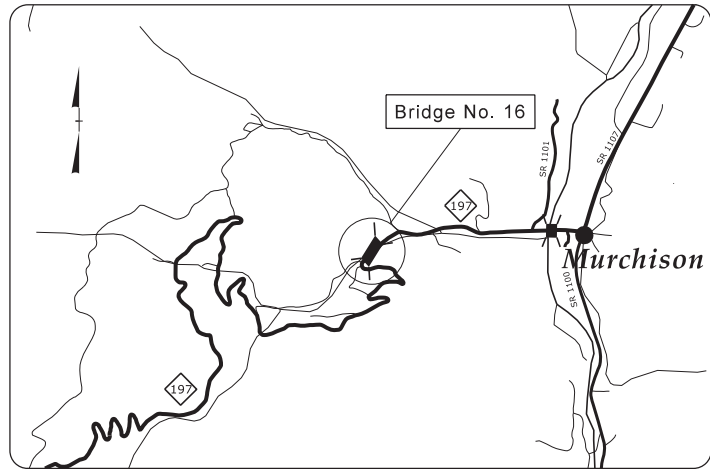


09.08.19

SEE SHEET 1A FOR INDEX OF SHEETS
SEE SHEET 1B FOR CONVENTIONAL SYMBOLS



VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YANCEY COUNTY

LOCATION: BRIDGE NO.16 OVER ELK FORK CREEK
ON NC 197

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

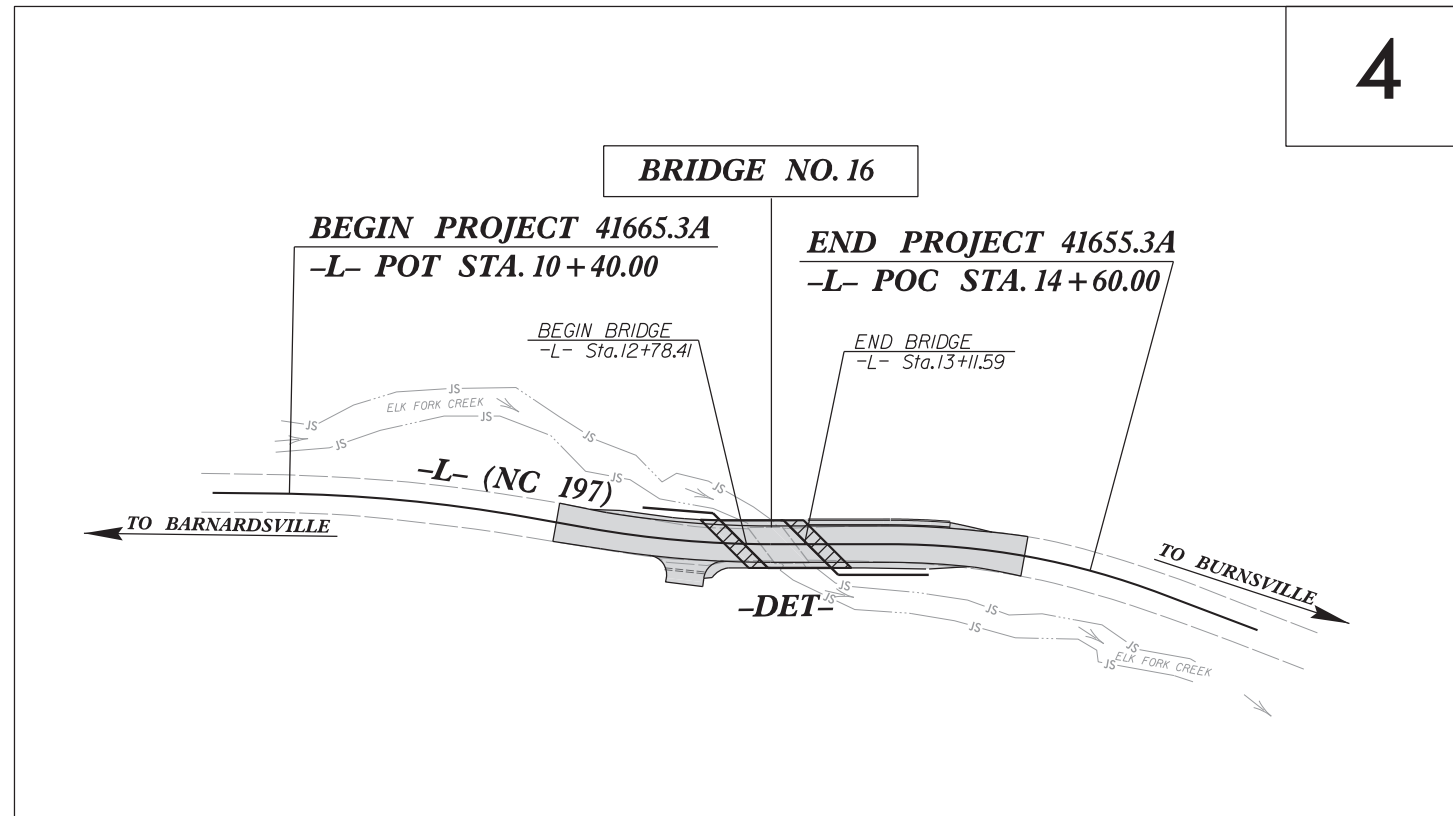


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	41665.3A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
41665.3A		PE, ROW, UTIL. & CONST.	



WBS: 41665.3A

CONTRACT: DM00388

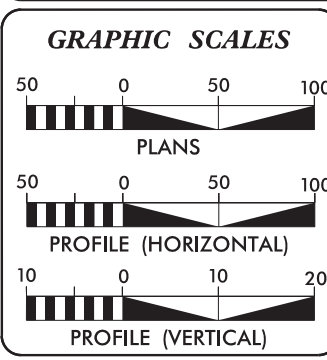


4

RFC PLANS SUBMITTAL
DATE: 11/18/22

NOTE:
1. DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED & LANE WIDTH.

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UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT = < 400 (2023)
ADT = < 400 (2043)
T = 7%
V = 25 MPH

FUNC CLASS =
RURAL COLLECTOR
(TST=4% + DUALS=3%)
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 41665.3A0.074 mi
LENGTH STRUCTURE PROJECT 41665.3A0.006 mi
TOTAL LENGTH PROJECT 41665.3A0.080 mi

RK&K
RUMMEL, KLEPPER & KAHL, LLP
8601 SIX FORKS ROAD, FORUM 1 SUITE 700
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0112
1-888-521-4455 OR 919-878-9560

FOR
NCDOT DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 2015

LETTING DATE:
MAY 17, 2023

NCDOT CONTACT:
Eddie Douglas
DIVISION BRIDGE PROGRAM MANAGER

B. Keith Skinner, P.E.
PROJECT ENGINEER

Brandon J. McInnis, P.E.
PROJECT DESIGN ENGINEER

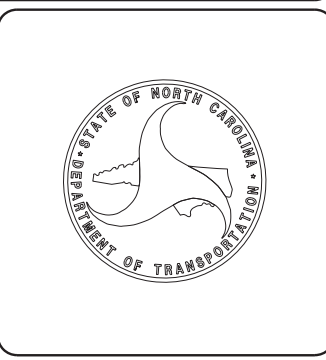
HYDRAULICS ENGINEER

DocuSigned by:
Brandon J. McInnis
2801C0C201A98...
SIGNATURE

ROADWAY DESIGN ENGINEER

DocuSigned by:
Mary E. Mays Hall
770C8706487AC3...
SIGNATURE

Professional Engineer Seals for B. Keith Skinner and Mary E. Mays Hall, dated 11/18/22.



12/13/2022
R:\Roadway\Proj\990016_rdy_tsh.dgn
deFault

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX of SHEETS, GENERAL NOTES, and LIST of STANDARDS

PROJECT REFERENCE NO. 41665.3A	SHEET NO. 1-A
-----------------------------------	------------------

ROADWAY DESIGN ENGINEER

Documented by:
Mary Mays Hall
77908

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INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	DETOUR
2C-1 THRU 2C-4	DETAIL SHEETS
3B-1 THRU 3B-2	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
4	PLAN AND PROFILE SHEET
RW01 THRU RW04	RIGHT OF WAY SHEETS
TMP-1 THRU TMP-6	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
X-0 THRU X-21	CROSS-SECTIONS
S-1 THRU S-28	STRUCTURE PLANS

LIST OF STANDARDS

EFF. 01-16-2018

2018 ROADWAY ENGLISH STANDARD DRAWINGS

REV.

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method 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	
806.01	Concrete Right-of-Way Marker
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.03	Drainage Ditches with Class 'A' Rip Rap
876.04	Drainage Ditches with Class 'B' Rip Rap

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 11.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

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 FRENCH BROAD EMC (POWER, FRONTIER

RIGHT-OF-WAY MARKERS:

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

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

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin (EIP)	○
Computed Property Corner	×
Existing Concrete Monument (ECM)	□
Parcel/Sequence Number	(123)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-
Existing Historic Property Boundary	-HPB-
Known Contamination Area: Soil	-S-S-
Potential Contamination Area: Soil	-S-S-
Known Contamination Area: Water	-W-W-
Potential Contamination Area: Water	-W-W-
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Secondary Horiz and Vert Control Point	◆
Vertical Benchmark	⊠
Existing Right of Way Monument	△
Proposed Right of Way Monument (Rebar and Cap)	▲
Proposed Right of Way Monument (Concrete)	⊕
Existing Permanent Easement Monument	◇
Proposed Permanent Easement Monument (Rebar and Cap)	◆
Existing C/A Monument	△
Proposed C/A Monument (Rebar and Cap)	▲
Proposed C/A Monument (Concrete)	⊕
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Existing Control of Access Line	-----
Proposed Control of Access Line	-----
Proposed ROW and CA Line	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	-E-
Proposed Temporary Drainage Easement	-TDE-
Proposed Permanent Drainage Easement	-PDE-
Proposed Permanent Drainage/Utility Easement	-DUE-
Proposed Permanent Utility Easement	-PUE-
Proposed Temporary Utility Easement	-TUE-
Proposed 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	-----

EXISTING STRUCTURES:

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

UTILITIES:

* SUE - Subsurface Utility Engineering
LOS - Level of Service - A,B,C or D (Accuracy)

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊠
Power Transformer	⊠
U/G Power Cable Hand Hole	PH
H-Frame Pole	●
U/G Power Line Test Hole (SUE - LOS A)*	⊕
U/G Power Line (SUE - LOS B)*	-----
U/G Power Line (SUE - LOS C)*	-----
U/G Power Line (SUE - LOS D)*	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	PH
U/G Telephone Test Hole (SUE - LOS A)*	⊕
U/G Telephone Cable (SUE - LOS B)*	-----
U/G Telephone Cable (SUE - LOS C)*	-----
U/G Telephone Cable (SUE - LOS D)*	-----
U/G Telephone Conduit (SUE - LOS B)*	-----
U/G Telephone Conduit (SUE - LOS C)*	-----
U/G Telephone Conduit (SUE - LOS D)*	-----
U/G Fiber Optics Cable (SUE - LOS B)*	-----
U/G Fiber Optics Cable (SUE - LOS C)*	-----
U/G Fiber Optics Cable (SUE - LOS D)*	-----

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line Test Hole (SUE - LOS A)*	⊕
U/G Water Line (SUE - LOS B)*	-----
U/G Water Line (SUE - LOS C)*	-----
U/G Water Line (SUE - LOS D)*	-----
Above Ground Water Line	A/G Water
TV:	
TV Pedestal	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	PH
U/G TV Test Hole (SUE - LOS A)*	⊕
U/G TV Cable (SUE - LOS B)*	-----
U/G TV Cable (SUE - LOS C)*	-----
U/G TV Cable (SUE - LOS D)*	-----
U/G Fiber Optic Cable (SUE - LOS B)*	-----
U/G Fiber Optic Cable (SUE - LOS C)*	-----
U/G Fiber Optic Cable (SUE - LOS D)*	-----

GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line Test Hole (SUE - LOS A)*	⊕
U/G Gas Line (SUE - LOS B)*	-----
U/G Gas Line (SUE - LOS C)*	-----
U/G Gas Line (SUE - LOS D)*	-----
Above Ground Gas Line	A/G Gas

SANITARY SEWER:

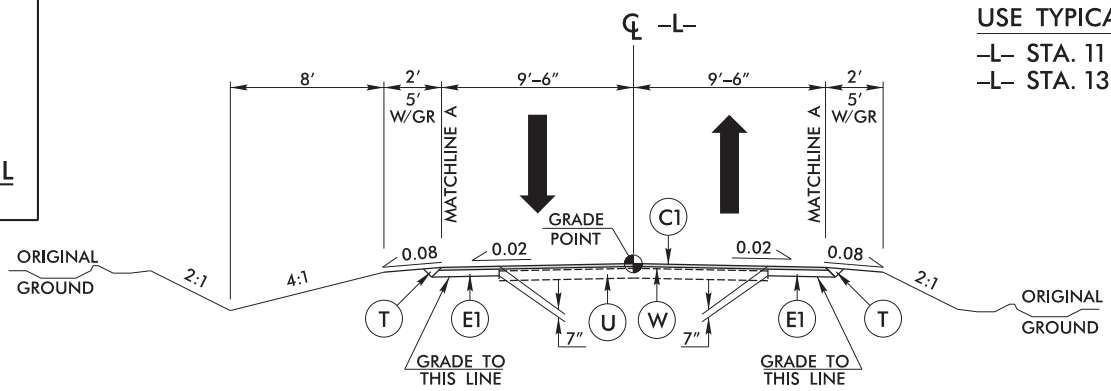
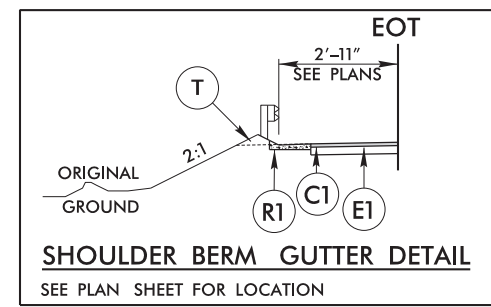
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	SS
Above Ground Sanitary Sewer	A/G Sanitary Sewer
SS Force Main Line Test Hole (SUE - LOS A)*	⊕
SS Force Main Line (SUE - LOS B)*	-----
SS Force Main Line (SUE - LOS C)*	-----
SS Force Main Line (SUE - LOS D)*	-----

MISCELLANEOUS:

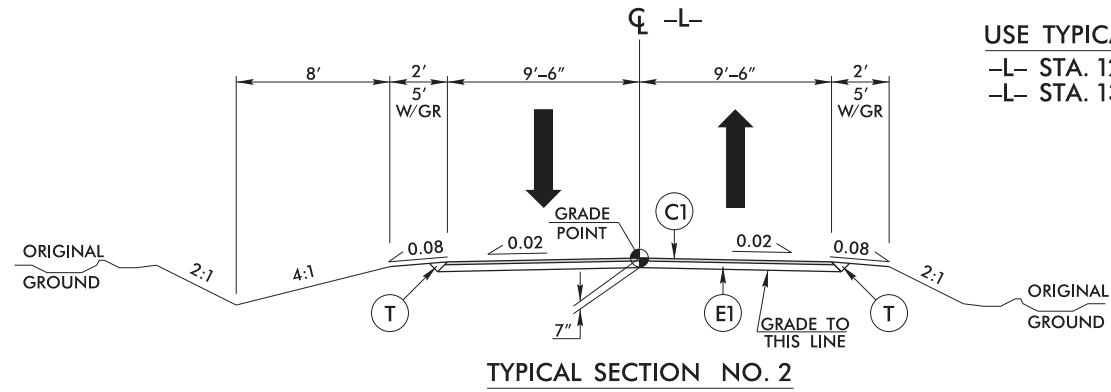
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line (SUE - LOS B)*	-----
U/G Tank; Water, Gas, Oil	-----
Underground Storage Tank, Approx. Loc.	UST
A/G Tank; Water, Gas, Oil	-----
Geoenvironmental Boring	⊕
Abandoned According to Utility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

6/2/99

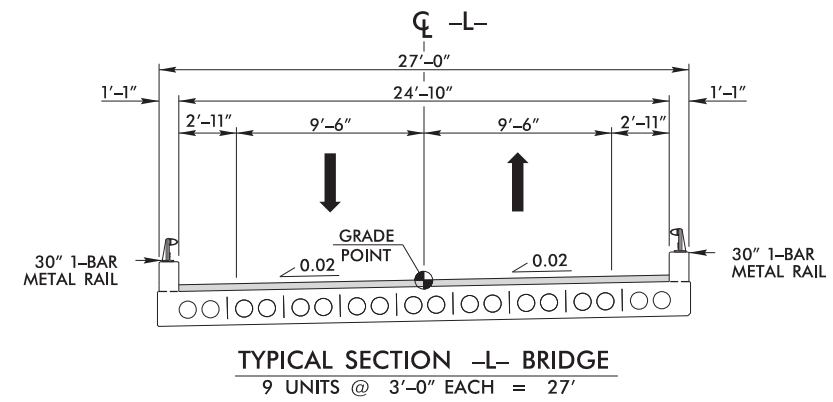
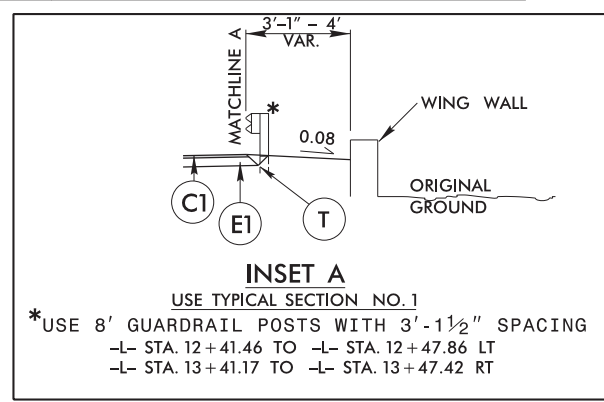
PAVEMENT SCHEDULE	
C1	1½" SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ.YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH
E1	5½" BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE CORSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ.YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT GREATER THAN 5.5" IN DEPTH OR LESS THAN 3" IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT.
W	WEDGING



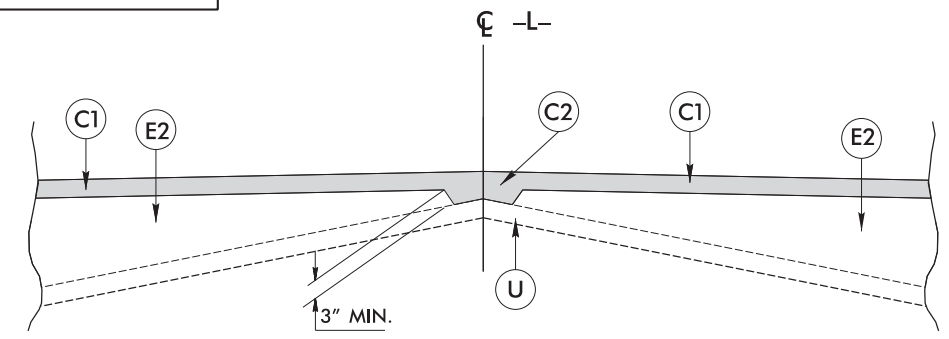
USE TYPICAL SECTION NO. 1
 -L- STA. 11+80.00 TO STA. 12+45.81
 -L- STA. 13+26.66 TO STA. 14+25.00



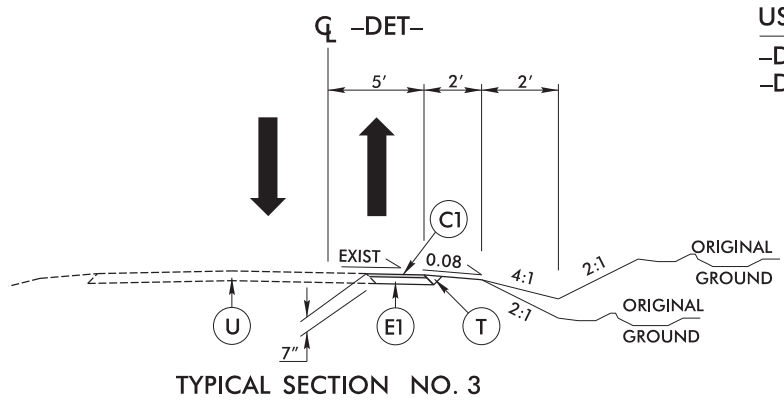
USE TYPICAL SECTION NO. 2
 -L- STA. 12+45.81 TO STA. 12+78.41 (BEGIN BRIDGE)
 -L- STA. 13+11.59 (END BRIDGE) TO STA. 13+26.66



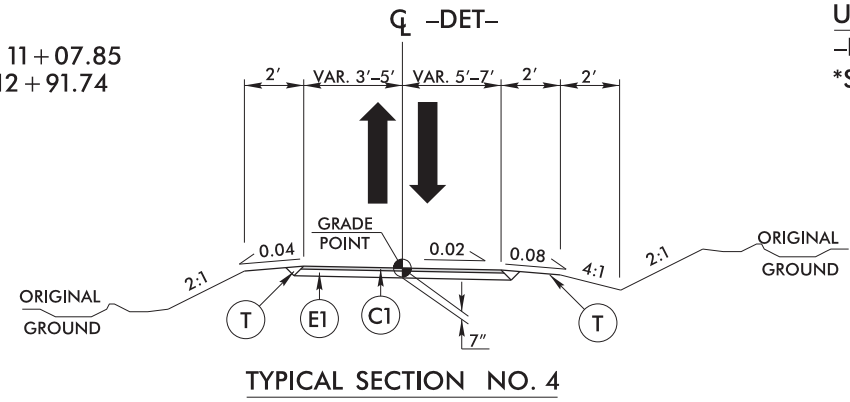
USE TYPICAL SECTION -L- BRIDGE
 -L- STA. 12+78.41 TO -L- STA. 13+11.59



DETAIL SHOWING METHOD OF WEDGING



USE TYPICAL SECTION NO. 3
 -DET- STA. 10+70.88 TO STA. 11+07.85
 -DET- STA. 12+51.41 TO STA. 12+91.74

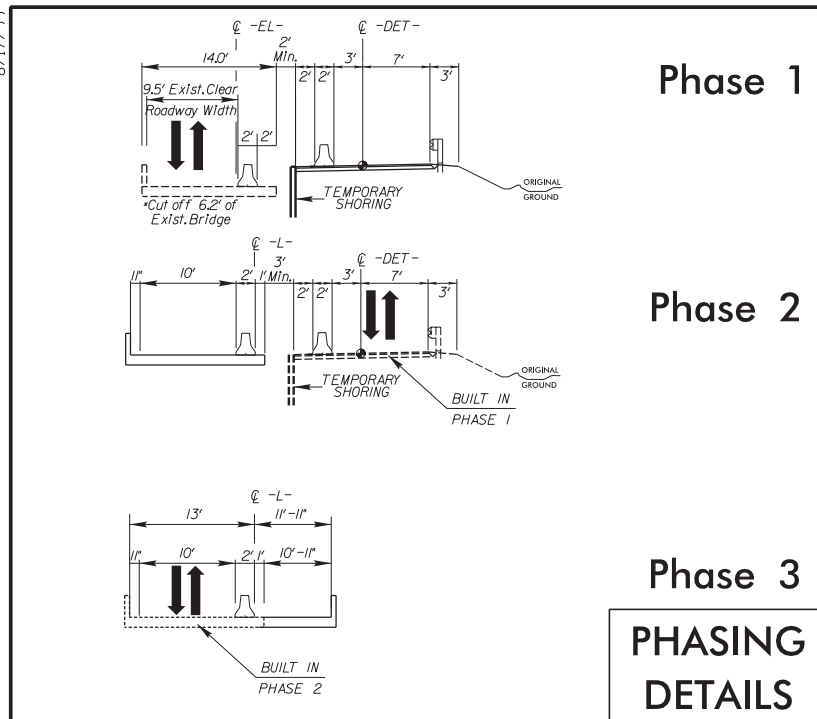


USE TYPICAL SECTION NO. 4
 -DET- STA. 11+07.85 TO STA. 12+51.41
 *SEE PLAN SHEET FOR TAPER DETAILS

PROJECT REFERENCE NO. 41665.3A	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER Mary Ellen Mays Hall 77908796447403	PAVEMENT DESIGN ENGINEER Gregory Goins 4408119A1E2843C
NORTH CAROLINA PROFESSIONAL SEAL 040878 1/6/2023	NORTH CAROLINA PROFESSIONAL SEAL 041709 1/6/2023
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 Raleigh, North Carolina 27615-3960
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 Engineers | Construction Managers | Planners | Scientists
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 Responsive People | Creative Solutions

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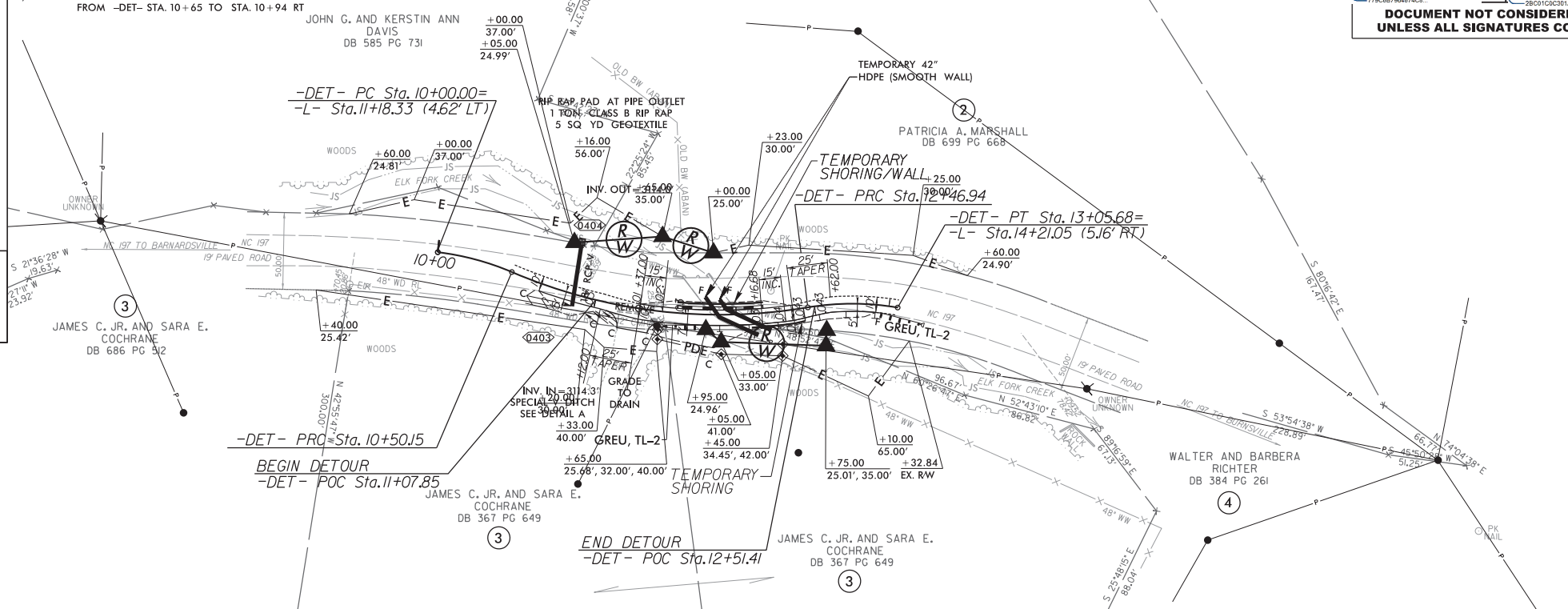
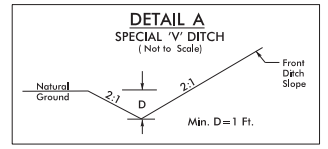


Phase 1

Phase 2

Phase 3

PHASING DETAILS

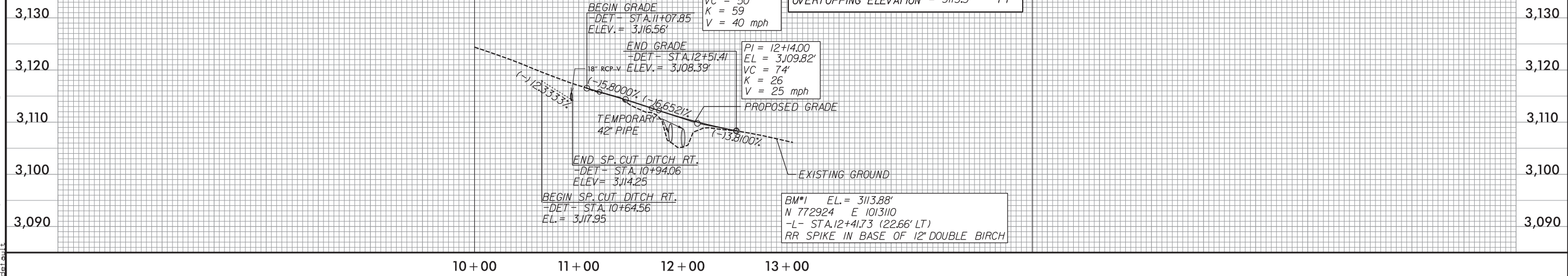


NOTE: SEE TMP PLANS FOR BARRIER DETAILS

-DET-		
PI Sta 10+25.25	PI Sta 11+51.30	PI Sta 12+76.59
$\Delta = 16' 25'' 04.2''$ (RT)	$\Delta = 32' 40'' 54.4''$ (LT)	$\Delta = 19' 13'' 59.1''$ (RT)
$D = 32' 44'' 25.6''$	$D = 16' 36'' 26.9''$	$D = 32' 44'' 25.6''$
$L = 50.15'$	$L = 196.79'$	$L = 58.74'$
$T = 25.25'$	$T = 101.15'$	$T = 29.65'$
$R = 175.00'$	$R = 345.00'$	$R = 175.00'$
$V = 25\text{mph}$	$V = 30\text{mph}$	$V = 25\text{mph}$

PIPE HYDRAULIC DATA	
2 @ 42" RCP STA.11+93 -DET-	
DRAINAGE AREA	= 1575 AC
DESIGN FREQUENCY	= - YRS
DESIGN DISCHARGE	= - CFS
DESIGN HW ELEVATION	= - FT
MAX EVAL.FREQUENCY	= 2 YRS
MAX EVAL.DISCHARGE	= 220 CFS
MAX EVAL.HW ELEVATION	= 3113.4 FT
OVERTOPPING FREQUENCY	= 2- YRS
OVERTOPPING DISCHARGE	= 211 CFS
OVERTOPPING ELEVATION	= 3113J FT

PIPE HYDRAULIC DATA	
18" RCP STA.10+93 -DET-	
DRAINAGE AREA	= 0.5 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 2.0 CFS
DESIGN HW ELEVATION	= 3115.2 FT
100 YEAR DISCHARGE	= 2.2 CFS
100 YEAR HW ELEVATION	= 3115.2 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= 5.0 CFS
OVERTOPPING ELEVATION	= 3115.5 FT

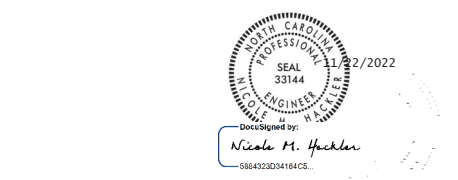


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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE	SHEET 1 OF 7 862D03
<p>NOTE:</p> <ul style="list-style-type: none"> **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 11 1/2" 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). -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW. -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9. 		

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
<p>NOTE:</p> <ul style="list-style-type: none"> **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 11 1/2" 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). -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW. -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9. 		



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

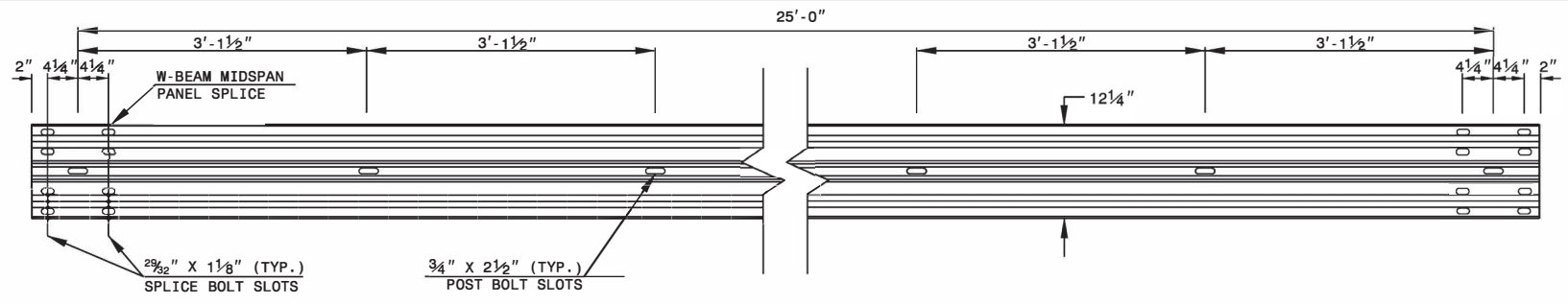
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ORIGINAL BY: J. HOWERTON	DATE: 06-22-12
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	

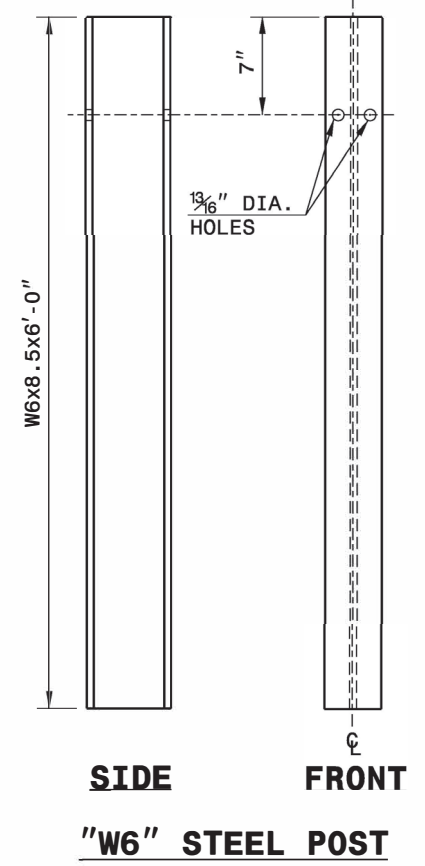
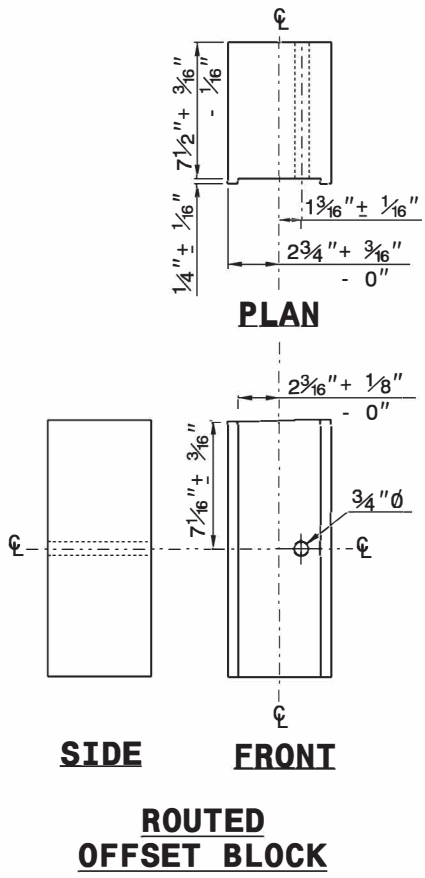
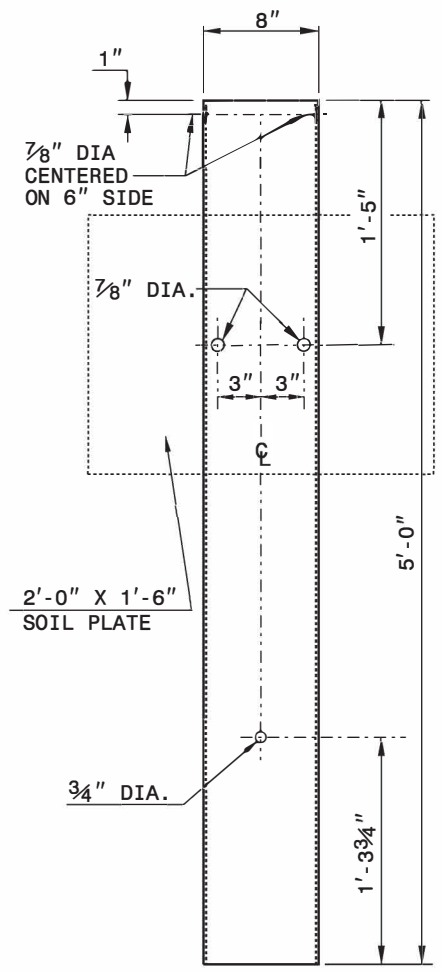
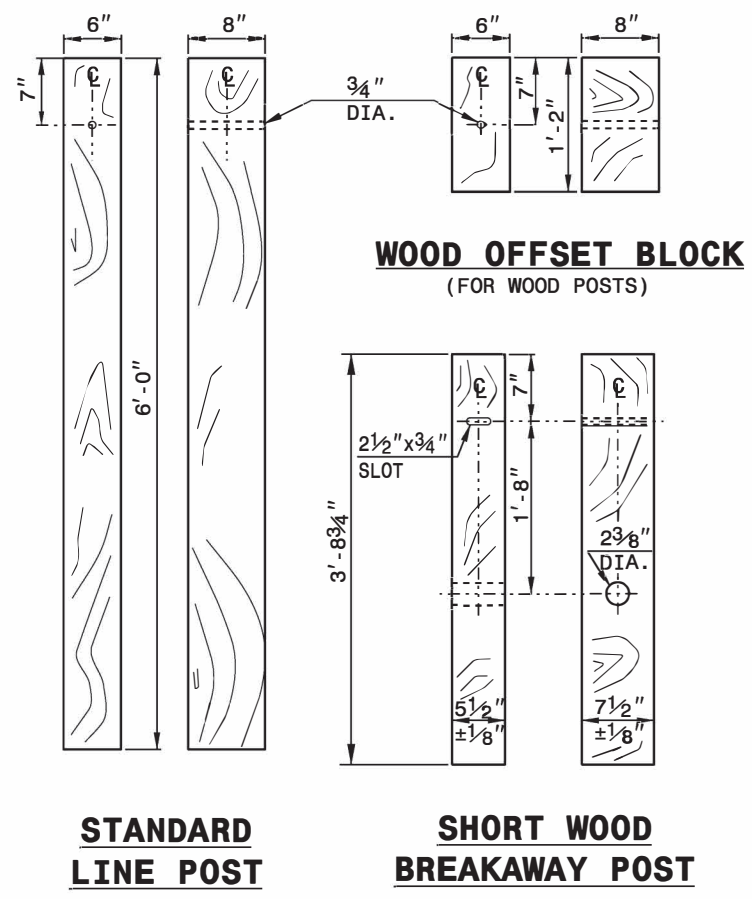
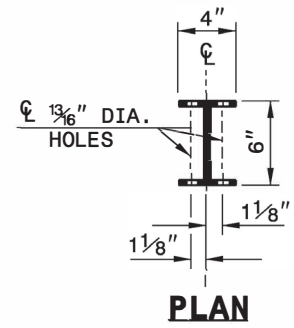
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



STANDARD W-BEAM GUARDRAIL



SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

Seal of a Professional Engineer, State of North Carolina, License No. 33144, dated 12/22/2022. Signed by Nicole M. Heckler.

**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.:	

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

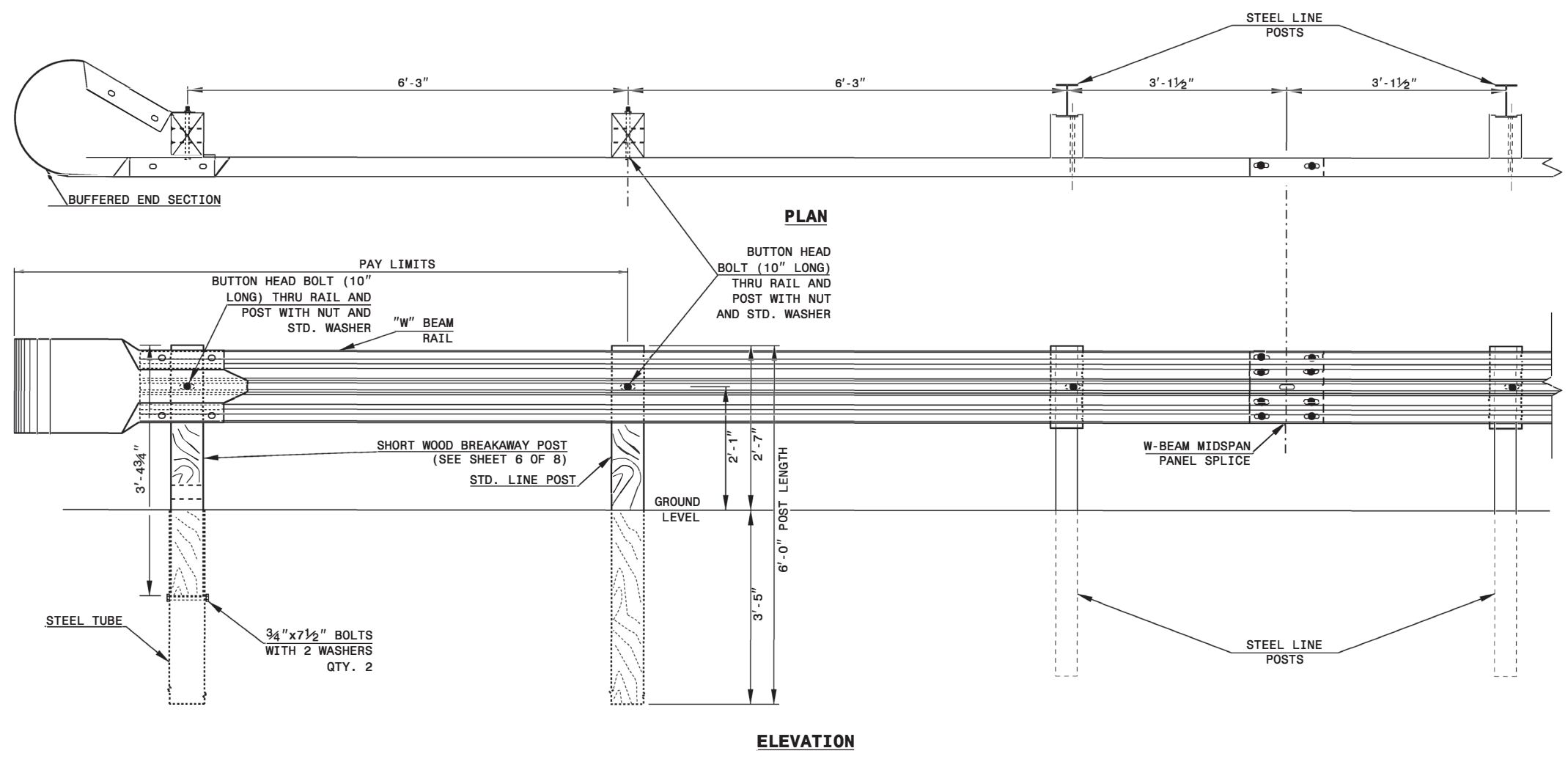
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

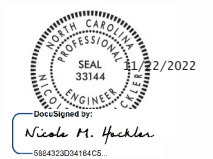
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF



TRAILING END UNIT ASSEMBLY
A.T.-1 SYSTEM



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.: _____	

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

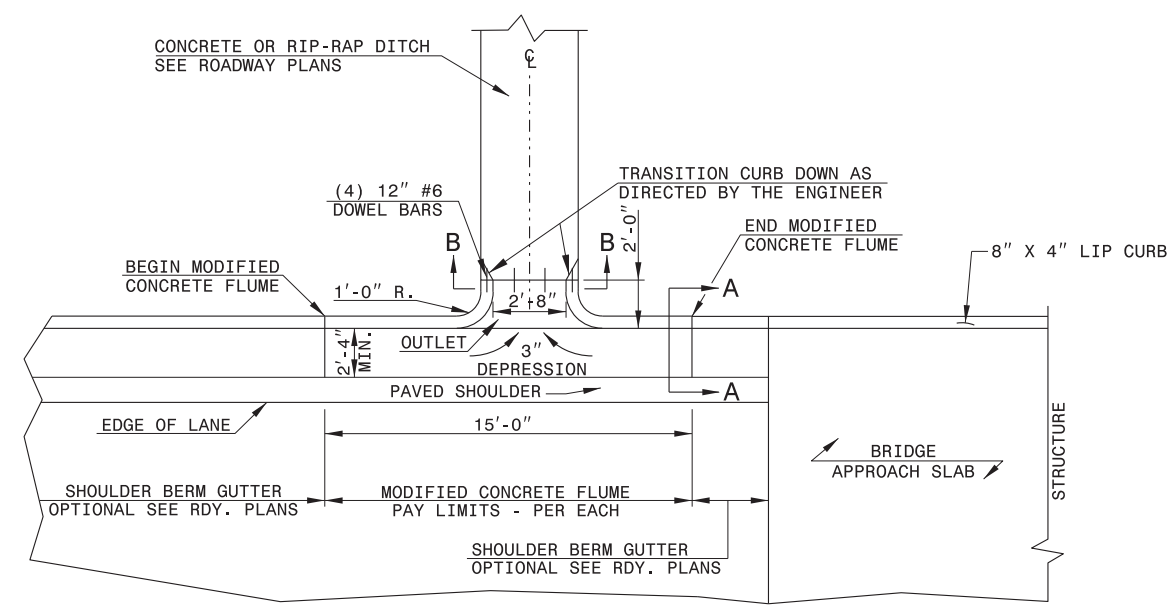
ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

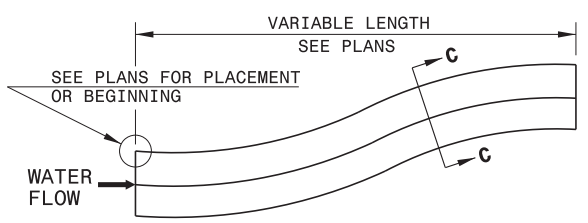
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

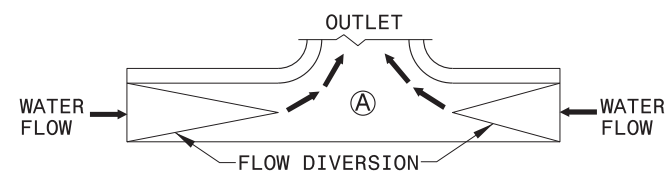
SHEET 1 OF 1
MODFLMDTCH



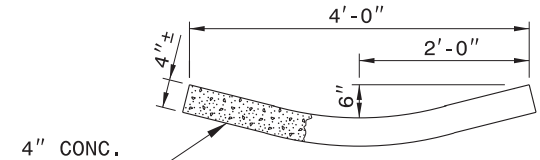
PLAN VIEW



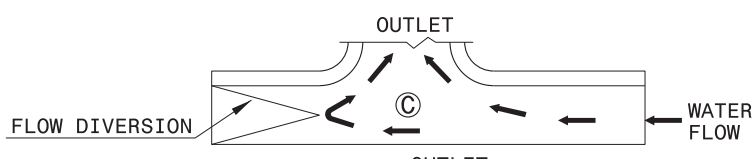
DOWNGRADE OR SAG



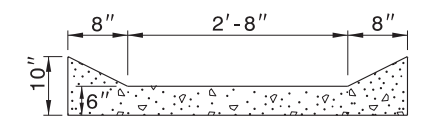
SAG



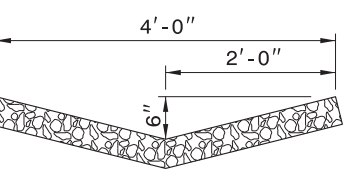
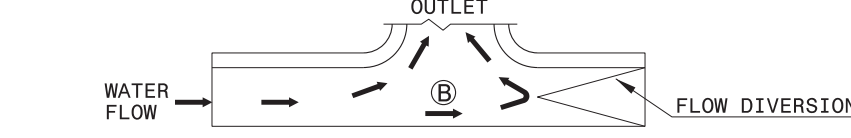
SECTION C-C



SECTION A-A



SECTION B-B



RIP-RAP LINED DITCH

FLOW DIVERSION EXAMPLES

NOTES:

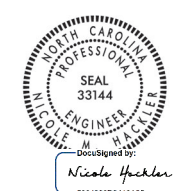
- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE 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.

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	



11/22/2022

18-OCT-2017 14:17
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J:\power-ton - AI - CS0-232945

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUARDRAIL SUMMARY

ALN.	BEG. STA.	END STA.	LOCATION	LENGTH		WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS			IMPACT ATTENUATOR TYPE 350		REMOVE EXISTING GR	REMARKS	
				STRAIGHT	SHOP-CURVED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	TYPE-III	TYPE-III SC	GRAU 350	TL-2	AT-1			G
-L-	12+11.89	12+67.02	LT	62.50										1				1			
-L-	12+97.58	14+13.04	LT	125.00										1				1			
-L-	12+61.34	12+92.42	RT		12.50									1					1		
-L-	13+22.42	13+77.10	RT	62.50										1				1			
SUBTOTAL:				250.00	12.50									4				3	1		
ANCHOR UNIT DEDUCTIONS:																					
Type-III @ 18.75' Each				-75.00																	
Type-III SC @ 18.75' Each																					
TL-2 @ 25' Each				-75.00																	
AT-1 @ 6.25' Each				-6.25																	
LESS GUARDRAIL DEDUCTIONS:				93.75	12.50																
PROJECT TOTAL:				93.75	12.50																
SAY				100.00	12.5									4				3	1		ADDITIONAL GUARDRAIL POST = 5 EA
TEMPORARY																					
-DET-	11+51.66	13+25.00	RT	175.00																	
SUBTOTAL:				175.00																	
ANCHOR UNIT DEDUCTIONS:																					
Type-III @ 18.75' Each																					
Type-III SC @ 18.75' Each																					
TL-2 @ 25' Each				-50.00																	
AT-1 @ 6.25' Each																					
LESS GUARDRAIL DEDUCTIONS:				125.00																	
PROJECT TOTAL:				125.00																	

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF

SUMMARY OF EARTHWORK IN CUBIC YARDS

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			TOTAL
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSAT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK +15%		ROCK	SUITABLE	UNSAT.	
-DET- 11+07.85	-DET- 12+51.41	57				57	92		92	106	49				
-L- 11+80.00	-L- 14+25.00	129				129	147		147	169	40				
remove detour		92				92	57		57	66	92				
SUBTOTAL		278				278	296		296	340	89				
TOTAL		278				278	296		296	340	89				
MATERIAL FOR SHOULDER CONSTRUCTION															
LOSS DUE TO CLEARING & GRUBBING		-14				-14					14				
ADDITIONAL UNDERCUT															
ROCK WASTE TO REPLACE BORROW															
ADJUST FOR ROCK WASTE															
WASTE IN LIEU OF BORROW															
PROJECT TOTAL		264				264	296		296	340	103				
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT											5				
GRAND TOTAL		264				264	296		296	340	108				
SAY		270									120				

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

SHOULDER BERM GUTTER

LOCATION	SIDE	BEG. STA.	END STA.	LENGTH
-L-	LT	13+12.00	13+85.00	73.0
TOTAL				73.0
SAY				80

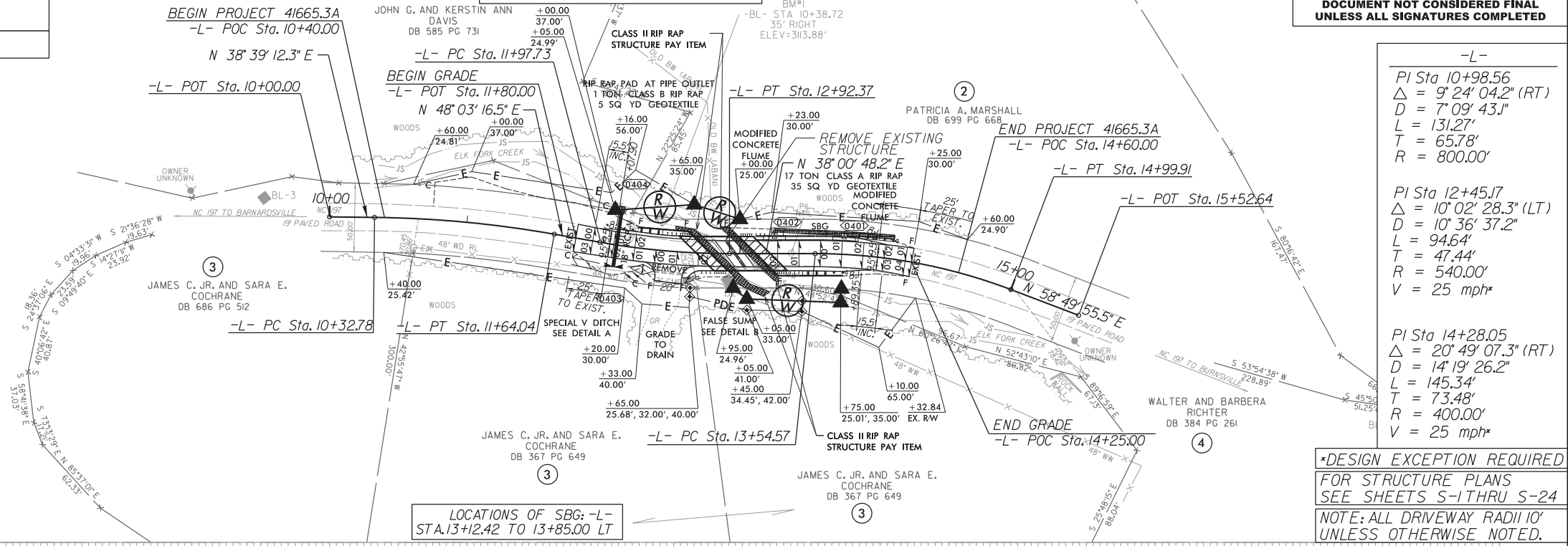
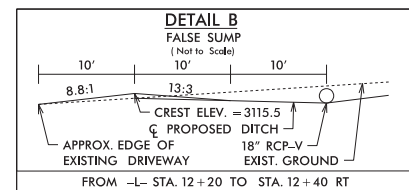
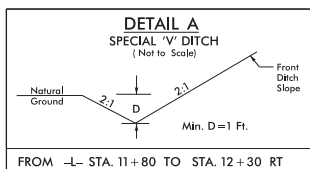
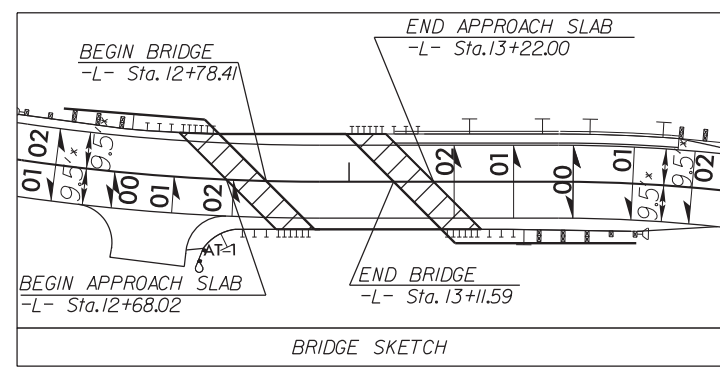
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

REMOVAL OF EXISTING PAVEMENT

LINE	STATION	STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
-DET-	10+71	12+92		1809.33		201.04
-L-	12+57	EX BRIDGE		509.20		56.58
-L-	EX BRIDGE	13+35		516.70		57.41
					TOTAL	315.03
					SAY	320

8/17/99
I:\Projects\990016_Rd\psh.dgn

PROJECT REFERENCE NO. 41665.3A	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	



-L-
 PI Sta 10+98.56
 $\Delta = 9' 24'' 04.2''$ (RT)
 $D = 7' 09'' 43.1''$
 $L = 131.27'$
 $T = 65.78'$
 $R = 800.00'$

PI Sta 12+45.17
 $\Delta = 10' 02'' 28.3''$ (LT)
 $D = 10' 36'' 37.2''$
 $L = 94.64'$
 $T = 47.44'$
 $R = 540.00'$
 $V = 25$ mph

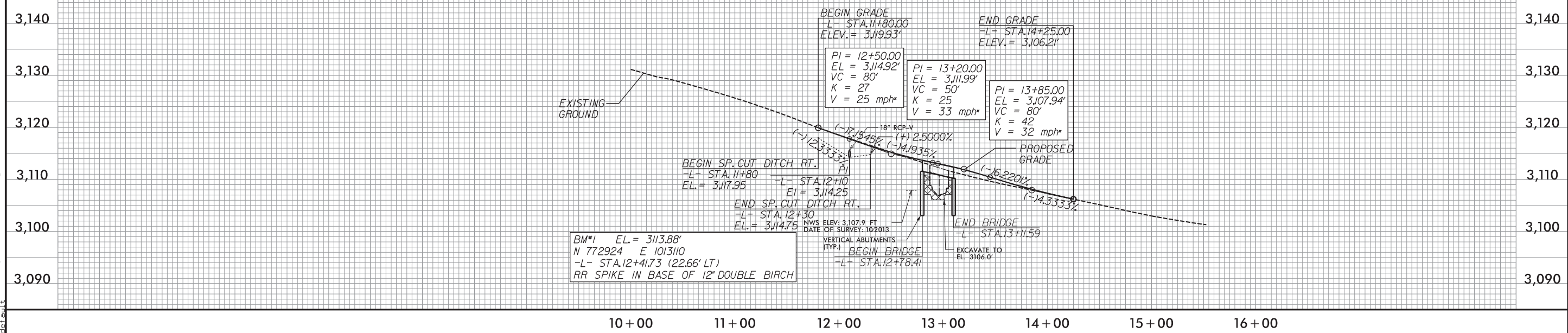
PI Sta 14+28.05
 $\Delta = 20' 49'' 07.3''$ (RT)
 $D = 14' 19'' 26.2''$
 $L = 145.34'$
 $T = 73.48'$
 $R = 400.00'$
 $V = 25$ mph

*DESIGN EXCEPTION REQUIRED
 FOR STRUCTURE PLANS
 SEE SHEETS S-1 THRU S-24
 NOTE: ALL DRIVEWAY RADII 10'
 UNLESS OTHERWISE NOTED.

