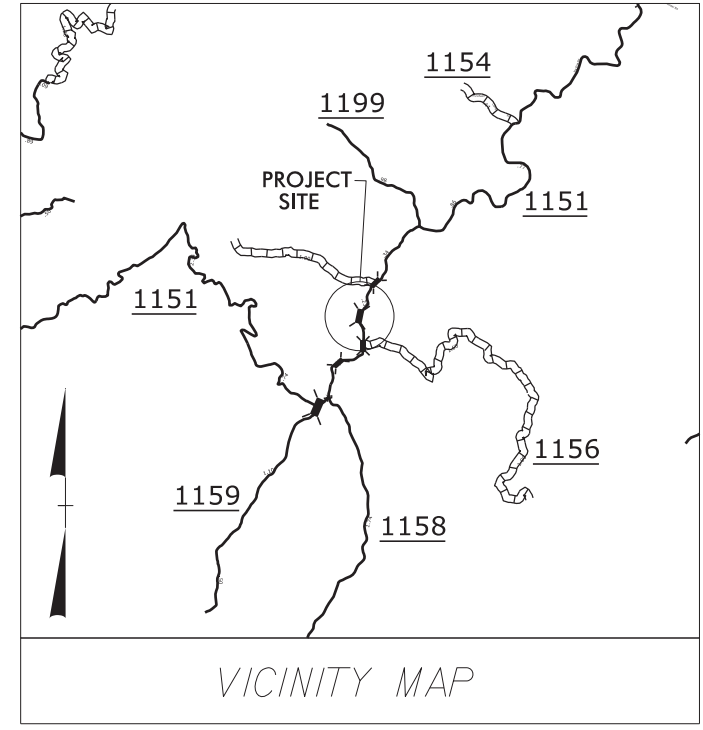


09_2025/24 28-SEP-2023 09:26 M:\2016\221601946_09 NCDOT Division 13 Bridge Replacements\B_17BP.13.R.156_Madison_560143_Roadway\560143_Rdy_fsh .dgn \$\$\$USERNAME\$\$\$

STATE PROJECT: 17BP.13.R.156 CONTRACT: DM00361

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



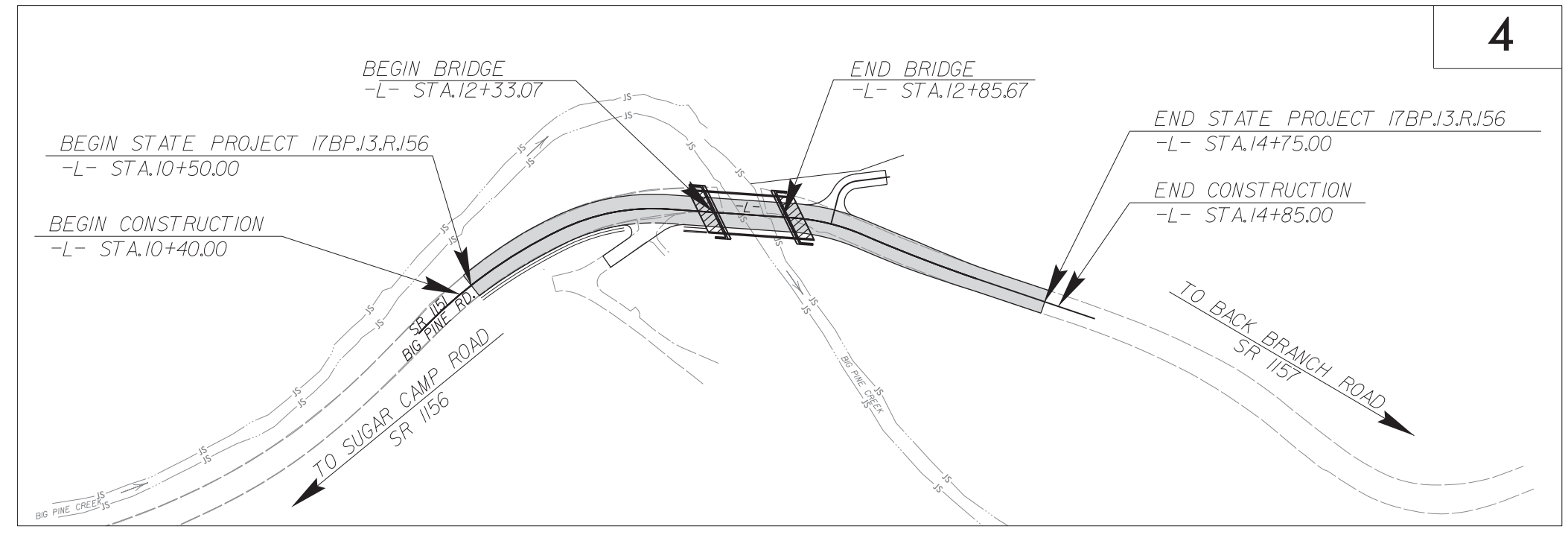
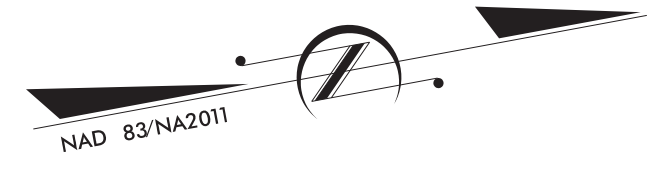
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS MADISON COUNTY

LOCATION: REPLACE BRIDGE NO.143 OVER BIG PINE CREEK ON SR 1151 (BIG PINE RD.)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

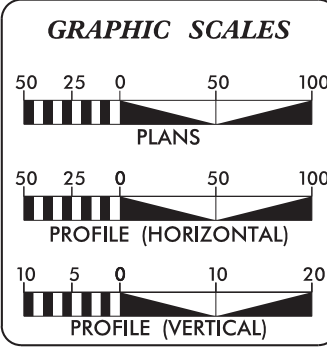
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.156	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.13.PE.156		PE	
17BP.13.ROW.156		RW	
17BP.13.R.156		CON	

100% PLANS



4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2017 = 510
V = 30 MPH

FUNC CLASS = MINOR COLLECTOR

SUB - REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 17BP.13.R.156 = .070 MILES

LENGTH OF STRUCTURE PROJECT 17BP.13.R.156 = .010 MILES

TOTAL LENGTH OF PROJECT 17BP.13.R.156 = .080 MILES

Prepared in the Office of: KCI ASSOCIATES OF N.C., P.A.
4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609
Phone (919) 783-9214
NC Firm License No: C-0764

Plans Prepared For: NCDOT DIVISION 13
55 Orange Street
Asheville, NC 28801

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 14, 2022

LETTING DATE: JANUARY 17, 2024

NCDOT CONTACT: EDDIE DOUGLAS
NCDOT DIVISION 13

ROBERT F. DECOLA, P.E.
KCI PROJECT MANAGER

TYLER M. KRAUSS, P.E.
KCI ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

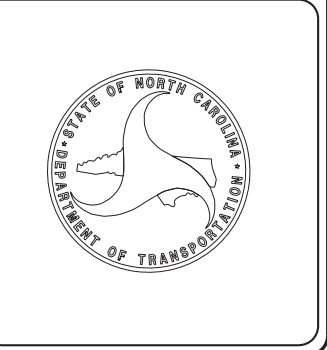
11/6/2023

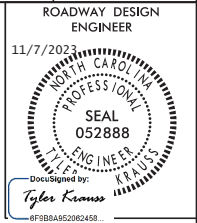
DocuSigned by: Joshua G. Dalton
JOSHUA G. DALTON
P.E.

ROADWAY DESIGN ENGINEER

11/7/2023

DocuSigned by: Tyler M. Krauss
TYLER M. KRAUSS
P.E.





SHEET NUMBER	INDEX OF SHEETS SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 TO 2A-2	TYPICAL SECTIONS, PAVEMENT SCHEDULE, WEDGING DETAIL, AND PROFILE KEY-IN DETAIL
2C-1	TYPE III STRUCTURE ANCHOR UNIT DETAIL
2G-1 TO 2G-4	STANDARD TEMPORARY SHORING
3B-1	SUMMARY OF EARTHWORK, SUMMARY OF SHOULDER BERM GUTTER, SUMMARY OF PAVEMENT REMOVAL, AND SUMMARY OF GUARDRAIL
3D-1	DRAINAGE SUMMARY SHEET
3G-1	GEOTECHNICAL SUMMARY SHEET
4	PLAN SHEET
4A	PLAN DIMENSION SHEET
5	PROFILE SHEET
RW01	RW TITLE SHEET
RW02C-1 TO RW02C-2	SURVEY CONTROL SHEETS
RW02D-1	PROPOSED ALIGNMENT CONTROL SHEET
RW03E-1	PERMANENT EASEMENT CONTROL SHEET
RW04	RIGHT OF WAY SHEET
TMP-1 TO TMP-5	TRANSPORTATION MANAGEMENT PLANS
PMP-1 TO PMP-2	PAVEMENT MARKING PLANS
EC-1 TO EC-5	EROSION CONTROL PLANS
X-0	CROSS SECTION SUMMARY SHEET
X-1 TO X-22	-L- CROSS-SECTIONS
S-1 TO S-21	STRUCTURE PLANS

GENERAL NOTES:

2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

**GRADE LINE:
GRADING AND SURFACING:**

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

SUBSURFACE DRAINS:

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

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.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets

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)	○ EIP
Computed Property Corner	✕
Existing Concrete Monument (ECM)	□ 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	-----
Potential Contamination Area: Soil	-----
Known Contamination Area: Water	-----
Potential Contamination Area: Water	-----
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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	-----
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	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	-----
Paved Ditch Gutter	-----
Storm Sewer Manhole	-----
Storm Sewer	-----

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	⊠
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	⊠
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	-----
TV:	
TV Pedestal	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	⊠
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	-----

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground 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:

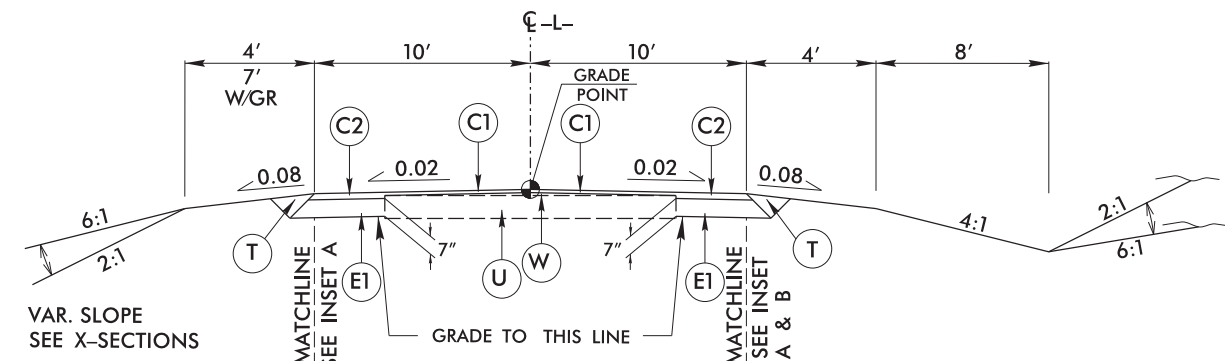
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line (SUE - LOS B)*	-----
U/G Tank; Water, Gas, Oil	-----
Underground Storage Tank, Approx. Loc.	-----
A/G Tank; Water, Gas, Oil	-----
Geoenvironmental Boring	⊕
Abandoned According to Utility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

6/2/2019

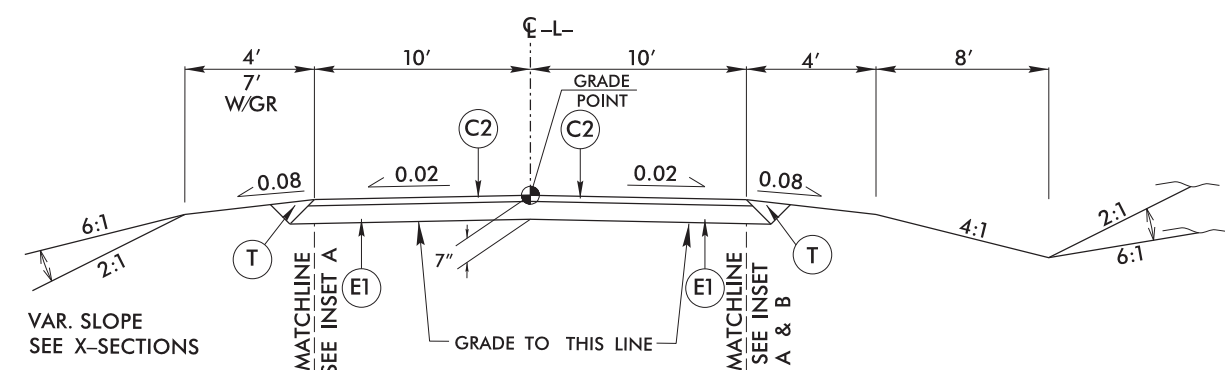
FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165.0 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165.0 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J	6" AGGREGATE BASE COURSE
R1	SHOULDER BERM GUTTER
R2	EXPRESSWAY GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING DETAIL

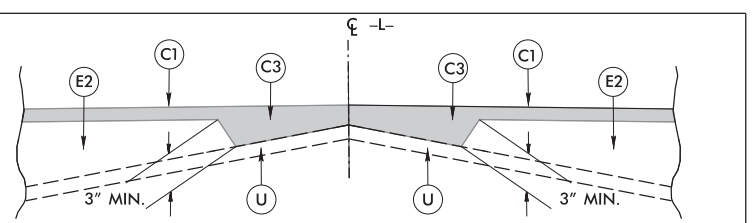
ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.



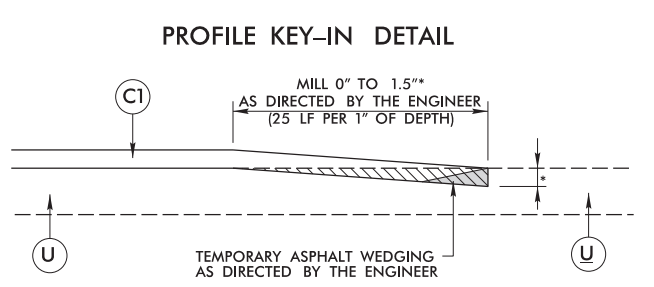
ROADWAY TYPICAL SECTION 1
 -L- STA. 10+50.00 TO STA. 11+50.00
 -L- STA. 13+50.00 TO STA. 14+75.00



ROADWAY TYPICAL SECTION 2
 -L- STA. 11+50.00 TO STA. 12+33.07 (BEG. BRIDGE)
 -L- STA. 12+85.67 (END BRIDGE) TO STA. 13+50.00

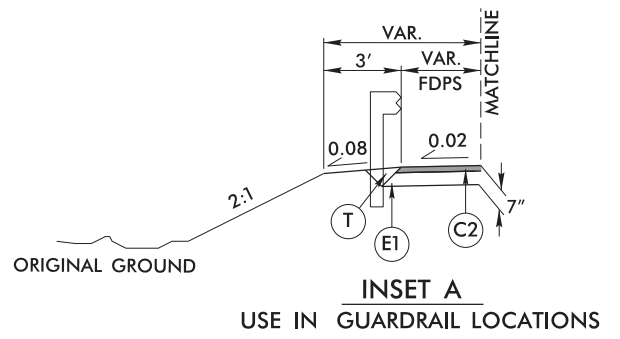


Detail Showing Method of Wedging

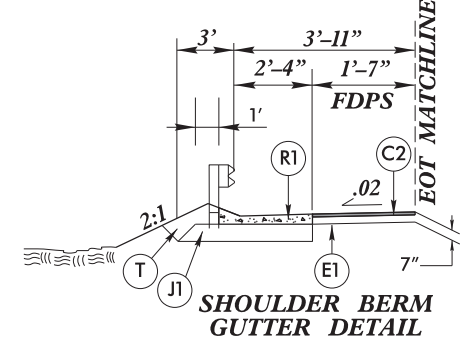


TEMPORARY ASPHALT WEDGING AS DIRECTED BY THE ENGINEER
 * MILL DEPTH AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER

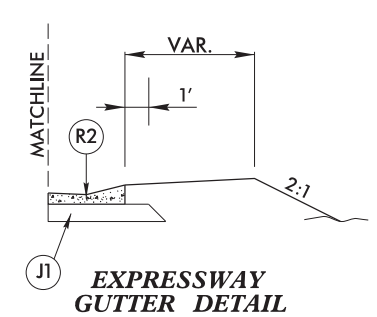
** SEE TYPICALS FOR MIX TYPE



INSET A
 USE IN GUARDRAIL LOCATIONS



SHOULDER BERM GUTTER DETAIL



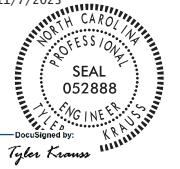
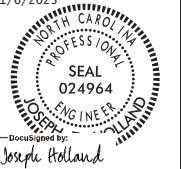

INSET B
 -L- STA. 10+50.00 TO STA. 11+68.58 (RT)

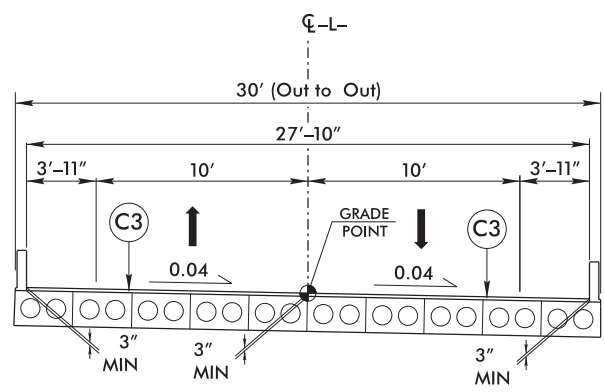
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ROADWAY DESIGN ENGINEER 11/7/2023 TYLER KRANZ SEAL 052888 NORTH CAROLINA PROFESSIONAL ENGINEER	PAVEMENT DESIGN ENGINEER 11/6/2023 JOSEPH HOLLAND SEAL 024964 NORTH CAROLINA PROFESSIONAL ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214 NC Firm License No. C-0764	

DC: NOV-2023 14:07
 MS: 2016 10:46:09
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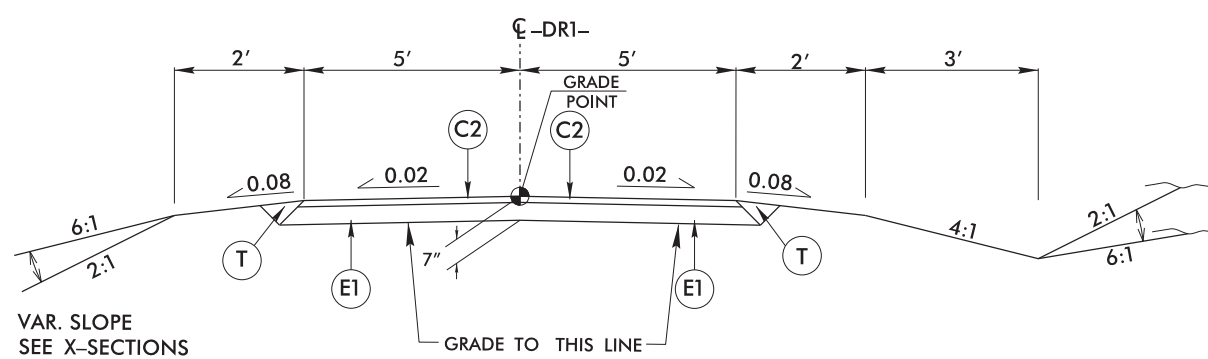
6/2/99

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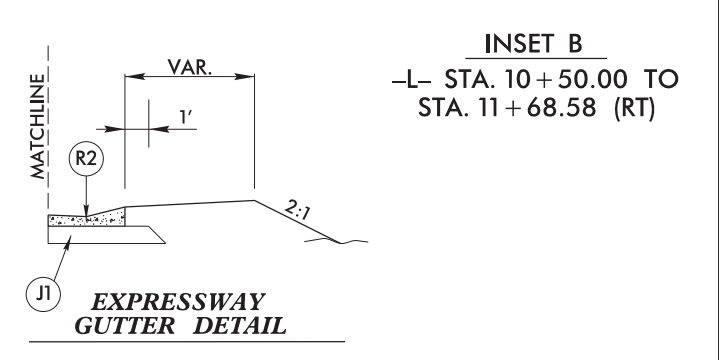
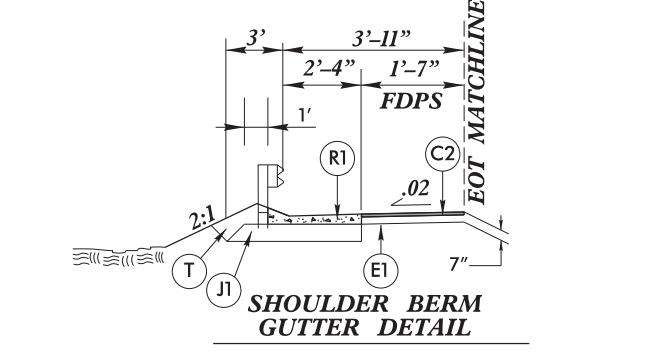
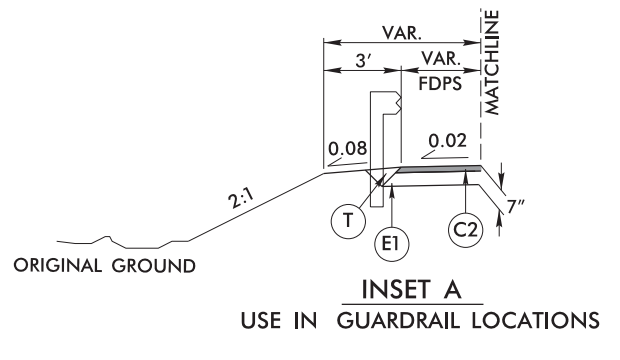
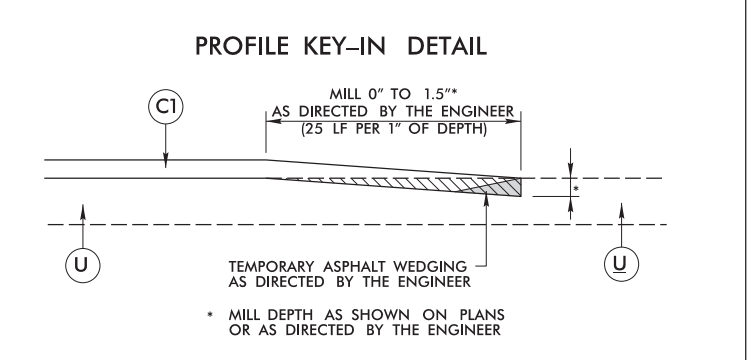
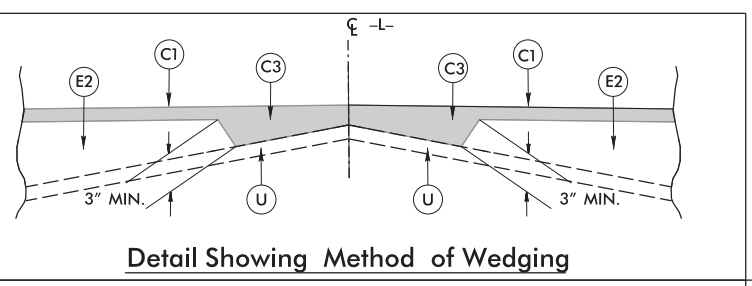
PROJECT REFERENCE NO. 17BP.13.R.156	SHEET NO. 2A-2
ROADWAY DESIGN ENGINEER 11/7/2023 	PAVEMENT DESIGN ENGINEER 11/6/2023 
Documented by: Tyler Krauss 0F9BA852062459	
Documented by: Joseph Holland 719653B165ED44E	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214 NC Firm License No. C-0764	



