN BY : KES DATE : 10-22
CHECKED BY : TJT DATE : 10-22
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

DATE: 10/11/2022 2:46:56 PM TIME: 2:46:56 PM
FILE: I:\3850G - Div 13 Bridge 66 (Madison Co)\Dwg\Sheets\401.035.17BP.13.R.171_SMU_AS_018_560066.dgn

BILL OF MATERIAL
APPROACH SLAB AT EB #2

STAGE 2 CONSTRUCTION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	1	#4	STR	24'-8"	16
* A2	1	#4	STR	24'-11"	17
* A3	1	#4	STR	25'-5"	17
* A4	1	#4	STR	25'-11"	17
* A5	1	#4	STR	26'-5"	18
* A6	1	#4	STR	26'-11"	18
* A7	1	#4	STR	27'-5"	18
* A8	1	#4	STR	27'-11"	19
* A9	1	#4	STR	28'-6"	19
* A10	1	#4	STR	29'-0"	19
* A11	1	#4	STR	29'-8"	20
* A12	1	#4	STR	30'-5"	20
* A13	2	#4	STR	30'-10"	41
A21	1	#4	STR	24'-8"	16
A22	1	#4	STR	24'-11"	17
A23	1	#4	STR	25'-5"	17
A24	1	#4	STR	25'-11"	17
A25	1	#4	STR	26'-5"	18
A26	1	#4	STR	26'-11"	18
A27	1	#4	STR	27'-5"	18
A28	1	#4	STR	27'-11"	19
A29	1	#4	STR	28'-6"	19
A30	1	#4	STR	29'-0"	19
A31	1	#4	STR	29'-8"	20
A32	1	#4	STR	30'-5"	20
A33	1	#4	STR	30'-8"	20
* B1	47	#5	STR	9'-7"	470
* B16	1	#5	STR	9'-5"	10
* B17	1	#5	STR	8'-7"	9
* B18	1	#5	STR	8'-3"	9
* B19	1	#5	STR	6'-10"	7
* B20	1	#5	STR	6'-0"	6
* B21	1	#5	STR	5'-1"	5
* B22	1	#5	STR	4'-3"	4
* B23	1	#5	STR	3'-10"	4
* B24	1	#5	STR	3'-1"	3
* B25	1	#5	STR	2'-4"	2
* B26	1	#5	STR	1'-8"	2
* B27	1	#5	STR	1'-1"	1
* B28	1	#5	STR	11'-9"	12
B51	47	#6	STR	10'-1"	712
B66	1	#6	STR	9'-11"	15
B67	1	#6	STR	9'-1"	14
B68	1	#6	STR	8'-9"	13
B69	1	#6	STR	7'-4"	11
B70	1	#6	STR	6'-6"	10
B71	1	#6	STR	5'-7"	8
B72	1	#6	STR	4'-9"	7
B73	1	#6	STR	3'-10"	6
B74	1	#6	STR	3'-1"	5
B75	1	#6	STR	2'-4"	4
B76	1	#6	STR	1'-8"	3
B77	1	#6	STR	1'-1"	2
B78	1	#6	STR	11'-9"	18
REINFORCING STEEL			LBS.		1066
* EPOXY COATED REINFORCING STEEL			LBS.		803
CLASS AA CONCRETE			C.Y.		13.3