PIPE HYDRAULIC DATA	
18" RCP STA. 12+10 -L-	
DRAINAGE AREA	= 0.5 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 2.0 CFS
DESIGN HW ELEVATION	= 3115.2 FT
100 YEAR DISCHARGE	= 2.2 CFS
100 YEAR HW ELEVATION	= 3115.2 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= 5.0 CFS
OVERTOPPING ELEVATION	= 3115.5 FT



BRIDGE HYDRAULIC DATA	
STR *990016 Sta. 12+95 -L-	
DESIGN FREQUENCY	= 2 YRS
DESIGN DISCHARGE	= 220 CFS
DESIGN HW ELEVATION	= 3,112.6 FT
100 YEAR DISCHARGE	= 1,405 CFS
100 YEAR FREQUENCY	= 100 YRS
100 YEAR HW ELEVATION	= 3,117.85 FT
OVERTOPPING FREQUENCY	= 2 + YRS
OVERTOPPING DISCHARGE	= 450 CFS
OVERTOPPING ELEVATION	= 3,113.1 FT
NORMAL WATER SURFACE ELEV	= 3,107.9 FT
DATE OF SURVEY	= 10/2013



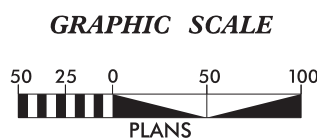
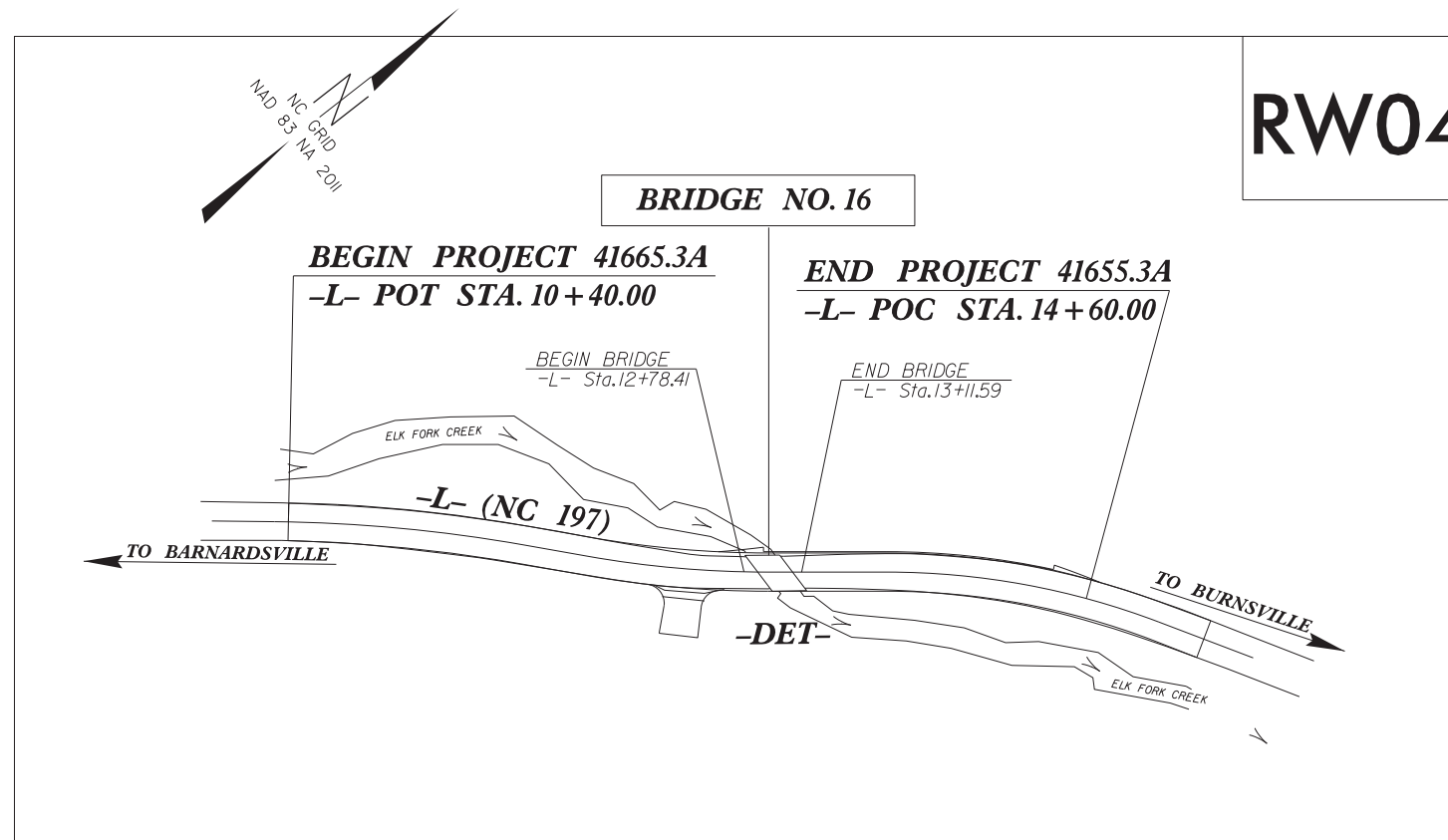
TIP PROJECT: 41665.3A

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	41665.3A	RW01	6

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

YANCEY COUNTY



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "990016-2" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 772,934.743(ft) EASTING: 1,013,174.160(ft) ELEVATION: 3,113.200(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99977983 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "990016-2" TO -L- STATION 10+00 IS S 47-03'31.7" W 292.90(ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

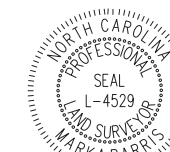
V&M
Vaughn & Melton
1318-F Patton Avenue
Asheville, NC 28806
Firm License # F-1088

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 2015

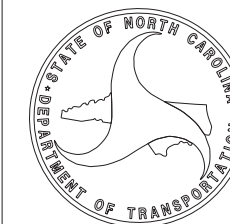
LETTING DATE:
MAY 17, 2023

PROFESSIONAL LAND SURVEYOR



DocuSigned by:
F1570CB85C7248A
SIGNATURE:


Date:



\$\$\$\$\$ SYSTEM \$\$\$\$\$\$
\$\$\$\$\$ DDN \$\$\$\$\$\$
\$\$\$\$\$ USERNAME \$\$\$\$\$\$

SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. 41665.3A	SHEET NO. RW02C-1
Location and Surveys	
V&M Vaughn & Melton	
PROJECT SURVEYOR	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Mark A. Parris, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey;

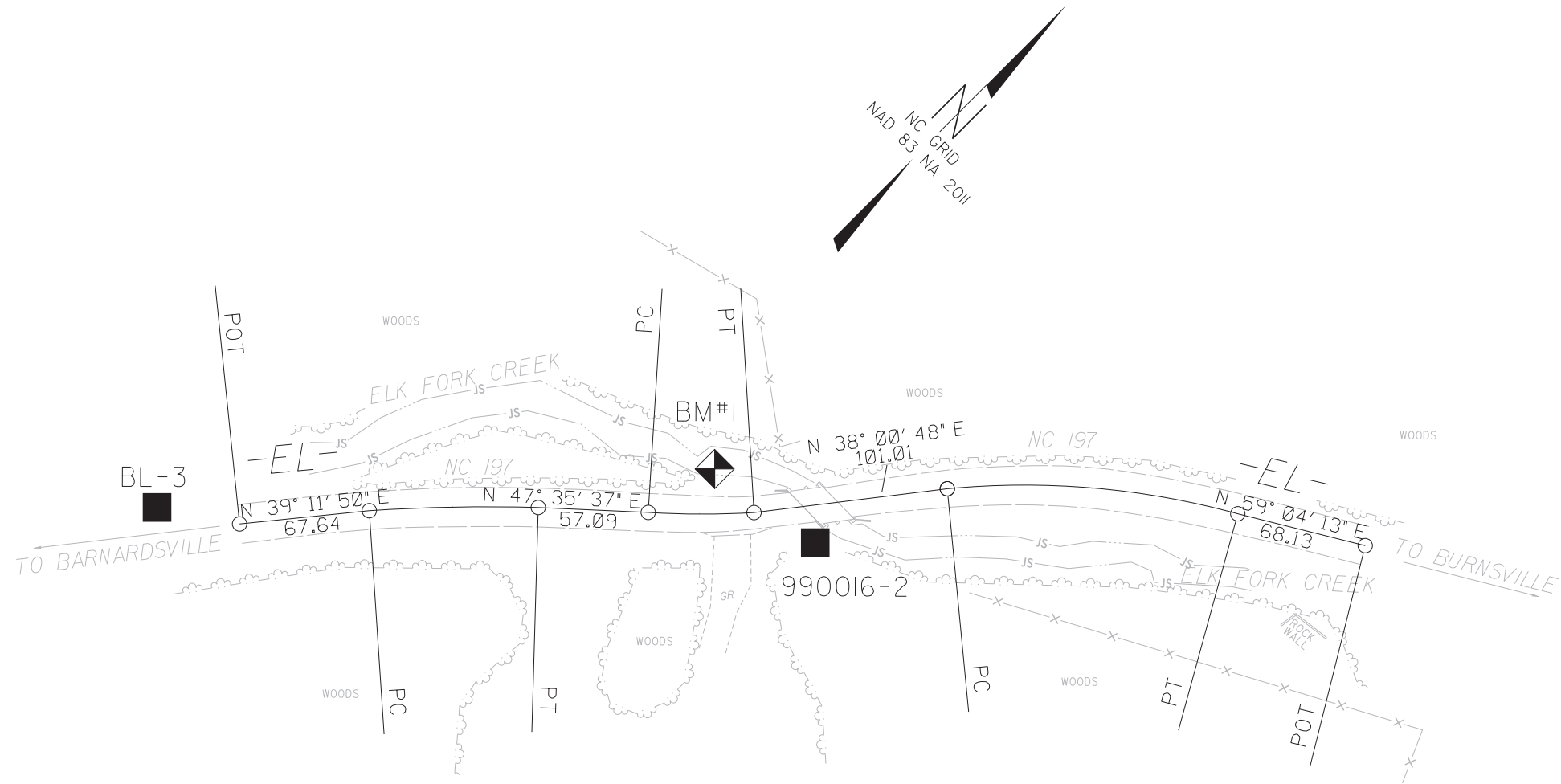
Class of survey: **AA**
 Type of GPS field procedure: **RTN**
 Dates of survey: **July 2015**
 Datum/Epoch: **NAD83/NSRS 2007**
 Published/Fixed-control use: **N/A**
 Localized around: **BL-2**
 Northing: **772934,7430**
 Easting: **1013174,1600**
 Combined grid factor: **0.99977983**
 Geoid model: **GEOID 12 CONUS**
 Units: **US SURVEY FEET**

I also certify that the Baseline Control for this project 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 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from July 2015 to August 2015, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of December, 2022.


 Professional Land Surveyor L-4529

Professional Land Surveyor L-4529



**SEE SHEET RW02C-2
FOR FURTHER
ALIGNMENT DETAILS**

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.

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. 41665.3A	SHEET NO. RW02C-2
Location and Surveys	
PROJECT SURVEYOR	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Mark A. Parris, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
 Type of GPS field procedure: RTN
 Dates of survey: July 2015
 Datum/Epoch: NAD83/NSRS 2007
 Published/Fixed-control use: N/A
 Localized around: BL-2
 Northing: 772934.7430
 Easting: 1013174.1600
 Combined grid factor: 0.99977983
 Geoid model: GEOID 12 CONUS
 Units: US SURVEY FEET

I also certify that the Baseline Control for this project 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 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from July 2015 to August 2015, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of December, 2022.

Digitally signed by Mark A. Parris
 DN: cn=Mark A. Parris, o=Professional Land Surveyor L-4529

BL	POINT	DESC.	NORTH	EAST	ELEVATION
1	990016-1		773250.8390	1013541.5870	3098.14
2	990016-2		772934.7430	1013174.1600	3113.20
3	BL-3		772706.3870	1012919.6959	3134.30

 BM1 ELEVATION = 3113.88
 N 772925 E 1013110
 8" SPIKE IN BASE OF 12" DOUBLE BIRCH



EL	POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	772730.613	1012956.100								
LINE				N 39°11'50.5" E	67.64					
PC	772783.028	1012998.845								
CURVE				N 43°57'28.9" E	87.66	05°25'18.3"(RT)	06°10'58.1"	87.69	43.88	926.70
PT	772846.129	1013059.691								
LINE				N 47°35'36.7" E	57.09					
PC	772884.633	1013101.849								
CURVE				N 45°06'31.4" E	54.88	06°56'10.9"(LT)	12°37'55.0"	54.91	27.49	453.58
PT	772923.364	1013140.727								
LINE				N 38°00'48.2" E	101.01					
PC	773002.949	1013202.936								
CURVE				N 49°57'40.6" E	151.24	20°47'30.5"(RT)	13°40'18.6"	152.08	76.88	419.08
PT	773100.246	1013318.730								
LINE				N 59°04'12.9" E	68.13					
POT	773135.266	1013377.176								

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

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. 41665.3A	SHEET NO. RW02D-1
Location and Surveys	
	
PROJECT SURVEYOR	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Mark A. Parris, PLS, 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.

This 16th day of December, 2022.

DocuSigned by:

 F1570CB85C7248A
 Professional Land Surveyor L-4529

L



TYPE	STATION	NORTH	EAST
POT	10+00.00	772735.2081	1012959.7443
PC	10+32.78	772760.8046	1012980.2169
PT	11+64.04	772856.1438	1013070.2298
PC	11+97.73	772878.6623	1013095.2871
PT	12+92.37	772947.7480	1013159.7871
PC	13+54.57	772996.7558	1013198.0947
PT	14+99.91	773092.6793	1013306.2223
POT	15+52.64	773119.9680	1013351.3383

REVISIONS


NOTES:

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

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO. 41665.3A	SHEET NO. RW03E-1
Location and Surveys	
	
PROJECT SURVEYOR	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Mark A. Parris, 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 Nov. 2015 to Dec. 2015, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of December, 2022.

 Professional Land Surveyor L-4529

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+05.00	-24.99	772901.9179	1013083.7086
L	12+65.00	-35.00	772949.5466	1013115.9464
L	12+95.00	24.96	772934.4486	1013181.0771
L	13+00.00	-25.00	772969.1581	1013144.7913
L	13+05.00	33.00	772937.3784	1013193.5668
L	13+75.00	35.00	772989.5894	1013237.5209
L	13+75.00	25.01	772996.1370	1013229.9728

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+65.00	32.00	772905.6639	1013166.5755
L	12+65.00	25.68	772909.8047	1013161.7980
L	13+05.00	41.00	772932.4516	1013199.8698
L	13+45.00	42.00	772963.3504	1013225.2915
L	13+45.00	34.45	772967.9988	1013219.3447
L	14+25.00	40.00	773018.3771	1013272.8299
L	14+25.00	25.16	773029.4193	1013262.9229
L	14+48.00	40.00	773031.7503	1013288.6264
L	14+48.00	25.14	773043.3621	1013279.3555

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 NOV. 2015 TO DEC. 2015 .

REVISIONS

Location and Surveys



PROJECT SURVEYOR



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Mark A. Parris, 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 Nov. 2015 to Dec. 2015, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of December, 2022.

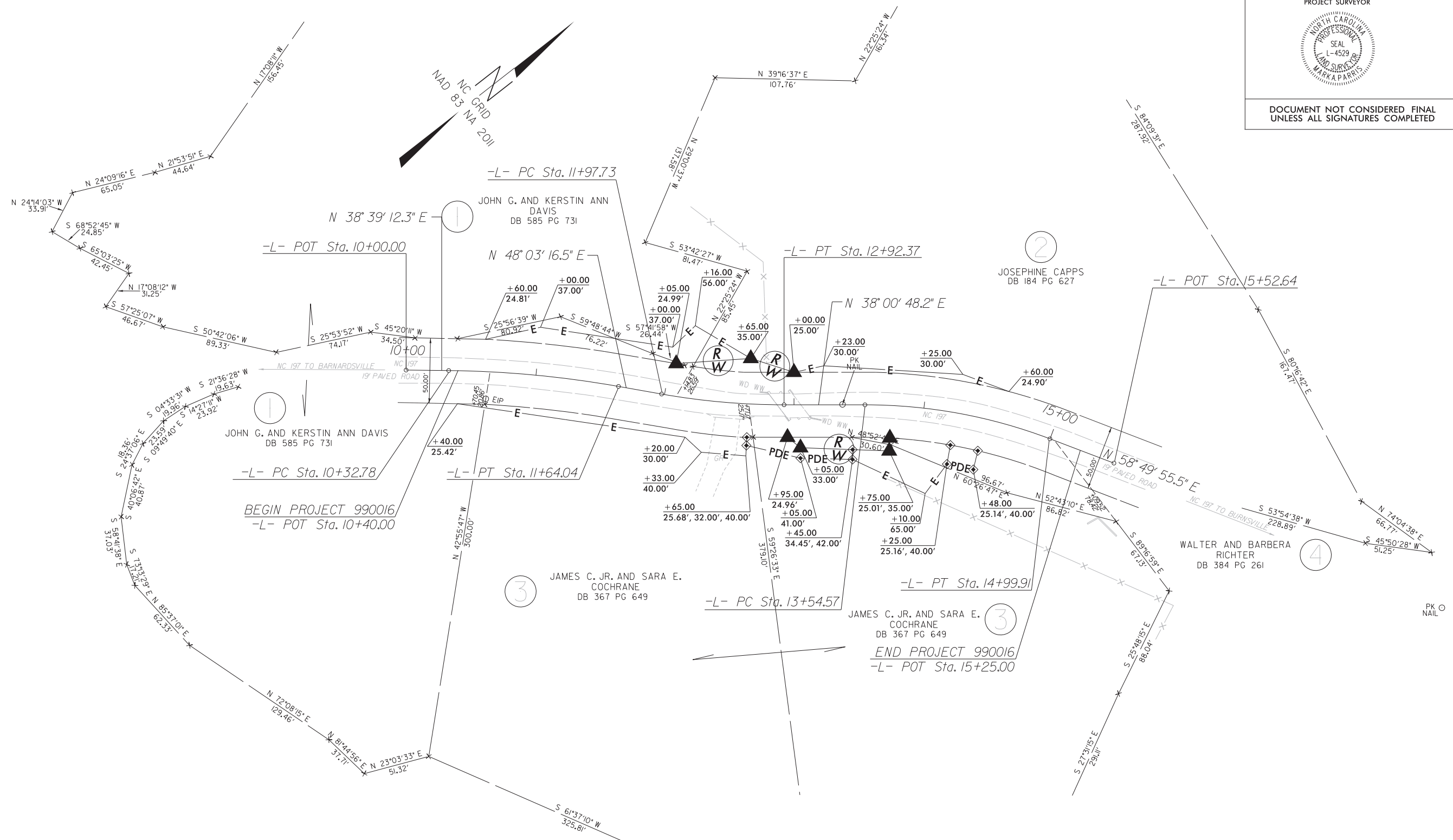
DocuSign
 Prof: F1570CB85C7248A...rveyor L-4529

-L-

PI Sta 10+98.56 $\Delta = 9^{\circ} 24' 04.2''$ (RT) $D = 7^{\circ} 09' 43.1''$ $L = 131.27'$ $T = 65.78'$ $R = 800.00'$	PI Sta 12+45.17 $\Delta = 10^{\circ} 02' 28.3''$ (LT) $D = 10^{\circ} 36' 37.2''$ $L = 94.64'$ $T = 47.44'$ $R = 540.00'$	PI Sta 14+28.05 $\Delta = 20^{\circ} 49' 07.3''$ (RT) $D = 14^{\circ} 19' 26.2''$ $L = 145.34'$ $T = 73.48'$ $R = 400.00'$
---	--	---

REVISIONS

19-DEC-2022 11:57
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 AT P:\01\21\HI-34
 Jcgarland



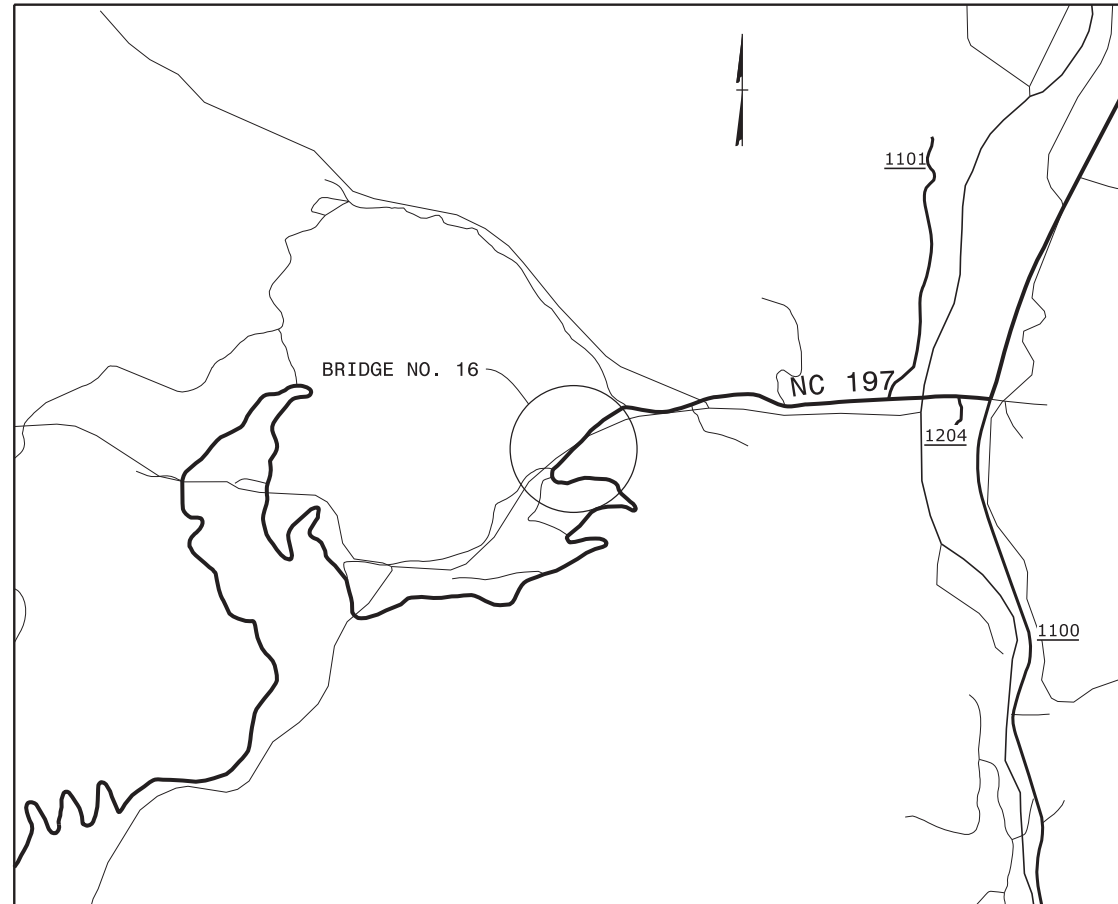
NOTES:

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 NOV. 2015 TO DEC. 2015 .

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

YANCEY COUNTY



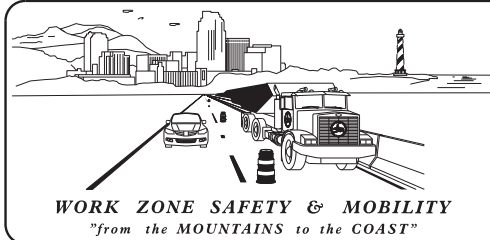
INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-2	TRANSPORTATION OPERATIONS PLAN: GENERAL NOTES
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP-4	TEMPORARY TRAFFIC CONTROL PHASE I DETAIL
TMP-5	TEMPORARY TRAFFIC CONTROL PHASE II DETAIL
TMP-6	TEMPORARY TRAFFIC CONTROL PHASE III DETAIL

SHEET NO.
TMP-1

BRIDGE NO. 16 YANCEY COUNTY WBS:41665.3A

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PLANS PREPARED BY:

Byron Holden, PE
PROJECT MANAGER

Kevin Bisby, PE
TECHNICAL MANAGER

NCDOT CONTACTS:

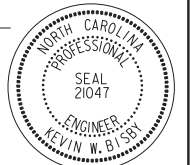
Eddie Douglas
DIVISION BRIDGE PROGRAM MANAGER

Anna G. Henderson, PE
DIVISION TRAFFIC ENGINEER



APPROVED: *Kevin Bisby*
DATE: 12/2/2022

SEAL



ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	POSITIVE PROTECTION
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)

WORK AREA

REMOVAL

SIGNALS

- TEMPORARY PORTABLE

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN
- PORTABLE CONCRETE BARRIER
- PORTABLE CONCRETE BARRIER (EXISTING)
- PORTABLE CONCRETE BARRIER (SECTION VIEW)
- DRUM (SECTION VIEW)

TEMPORARY PAVEMENT MARKING SCHEDULE

- PA - 4" WHITE EDGELINE, PAINT
- P2 - 24" WHITE STOP BAR, PAINT

APPROVED: DATE: 10/20/2022 SEAL			ROADWAY STANDARD DRAWINGS & LEGEND
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

GENERAL NOTES

PROJ. REFERENCE NO. 990016	SHEET NO. TMP - 2
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P: (919) 878-6560
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Raleigh, North Carolina 27615-3960
NC License No. F-0112

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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) (500') IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

SIGNING

- H. 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.

TRAFFIC BARRIER

- I. 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 IS REMOVED.

- J. 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 MOVEABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVEABLE/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 LES	15 FT
45 - 50	20 FT
55	25 FT
60 MPH OR HIGHER	30 FT

TRAFFIC CONTROL DEVICES

- K. 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 WHEN LANE CLOSURES ARE NOT IN EFFECT. WHEN SKINNY DRUMS ARE ALLOWED REFER TO SECTION 1180 OF STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES OR AS SHOWN IN THE PLANS.

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

PAVEMENT MARKINGS AND MARKERS

- M. INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS SHOWN IN THE PAVEMENT MARKING PLAN.
- N. INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD TYPE	MARKING PAINT	MARKER
ASPHALT	PAINT	NONE
- O. 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.
- P. TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- Q. REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

10/20/2022
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R05Bdy

APPROVED: DATE: 10/20/2022 SEAL			TRANSPORTATION OPERATIONS PLAN GENERALNOTES
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

TRAFFIC CONTROL PHASING

PHASE I

STEP 1:
ERECT ADVANCED WORK ZONE SIGNS ON -L- NC 197, IN ACCORDANCE WITH SHEET TMP-3.

NOTE: COMPLETE THE WORK REQUIRED IN PHASE I STEP 1 IN A CONTINUOUS OPERATION.

STEP 2:
USING ROADWAY STANDARD DRAWING NO. 1101.02 SHEET 1, DEPLOY PORTABLE TEMPORARY TRAFFIC SIGNAL SYSTEM AND APPLY TEMPORARY PAVEMENT MARKINGS ON NC 197 SHIFTING TRAFFIC INTO A ONE LANE, TWO WAY PATTERN. SET PORTABLE CONCRETE BARRIER (ANCHORED). (SEE TMP-4)

STEP 3:
CONSTRUCT ON-SITE DETOUR FROM -DET- STA 11+87± TO STA 12+91±. (SEE TMP-4)

PHASE II

NOTE: COMPLETE THE WORK REQUIRED IN PHASE II STEPS 1 AND 2 IN A CONTINUOUS OPERATION.

STEP 1:
USING ROADWAY STANDARD DRAWING NO. 1101.02 SHEET 1, APPLY TEMPORARY PAVEMENT MARKINGS ON -DET- ON-SITE DETOUR AND SET PORTABLE CONCRETE BARRIER. (SEE TMP-5)

STEP 2:
ACTIVATE TEMPORARY PORTABLE SIGNALS AND SHIFT EXISTING NC 197 TRAFFIC ONTO THE TEMPORARY ON-SITE DETOUR IN A ONE LANE, TWO WAY TRAFFIC PATTERN. (SEE TMP-5)

STEP 3:
CONSTRUCT -L- NC 197 ROADWAY APPROACHES AND PROPOSED BRIDGE STAGE 1. (SEE TMP-5)

PHASE III

NOTE: COMPLETE THE WORK REQUIRED IN PHASE III STEPS 1 AND 2 IN A CONTINUOUS OPERATION.


STEP 1:
USING ROADWAY STANDARD DRAWING NO. 1101.02 SHEET 1 APPLY TEMPORARY PAVEMENT MARKINGS ON -L- NC 197 AND SET PORTABLE CONCRETE BARRIER. (SEE TMP-6)

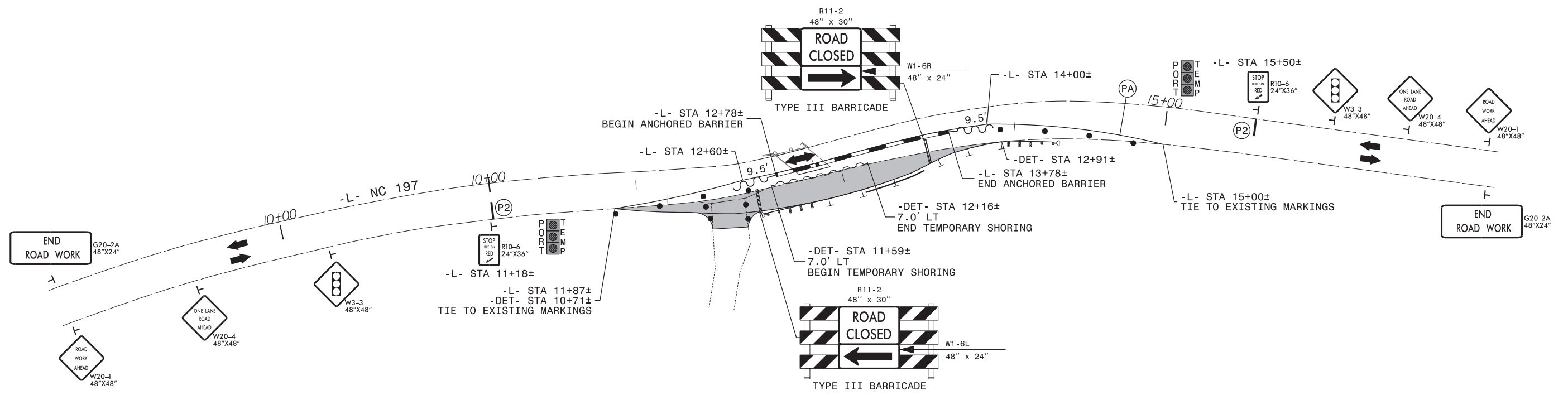
STEP 2:
SHIFT NC 197 TRAFFIC ONTO PROPOSED -L- NC 197 IN A ONE LANE, TWO WAY TRAFFIC PATTERN. (SEE TMP-6)

STEP 3:
CONSTRUCT -L- NC 197 ROADWAY APPROACHES AND PROPOSED BRIDGE STAGE 2. REMOVE -DET-. (SEE TMP-6)

STEP 4:
USING RDWY STD 1101.02 SHEET 1, REMOVE PORTABLE CONCRETE BARRIER, PAVE THE FINAL LAYER OF SURFACE COURSE, APPLY THE FINAL PAVEMENT MARKINGS AND REMOVE THE TEMPORARY PORTABLE SIGNALS. (SEE FINAL PAVEMENT MARKING AND DELINEATION PLAN).

10/20/2022
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R01bby

APPROVED:  DATE: 10/20/2022 SEAL			TEMPORARY TRAFFIC CONTROL PHASING
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INSTALL ONE (1) TEMPORARY PORTABLE TRAFFIC SIGNAL SYSTEM AS SPECIFIED IN THE PROJECT SPECIAL PROVISIONS. CONTACT THE DIVISION TRAFFIC OFFICE TO OBTAIN CONSULTATION AND APPROVAL OF THE TEMPORARY TRAFFIC SIGNALS LOCATION AND TIMING BEFORE A TEMPORARY TRAFFIC SIGNAL IS MADE OPERATIONAL.

REFER TO STRUCTURE PLANS FOR BRIDGE PHASING DETAILS.

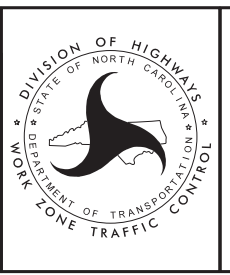
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APPROVED: *Kevin W. Bissel*
 DATE: 10/20/2022

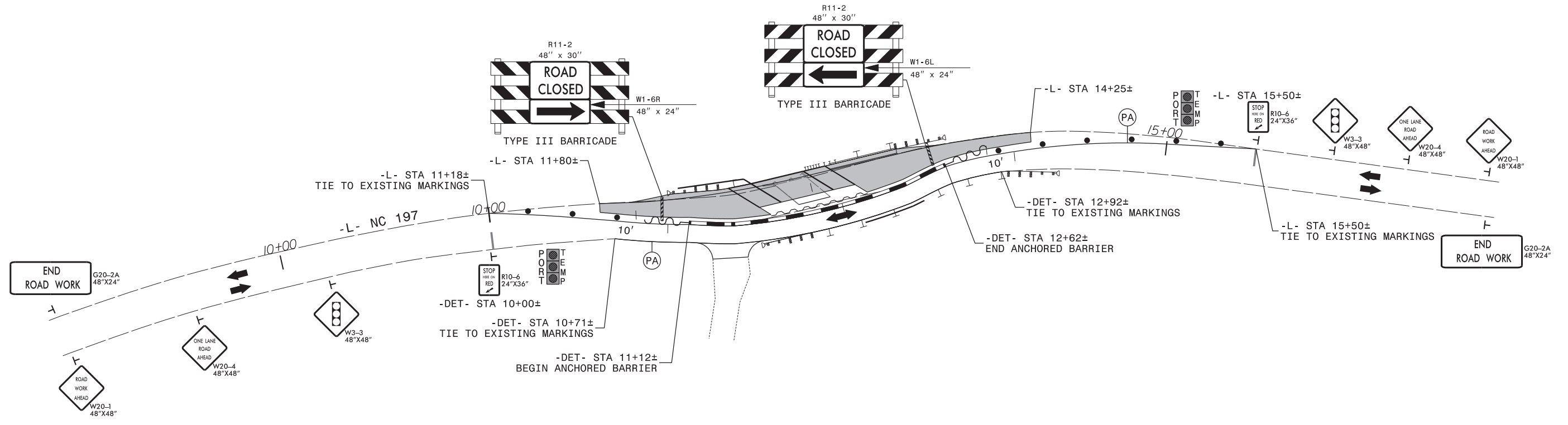
SEAL

PROFESSIONAL ENGINEER
 KEVIN W. BISSEL
 SEAL 21047

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PHASE I DETAIL



INSTALL ONE (1) TEMPORARY PORTABLE TRAFFIC SIGNAL SYSTEM AS SPECIFIED IN THE PROJECT SPECIAL PROVISIONS. CONTACT THE DIVISION TRAFFIC OFFICE TO OBTAIN CONSULTATION AND APPROVAL OF THE TEMPORARY TRAFFIC SIGNALS LOCATION AND TIMING BEFORE A TEMPORARY TRAFFIC SIGNAL IS MADE OPERATIONAL.

REFER TO STRUCTURE PLANS FOR BRIDGE PHASING DETAILS.

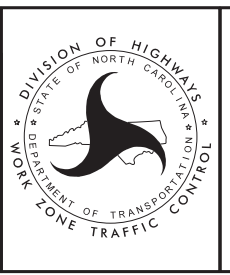
SIGN SPACING IS 100'.

APPROVED: *Kevin B. Bissel*
 DATE: 10/20/2022

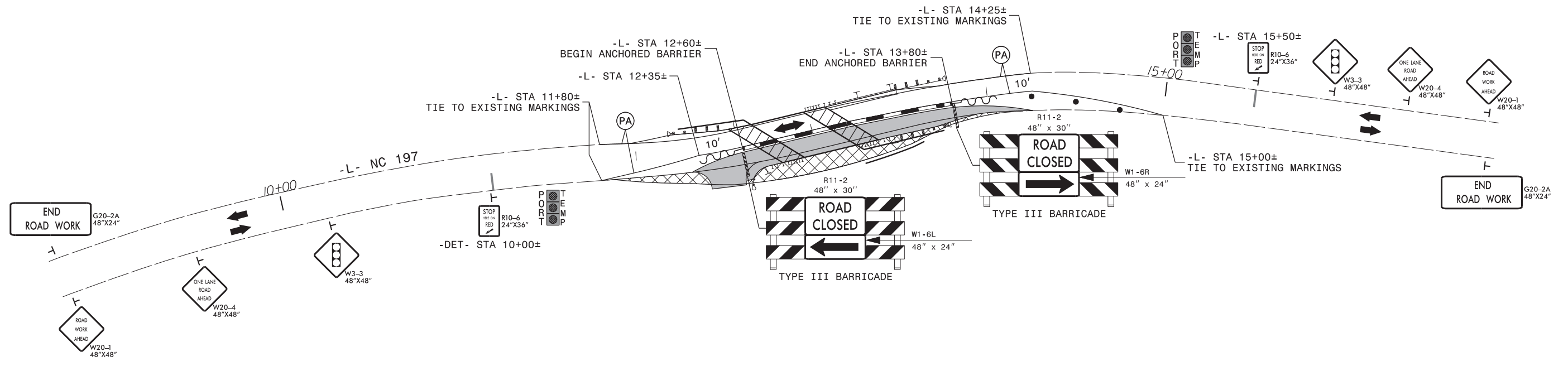
SEAL

PROFESSIONAL ENGINEER
 KEVIN W. BISSEL
 SEAL 21047

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PHASE II DETAIL



INSTALL ONE (1) TEMPORARY PORTABLE TRAFFIC SIGNAL SYSTEM AS SPECIFIED IN THE PROJECT SPECIAL PROVISIONS. CONTACT THE DIVISION TRAFFIC OFFICE TO OBTAIN CONSULTATION AND APPROVAL OF THE TEMPORARY TRAFFIC SIGNALS LOCATION AND TIMING BEFORE A TEMPORARY TRAFFIC SIGNAL IS MADE OPERATIONAL.

REFER TO STRUCTURE PLANS FOR BRIDGE PHASING DETAILS.

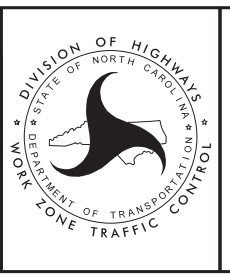
SIGN SPACING IS 100'.

PAVE ROADWAY APPROACHES AS NEEDED.

APPROVED: *Kevin B. Bissel*
 DATE: 10/20/2022

SEAL

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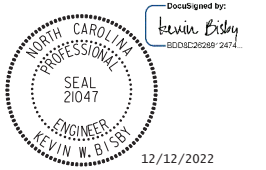
PHASE III DETAIL

10/20/2022
 990016_TMP_PSH06.dgn
 R015by

BRIDGE NO. 16 YANCEY COUNTY WBS: 41665.3A

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
YANCEY COUNTY**



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

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

INDEX

SHEET NO.	DESCRIPTION
PM-1	PAVEMENT MARKING PLAN TITLE SHEET
PM-2	PAVEMENT MARKING DETAIL

GENERAL NOTES

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

- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
-L- LINE	PAINT	NONE

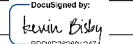

- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

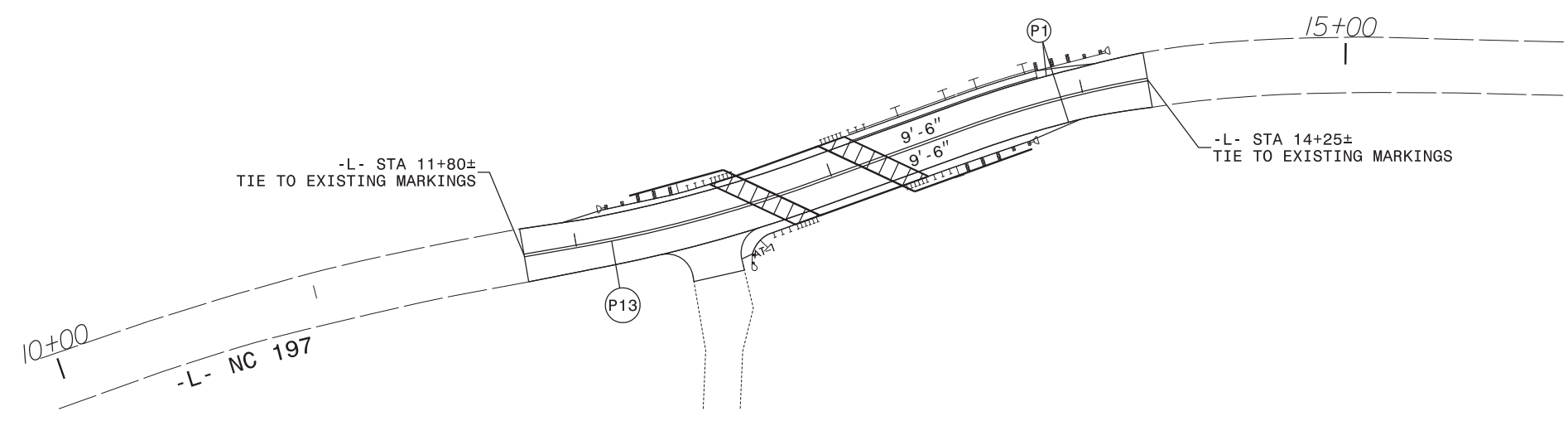
PAVEMENT MARKING SCHEDULE

- PAINT PAVEMENT MARKING LINES
- (P1) - 4" WHITE EDGE LINE
 - (P13) - 4" YELLOW DOUBLE CENTER LINE

PAVEMENT MARKING PLAN
 PLANS PREPARED BY :
K. W. BISBY, P.E. TECHNICAL MANAGER
B. HOLDEN, PE PROJECT MANAGER

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PROJECT	SHEET NO.
990016	PMP-2
APPROVED:  <small>DocuSigned by: Kevin Bissett 8008282889 2474</small>	
DATE: 12/12/2022	
SEAL	
	
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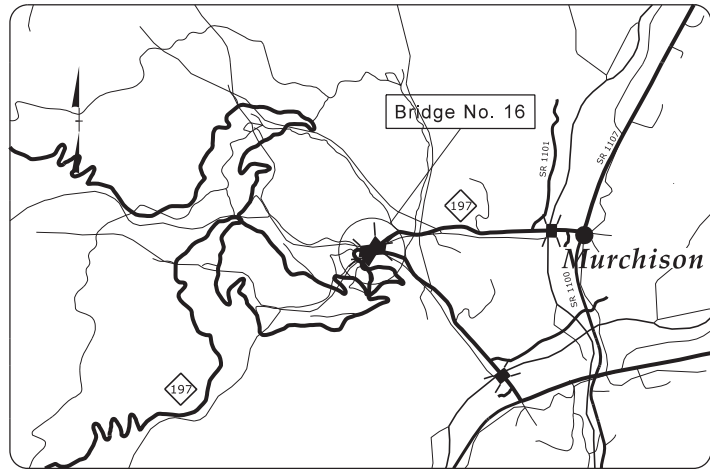
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 kbissett

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 8601 Six Forks Road Forum 1 Suite 700 | Raleigh, North Carolina 27615
 NC License No. F-0112
 Engineers | Construction Managers | Planners | Scientists
 www.rkk.com
 Responsive People | Creative Solutions

PAVEMENT MARKING DETAIL

09/26/99

SEE SHEET 1A FOR INDEX OF SHEETS
SEE SHEET 1B FOR CONVENTIONAL SYMBOLS

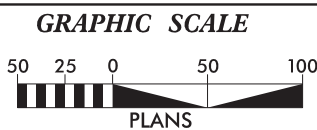


VICINITY MAP
NOT TO SCALE

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
1606.01	Special Sediment Control Fence	△△△△△
1622.01	Temporary Berms and Slope Drains	— T —
1630.02	Silt Basin Type B	▨
1635.01	Temporary Rock Silt Check Type-A	▨
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	▨
1635.02	Temporary Rock Silt Check Type-B	▨
	Wattle / Coir Fiber Wattle	— W —
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	— W —
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	▭

NOTE:
1. DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED & LANE WIDTH.



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.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YANCEY COUNTY

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

LOCATION: BRIDGE NO. 16 OVER ELK FORK CREEK
ON NC 197

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES AND
RESURFACING

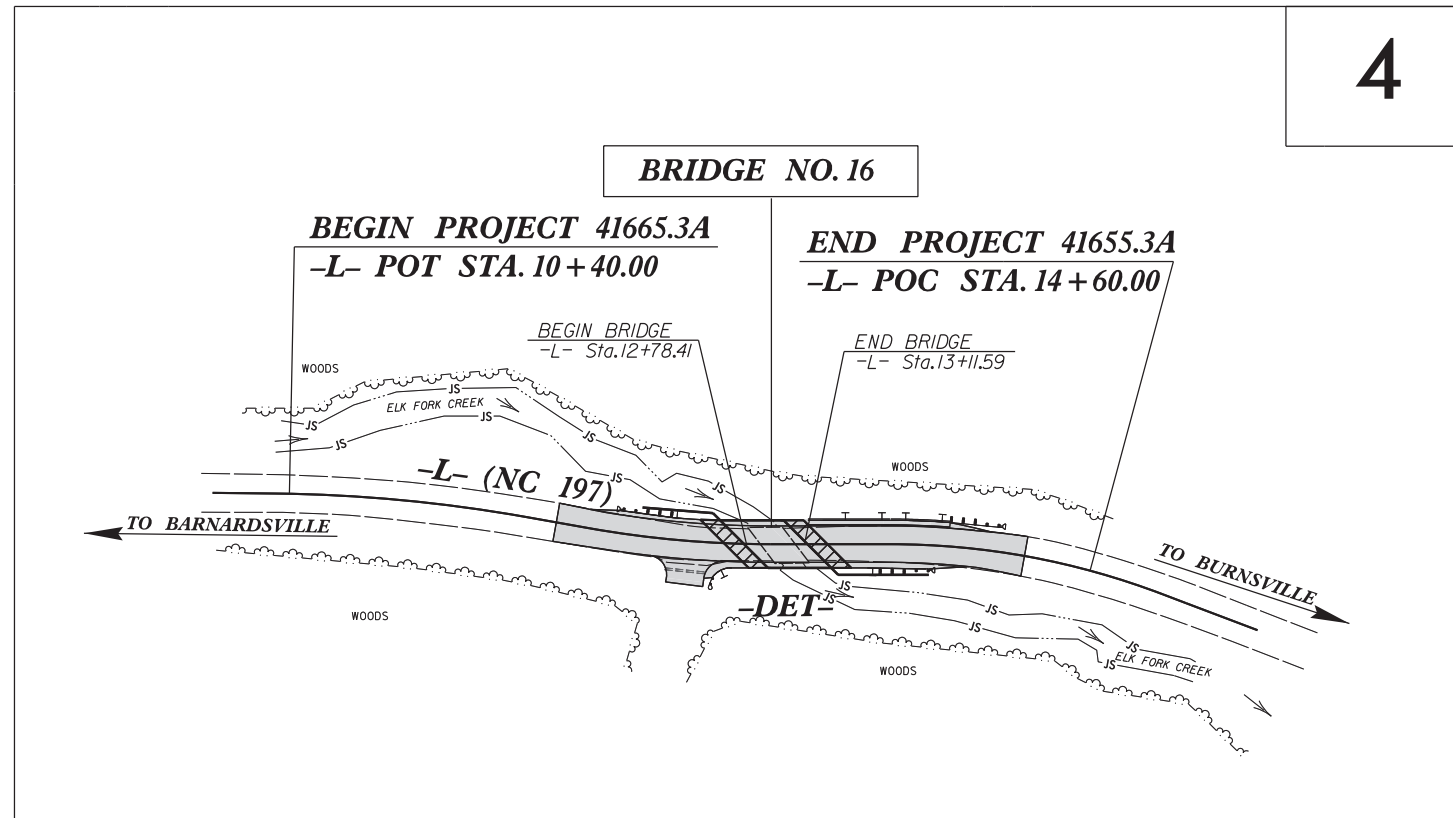


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	41665.3A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
41665.3A		PE, ROW, UTIL. & CONST.	



WBS: 41665.3A

CONTRACT: DM00388



Clearing and Grubbing Phase
 Final Phase
 Both Phases

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

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

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.

HIGH QUALITY WATER(S) EXIST ON THIS PROJECT

High Quality Water Zone(s) Exist
From Sta. 11+80
to Sta. 14+25
Refer To E. C. Special Provisions for Special Considerations.

4

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Prepared in the Office of:
RUMMEL, KLEPPER & KAHL, LLP
 8601 SIX FORKS ROAD, FORUM 1 SUITE 700
 RALEIGH, NORTH CAROLINA 27615-3960
 NC LICENSE NO. F-0112
 1-888-521-4455 OR 919-878-9560

Designed by:
SETH JONES, EI 4183
 NAME LEVEL III CERTIFICATION NO.

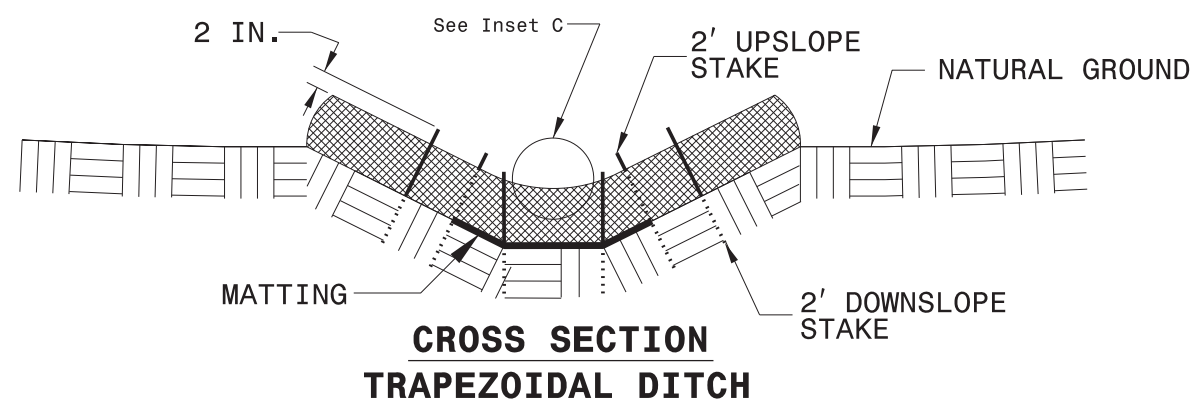
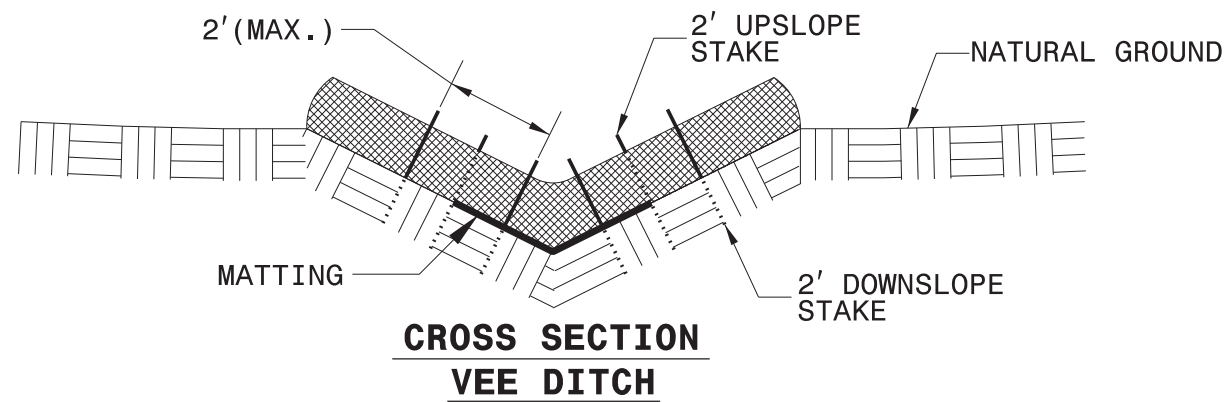
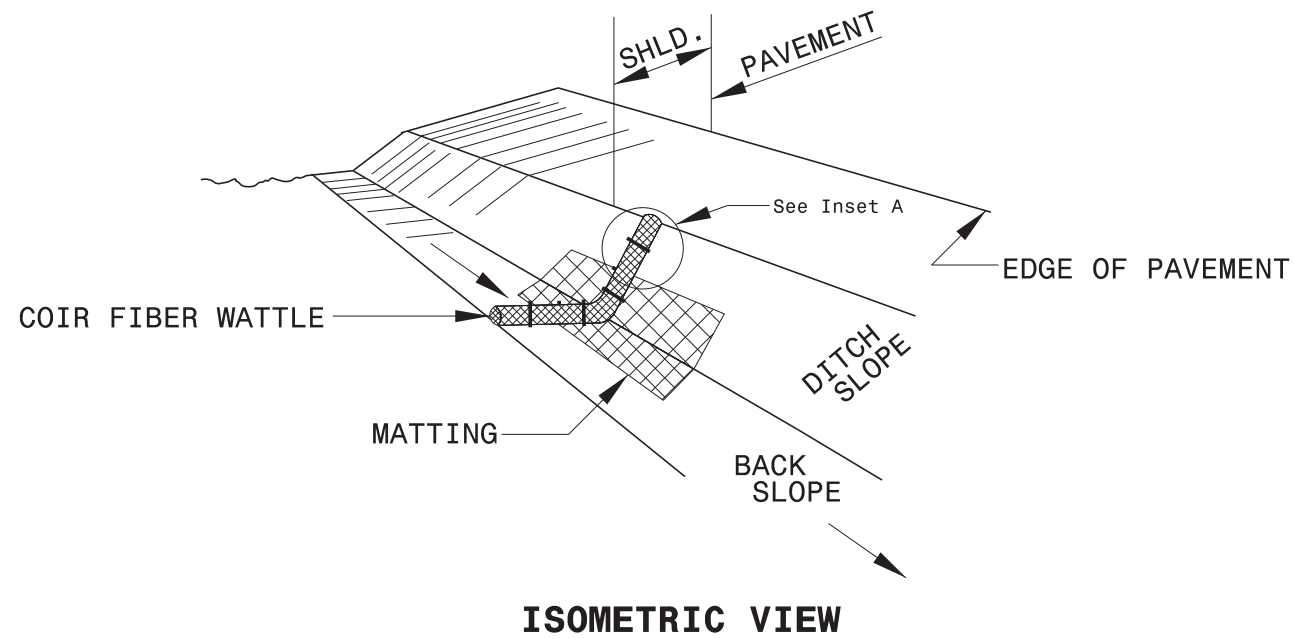
Roadway Standard Drawings

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

1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type 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 Jaffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	

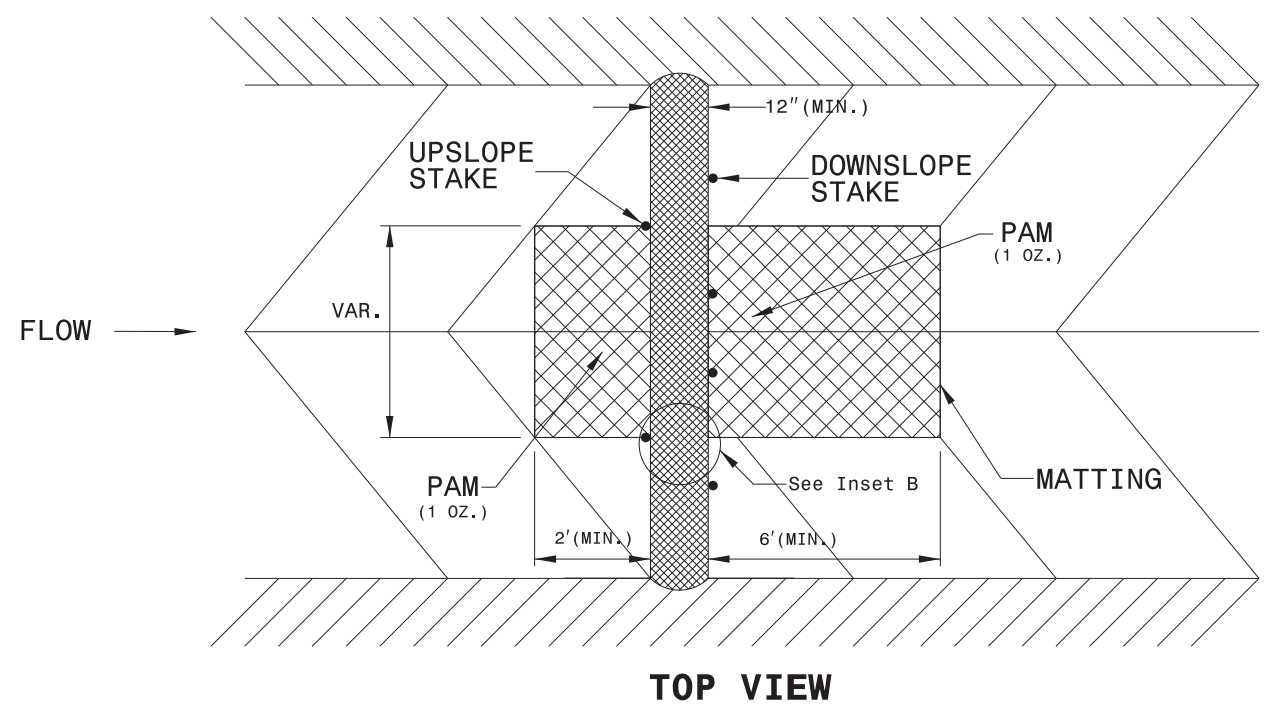
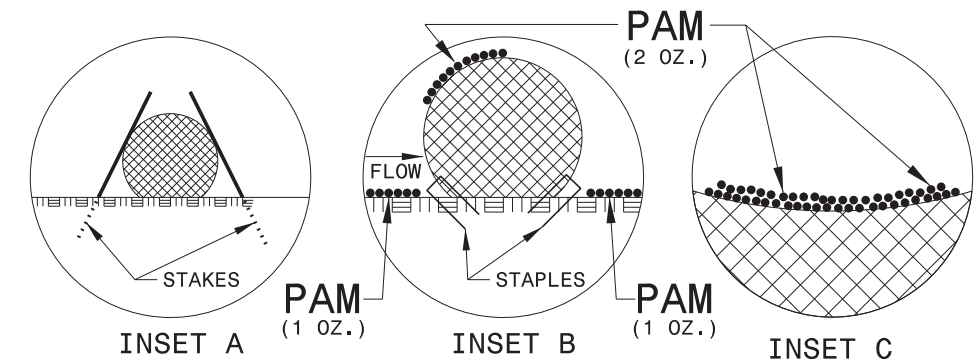
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41665.3A		EC-2
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



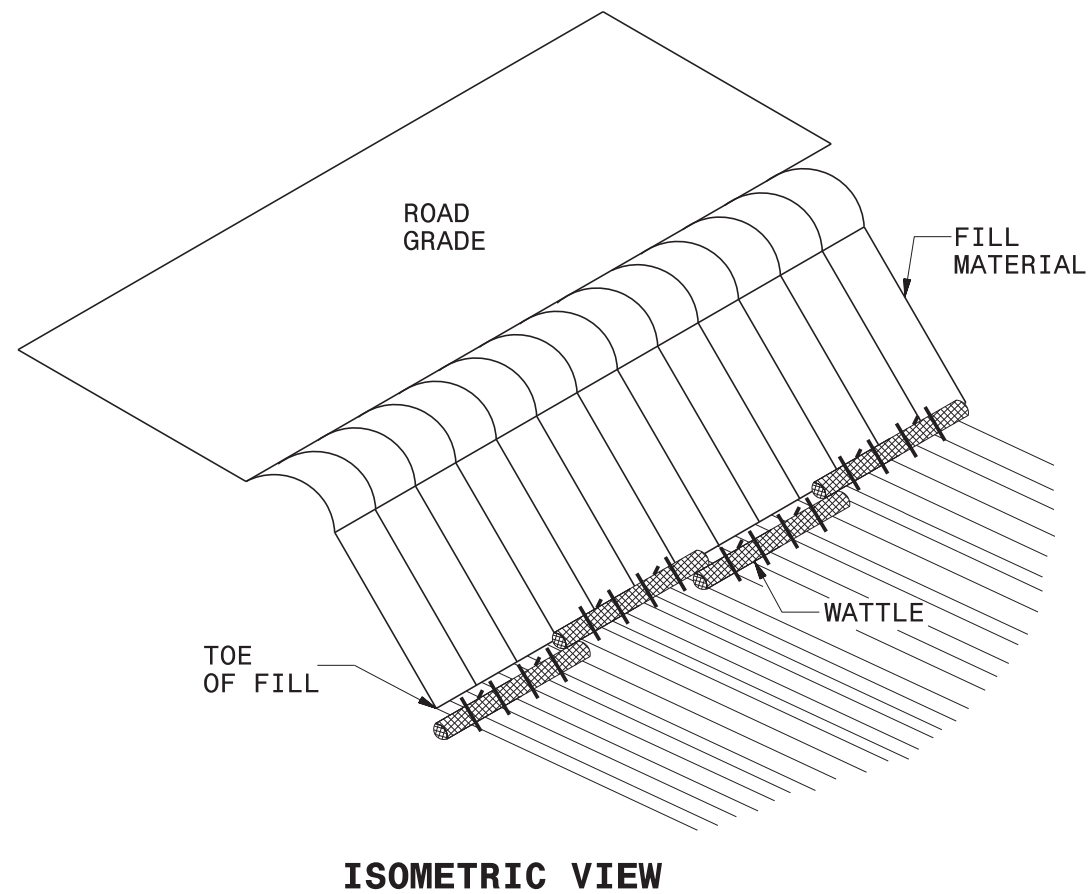
NOTES:

- USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
- PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.
- PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.
- INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

COIR FIBER WATTLE BARRIER DETAIL



NOTES:

USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

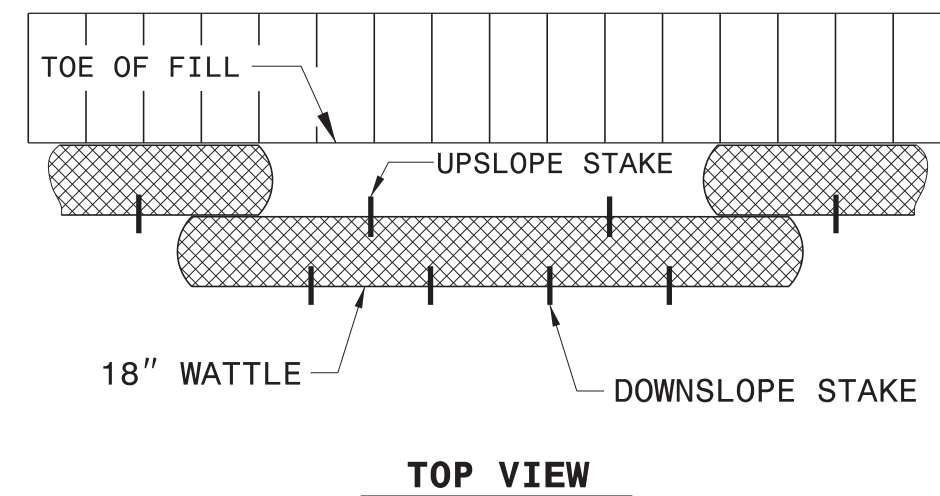
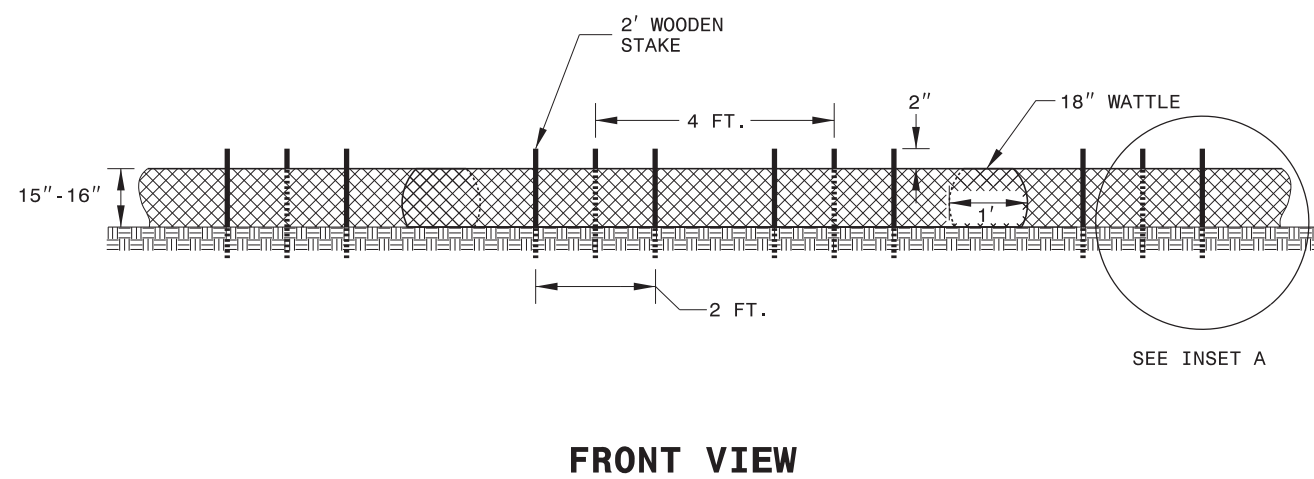
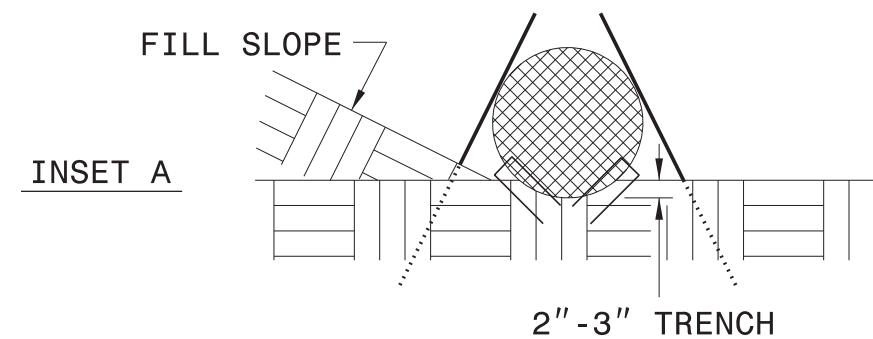
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

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.

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.