STRUCTURE RECOMMENDATION
 21" CORED SLAB - 50' LENGTH
STRUCTURE RECOMMENDATION
 -L- STA. 12+33.07 TO STA. 12+85.67



DRIVEWAY TYPICAL SECTION
 -DR1- STA. 10+02.66 TO STA. 10+47.26



INSET B
 -L- STA. 10+50.00 TO STA. 11+68.58 (RT)

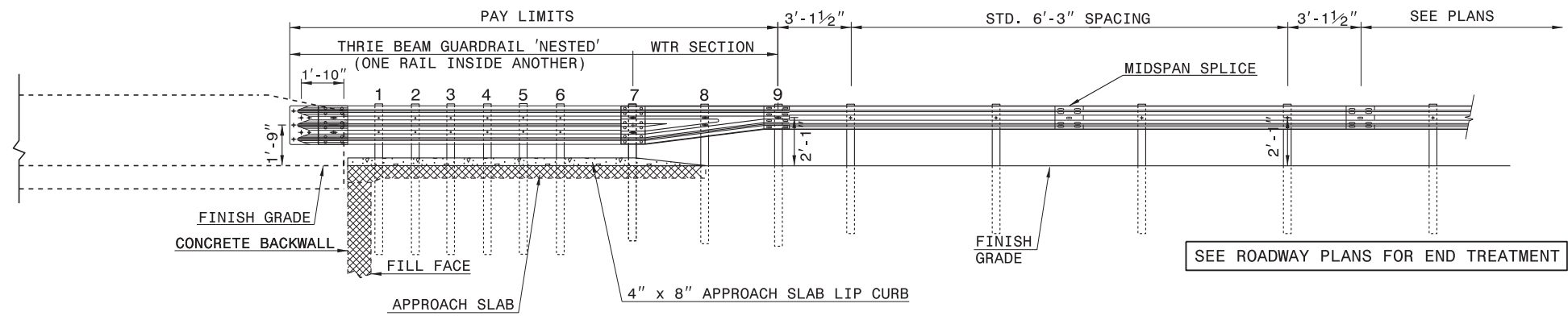
C1	1 1/2" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
E1	4" B25.0C
E2	VAR. B25.0C
J	6" ABC
R1	SBG
R2	EXP. GUT.
T	EARTH MAT.
U	EX. PVMT.
W	WEDGING

** SEE TYPICALS FOR MIX TYPE

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

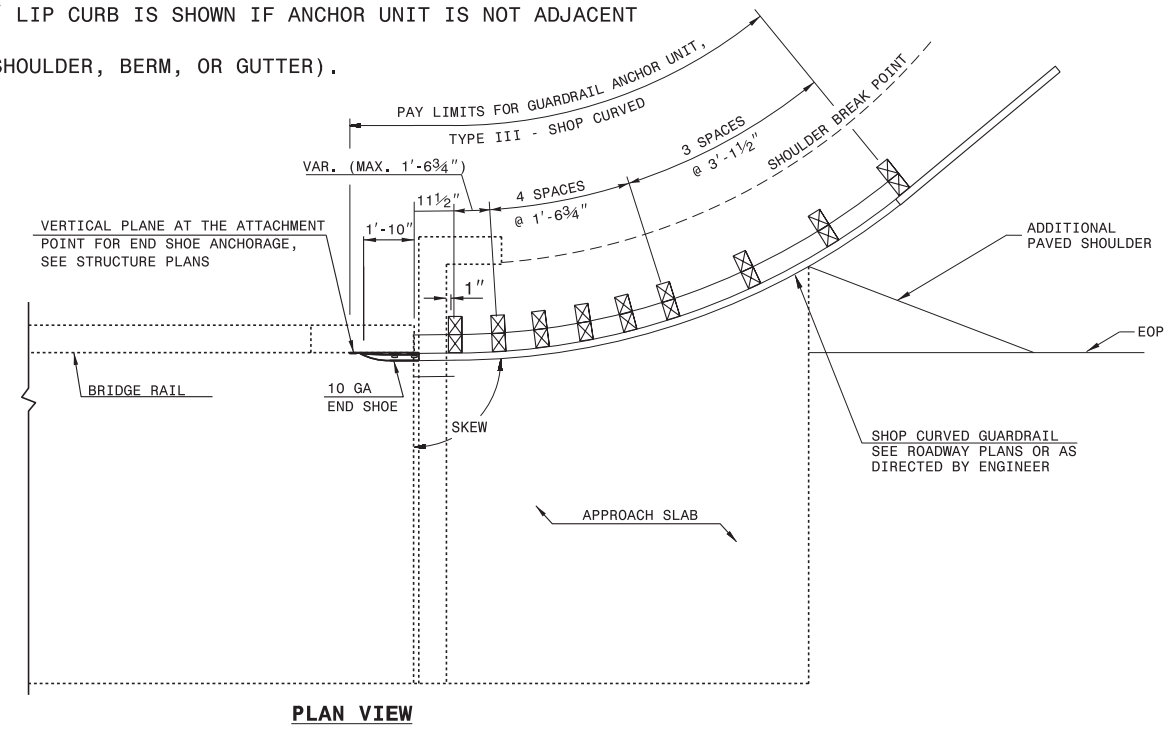
ENGLISH DETAIL DRAWING FOR
**TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT**

SHEET 1 OF 1
TYPE III SC



NOTE:

- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 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).
- USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.

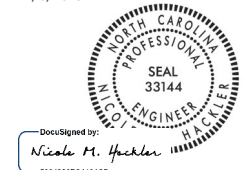


**GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED
FOR ATTACHMENT TO RAIL ON BRIDGE**

SHEET 1 OF 1
TYPE III SC

01-FEB-2018 09:49 S:\Contracts\Special Details\howerton\guardrail\31 inch Guardrail\type_iii.sc.dgn

11/6/2023

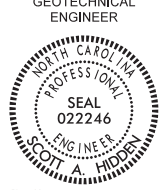


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE PLATE FOR TITLE

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

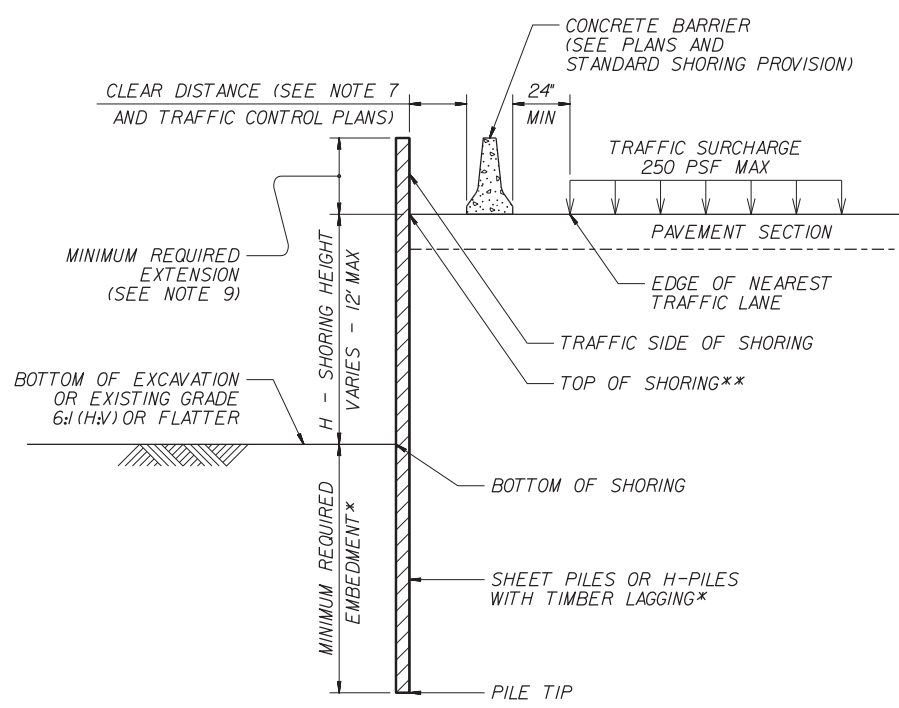
PROJECT REFERENCE NO. 17BP.13.R.156	SHEET NO. 2G-1
GEOTECHNICAL ENGINEER  SEAL 022246 SCOTT A. HADDEN ENGINEER	ENGINEER
Documented by: Scott A. Hadden 11/2023 DATE	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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

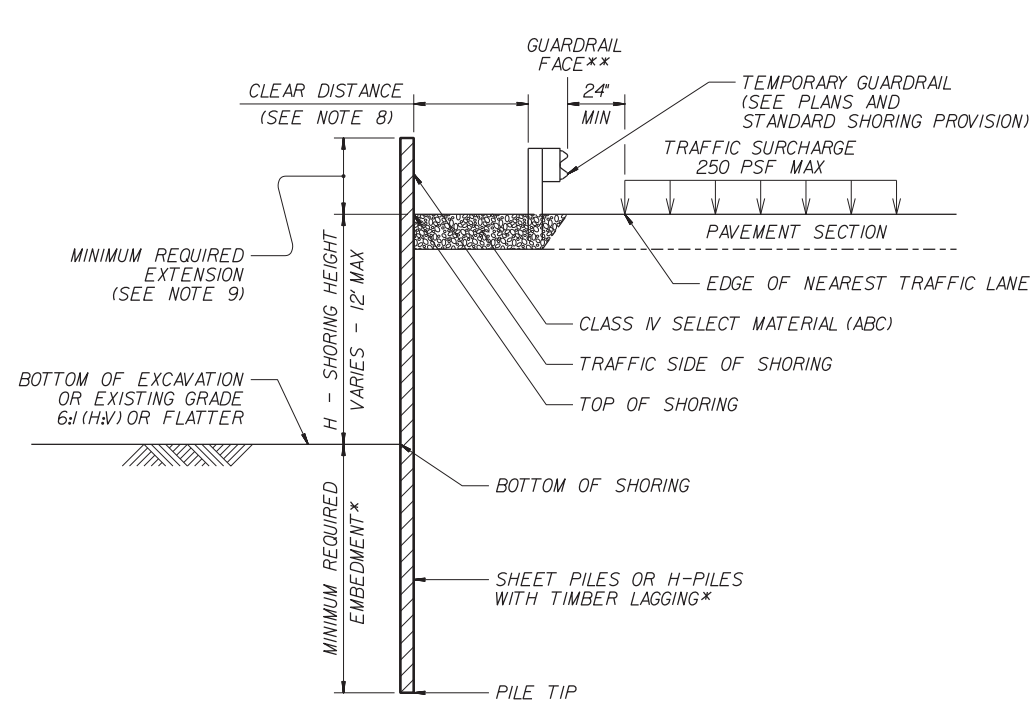
- NOTES:**
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
 - FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
 - STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi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

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

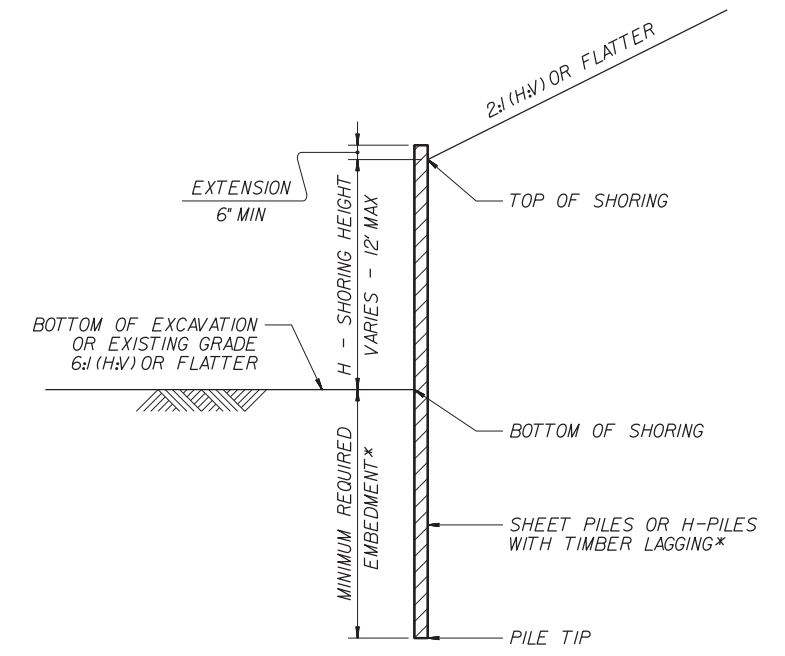
*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".



CONCRETE BARRIER
**TOP OF SHORING =
EDGE OF PAVEMENT



TEMPORARY GUARDRAIL
**GUARDRAIL FACE =
EDGE OF PAVEMENT



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

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




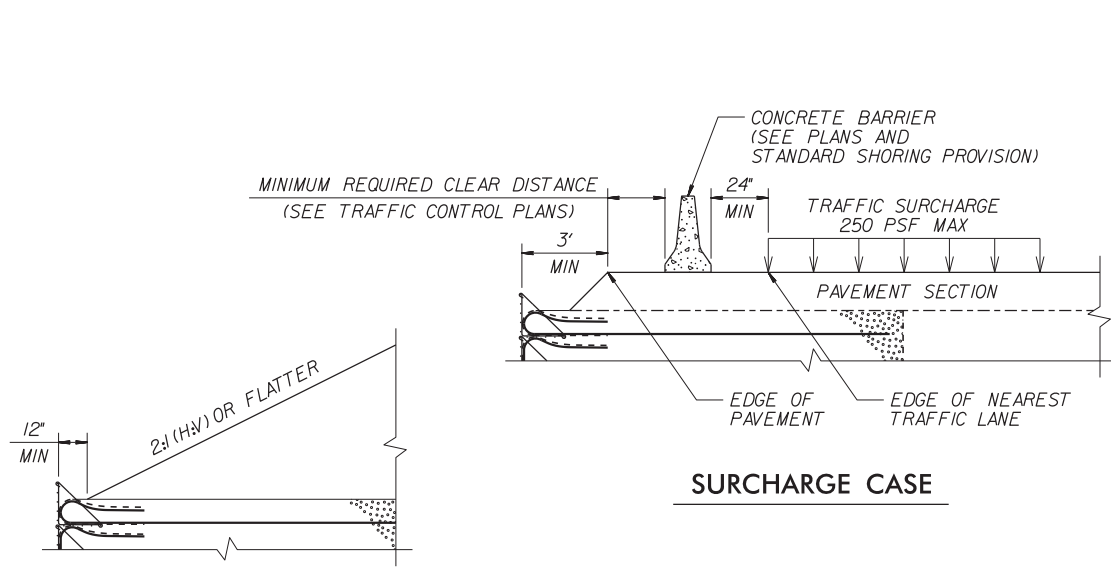
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**GEOTECHNICAL
ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.01

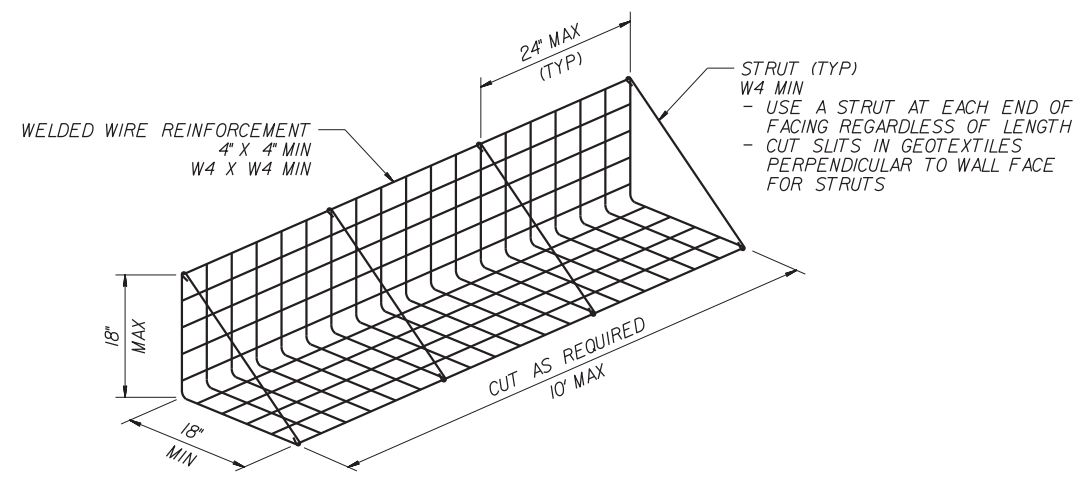
STANDARD
TEMPORARY SHORING

PROJECT REFERENCE NO. 17BP.13.R.156	SHEET NO. 2G-2
GEOTECHNICAL ENGINEER  Documented by: <i>Scott A. Hadden</i> 0/11/2023 F780CABE88FAC3 SIGNATURE DATE	ENGINEER SIGNATURE DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