BILL OF MATERIAL
APPROACH SLAB AT EB #2

STAGE 3 CONSTRUCTION

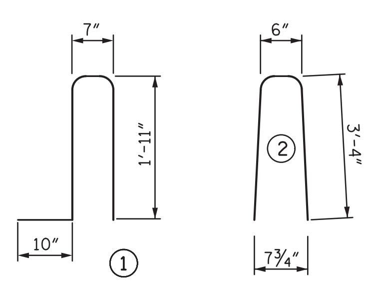
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A51	1	#4	STR	16'-3"	11
* A52	1	#4	STR	16'-7"	11
* A53	1	#4	STR	17'-1"	11
* A54	1	#4	STR	17'-8"	12
* A55	1	#4	STR	18'-3"	12
* A56	1	#4	STR	18'-4"	12
* A57	1	#4	STR	18'-11"	13
* A58	1	#4	STR	19'-6"	13
* A59	1	#4	STR	20'-2"	13
* A60	1	#4	STR	21'-0"	14
* A61	1	#4	STR	21'-11"	15
* A62	1	#4	STR	23'-1"	15
* A63	2	#4	STR	23'-9"	32
A71	1	#4	STR	16'-3"	11
A72	1	#4	STR	16'-7"	11
A73	1	#4	STR	17'-1"	11
A74	1	#4	STR	17'-8"	12
A75	1	#4	STR	18'-3"	12
A76	1	#4	STR	18'-4"	12
A77	1	#4	STR	18'-11"	13
A78	1	#4	STR	19'-6"	13
A79	1	#4	STR	20'-2"	13
A80	1	#4	STR	21'-0"	14
A81	1	#4	STR	21'-11"	15
A82	1	#4	STR	23'-1"	15
A83	1	#4	STR	23'-10"	16
* B1	35	#5	STR	9'-7"	350
* B2	35	#5	STR	8'-9"	319
* B3	35	#5	STR	8'-0"	292
* B4	35	#5	STR	7'-3"	265
* B5	35	#5	STR	5'-8"	207
* B6	35	#5	STR	4'-11"	179
* B7	35	#5	STR	4'-2"	152
* B8	35	#5	STR	3'-6"	128
* B9	35	#5	STR	2'-11"	106
* B10	35	#5	STR	2'-4"	85
* B11	35	#5	STR	2'-4"	85
* B12	35	#5	STR	1'-11"	70
* B13	35	#5	STR	1'-6"	55
* B14	35	#5	STR	1'-2"	43
* B15	35	#5	STR	0'-10"	30
* B28	35	#5	STR	13'-1"	478
* B29	35	#5	STR	4'-4"	158
B51	35	#6	STR	10'-1"	530
B52	35	#6	STR	9'-3"	486
B53	35	#6	STR	8'-6"	447
B54	35	#6	STR	7'-9"	407
B55	35	#6	STR	6'-2"	324
B56	35	#6	STR	5'-5"	285
B57	35	#6	STR	4'-8"	245
B58	35	#6	STR	4'-0"	210
B59	35	#6	STR	3'-5"	180
B60	35	#6	STR	2'-10"	149
B61	35	#6	STR	2'-4"	123
B62	35	#6	STR	1'-11"	101
B63	35	#6	STR	1'-6"	79
B64	35	#6	STR	1'-2"	61
B65	35	#6	STR	0'-10"	44
B78	35	#6	STR	13'-1"	688
B79	35	#6	STR	4'-4"	228
* S1	9	#5	1	5'-3"	49
REINFORCING STEEL			LBS.		4755
* EPOXY COATED REINFORCING STEEL			LBS.		3235
CLASS AA CONCRETE			C.Y.		10.2

BILL OF MATERIAL
END POST

STAGE 3 CONSTRUCTION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S2	9	#5	2	7'-2"	67
* H1	5	#5	STR	4'-6"	23
* H2	5	#5	STR	4'-3"	22
* EPOXY COATED REINFORCING STEEL			LBS.		112
CLASS AA CONCRETE			C.Y.		0.7
TOTAL VERTICAL CONCRETE BARRIER RAIL			L.F.		4'-11"