8/17/99
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DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

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

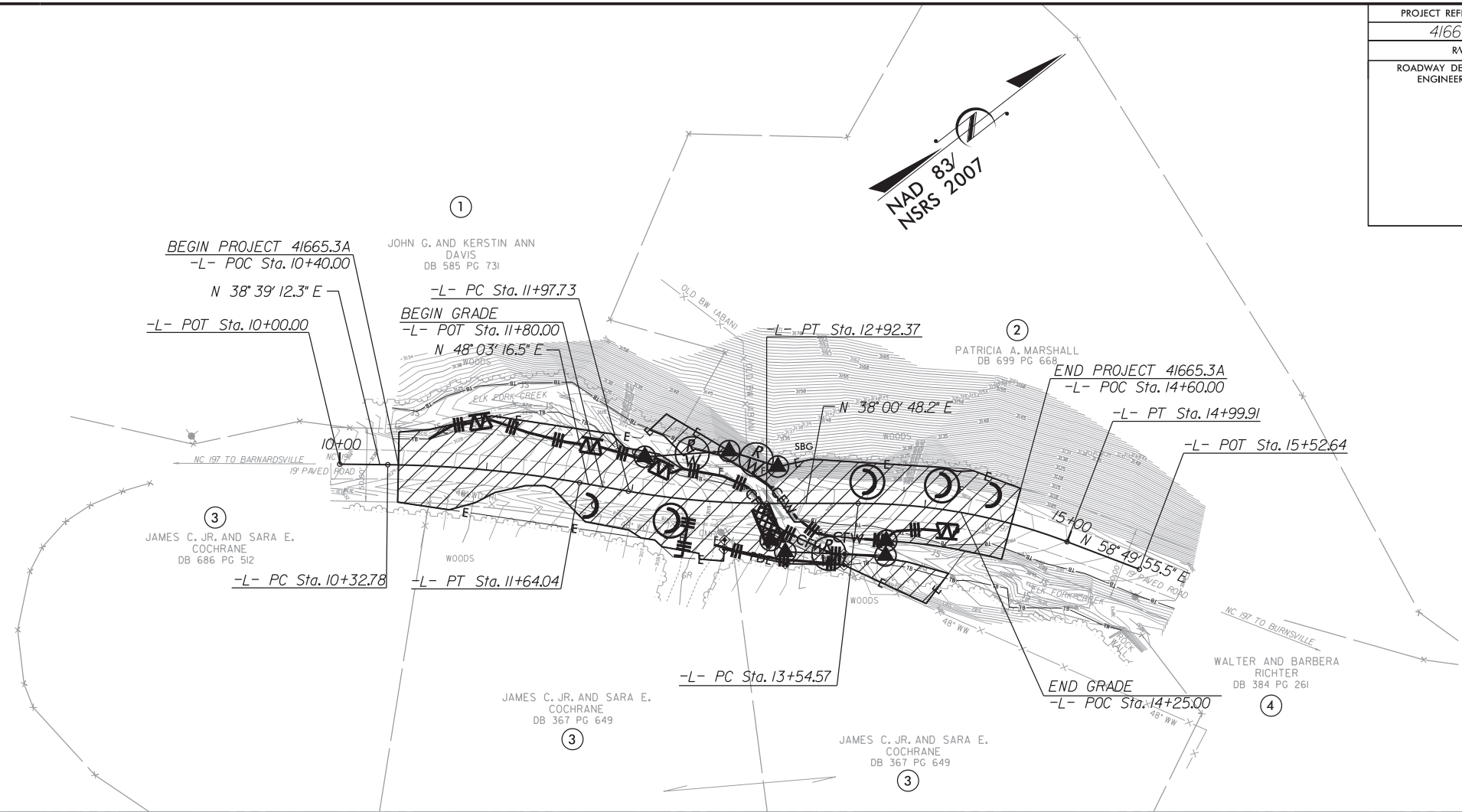
PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-4/
RW SHEET NO. CONST.4	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

8/17/99

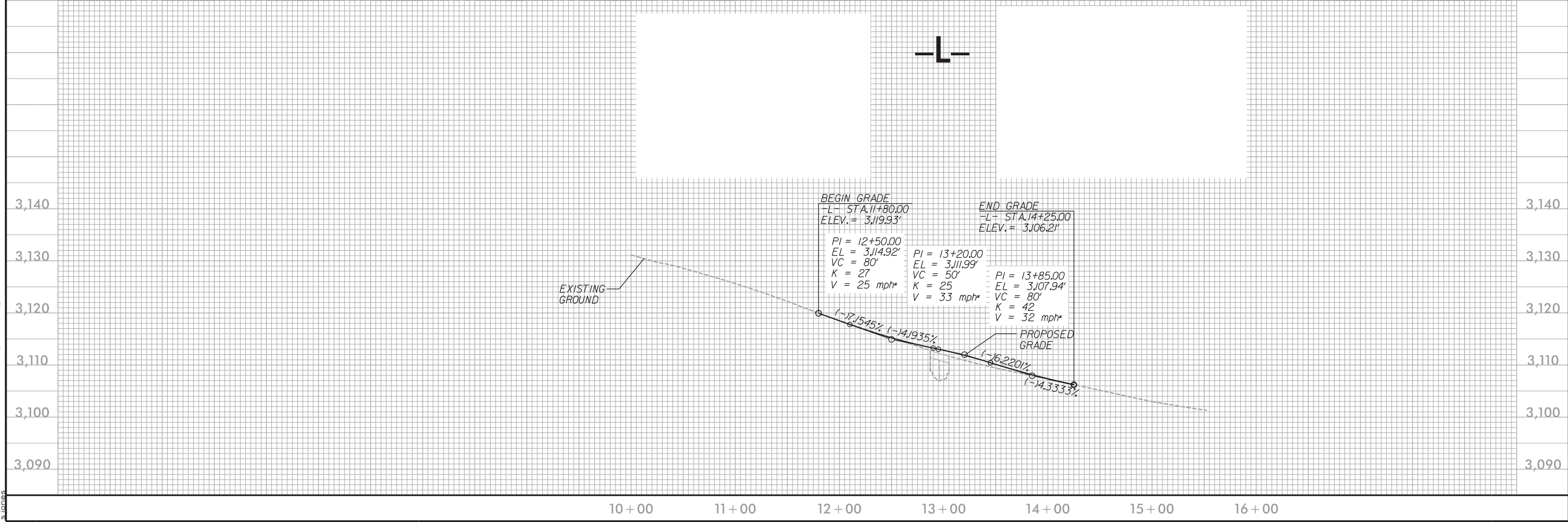
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

 ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS



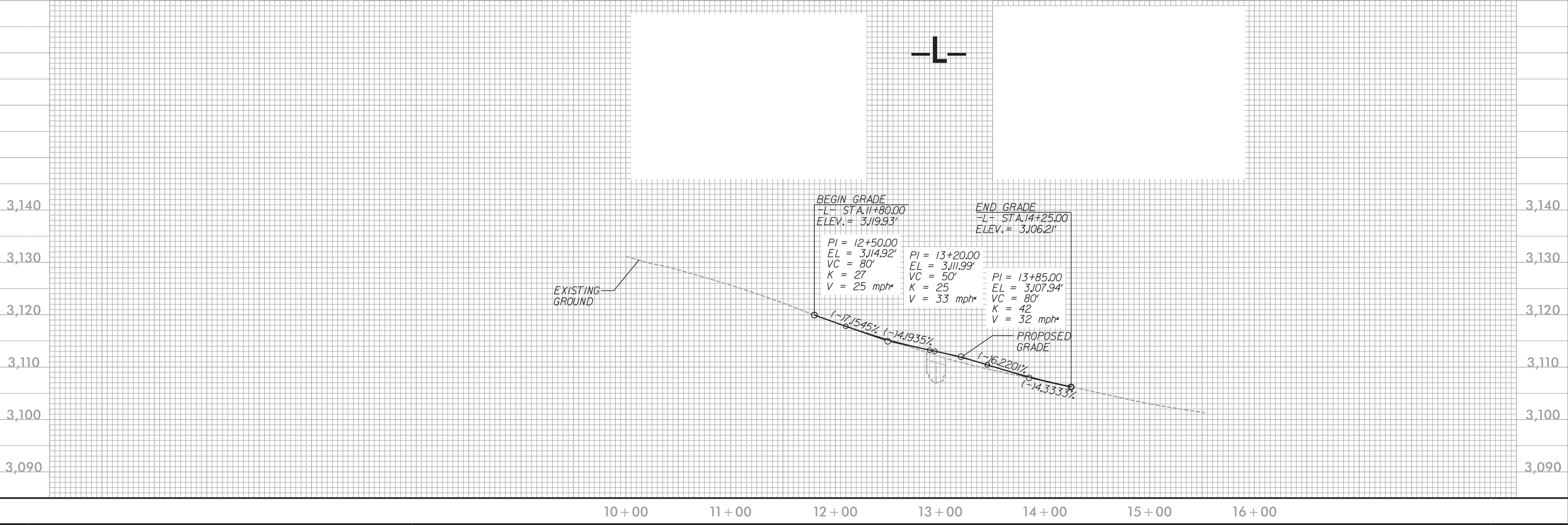
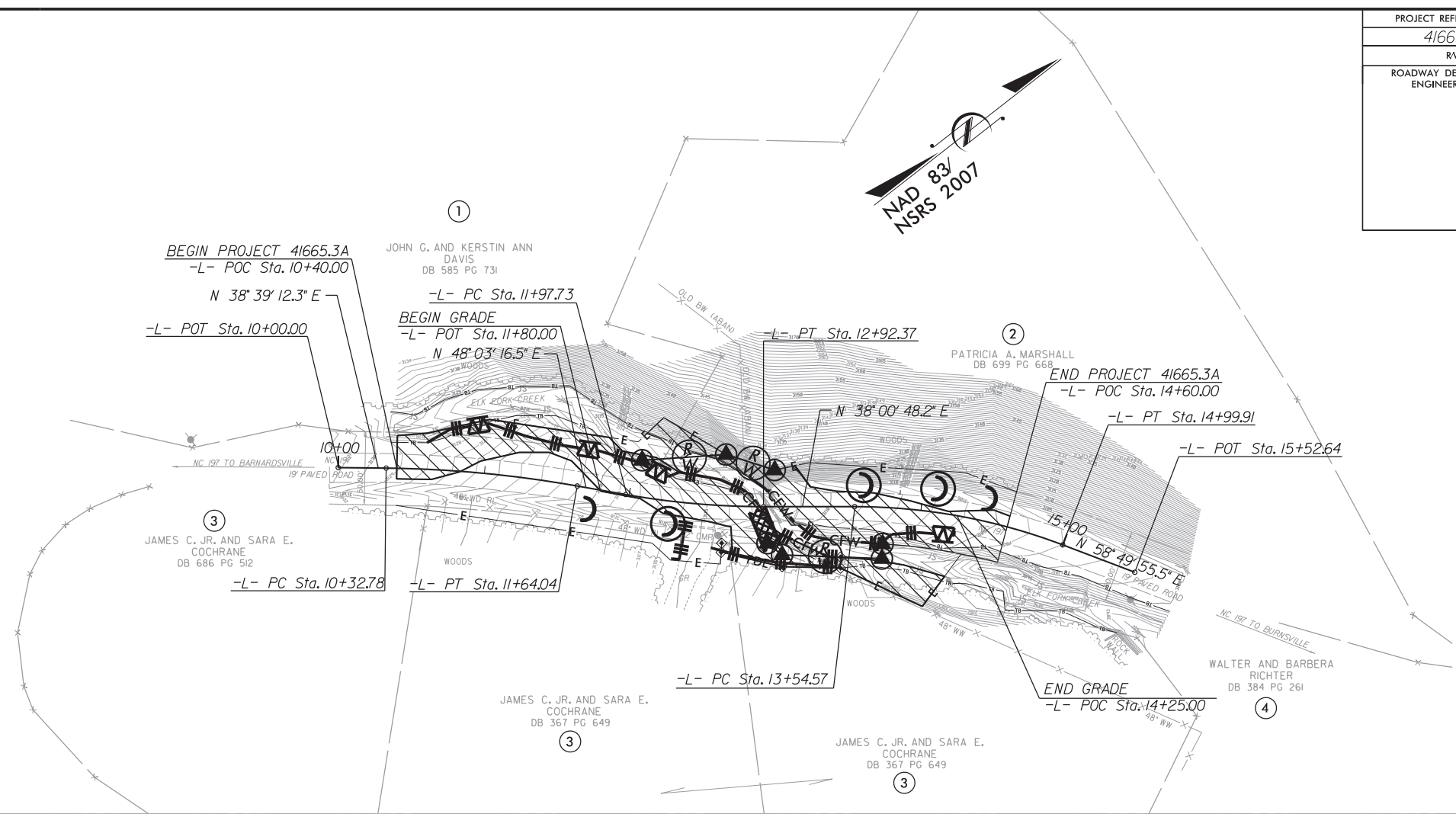
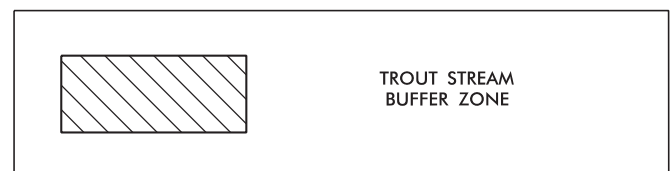
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PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-4A/
R/W SHEET NO. CONST.4	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

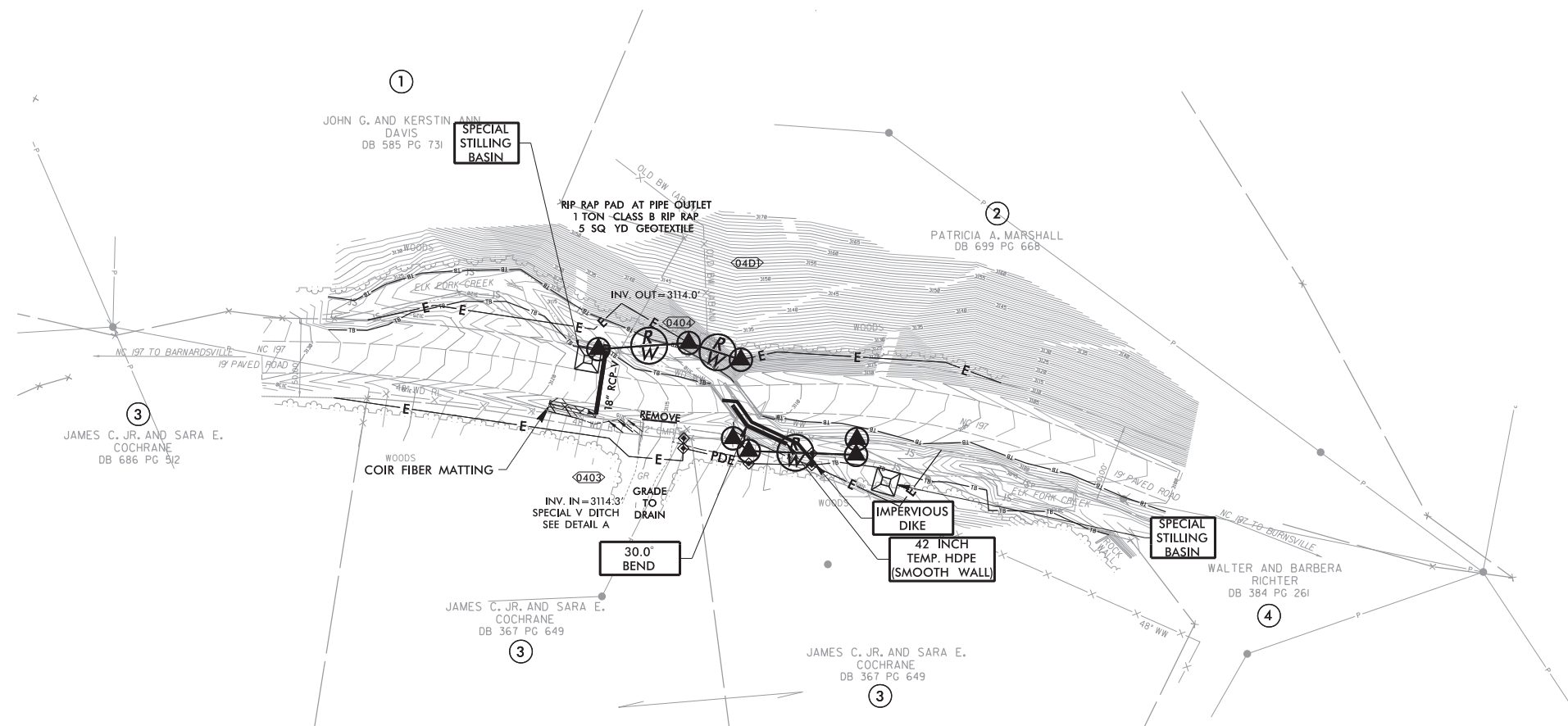
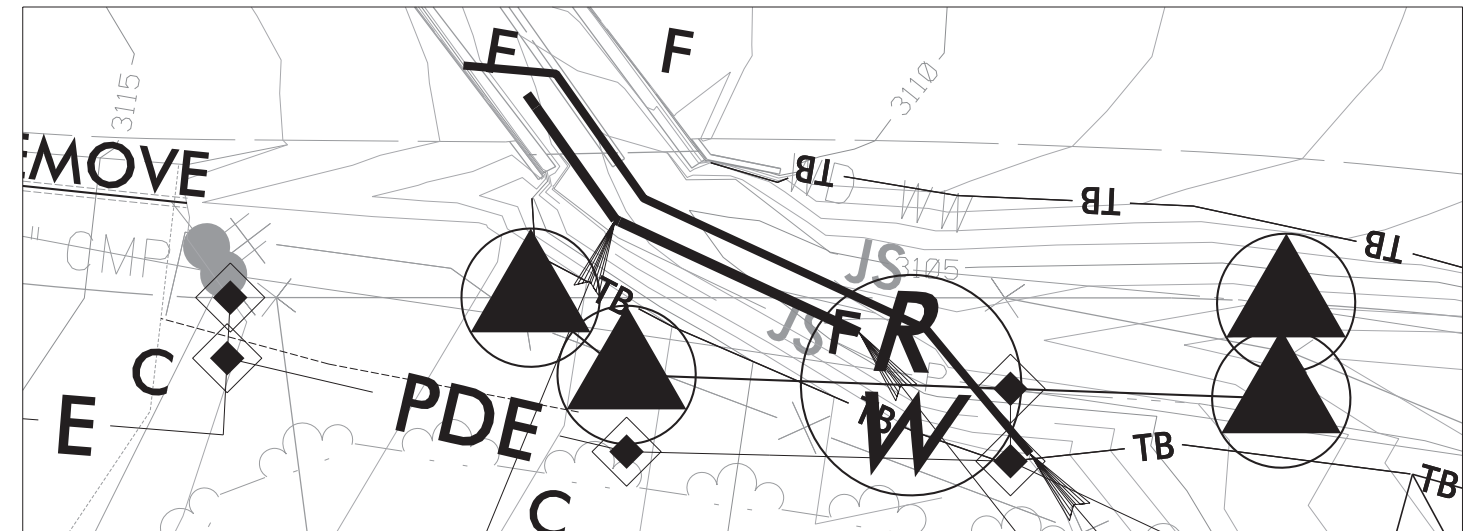


PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-4B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BRIDGE CONSTRUCTION SEQUENCE STA. 12 + 88 -L-

PHASE IA

1. PHASE IS TO BE COMPLETED IN A DRY PERIOD.
2. INSTALL 18" RCP-V CROSSPIPE AT -L- 12+10, SPECIAL CUT DITCH FROM -L- 11+80 TO 12+10 RT, AND CLASS B RIPRAP AT PIPE OUTLET. REMOVE EXISTING 12" CMP AND LINE DITCH WITH COIR FIBER MATTING.
3. INSTALL SPECIAL STILLING BASIN(S) WITH A MINIMUM CAPACITY OF 40 CY. UPSTREAM & DOWNSTREAM SITES ARE SHOWN.
4. INSTALL IMPERVIOUS DIKE AS SHOWN TO ISOLATE RIGHT SIDE OF DOWNSTREAM CHANNEL.
5. DEWATER WORK AREA WITH USE OF SPECIAL STILLING BASIN(S).
6. INSTALL RIGHT SIDE 42" TEMPORARY PIPE.
7. BEGIN PHASE IB.



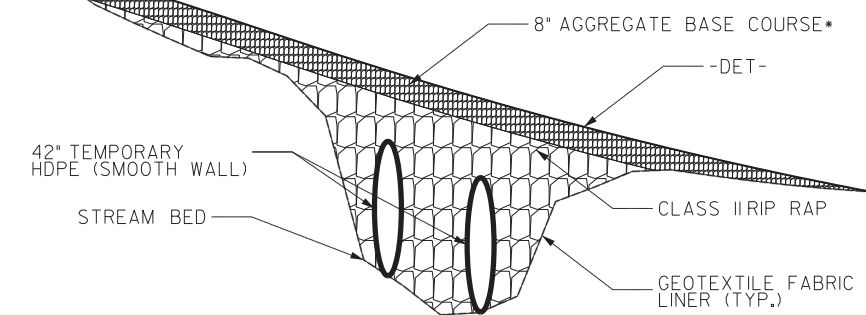
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PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-4D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BRIDGE CONSTRUCTION SEQUENCE STA. 12+88 -L-

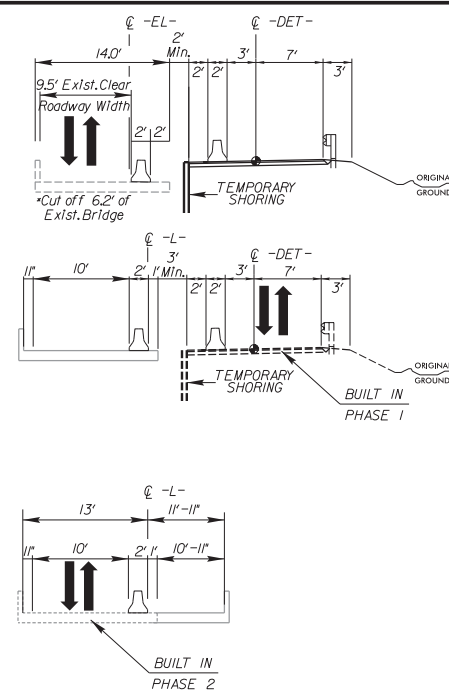
PHASE IC

- ADJUST IMPERVIOUS DIKES AS SHOWN TO ROUTE FLOW THROUGH BOTH 42" TEMPORARY PIPES. ANCHOR AND SEAL TEMPORARY PIPES SECURELY AT INLET.
- DEWATER WORK AREA WITH USE OF SPECIAL STILLING BASIN(S).
- CONSTRUCT ON-SITE DETOUR, EMBANKMENTS AND ASSOCIATED DRAINAGE AS SHOWN ON PHASING PLAN.
- SHIFT TRAFFIC AND MAINTAIN THE TEMPORARY ONE LANE, TWO-WAY TRAFFIC PATTERN.
- BEGIN PHASE IIA



DETAIL OF TEMPORARY STREAM CROSSING
(N.T.S.)

*NOTE: PLACE, COMPACT AND MONITOR TEMPORARY ABC SURFACE TO ENSURE STONES DO NOT ENTER THE STREAM

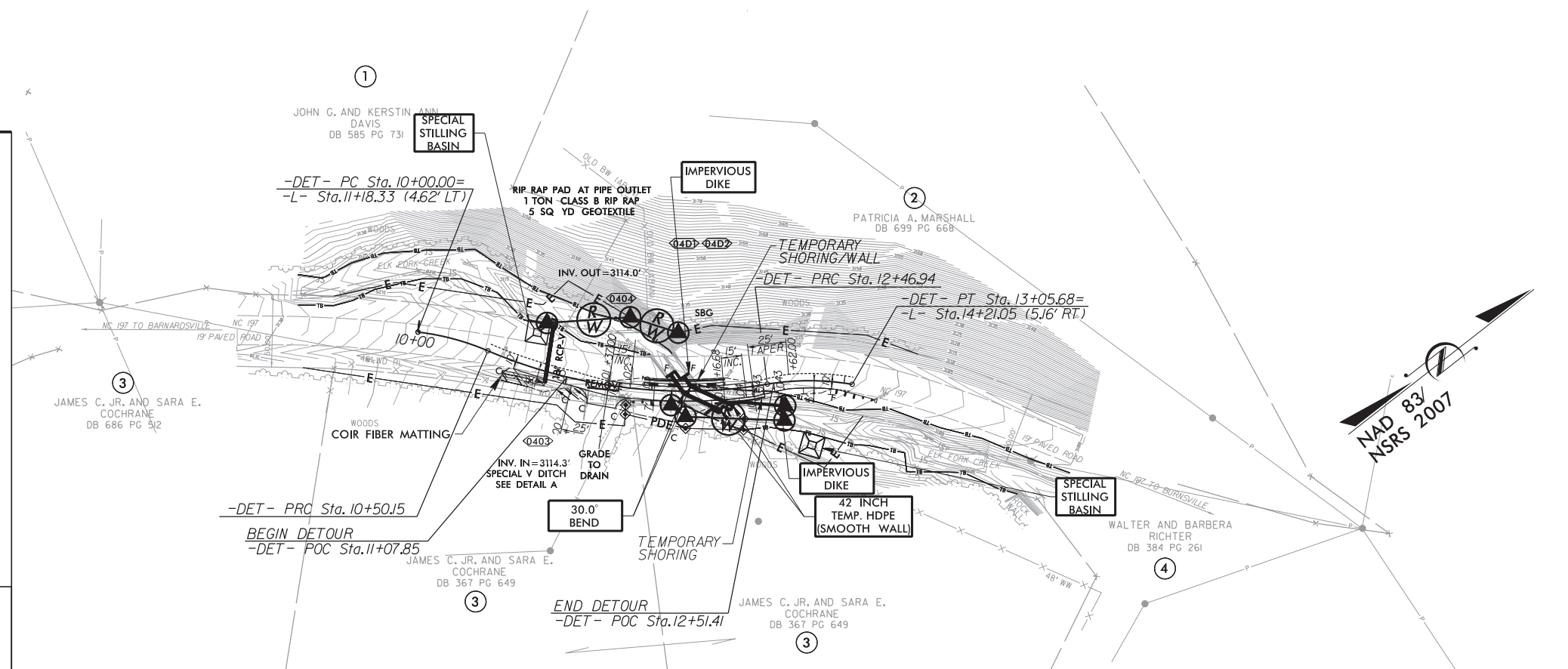


Phase 1

Phase 2

Phase 3

PHASING
DETAILS

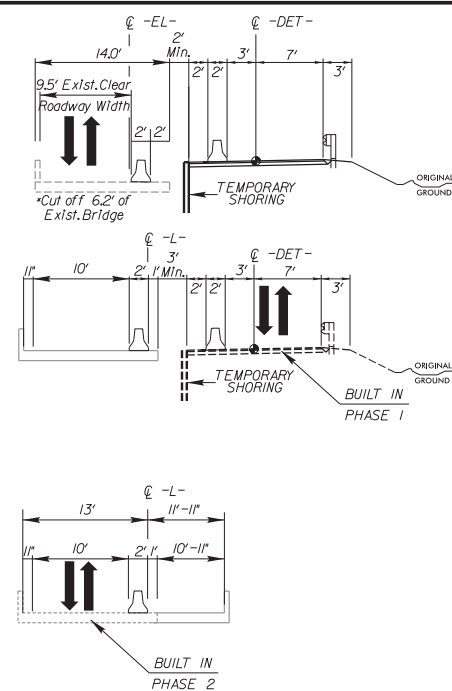


PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-4G
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BRIDGE CONSTRUCTION SEQUENCE STA. 12+88 -L-

PHASE IIC

1. ADJUST UPSTREAM IMPERVIOUS DIKE AS SHOWN ROUTE FLOW THROUGH BOTH 42" TEMPORARY PIPES. ANCHOR AND SEAL TEMPORARY PIPES SECURELY AT INLET.
2. DEWATER WORK AREA WITH USE OF SPECIAL STILLING BASIN(S).
3. REMOVE THE REMAINING PORTIONS OF THE EXISTING BRIDGE.
4. BEGIN PHASE IID.

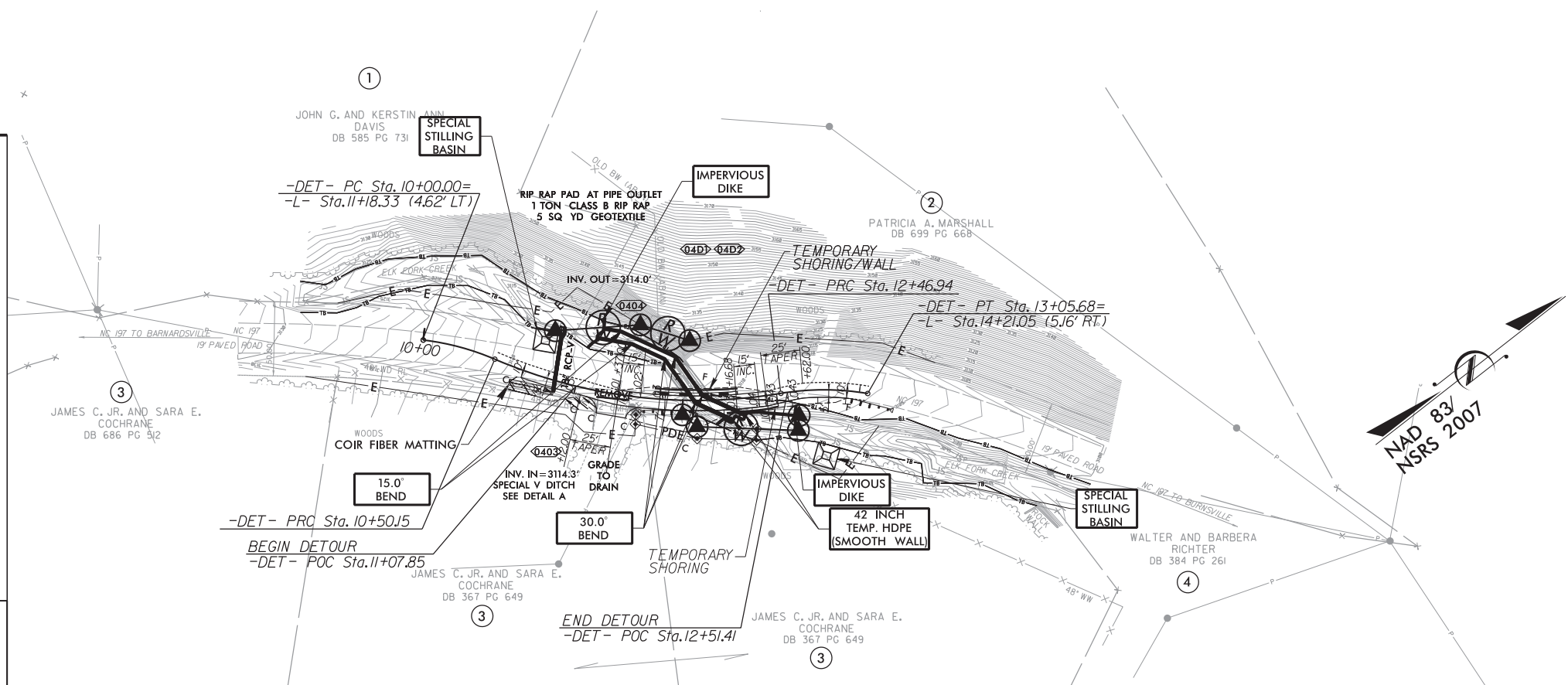


Phase 1

Phase 2

Phase 3

PHASING
DETAILS

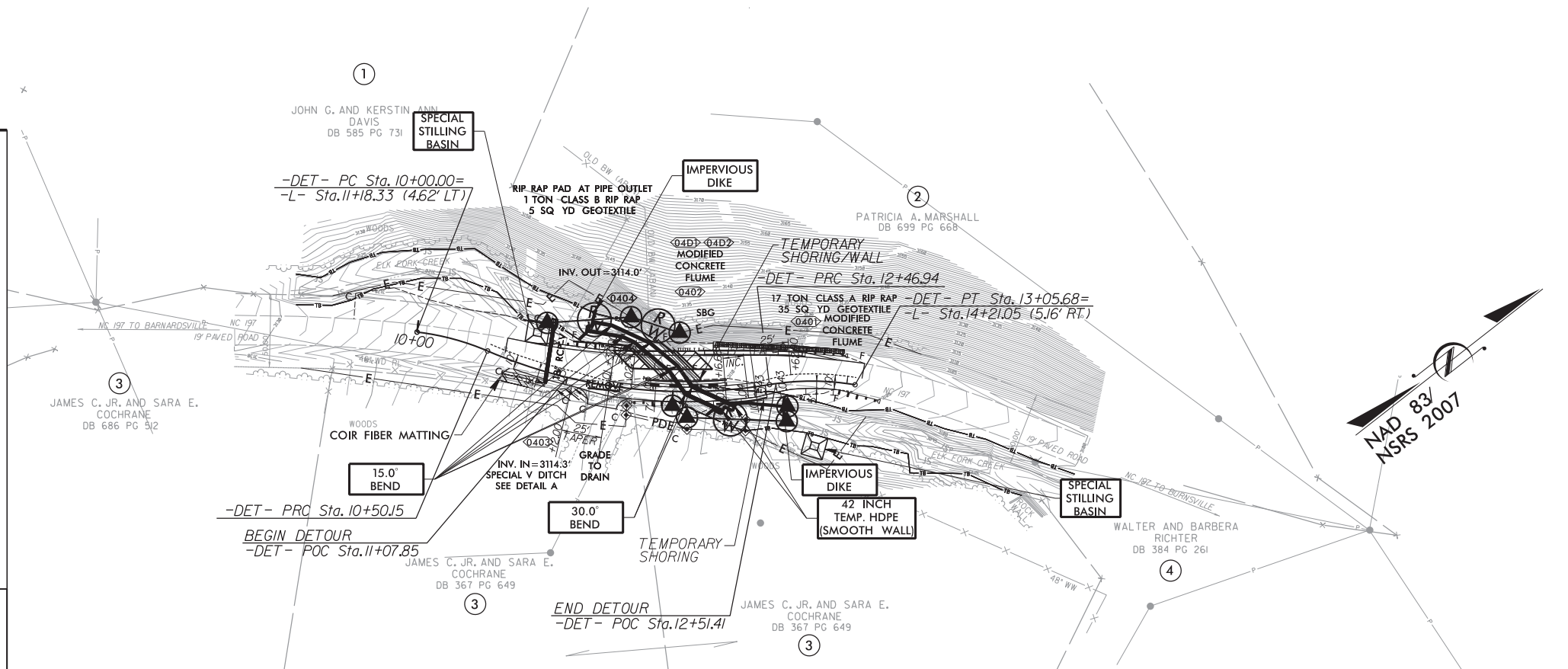
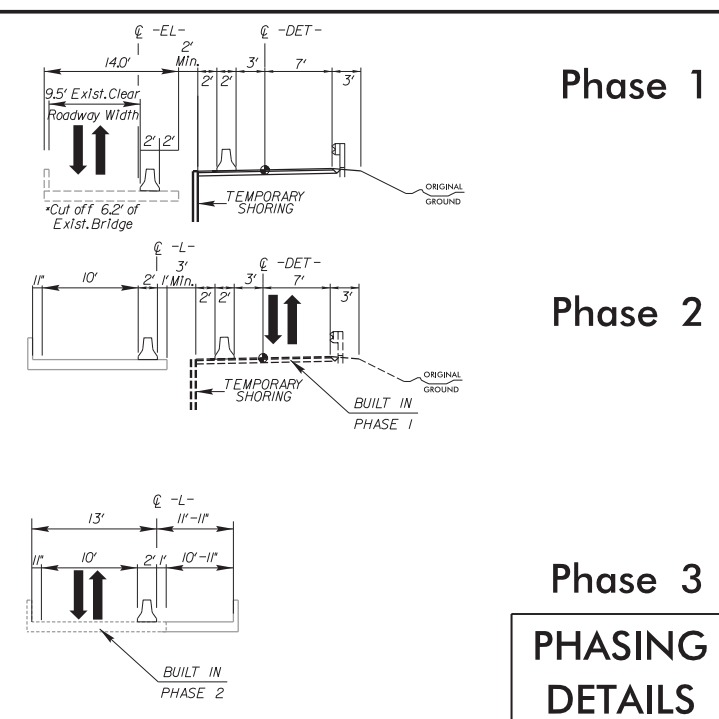


PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-4H
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BRIDGE CONSTRUCTION SEQUENCE STA. 12+88 -L-

PHASE IID

1. CONSTRUCT CHANNEL CHANGE ON LEFT SIDE OF DETOUR.
2. REALIGN TWO LINES OF TEMPORARY 42" PIPE (APPROX. 70 AND 80 LF +/-) AT -L- STA. 12+86.5 AND 12+97 THROUGH PROPOSED BRIDGE AS SHOWN ON PHASING PLAN.
3. CONSTRUCT WESTBOUND LANE OF THE PROPOSED BRIDGE AS SHOWN ON THE PHASING PLAN BELOW. INSTALL MODIFIED CONCRETE FLUMES AT -L- 13+25 & 13+75 LT. LINE EXISTING DITCH WITH CLASS A RIP RAP.
4. BEGIN PHASE IIIA



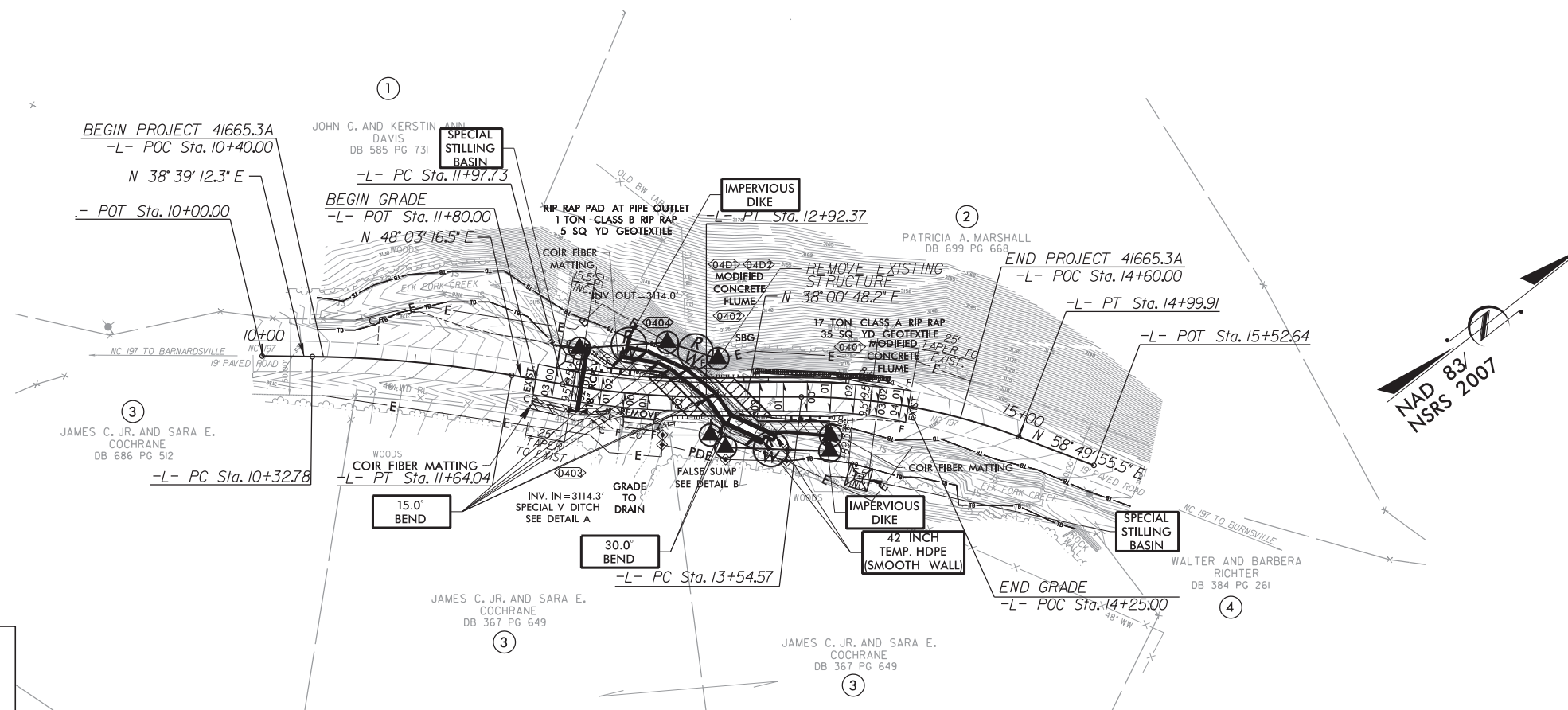
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BRIDGE CONSTRUCTION SEQUENCE STA. 12+88 -L-

PHASE IIIA

1. SHIFT TRAFFIC TO WESTBOUND LANE OF PROPOSED BRIDGE. CONTINUE USE OF CONTROLLED TWO-WAY, SINGLE-LANE FLOW.
2. REMOVE ON-SITE DETOUR AND ASSOCIATED EMBANKMENTS.
3. CONSTRUCT CHANNEL CHANGE AT EAST END OF THE BRIDGE.
4. CONSTRUCT EASTBOUND LANE OF PROPOSED BRIDGE AS SHOWN ON THE PHASING PLAN BELOW.
5. GRADE DITCH FRONT SLOPE TO 2:1 AND EXTEND TO -L- 12+30 RT. LINE DITCH WITH COIR FIBER MATTING.
6. SHIFT EASTBOUND TRAFFIC TO EASTBOUND LANE OF PROPOSED BRIDGE TO RETURN TO NORMAL TWO-WAY, TWO-LANE FLOW.
7. BEGIN PHASE IIIB.



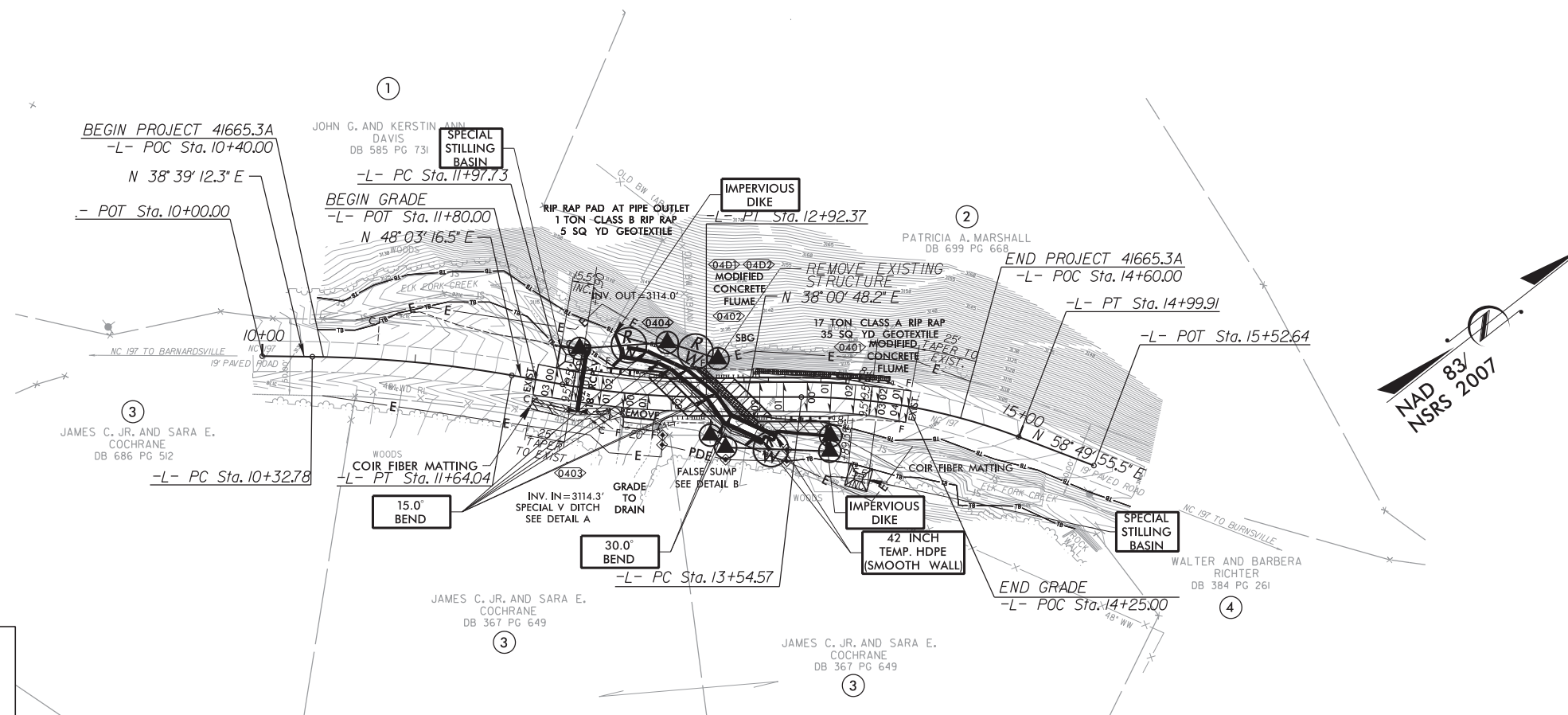
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PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-4J
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BRIDGE CONSTRUCTION SEQUENCE STA. 12 + 88 -L-

PHASE IIIB

1. PHASE IS TO BE COMPLETED IN A DRY PERIOD
2. ADJUST UPSTREAM IMPERVIOUS DIKE TO ROUTE FLOW THROUGH RIGHT 42" TEMPORARY PIPE.
ADJUST DOWNSTREAM IMPERVIOUS DIKE TO BLOCK OPENING OF LEFT 42" TEMPORARY PIPE.
3. DEWATER WORK AREA WITH USE OF SPECIAL STILLING BASIN.
4. REMOVE LEFT 42" TEMPORARY PIPE.
5. INSTALL CLASS II RIP RAP AND COIR FIBER MATTING ALONG LEFT BANK.
6. BEGIN PHASE IIIC.



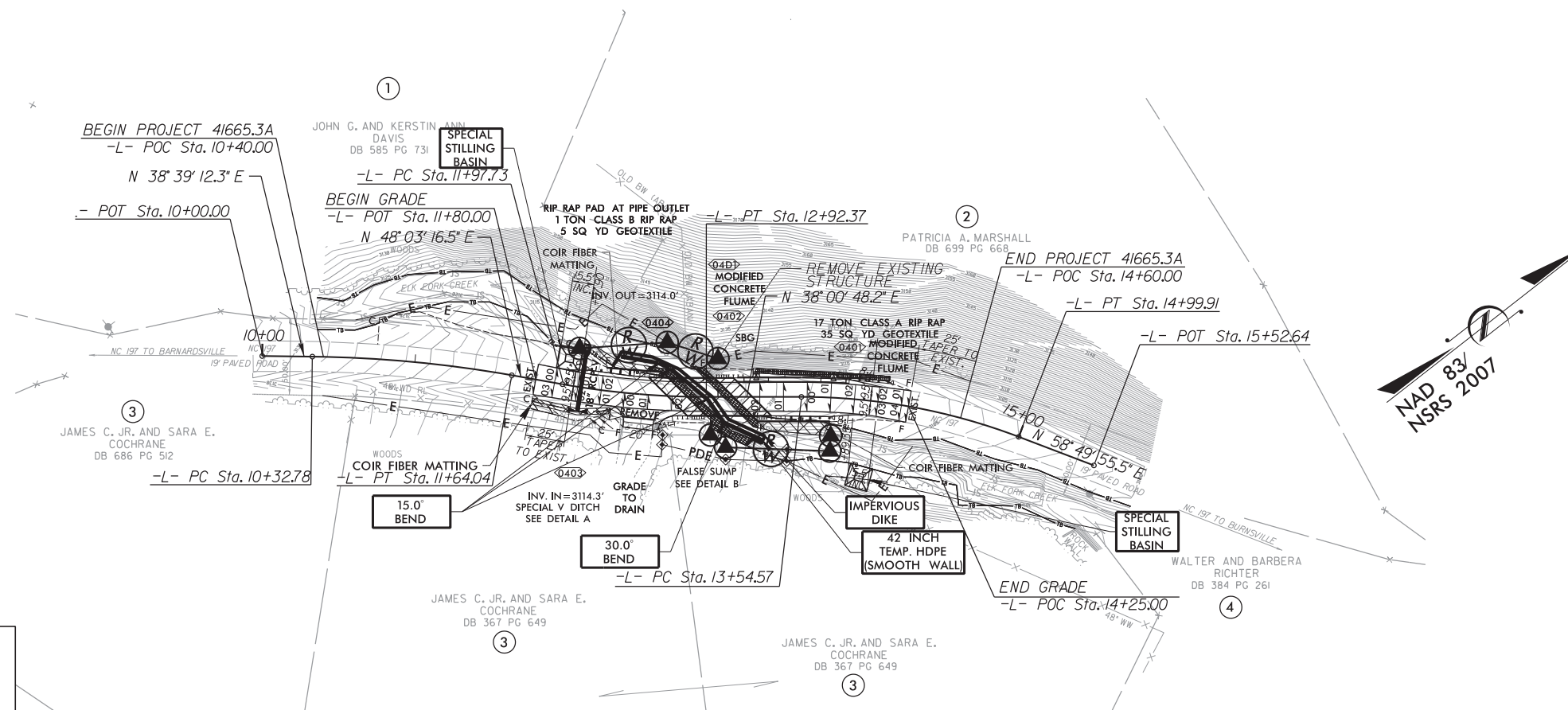
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PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-4K
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BRIDGE CONSTRUCTION SEQUENCE STA. 12 + 88 -L-

PHASE IIIC

1. PHASE IS TO BE COMPLETED IN A DRY PERIOD.
2. ADJUST AND EXTEND IMPERVIOUS DIKE AS SHOWN TO ISOLATE RIGHT 42" TEMPORARY PIPE AND ROUTE FLOW ALONG LEFT SIDE OF CHANNEL CHANGE.
3. DEWATER WORK AREA WITH USE OF SPECIAL STILLING BASIN(S).
4. REMOVE RIGHT 42" TEMPORARY PIPE.
5. INSTALL CLASS II RIP RAP AND COIR FIBER MATTING ON RIGHT BANK.
6. REMOVE IMPERVIOUS DIKE TO ALLOW FLOW ACROSS ENTIRE CHANNEL.
7. REMOVE SPECIAL STILLING BASIN(S)
8. COMPLETE ANY REMAINING ROADWAY WORK.

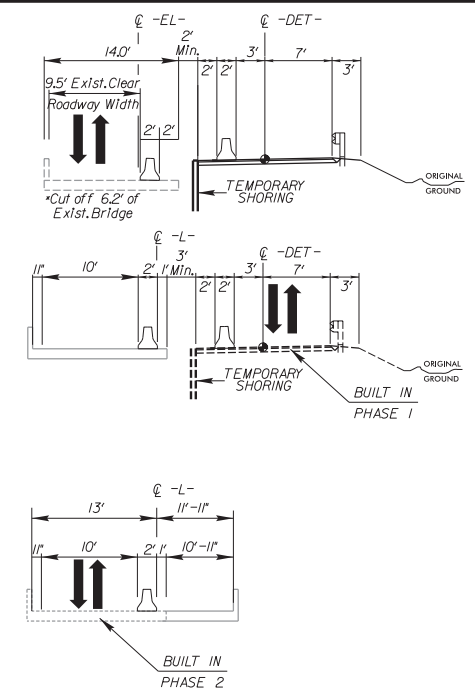


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8/17/99

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PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-5/
RW SHEET NO. CONST.2B-1	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

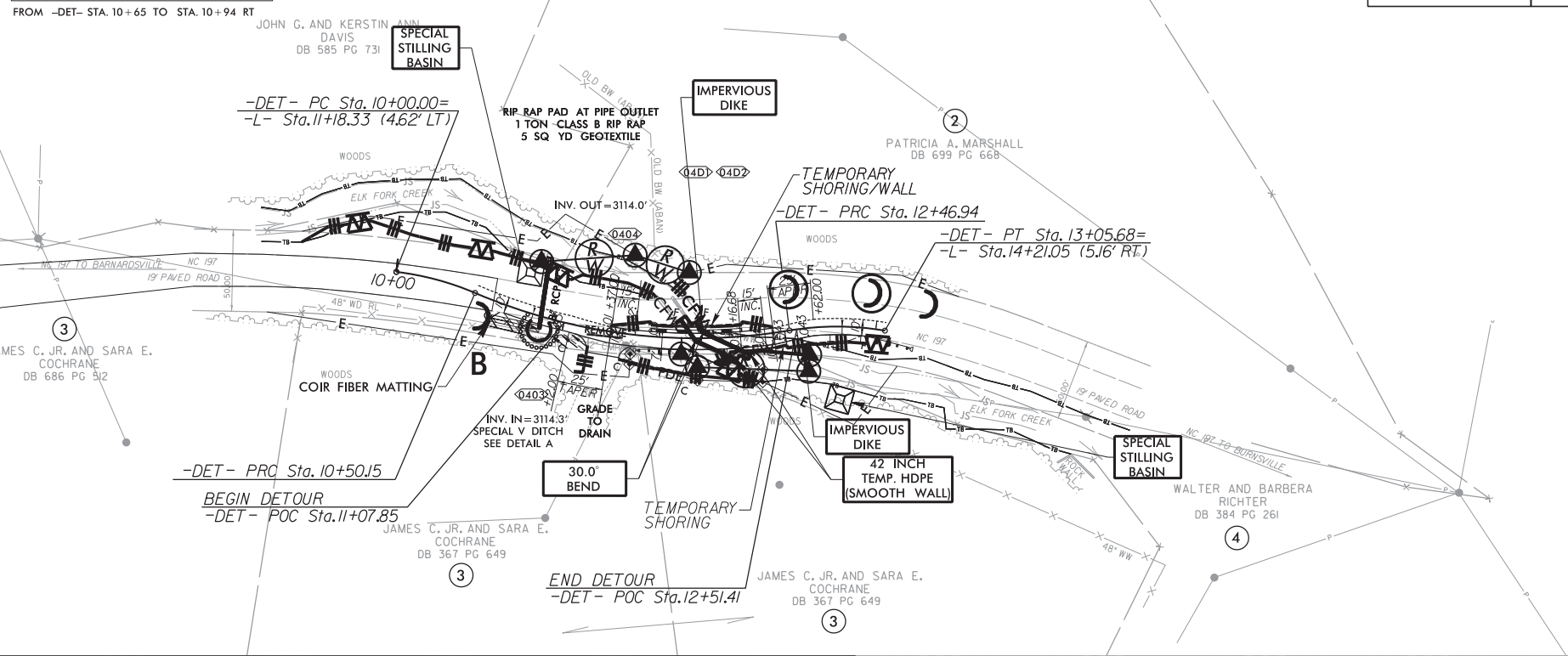
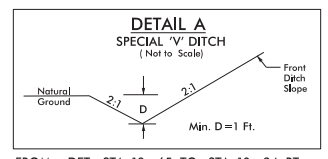


Phase 1

Phase 2

Phase 3

PHASING DETAILS



NOTE: SEE TMP PLANS FOR BARRIER DETAILS

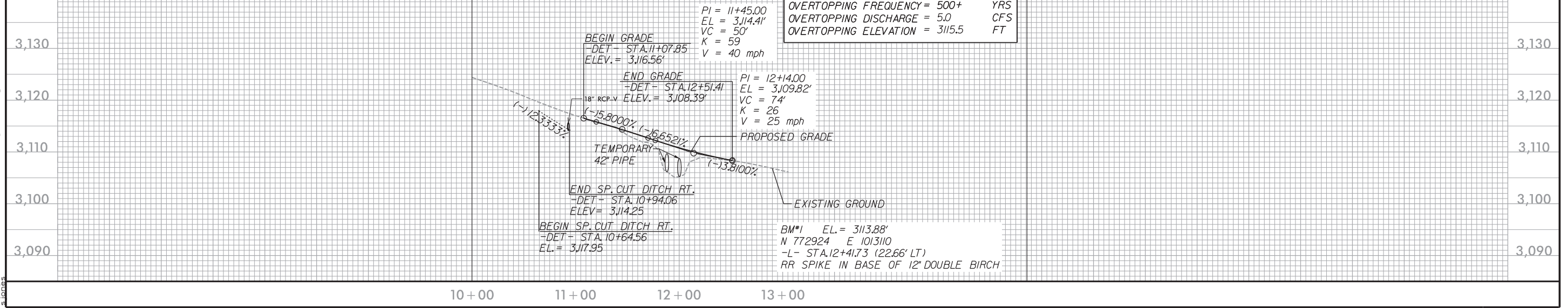
PIPE HYDRAULIC DATA
2 @ 42" RCP STA. 11+93 -DET-

DRAINAGE AREA	= 1575	AC
DESIGN FREQUENCY	= -	YRS
DESIGN DISCHARGE	= -	CFS
DESIGN HW ELEVATION	= -	FT
MAX EVAL. FREQUENCY	= 2	YRS
MAX EVAL. DISCHARGE	= 220	CFS
MAX EVAL. HW ELEVATION	= 3113.4	FT
OVERTOPPING FREQUENCY	= 2-	YRS
OVERTOPPING DISCHARGE	= 211	CFS
OVERTOPPING ELEVATION	= 3113J	FT

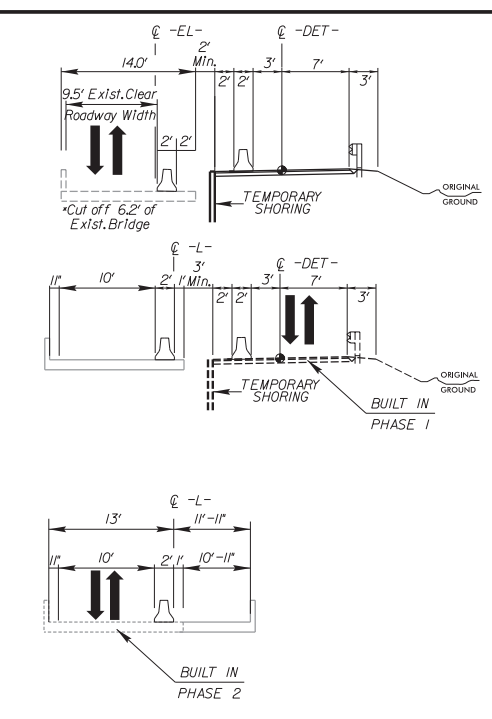
-DET-

PIPE HYDRAULIC DATA
18" RCP STA. 10+93 -DET-

DRAINAGE AREA	= 0.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 2.0	CFS
DESIGN HW ELEVATION	= 3115.2	FT
100 YEAR DISCHARGE	= 2.2	CFS
100 YEAR HW ELEVATION	= 3115.2	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 5.0	CFS
OVERTOPPING ELEVATION	= 3115.5	FT



PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-6/
RW SHEET NO. CONST.2B-1	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



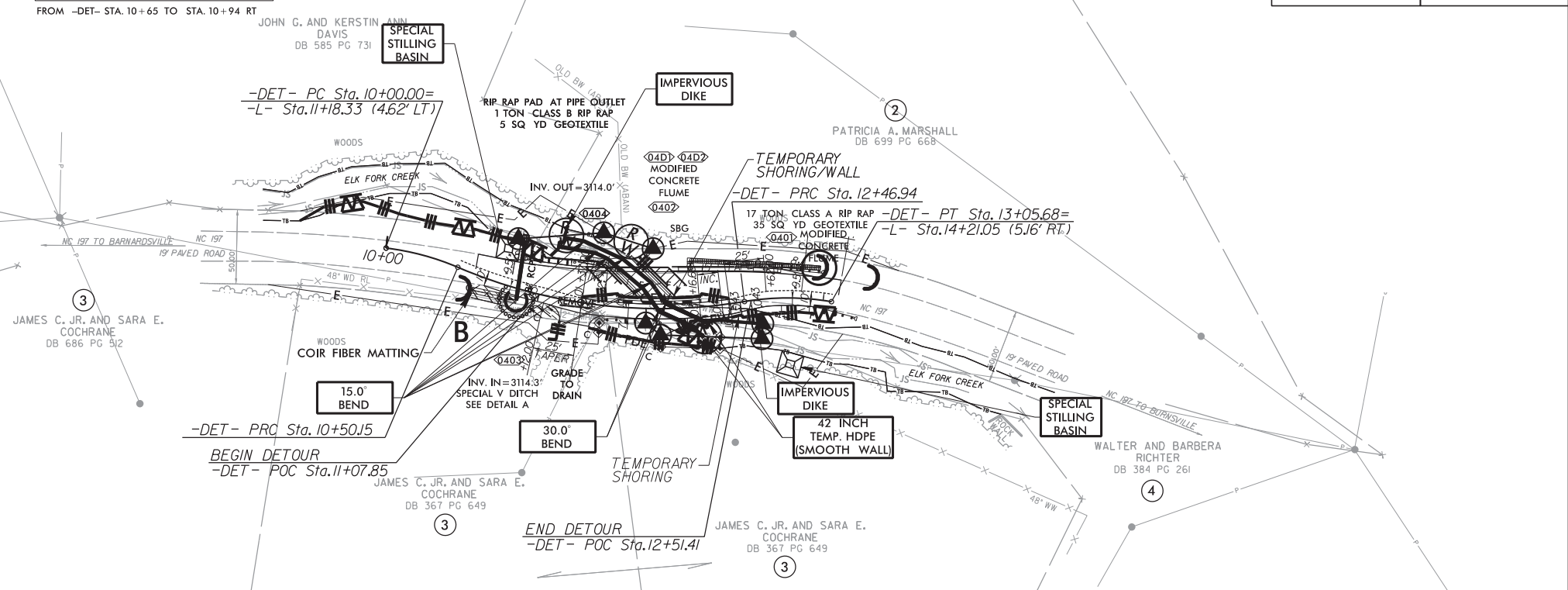
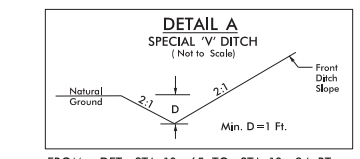
Phase 1

Phase 2

Phase 3

PHASING DETAILS

NOTE: SEE TMP PLANS FOR BARRIER DETAILS



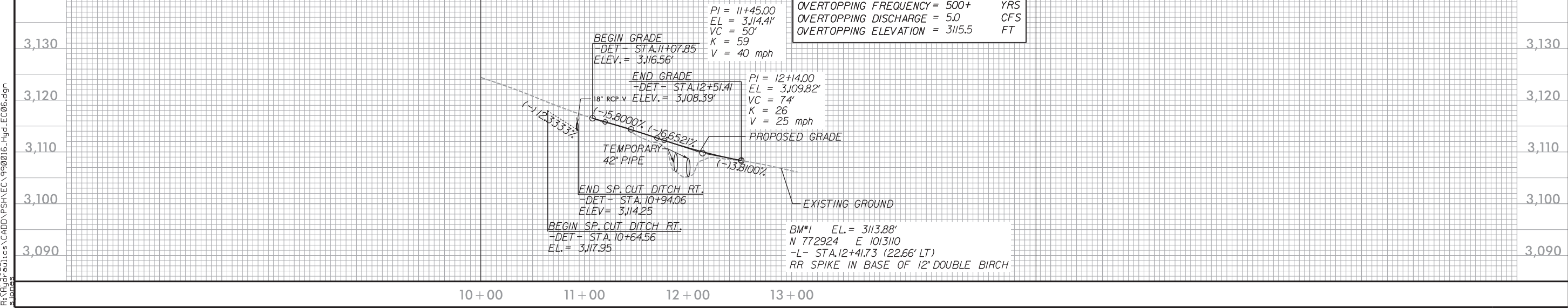
PIPE HYDRAULIC DATA
2 @ 42" RCP STA.11+93 -DET-

DRAINAGE AREA	= 1575	AC
DESIGN FREQUENCY	= -	YRS
DESIGN DISCHARGE	= -	CFS
DESIGN HW ELEVATION	= -	FT
MAX EVAL.FREQUENCY	= 2	YRS
MAX EVAL.DISCHARGE	= 220	CFS
MAX EVAL.HW ELEVATION	= 3113.4	FT
OVERTOPPING FREQUENCY	= 2-	YRS
OVERTOPPING DISCHARGE	= 211	CFS
OVERTOPPING ELEVATION	= 3113J	FT