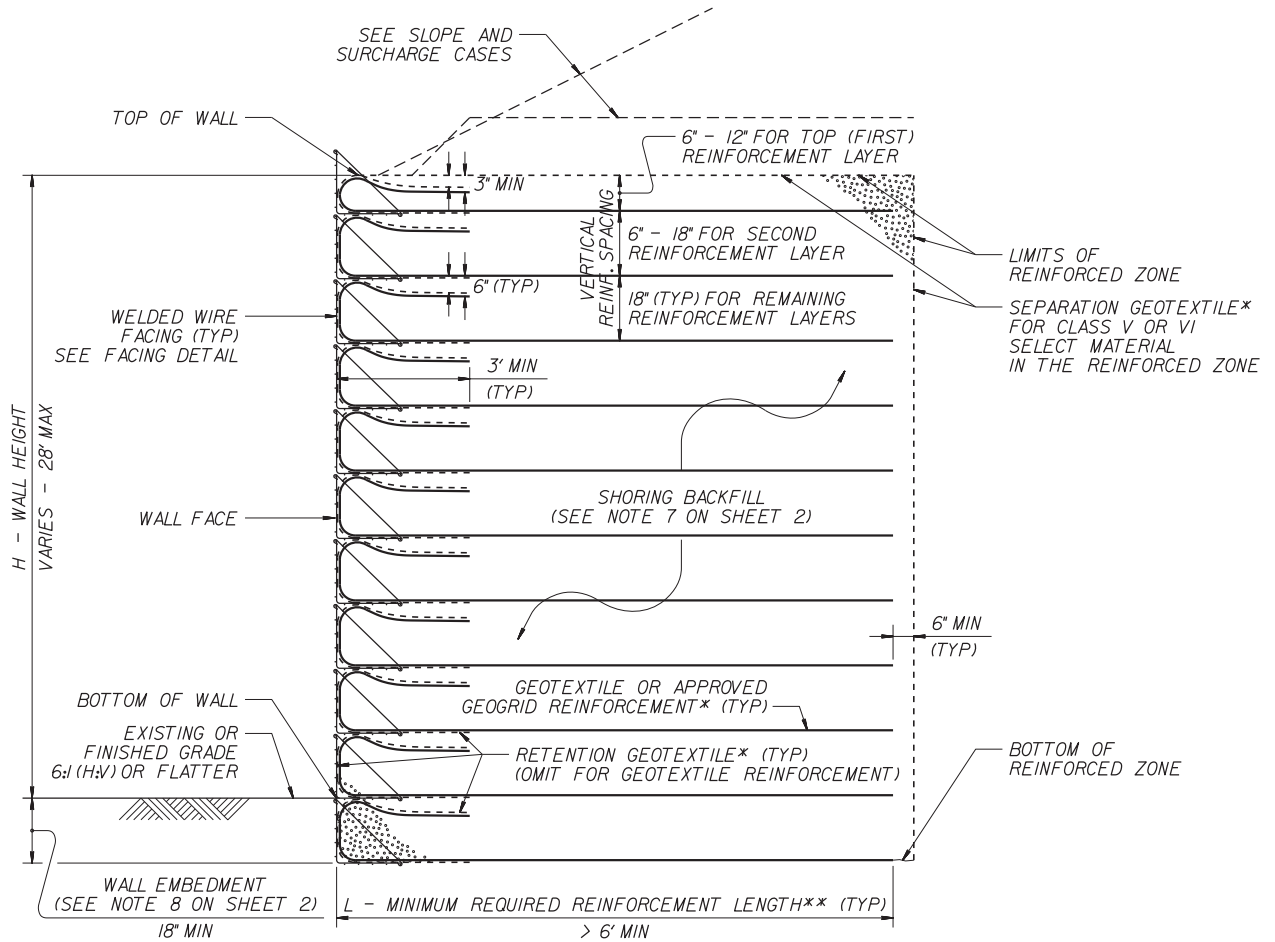


SLOPE CASE

SURCHARGE CASE

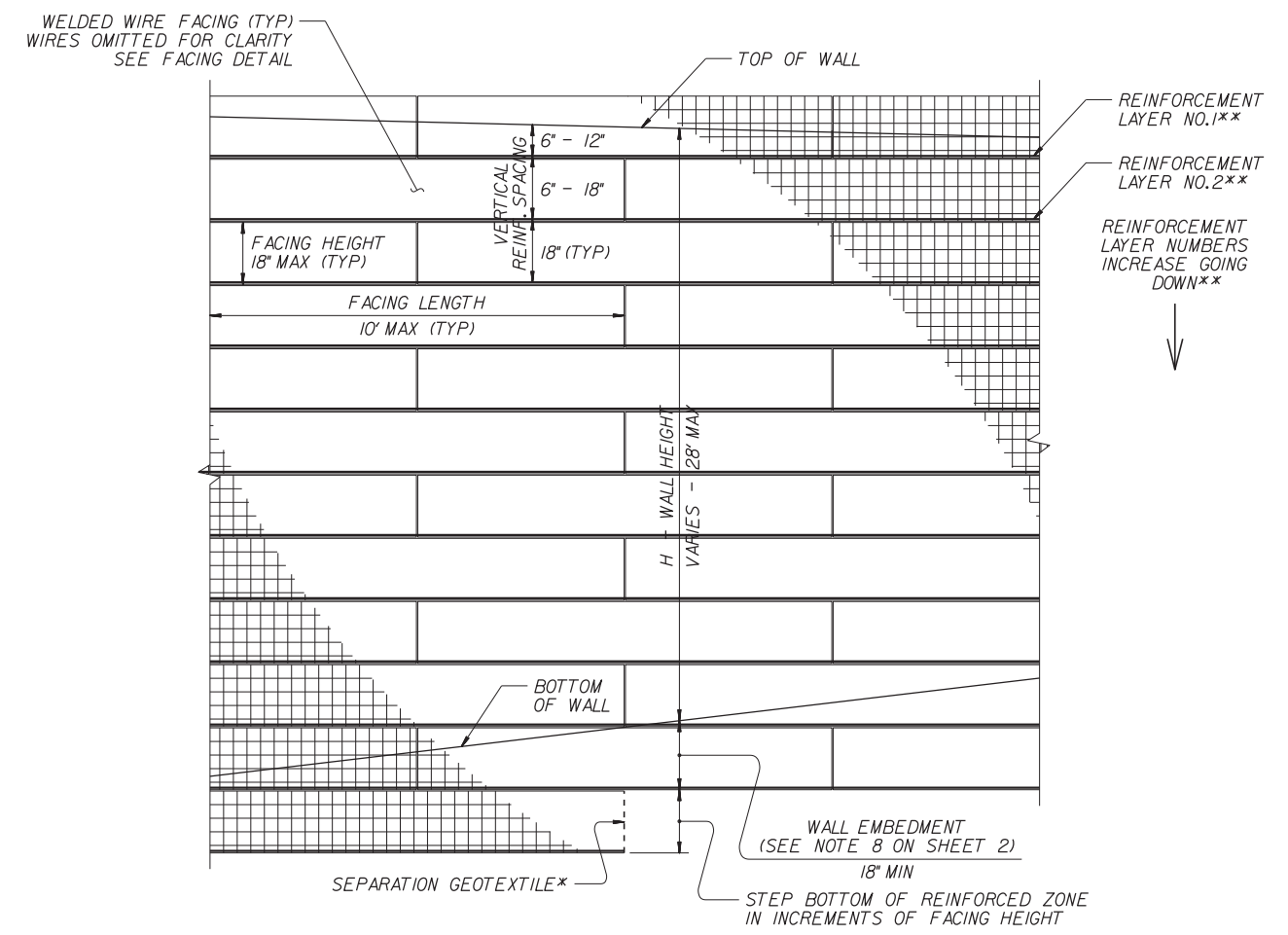


FACING DETAIL




STANDARD TEMPORARY WALL


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

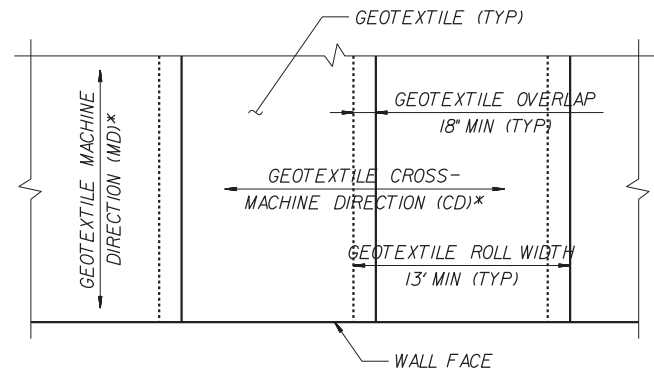


STANDARD TEMPORARY WALL – PARTIAL ELEVATION

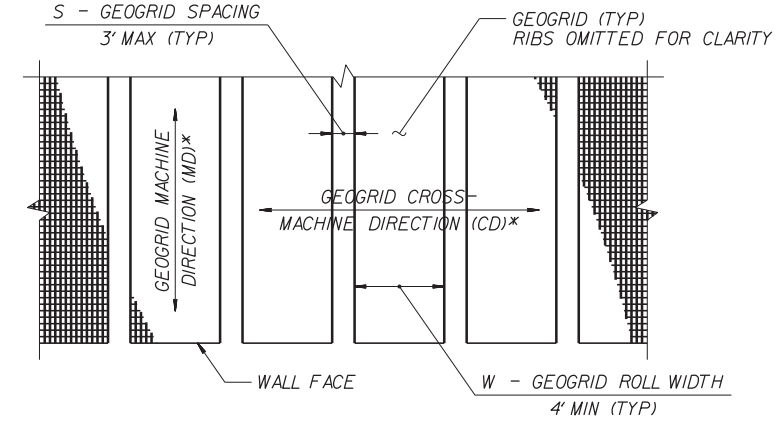
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
 **SEE REINFORCEMENT TABLES ON SHEET 3.

 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT	STANDARD DETAIL NO. 1801.02
	STANDARD TEMPORARY WALL SHEET 1 OF 3

PROJECT REFERENCE NO. 17BP.13.R.156	SHEET NO. 2G-3
GEOTECHNICAL ENGINEER  Documented by: <i>Scott A. Hilden</i> 10/11/2023 F790C4E8B6F6C6D4 SIGNATURE DATE	ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

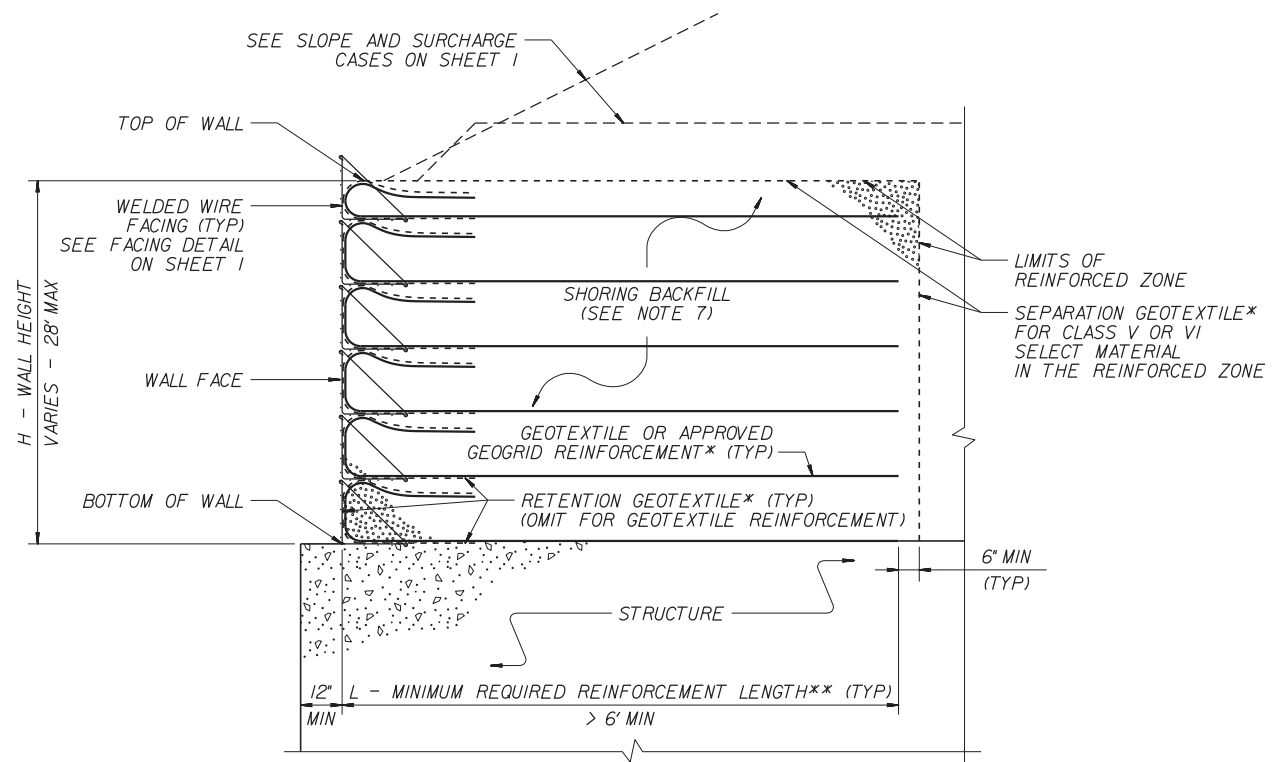


GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



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

GEOSYNTHETIC PLACEMENT DETAILS
(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL
*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ PSF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER OR FLOOD ELEVATION IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. WALL EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS FOR GEOGRID REINFORCEMENT ARE APPROVED FOR SHORT TERM DESIGN STRENGTHS (3-YEAR DESIGN LIFE) IN THE MD AND CD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Products.aspx DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

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

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




NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 2 OF 3

PROJECT REFERENCE NO. 17BP.13.R.156	SHEET NO. 2G-4
 GEOTECHNICAL ENGINEER ENGINEER	ENGINEER _____ DATE: _____
Documented by: <u>Scott A. Hadden</u> /0/11/2023 F770C4E8B6F6C0A SIGNATURE DATE SIGNATURE DATE	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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

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

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

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

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

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

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

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

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



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**GEOTECHNICAL
ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.02
STANDARD TEMPORARY WALL SHEET 3 OF 3
DATE: 11-19-13

8/17/99
 06-JUN-2023 10:59
 PLS DO NOT SCALE OR MODIFY THIS DRAWING
 NCDOT Division 13 Bridge Replacements\B.17BP.13.R.156.Modison.560143.Roadway\Proj\560143.Rdy_30.dgn

COMPUTED BY: D. Clayton Elliott, PG DATE: December 14, 2022
 CHECKED BY: Shane C. Clark, PE DATE: December 14, 2022

(12-17-19)

PROJECT NO. 17BP.13.R.156(SF-560143)	SHEET NO. 3G-1
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STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

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

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

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

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

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU(1)	12	100	200	500		
					TOTAL CY/TONS/SY:	100	200**	500**	0 0

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

SUMMARY OF SURCHARGES AND SURCHARGE WAITING PERIODS

LINE	Station	Station	Surcharge Height FT	MONTHS

SUMMARY OF EMBANKMENT WAITING PERIODS

LINE	Station	Station	MONTHS

SUMMARY OF BRIDGE WAITING PERIODS

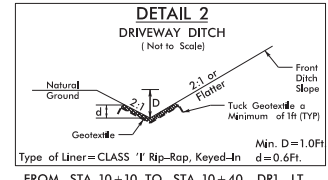
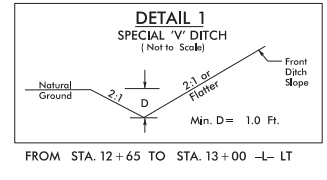
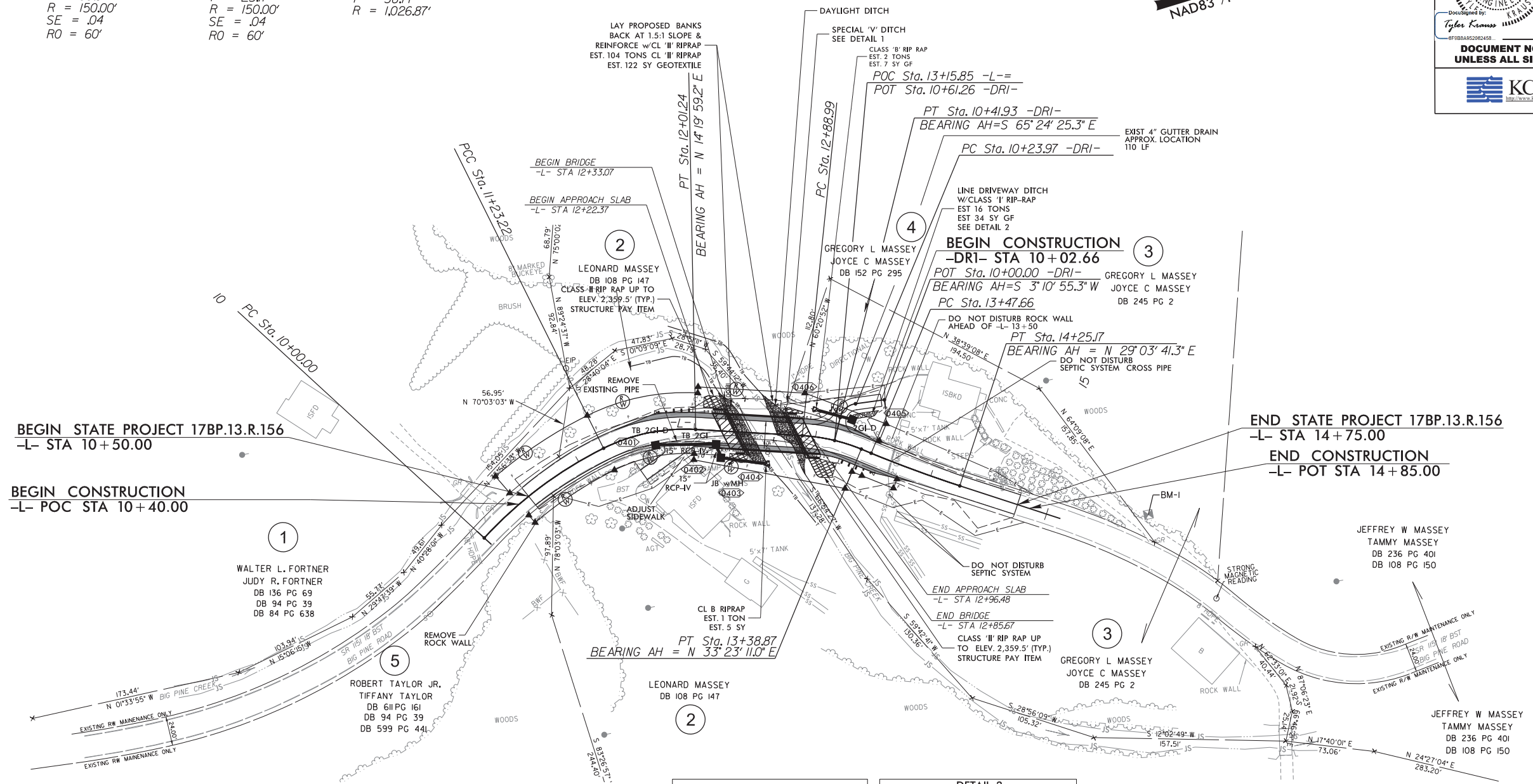
Bridge Description	End Bent/ Bent No.	MONTHS

8/17/99

-L-

PI Sta 10+62.31 Δ = 20° 56' 58.7" (RT) D = 17' 00" 06.1" L = 123.22' T = 62.31' R = 337.00'	PI Sta 11+63.13 Δ = 29° 47' 58.3" (RT) D = 38' 11" 49.9" L = 78.02' T = 39.91' R = 150.00' SE = .04 RO = 60'	PI Sta 13+14.16 Δ = 19° 03' 11.8" (RT) D = 38' 11" 49.9" L = 49.88' T = 25.17' R = 150.00' SE = .04 RO = 60'	PI Sta 13+86.43 Δ = 4° 19' 29.7" (LT) D = 5' 34' 46.8" L = 77.51' T = 38.77' R = 1,026.87'
--	---	---	---

PROJECT REFERENCE NO. 17BP.13.R.156	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 11/7/2023	HYDRAULICS ENGINEER 11/6/2023
<p>Documented by: Tyler Kravos</p> <p>Designed by: Joshua G. Dalton</p> <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	
<p>KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-4270 Phone (919) 783-9214 NC Firm License No. C-0764</p>	



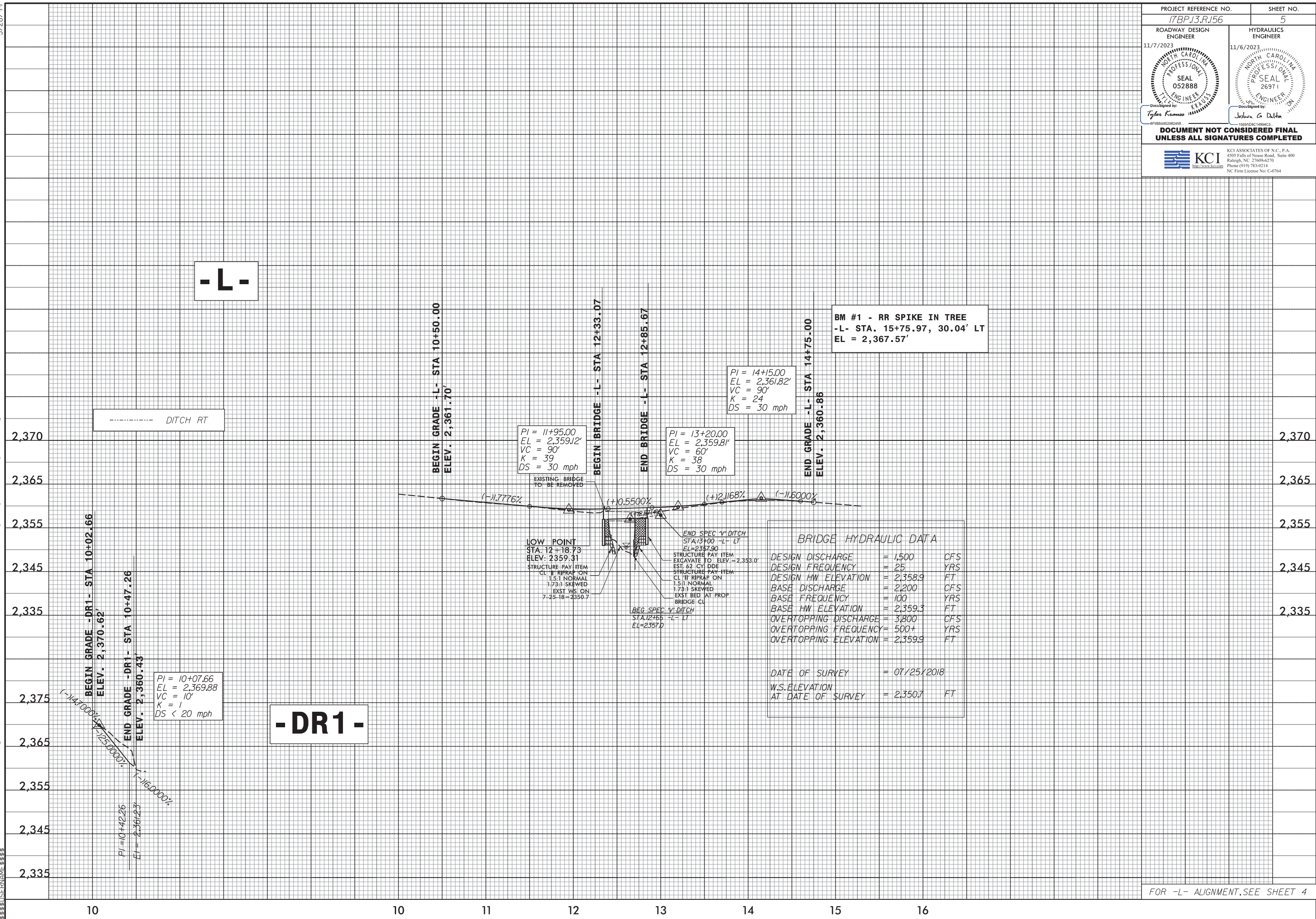
REVISIONS
 28 SEP 2023 09:44
 PC: 20160914.09 NCDOT Division 13 Bridge Replacements, 17BP.13.R.156, Madison_560143.Rdw_pahudgn
 17BP.13.R.156
 17BP.13.R.156

FOR DIMENSIONS, SEE SHEET 4A
 FOR -L-, -DRI- PROFILE SEE SHEET 5
 FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-21

5/28/99

PROJECT REFERENCE NO. 17BP.13.R.156	SHEET NO. 5
ROADWAY DESIGN ENGINEER 11/7/2023 SEAL 052888 ENGINEER KRAUS	HYDRAULICS ENGINEER 11/6/2023 SEAL 26971 ENGINEER DALTON
<p>DocuSigned by: Tyler Kraus</p> <p>DocuSigned by: Joshua G Dalton</p>	
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	
<p>KCI ASSOCIATES OF N.C., P.A. 4905 Falls of News Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214 NC Firm License No. C-0764</p>	

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FOR -L- ALIGNMENT, SEE SHEET 4

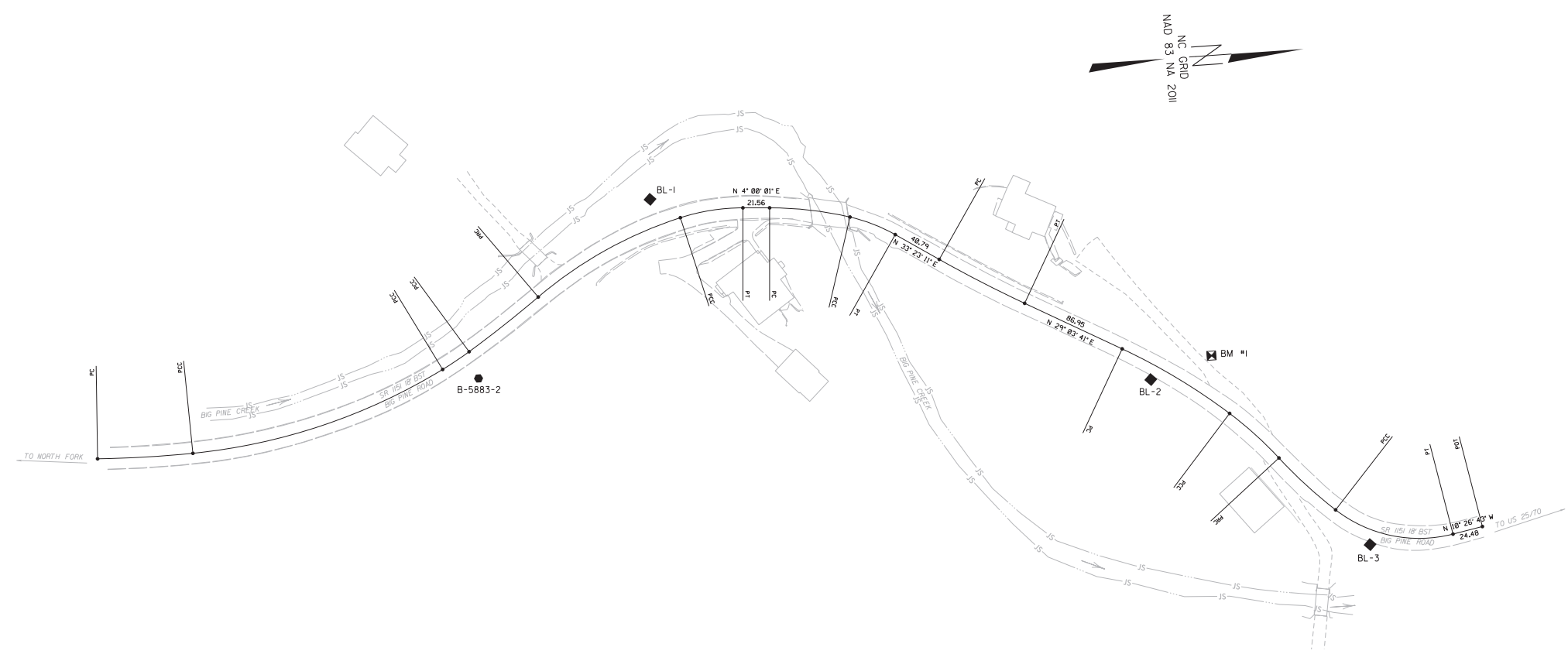
PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.156	RW02C-1
Location and Surveys	

SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

6/2/99

REVISIONS



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-5883 GPS 1"

WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
 NORTHING: 764410.6860(±ft) EASTING: 870868.9040(±ft)
 ELEVATION: 2382.59(±ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99980774

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-5883 GPS 1" TO "L" STATION IS

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

NOTES:

- IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

01-FEB-2023 07:45
 Revision AT 13-330134L
 Program\560143\Working\Control Sheets\560143_Is_rw02c-1.dgn

SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

SURVEY CONTROL

BL	POINT	DESC.	NORTH	EAST	ELEVATION
GPS1	B-5883-1		764410.6860	870868.9040	2382.59
GPS2	B-5883-2		765124.8390	870840.9472	2366.72
1	BL 1		765273.0245	870706.2881	2360.71
2	BL 2		765666.1535	870879.6852	2358.48
3	BL -3		765833.4355	871025.0128	2356.90

SURVEY BENCHMARK

.....
 BENCHMARK ELEVATION = 2367.57
 N 765716 E 870864
 BM 1 RR SPIKE IN TREE

EXISTING ALIGNMENT TABLE

EL	POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	764813.514		870884.237	N 00°41'37.8" E	77.06	04°50'50.6"(L.T)	06°17'18.7"	77.08	38.56	911.12
CURVE	764890.569		870885.170	N 14°33'48.6" W	212.70	25°40'02.3"(L.T)	11°57'59.6"	214.49	109.08	478.80
PCC	765096.437		870831.685	N 29°51'13.1" W	25.72	04°54'46.6"(L.T)	19°05'54.8"	25.72	12.87	300.00
PC	765118.741		870818.884	N 34°21'47.1" W	71.16	04°06'21.5"(L.T)	05°46'06.6"	71.18	35.60	993.25
CURVE	765177.485		870778.717	N 25°10'21.9" W	131.41	22°29'11.9"(RT)	17°00'06.1"	132.26	66.99	337.00
PCC	765296.419		870722.820	N 04°57'52.2" W	51.11	17°55'47.4"(RT)	34°56'11.4"	51.32	25.87	164.00
PT	765347.339		870718.397	N 04°00'01.5" E	21.56					
LINE	765368.849		870719.901	N 10°32'01.0" E	65.31	13°03'59.1"(RT)	19°57'49.3"	65.45	32.87	287.00
PC	765433.057		870731.840	N 25°13'35.8" E	39.20	16°19'10.4"(RT)	41°29'38.7"	39.33	19.80	138.08
CURVE	765468.516		870748.546	N 33°23'11.0" E	40.79					
PCC	765502.579		870770.995	N 31°13'26.2" E	77.49	04°19'29.7"(L.T)	05°34'46.8"	77.51	38.77	1026.87
PC	765568.847		870811.166	N 29°03'41.3" E	86.95					
LINE	765644.847		870853.400	N 35°00'43.6" E	101.16	11°54'04.6"(RT)	11°44'38.6"	101.34	50.85	487.87
CURVE	765727.698		870911.439	N 46°05'42.4" E	53.67	10°15'52.9"(RT)	19°05'54.9"	53.75	26.95	300.00
PCC	765764.919		870950.111	N 46°29'13.7" E	62.07	09°28'50.3"(L.T)	15°15'26.3"	62.14	31.14	375.53
PC	765807.653		870995.123	N 15°39'02.6" E	96.77	52°11'31.9"(L.T)	52°05'13.5"	100.20	53.88	110.00
CURVE	765900.838		871021.230	N 10°26'43.4" W	24.48					
PT	765924.912		871016.792							

NOTES:

- IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

REVISIONS

6/2/19



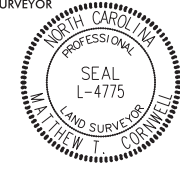
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Revision
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Revision
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1/2023

REVISIONS

30 JAN 2023 09:13
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mccornwell

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. 17BP.13.R.156	SHEET NO. RW02D-1
Location and Surveys	
 TGS ENGINEERS 201 WEST MARION STREET SUITE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	
PROJECT SURVEYOR	
DocuSigned by:  <small>ESD00P11473E475...</small>	
1/30/2023	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Matthew T. Cornwell, 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 1/30/2023

DocuSigned by:

ESD00P11473E475...
 Professional Land Surveyor L-4775

		L	
TYPE	STATION	NORTH	EAST
PC	10+00.00	765177.4851	870778.7166
PCC	11+23.22	765287.6743	870725.1135
PT	12+01.24	765364.8092	870724.3506
PC	12+88.99	765449.8337	870746.0754
PT	13+38.87	765495.2423	870766.1595
PC	13+47.66	765502.5788	870770.9946
PT	14+25.17	765568.8473	870811.1661
PC	15+12.12	765644.8474	870853.4003
PT	16+13.46	765727.6978	870911.4388

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

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO. 17BP.13.R.156	SHEET NO. RW03E-1
Location and Surveys	
TGS ENGINEERS 201 WEST MARION STREET SUITE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	
PROJECT SURVEYOR <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="font-size: small;"> Designed by: EBD00P11473E475 </div> <div style="text-align: center;"> </div> </div> <p style="text-align: right; font-size: x-small;">7/24/2023</p>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Matthew T. Cornwell, 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 January 20, 2023 to July 21, 2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 7/24/2023

Designed by:

 EBD00P11473E475
 Professional Land Surveyor L-4775

REVISIONS


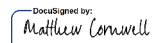

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST	
L	10+40.00	20.00	765220.8898	870774.3218	PUNCH IN ROCK
L	10+40.00	-12.00	765205.0762	870746.5022	
L	10+40.00	12.00	765216.9364	870767.3669	POINT NOT SET - FALLS IN CREEK
L	10+40.00	-30.00	765196.1810	870730.8537	
L	11+23.22	20.00	765293.0078	870744.3892	
L	11+23.22	-30.00	765279.6741	870696.1999	
L	12+01.24	-35.00	765373.4738	870690.4400	
L	12+01.24	20.00	765359.8581	870743.7281	
L	12+01.24	25.00	765358.6203	870748.5724	
L	12+01.24	-30.00	765372.2360	870695.2844	
L	12+88.99	-35.00	765458.4983	870712.1649	
L	13+38.87	35.00	765475.9824	870795.3838	
L	13+38.87	20.00	765484.2366	870782.8591	
L	13+47.66	20.00	765491.5732	870787.6942	
L	13+50.00	-27.00	765519.3405	870749.7019	
L	13+50.00	-12.00	765511.1149	870762.2454	
L	13+75.00	12.00	765519.2706	870795.9258	
L	13+75.00	20.00	765515.0477	870802.7204	

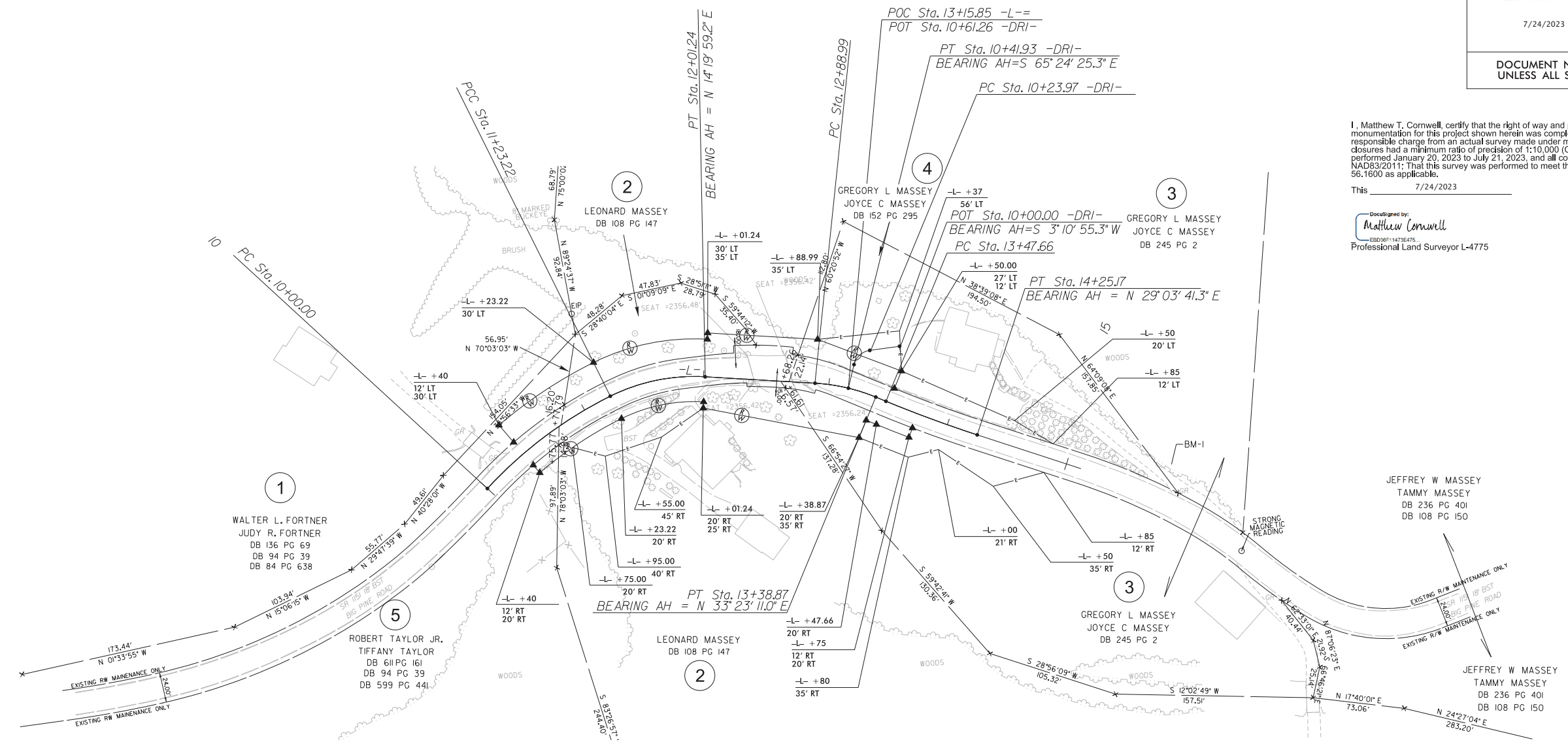
NOTES:

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 JANUARY 20, 2023 TO JULY 21, 2023.

24 JUL 2023 15:44
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 Matthew T. Cornwell

PROJECT REFERENCE NO. 17BP.13.R.156	SHEET NO. RW04
Location and Surveys	
 TGS ENGINEERS 201 WEST MARION STREET SUITE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	
PROJECT SURVEYOR	
Designed by:  ESD00611473E475	
 7/24/2023	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PI Sta 10+62.31 $\Delta = 20^{\circ}56'58.7''$ (RT) $D = 17^{\circ}00'06.1''$ $L = 123.22'$ $T = 62.31'$ $R = 337.00'$	PI Sta 11+63.13 $\Delta = 29^{\circ}47'58.3''$ (RT) $D = 38^{\circ}11'49.9''$ $L = 78.02'$ $T = 39.91'$ $R = 150.00'$ $SE = .04$ $RO = 60'$	PI Sta 13+14.16 $\Delta = 19^{\circ}03'11.8''$ (RT) $D = 38^{\circ}11'49.9''$ $L = 49.88'$ $T = 25.17'$ $R = 150.00'$ $SE = .04$ $RO = 60'$	PI Sta 13+86.43 $\Delta = 4^{\circ}19'29.7''$ (LT) $D = 5^{\circ}34'46.8''$ $L = 77.51'$ $T = 38.77'$ $R = 1,026.87'$
---	--	--	--



I, Matthew T. Cornwell, 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 January 20, 2023 to July 21, 2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 7/24/2023

Designed by:

 ESD00611473E475
 Professional Land Surveyor L-4775

REVISIONS

24 JUL 2023 15:48
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 Matthew T. Cornwell
 A PROFESSIONAL LAND SURVEYOR

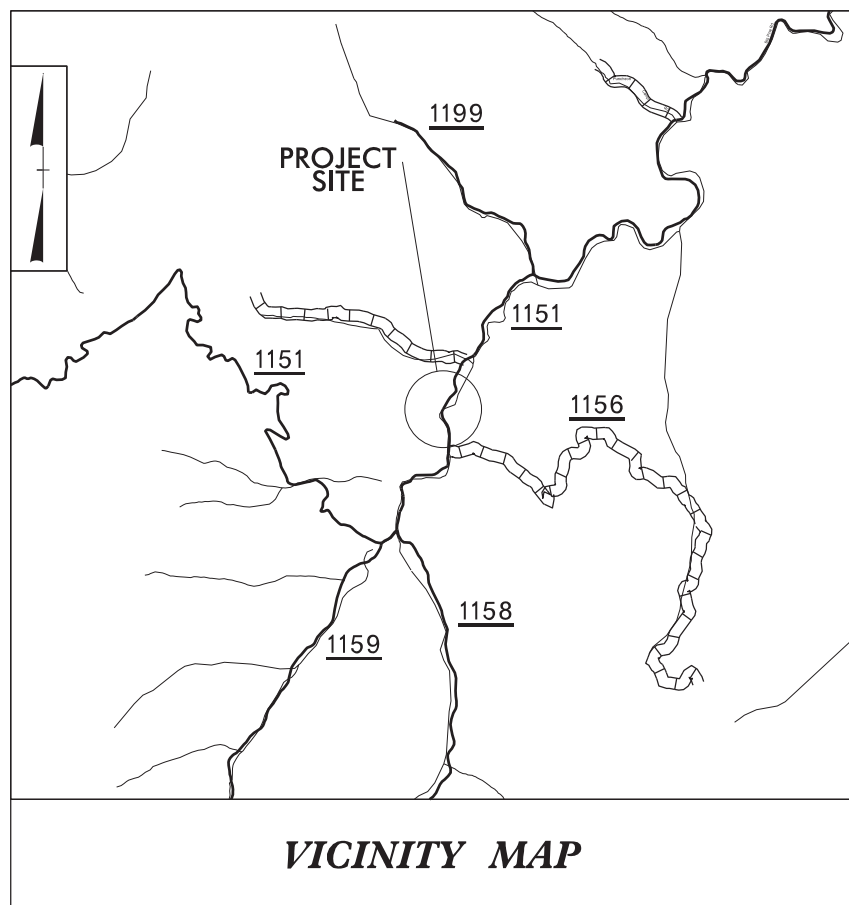
NOTES:

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 JANUARY 20, 2023 TO JULY 21, 2023.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

MADISON COUNTY



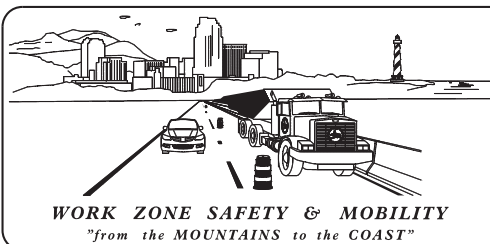
**LOCATION: REPLACE BRIDGE NO. 143
OVER BIG PINE CREEK
ON SR 1151 (BIG PINE ROAD)**

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

<u>SHEET NO.</u>	<u>TITLE</u>
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, LOCAL NOTES)
TMP-1C	PHASING
TMP-2A	ADVANCE SIGNING DETAIL FOR FLAGGERS (SOUTHBOUND LANE SHIFT)
TMP-2B	ADVANCE SIGNING DETAIL FOR FLAGGERS (NORTHBOUND LANE SHIFT)
TMP-2C	ADVANCE SIGNING DETAIL FOR TEMPORARY SIGNAL (SOUTHBOUND LANE SHIFT)
TMP-2D	ADVANCE SIGNING DETAIL FOR TEMPORARY SIGNAL (NORTHBOUND LANE SHIFT)
TMP-3	TEMPORARY TRAFFIC CONTROL PHASE 1 DETAIL
TMP-4	TEMPORARY TRAFFIC CONTROL PHASE 2 DETAIL
TMP-5	TEMPORARY TRAFFIC CONTROL PHASE 3 DETAIL

PROJECT: 17BP.13.R.156
CONTRACT: DM00361

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



PLANS PREPARED BY:

ROBERT F. DECOLA, P.E.
PROJECT MANAGER

TYLER M. KRAUSS, P.E.
ROADWAY DESIGN ENGINEER

KCI ASSOCIATES OF NC, PA

NCDOT CONTACTS:

ZACHARY CLARK, P.E.
PROJECT ENGINEER

KARMEN DAIS, P.E.
PROJECT DESIGN ENGINEER



KCI
http://www.kci.com

KCI ASSOCIATES OF N.C., P.A.
4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609-6270
Phone (919) 783-9214
NC Firm License No: C-0764

APPROVED *Tyler Krauss*
DATE: 11/7/2023

SEAL

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\$\$\$\$\$USERNAME\$\$\$\$\$

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1180.01	SKINNY - DRUMS
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

USER DEFINED (IF NEEDED)

USER DEFINED (IF NEEDED)

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TEMPORARY PAVEMENT MARKING

DESCRIPTION	PAY ITEM
P1 - WHITE EDGELINE	PAINT (4")
P61 - WHITE STOPBAR	PAINT (24")

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

12-SEP-2023 13:38 M:\2016\221601946.09 NCDOT Division 13 Bridge Replacements\B.17BP.13.R.156.Madison_560043\TrafficControl\TCP\17BP.13.R.156_TMP_01A.dgn \$\$\$USERNAME\$\$\$

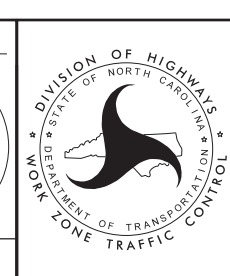


DocuSigned by:
Tyler Krauss
#F0B8A5C202458

APPROVED: _____
DATE: 11/7/2023

SEAL

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



ROADWAY STANDARD
DRAWINGS & LEGEND

DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR 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) 100 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

- I) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- J) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- K) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 100 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

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

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

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

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

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

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

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

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

TRAFFIC CONTROL DEVICES

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

ROAD NAME:	MARKING PAINT	MARKER
SR 1151 (BIG PINE ROAD)		TEMPORARY RAISED

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

MISCELLANEOUS

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

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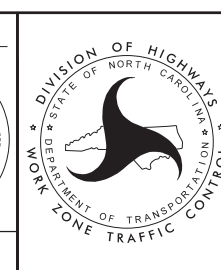


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PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.156	TMP-1C

PHASING

PHASE 1

WORKING IN A CONTINUOUS MANNER COMPLETE THE FOLLOWING IN PHASE 1 STEPS 1 AND 2:

- STEP 1: USING ROADWAY STANDARD DRAWING 1101.01 SHEET 3 OF 3 COMPLETE THE FOLLOWING:
- INSTALL ADVANCE WARNING WORK ZONE SIGNS PER ADVANCED SIGNING DETAIL TMP-2A AND TMP-2B AND ROADWAY STANDARD DRAWING 1101.01, SHEET 3 OF 3.
- STEP 2: USING ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 14 COMPLETE THE FOLLOWING:
- USING ALTERNATING LANE CLOSURES, WEDGE AND CONSTRUCT PAVEMENT FROM -L- STA. 10+50.00 TO -L- STA. 12+00.00 AND -L- STA. 13+00.00 TO -L- STA. 14+75.00 SUCH THAT THE EDGE OF TRAVEL PAVEMENT DROP-OFF IS NO GREATER THAN 3" AT ANY POINT. WEDGE AND CONSTRUCT TEMPORARY PAVEMENT BACK DOWN TO THE EXISTING BRIDGE GRADE FROM -L- STA. 12+00.00 TO EXISTING BRIDGE AND EXISTING BRIDGE TO -L- STA. 13+00.00 (SEE TMP-3).
- CONSTRUCT TEMPORARY GRAVEL DRIVEWAY FOR ACCESS TO PARCEL 2. CONSTRUCT TEMPORARY PAVEMENT WIDENING ON PARCEL 4.

PHASE 2

WORKING IN A CONTINUOUS MANNER COMPLETE THE FOLLOWING IN PHASE 2 STEPS 1 AND 2:

- STEP 1: USING ROADWAY STANDARD DRAWING 1101.01 SHEET 3 OF 3 COMPLETE THE FOLLOWING:
- INSTALL ADVANCE WARNING WORK ZONE SIGNS PER ADVANCED SIGNING DETAIL TMP-2C AND ROADWAY STANDARD DRAWING 1101.01, SHEET 3 OF 3. KEEP "ONE LANE ROAD AHEAD", "BE PREPARED TO STOP", "SIGNAL AHEAD", SIGNAL SIGN AND "STOP HERE ON RED" SIGNS COVERED.
- STEP 2: USING ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 14 COMPLETE THE FOLLOWING:
- INSTALL TEMPORARY SIGNALS AND TEMPORARY 24" WHITE STOP BARS, KEEPING SIGNAL HEADS AND SIGNS COVERED (SEE DETAIL TMP-2C).
- PLACE TEMPORARY PAVEMENT MARKINGS FROM -L- STA. 11+25.00 TO -L- STA 13+75.00 TO DESIGNATE LANE SHIFT AND 9 FT. CLEAR ROADWAY.
- INSTALL TEMPORARY PORTABLE CONCRETE BARRIER PER PHASE 2 DETAIL (TMP-4) FROM -L- STA. 12+00.00 TO -L- STA. 13+00.00 KEEPING ENDS PROTECTED BY TEMPORARY CRASH CUSHIONS.
- INSTALL TYPE III BARRICADES AND CHANNELIZING DEVICES PER ADVANCE SIGNING DETAIL TMP-2C AND PHASE 2 DETAIL.
- UNCOVER SIGNAL HEADS AND SIGNS. ACTIVATE TEMPORARY SIGNALS AND PLACE SR 1151 (BIG PINE RD) IN A ONE-LANE, TWO-WAY PATTERN FROM -L- STA. 10+75.00 TO -L- STA. 13+75.00.
- STEP 3: BEHIND THE TEMPORARY TRAFFIC BARRIER AND CHANNELIZING DEVICES COMPLETE THE FOLLOWING:
- CONSTRUCT DOWNSTREAM PORTION OF THE PROPOSED BRIDGE, AS SHOWN IN PHASE 2 DETAIL (TMP-4), INCLUDING END BENTS.
- CONSTRUCT PROPOSED ROADWAY ASPHALT UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AS SHOWN IN PHASE 2 DETAIL (TMP-4), INCLUDING GUARDRAIL AND SHOULDERS AS SHOWN IN THE ROADWAY PLANS.
- WEDGE/PAVE TO TIE IN WHERE NECESSARY TO PROVIDE 9' CLEAR ROADWAY FOR PHASE 3.