BAR TYPES



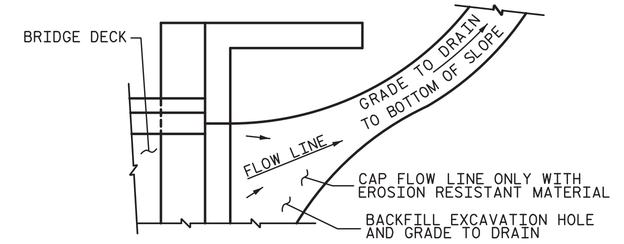
BILL OF MATERIAL
APPROACH SLAB AT EB #1

STAGE 2 CONSTRUCTION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	25'-7"	222
A2	13	#4	STR	25'-4"	220
.	.	.	.	.	
* B1	41	#5	STR	11'-1"	474
B2	41	#6	STR	11'-7"	713
REINFORCING STEEL			LBS.		933
* EPOXY COATED REINFORCING STEEL			LBS.		696
CLASS AA CONCRETE			C.Y.		11.9

STAGE 3 CONSTRUCTION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A3	13	#4	STR	16'-7"	144
A4	13	#4	STR	16'-7"	144
.	.	.	.	.	
* B1	29	#5	STR	11'-1"	335
B2	29	#6	STR	11'-7"	505
REINFORCING STEEL			LBS.		649
* EPOXY COATED REINFORCING STEEL			LBS.		479
CLASS AA CONCRETE			C.Y.		8.4



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4"Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

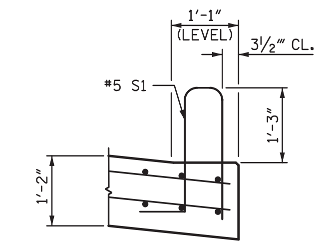
SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

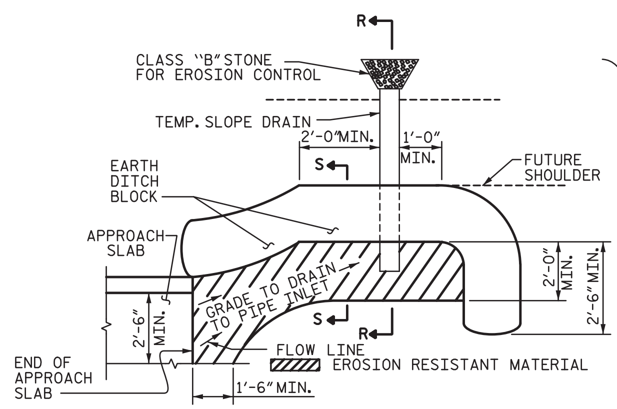
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

#5B28-30 AND #6B78-80 SHALL BE FIELD BENT.

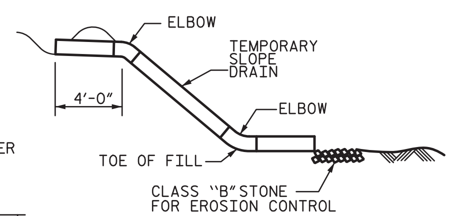


SECTION K-K

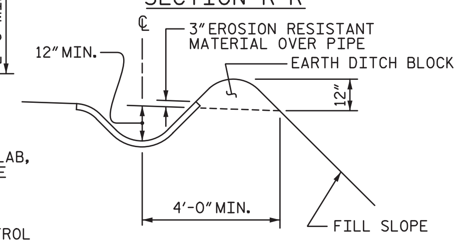


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW



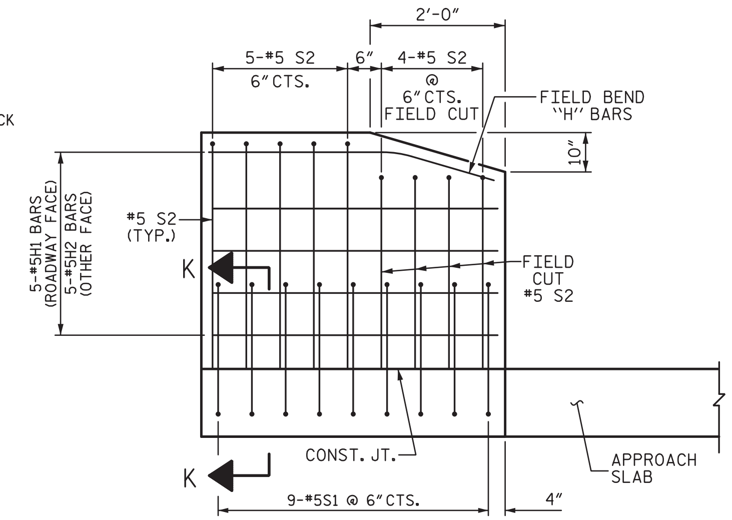
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