-DET-

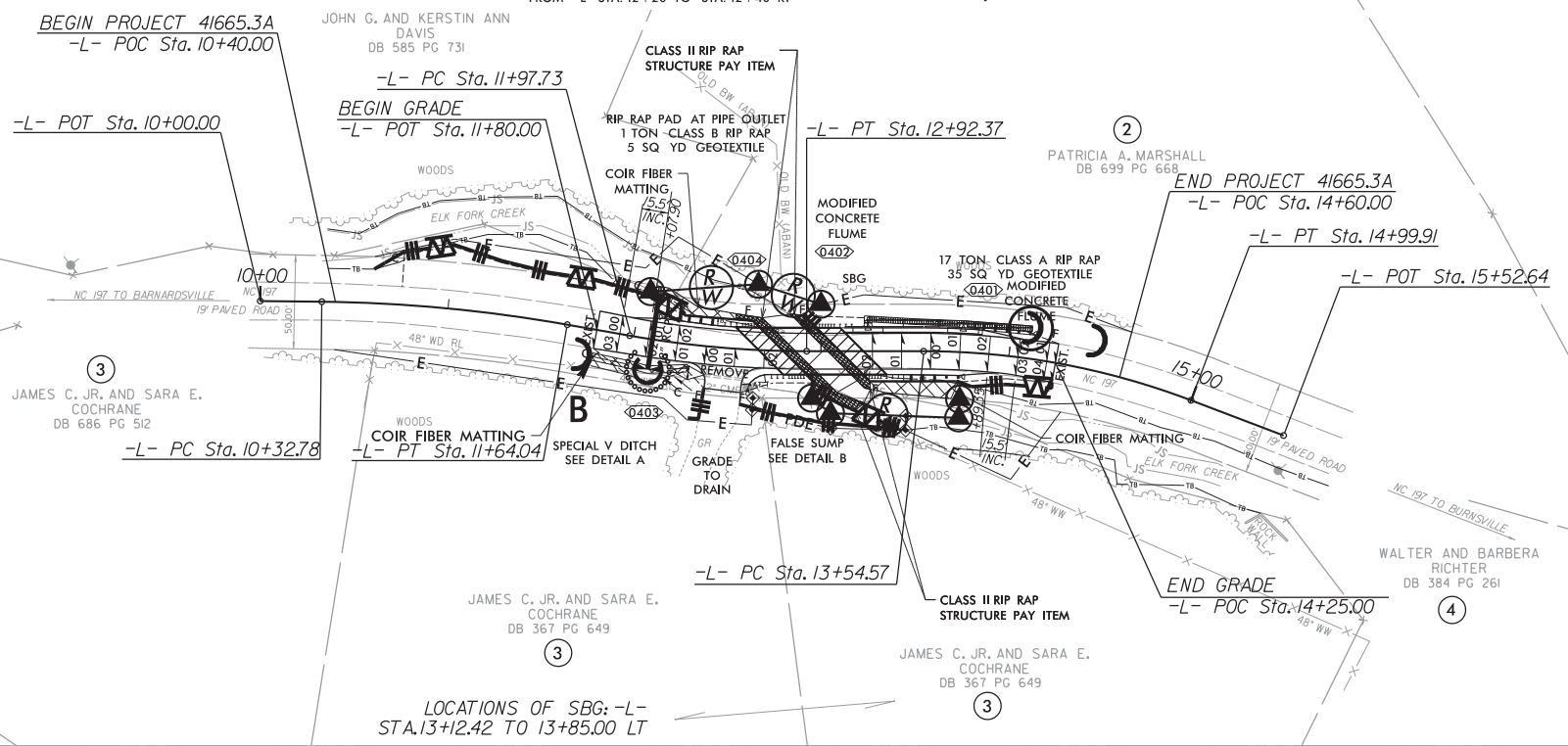
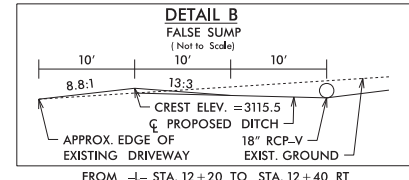
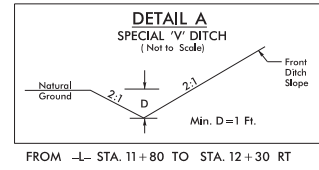
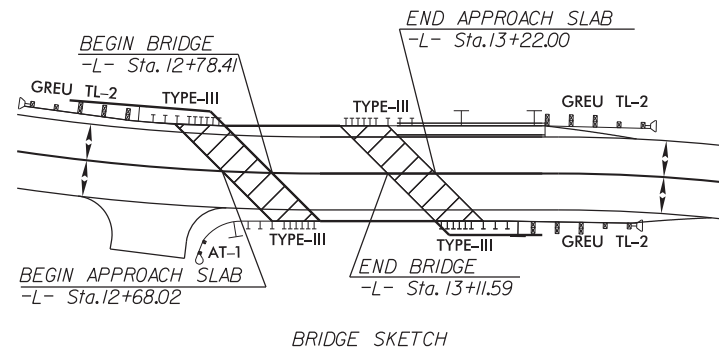
PIPE HYDRAULIC DATA
18" RCP STA.10+93 -DET-

DRAINAGE AREA	= 0.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 2.0	CFS
DESIGN HW ELEVATION	= 3115.2	FT
100 YEAR DISCHARGE	= 2.2	CFS
100 YEAR HW ELEVATION	= 3115.2	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 5.0	CFS
OVERTOPPING ELEVATION	= 3115.5	FT



8/17/99
11/22/2022
H:\CADD\Projects\990016_Hyd_EC06.dgn

PROJECT REFERENCE NO. 41665.3A	SHEET NO. EC-7/
RW SHEET NO. CONST.4	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



PIPE HYDRAULIC DATA

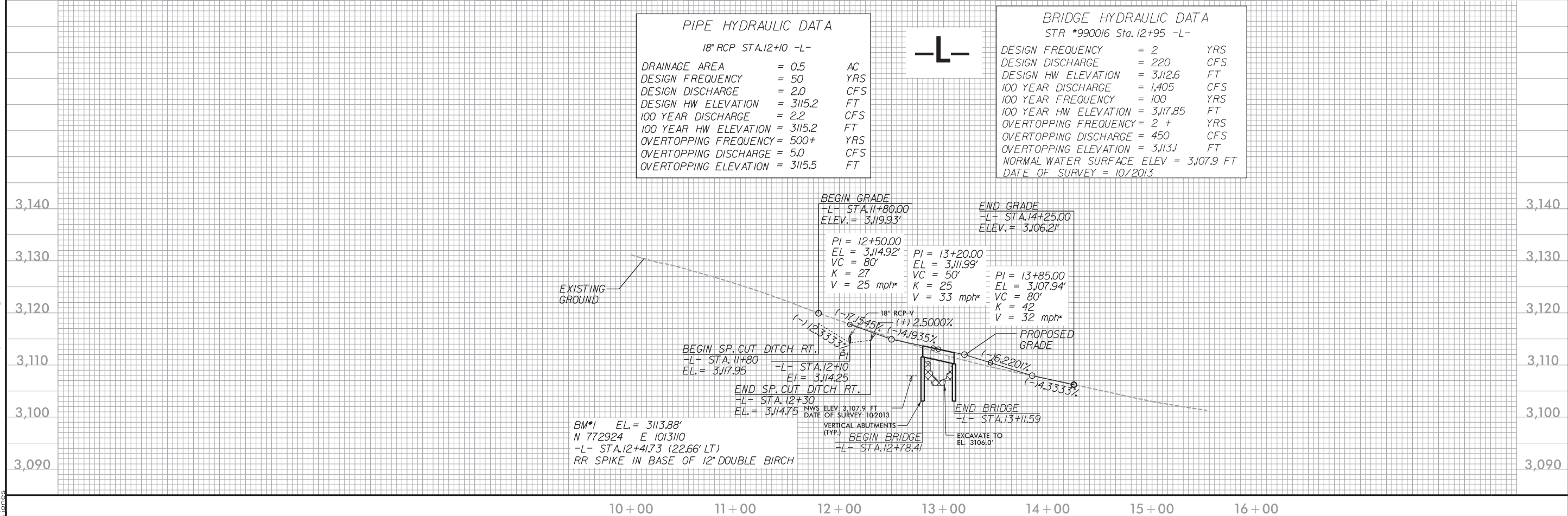
18" RCP STA. 12+10 -L-

DRAINAGE AREA	= 0.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 2.0	CFS
DESIGN HW ELEVATION	= 3115.2	FT
100 YEAR DISCHARGE	= 2.2	CFS
100 YEAR HW ELEVATION	= 3115.2	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 5.0	CFS
OVERTOPPING ELEVATION	= 3115.5	FT

BRIDGE HYDRAULIC DATA

STR #990016 Sta. 12+95 -L-

DESIGN FREQUENCY	= 2	YRS
DESIGN DISCHARGE	= 220	CFS
DESIGN HW ELEVATION	= 3,112.6	FT
100 YEAR DISCHARGE	= 1,405	CFS
100 YEAR FREQUENCY	= 100	YRS
100 YEAR HW ELEVATION	= 3,117.85	FT
OVERTOPPING FREQUENCY	= 2 +	YRS
OVERTOPPING DISCHARGE	= 450	CFS
OVERTOPPING ELEVATION	= 3,113.1	FT
NORMAL WATER SURFACE ELEV	= 3,107.9	FT
DATE OF SURVEY	= 10/2013	



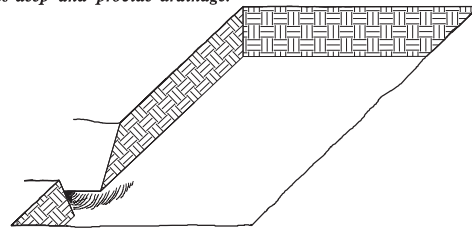
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	990016	RF-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

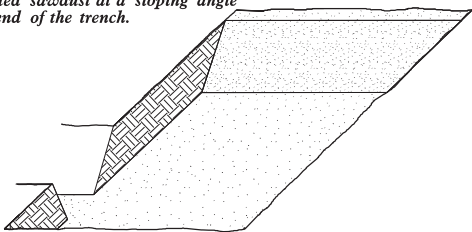
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

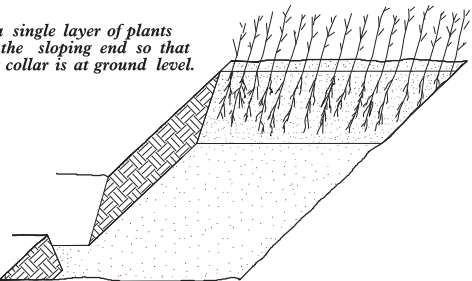
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



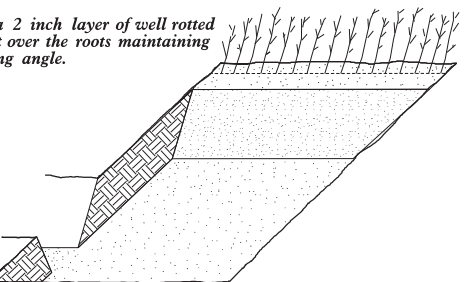
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

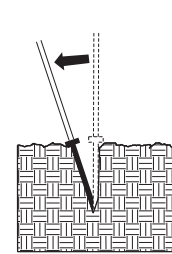


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

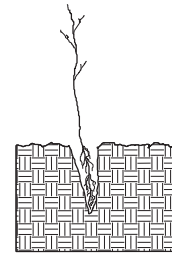


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

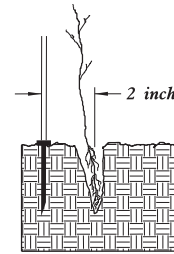
DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



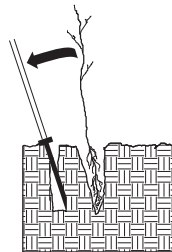
1. Insert planting bar as shown and pull handle toward planter.



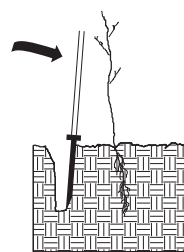
2. Remove planting bar and place seedling at correct depth.



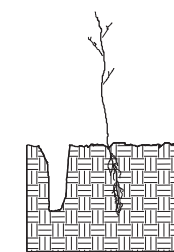
3. Insert planting bar 2 inches toward planter from seedling.



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

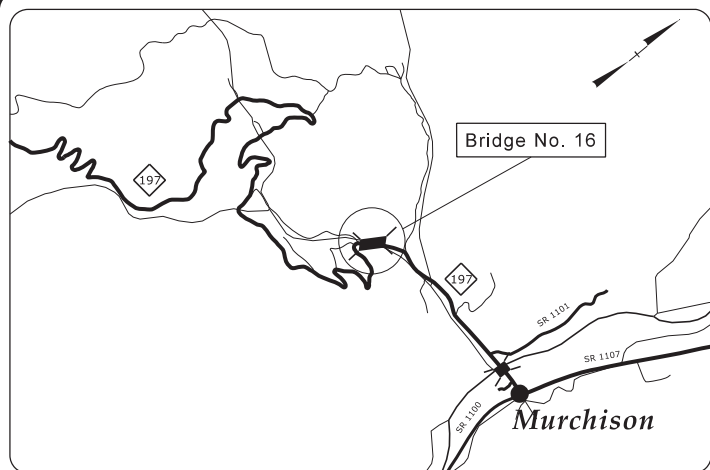
MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25%	<i>LIRIODENDRON TULIPIFERA</i>	TULIP POPLAR	12 in - 18 in BR
25%	<i>PLATANUS OCCIDENTALIS</i>	AMERICAN SYCAMORE	12 in - 18 in BR
25%	<i>FRAXINUS PENNSYLVANICA</i>	GREEN ASH	12 in - 18 in BR
25%	<i>BETULA NIGRA</i>	RIVER BIRCH	12 in - 18 in BR

REFORESTATION DETAIL SHEET

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

WBS: 41665.3A



VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**UTILITIES BY OTHERS PLANS
YANCEY COUNTY**

LOCATION: BRIDGE NO. 990016 OVER ELK FORK CREEK
ON NC 197

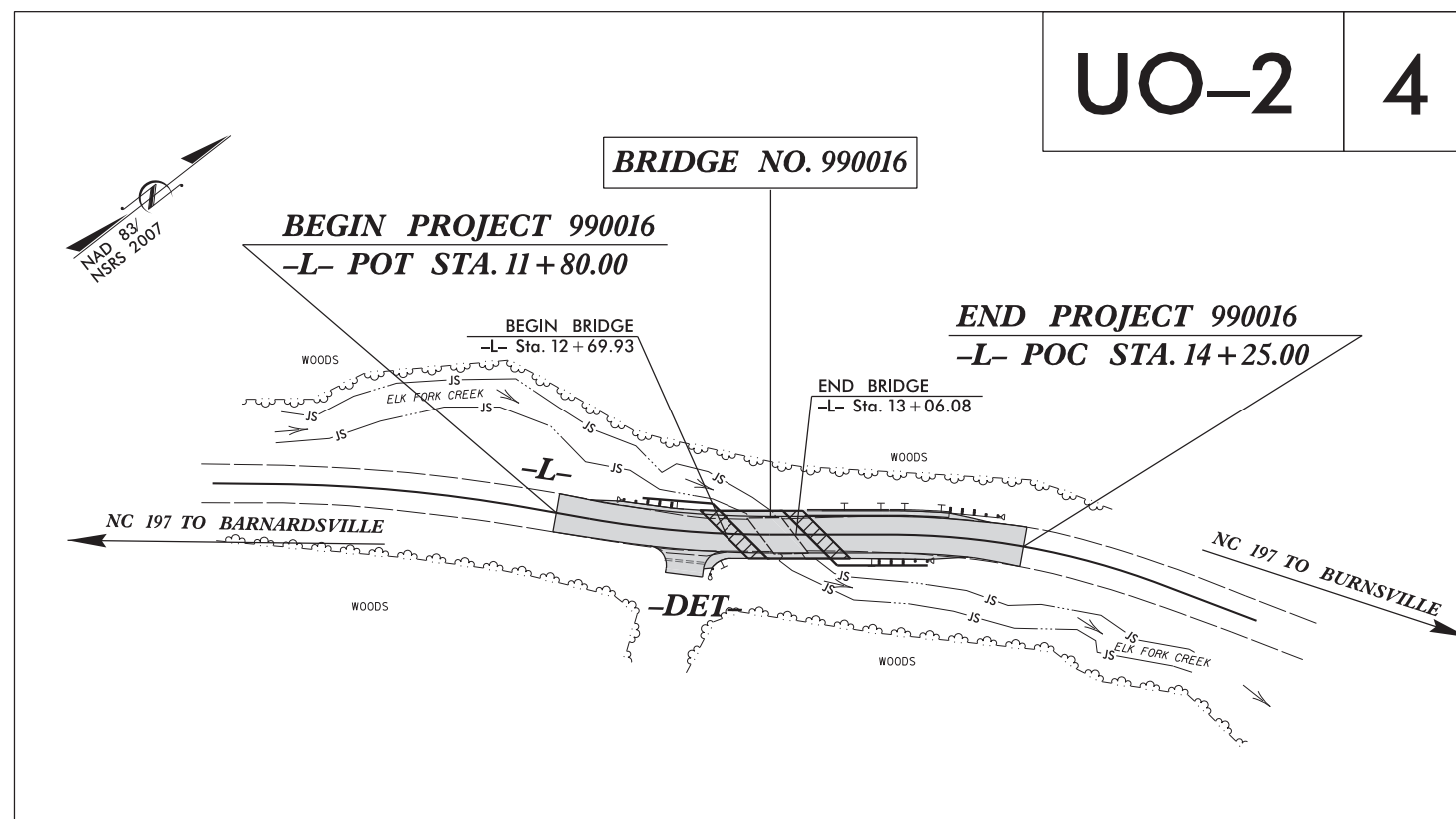
TYPE OF WORK: UTILITY

T.I.P. NO.	SHEET NO.
41665.3A	UO-1

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



UO-2 4



CONTRACT: DM00388

GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-2	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

- (A) FRENCH BROAD EMC - POWER (DIST)
- (B) FRONTIER TELECOMMUNICATIONS - TELEPHONE

PREPARED IN THE OFFICE OF:

RK&K
 P: (919) 878-9560
 8601 Six Forks Road, Forum 1, Suite 700
 Raleigh, North Carolina 27615-3960
 NC License No. F-0112
 Engineers | Construction Managers | Planners | Scientists
 www.rkk.com
 Responsive People | Creative Solutions

HOWARD WOODALL, P.E. UTILITY PROJECT MANAGER
 MARK LAWSON PROJECT UTILITY COORDINATOR
 LYNN KIESELHORST, P.G. PROJECT UTILITY CADD



DIVISION OF HIGHWAYS
DIVISION 13

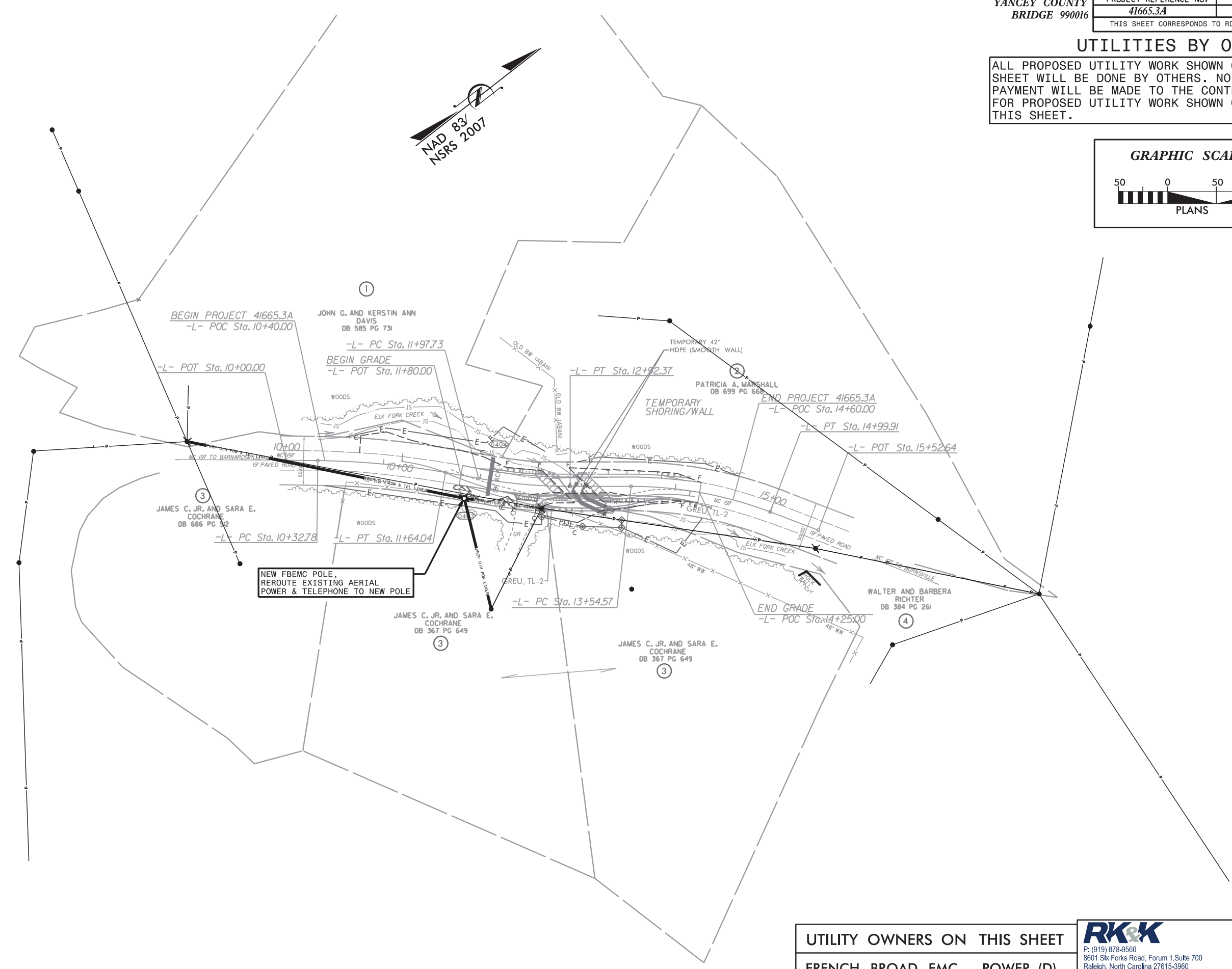
11 OLD CHARLOTTE HWY
ASHEVILLE, NC 28803

KEITH RADCLIFF SENIOR DIV. UTILITY COORD.
 JOHN METCALF DIVISION UTILITY COORD.
 CHRISTOPHER MEDLIN DIVISION CONTACT #3
 JODY LAWRENCE DIVISION CONTACT #4

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.

GRAPHIC SCALES



UTILITY OWNERS ON THIS SHEET
FRENCH BROAD EMC – POWER (D)
FRONTIER – TELECOMMUNICATIONS

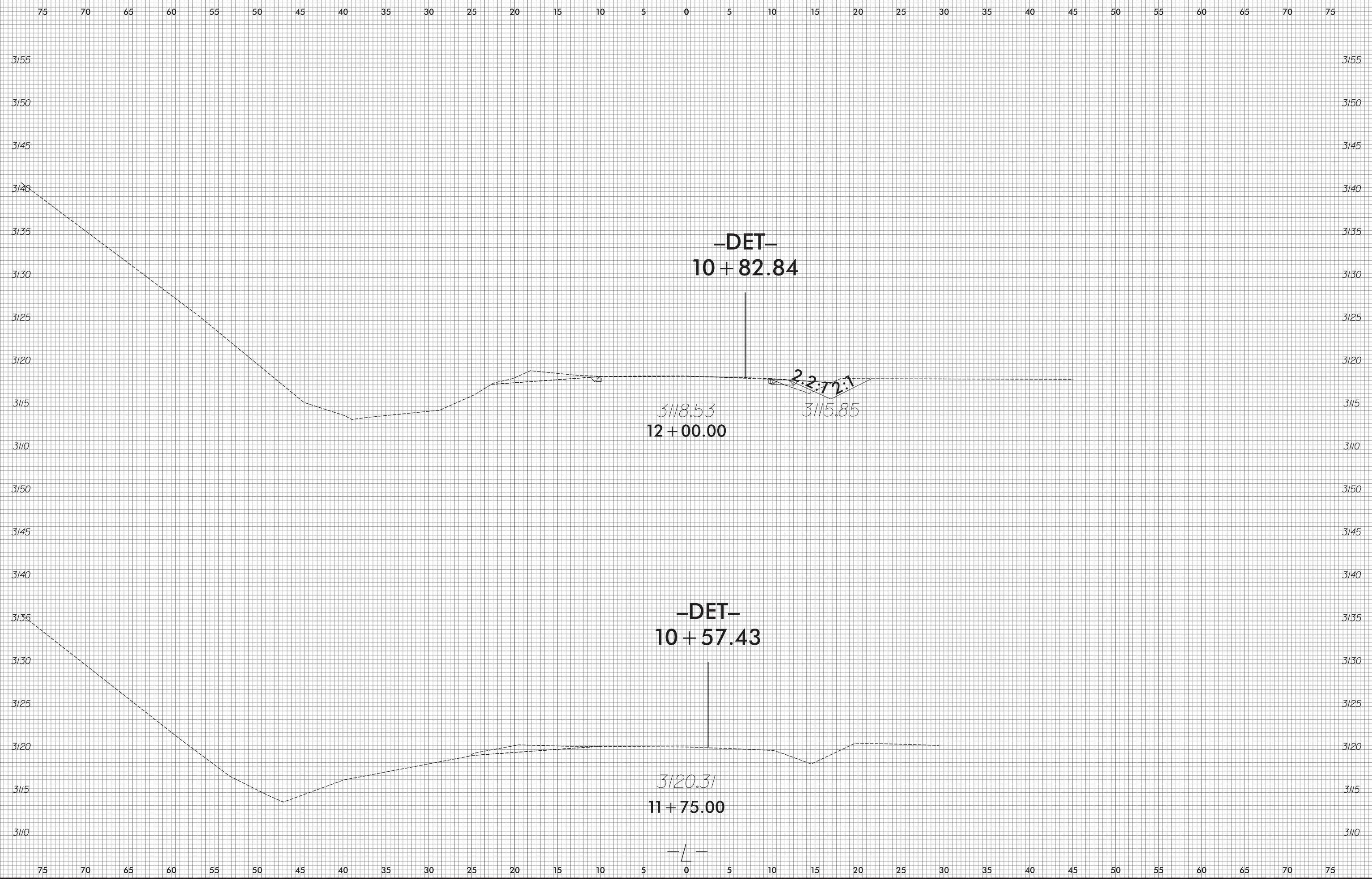
RK&K
 P: (919) 878-9560
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 Raleigh, North Carolina 27615-3960
 NC License No. F-0112
 Engineers | Construction Managers | Planners | Scientists
 www.rkk.com
 Responsive People | Creative Solutions

8/17/99
 \\23/2022
 \\sdr\cck\com\fa\Cloud\Projects\2012\2094_NCD010\0C\C01_C07_Div13_Bridges\C07_Div13_Yancey\16_Design\Ut\1\trcs\Redy_Ut\Proj\990016_ut_Red\04_U02_psh.dgn

NC 197 CROSS SECTIONS

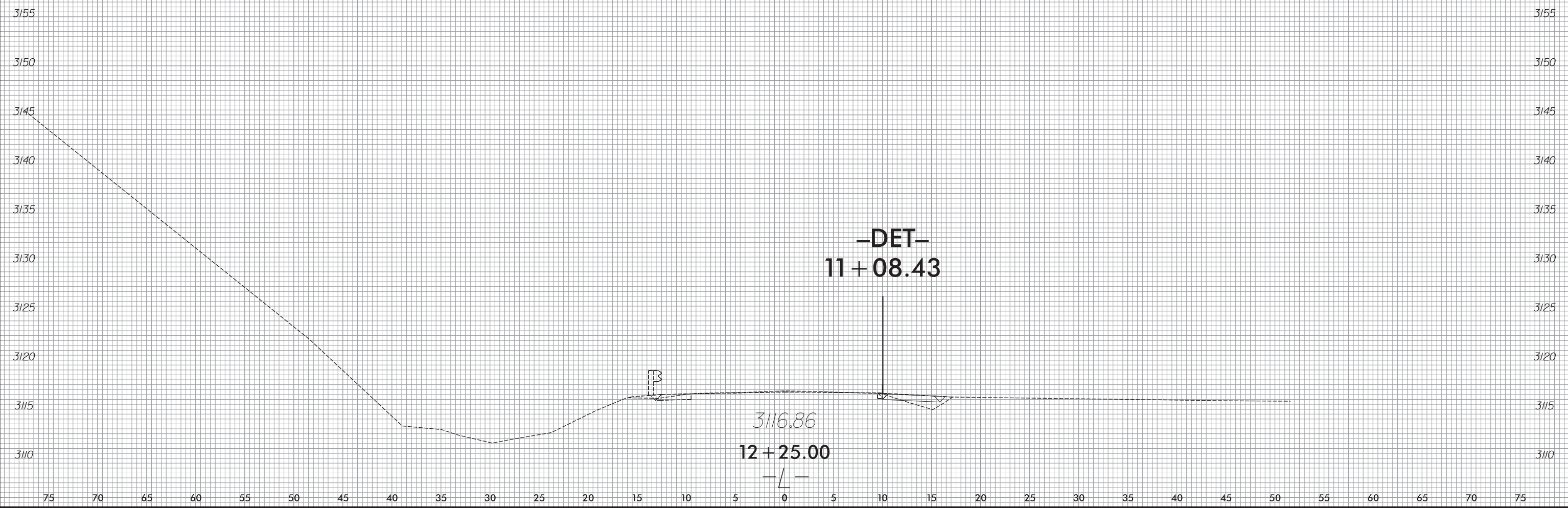
YANCEY COUNTY

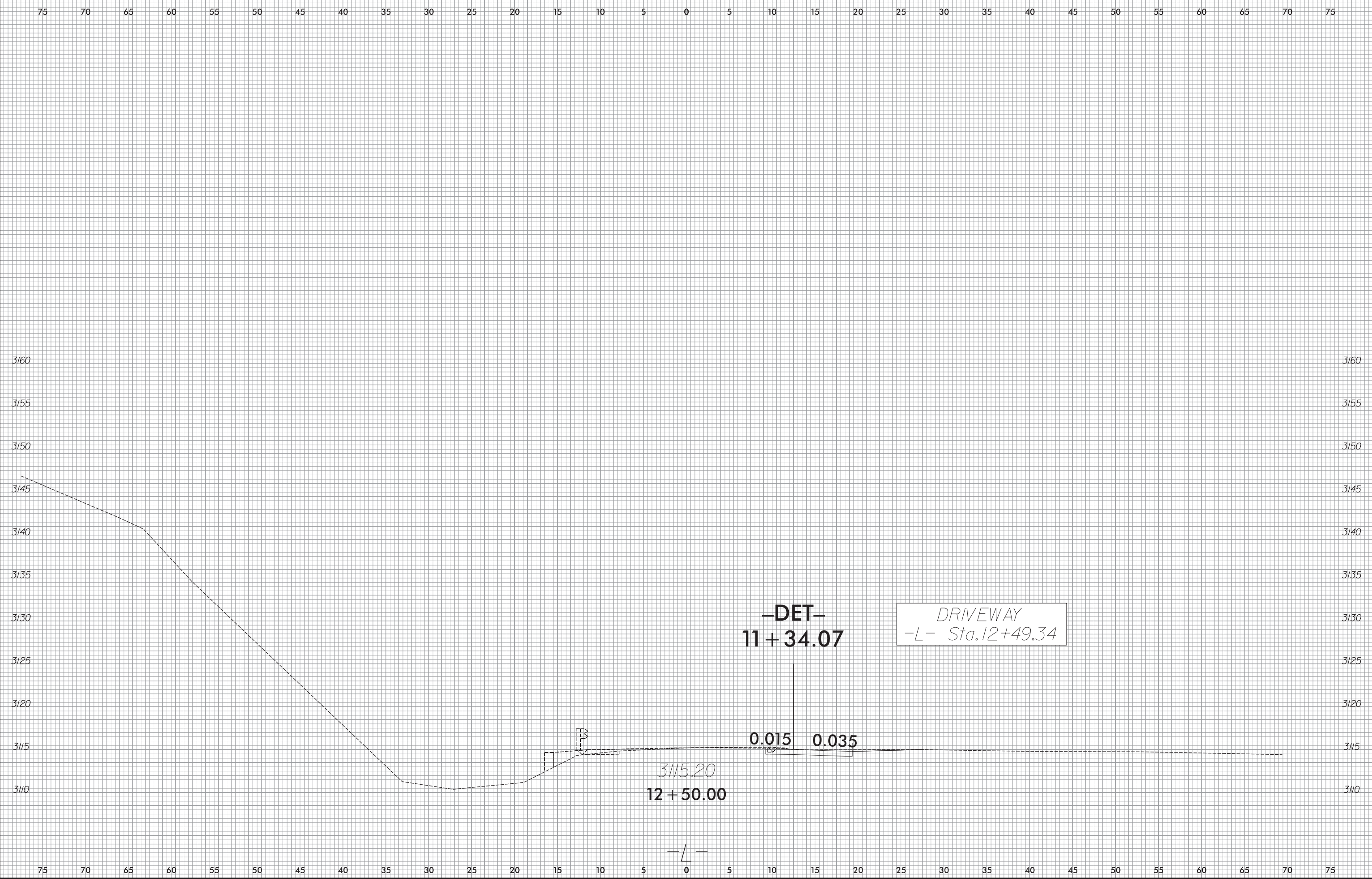
<u>LINE</u>	<u>SHEET NO.</u>
-L-	X-1 THRU X-21





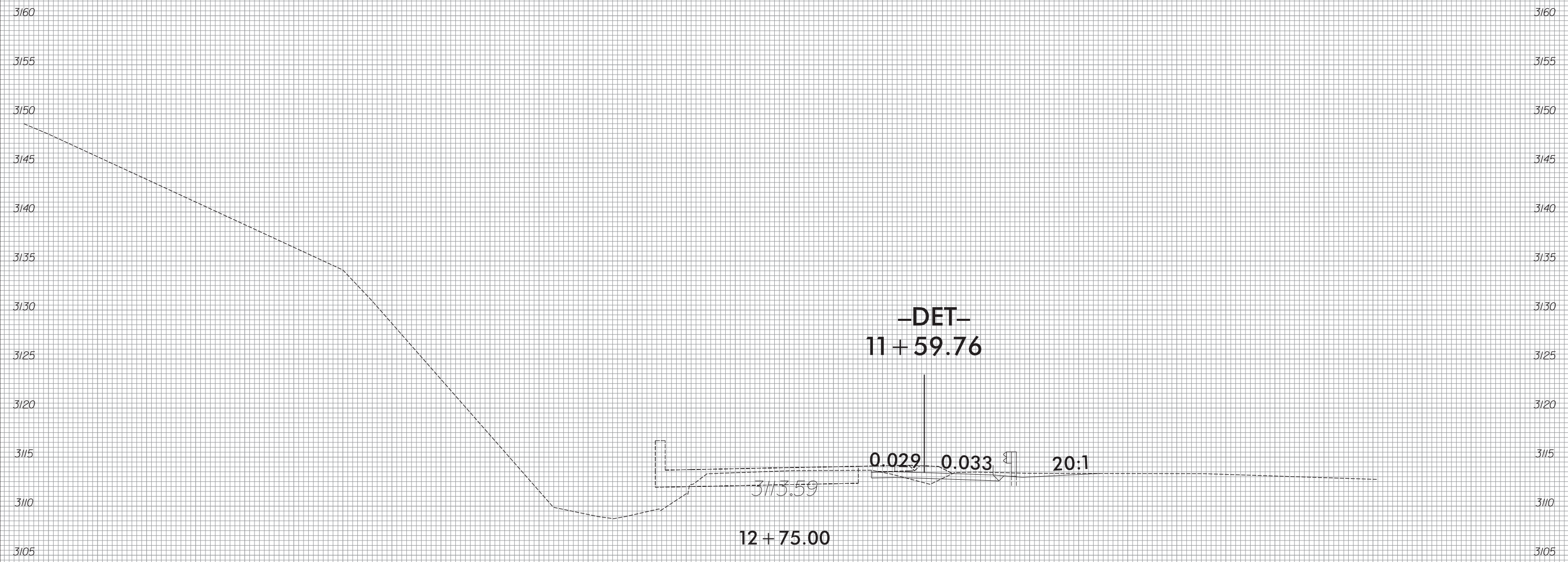
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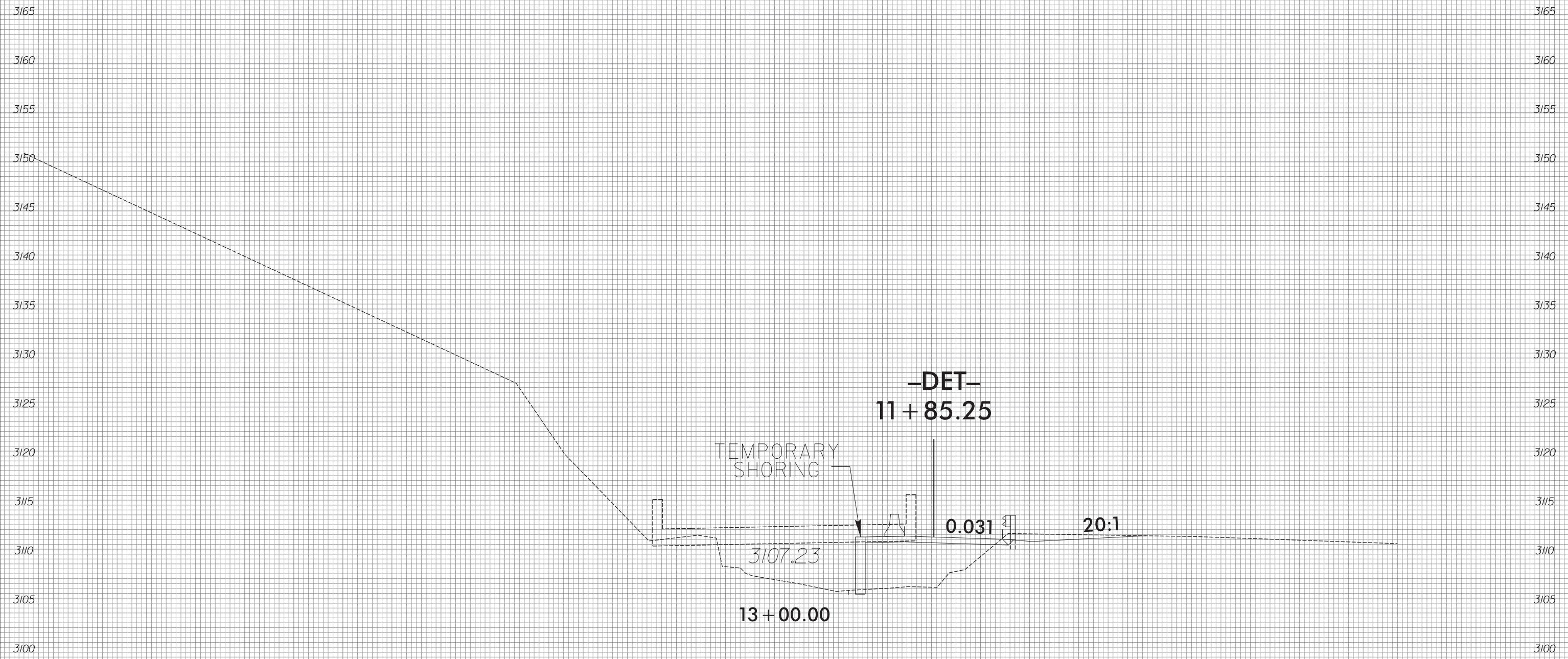
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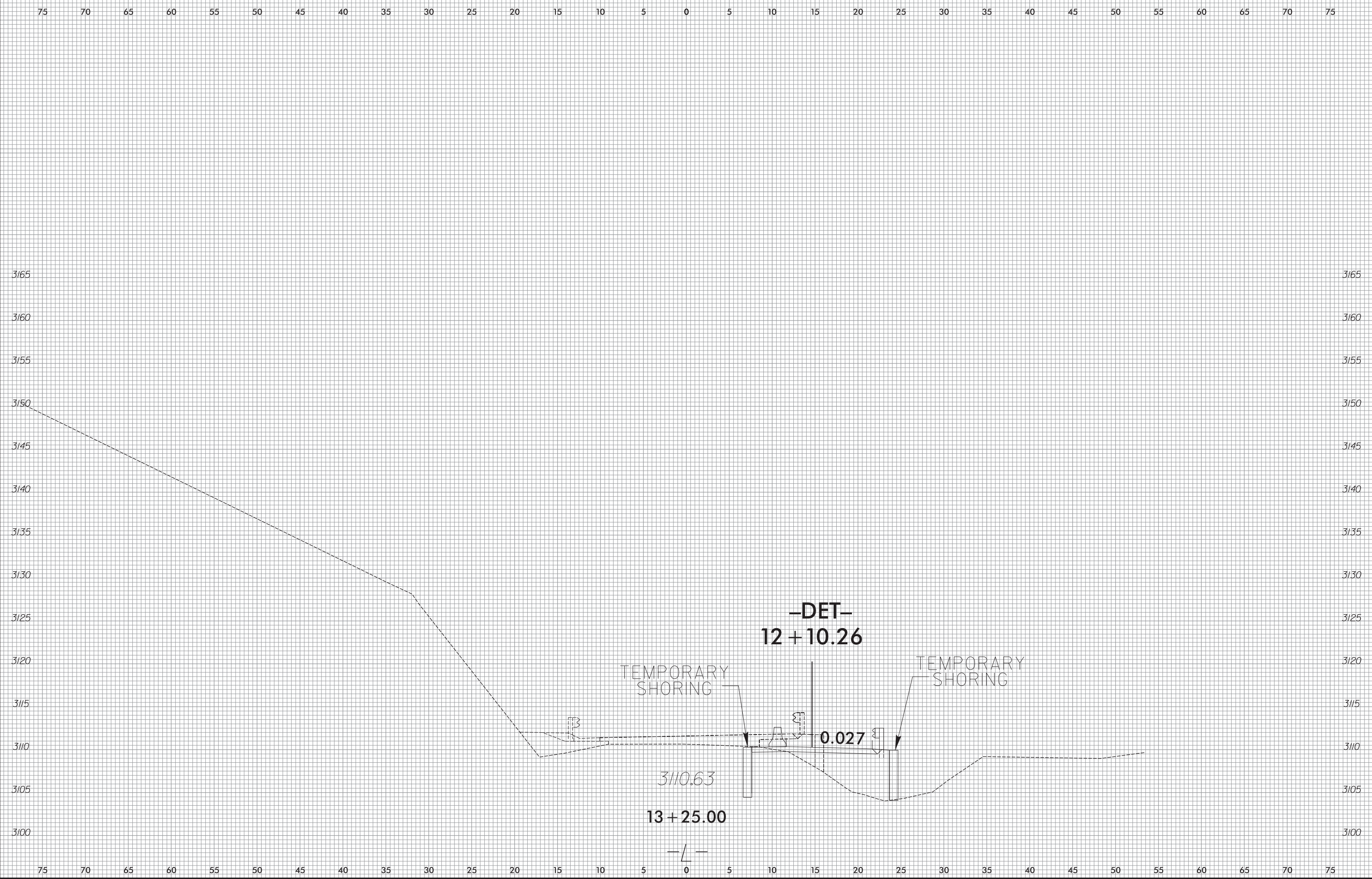
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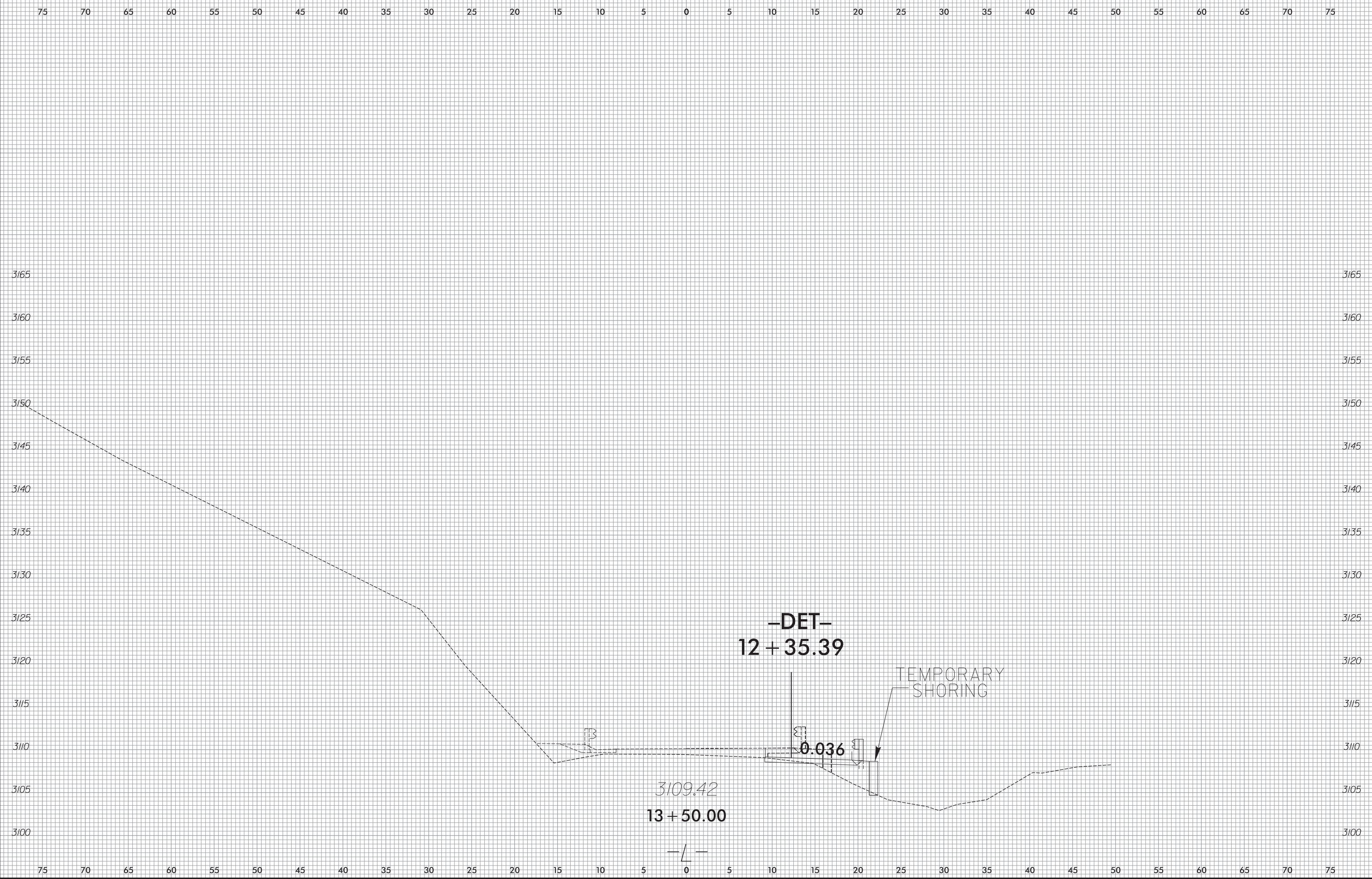


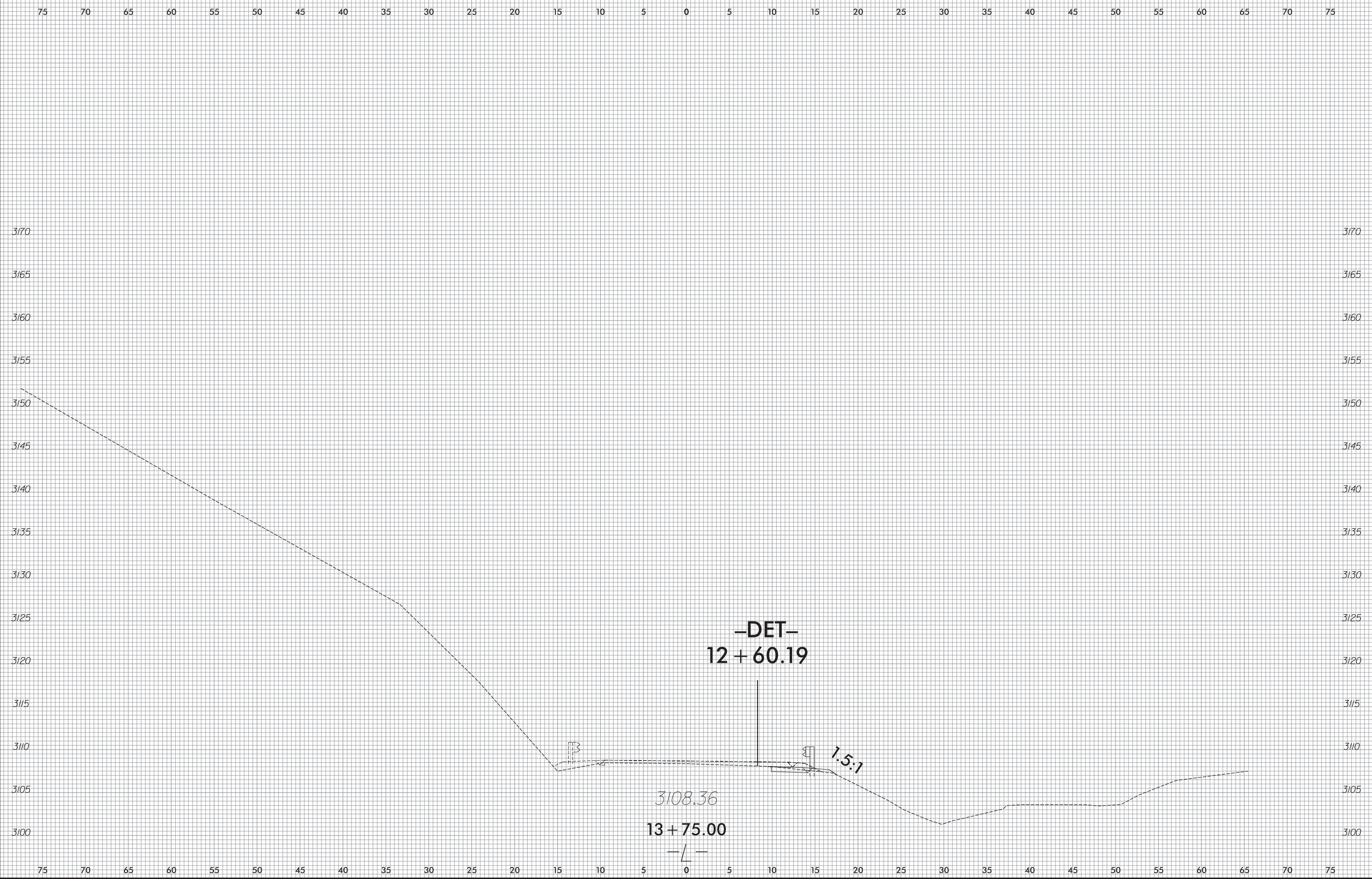
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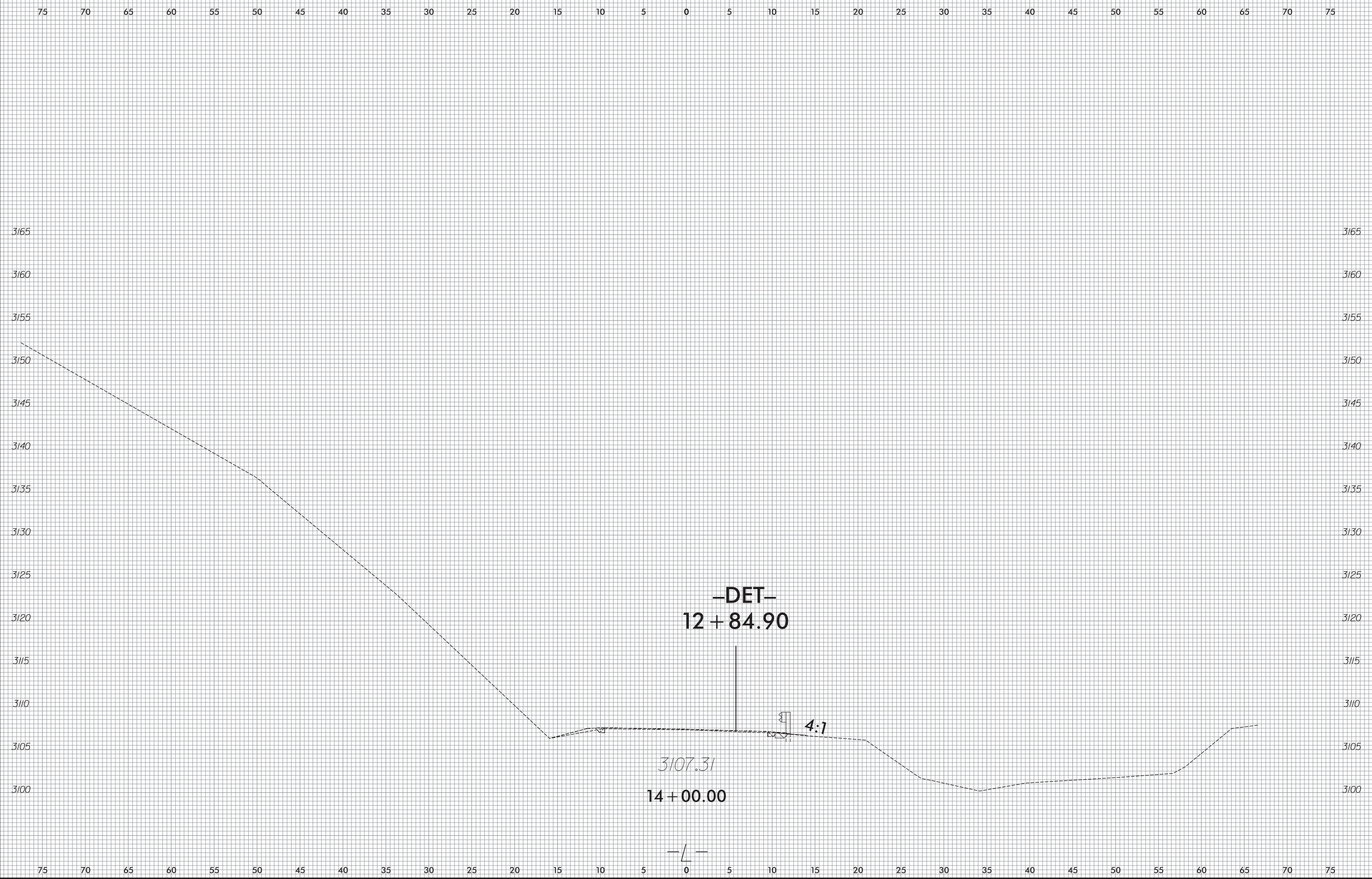


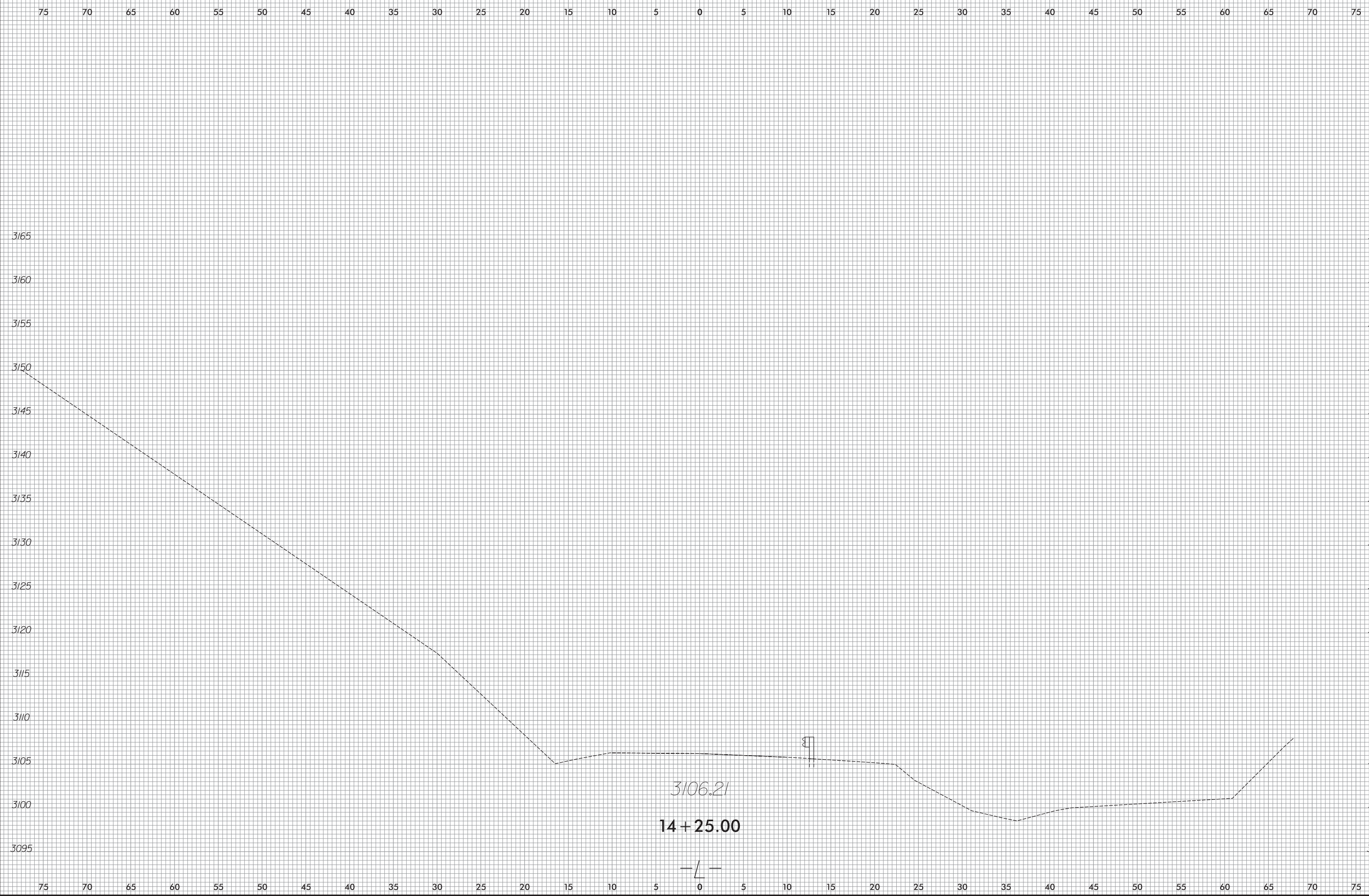
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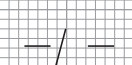