PHASE 3

- STEP 1: MOVE TEMPORARY PORTABLE CONCRETE BARRIER PER PHASE 3 DETAIL (TMP-5) TO -L- STA. 12+00.00 TO -L- STA. 13+00.00, KEEPING ENDS PROTECTED BY TEMPORARY CRASH CUSHIONS.
- WEDGE/PAVE AS NECESSARY TO SMOOTHLY TIE PROPOSED WITH EXISTING SR 1151.
- REMOVE CONFLICTING EXISTING TEMPORARY PAVEMENT MARKINGS AND PLACE NEW TEMPORARY PAVEMENT MARKINGS FROM -L- STA. 11+25.00 TO -L- STA. 13+75.00 TO DESIGNATE LANE SHIFT AND 9 FT. CLEAR ROADWAY.
- RESET TYPE III BARRICADES, CHANNELIZING DEVICES, AND TRAFFIC SHIFT SIGNS PER SHEET TMP-2D AND PHASE 2 DETAIL (TMP-5).
- PLACE TRAFFIC TO NEW ONE-LANE, TWO-WAY PATTERN SHOWN IN PHASE 2 DETAIL (TMP-5).
- STEP 2: BEHIND THE TEMPORARY TRAFFIC BARRIER AND CHANNELIZING DEVICES COMPLETE THE FOLLOWING:
- REMOVE REMAINING PORTION OF EXISTING BRIDGE INCLUDING WING WALLS.
- CONSTRUCT REMAINING PORTION OF PROPOSED BRIDGE, AS SHOWN IN PHASE 3 DETAIL.
- CONSTRUCT PROPOSED ROADWAY ASPHALT UP TO BUT NOT INCLUDED THE FINAL LAYER OF SURFACE COURSE, AS SHOWN IN PHASE 3 DETAIL, INCLUDING GUARDRAIL AND SHOULDERS AS SHOWN IN THE ROADWAY PLANS.
- STEP 3: REMOVE PORTABLE CONCRETE BARRIER AND TEMPORARY PAVEMENT MARKINGS.
- WEDGE/PAVE AS NECESSARY TO SMOOTHLY TIE REMAINING SECTIONS OF PROPOSED -L- FROM -L- STA. 10+50.00 TO -L- STA. 14+75.00 UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.
- COVER TEMPORARY SIGNALS AND REMOVE "STOP HERE ON RED", "ONE LANE ROAD AHEAD", AND "BE PREPARED TO STOP" SIGNS.
- USING ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 14 COMPLETE THE FOLLOWING:
- REMOVE ALL EXISTING AND TEMPORARY PAVEMENT MARKINGS FROM -L- STA. 10+50.00 TO -L- STA. 14+75.00.
- PLACE THE FINAL LAYER OF SURFACE COURSE IN THE FINAL TWO-WAY, TWO-LANE PATTERN (SEE ROADWAY PLANS) AND PLACE FINAL PAVEMENT MARKINGS (PAINT) IN THE FINAL PATTERN FROM -L- STA. 10+50.00 TO -L- STA. 14+75.00.
- OPEN SR 1151 (BIG PINE RD) TO THE FINAL TWO-LANE, TWO-WAY PATTERN.
- STEP 4: REMOVE ALL WORK ZONE TRAFFIC CONTROL DEVICES.

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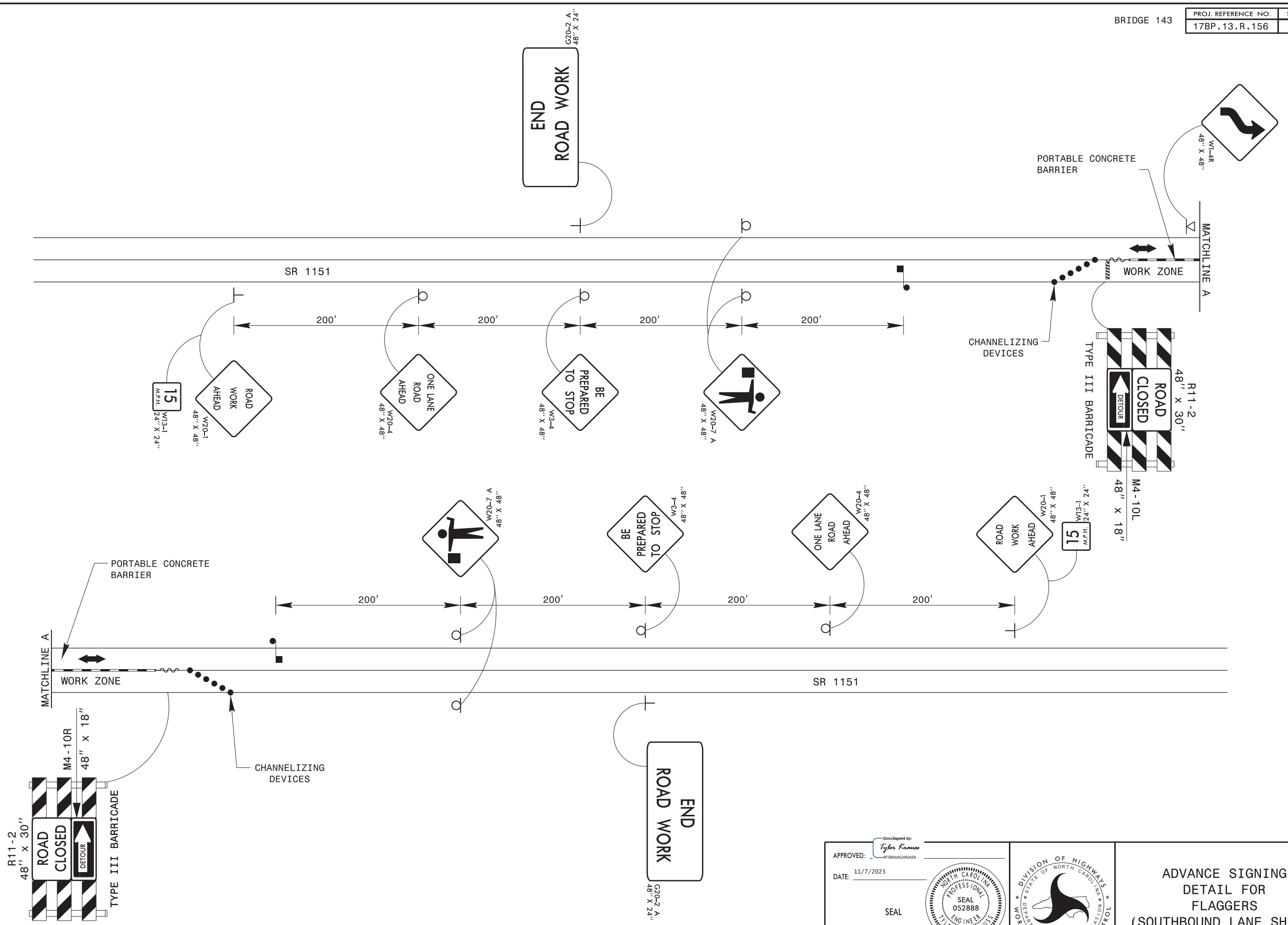
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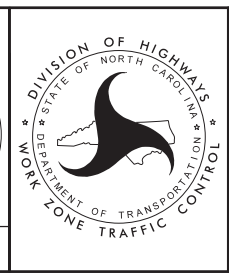
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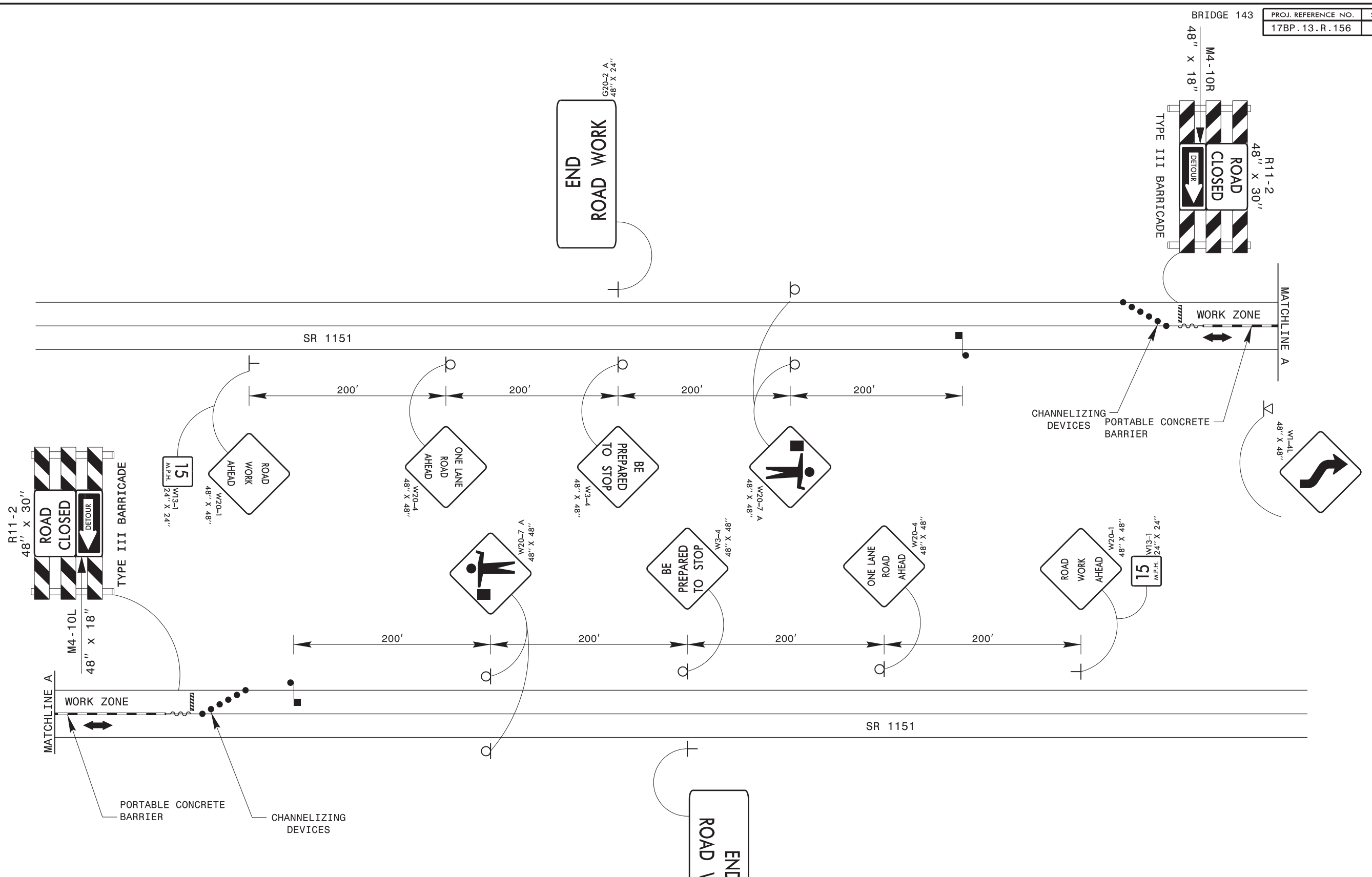
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**ADVANCE SIGNING
DETAIL FOR
FLAGGERS
(SOUTHBOUND LANE SHIFT)**

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PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.156	TMP-2B



END ROAD WORK
G20-2 A
48" X 24"

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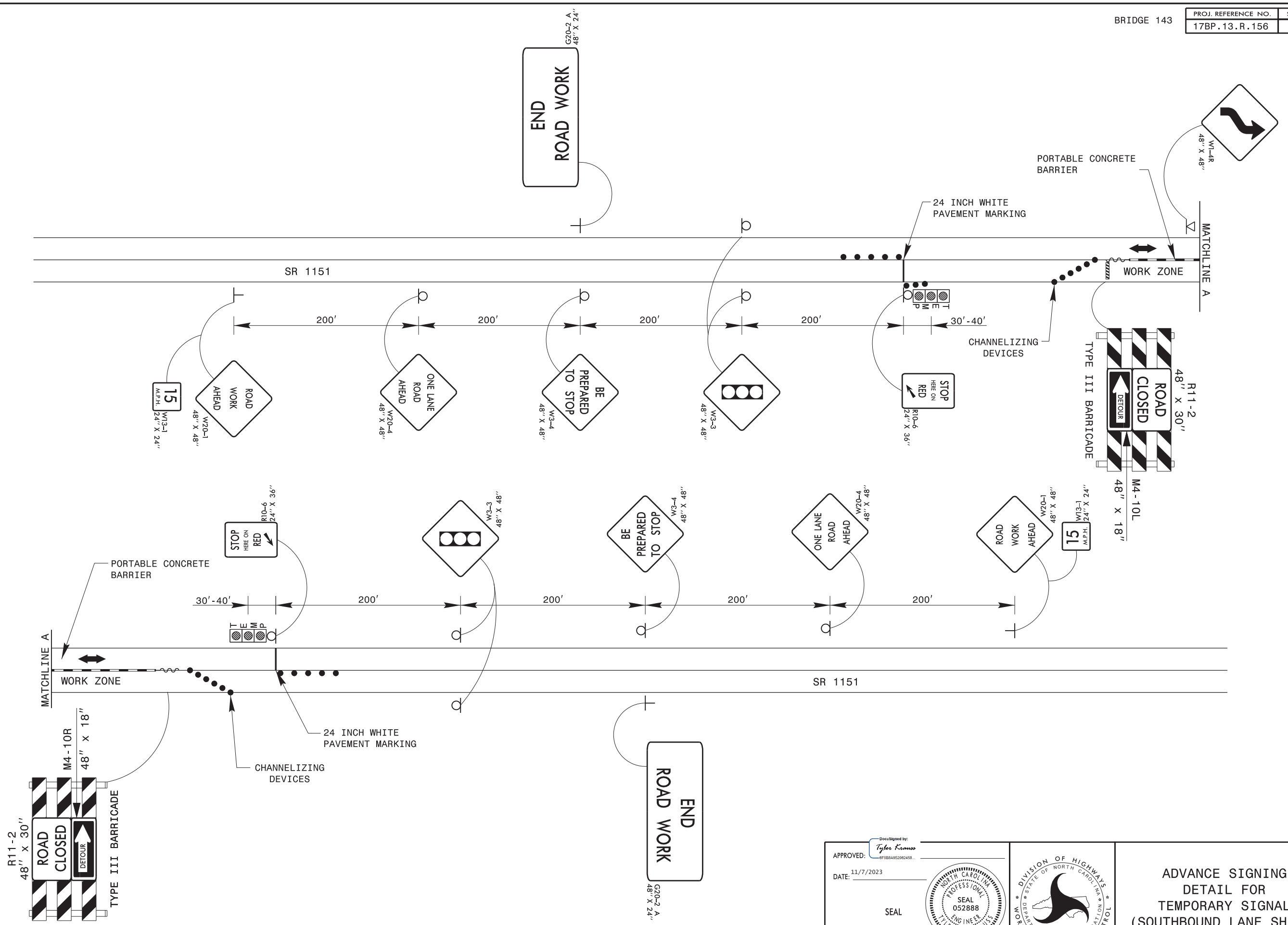
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**ADVANCE SIGNING
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FLAGGERS
(NORTHBOUND LANE SHIFT)**

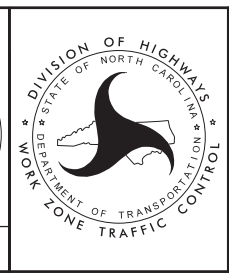
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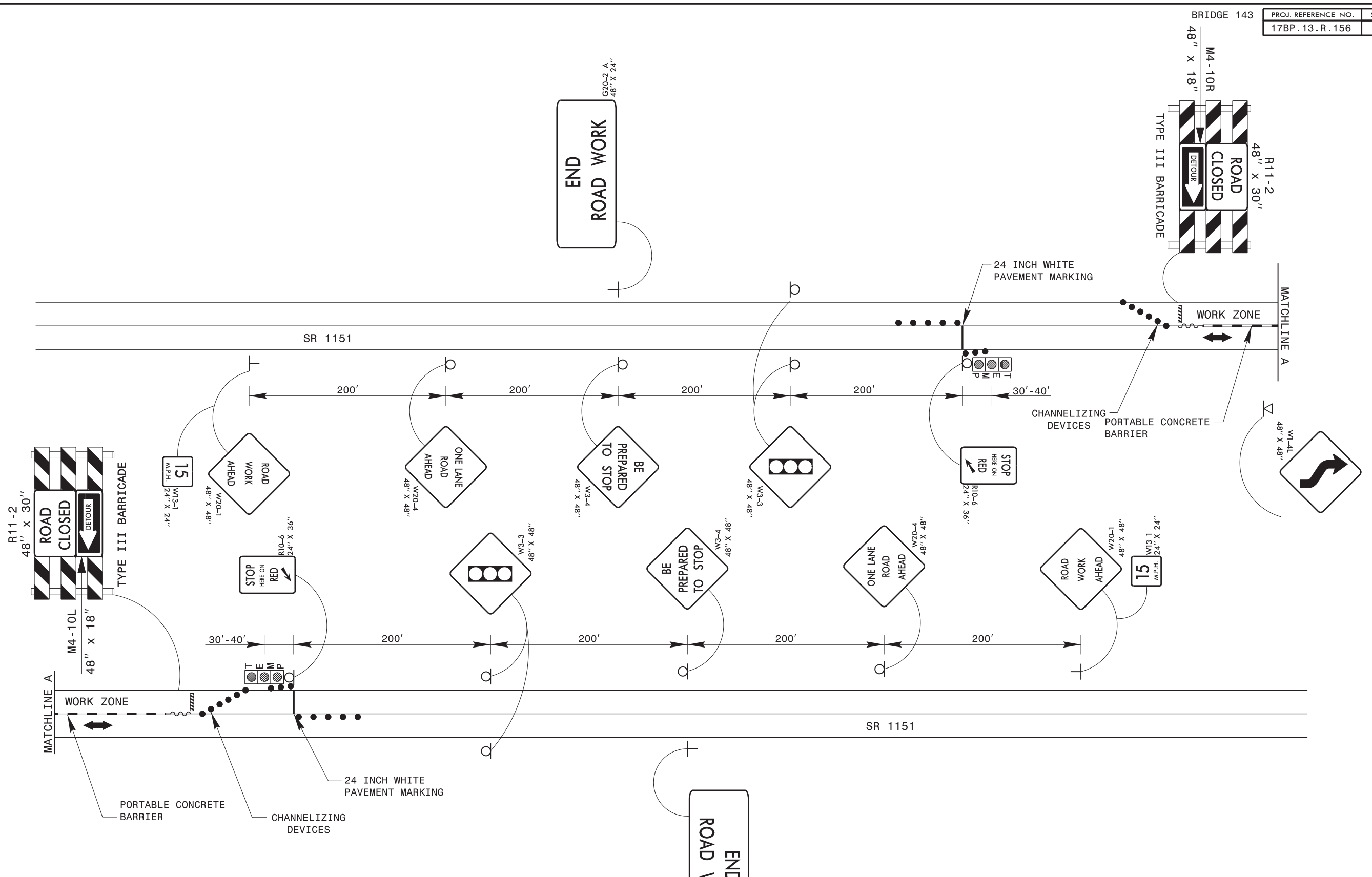
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ADVANCE SIGNING
 DETAIL FOR
 TEMPORARY SIGNAL
 (SOUTHBOUND LANE SHIFT)

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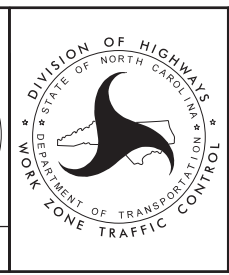
END ROAD WORK
G20-2 A
48" X 24"

END ROAD WORK
G20-2 A
48" X 24"

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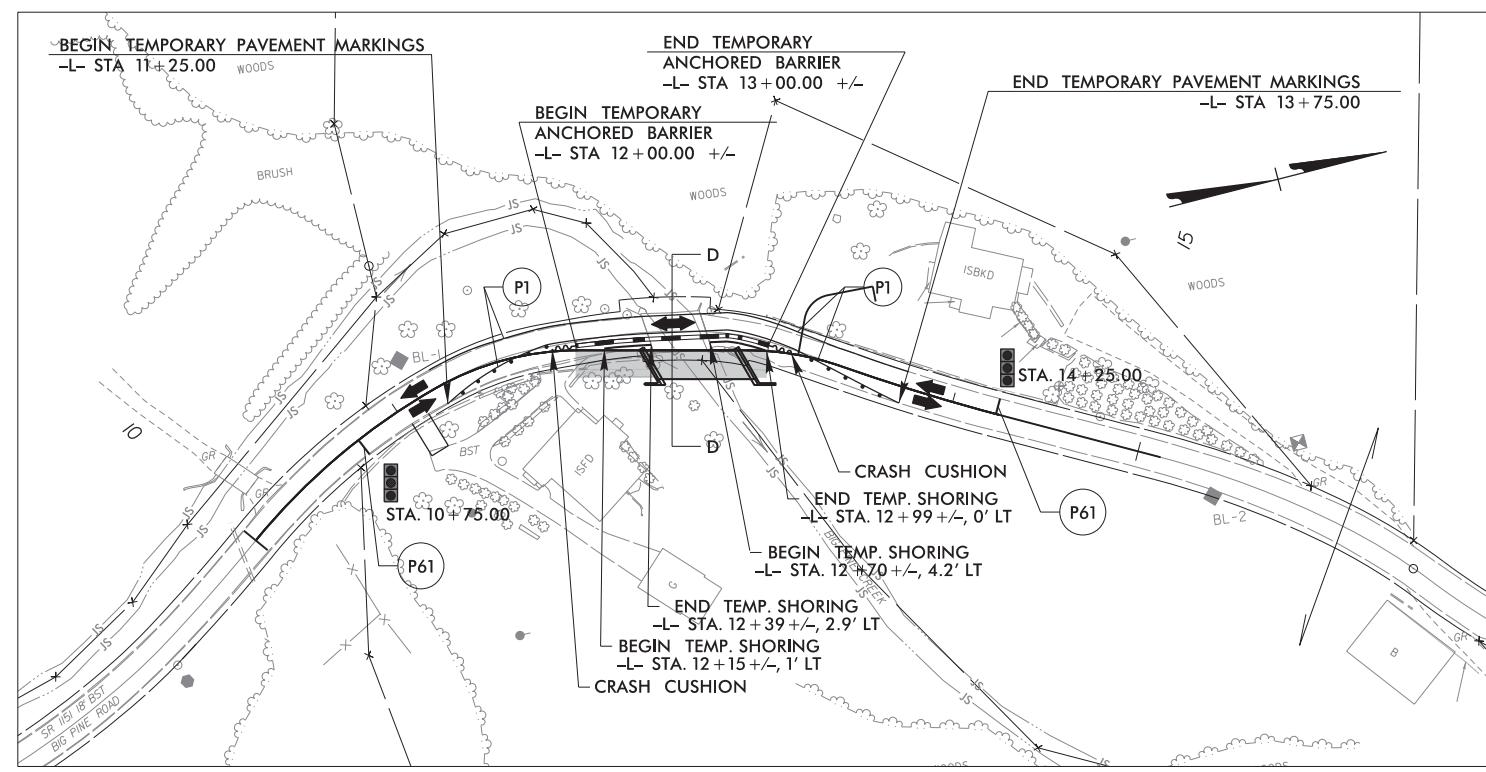
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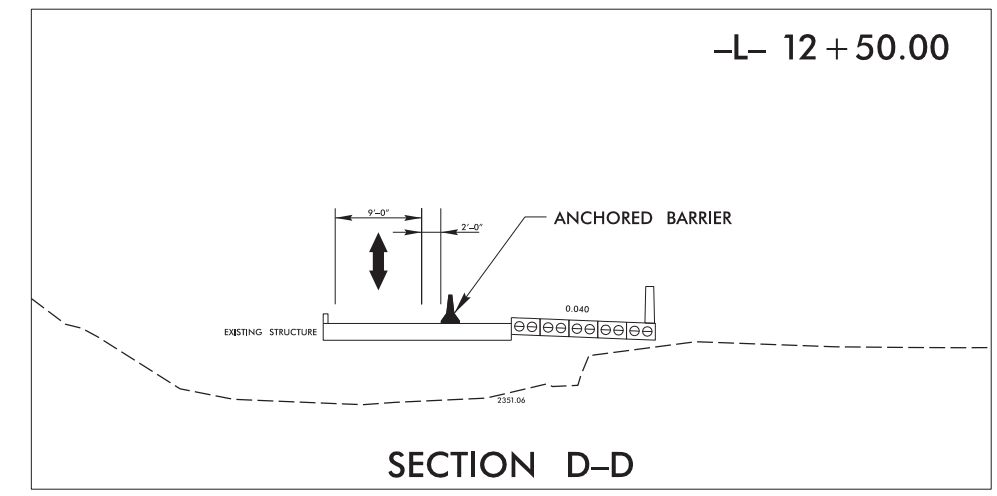
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PHASE 2 CONSTRUCTION
PROPOSED DOWNSTREAM STRUCTURE CONSTRUCTION