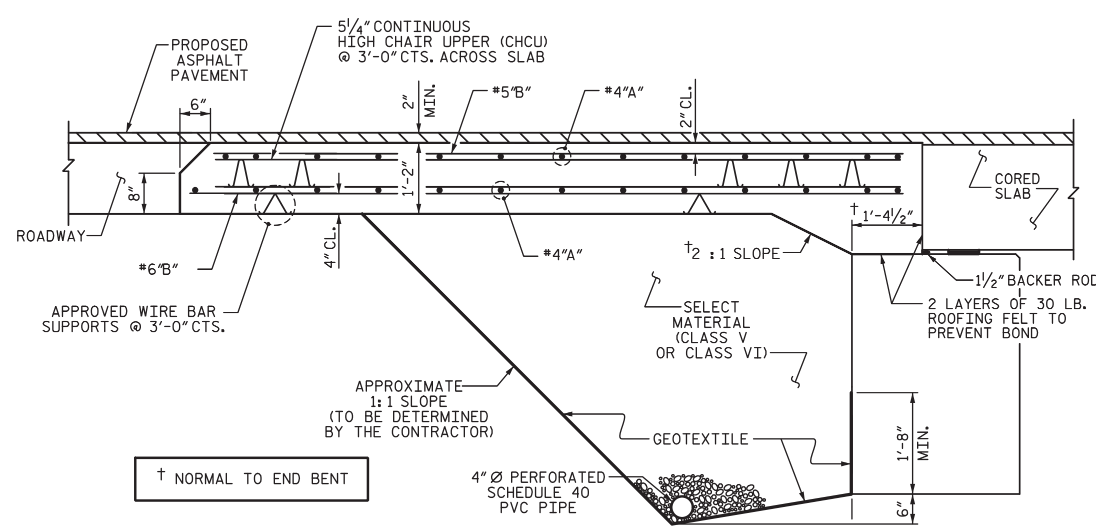
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SIDE VIEW

END POST DETAILS

SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION", ON SHEET S-9, FOR ADDITIONAL IFNORMATION



† NORMAL TO END BENT

SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH FILL)

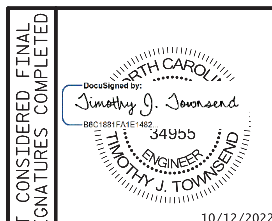
PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

SHEET 2 OF 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 60° SKEW

REVISIONS

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

SHEET NO. S-19

TOTAL SHEETS 20

DRAWN BY : KES DATE : 10-22

CHECKED BY : TJT DATE : 10-22

DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 10-22

DATE: 10/11/2022 2:46:57 PM TIME: 2:46:57 PM

FILE: I:\3850G - Div 13 Bridge 66 (Madison Co)\Dwg\Sheets\401.037_17BP.13.R.171_SMU_AS2_019_560066.dgn

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED $\frac{3}{4}$" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $1\frac{1}{2}$" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A $\frac{1}{4}$" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE $\frac{7}{8}$"Ø SHEAR STUDS FOR THE $\frac{3}{4}$"Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$"Ø STUDS FOR 4 - $\frac{3}{4}$"Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$"Ø STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$"Ø STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$"Ø STUDS FOR 4 - $\frac{3}{4}$"Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{5}{16}$" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY $\frac{1}{16}$ INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

PROJECT NO. 17BP.13.R.171

MADISON COUNTY

STATION: 13+73.12 -L-

STATE OF NORTH CAROLINA
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STANDARD NOTES

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NO.	BY:	DATE:	NO.	BY:	DATE:			S-20
1			3					TOTAL SHEETS
2			4					20

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