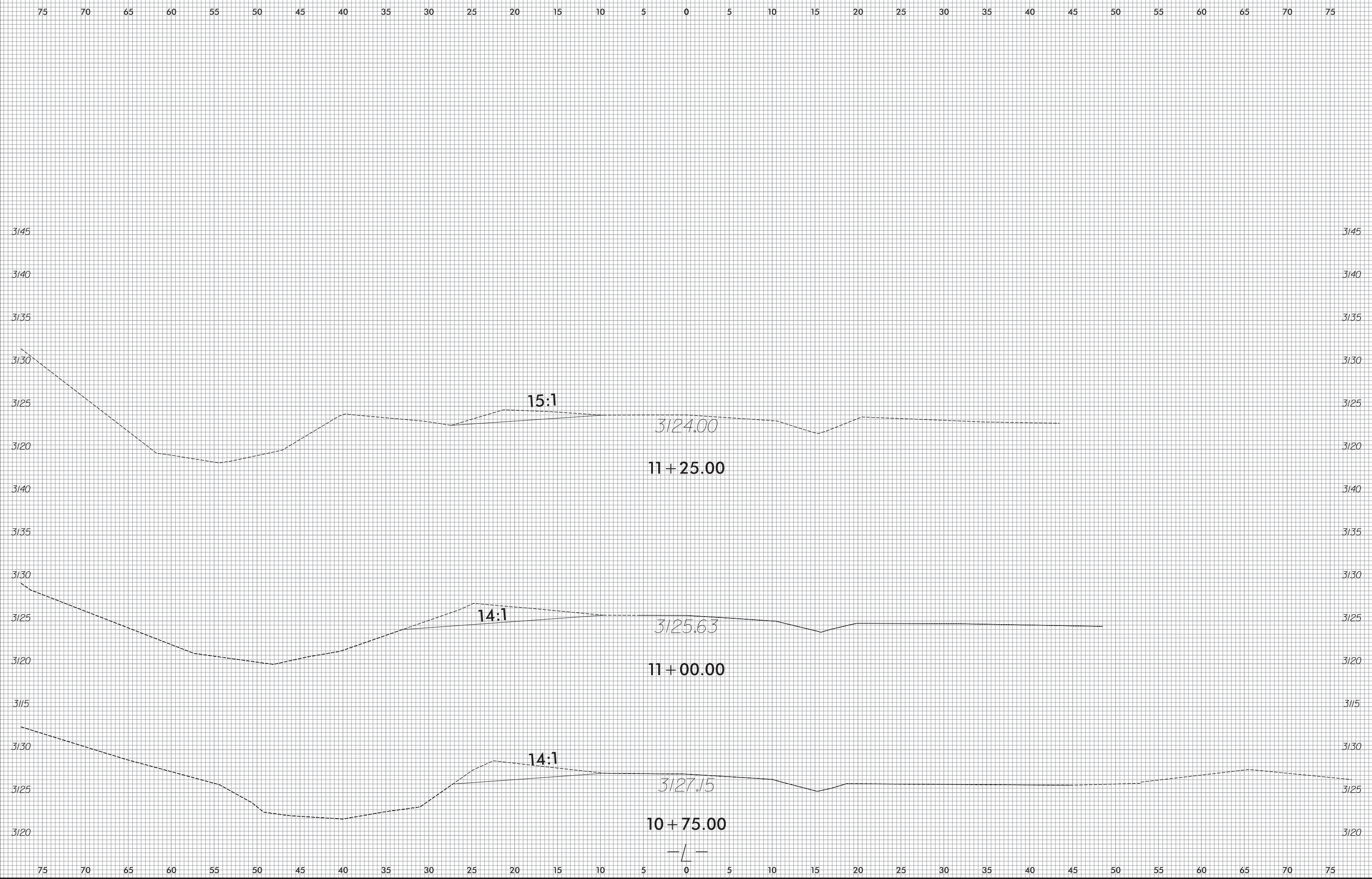


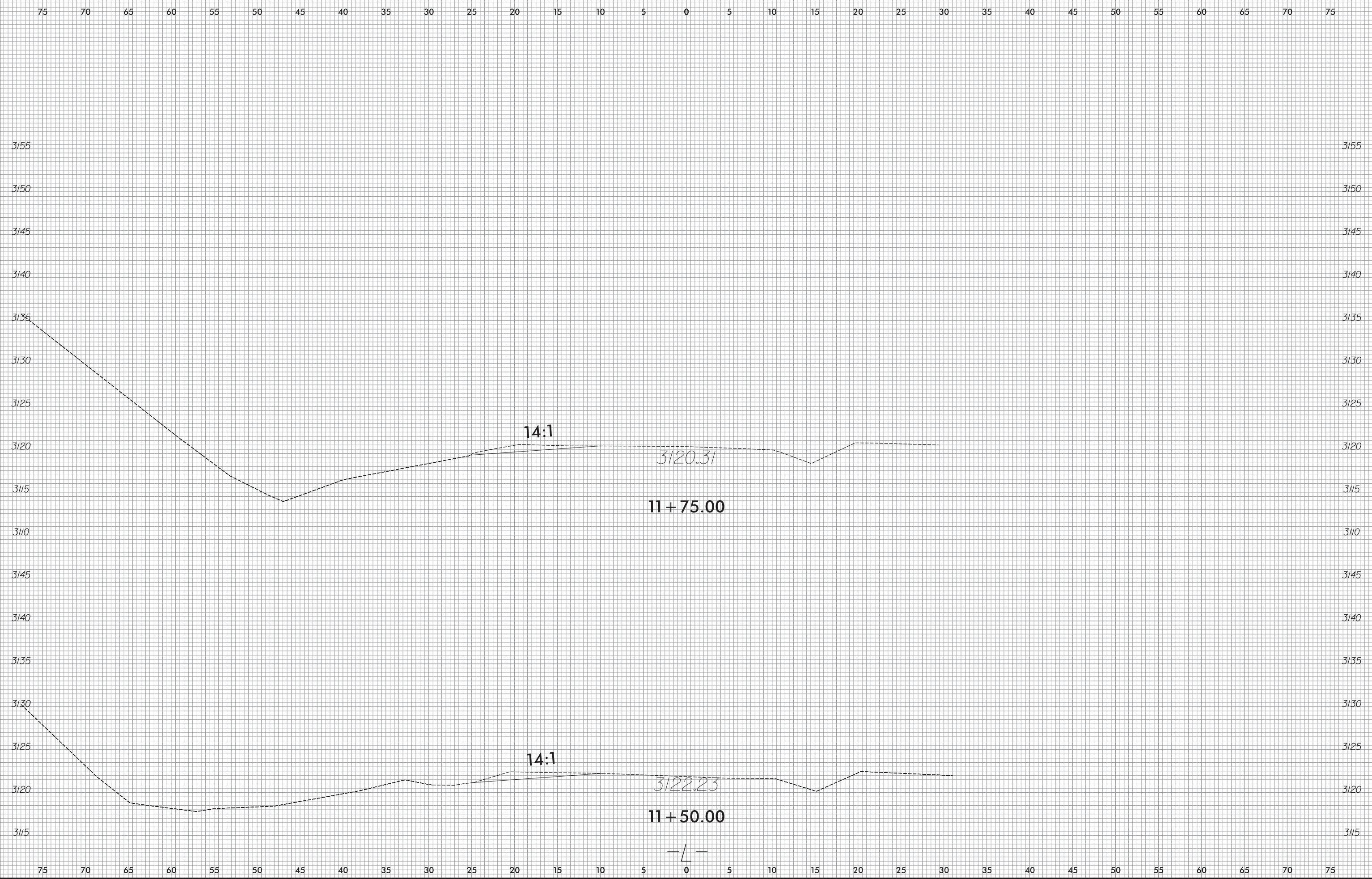




3106.21
14 + 25.00









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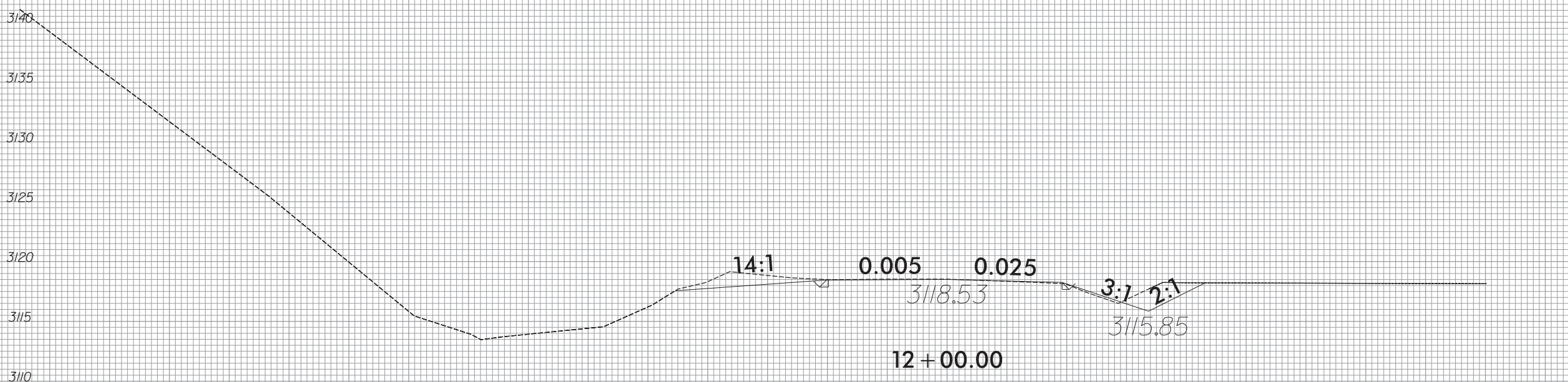
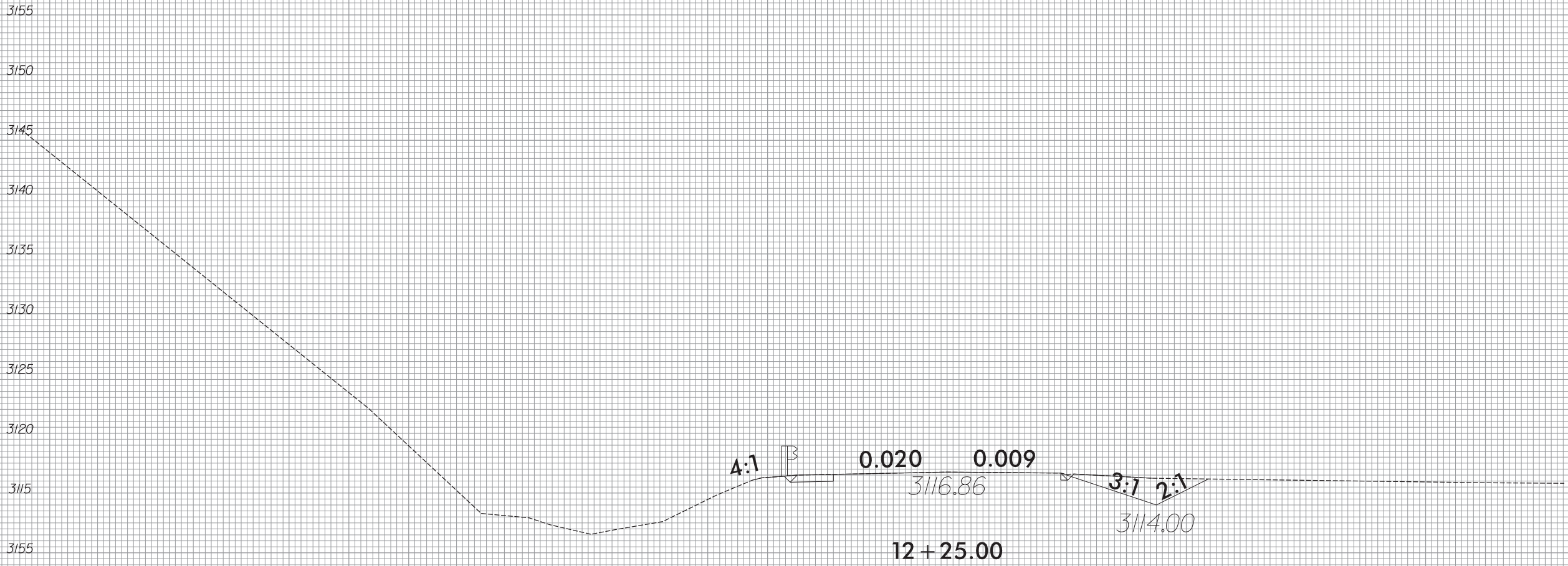
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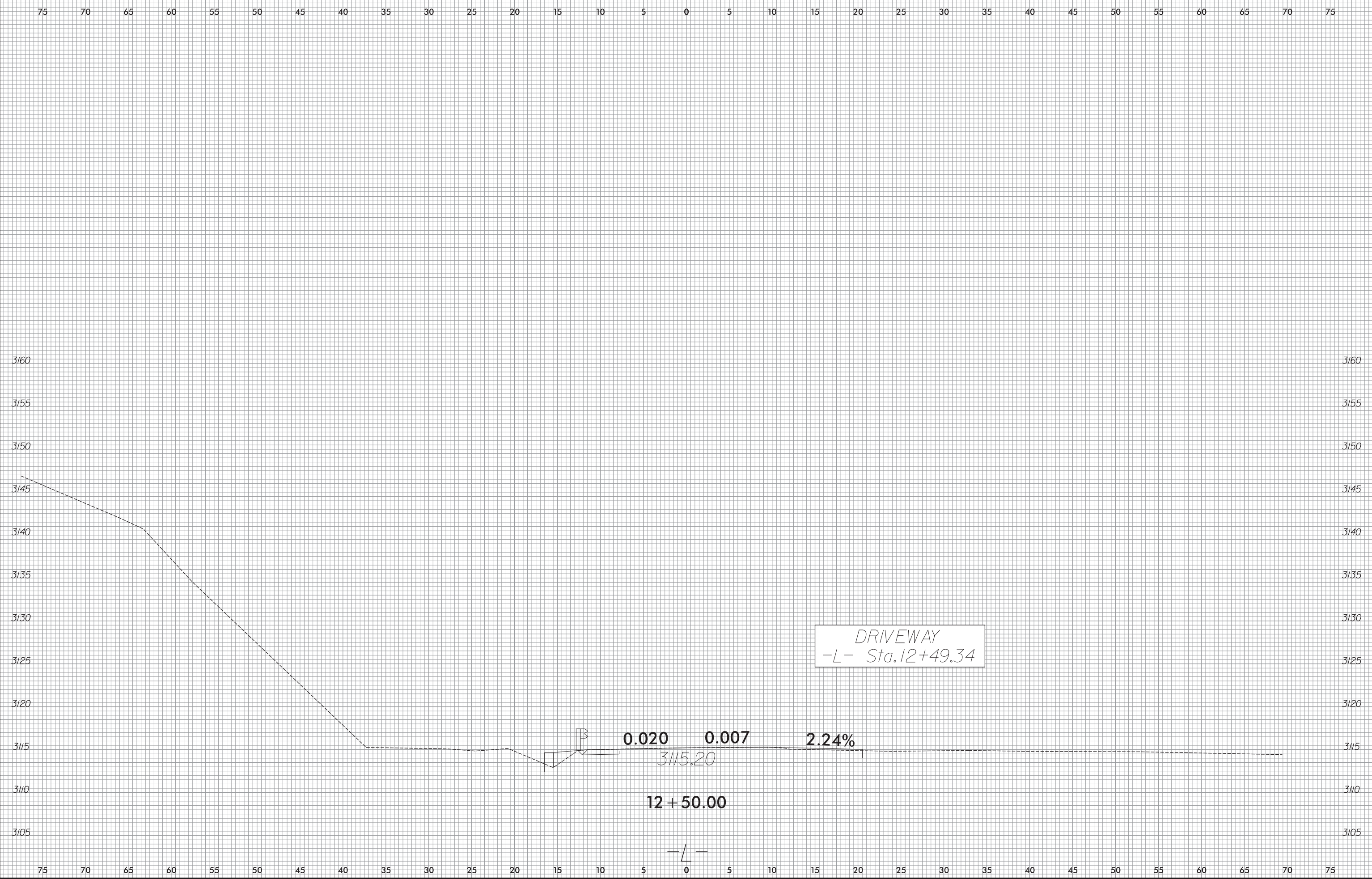
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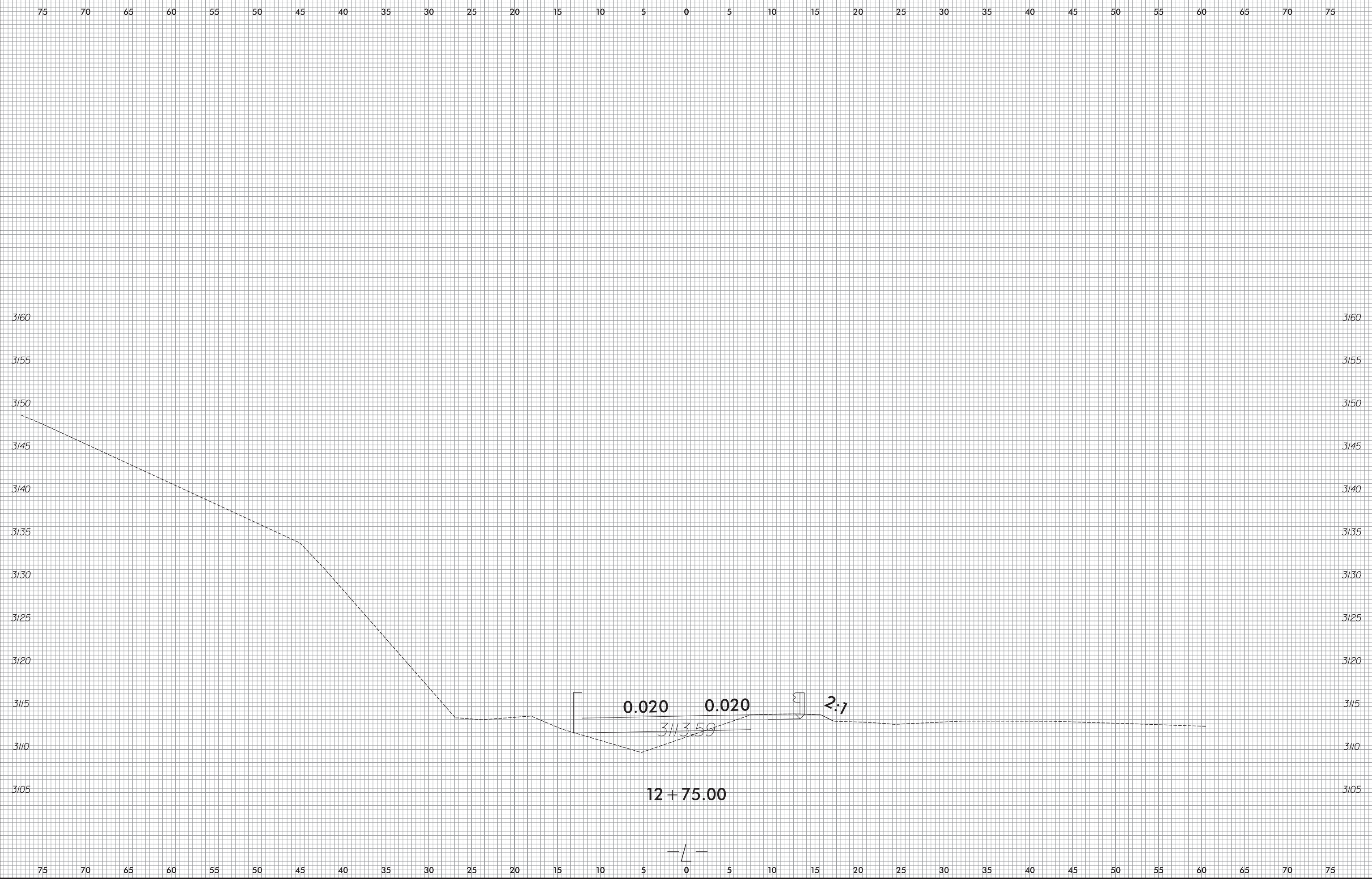
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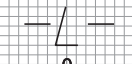
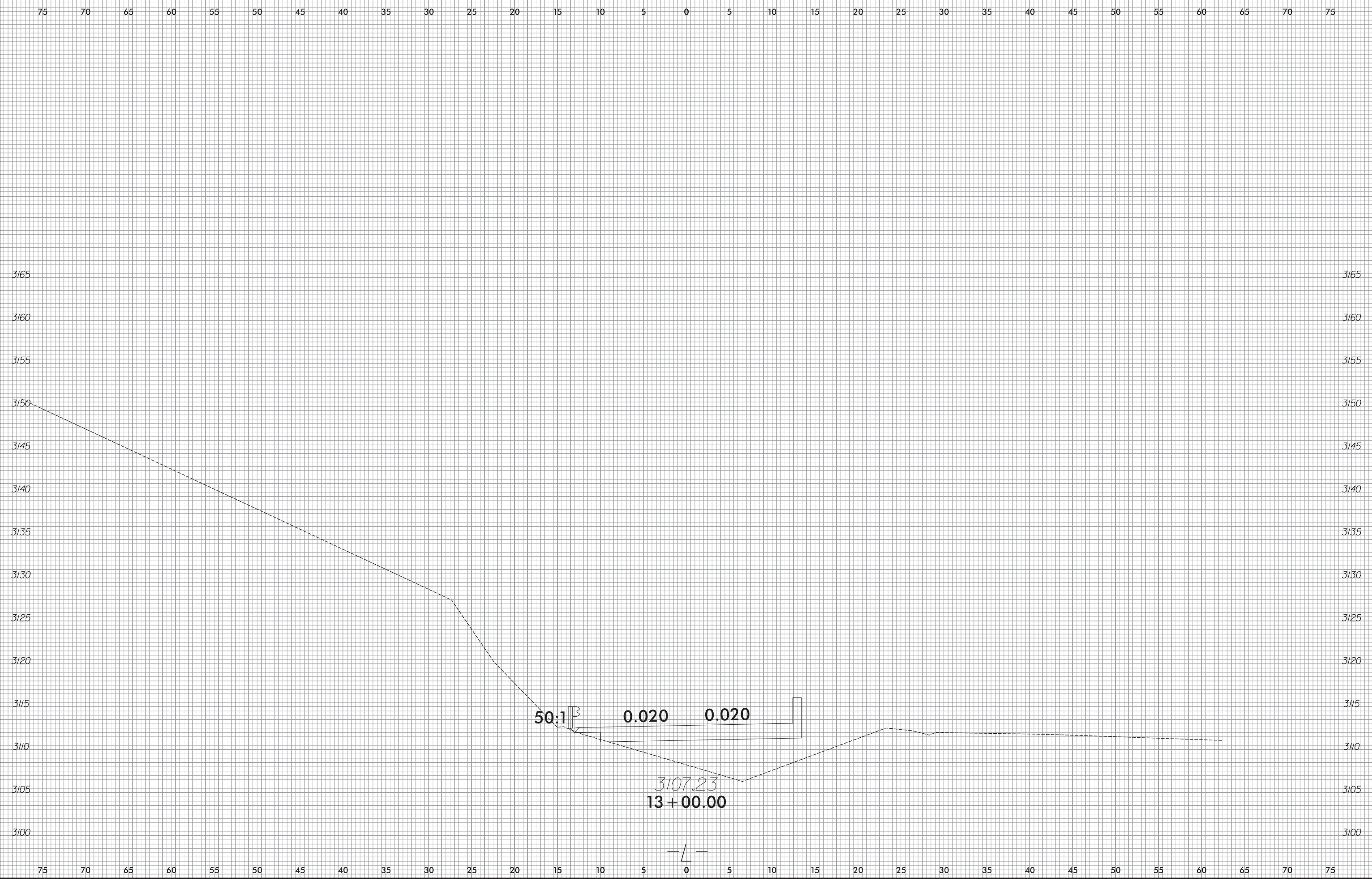
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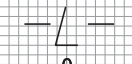
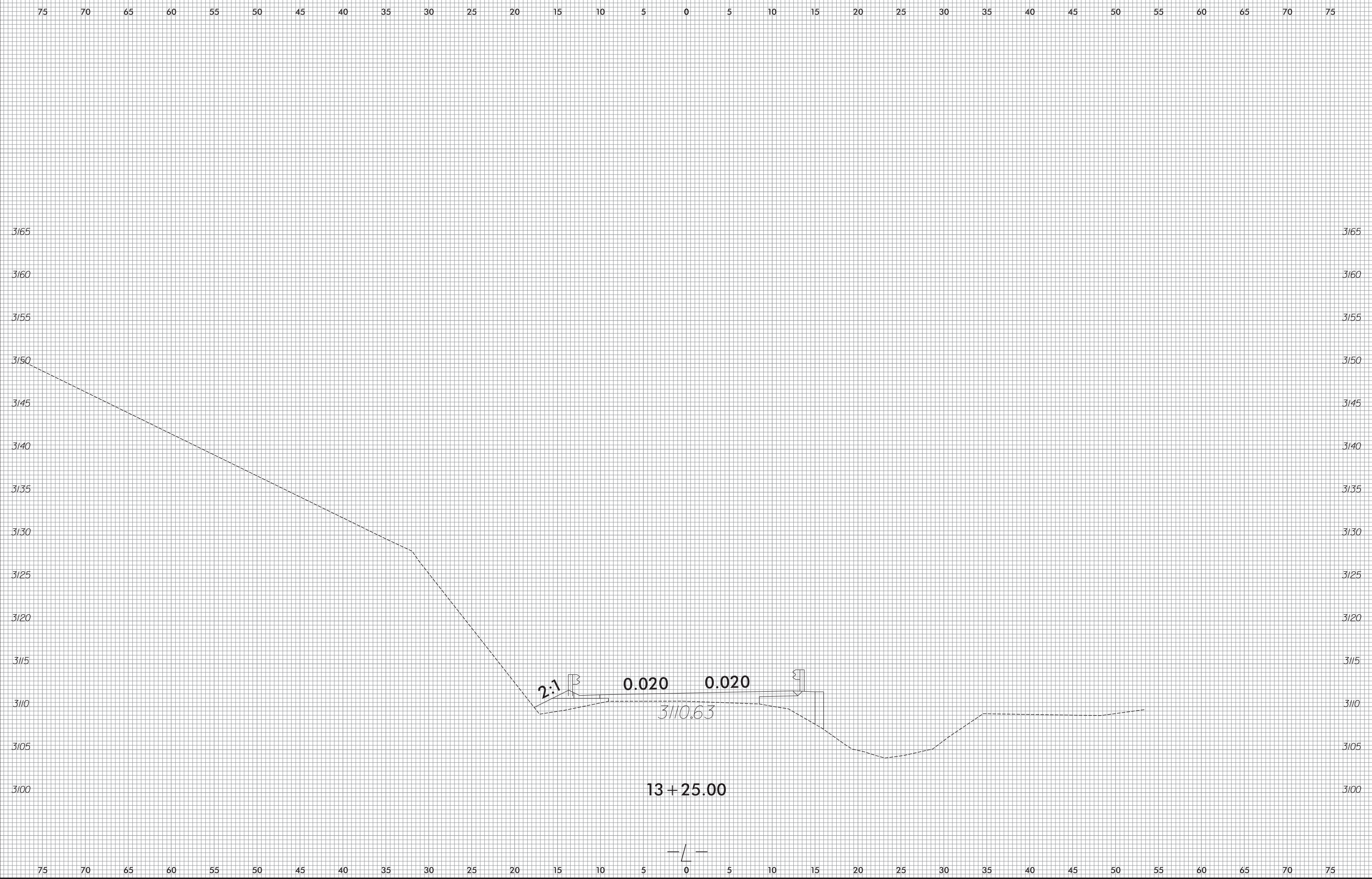
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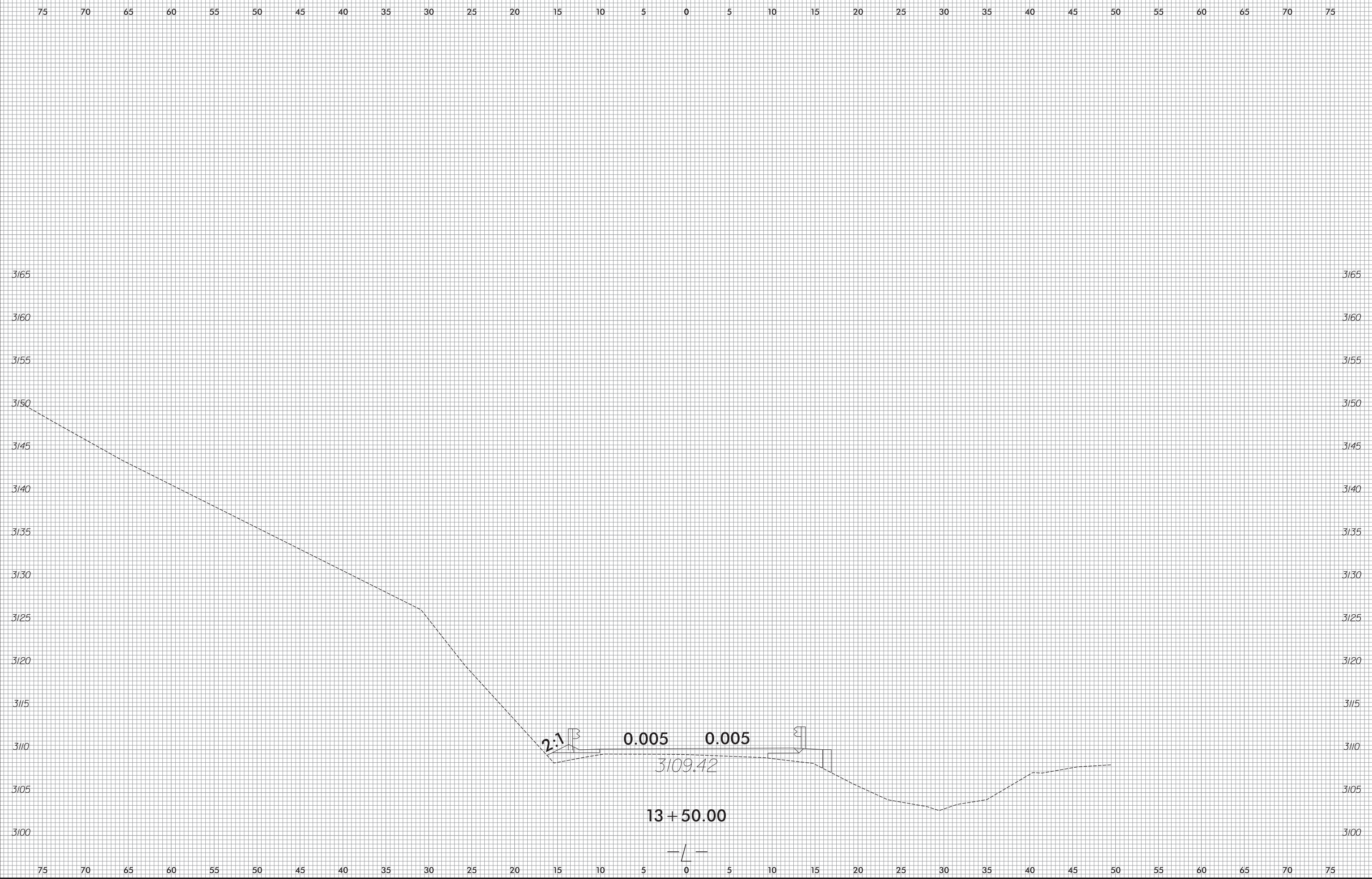


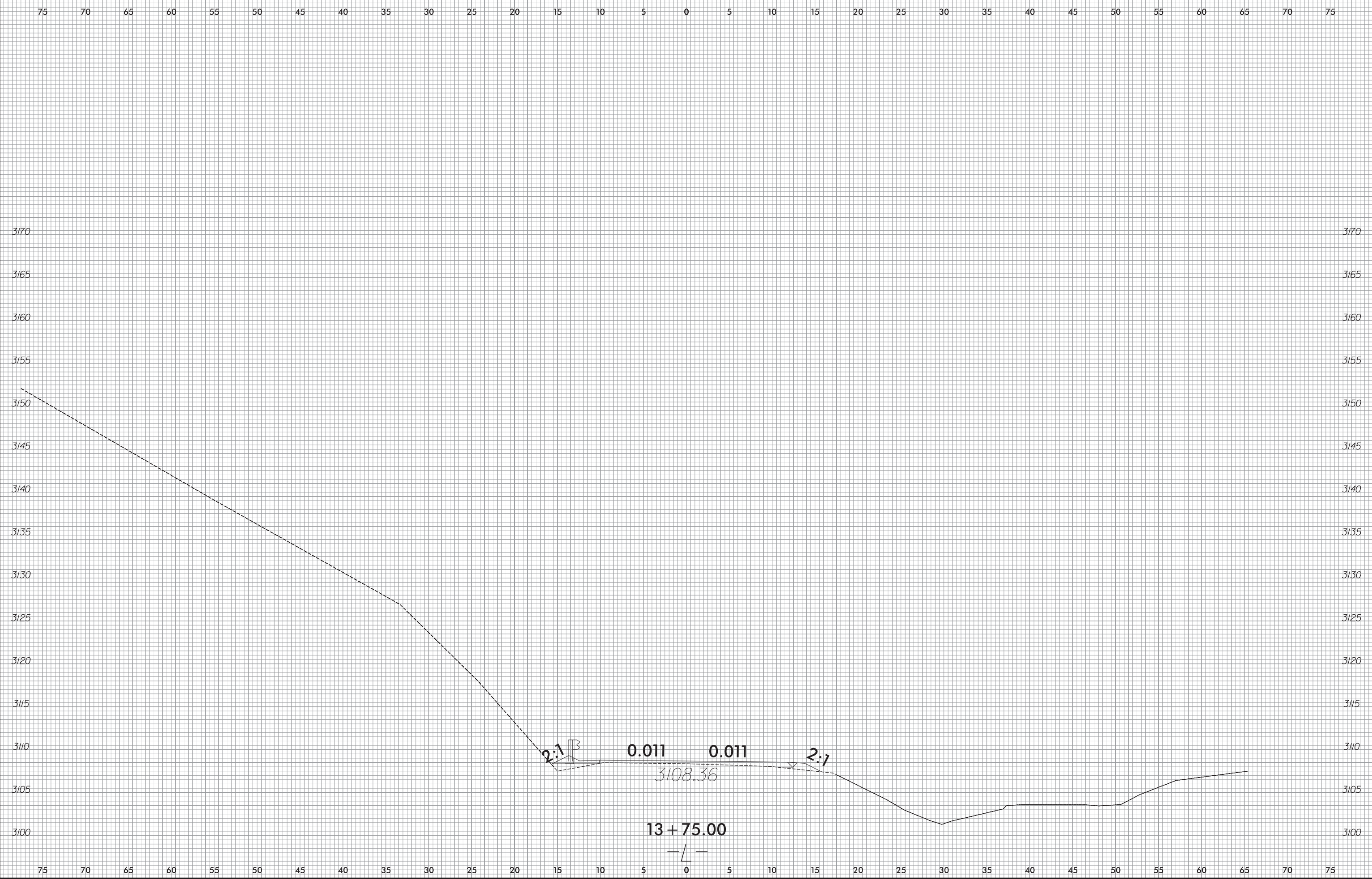


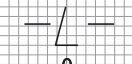
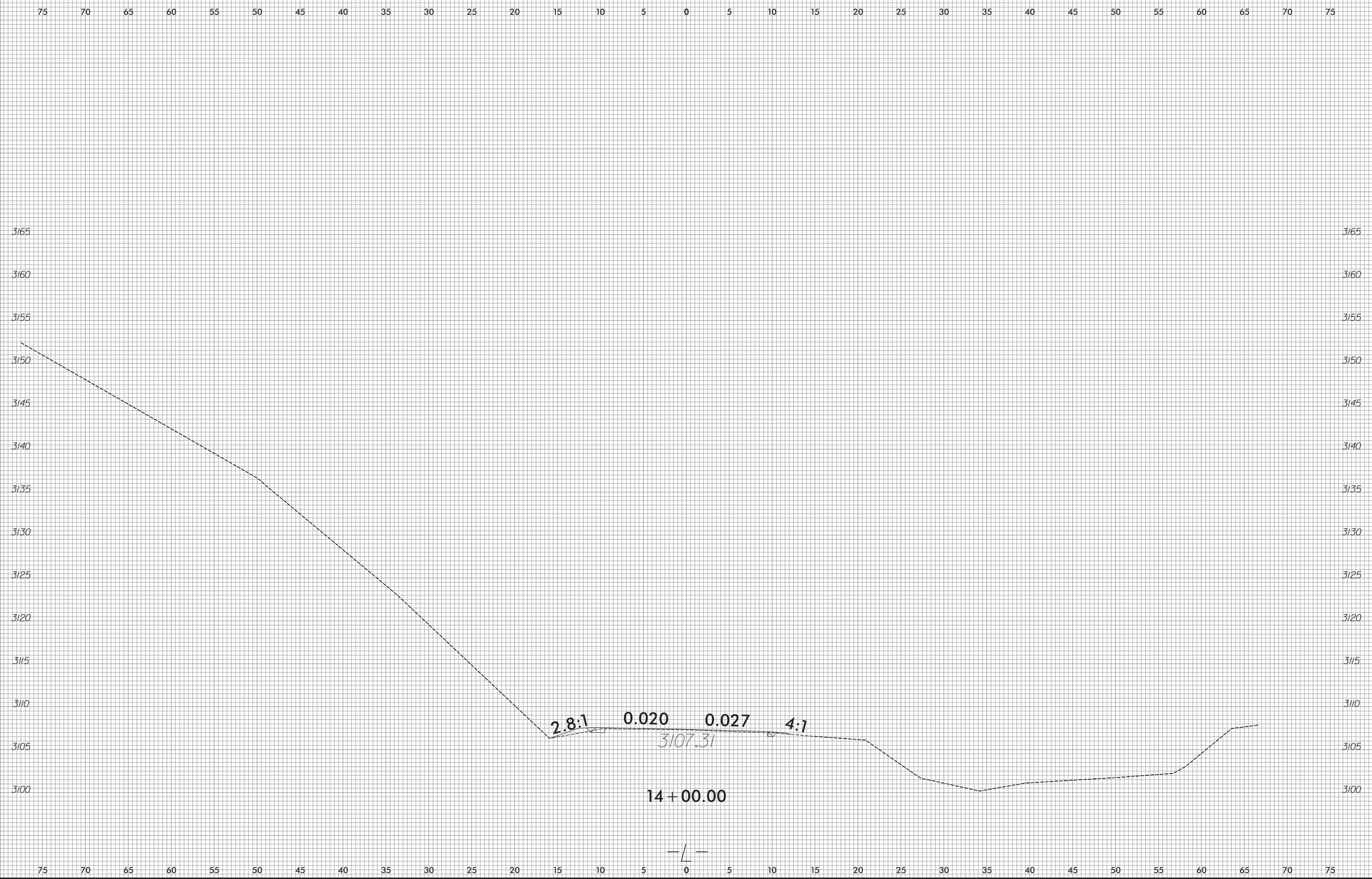


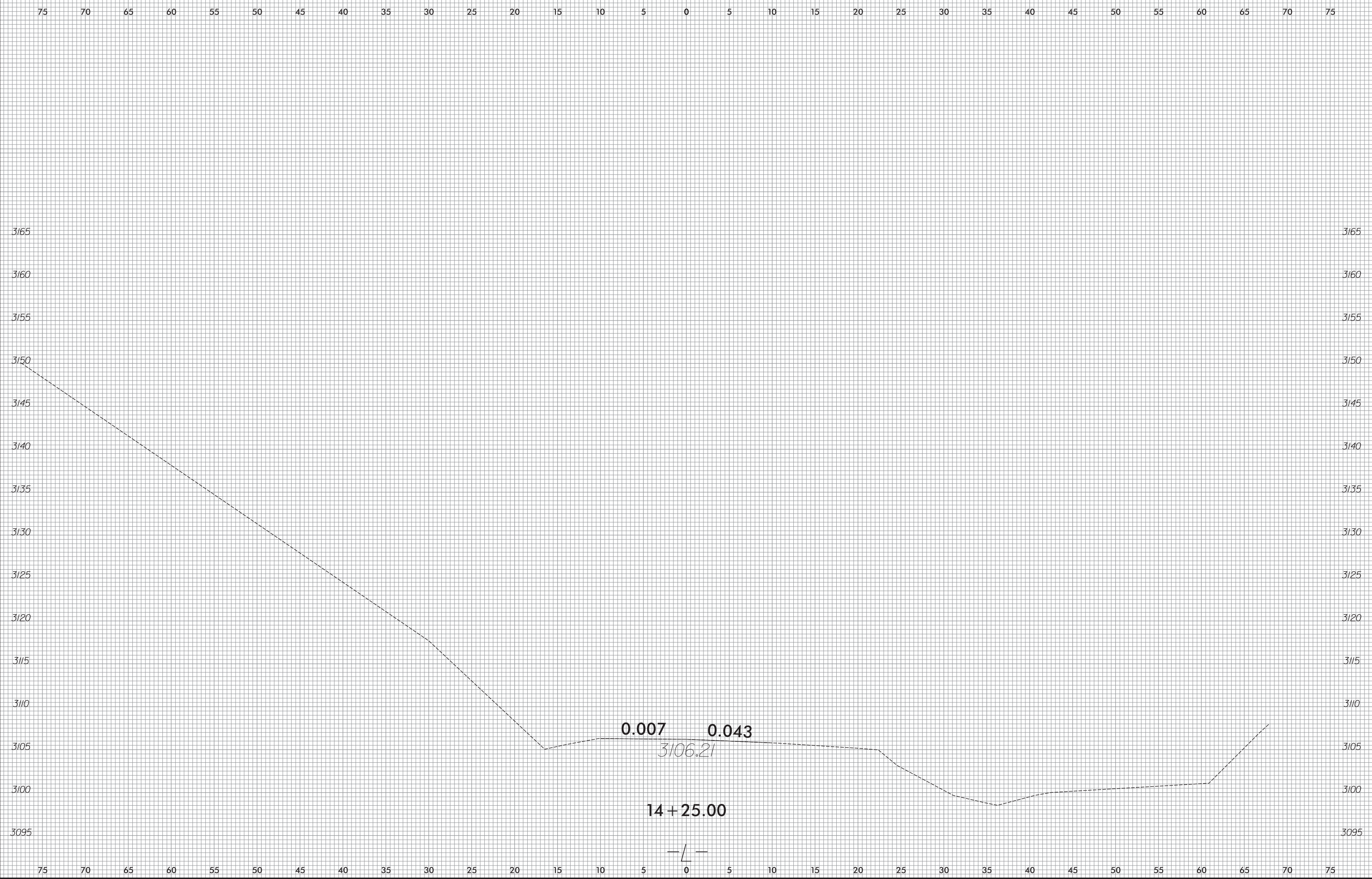












WBS: 41665.3A

CONTRACT: DM00388

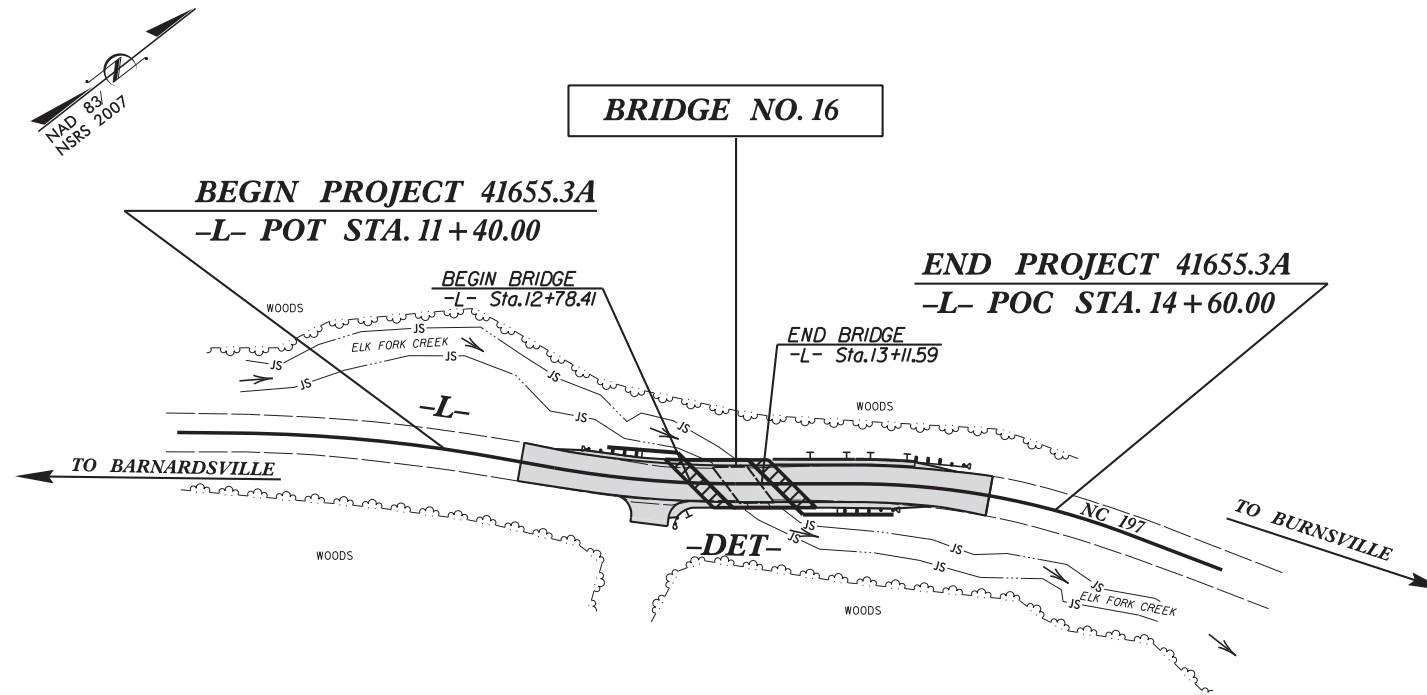
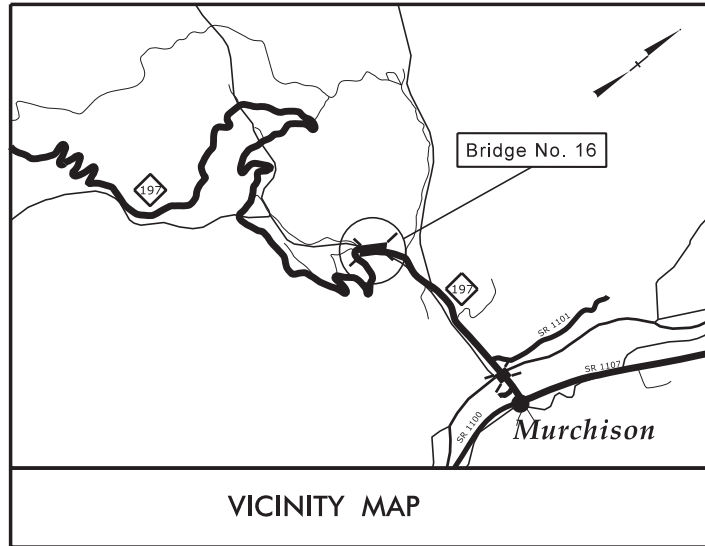
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YANCEY COUNTY

**LOCATION: BRIDGE NO.16 OVER ELK FORK CREEK
ON NC 197**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	41665.3A		
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
41665.3A		PE, ROW, UTIL. & CONST.	



STRUCTURES



DESIGN DATA

ADT 2023 = <400
ADT 2043 = <400
T = 7 %
V = 35 MPH

FUNC CLASS =
RURAL COLLECTOR

(TST 4 % + DUALS 3 %)
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 41665.3A = 0.074 MILES
LENGTH STRUCTURE TIP PROJECT 41665.3A = 0.006 MILE
TOTAL LENGTH TIP PROJECT 41665.3A = 0.080 MILES

Prepared for the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

Brandon J. McInnis, P.E.
PROJECT ENGINEER

Bruce D. Klappenbach, P.E.
PROJECT STRUCTURE ENGINEER

LETTING DATE :
MAY 17, 2023

NCDOT CONTACT:
Eddie Douglas
Division Bridge Program Manager

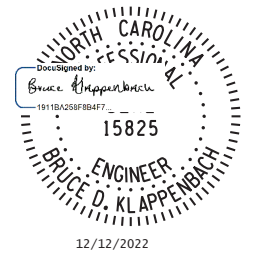
PLANS PREPARED BY:



P: (919) 878-9560
8601 Six Forks Road, Forum 1 Suite 700
Raleigh, North Carolina 27615 | NC License No. F-0112

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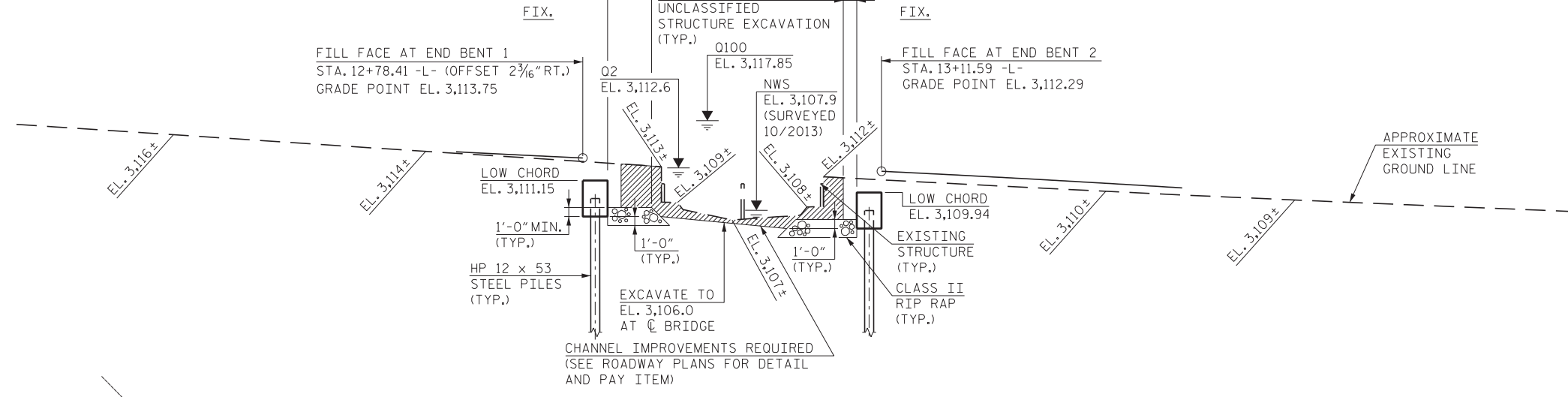
P.I. = 12+50.00
 EL. = 3,114.92
 V.C. = 80 FT.

-L- GRADE DATA

P.I. = 13+20.00
 EL. = 3,111.99
 V.C. = 50 FT.

-L- GRADE DATA

SPAN A



HYDRAULIC DATA

DESIGN DISCHARGE..... 220 C.F.S.
 FREQUENCY OF DESIGN FLOOD..... 2 YRS.
 DESIGN HIGH WATER ELEVATION..... 3,112.6
 DRAINAGE AREA..... 2.46 SQ. MI.
 BASE DISCHARGE (Q100)..... 1,405 C.F.S.
 BASE HIGH WATER ELEVATION..... 3,117.85

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE..... 450 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD..... 2+ YR.
 OVERTOPPING FLOOD ELEVATION..... 3,113.1 AT -L- STA. 12+97 LT.

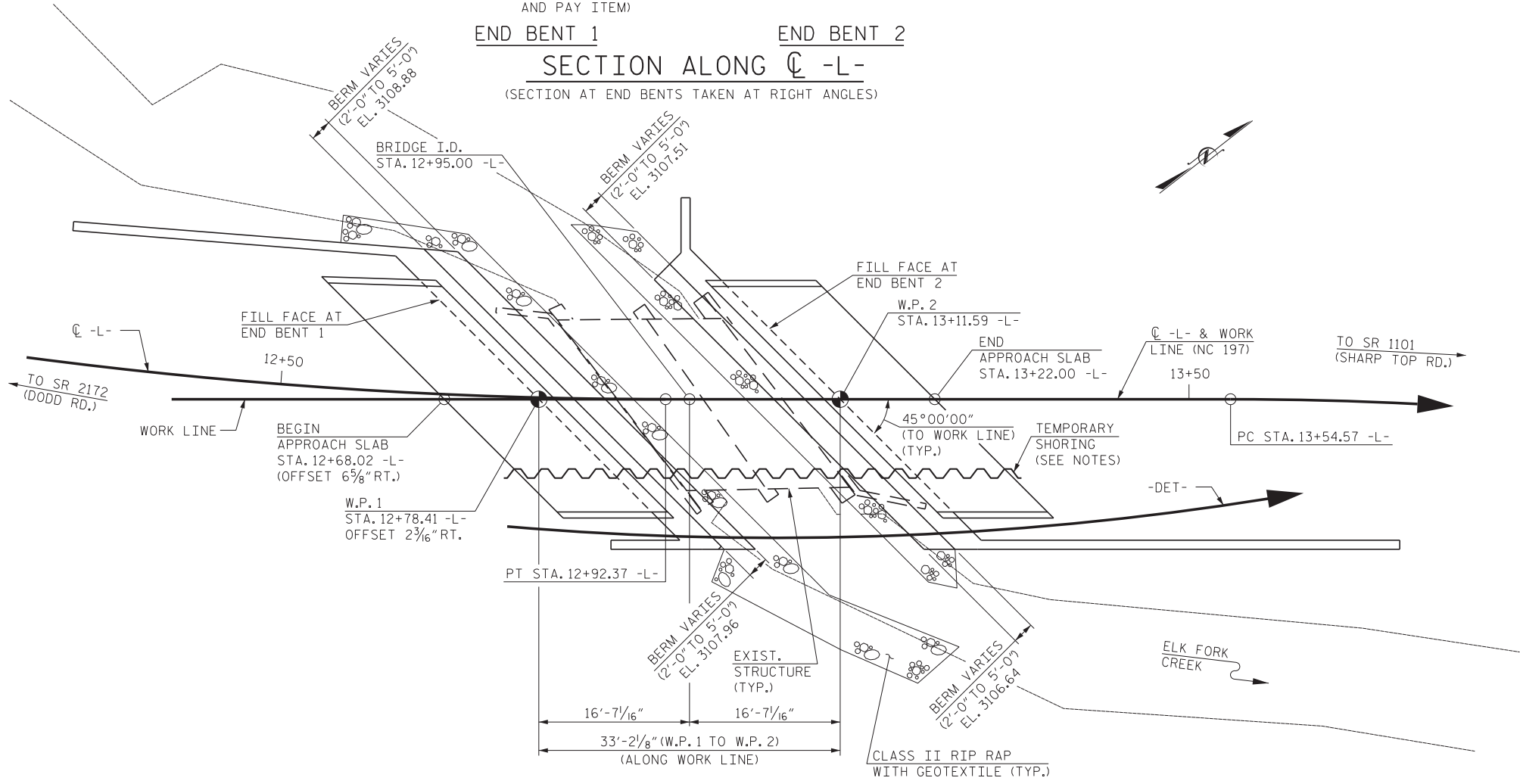
END BENT 1 END BENT 2

SECTION ALONG C -L-

(SECTION AT END BENTS TAKEN AT RIGHT ANGLES)

HORIZONTAL CURVE DATA -L-

P.I. STA. 12+45.17 -L-	P.I. STA. 14+28.05 -L-
$\Delta = 10^\circ 02' 28.3''$ (LT.)	$\Delta = 20^\circ 49' 07.3''$ (RT.)
D = 10°36'37.2"	D = 14°19'26.2"
L = 94.64'	L = 145.34'
T = 47.44'	T = 73.48'
R = 540.00'	R = 400.00'

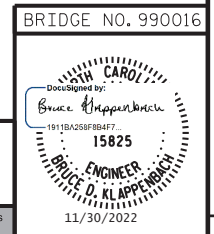


PLAN

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

PROJECT NO. 41665.3A
 YANCEY COUNTY
 STATION: 12+95.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 990016



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER ELK FORK
 CREEK ON NC 197 BETWEEN
 SR 2172 AND SR 1101

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					28

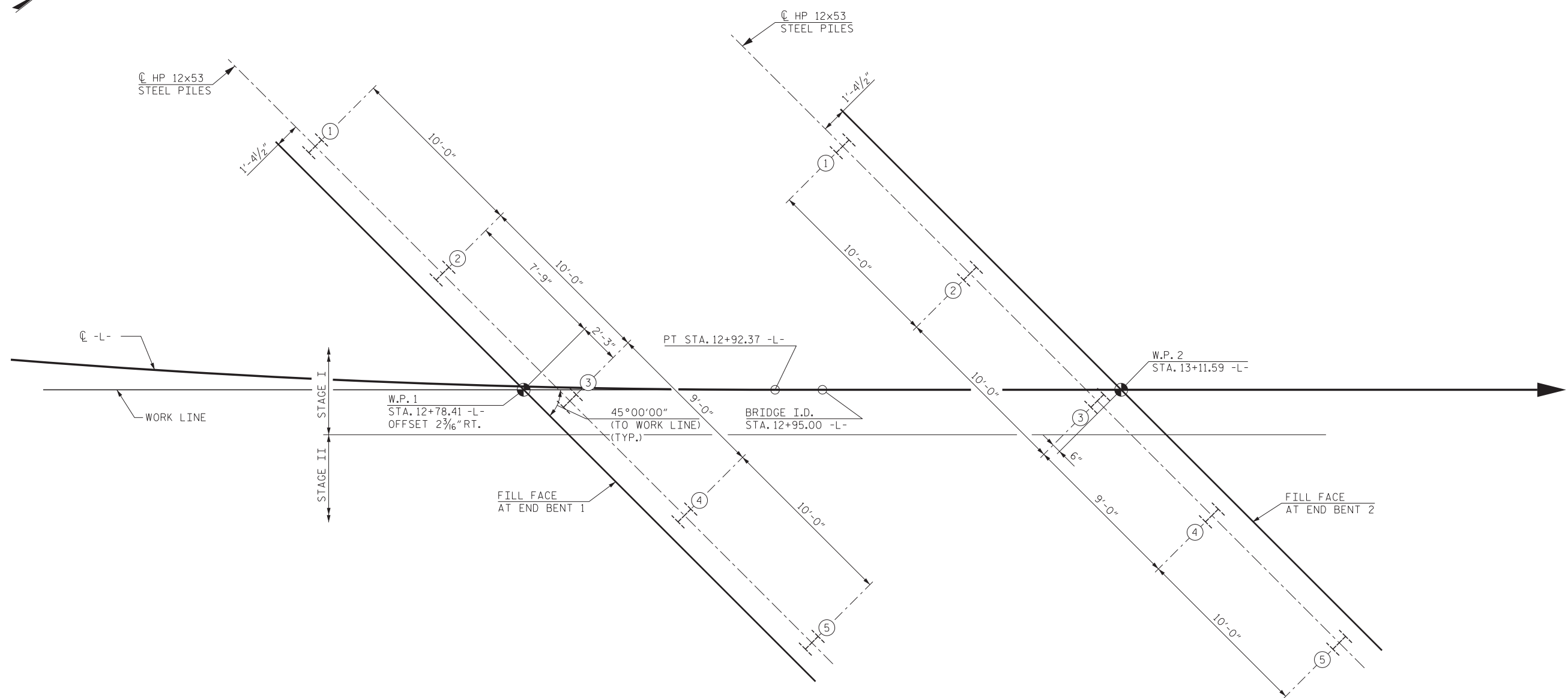
11/30/2022 R:\Structures\GON\FINAL\41665.3A_SMU_GD_990016.dgn
 DRAWN BY : B. H. GONFA DATE : JUL 2022
 CHECKED BY : B. D. KLAPPENBACH DATE : JUL 2022
 DESIGN ENGINEER OF RECORD : B. D. KLAPPENBACH DATE : JUL 2022

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FOUNDATION NOTES:

FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

FILL HOLES FOR PILE EXCAVATION AT END BENT 1 AND END BENT 2 WITH CONCRETE.



END BENT 1
 STAGE I - PILES 1-3
 STAGE II - PILES 4 & 5

END BENT 2
 STAGE I - PILES 1-3
 STAGE II - PILES 4 & 5

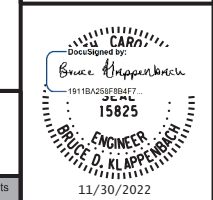
FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE

PROJECT NO. 41665.3A
YANCEY COUNTY
 STATION: 12+95.00 -L-

SHEET 2 OF 3

BRIDGE NO. 990016



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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOUNDATION LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			28

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SUMMARY OF PILE INFORMATION/INSTALLATION

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

	FACTORED RESISTANCE PER PILE	PILE CUT-OFF (TOP OF PILE) ELEVATION	ESTIMATED PILE LENGTH PER PILE	SCOUR CRITICAL ELEVATION	DRIVEN PILES			PREDRILLING FOR PILES *			DRILLED-IN PILES		
					MIN. PILE TIP (TIP NO HIGHER THAN) ELEV.	REQUIRED DRIVING RESISTANCE (RDR) ** PER PILE	TOTAL PILE REDRIVES QUANTITY	PREDRILLING LENGTH PER PILE	PREDRILLING ELEVATION (ELEV. NOT TO PREDRILL BELOW)	MAXIMUM PREDRILLING DIAMETER	PILE EXCAVATION BOTTOM OF HOLE) ELEV.	PILE EXCAVATION NOT IN SOIL PER PILE	PILE EXCAVATION IN SOIL PER PILE
					FT.	TONS	EA.	LIN.FT.	FT.	INCHES	FT.	LIN.FT.	LIN.FT.
END BENT 1, PILES 1-5	59	SEE SUBSTRUCTURE PLANS	15			100					3097.1	8.0	2.0
END BENT 2, PILES 1-5	59		15			100					3095.6	10.0	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 = $\frac{\text{FACTORED RESISTANCE} + \text{FACTORED DOWNDRAG LOAD} + \text{FACTORED DEAD LOAD}}{\text{DYNAMIC RESISTANCE FACTOR}} + \text{NOMINAL DOWNDRAG RESISTANCE} + \frac{\text{NOMINAL SCOUR RESISTANCE}}{\text{SCOUR RESISTANCE FACTOR}}$

NOTES:

1. THE PILE FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS SEALED BY A NORTH CAROLINA PROFESSIONAL ENGINEER (GREGORY K. GOINS, PE#041709) ON 10/21/2022.
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 PDA'S OR PLATES MAY BE REQUIRED.
4. PILE EXCAVATION WAS ANTICIPATED IN DESIGN, HOWEVER, THROUGH THE DIRECTION OF THE ENGINEER, DRIVEN PILES MAY BE APPLICABLE.
5. FOR PILES, SEE SPECIAL PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
6. FILL HOLES FOR PILE EXCAVATION AT END BENT 1 AND END BENT 2 WITH CONCRETE.

PROJECT NO. 41665.3A
YANCEY COUNTY
 STATION: 12+95.00 -L-

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11/30/2022

STATE OF NORTH CAROLINA
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PILE FOUNDATION TABLES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			28

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TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 12+95.00 -L-	ASBESTOS ASSESSMENT	PILE EXCAVATION NOT IN SOIL	PILE EXCAVATION IN SOIL	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLAB AT STA. 12+95.00 -L-	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES	ONE BAR METAL RAIL	1'-0" X 1'-10 1/2" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS			
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	SQ. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	EACH	NO.	LIN. FT.	LIN. FT.	LIN. FT.	TONS	SO. YDS.	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE	LUMP SUM				745.0	1,157						43.00	60.00				LUMP SUM	9	270.00	
END BENT NO.1	---		40	10			42.9		5,418	5	5	75		55	62					
END BENT NO.2	---		50	-			37.1		4,503	5	5	75		50	56					
TOTAL	LUMP SUM	LUMP SUM	90	10	745.0	1,157	80.0	LUMP SUM	9,921	10	10	150	43.00	60.00	105	118	LUMP SUM	9	270.00	

GENERAL NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET S-28.

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.

THE EXISTING STRUCTURE CONSISTING OF 2 SPANS AT 9'-3 1/4" CLEAR ROADWAY WIDTH OF 19.2' ASPHALT WEARING SURFACE ON TIMBER JOISTS; END BENTS CONSISTING OF TIMBER CAPS/POSTS WITH CONCRETE SILLS; AND A CRUTCH BENT CONSISTING OF TIMBER CAP AND TIMBER PILES, LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT 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. 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 COST INCURRED BASED ON THE DIFFERENCES BETWEEN THE EXISTING 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. CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

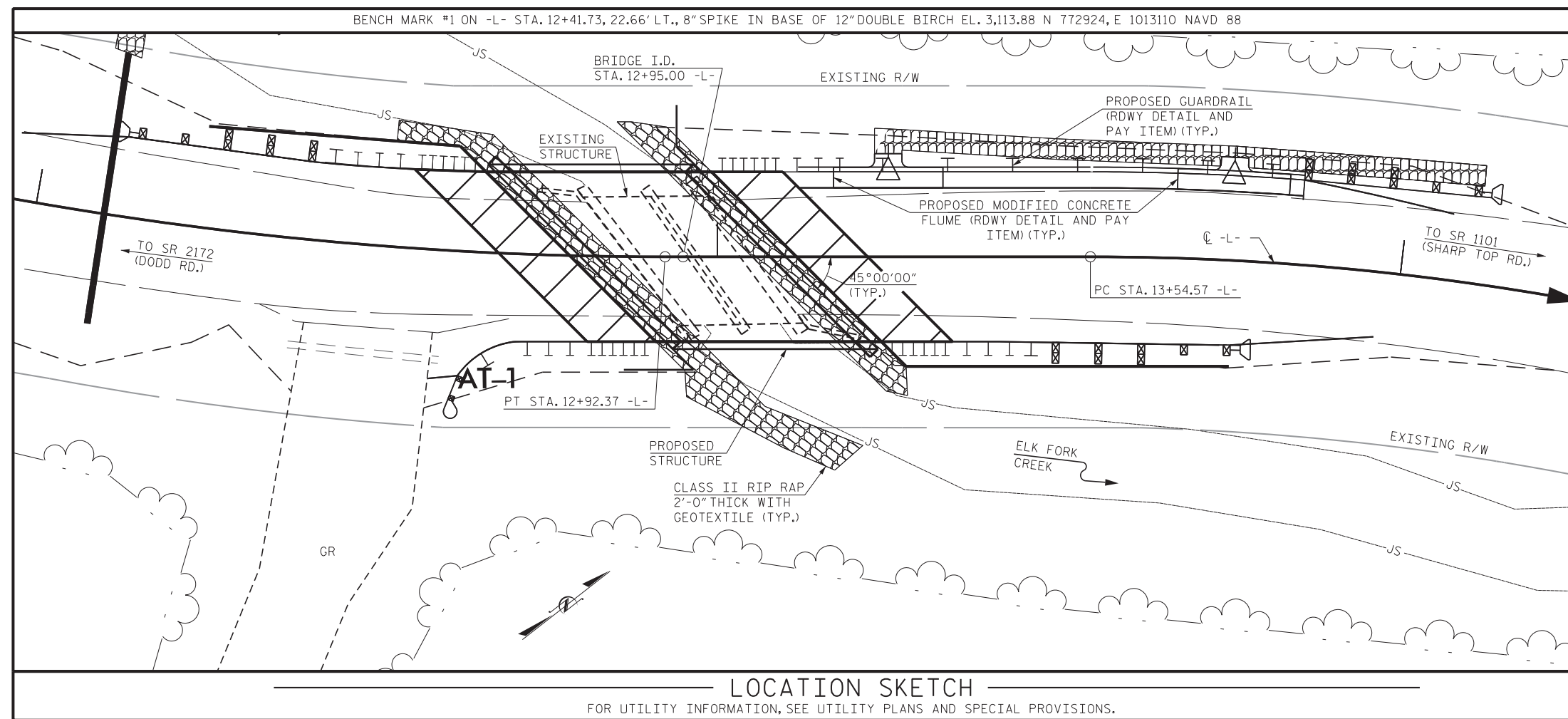
THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18- EVALUATING SCOUR AT BRIDGES."