REFER TO SHEETS 2G-1 THRU 2G-4 FOR TEMPORARY SHORING DETAILS



SECTION D-D

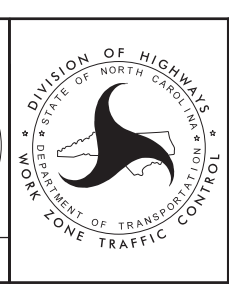
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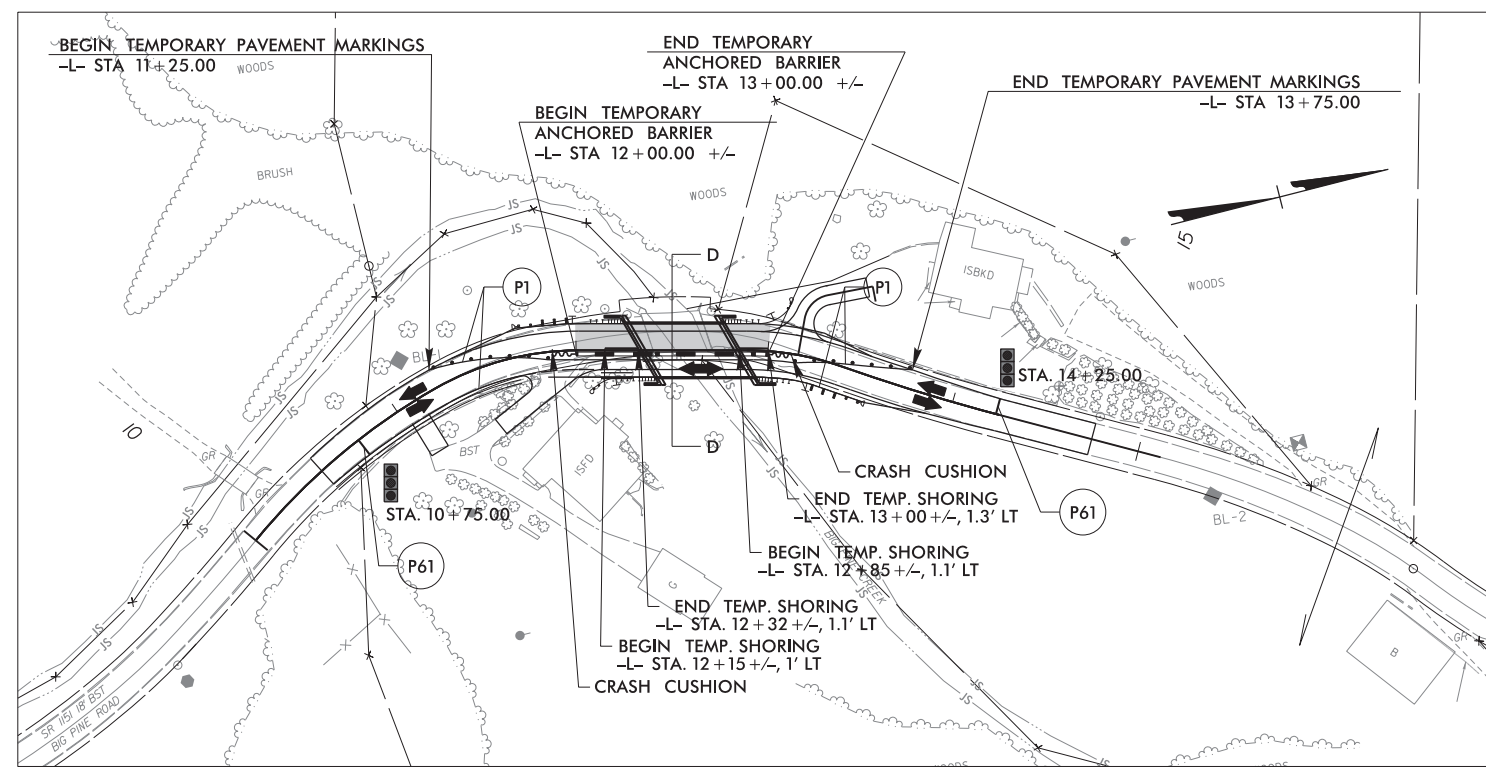
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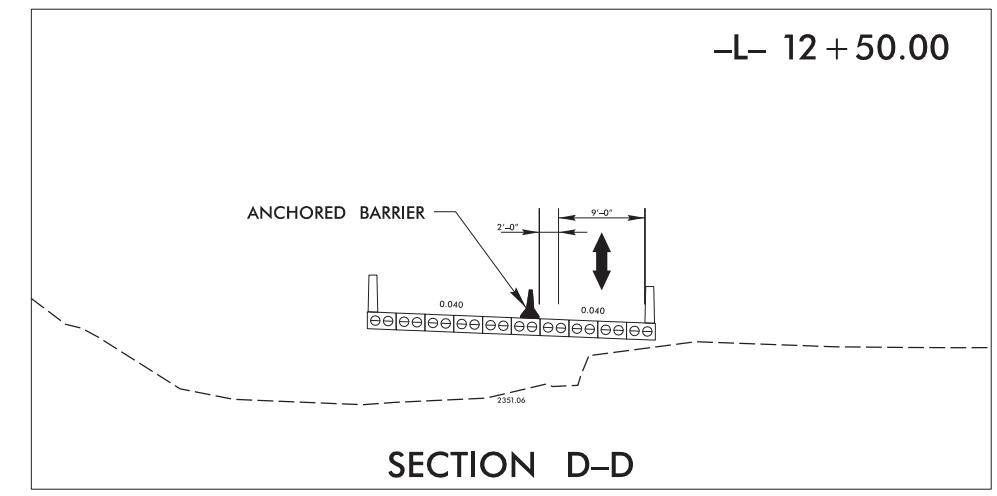


**TEMPORARY TRAFFIC CONTROL
PHASE 2 DETAIL**



PHASE 3 CONSTRUCTION
PROPOSED UPSTREAM STRUCTURE CONSTRUCTION

REFER TO SHEETS 2G-1 THRU 2G-4 FOR TEMPORARY SHORING DETAILS



SECTION D-D

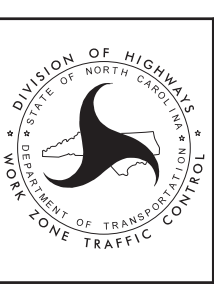
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TEMPORARY TRAFFIC CONTROL
PHASE 3 DETAIL

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CONTRACT: DM00361 PROJECT: 17BP.13.R.156

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PAVEMENT MARKING PLANS

MADISON COUNTY

LOCATION: BRIDGE No. 143 ON SR 1151 (BIG PINE ROAD)
OVER BIG PINE CREEK

PROJECT REFERENCE NO. <i>17BP.13.R.156</i>	SHEET NO. <i>PMP-1</i>
APPROVED: <i>Tyler Krauss</i> <small>Professional Engineer #F388462002458</small>	
DATE: 11/7/2023	
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ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 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 MULTILANE ROADWAYS
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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

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

BRIDGE #	MARKING	MARKER
No. 143	PAINT	NONE
- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

PAVEMENT MARKING SCHEDULE

SYMB	DESCRIPTION
P1	PAINT (4") WHITE EDGELINE
P10	PAINT (4") YELLOW DOUBLE CENTER

INDEX

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

KELVIN L. JORDAN SIGNING & DELINEATION REGIONAL ENGINEER

RENEE B. ROACH, PE, CPM STATE SIGNING & DELINEATION ENGINEER



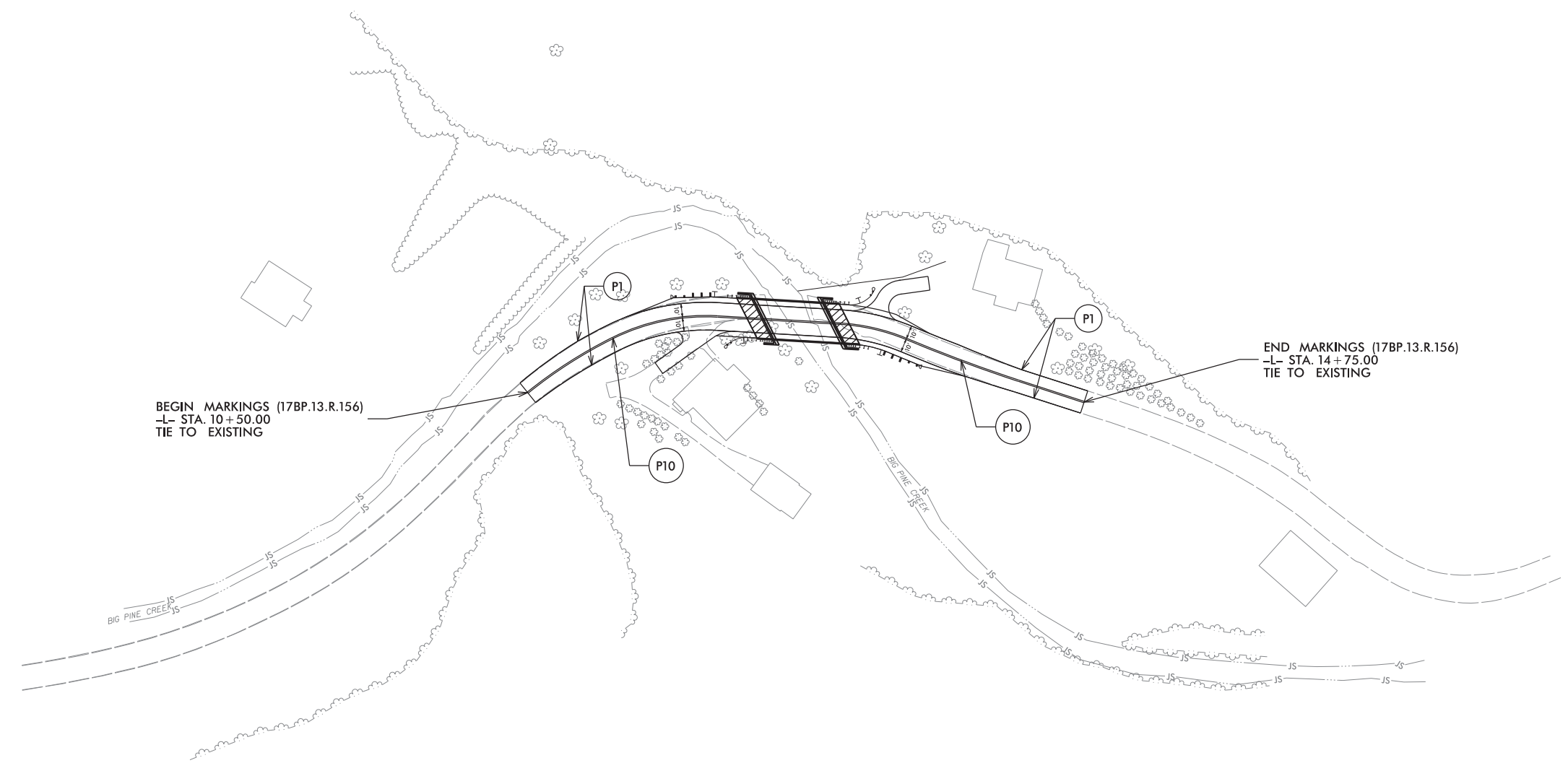
PLANS PREPARED BY:

ROBERT F. DECOLA, P.E. PROJECT MANAGER

TYLER M. KRAUSS, P.E. PROJECT DESIGN ENGINEER



KCI ASSOCIATES OF N.C., P.A.
4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609-6270
Phone (919) 783-9214
NC Firm License No. C-0764

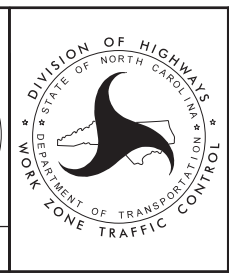


PAVEMENT MARKING LEGEND	
(P1)	WHITE EDGELINE (4")
(P10)	YELLOW DOUBLE CENTER (4")

12-SEP-2023 13:41
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 \$\$\$USERNAME\$\$\$

KCI
 KCI ASSOCIATES OF N.C., P.A.
 4505 Falls of Neuse Road, Suite 400
 Raleigh, NC 27609-6270
 Phone (919) 783-9214
 NC Firm License No: C-0764

APPROVED: *Tyler Krauss*
 DATE: 11/7/2023
 SEAL
 DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



PAVEMENT MARKING DETAIL

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. 17BP.13.R.156	SHEET NO. EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol	Std. #	Description	Symbol
1605.01	Temporary Silt Fence		1633.01	Temporary Rock Silt Check Type A	
1606.01	Special Sediment Control Fence		1633.02	Temporary Rock Silt Check Type B	
1622.01	Temporary Berms and Slope Drains		1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1630.02	Silt Basin Type B		1634.01	Temporary Rock Sediment Dam Type A	
1630.03	Temporary Silt Ditch		1634.02	Temporary Rock Sediment Dam Type B	
1630.04	Stilling Basin		1635.01	Rock Pipe Inlet Sediment Trap Type A	
1630.05	Temporary Diversion		1635.02	Rock Pipe Inlet Sediment Trap Type B	
1630.06	Special Stilling Basin		1636.01	Excelsior Wattle Check	
1630.07	Skimmer Basin		1636.01	Excelsior Wattle Check with Flocculant	
1630.08	Tiered Skimmer Basin		1636.01	Coir Fiber Wattle Check	
1630.09	Earthen Dam with Skimmer		1636.01	Coir Fiber Wattle Check with Flocculant	
	Infiltration Basin		1636.02	Silt Fence Excelsior Wattle Break	
	Rock Inlet Sediment Trap:			Silt Fence Coir Fiber Wattle Break	
1632.01	Type A				
1632.02	Type B		1636.03	Excelsior Wattle Barrier	
1632.03	Type C		1636.03	Coir Fiber Wattle Barrier	

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
<i>17BPJ3.RJ56</i>	<i>EC-3A</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

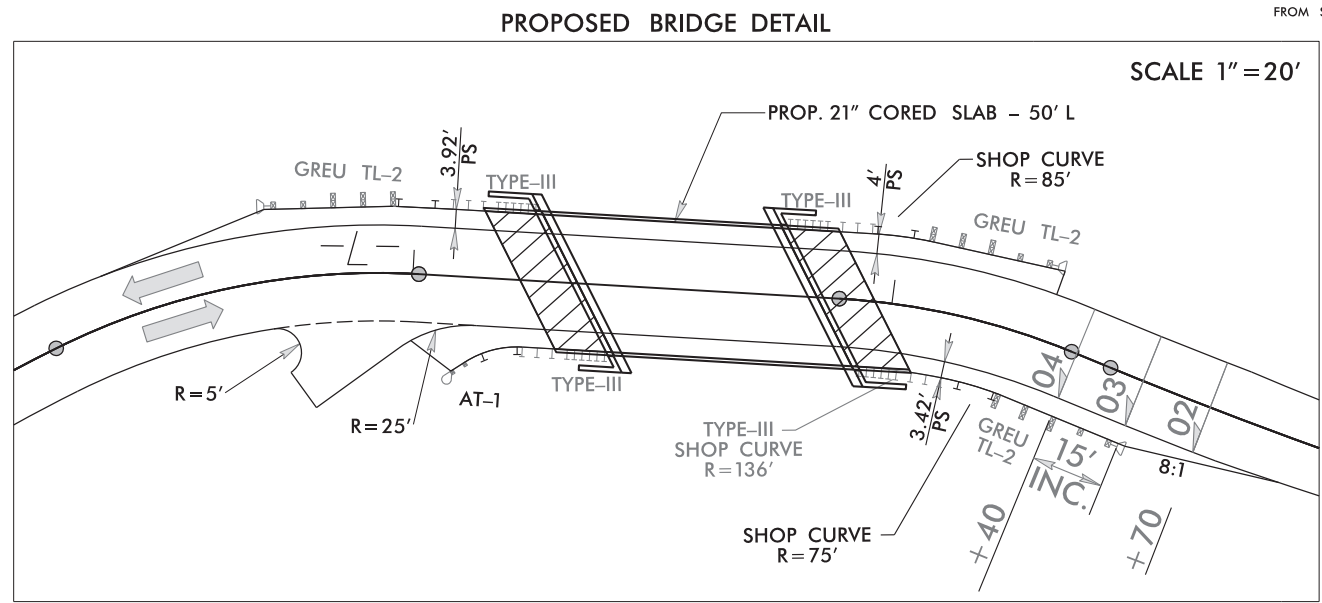
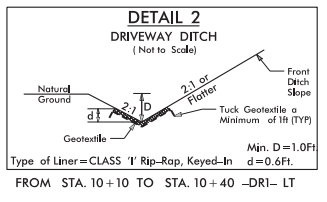
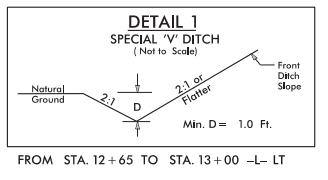
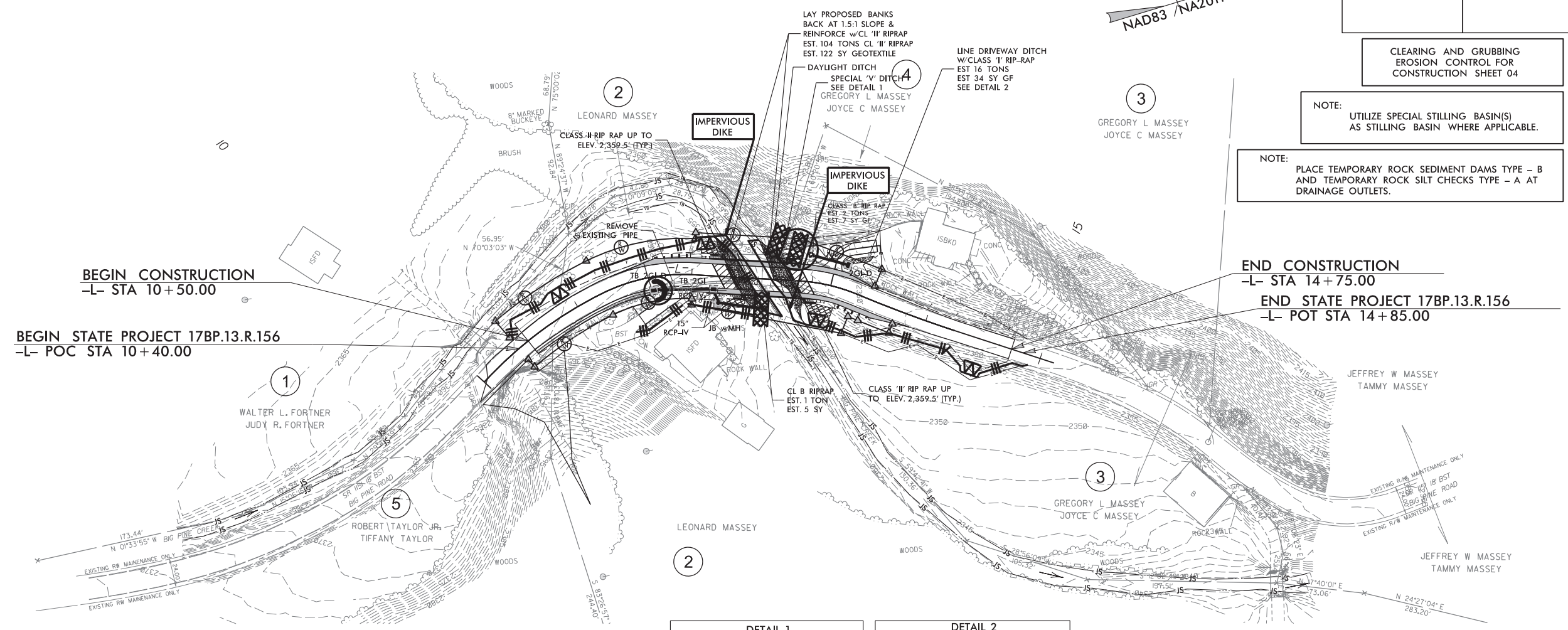
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 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. 17BP.13.R.156	SHEET NO. EC-04/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