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

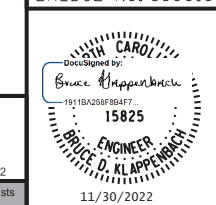
FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.



PROJECT NO. 41665.3A
YANCEY COUNTY
STATION: 12+95.00 -L-

SHEET 3 OF 3

BRIDGE NO. 990016



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER ELK FORK
CREEK ON NC 197 BETWEEN
SR 2172 AND SR 1101

REVISIONS

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

SHEET NO.

S-4
TOTAL SHEETS
28

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CHECKED BY : B. D. KLAPPENBACH DATE : JUL 2022
DESIGN ENGINEER OF RECORD : B. D. KLAPPENBACH DATE : JUL 2022

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			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							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)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	2.12	-	1.75	0.286	2.12	A	E	14.3	0.465	3.28	A	E	1.5	0.8	0.286	2.58	A	E	14.3		
	HL-93(0pr)	N/A	--	2.75	-	1.35	0.286	2.75	A	E	14.3	0.465	4.29	A	E	1.5	N/A	-	-	-	-			
	HS-20(Inv)	36.000	2	2.89	104.040	1.75	0.286	2.89	A	E	11.3	0.465	3.76	A	E	1.5	0.80	0.286	3.63	A	E	11.3		
	HS-20(0pr)	36.000	--	3.75	135.000	1.35	0.286	3.75	A	E	11.3	0.465	4.91	A	E	1.5	N/A	-	-	-	-			
LEGAL LOAD RATING	SV	SNSH	13.500	--	5.83	78.705	1.40	0.286	5.97	A	E	14.3	0.465	8.70	A	E	8.3	0.80	0.286	5.83	A	E	14.3	
		SNGARBS2	20.000	--	5.16	103.200	1.40	0.286	5.16	A	E	11.3	0.465	7.14	A	E	8.3	0.80	0.286	5.19	A	E	11.3	
		SNAGRIS2	22.000	--	5.26	115.720	1.40	0.286	5.26	A	E	11.3	0.465	6.94	A	E	1.5	0.80	0.286	5.28	A	E	11.3	
		SNCOTTS3	27.250	--	2.93	79.843	1.40	0.286	3.00	A	E	14.3	0.465	4.31	A	E	8.3	0.80	0.286	2.93	A	E	14.3	
		SNAGRS4	34.925	--	2.83	98.838	1.40	0.286	2.87	A	E	11.3	0.465	4.28	A	E	1.5	0.80	0.286	2.83	A	E	14.3	
		SNS5A	35.550	--	2.74	97.407	1.40	0.286	2.80	A	E	14.3	0.465	4.45	A	E	8.3	0.80	0.286	2.74	A	E	14.3	
		SNS6A	39.950	--	2.58	103.071	1.40	0.286	2.65	A	E	14.3	0.465	4.19	A	E	1.5	0.80	0.286	2.58	A	E	14.3	
	SNS7B	42.000	3	2.51	105.420	1.40	0.286	2.58	A	E	14.3	0.465	4.27	A	E	1.5	0.80	0.286	2.51	A	E	14.3		
	TTST	TNAGRIT3	33.000	--	3.37	111.210	1.40	0.286	3.45	A	E	14.3	0.465	5.04	A	E	1.5	0.80	0.286	3.37	A	E	14.3	
		TNT4A	33.075	--	3.18	105.179	1.40	0.286	3.25	A	E	14.3	0.465	4.74	A	E	1.5	0.80	0.286	3.18	A	E	14.3	
		TNT6A	41.600	--	2.89	120.224	1.40	0.286	2.96	A	E	14.3	0.465	4.47	A	E	8.3	0.80	0.286	2.89	A	E	14.3	
		TNT7A	42.000	--	2.99	125.580	1.40	0.286	3.06	A	E	14.3	0.465	4.36	A	E	1.5	0.80	0.286	2.99	A	E	14.3	
		TNT7B	42.000	--	2.81	118.020	1.40	0.286	2.88	A	E	14.3	0.465	4.16	A	E	1.5	0.80	0.286	2.81	A	E	14.3	
		TNAGRIT4	43.000	--	2.91	125.130	1.40	0.286	2.98	A	E	14.3	0.465	4.12	A	E	1.5	0.80	0.286	2.91	A	E	14.3	
TNAGT5A		45.000	--	2.84	127.800	1.40	0.286	2.91	A	E	14.3	0.465	4.37	A	E	8.3	0.80	0.286	2.84	A	E	14.3		
TNAGT5B	45.000	--	2.74	123.300	1.40	0.286	2.74	A	E	11.3	0.465	3.83	A	E	1.5	0.80	0.286	2.75	A	E	11.3			

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:

-
-
-
-

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

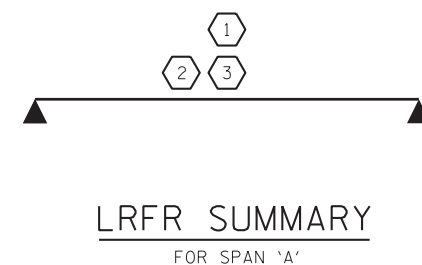
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
E - EXTERIOR GIRDER



PROJECT NO. 41665.3A
YANCEY COUNTY
 STATION: 12+95.00 -L-

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DocuSigned by:
 Bruce Klappenbach
 1911BA25E8B84F7-
 15825

ENGINEER
 BRUCE D. KLAPPENBACH

11/30/2022

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 DEPARTMENT OF TRANSPORTATION
 RALEIGH

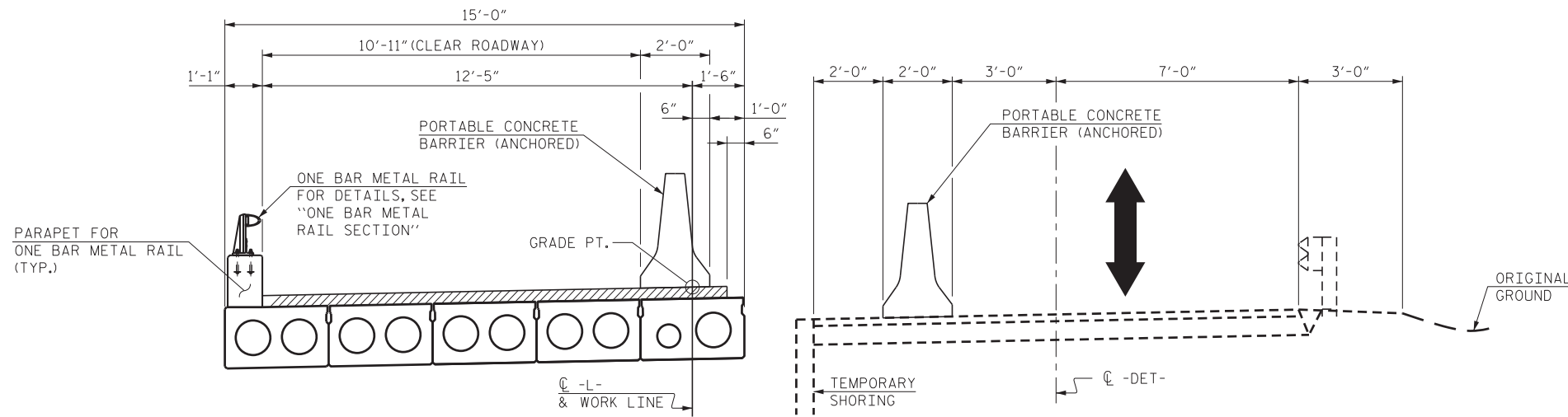
STANDARD
 LRFR SUMMARY FOR
 30' CORED SLAB UNIT
 45° SKEW
 (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			28

NOTE:

FOR PORTABLE CONCRETE BARRIER (ANCHORED),
SEE TRAFFIC CONTROL PLANS.

MAINTAIN ONE-LANE TWO-WAY TRAFFIC.
SEE TRAFFIC CONTROL PLANS.

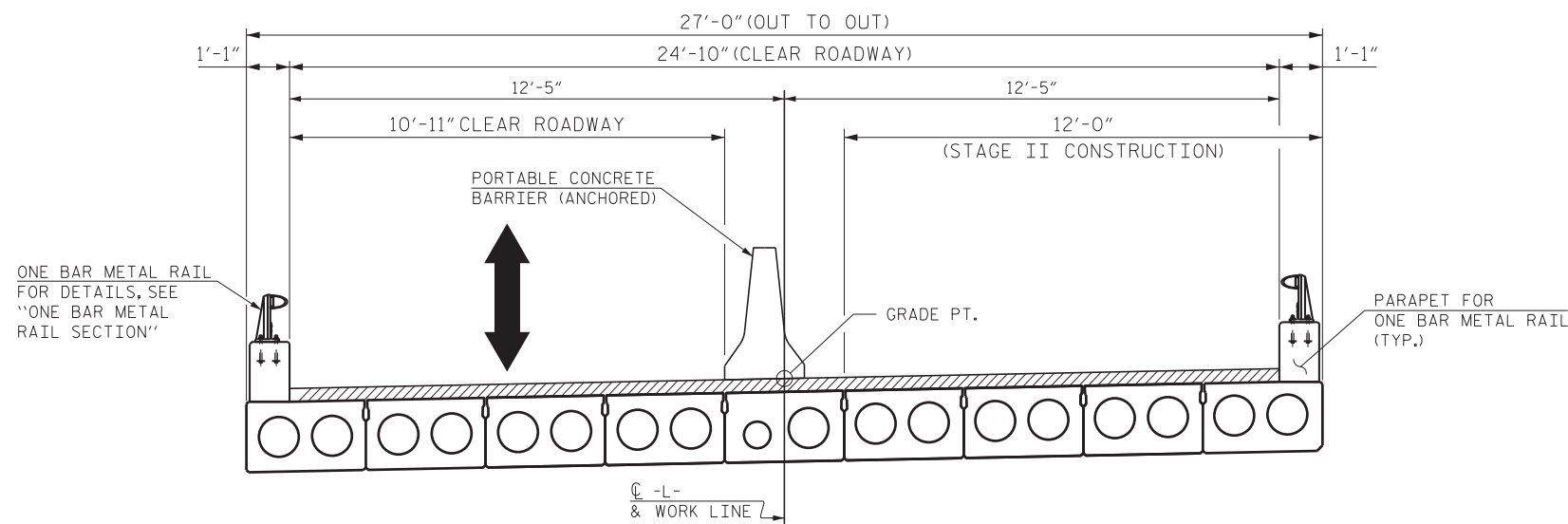


STAGE I CONSTRUCTION

TEMPORARY DETOUR STAGE I TRAFFIC

(SEE ROADWAY PLANS)

STAGE I



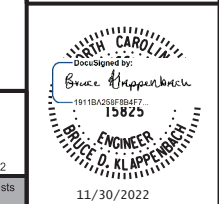
STAGE II TRAFFIC

STAGE II CONSTRUCTION

STAGE II

PROJECT NO. 41665.3A
YANCEY COUNTY
STATION: 12+95.00 -L-

BRIDGE NO. 990016



STATE OF NORTH CAROLINA
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CONSTRUCTION SEQUENCE

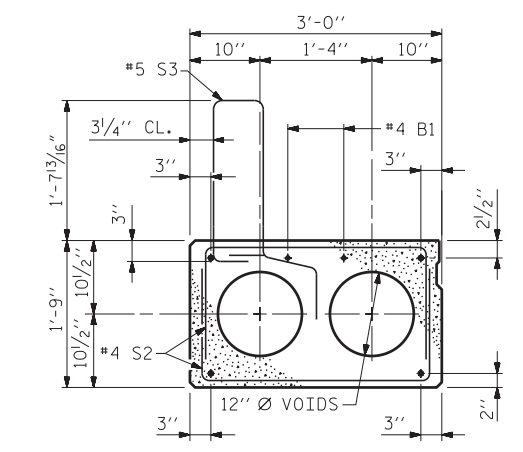
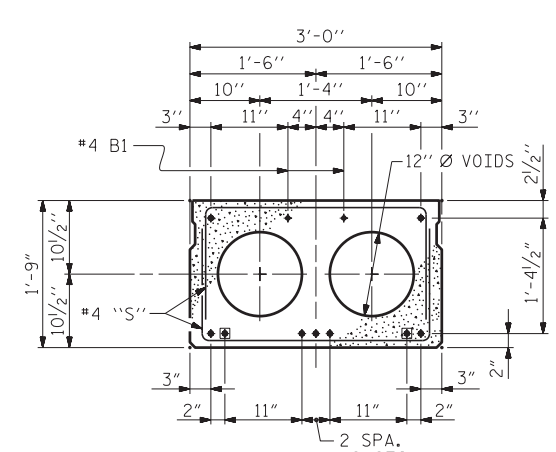
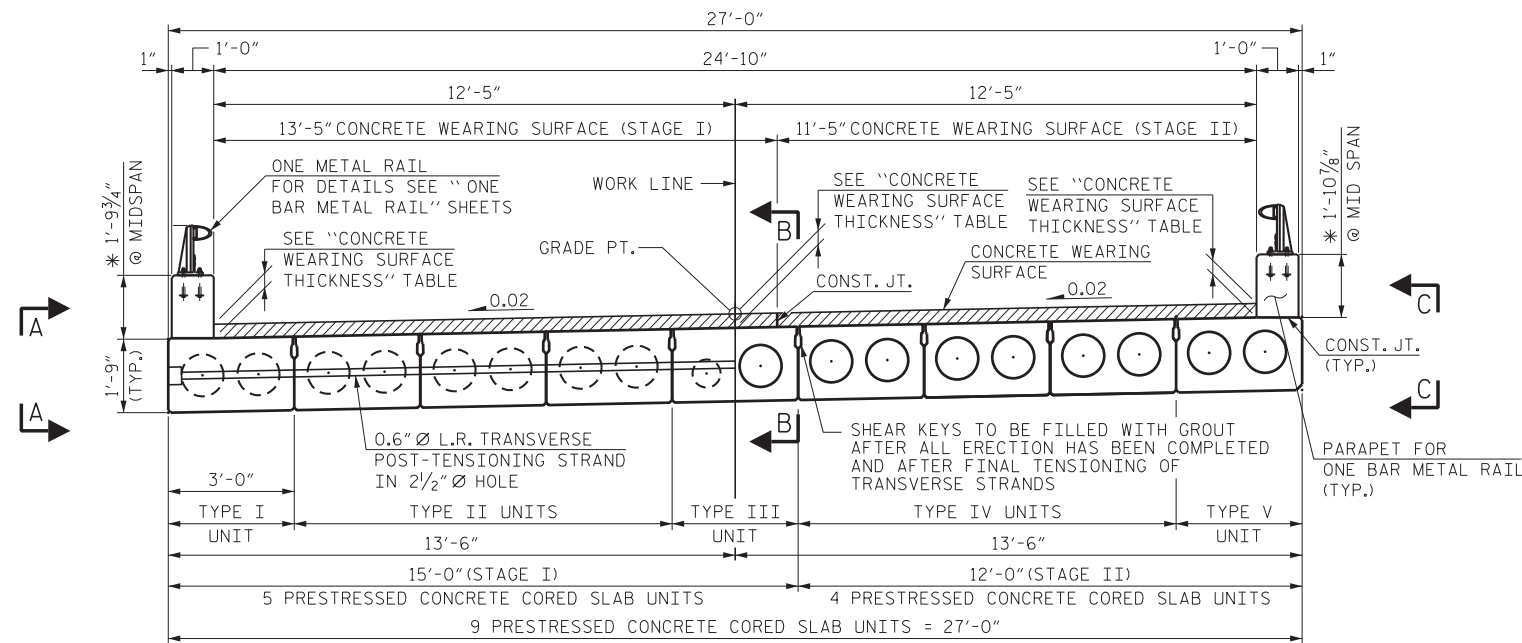


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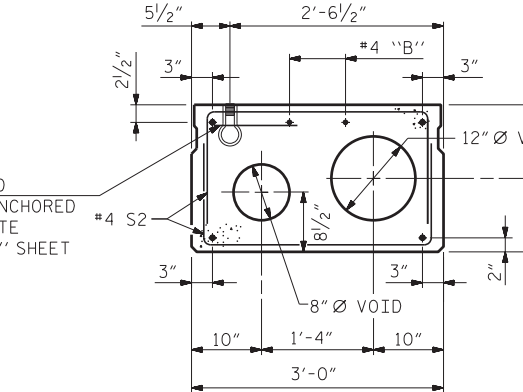


INTERIOR SLAB SECTION (30' UNIT)
(TYPE II AND IV UNIT)
(9 STRANDS REQUIRED)

EXT. SLAB SECTION
(TYPE I AND V UNIT)
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION)

☐ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



INTERIOR SLAB SECTION
(TYPE III UNIT)
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION TYPE II & IV UNIT)

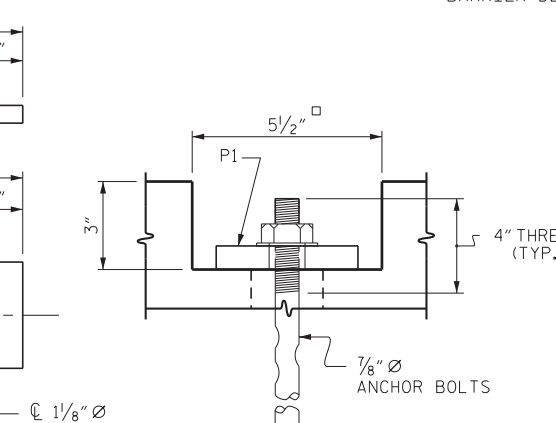


PLATE DETAILS -P1
(FIXED) P1 (36 REQ'D)

SECTION A-A
(FIXED)

BLOCKOUT DETAIL FOR ANCHOR BOLTS

CONCRETE WEARING SURFACE THICKNESS			
	CL BRG. @ EB 1	MID-SPAN	CL BRG. @ EB 2
LEFT G.L.	4 1/2"	3 3/4"	4 1/2"
CL WORK LINE	4"	4 3/8"	4 7/8"
RIGHT G.L.	4 1/2"	4 1/8"	4 1/2"

CONCRETE WEARING SURFACE THICKNESS VARIES DUE TO THE EFFECTS OF THE VERTICAL PROFILE.

CONCRETE WEARING SURFACE THICKNESS AT MID-SPAN IS BASED ON PREDICTED FINAL CAMBER.



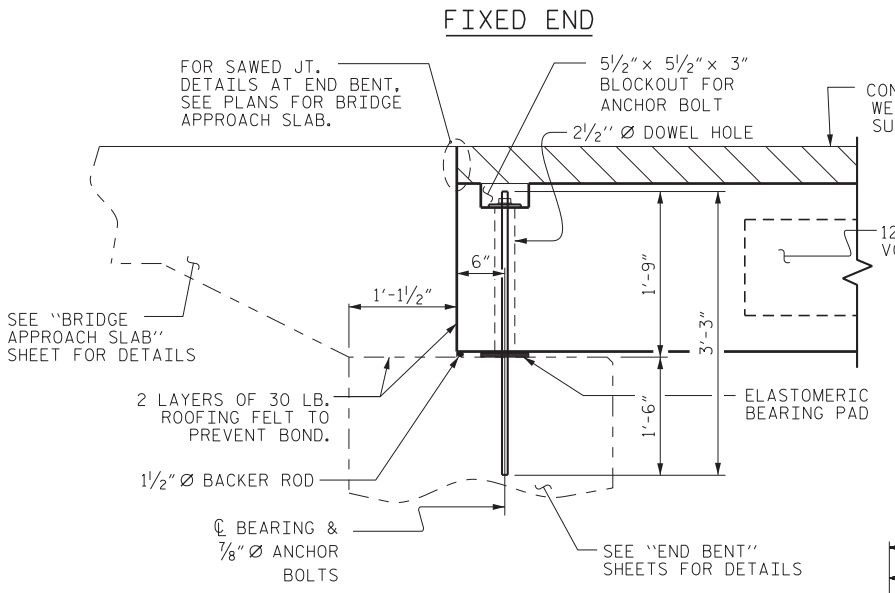
SHEAR KEY DETAIL
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

NOTE:
FOR VIEWS A-A, B-B, AND C-C, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS" SHEET.

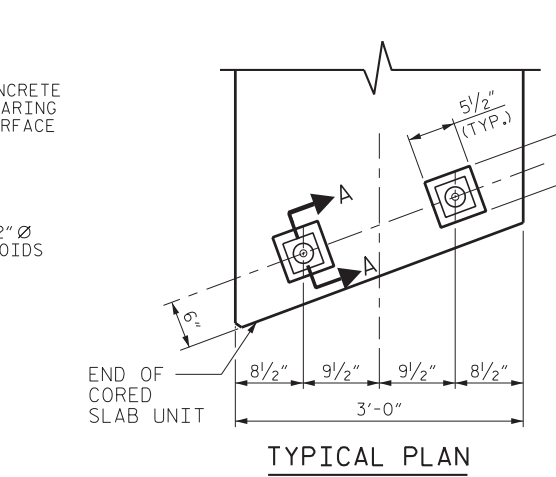
HALF SECTION AT INTERMEDIATE DIAPHRAGM **HALF SECTION THROUGH VOIDS**

TYPICAL SECTION

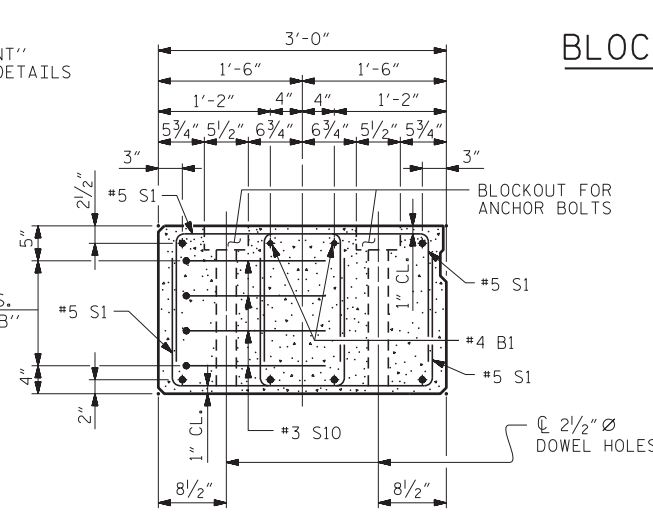
* THE MINIMUM HEIGHT OF THE PARAPET IS SHOWN. THE HEIGHT OF THE PARAPET VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE



SECTION AT END BENT

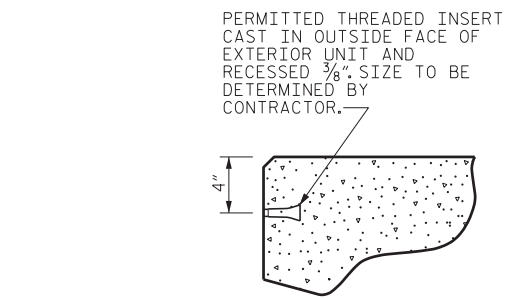


TYPICAL PLAN



END ELEVATION

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



THREADED INSERT DETAIL

PROJECT NO. 41665.3A
YANCEY COUNTY
STATION: 12+95.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
45° SKEW

BRIDGE NO. 990016

DocuSign by: Bruce Klappenbach
10118A055E3B4E7...
15825
BRUCE D. KLAPPENBACH
ENGINEER

12/8/2022

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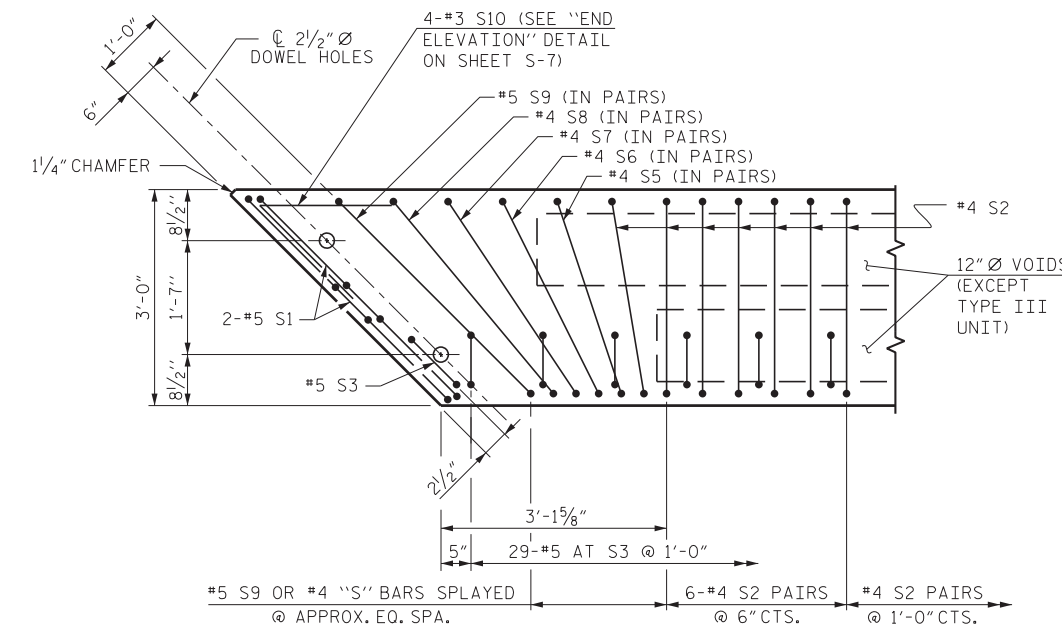
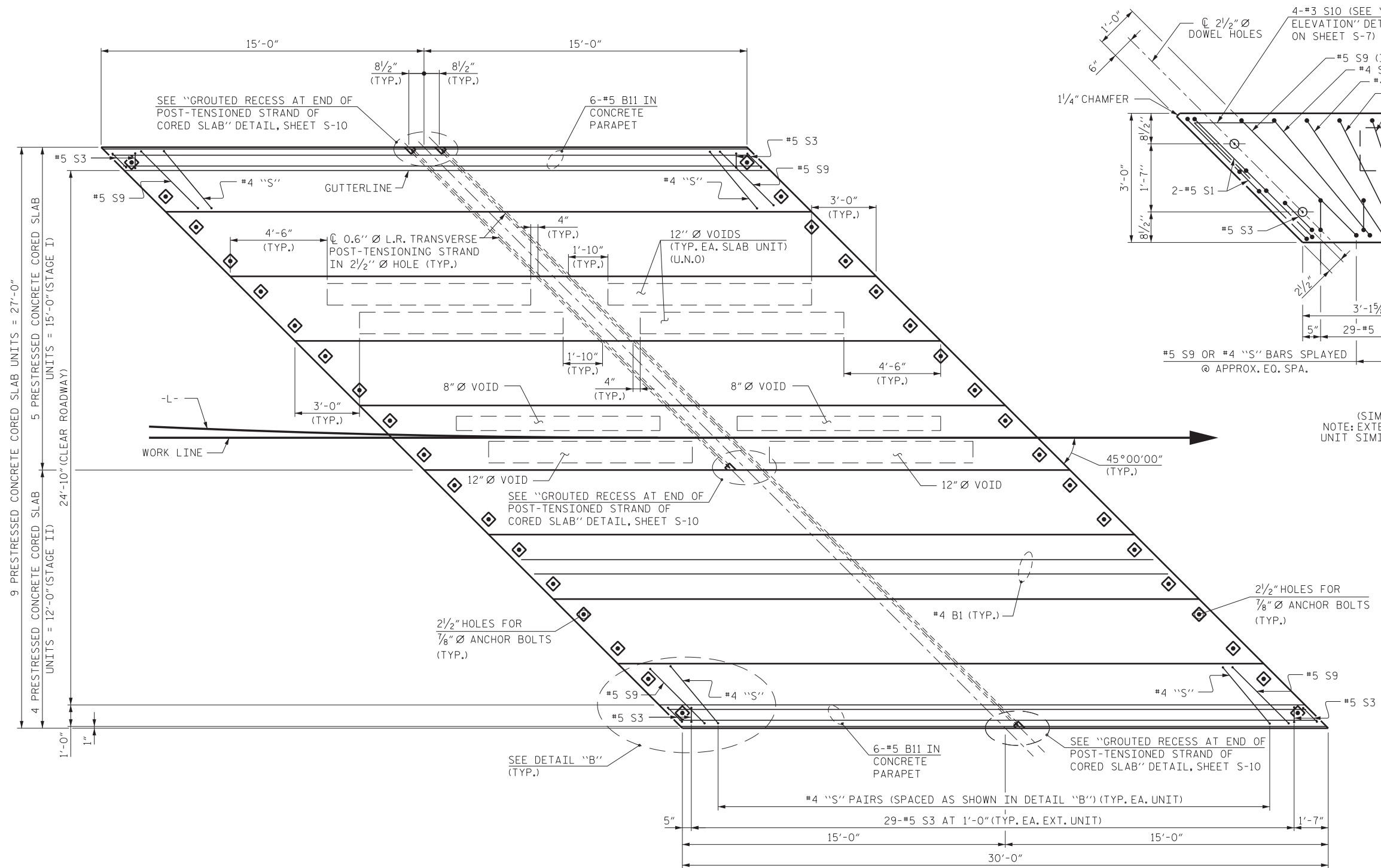
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1			3		
2			4		

SHEET NO.	
TOTAL SHEETS	NO.
28	S-7

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DRAWN BY: B. H. GONFA DATE: JUL 2022
CHECKED BY: B. D. KLAPPENBACH DATE: JUL 2022
DESIGN ENGINEER OF RECORD: B. D. KLAPPENBACH DATE: JUL 2022

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PLAN OF UNIT

PROJECT NO. 41665.3A
 YANCEY COUNTY
 STATION: 12+95.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 30' UNIT
 24'-10" CLEAR ROADWAY
 45° SKEW

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1			3		
2			4		

SHEET NO. S-8
 TOTAL SHEETS 28

BRIDGE NO. 990016

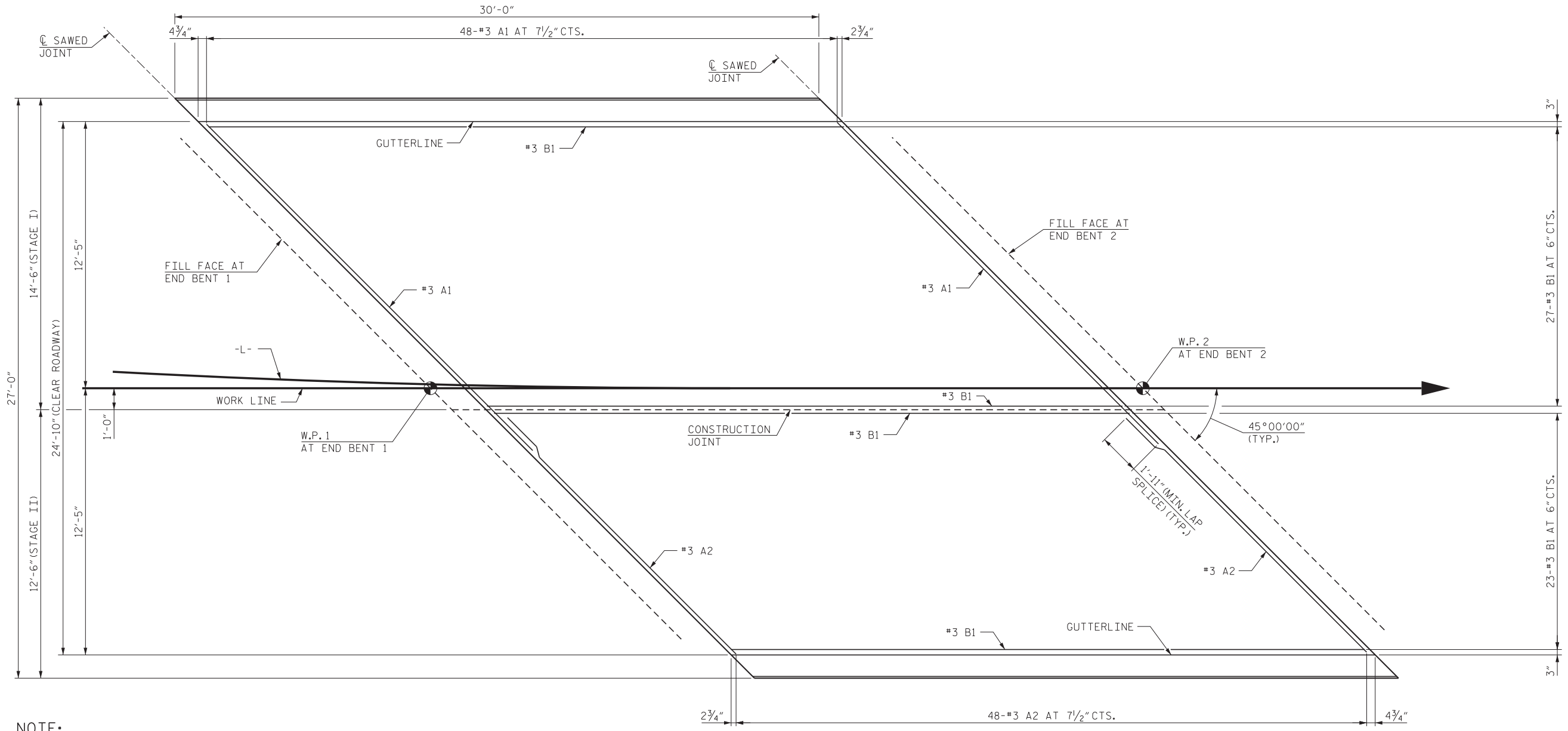
DESIGNED BY:
 Bruce Klappenbach
 15825
 ENGINEER
 BRUCE D. KLAPPENBACH
 11/30/2022

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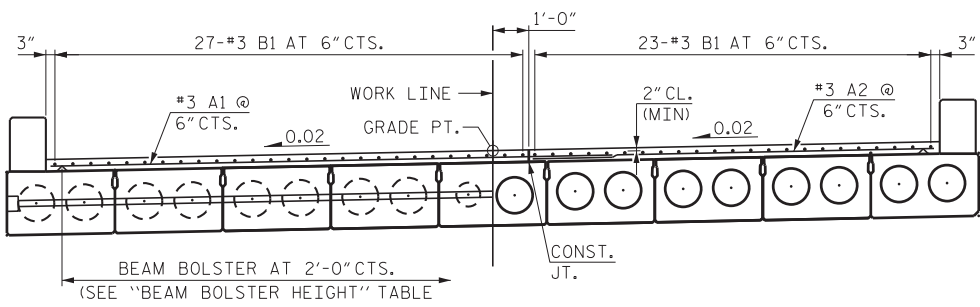
NOTE:

PLACEMENT OF THE CONCRETE OVERLAY SHALL OCCUR AFTER CASTING THE CONCRETE PARAPET. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

FOR STAGE I CONSTRUCTION, THE CONCRETE WEARING SURFACE SHALL BE POURED PRIOR TO PLACING AND ANCHORING THE PORTABLE CONCRETE BARRIER RAIL ON THE CONCRETE OVERLAY. THE CONTRACTOR SHALL PROVIDE A METHOD TO ALLOW ACCESS IN THE AREA OF THE CONCRETE INSERTS TO ALLOW ANCHORAGE TO THE CORED SLABS. THE METHOD SHALL BE APPROVED BY THE ENGINEER.

PLAN OF REINFORCING CONCRETE WEARING SURFACE

BEAM BOLSTER HEIGHT (IN.)			
	CL. BRG. @ EB 1	MID-SPAN	CL. BRG. @ EB 2
LEFT G.L.	1 1/2"	3/4"	1 1/2"
CL. WORK LINE	1"	1 1/4"	1 3/4"
RIGHT G.L.	1 1/2"	1 3/4"	1 1/2"



TYPICAL SECTION
SHOWING REINFORCING STEEL IN CONCRETE WEARING SURFACE

PROJECT NO. 41665.3A
YANCEY COUNTY
STATION: 12+95.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
REINFORCING FOR
CONCRETE WEARING
SURFACE
SPAN A

BRIDGE NO. 990016
DocuSigned by:
Bruce Klappenbach
191BA05F8B4F7
13023
ENGINEER
BRUCE D. KLAPPENBACH
12/8/2022

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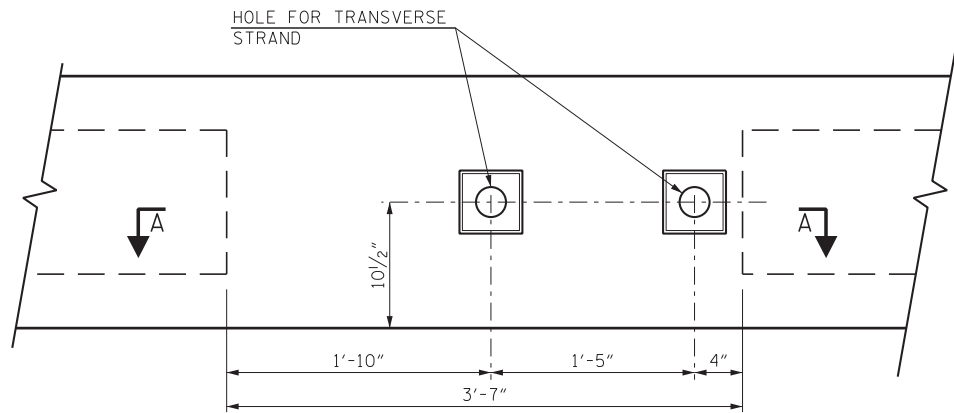
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TOTAL SHEETS: 28

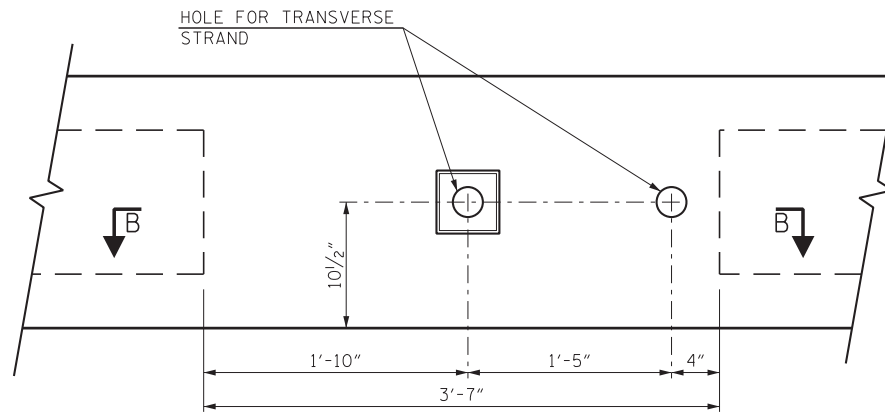
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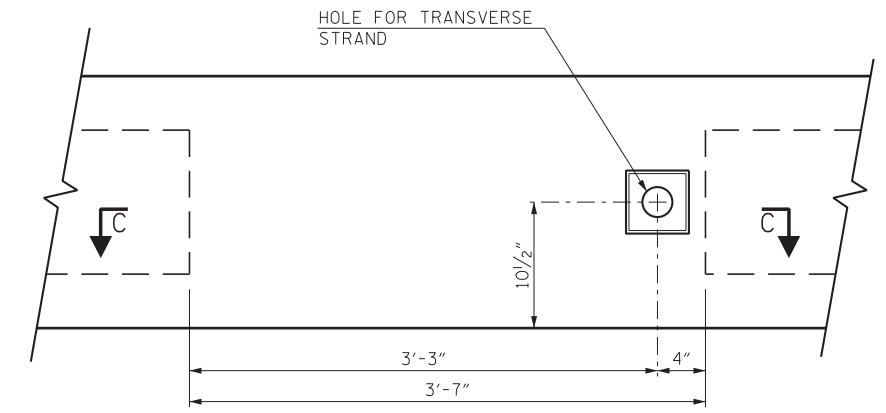
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12/8/2022
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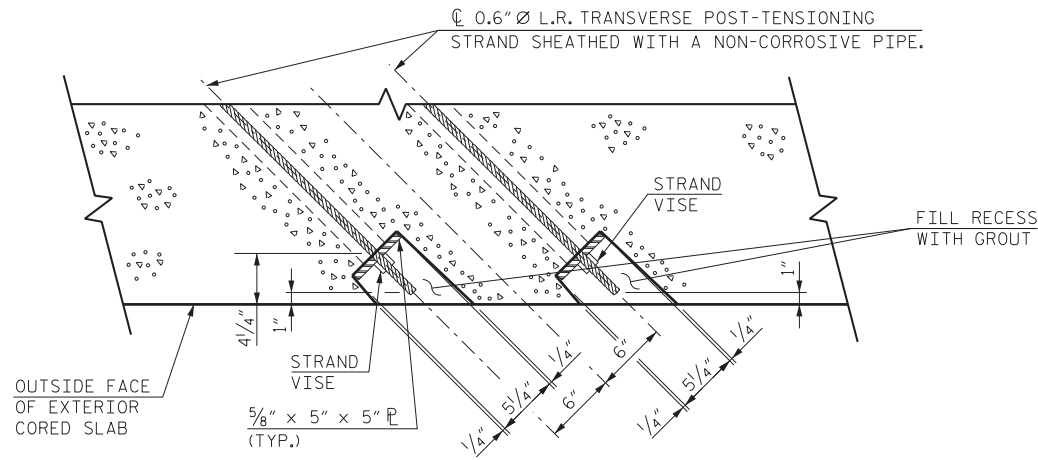
VIEW A-A
TYPE I UNIT



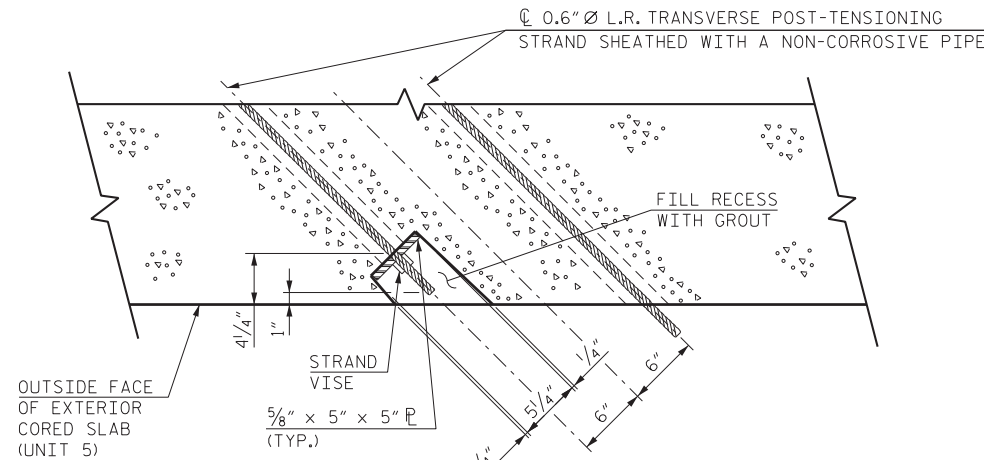
VIEW B-B
TYPE III UNIT



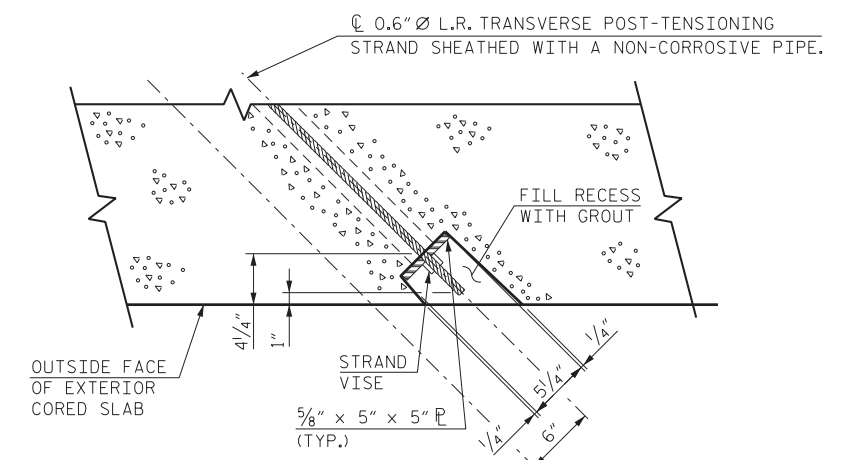
VIEW C-C
TYPE V UNIT



SECTION A-A



SECTION B-B



SECTION C-C

GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLAB

PROJECT NO. 41665.3A
 YANCEY COUNTY
 STATION: 12+95.00 -L-

11/30/2022 R:\Structures\DN\FINAL\41665.3A_SMU_S3_990016.dgn

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 Bruce Klappenbach
 15825
 ENGINEER
 BRUCE D. KLAPPENBACH
 11/30/2022

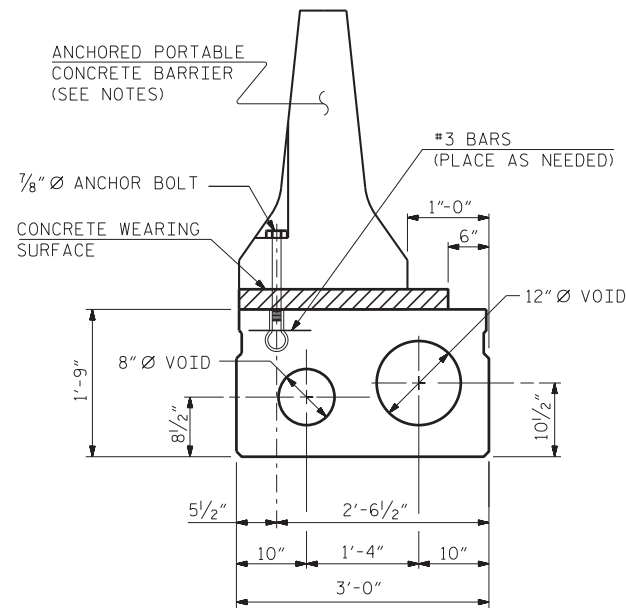
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 DETAILS

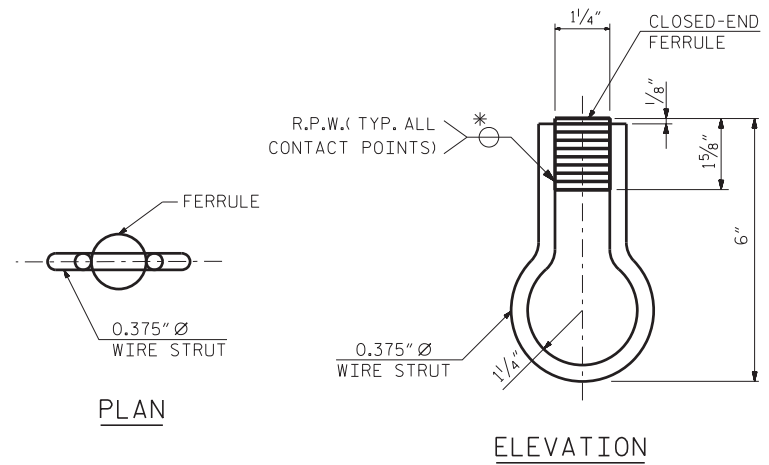
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1			3		
2			4		

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CONCRETE INSERT LOCATION
(TYP III UNIT)



STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE

NOTES:

THE STRUCTURAL CONCRETE INSERT 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 1 5/8".
- B. 1 - 7/8" Ø X 8 1/2" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø X 8 1/2" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATIVE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.
- D. STRUCTURAL CONCRETE INSERT ASSEMBLIES SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

THE COST OF THE STRUCTURAL CONCRETE INSERT ASSEMBLY, COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS.

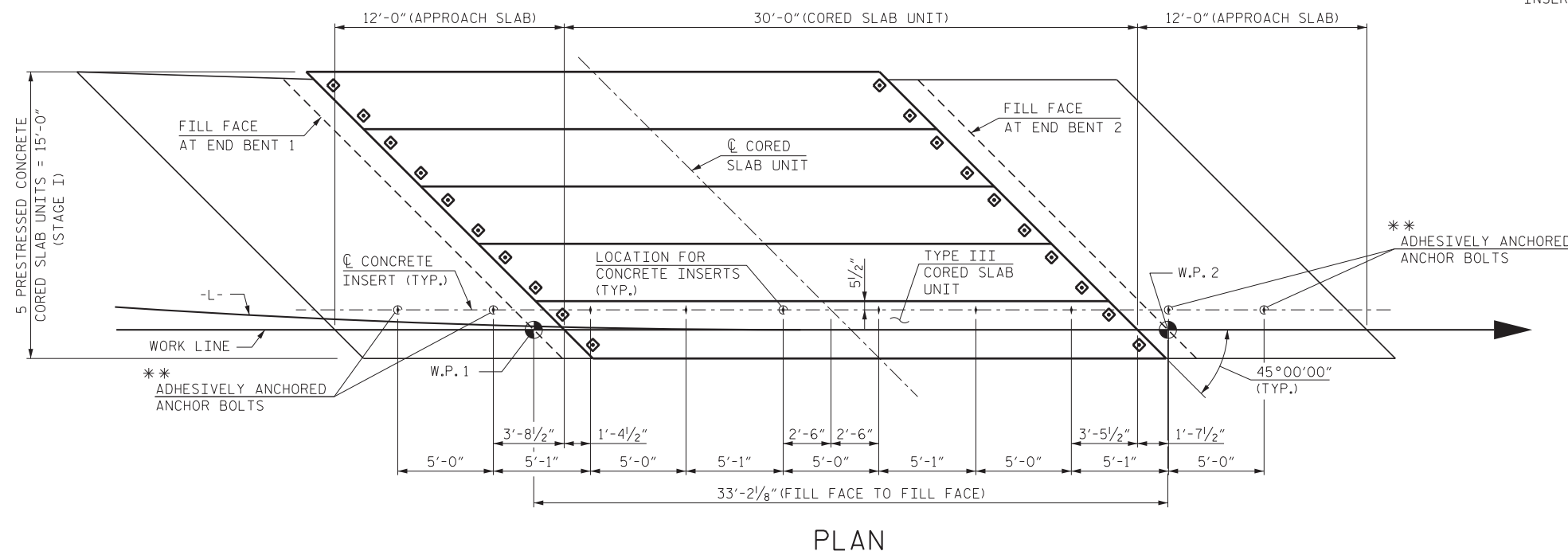
TO FACILITATE PLACEMENT OF THE STRUCTURAL CONCRETE INSERT ASSEMBLIES, #3 BARS MAY BE TIED TO THE #4 B4 BARS IN THE CORED SLAB UNITS. THE COST OF THE #3 BARS SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS.

STIRRUPS IN THE CORED SLAB UNITS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR STRUCTURAL CONCRETE INSERT ASSEMBLIES.

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

SEE TRAFFIC CONTROL PLANS FOR PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER.

AFTER REMOVAL OF ANCHORED PORTABLE CONCRETE BARRIER, THE STRUCTURAL CONCRETE INSERTS SHALL BE FILLED WITH GROUT.



PLAN

PROJECT NO. 41665.3A
YANCEY COUNTY
STATION: 12+95.00 -L-

** SEE "ADHESIVE BONDING SYSTEM ANCHOR METHOD" ON ROADWAY STANDARD NO. 1170.01 FOR DETAILS.

DRAWN BY : B. H. GONFA DATE : JUL 2022
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DESIGN ENGINEER OF RECORD : B. D. KLAPPENBACH DATE : JUL 2022

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ANCHORED PORTABLE CONCRETE BARRIER DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			28

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIALS AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

CLOSURE PLATES: CLOSURE PLATES SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE, EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

MATERIAL FOR ANCHOR STUDS SHALL BE ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. STUDS TO BE EMBEDDED 7" IN CONCRETE. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THICK, CLASS 2B THREAD, AND MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ANCHOR SHALL BE AASHTO M270 GRADE 36.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS, NUTS AND WASHERS SHALL MEET THE SAME REQUIREMENTS AS THE ANCHOR STUDS, NUTS AND WASHERS FOR USE WITH THE ANCHOR ASSEMBLY.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 43.00 LIN. FT.

PROJECT NO. 41665.3A
YANCEY COUNTY
STATION: 12+95.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**STANDARD
1 BAR METAL RAIL**

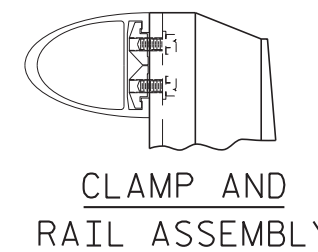
BRIDGE NO. 990016

BRUCE KLAPPENBACH
15825
ENGINEER

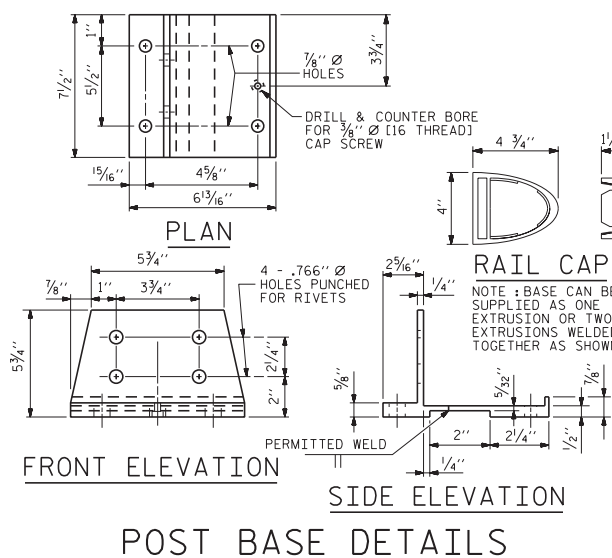
11/30/2022

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SHEET NO. S-12
TOTAL SHEETS 28

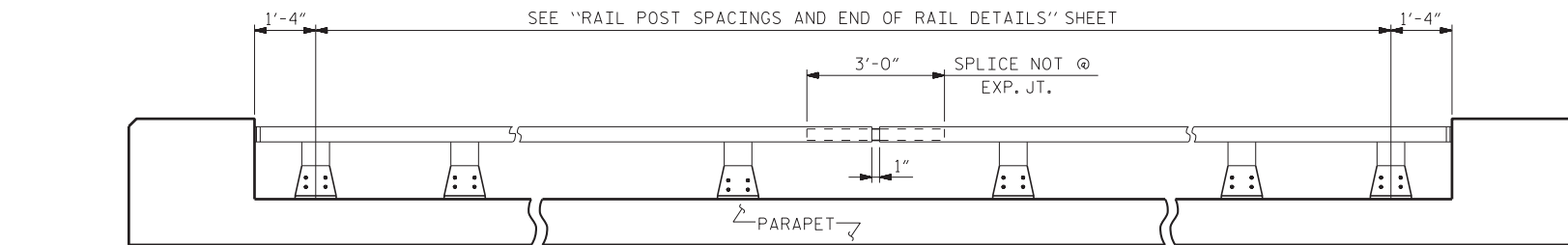


CLAMP AND RAIL ASSEMBLY

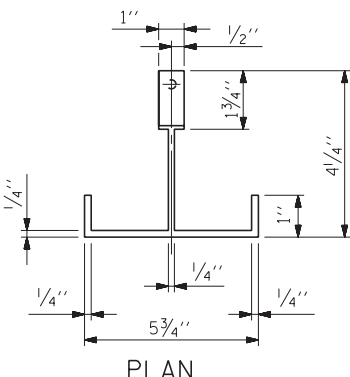


POST BASE DETAILS

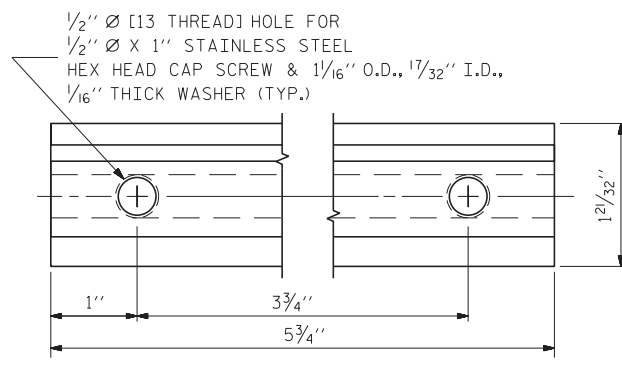
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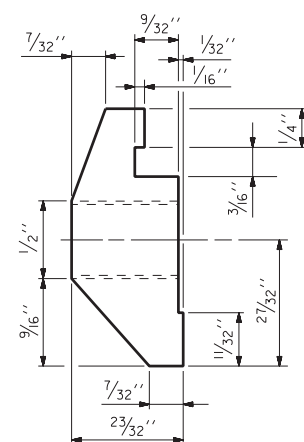
NOTE:
FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 2 OF 3.