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

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



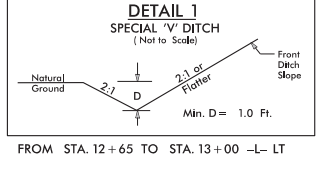
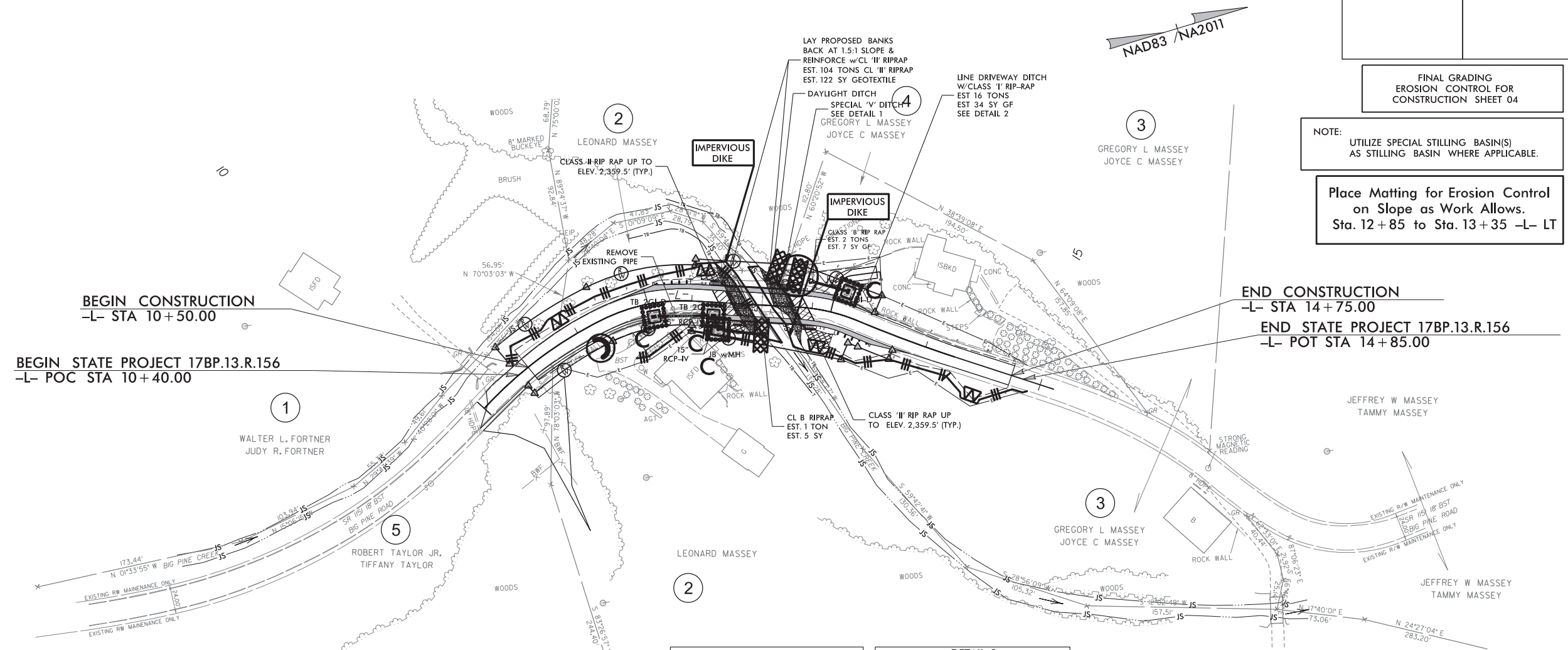
FOR -L- PROFILE SEE SHEET 5
FOR -DRV- PROFILE SEE SHEET 5

PROJECT REFERENCE NO. 17BP.13.R.156	SHEET NO. EC-05/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

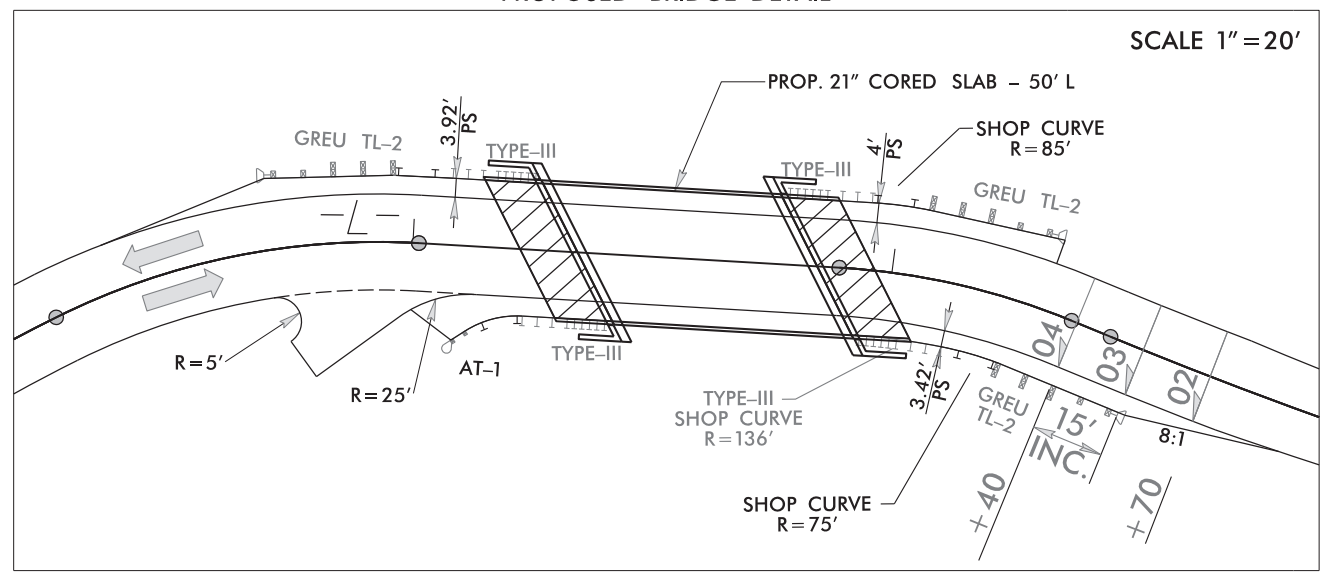
FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

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

Place Matting for Erosion Control
on Slope as Work Allows.
Sta. 12+85 to Sta. 13+35 -L- LT



PROPOSED BRIDGE DETAIL



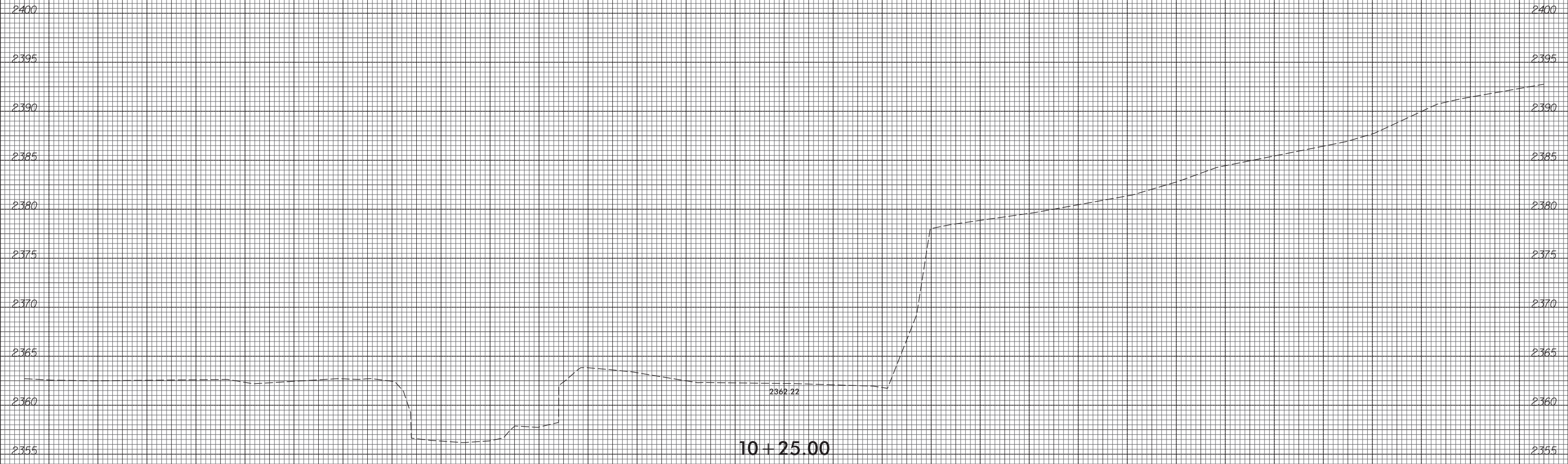
FOR -L- PROFILE SEE SHEET 5
FOR -DRV- PROFILE SEE SHEET 5

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.156	X-1

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10+25.00

2362.22

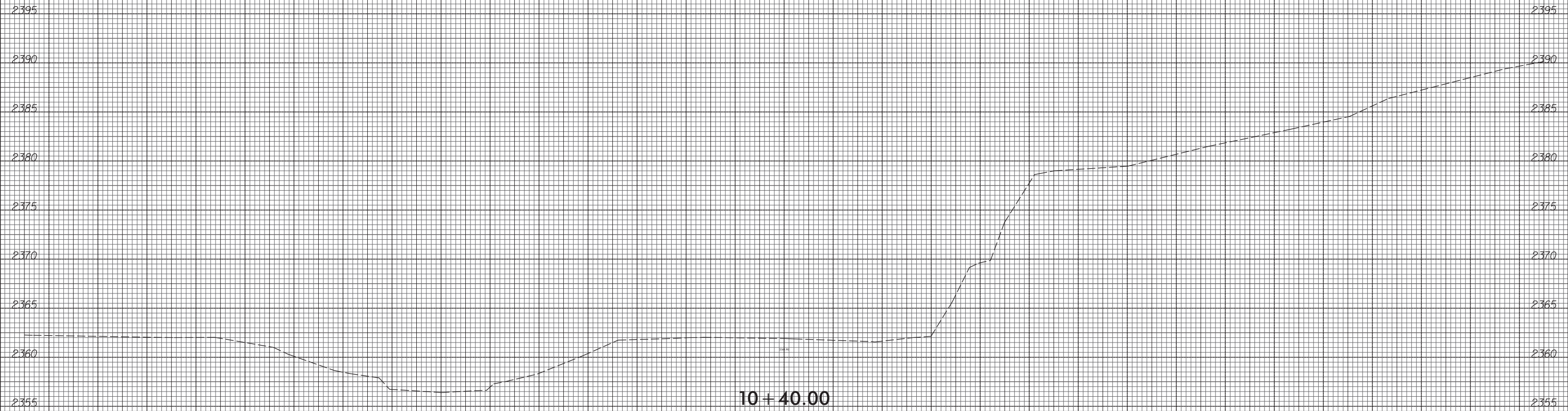
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6/23/16



PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.156	X-2

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10 + 40.00

BEGIN PROJECT STA. 10 + 40.00

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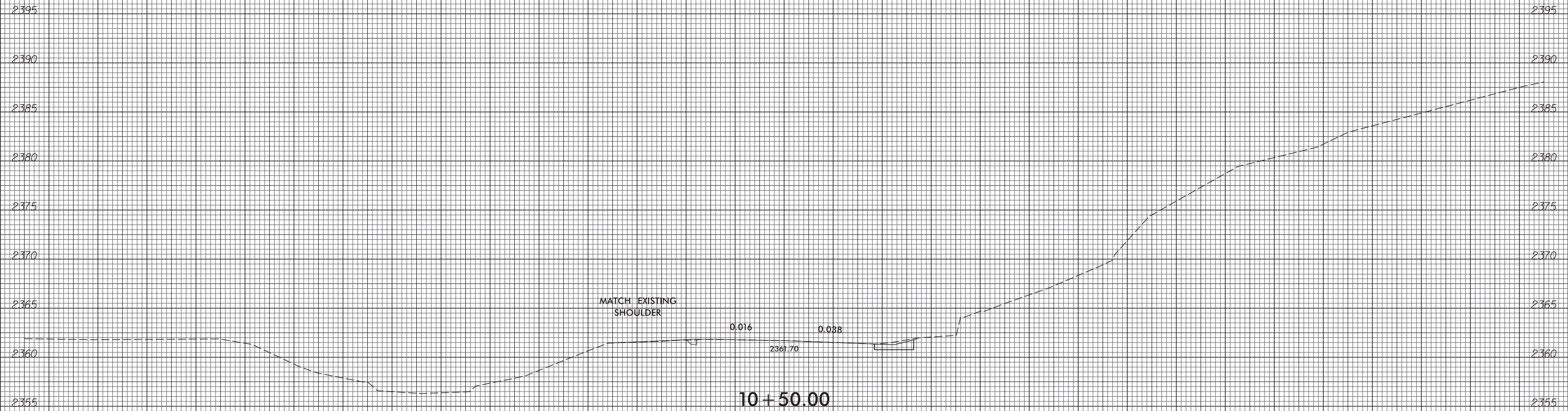
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6/23/16



PROJ. REFERENCE NO.	SHEET NO.
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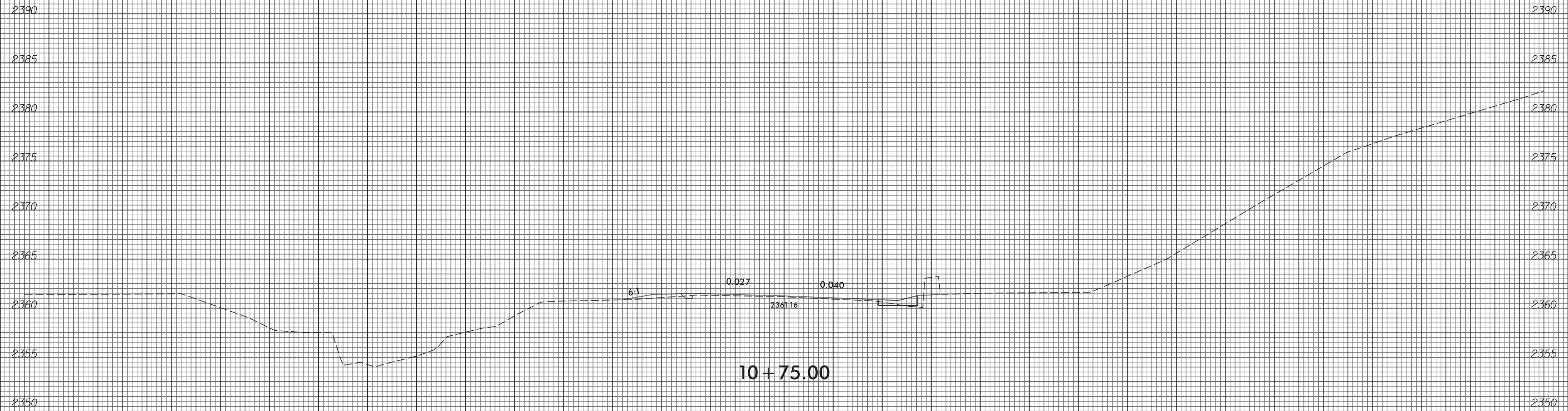
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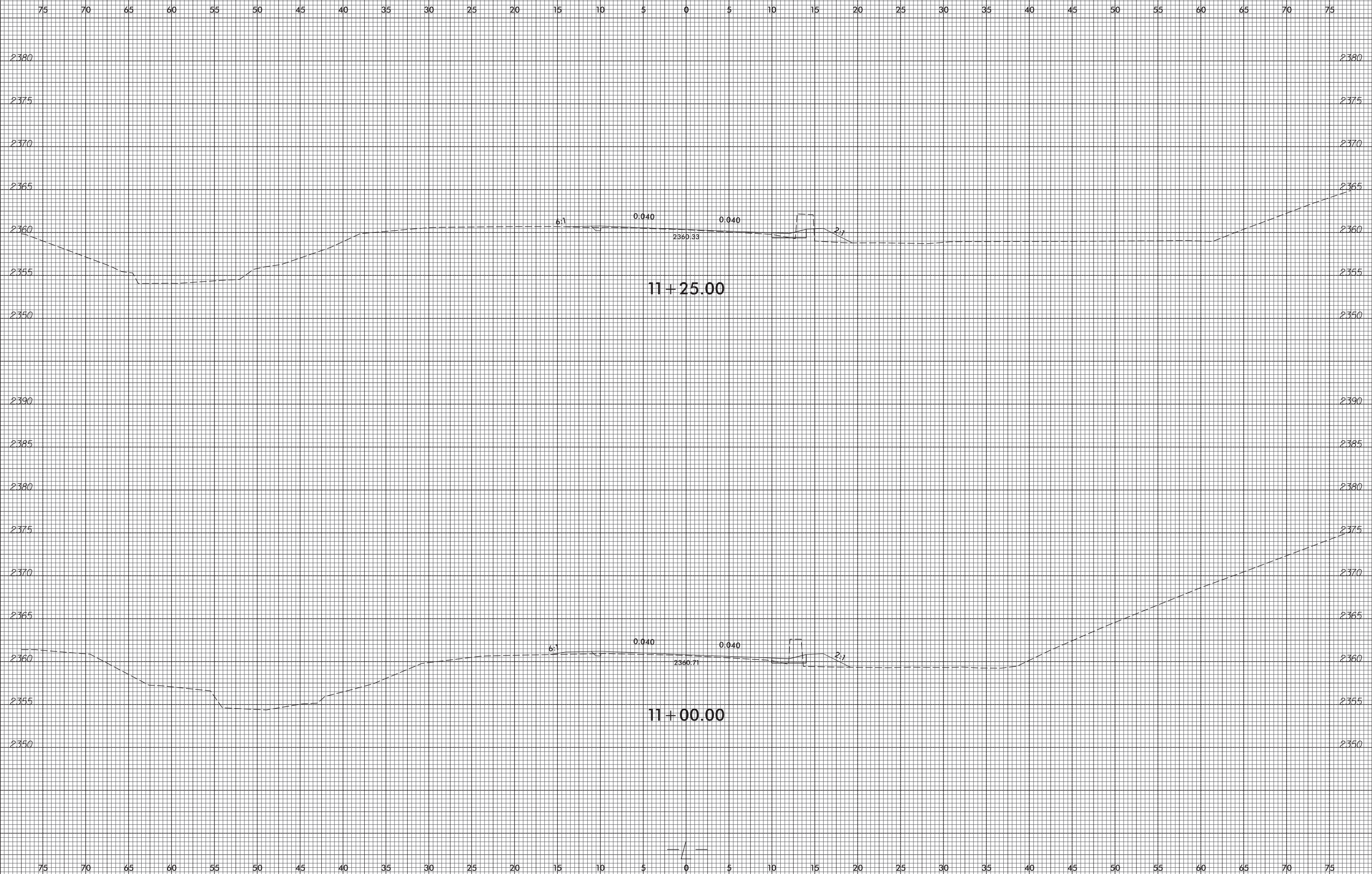
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6/23/16



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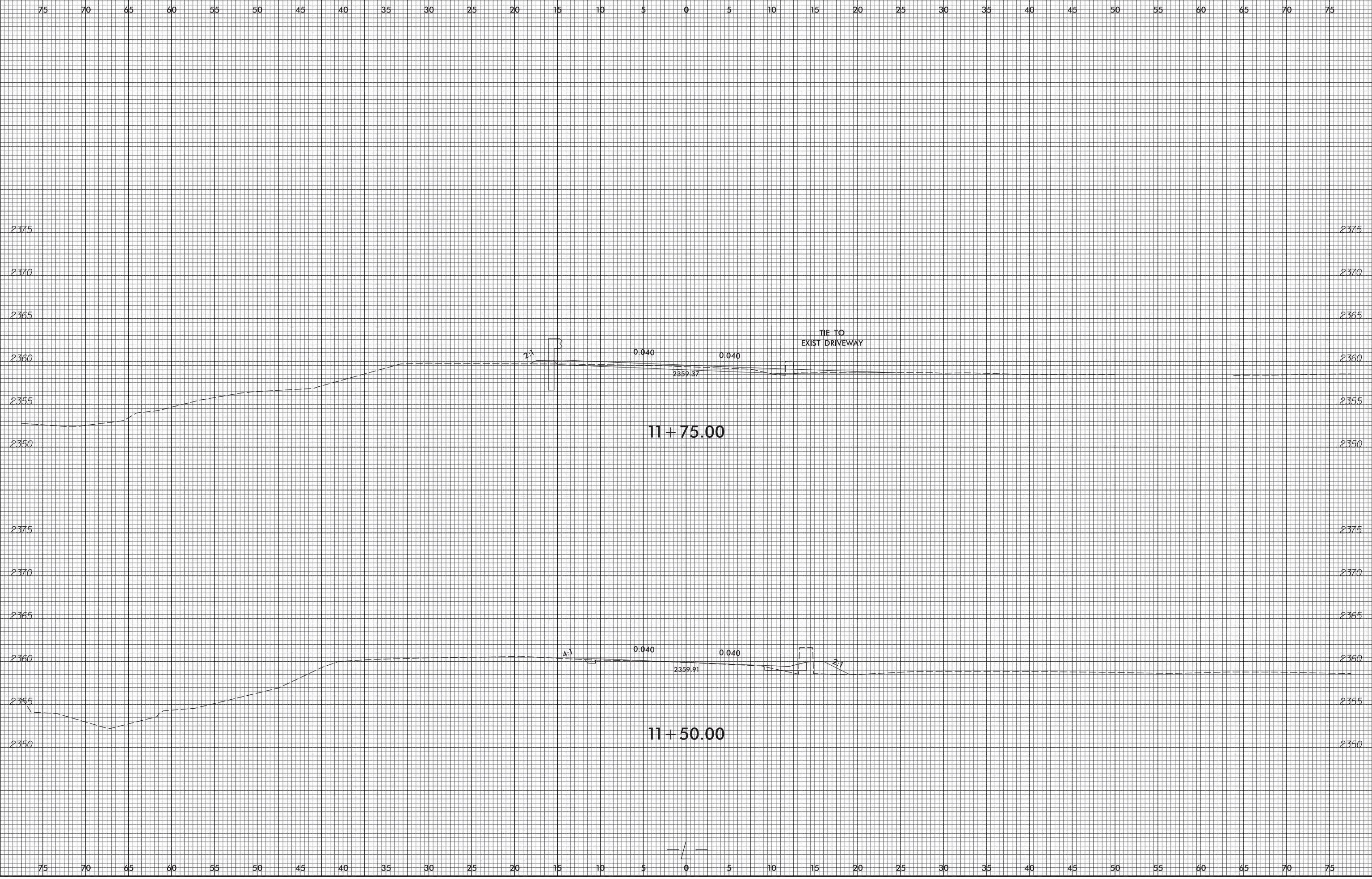


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6/23/16



PROJ. REFERENCE NO.	SHEET NO.
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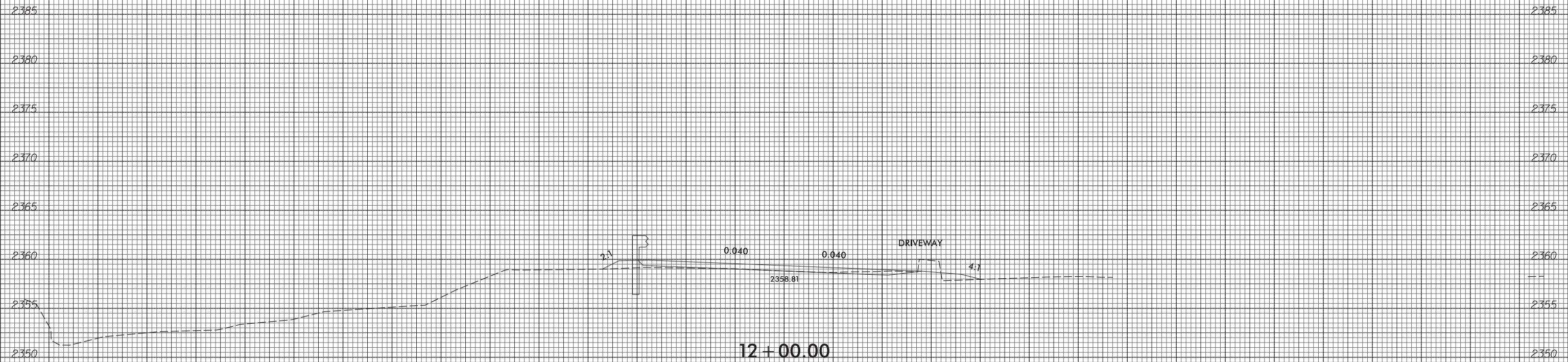
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PROJ. REFERENCE NO.
17BP.13.R.156