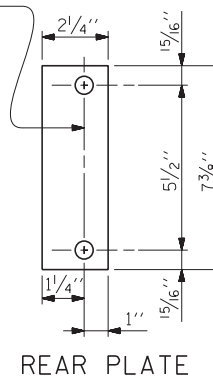
PLAN



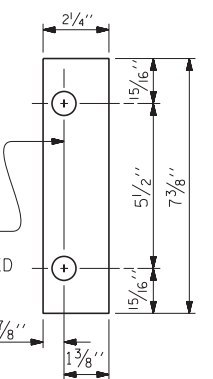
CLAMP BAR DETAIL
(2 REQUIRED PER POST)



RIVET DETAIL

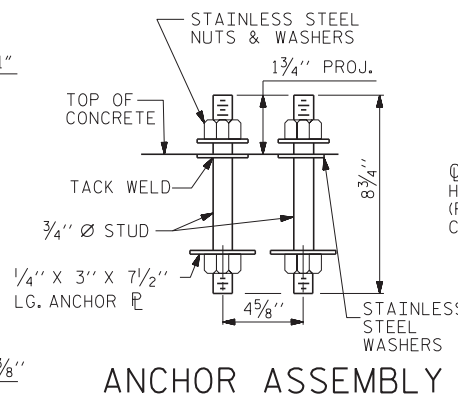


REAR PLATE

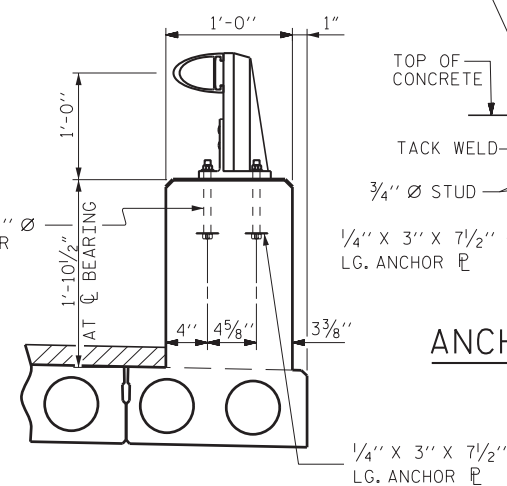


FRONT PLATE SHIM DETAILS

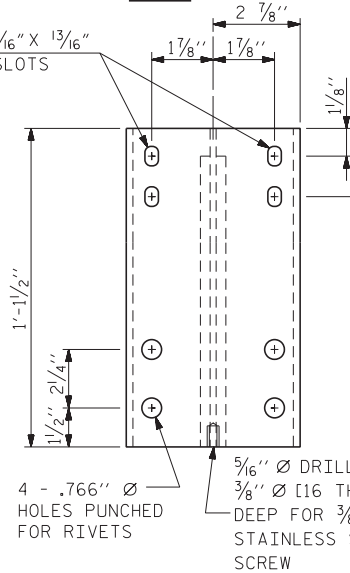
NOTE: SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT



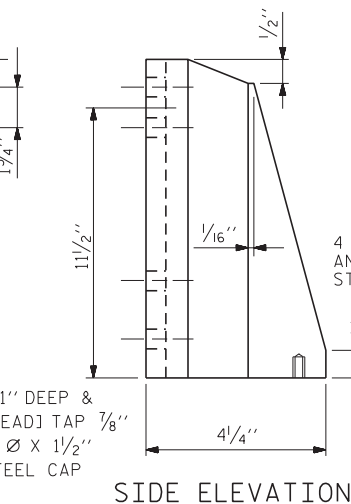
ANCHOR ASSEMBLY



SECTION THRU PARAPET AND RAIL

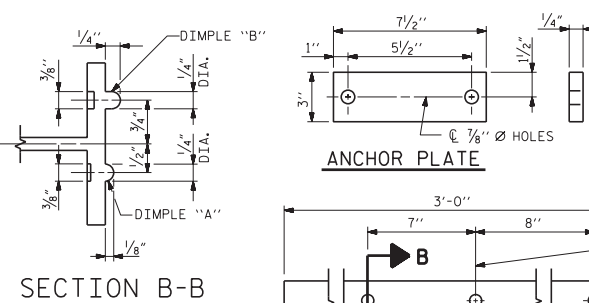


FRONT ELEVATION



SIDE ELEVATION

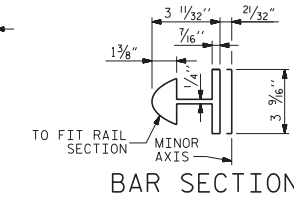
DETAILS OF POST



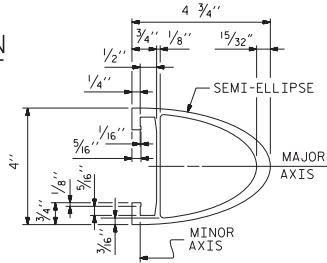
ANCHOR PLATE

SECTION B-B

EXPANSION BAR DETAILS



BAR SECTION



RAIL SECTION

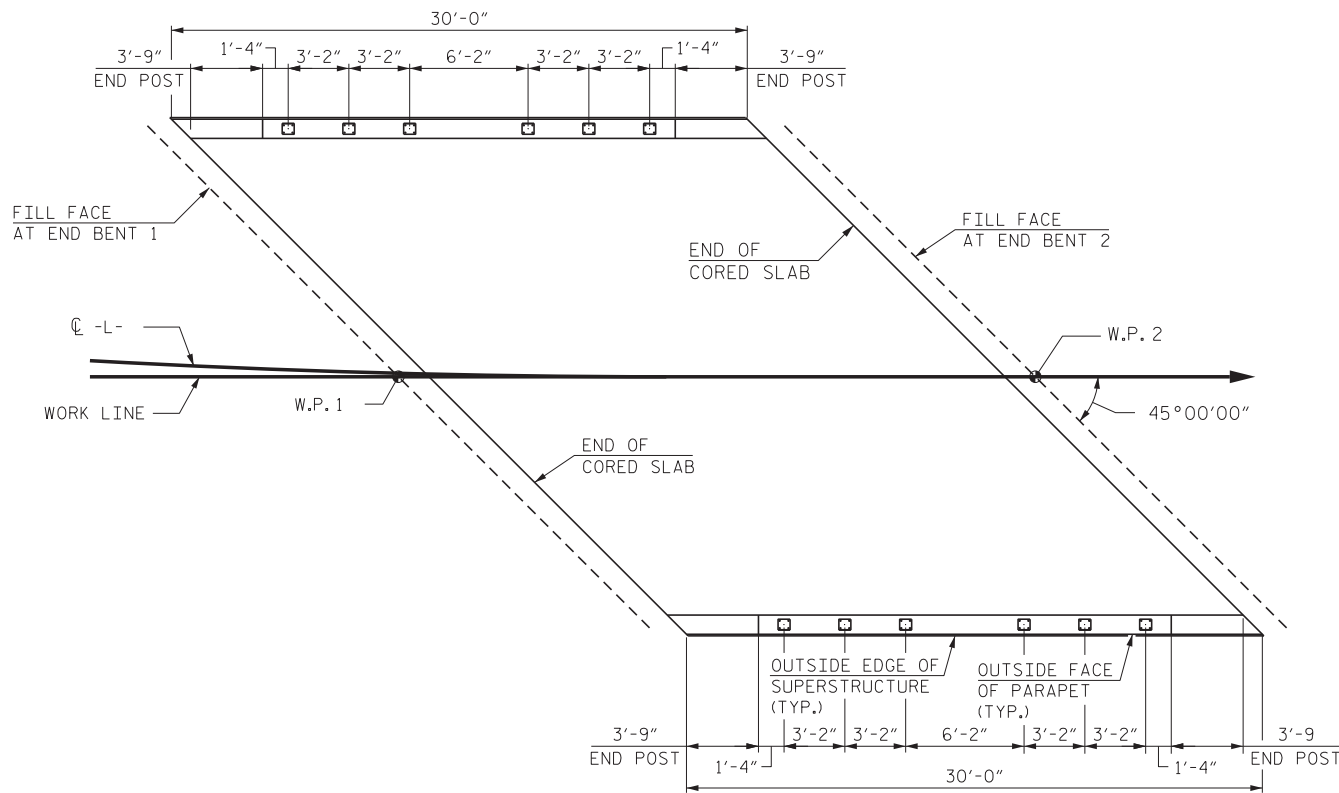
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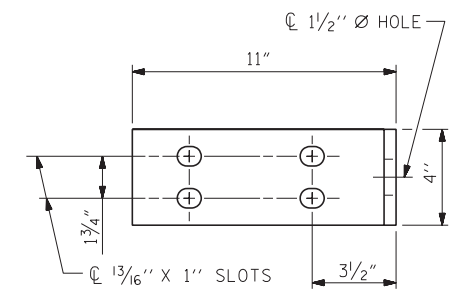
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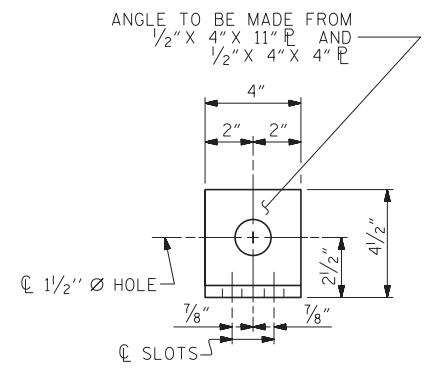
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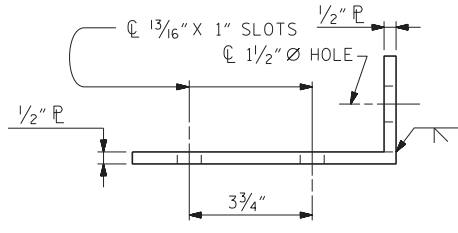
PLAN OF RAIL POST SPACINGS



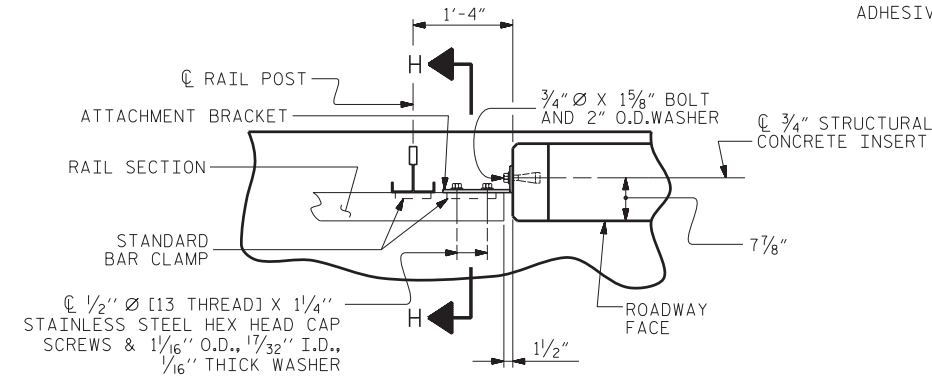
ELEVATION



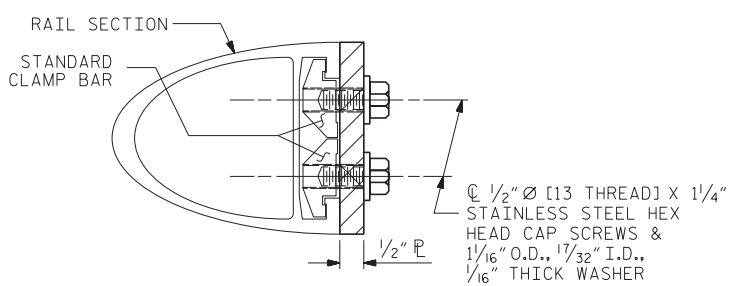
END VIEW



TOP VIEW



PLAN - RAIL AND END POST



SECTION H-H

DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES

STRUCTURAL CONCRETE INSERT

- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
 - 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
 - WIRE STRUT SHOWN IN THE CONCRETE INSERT 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.

NOTES

METAL RAIL TO END POST CONNECTION

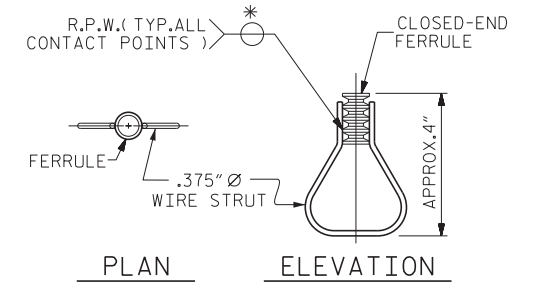
- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N.C. THREADS.
 - CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
 - STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



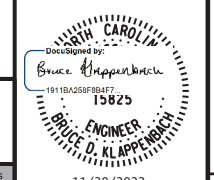
STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

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 YANCEY COUNTY
 STATION: 12+95.00 -L-

SHEET 2 OF 3

BRIDGE NO. 990016



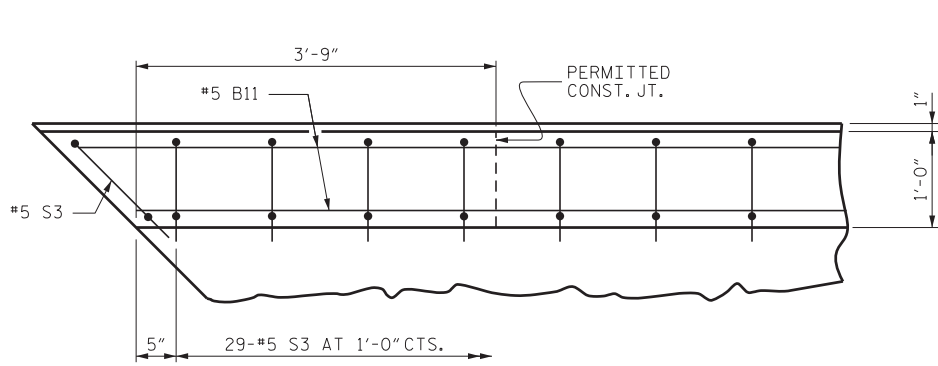
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 MISCELLANEOUS
 RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			28

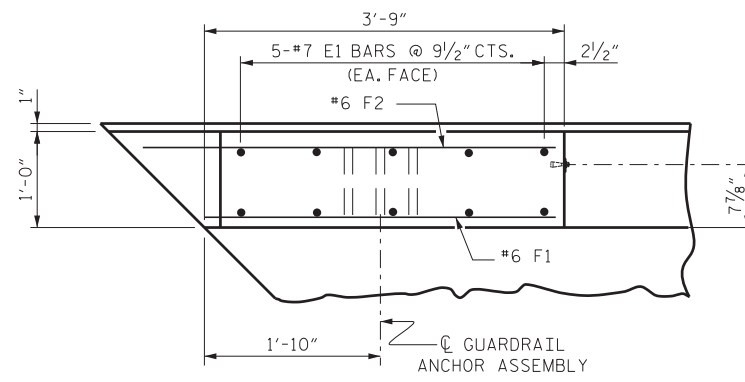
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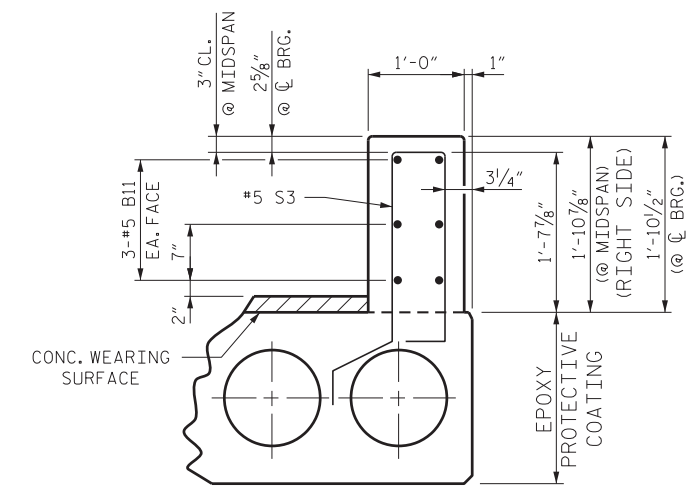
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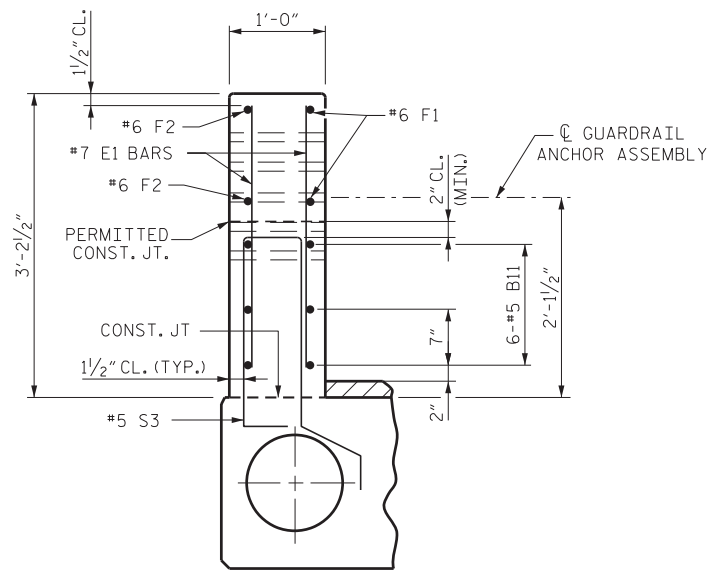
PLAN OF PARAPET



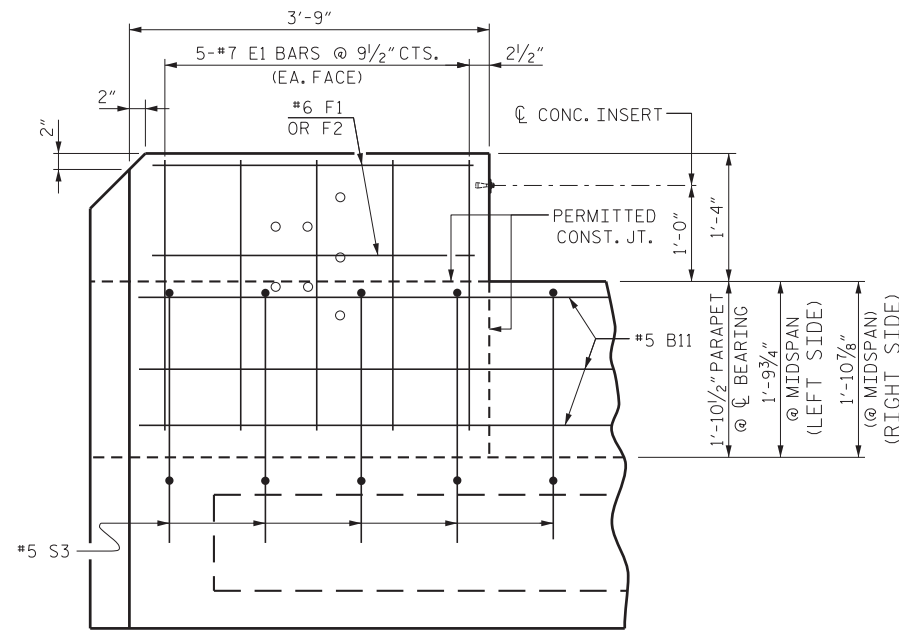
PLAN OF END POST



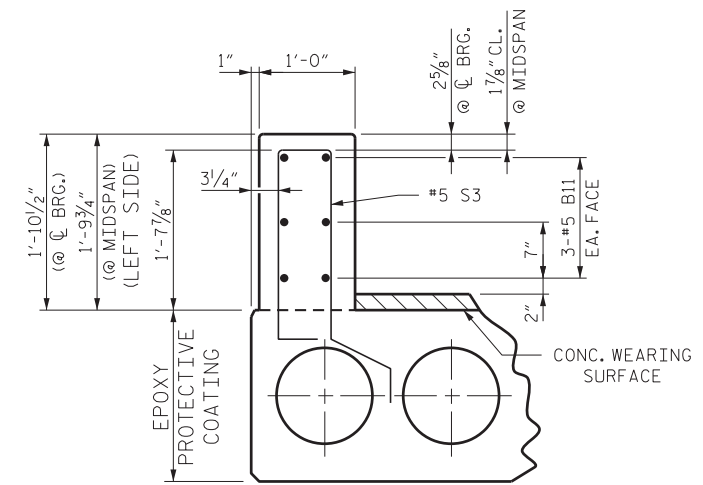
ONE BAR METAL RAIL PARAPET SECTION RIGHT SIDE



END VIEW



ELEVATION



ONE BAR METAL RAIL PARAPET SECTION LEFT SIDE

PARAPET AND END POST FOR ONE BAR RAIL

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 STATION: 12+95.00 -L-

SHEET 3 OF 3

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BRIDGE NO. 990016
 DESIGNED BY:
 Bruce Klappenbach
 15825
 ENGINEER
 BRUCE D. KLAPPENBACH
 11/30/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 MISCELLANEOUS
 CONCRETE PARAPET
 AND END POST DETAILS

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1			3		
2			4		

TOTAL SHEETS: 28

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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.

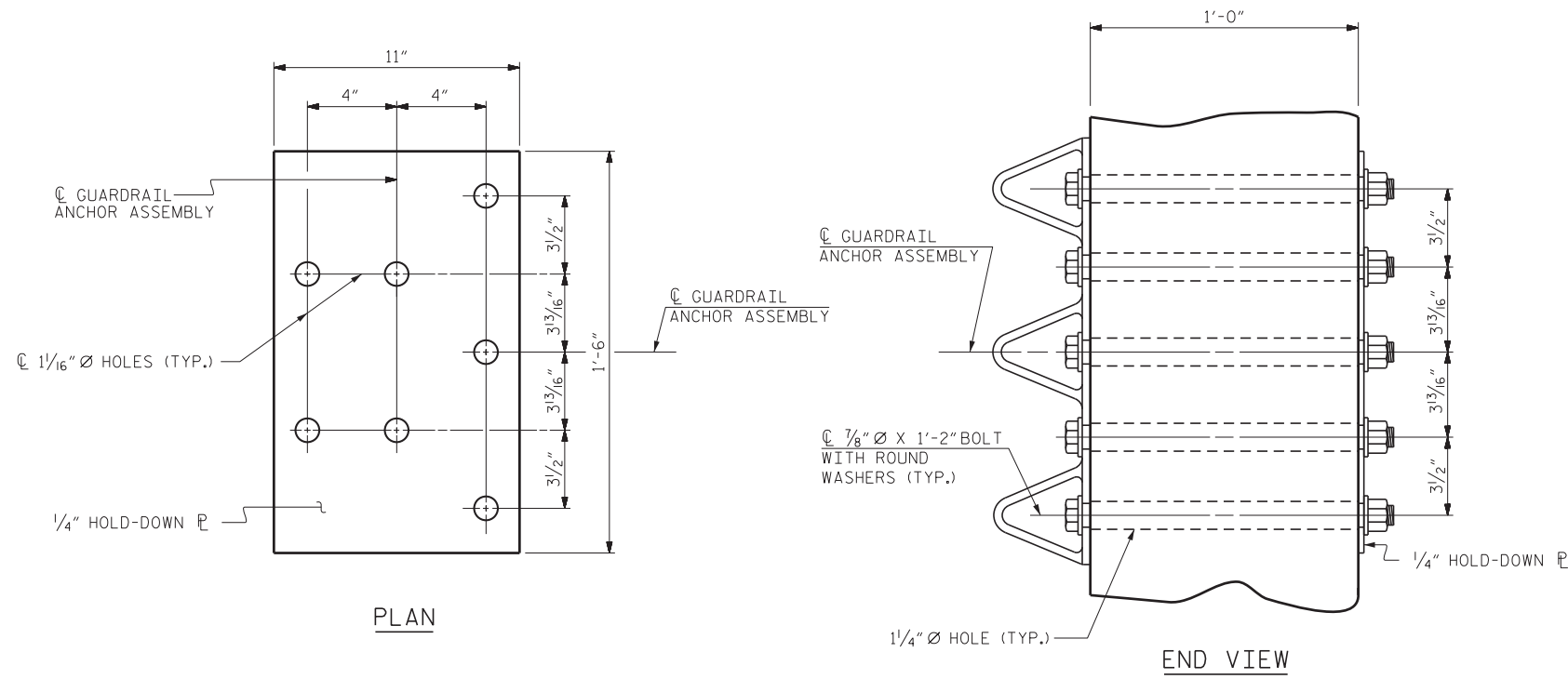
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST 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.

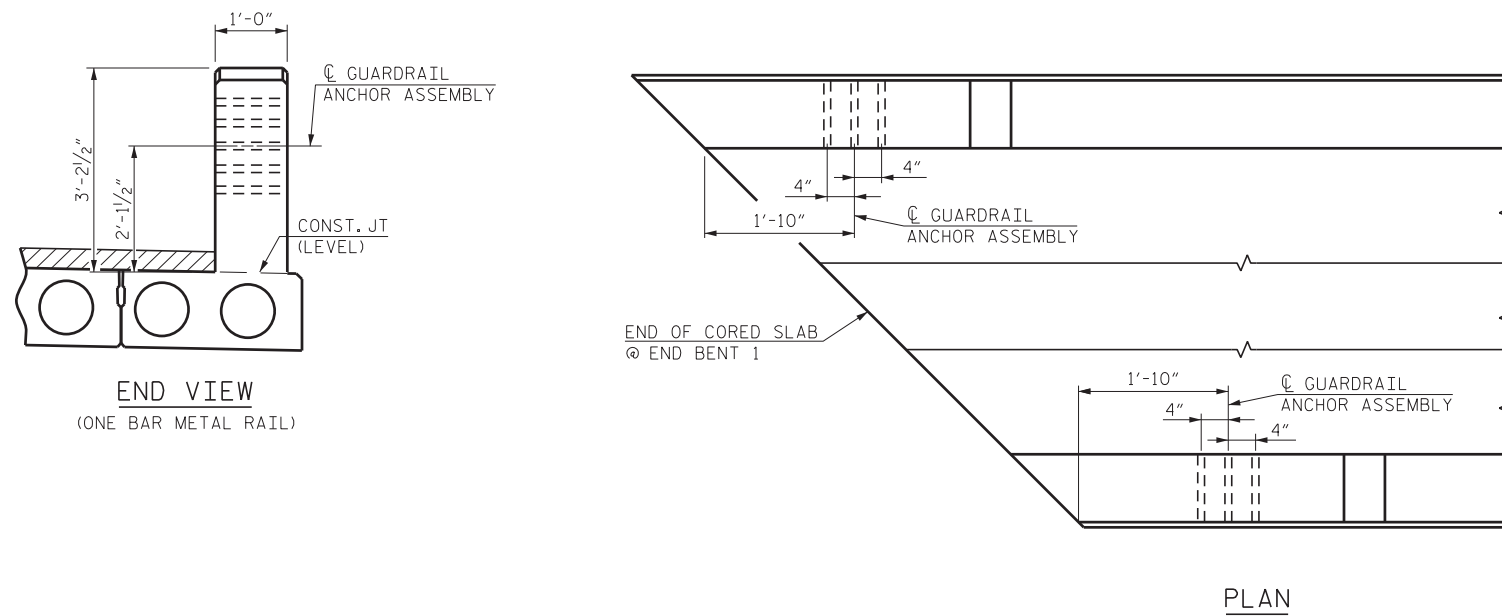


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

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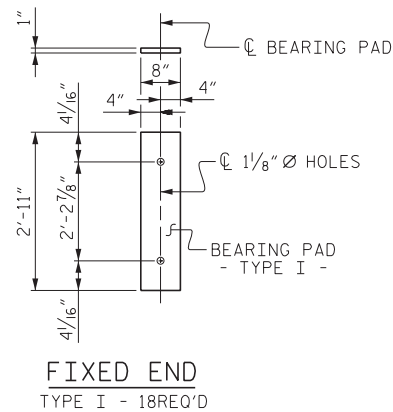
STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
STANDARD					
GUARDRAIL ANCHORAGE					
DETAILS FOR					
METAL RAILS					
BRIDGE NO. 990016					
DocuSigned by: Bruce Klappenbach 15825 BRUCE D. KLAPPENBACH ENGINEER					
11/30/2022					
REVISIONS					
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1			3		
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SHEET NO.					S-15
TOTAL SHEETS					28

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ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

BILL OF MATERIAL FOR ONE 30' CORED SLAB UNIT							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	2	#4	STR.	29'-7"	40	29'-7"	40
S1	8	#5	3	5'-0"	42	5'-0"	42
S2	58	#4	3	5'-4"	207	5'-4"	207
*S3	31	#5	1	6'-2"	199		
S5	4	#4	3	5'-6"	15	5'-6"	15
S6	4	#4	3	5'-8"	15	5'-8"	15
S7	4	#4	3	5'-10"	16	5'-10"	16
S8	4	#4	3	6'-2"	16	6'-2"	16
S9	4	#5	3	6'-5"	27	6'-5"	27
S10	8	#3	2	3'-6"	11	3'-6"	11
REINFORCING STEEL				LBS.	389		389
* EPOXY COATED REINFORCING STEEL				LBS.	199		
5000 P.S.I. CONCRETE				CU. YDS.	4.6		4.6
0.6" Ø L.R. STRANDS				No.	9		9

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-9"
30' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/16" ↓
FINAL CAMBER	3/16" ↑

** INCLUDES FUTURE WEARING SURFACE

CONCRETE RELEASE STRENGTH	
UNIT	PSI
30' UNITS	4000

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
30' UNIT			
EXTERIOR C.S.	2	30'-0"	60'-0"
INTERIOR C.S.	7	30'-0"	210'-0"
TOTAL	9		270'-0"

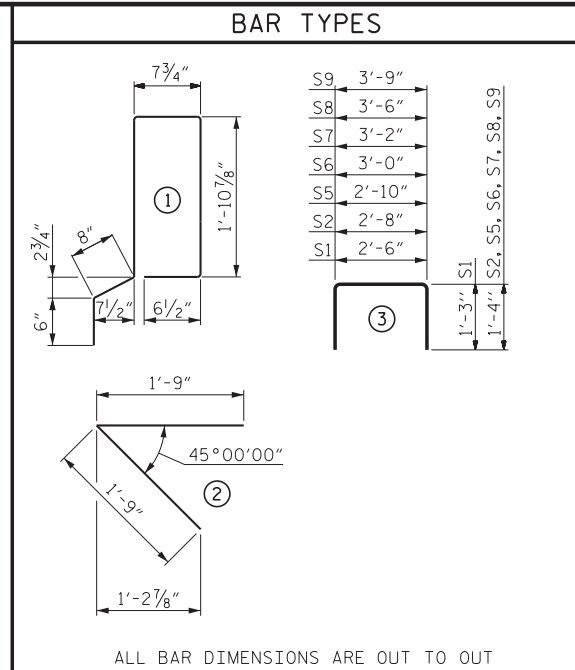
BILL OF MATERIAL FOR CONCRETE WEARING SURFACE					
STAGE I					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
*A1	48	#3	STR.	20'-11"	378
*B1	27	#3	STR.	29'-8"	301
* EPOXY COATED REINFORCING STEEL					679 LBS.
CONCRETE WEARING SURFACE					402.5 SQ. FT.

BILL OF MATERIAL FOR PARAPET AND END POSTS					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
*B11	12	#5	STR.	29'-6"	369
*E1	40	#7	STR.	2'-11"	238
*F1	8	#6	STR.	3'-5"	41
*F2	8	#6	STR.	4'-0"	48
* EPOXY COATED REINFORCING STEEL					696 LBS.
CLASS AA CONCRETE					5.0 CU. YDS.
1'-0" X 1'-10 1/2" CONCRETE PARAPET					60.0 LIN. FT.

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

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE					
STAGE II					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
*A2	48	#3	STR.	15'-10"	286
*B1	23	#3	STR.	29'-8"	257
* EPOXY COATED REINFORCING STEEL					543 LBS.
CONCRETE WEARING SURFACE					342.5 SQ. FT.

GROOVING BRIDGE FLOORS	
BRIDGE DECK	655.0 SQ. FT.
APPROACH SLAB	502.0 SQ. FT.
TOTAL	1,157.0 SQ. FT.



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 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 CONCRETE PARAPET 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, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CONCRETE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CONCRETE PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF THE CONCRETE PARAPET 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.

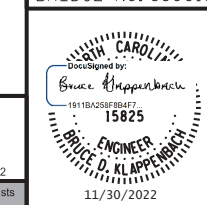
AT ALL FIXED AND EXPANSION ENDS OF ALL CORED SLAB SECTIONS WITH HOLD-DOWN ANCHOR BOLTS, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED AND THEN BACKED OFF 1/2" TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF ALL CORED SLAB SECTIONS WITH HOLD-DOWN ANCHOR BOLTS SHALL BE FILLED WITH NON-SHRINK GROUT TO THE BOTTOM OF THE ANCHOR BOLT BLOCKOUT PRIOR TO INSTALLING THE ANCHOR PLATES, WASHERS, AND NUTS.

THE ANCHOR BOLT BLOCKOUTS IN ALL CORED SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT PRIOR TO PLACEMENT OF THE WEARING SURFACE.

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
MISCELLANEOUS 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 45° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.

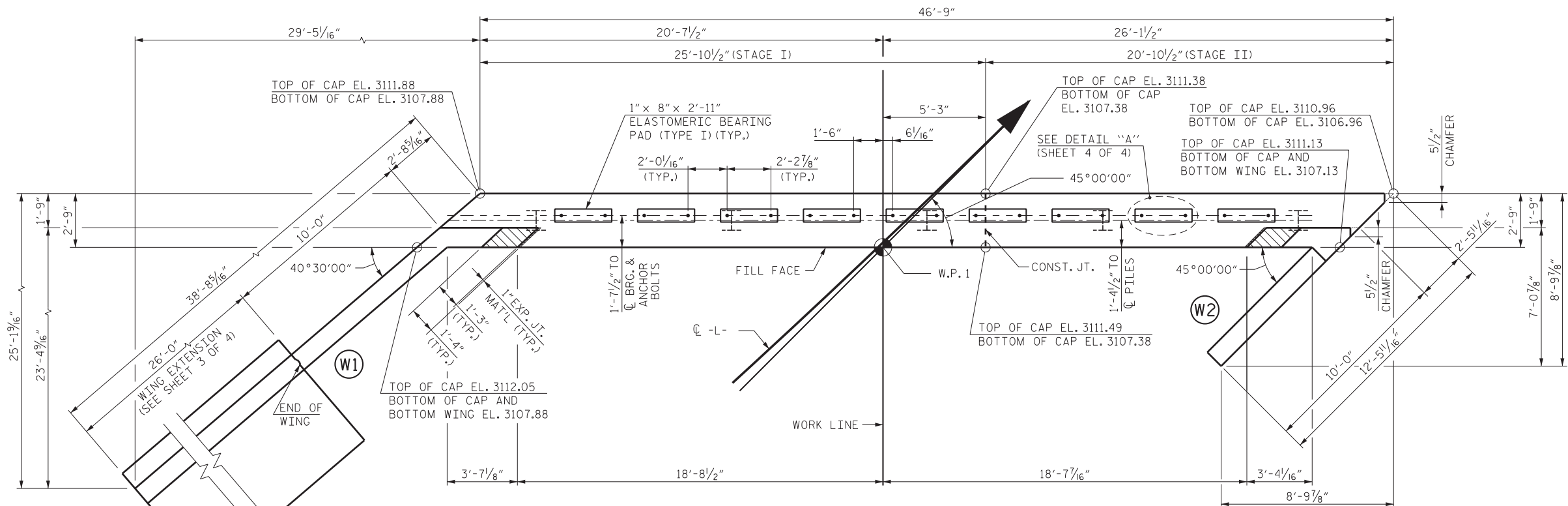
S-16

TOTAL SHEETS

28

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DESIGN ENGINEER OF RECORD : B. D. KLAPPENBACH DATE : JUL 2022



PLAN

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

FOR "TEMPORARY DRAINAGE AT END BENT" DETAIL, SEE SHEET 4 OF 4.

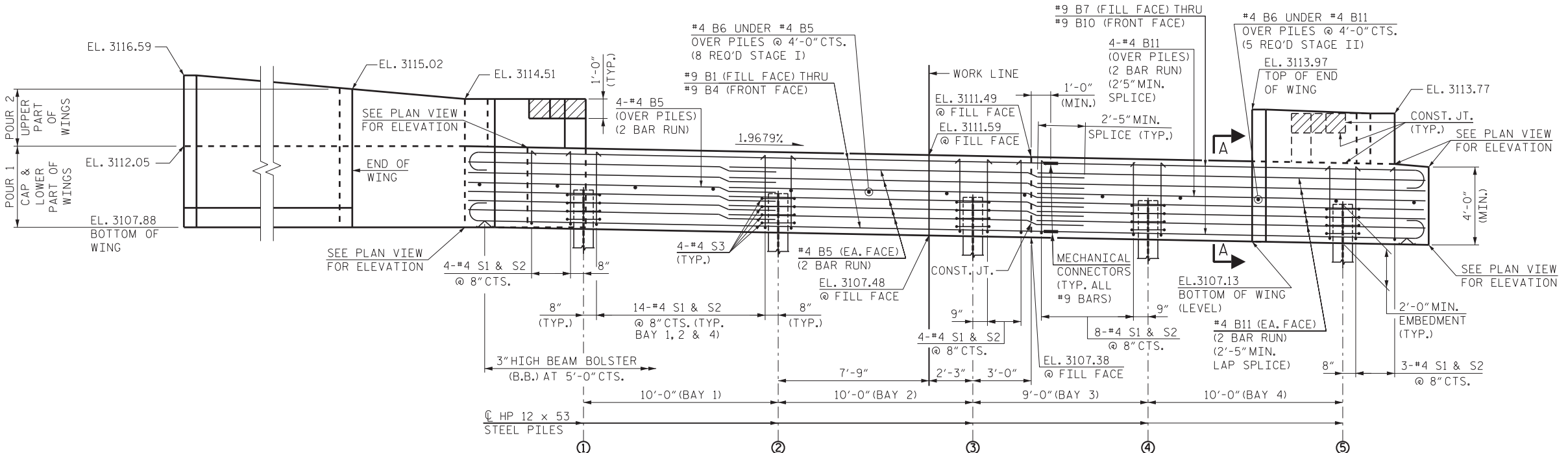
FOR WING DETAILS, SEE SHEET 2, AND 3 OF 4.

FOR PILE SPLICE DETAILS, SEE END BENT 2, SHEET 4 OF 4.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. ANCHOR PLATES, WASHERS, AND NUTS SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS. ANCHOR BOLTS, ANCHOR PLATES, WASHERS, AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

NO SEPARATE PAYMENT SHALL BE MADE FOR THE ANCHOR BOLTS, ANCHOR PLATES, WASHERS, AND NUTS. THE COST OF THE MATERIAL AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

TOP OF PILE ELEVATION TABLE	
NO.	ELEVATION
1	3109.79
2	3109.63
3	3109.47
4	3109.32
5	3109.16



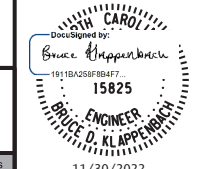
ELEVATION

FOR SECTION A-A, SEE SHEET 4 OF 4.

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SHEET 1 OF 4

BRIDGE NO. 990016



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**SUBSTRUCTURE
END BENT 1
PLAN AND ELEVATION**

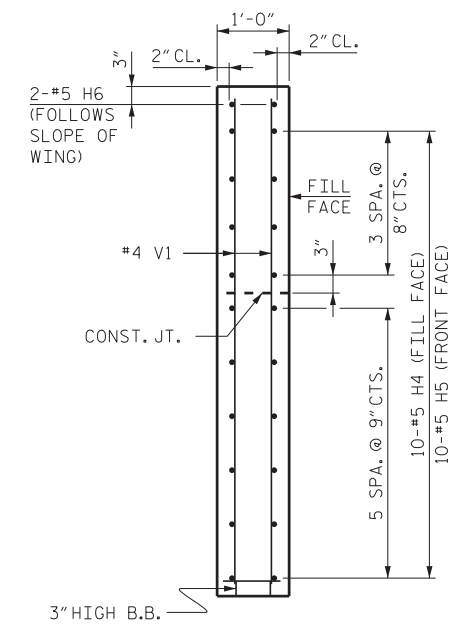
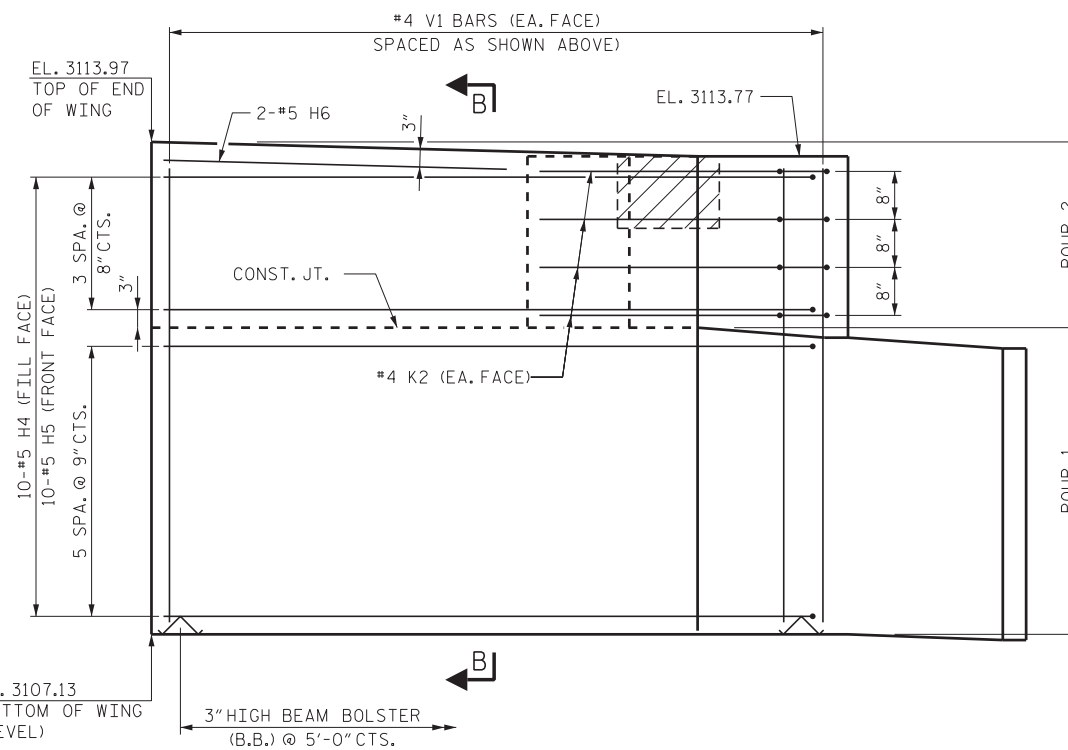
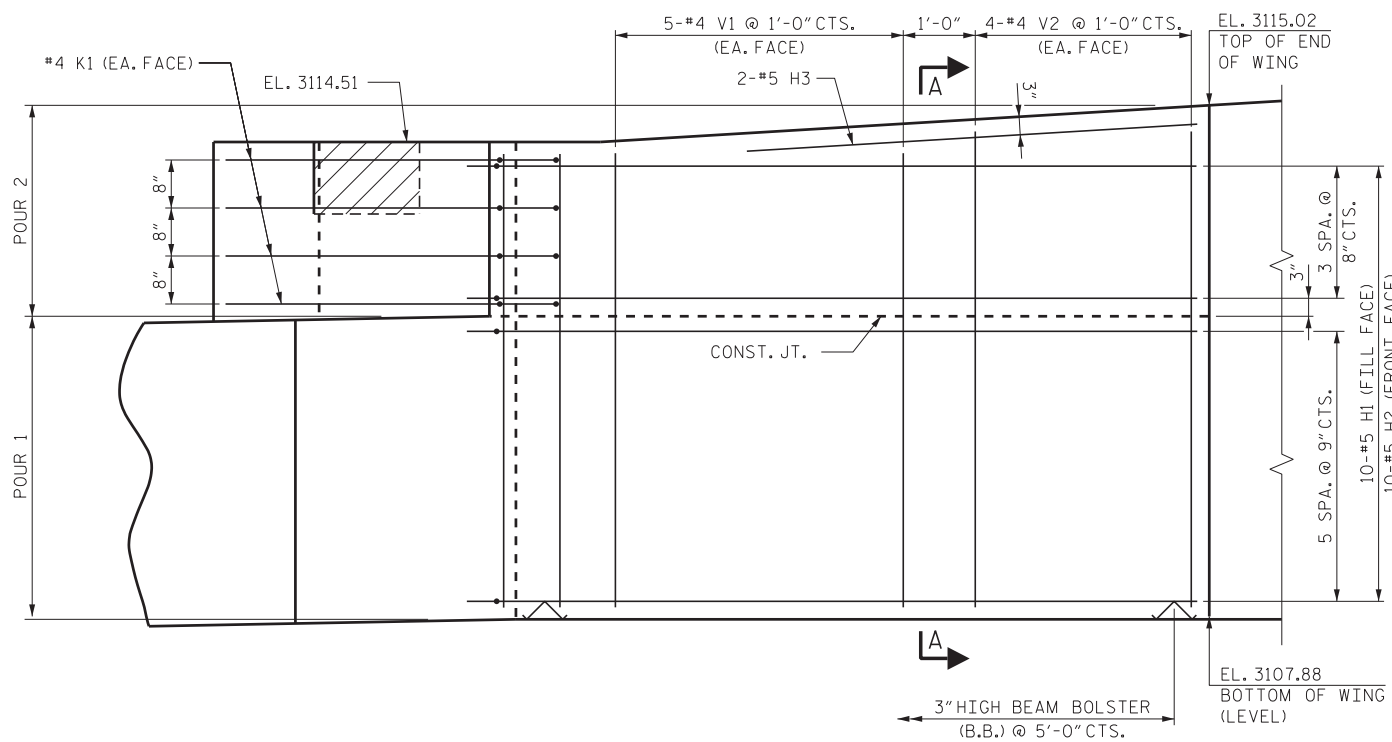
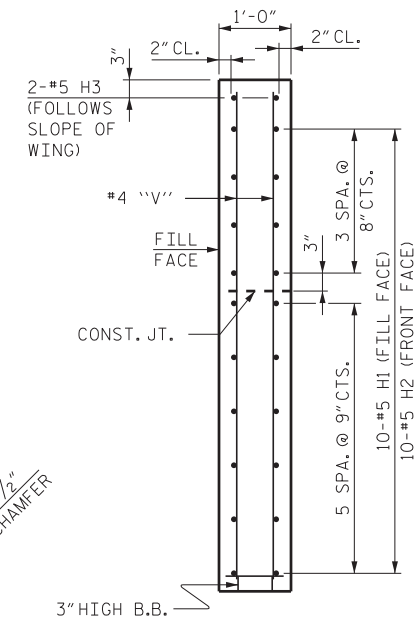
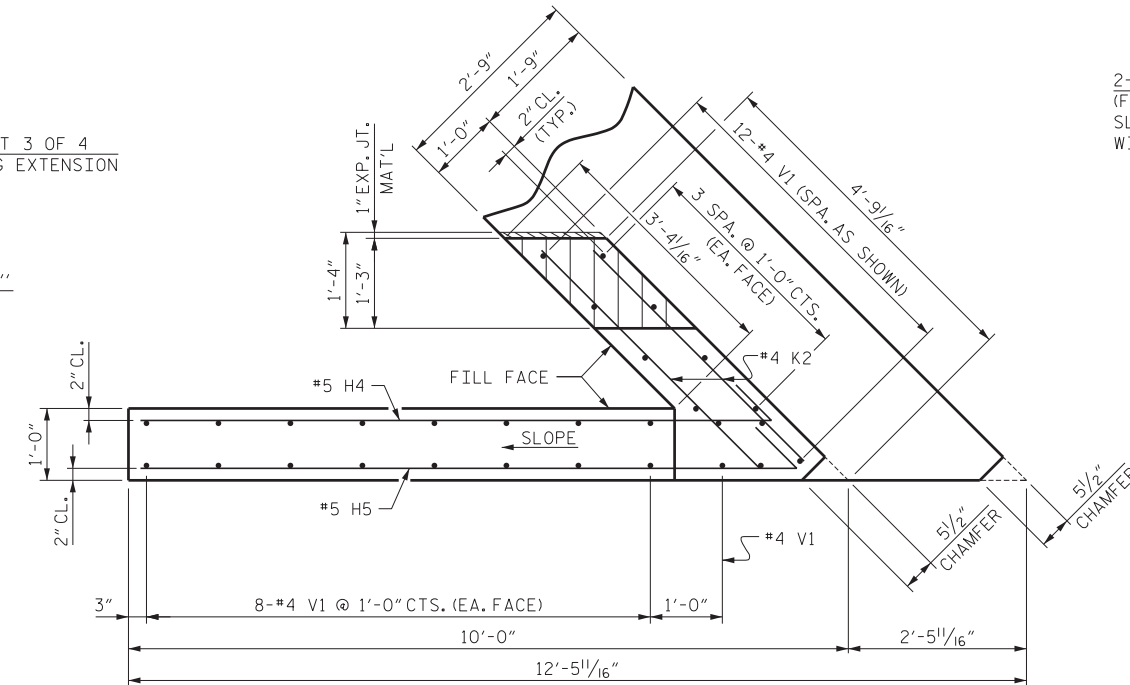
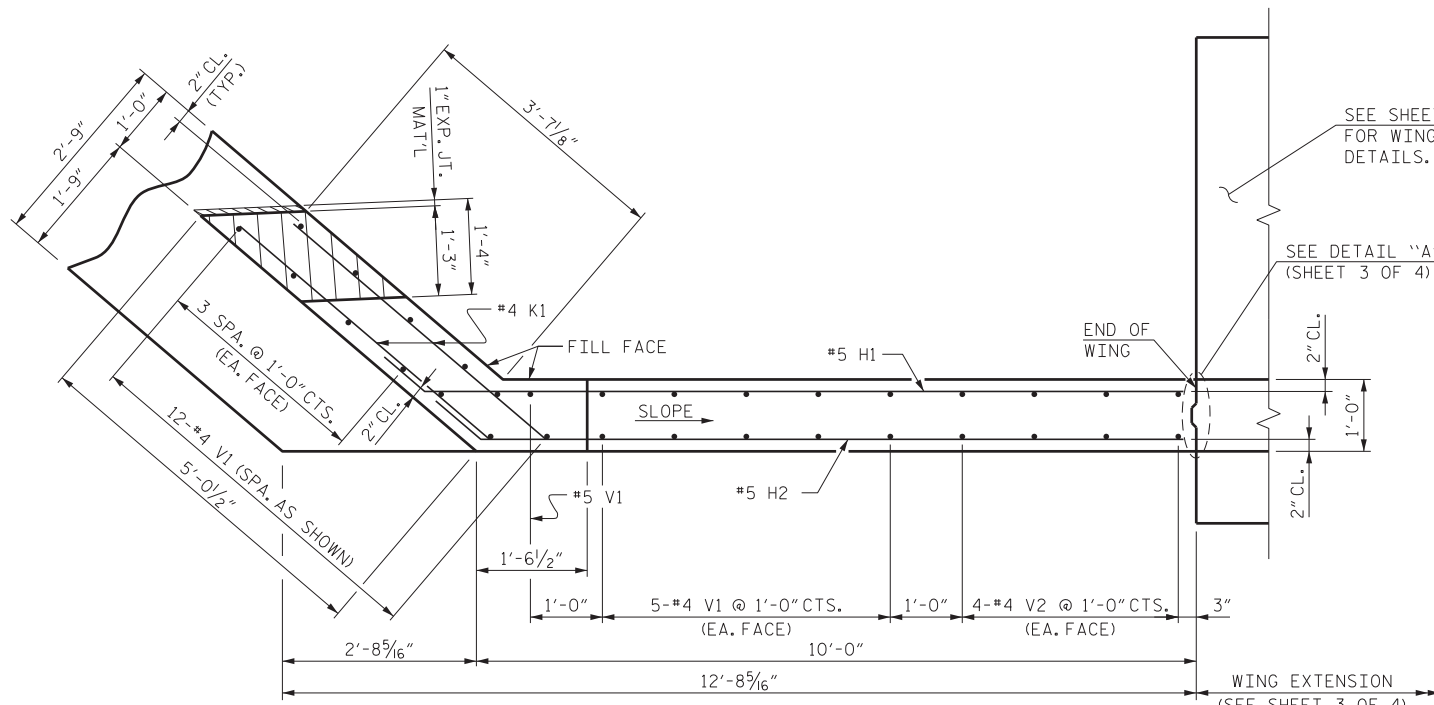


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1		TOTAL SHEETS
2		28

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DESIGN ENGINEER OF RECORD : B. D. KLAPPENBACH DATE : JUL 2022



ELEVATION OF WING (W1) (STAGE I)

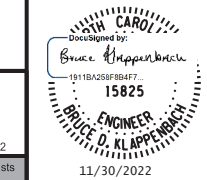
ELEVATION OF WING (W2) (STAGE II)

WING DETAILS

PROJECT NO. 41665.3A
 YANCEY COUNTY
 STATION: 12+95.00 -L-

SHEET 2 OF 4

BRIDGE NO. 990016



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 WINGWALL DETAIL

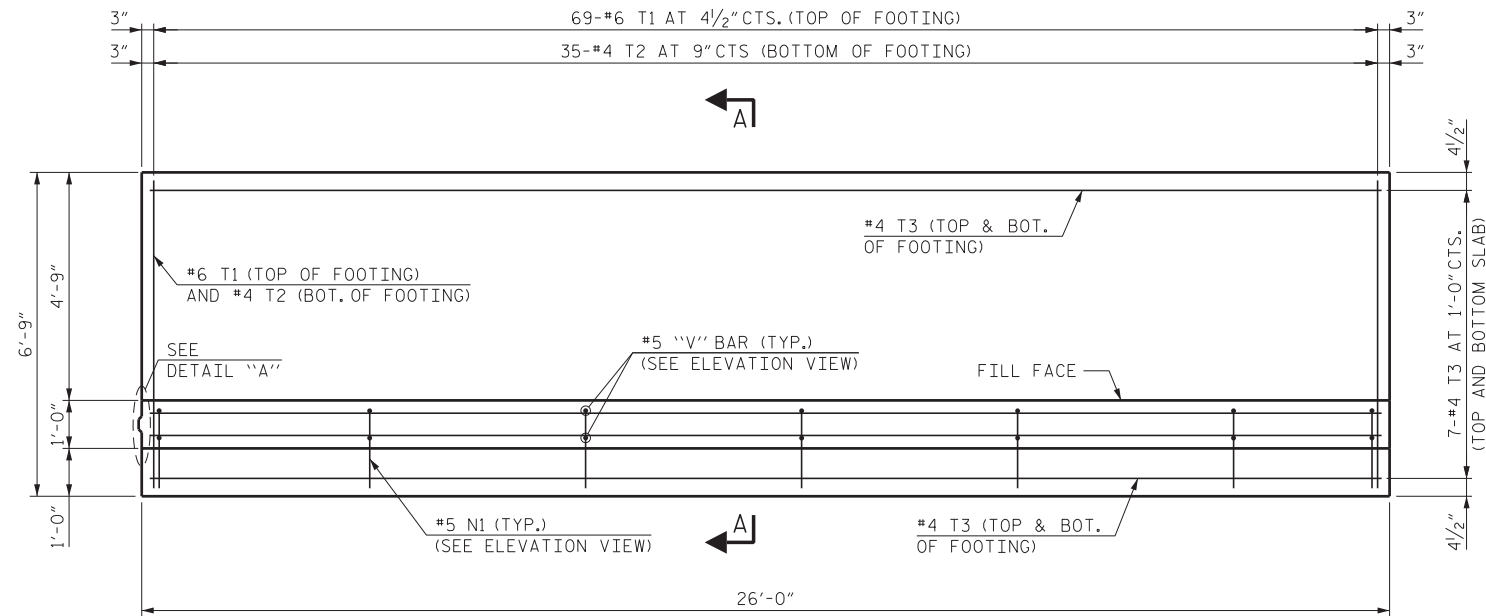
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1			3		
2			4		

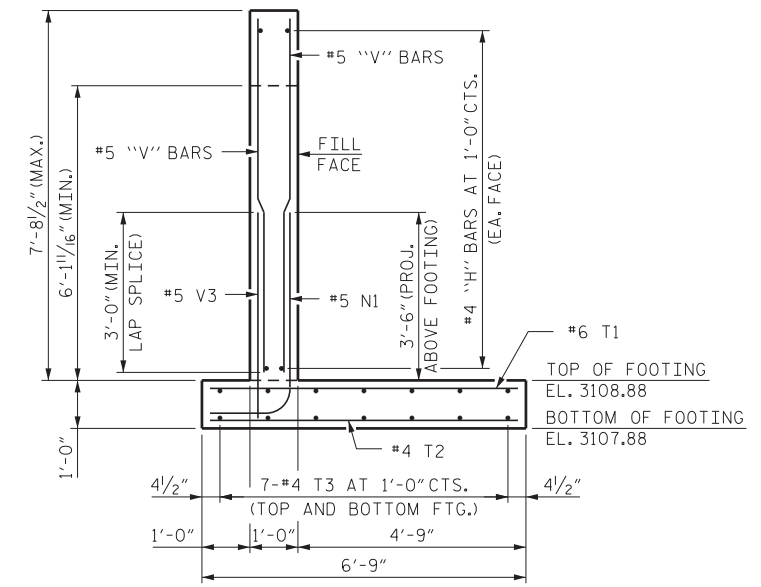
TOTAL SHEETS: 28

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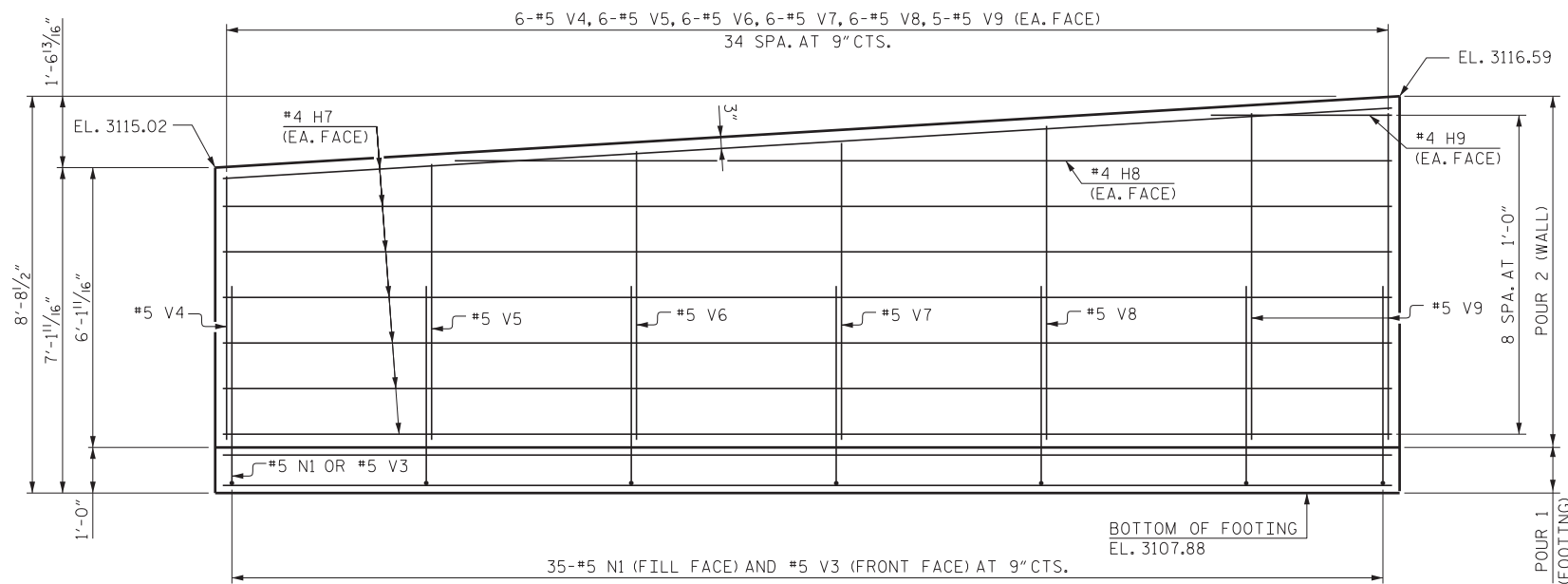
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PLAN

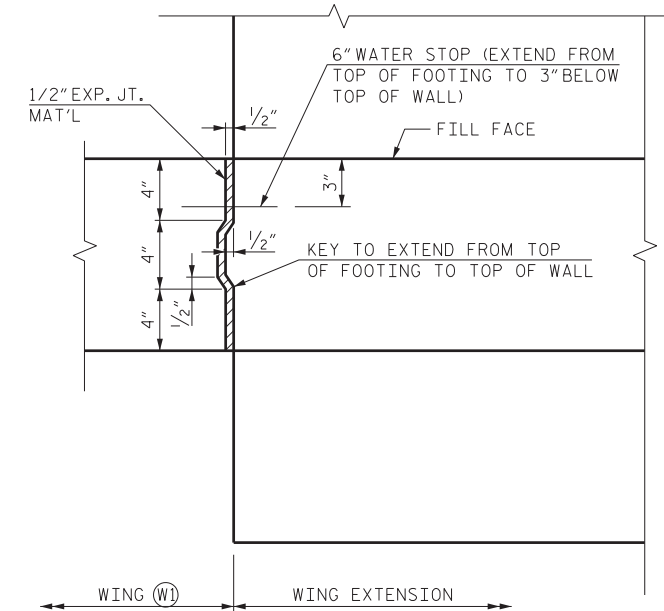


SECTION A-A



ELEVATION

WING EXTENSION DETAILS



DETAIL A

PROJECT NO. 41665.3A
 YANCEY COUNTY
 STATION: 12+95.00 -L-

SHEET 3 OF 4

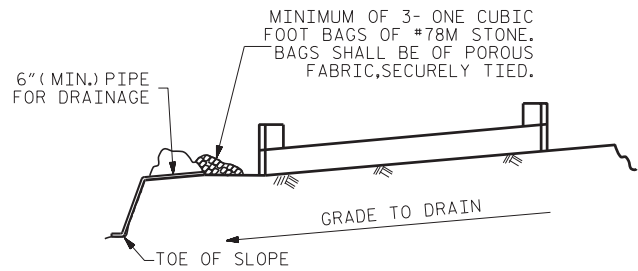
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BRIDGE NO. 990016
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 WING EXTENSION
 AT END BENT 1
 (STAGE I)
 11/30/2022

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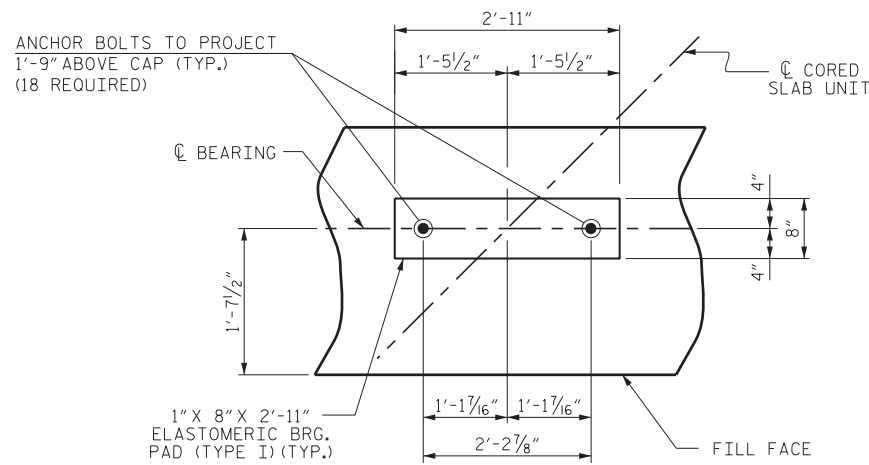


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

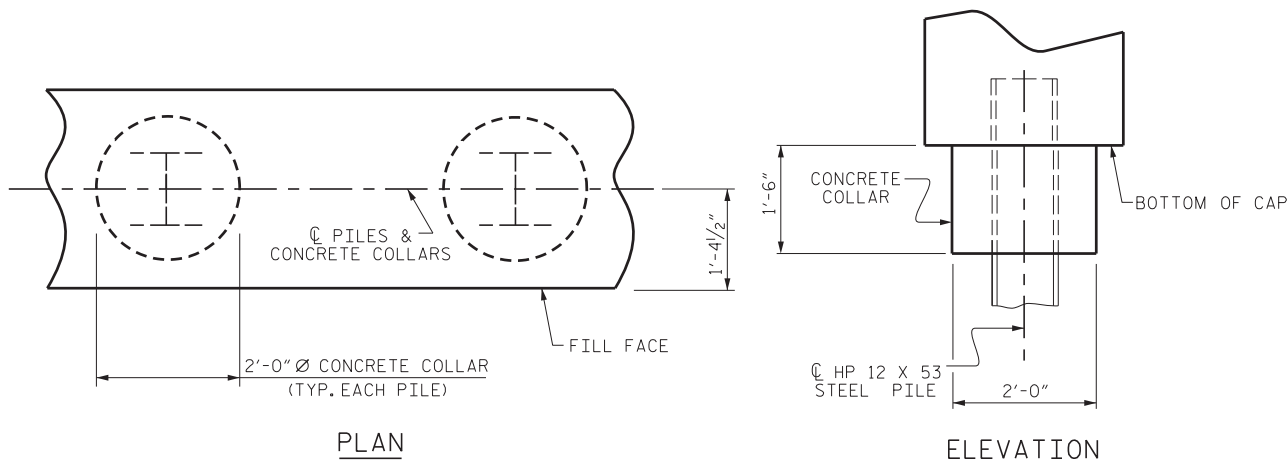
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

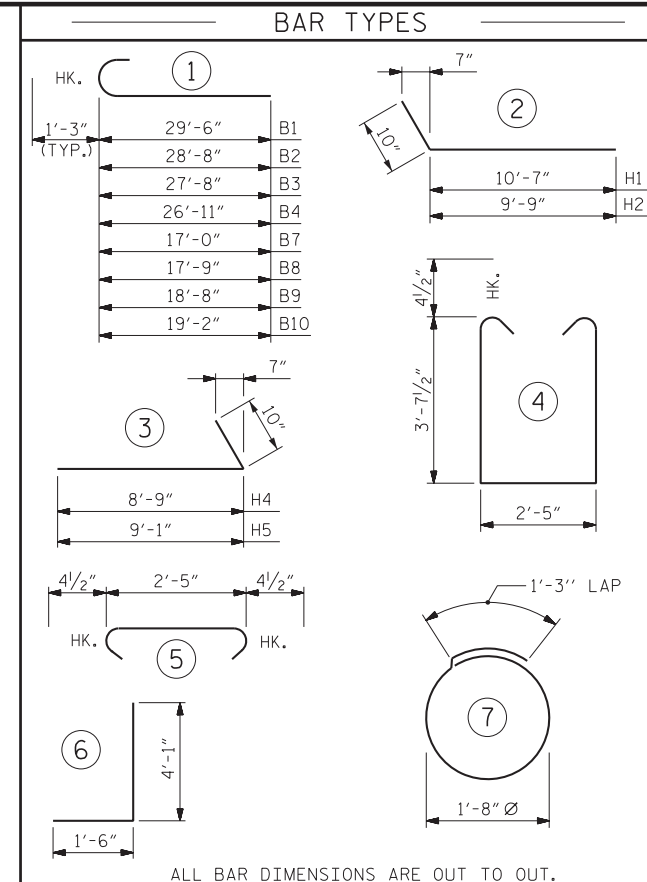


DETAIL "A"

(TOTAL OF 18 - 7/8" Ø X 2'-11" ANCHOR BOLTS REQUIRED AT END BENT 1)

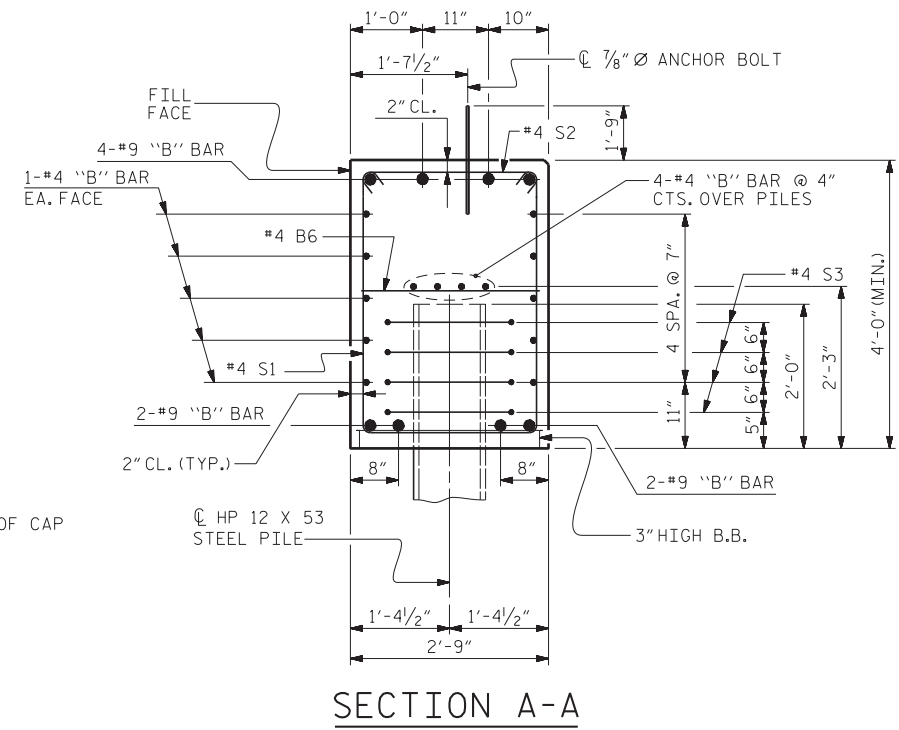


CORROSION PROTECTION FOR STEEL PILES DETAIL



BILL OF MATERIAL											
END BENT 1 (STAGE 1)					END BENT 1 (STAGE 2)						
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	2	#9	1	30'-9"	209	B6	5	#4	STR.	2'-5"	8
B2	2	#9	1	29'-11"	203	B7	2	#9	1	18'-3"	124
B3	2	#9	1	28'-11"	197	B8	2	#9	1	19'-0"	129
B4	2	#9	1	28'-2"	192	B9	2	#9	1	19'-11"	135
B5	28	#4	STR.	16'-9"	313	B10	2	#9	1	20'-5"	139
B6	8	#4	STR.	2'-5"	13	B11	28	#4	STR.	11'-4"	212
H1	10	#5	2	11'-5"	119	H4	10	#5	3	9'-7"	100
H2	10	#5	2	10'-7"	110	H5	10	#5	3	9'-11"	103
H3	2	#5	STR.	6'-6"	14	H6	2	#5	STR.	5'-9"	12
H7	14	#4	STR.	25'-8"	240						
H8	2	#4	STR.	21'-11"	29	K2	8	#4	STR.	4'-0"	21
H9	2	#4	STR.	5'-4"	7						
					S1	25	#4	4	10'-5"	174	
					K1	8	#4	STR.	4'-7"	24	
					S2	25	#4	5	3'-9"	63	
					S3	8	#4	7	6'-6"	35	
					N1	35	#5	6	5'-7"	204	
					V1	29	#4	STR.	6'-2"	119	
					S1	36	#4	4	10'-5"	251	
					S2	36	#4	5	3'-9"	90	
					S3	12	#4	7	6'-6"	52	
					T1	69	#6	STR.	6'-3"	648	
					T2	35	#4	STR.	6'-3"	146	
					T3	14	#4	STR.	25'-6"	238	
					V1	23	#4	STR.	6'-2"	95	
					V2	8	#4	STR.	6'-5"	34	
					V3	35	#5	STR.	4'-1"	149	
					V4	12	#5	STR.	5'-9"	72	
					V5	12	#5	STR.	6'-0"	75	
					V6	12	#5	STR.	6'-3"	78	
					V7	12	#5	STR.	6'-7"	82	
					V8	12	#5	STR.	6'-10"	86	
					V9	10	#5	STR.	7'-1"	74	

REINFORCING STEEL (STAGE 1)	REINFORCING STEEL (STAGE 2)
4,044 LBS.	1,374 LBS.
CLASS A CONCRETE BREAKDOWN (STAGE 1)	CLASS A CONCRETE BREAKDOWN (STAGE 2)
POUR #1 CAP, LOWER PART OF WING & COLLARS 13.5 C.Y.	POUR #1 CAP, LOWER PART OF WING & COLLARS 13.8 C.Y.
POUR #2 UPPER PART OF WING 1.2 C.Y.	POUR #2 UPPER PART OF WING 1.3 C.Y.
POUR #1 WING EXT. FTG. 6.5 C.Y.	
POUR #2 WING EXT. WALL 6.6 C.Y.	
TOTAL CLASS A CONCRETE 27.8 C.Y.	TOTAL CLASS A CONCRETE 15.1 C.Y.



PROJECT NO. 41665.3A
 YANCEY COUNTY
 STATION: 12+95.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1
 DETAILS
 AND BILL OF MATERIAL**

BRIDGE NO. 990016

15825

11/30/2022

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NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

FOR PILE SPLICE DETAIL, SEE SHEET 4 OF 4.

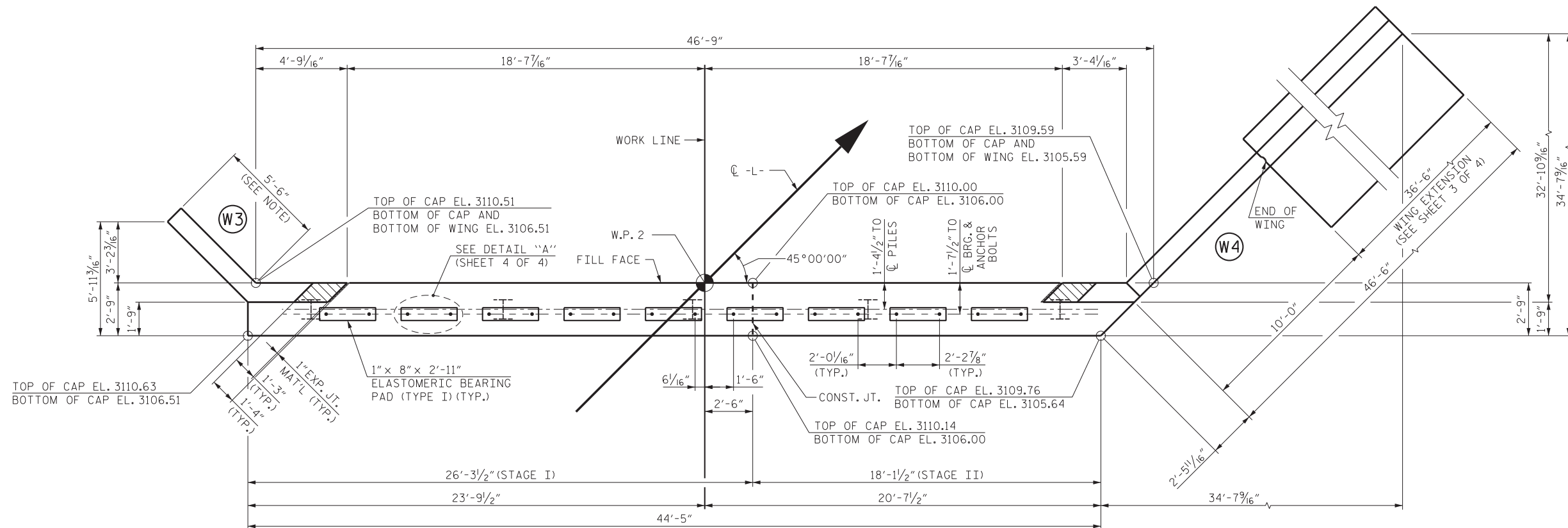
FOR WING DETAILS, SEE SHEET 2, AND 3 OF 4.

FOR TEMPORARY DRAINAGE AT END BENT, SEE END BENT 1, SHEET 4 OF 4.

THE LENGTH PROVIDED FOR WING W3 IS FROM THE BEST INFORMATION AVAILABLE TO TIE THE WING INTO THE EXISTING ROCK OUTCROP LOCATED IN THIS AREA. IF NECESSARY, THE WING LENGTH AND HEIGHT SHALL BE MODIFIED AS DIRECTED BY THE ENGINEER.

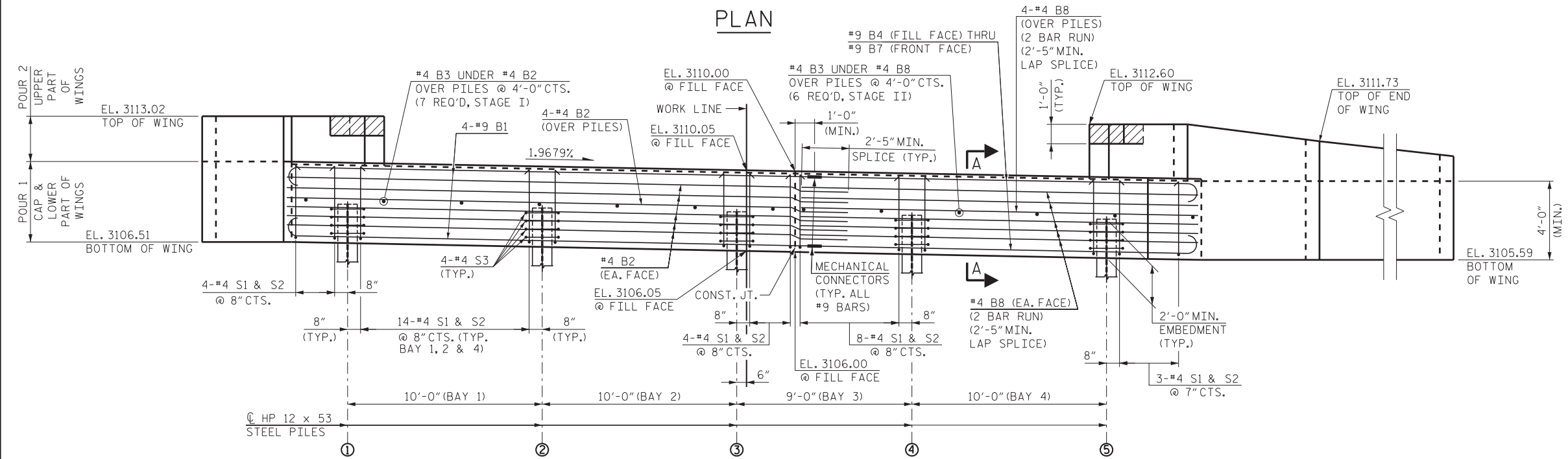
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. ANCHOR PLATES, WASHERS, AND NUTS SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS. ANCHOR BOLTS, ANCHOR PLATES, WASHERS, AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

NO SEPARATE PAYMENT SHALL BE MADE FOR THE ANCHOR BOLTS, ANCHOR PLATES, WASHERS, AND NUTS. THE COST OF THE MATERIAL AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.



PLAN

TOP OF PILE ELEVATION TABLE	
NO.	ELEVATION
1	3108.46
2	3108.27
3	3108.07
4	3107.87
5	3107.68



ELEVATION

FOR SECTION A-A, SEE SHEET 4 OF 4.

PROJECT NO. 41665.3A
 YANCEY COUNTY
 STATION: 12+95.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
END BENT 2
PLAN AND ELEVATION

BRIDGE NO. 990016

DocuSigned by:
 Bruce Klappenbach
 1911BA258FB847
 15825
 ENGINEER
 BRUCE D. KLAPPENBACH

11/30/2022

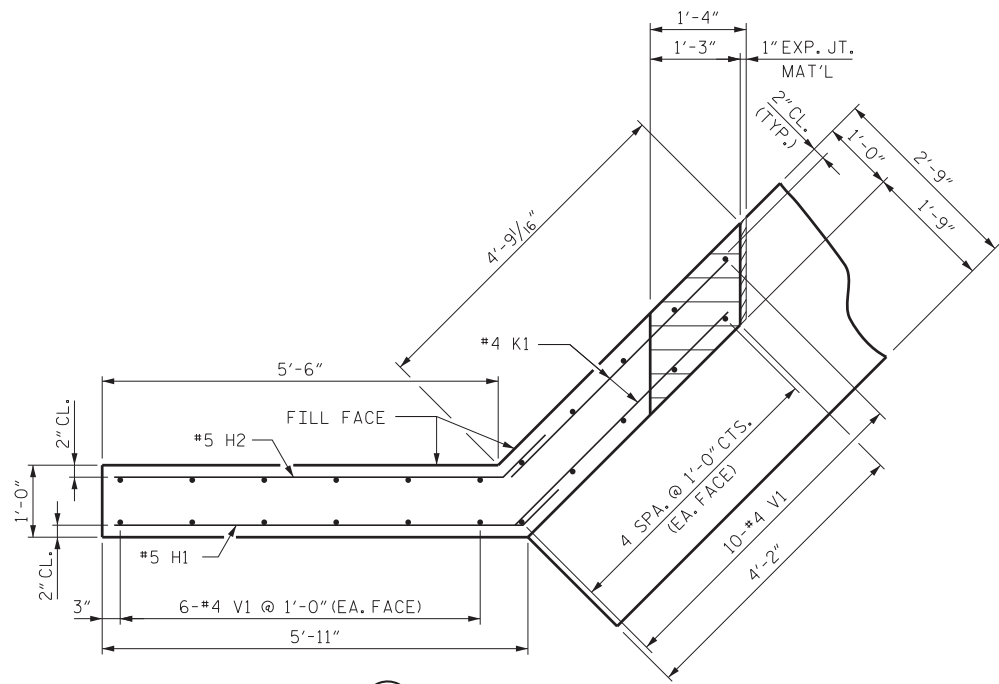
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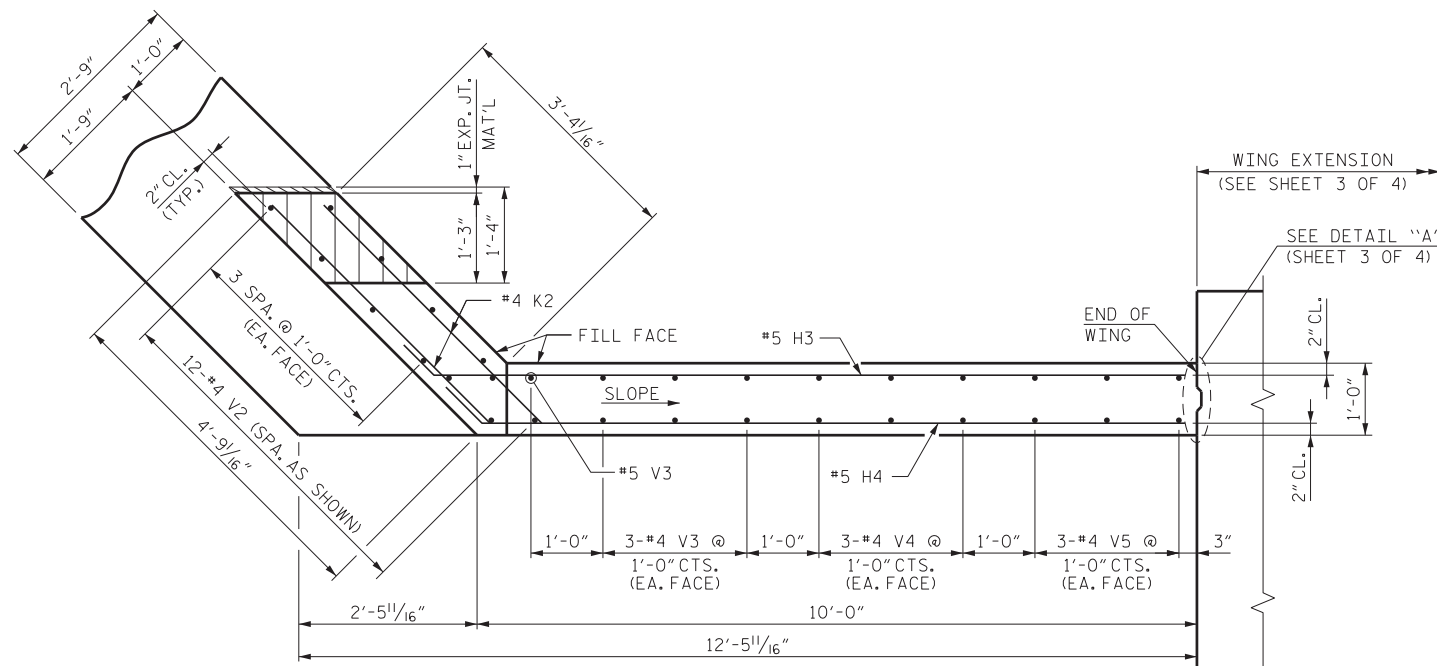
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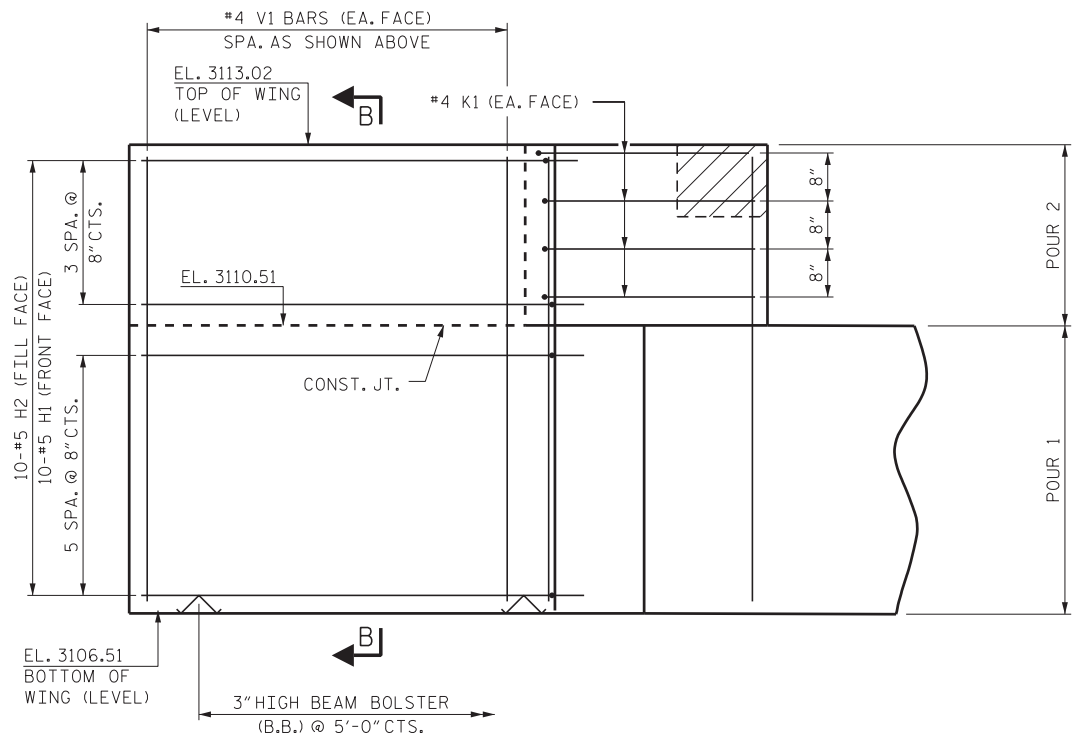
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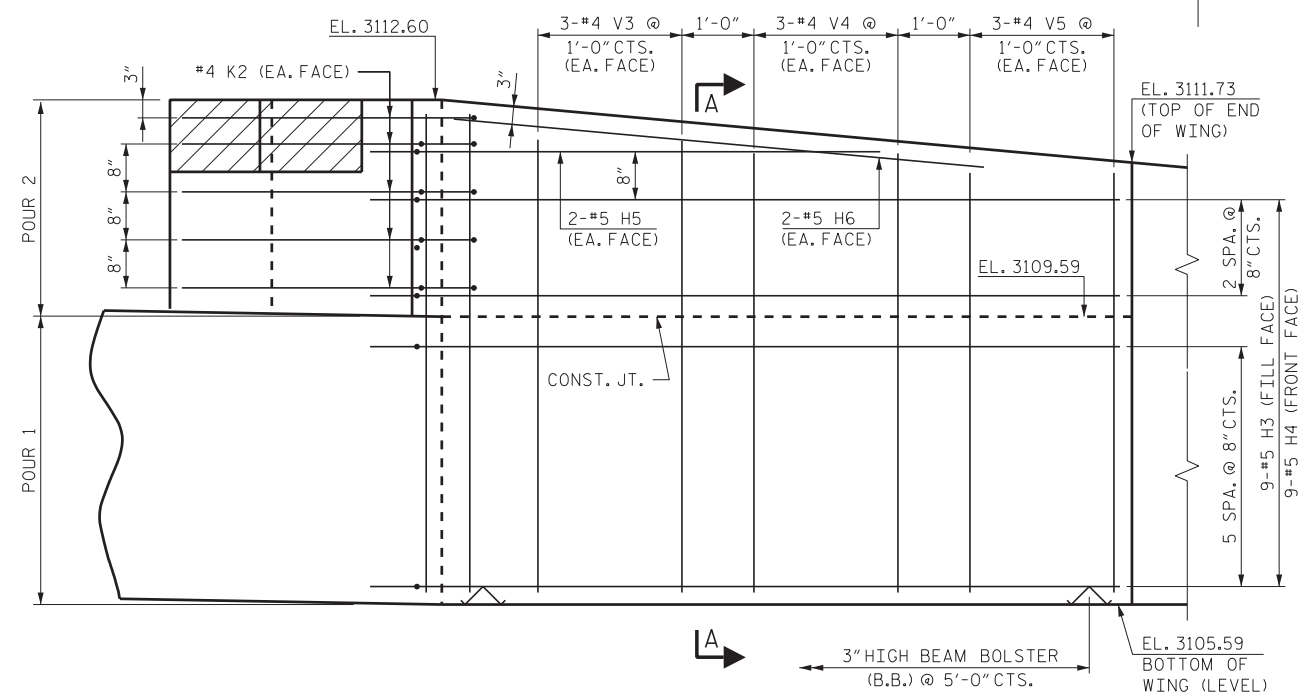
PLAN OF WING (W3)



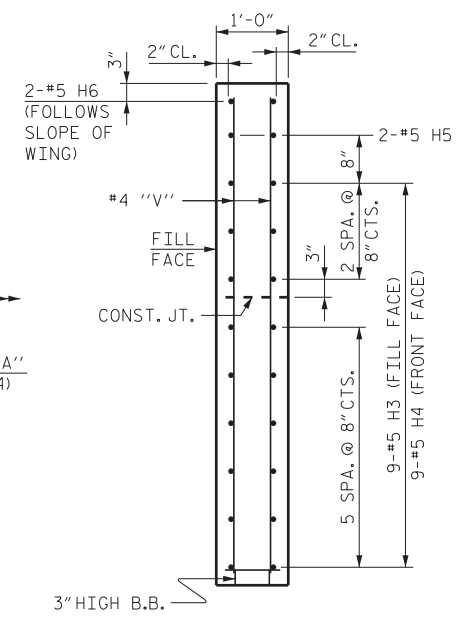
PLAN OF WING (W4)



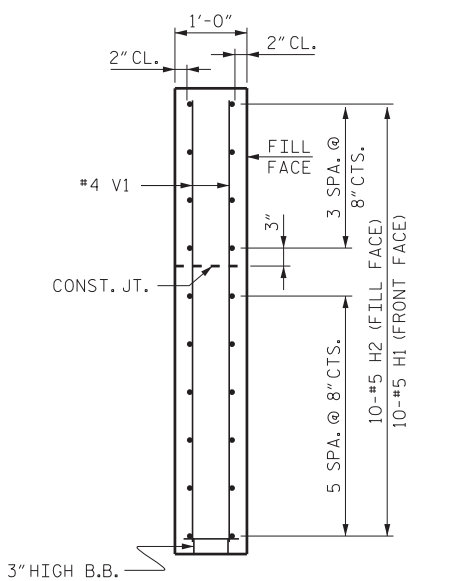
ELEVATION OF WING (W3)
(STAGE I)



ELEVATION OF WING (W4)
(STAGE I)



SECTION A-A



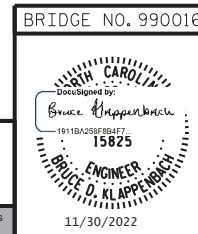
SECTION B-B

PROJECT NO. 41665.3A
YANCEY COUNTY
STATION: 12+95.00 -L-

SHEET 2 OF 4

WING DETAILS

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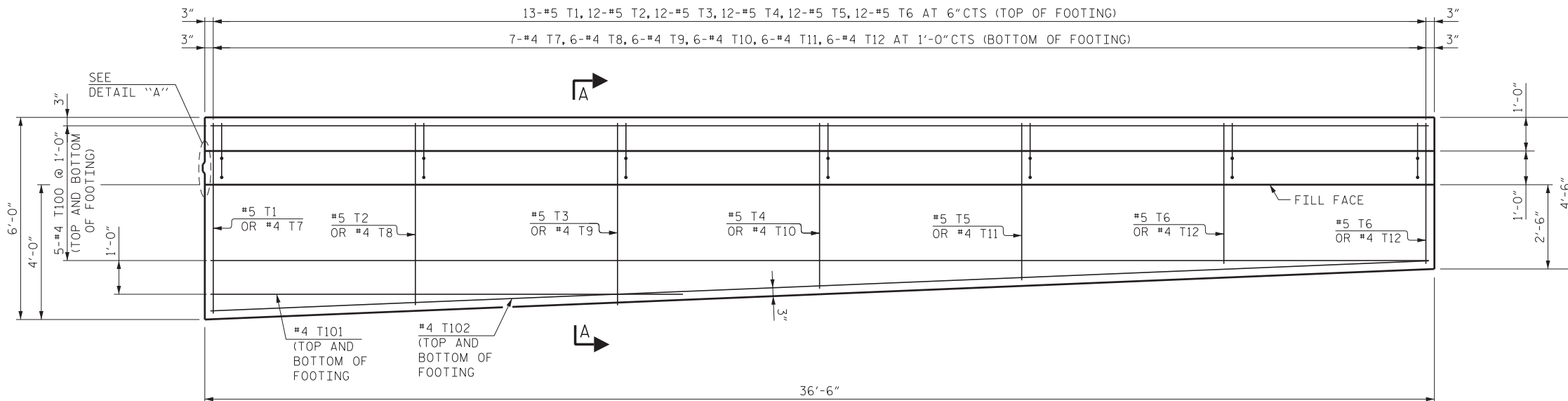


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 2
WINGWALL DETAIL

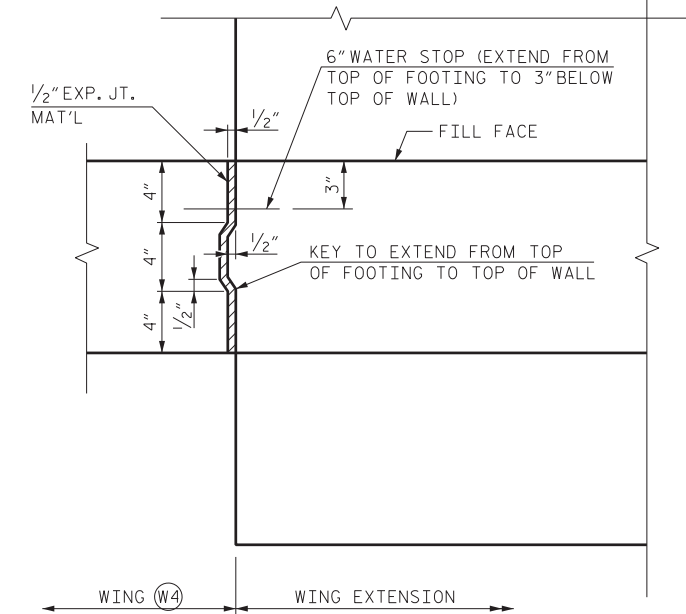
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NO. BY: DATE: NO. BY: DATE:
1 3
2 4

SHEET NO.		S-22
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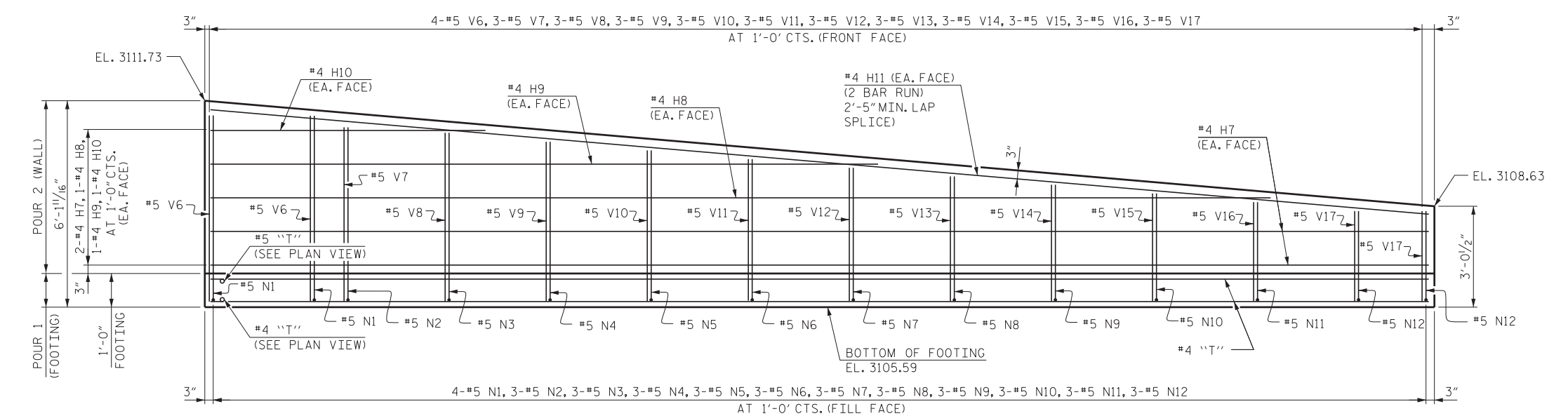
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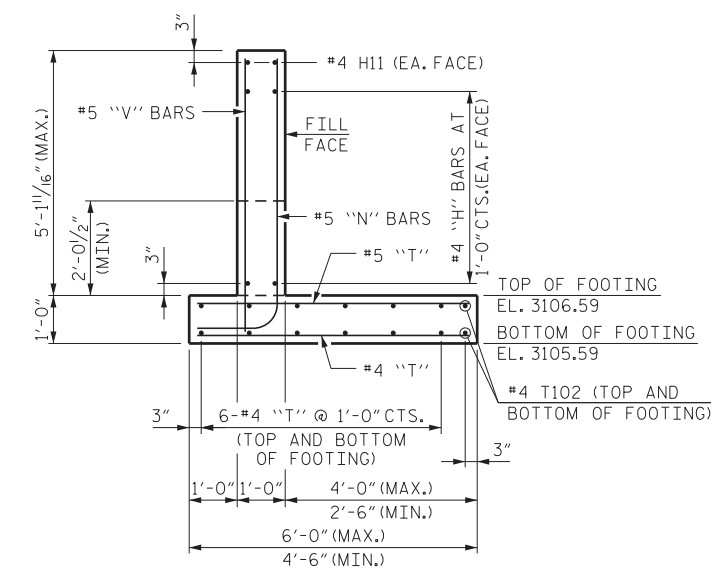
PLAN



DETAIL A



ELEVATION

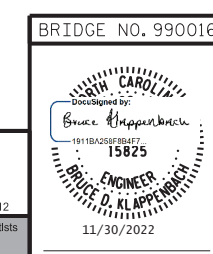


SECTION A-A

WING EXTENSION DETAILS

PROJECT NO. 41665.3A
 YANCEY COUNTY
 STATION: 12+95.00 -L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE NO. 990016

WING EXTENSION DETAILS
 AT END BENT 2
 (STAGE II)

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			28

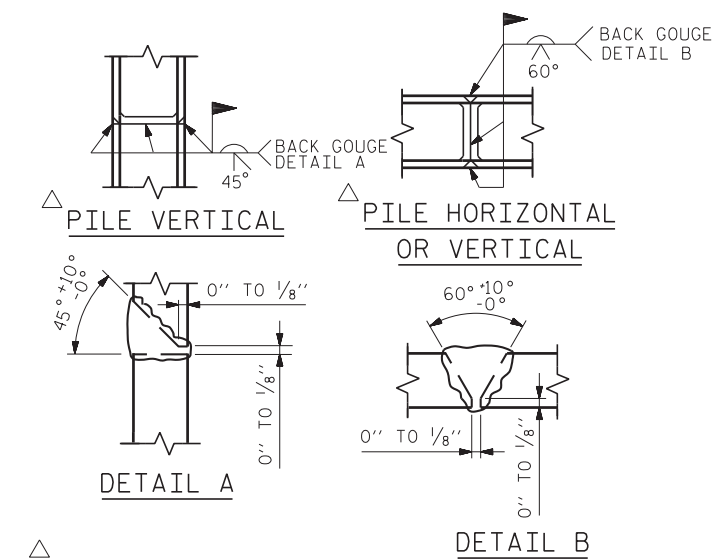
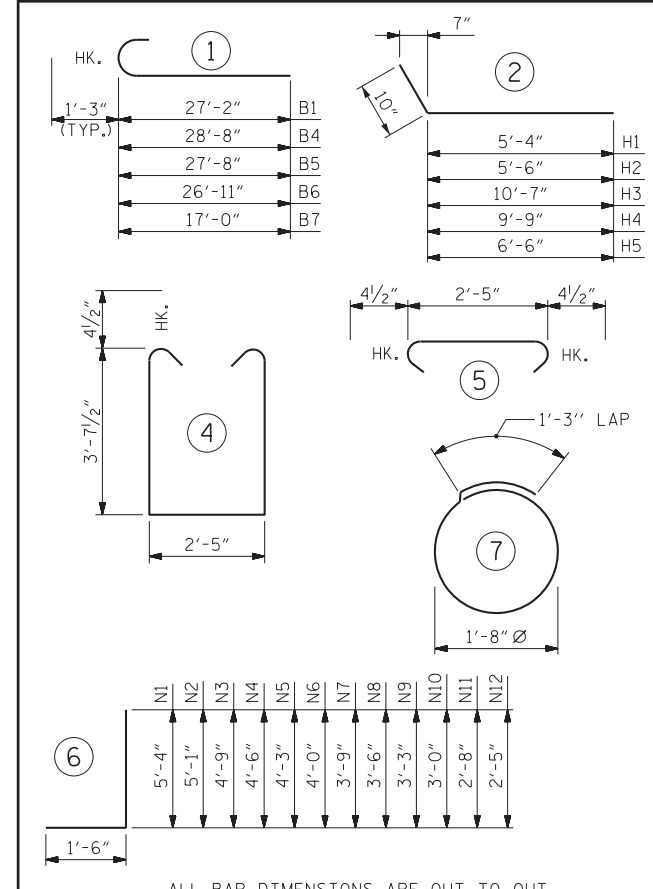
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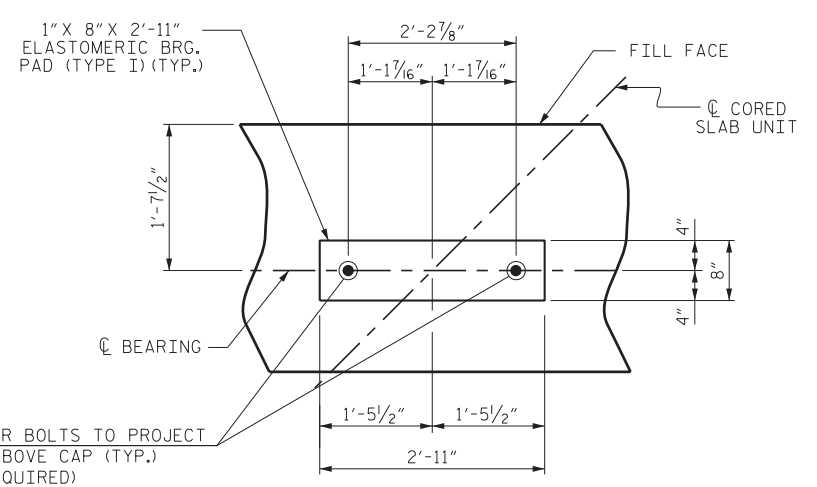
BILL OF MATERIAL

END BENT 2 (STAGE 1)					END BENT 2 (STAGE 2)				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#9	1	28'-5"	773	B3	#4	STR.	2'-5"	10
B2	#4	STR.	28'-9"	269	B4	#9	1	20'-7"	140
B3	#4	STR.	2'-5"	11	B5	#9	1	19'-9"	134
					B6	#9	1	18'-10"	128
H1	#5	2	6'-2"	64	B7	#9	1	18'-3"	124
H2	#5	2	6'-4"	66	B8	#4	STR.	11'-4"	212
					V8	#5	STR.	4'-9"	15
K1	#4	STR.	3'-8"	20	V9	#5	STR.	4'-6"	14
S1	#4	4	10'-5"	251	V10	#5	STR.	4'-3"	13
S2	#4	5	3'-9"	90	V11	#5	STR.	4'-0"	13
S3	#4	7	6'-6"	52	V12	#5	STR.	3'-9"	12
					V13	#5	STR.	3'-6"	11
V1	#5	STR.	6'-0"	138	V14	#5	STR.	3'-3"	10
					V15	#5	STR.	3'-0"	9
					V16	#5	STR.	2'-8"	8
					V17	#5	STR.	2'-5"	8
REINFORCING STEEL (STAGE 1) 1,734 LBS.					K2	#4	STR.	4'-5"	30
CLASS A CONCRETE BREAKDOWN (STAGE 1)					N1	#5	6	6'-9"	28
POUR #1 CAP, LOWER PART OF WING & COLLARS 12.6 C.Y.					N2	#5	6	6'-6"	20
POUR #2 UPPER PART OF WING 1.0 C.Y.					N3	#5	6	6'-3"	20
					N4	#5	6	6'-0"	19
					N5	#5	6	5'-9"	18
					N6	#5	6	5'-6"	17
					N7	#5	6	5'-3"	16
					N8	#5	6	5'-0"	16
					N9	#5	6	4'-9"	15
					N10	#5	6	4'-6"	14
TOTAL CLASS A CONCRETE 13.6 C.Y.					N11	#5	6	4'-2"	13
					N12	#5	6	3'-11"	12
					S1	#4	4	10'-5"	174
					S2	#4	5	3'-9"	63
					S3	#4	7	6'-6"	35
					T1	#5	STR.	5'-3"	71
					T2	#5	STR.	5'-0"	63
					T3	#5	STR.	4'-9"	59
					T4	#5	STR.	4'-6"	56
					T5	#5	STR.	4'-3"	53
					T6	#5	STR.	4'-0"	50
					T7	#4	STR.	5'-3"	25
					T8	#4	STR.	5'-0"	20
					T9	#4	STR.	4'-9"	19
					T10	#4	STR.	4'-6"	18
					T11	#4	STR.	4'-3"	17
					T12	#4	STR.	4'-0"	19
					T100	#4	STR.	36'-0"	240
					T101	#4	STR.	11'-10"	16
					T102	#4	STR.	32'-1"	43
					REINFORCING STEEL (STAGE 2) 2,769 LBS.				
					CLASS A CONCRETE BREAKDOWN (STAGE 2)				
					POUR #1 CAP, LOWER PART OF WING & COLLARS 9.9 C.Y.				
					POUR #2 UPPER PART OF WING 1.3 C.Y.				
					POUR #1 WING EXT. FTG. 7.0 C.Y.				
					POUR #2 WING EXT. WALL 5.3 C.Y.				
					TOTAL CLASS A CONCRETE 23.5 C.Y.				

BAR TYPES

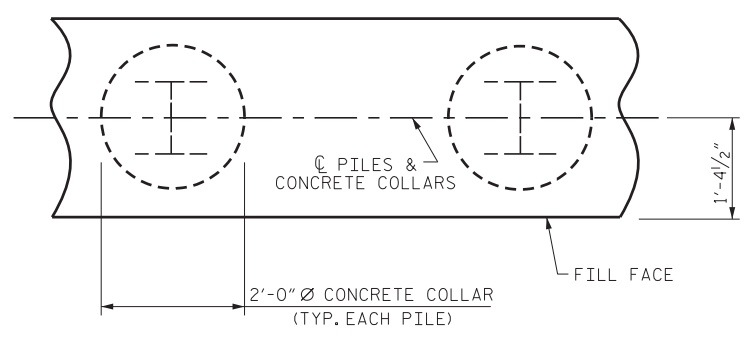


PILE SPLICE DETAILS

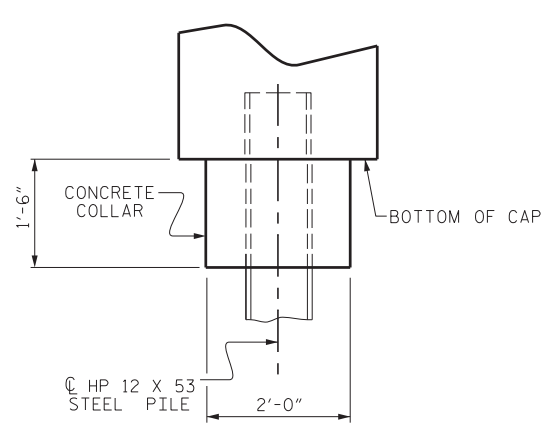


DETAIL "A"

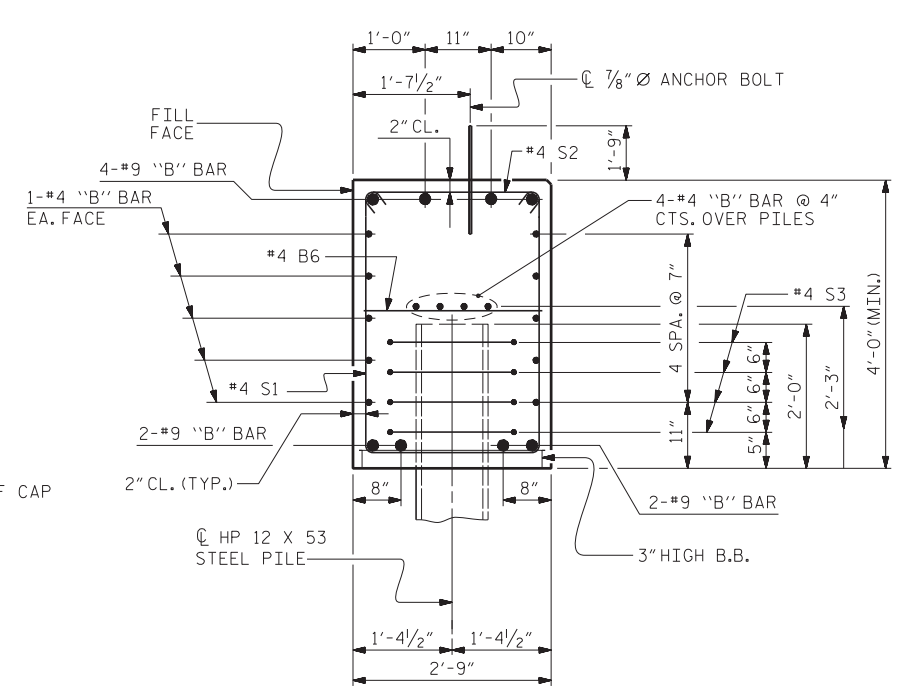
(TOTAL OF 18 - 7/8" Ø X 2'-11" ANCHOR BOLTS REQUIRED AT END BENT 2)



PLAN



ELEVATION



SECTION A-A

CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. 41665.3A
YANCEY COUNTY
STATION: 12+95.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 2
DETAILS
AND BILL OF MATERIAL

BRIDGE NO. 990016
DESIGNED BY:
Bruce Klappenbach
15825
ENGINEER
BRUCE D. KLAPPENBACH
11/30/2022

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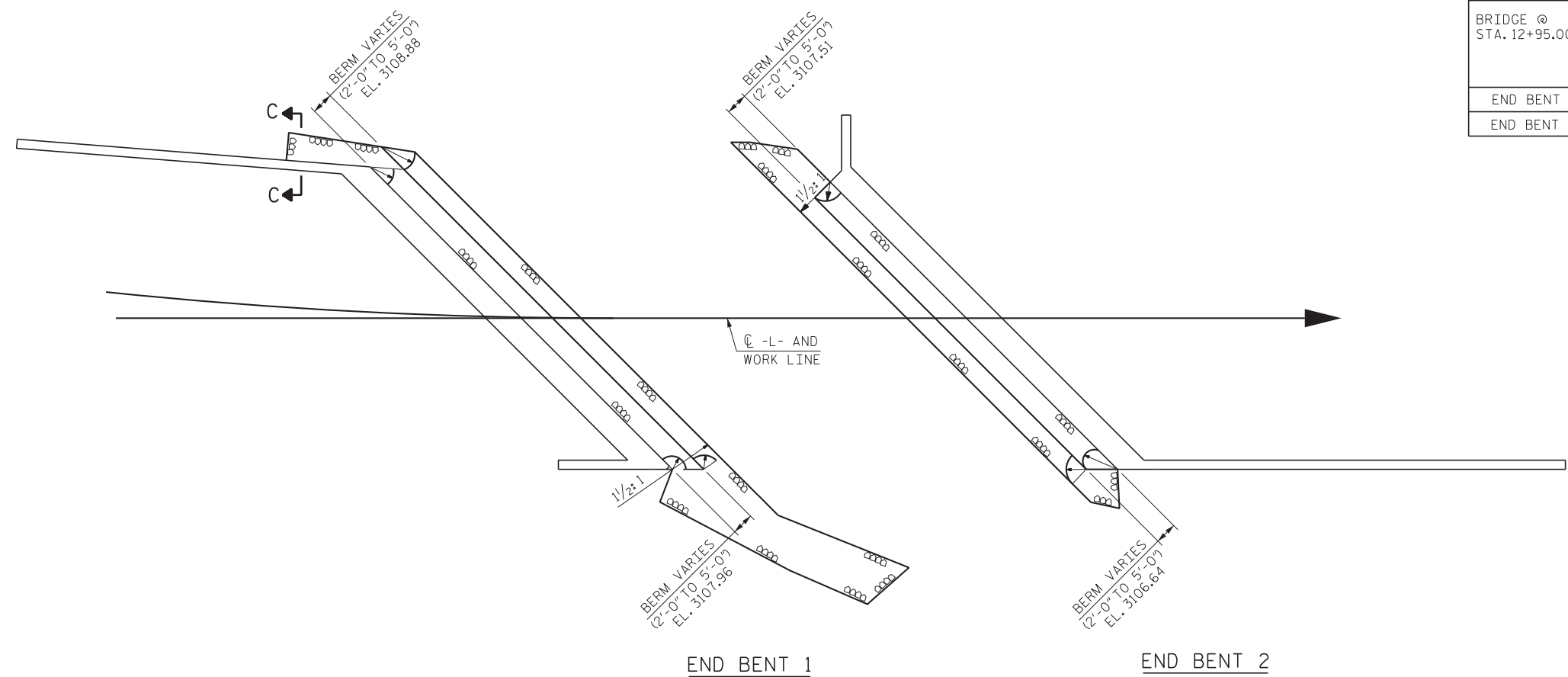
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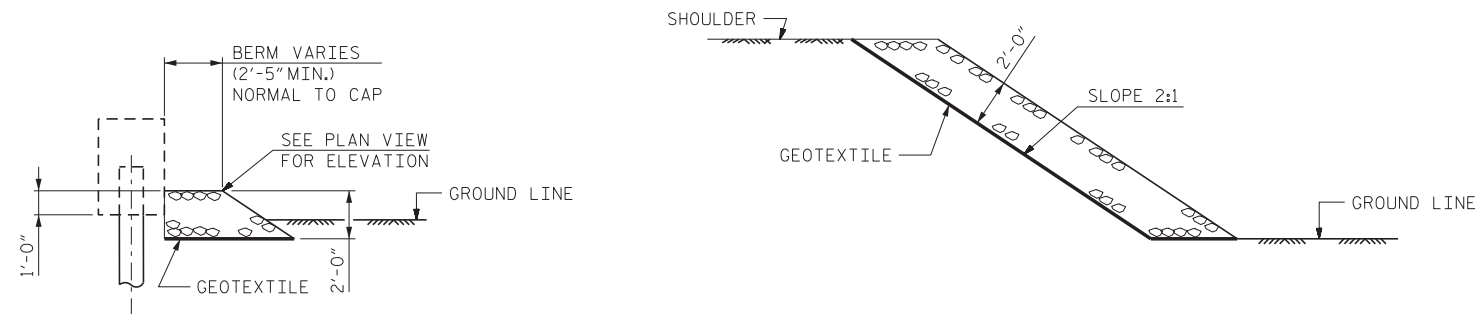
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CHECKED BY : B. D. KLAPPENBACH DATE : JUL 2022
DESIGN ENGINEER OF RECORD : B. D. KLAPPENBACH DATE : JUL 2022

ESTIMATED QUANTITIES		
BRIDGE @ STA. 12+95.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	55	62
END BENT 2	50	56



PLAN



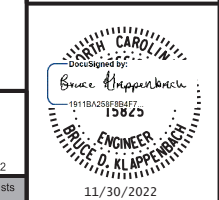
SECTION C-C

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

BERM RIP RAPPED

PROJECT NO. 41665.3A
YANCEY COUNTY
STATION: 12+95.00 -L-

BRIDGE NO. 990016



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
MISCELLANEOUS
RIP RAP DETAILS

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NOTES:

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE 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 OF APPROACH SLAB.

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

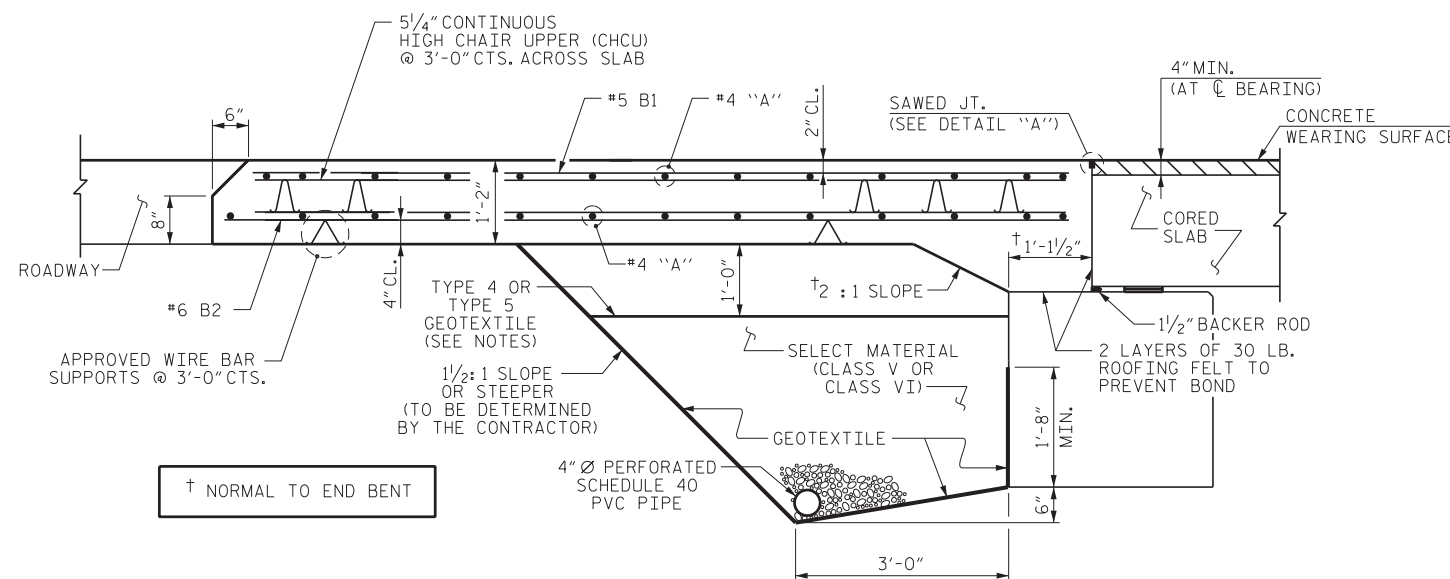
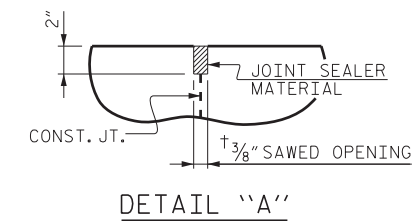
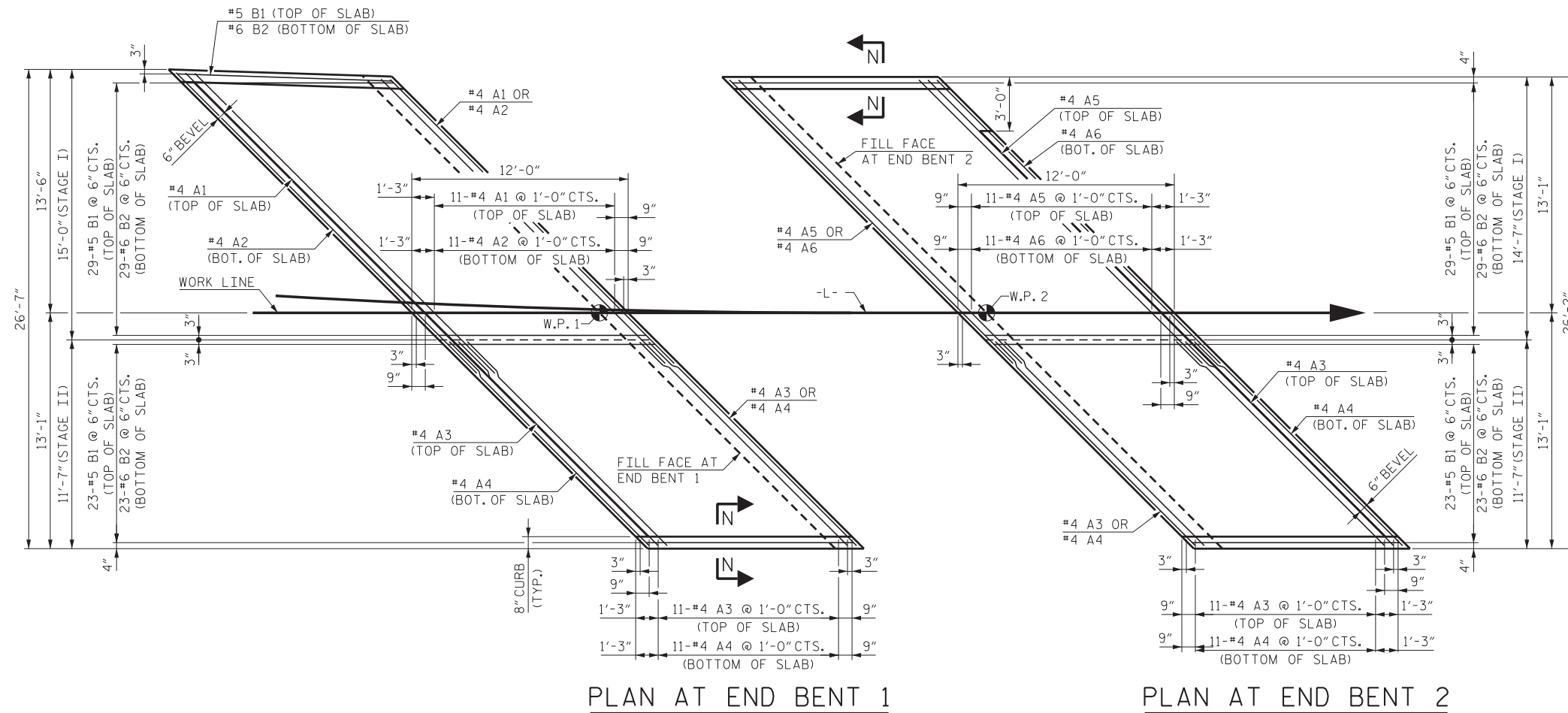
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

GROOVING SHALL BE REQUIRED IN ACCORDANCE TO THE STANDARD SPECIFICATIONS.

APPROACH SLAB SHALL BE POURED AFTER CONCRETE WEARING SURFACE IS POURED.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

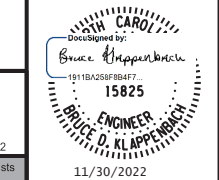
ROADWAY STANDARD 422.02 SHALL BE MODIFIED TO INCLUDE TYPE 4 OR TYPE 5 GEOTEXTILE LOCATED 1 FT. BELOW THE BOTTOM OF THE APPROACH SLAB AS SHOWN IN "SECTION THRU SLAB."



PROJECT NO. 41665.3A
YANCEY COUNTY
STATION: 12+95.00 -L-

SHEET 1 OF 2

BRIDGE NO. 990016



STATE OF NORTH CAROLINA
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RALEIGH

BRIDGE APPROACH SLAB
(SUB-REGIONAL TIER)



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REVISIONS

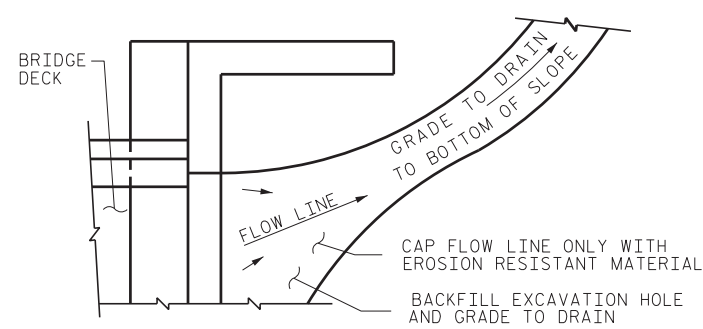
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SHEET NO.

S-26
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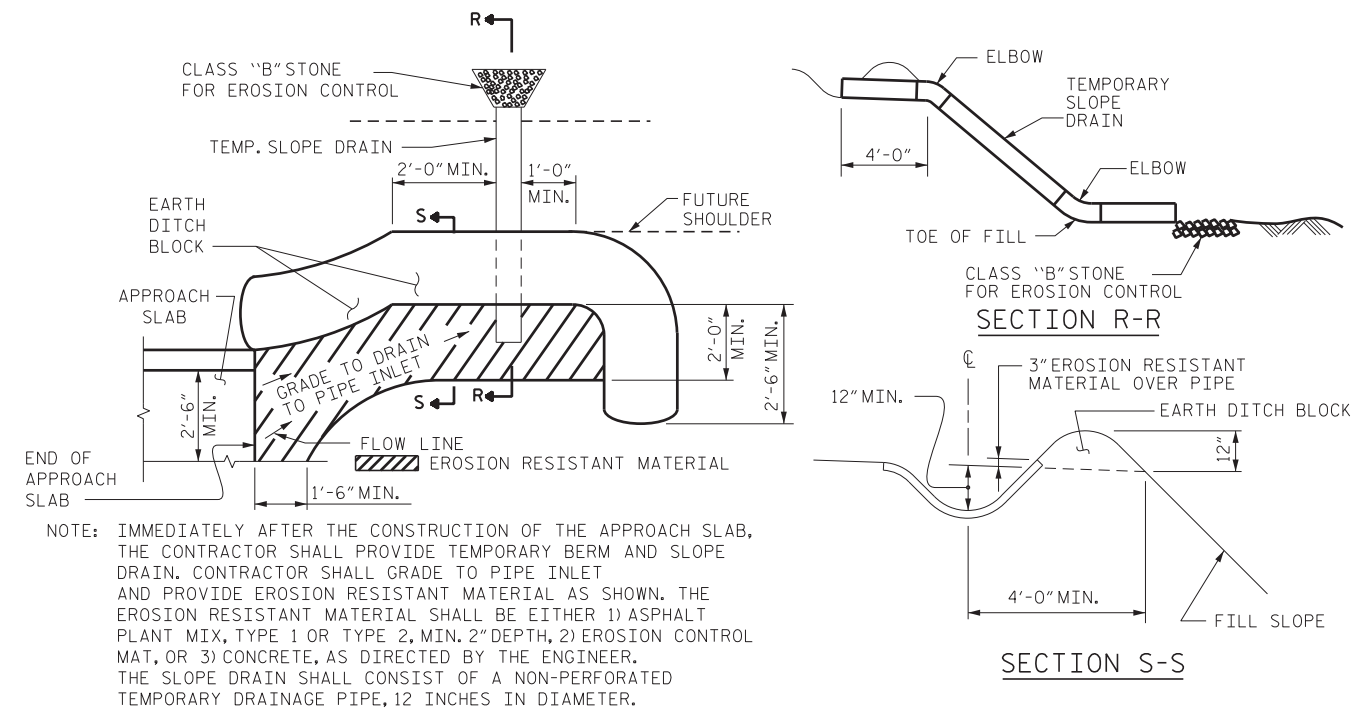
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NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO 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

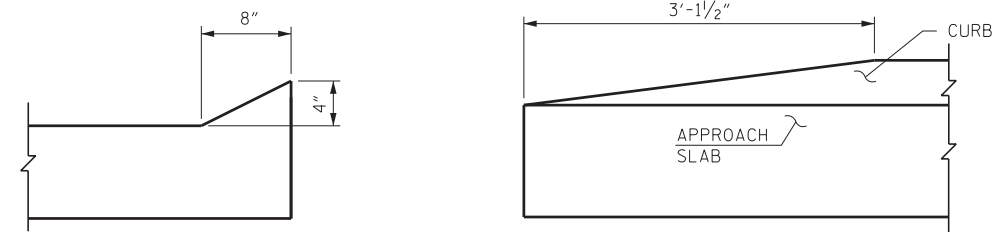


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION N-N

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

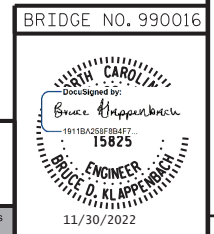
BILL OF MATERIAL					
APPROACH SLAB AT EB 1 STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR.	23'-1"	200
A2	13	#4	STR.	22'-10"	198
* B1	30	#5	STR.	10'-9"	336
B2	30	#6	STR.	11'-3"	507
				REINFORCING STEEL	LBS. 527
				* EPOXY COATED REINFORCING STEEL	LBS. 396
				CLASS AA CONCRETE	C. Y. 6.0
APPROACH SLAB AT EB 2 STAGE I					
				REINFORCING STEEL	LBS. 705
				* EPOXY COATED REINFORCING STEEL	LBS. 536
				CLASS AA CONCRETE	C. Y. 7.8

BILL OF MATERIAL					
APPROACH SLAB AT EB 1 STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A3	13	#4	STR.	15'-11"	138
A4	13	#4	STR.	15'-11"	138
* B1	23	#5	STR.	10'-9"	258
B2	23	#6	STR.	11'-3"	389
				REINFORCING STEEL	LBS. 527
				* EPOXY COATED REINFORCING STEEL	LBS. 396
				CLASS AA CONCRETE	C. Y. 6.0
APPROACH SLAB AT EB 2 STAGE II					
				REINFORCING STEEL	LBS. 682
				* EPOXY COATED REINFORCING STEEL	LBS. 520
				CLASS AA CONCRETE	C. Y. 7.6

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

PROJECT NO. 41665.3A
 YANCEY COUNTY
 STATION: 12+95.00 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB (SUB-REGIONAL TIER)

BRIDGE NO. 990016

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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. FINIS 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. 41665.3A
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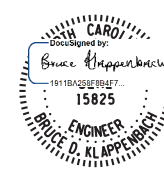
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