SHEET NO.
X-7

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12 + 00.00

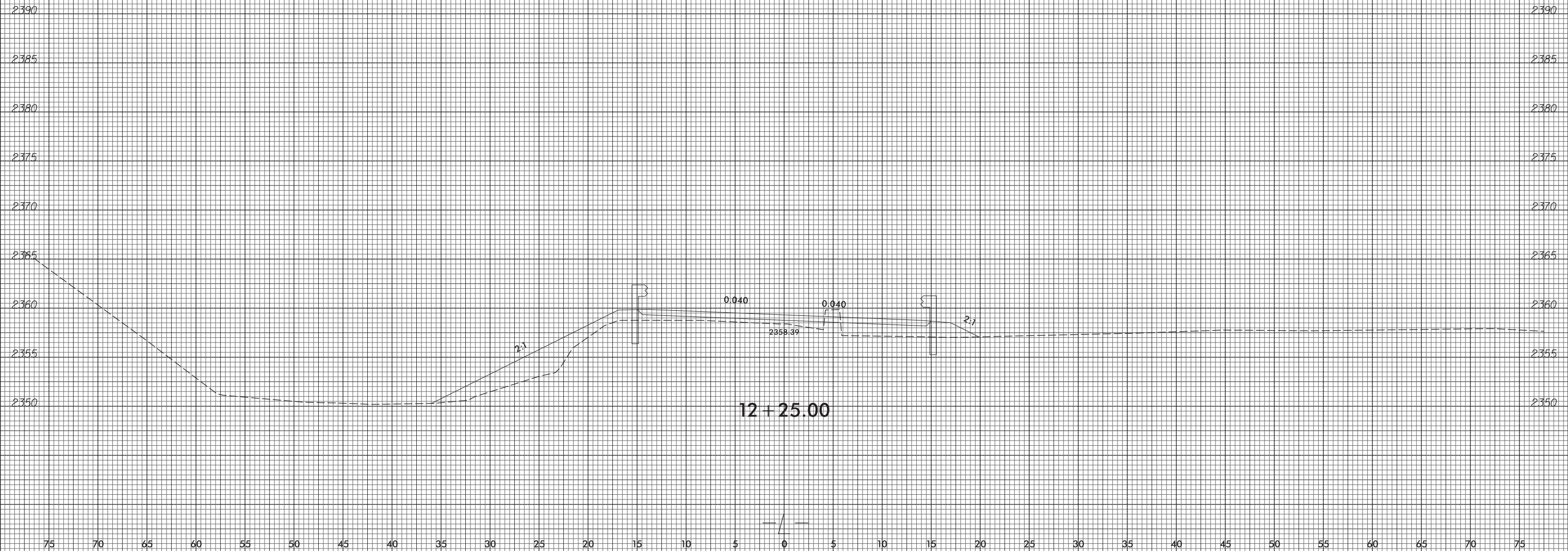
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SUBELEMENT

6/23/16



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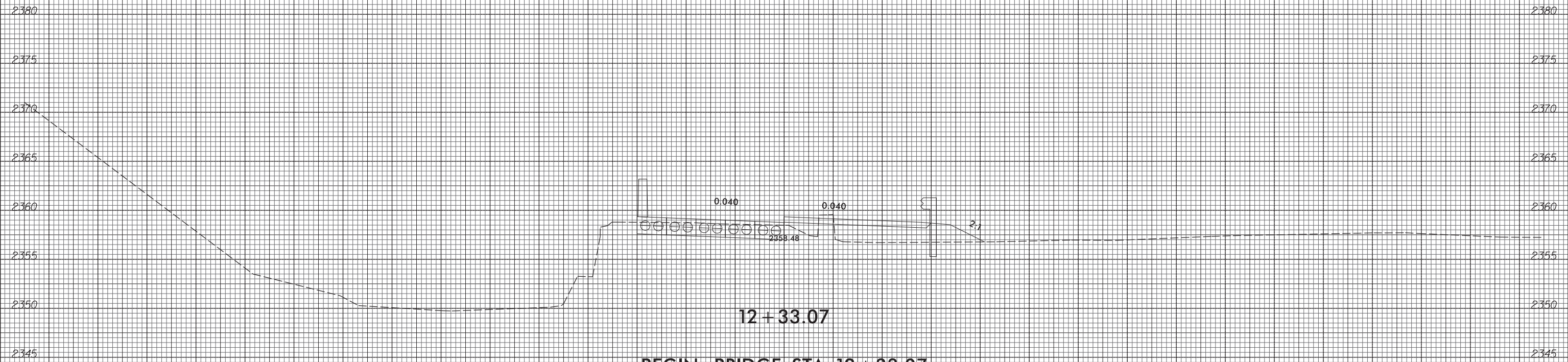
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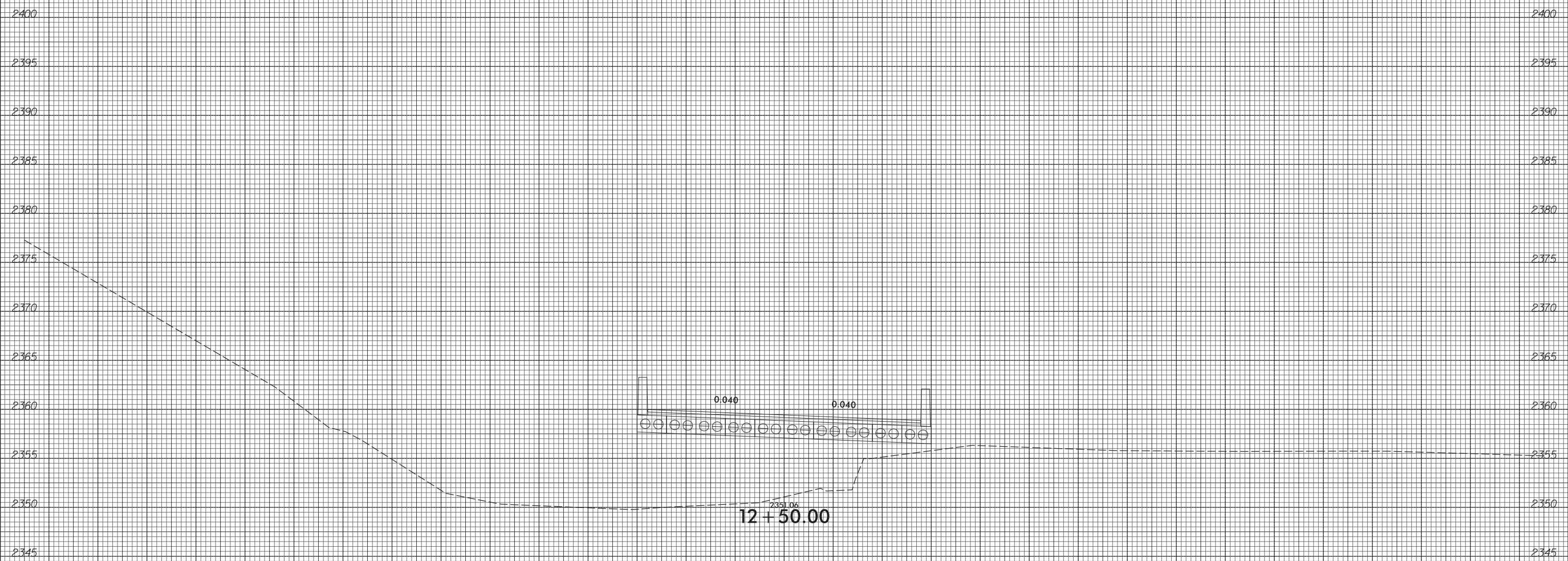
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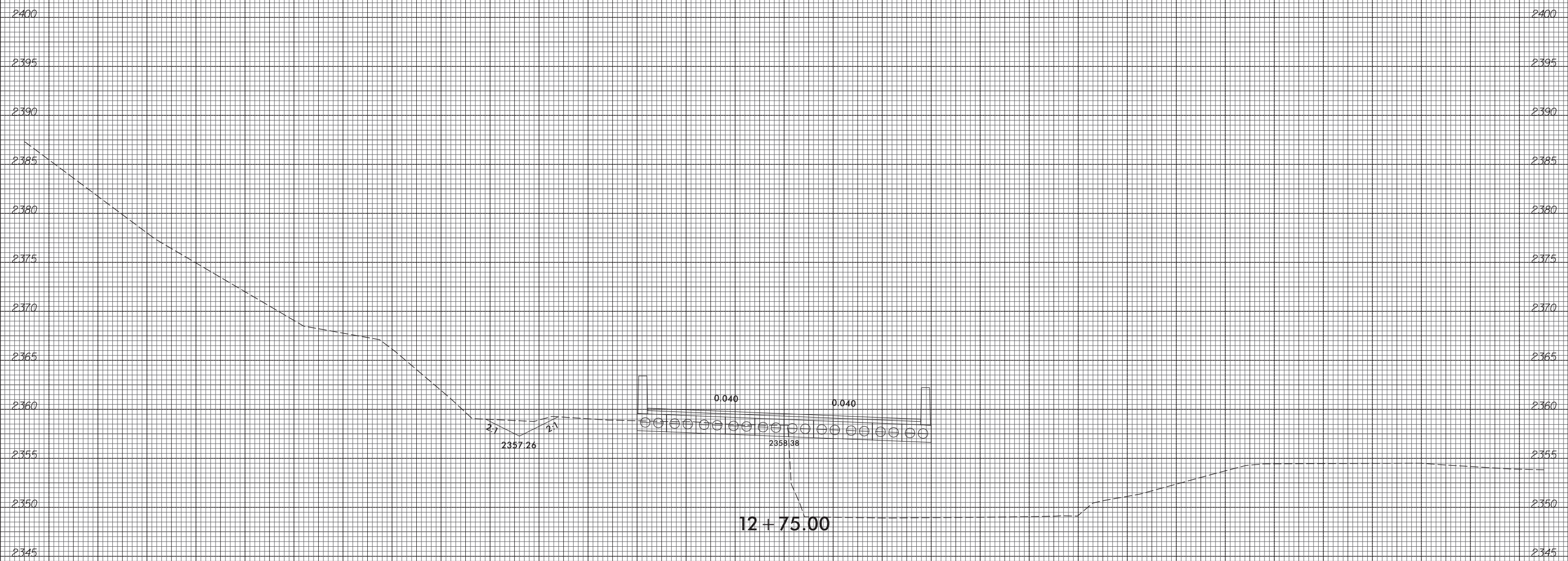
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6/23/16



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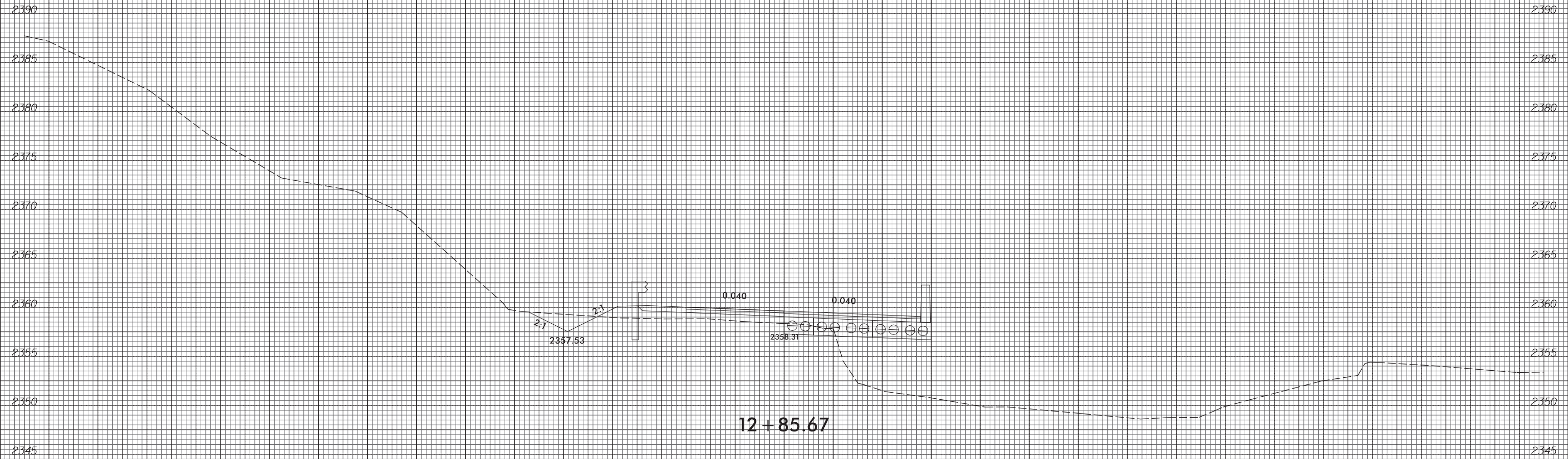
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X-12

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END BRIDGE STA. 12 + 85.67

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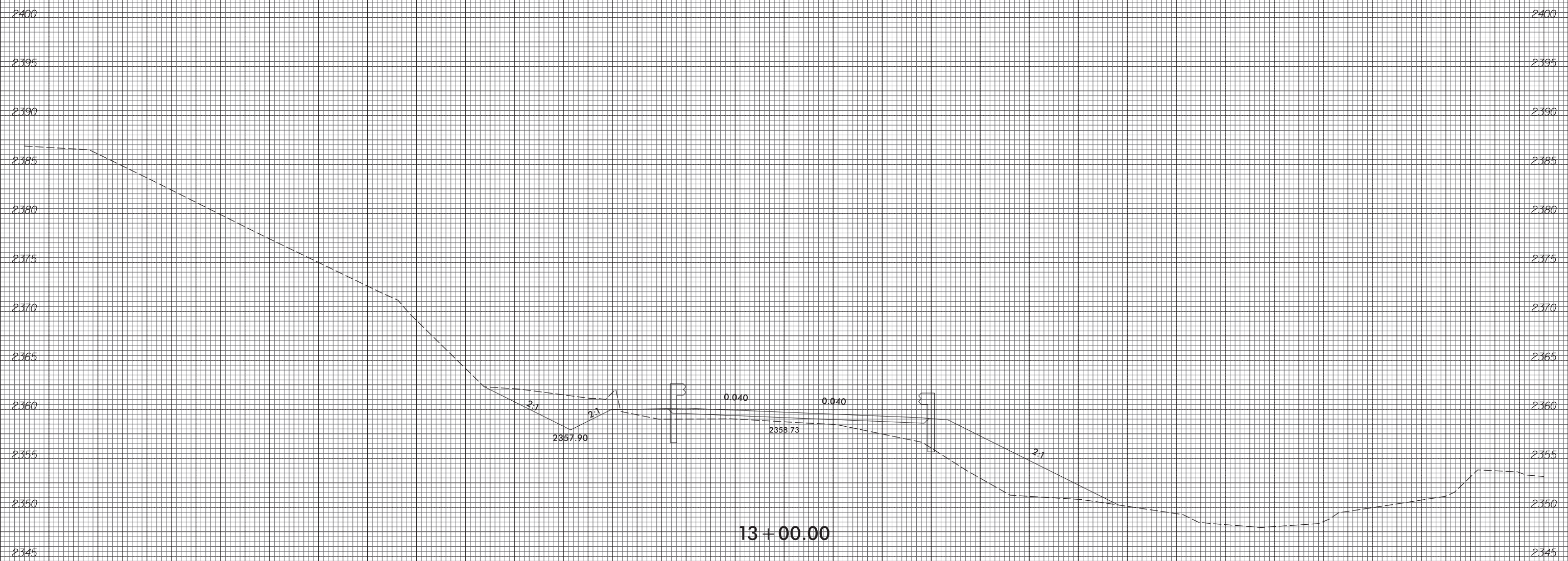
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6/23/16



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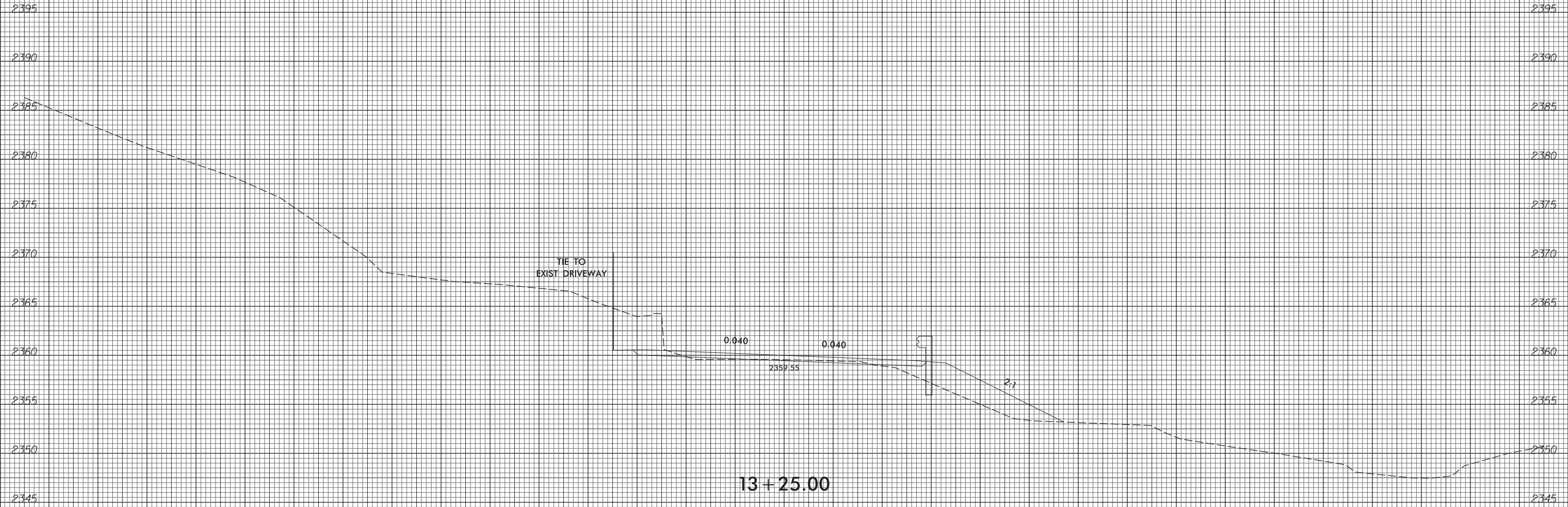
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6/23/16



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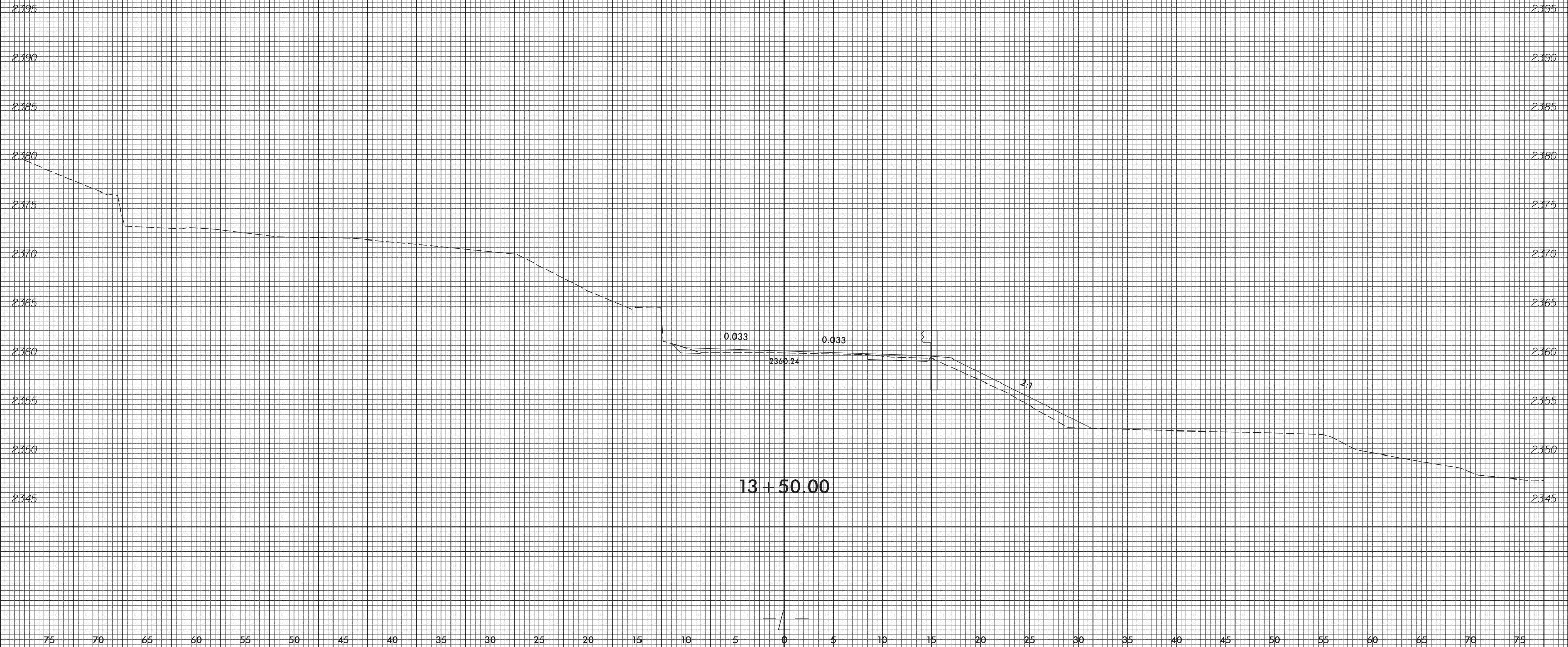
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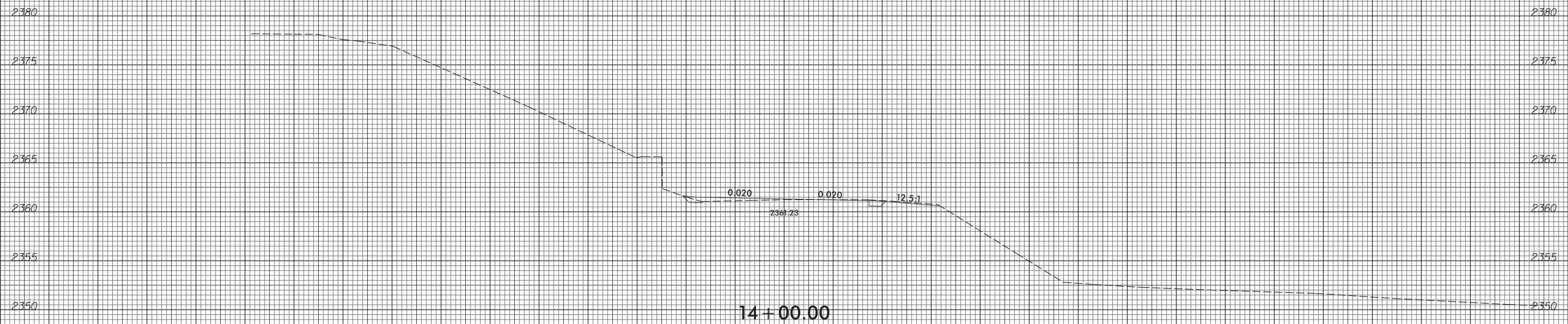


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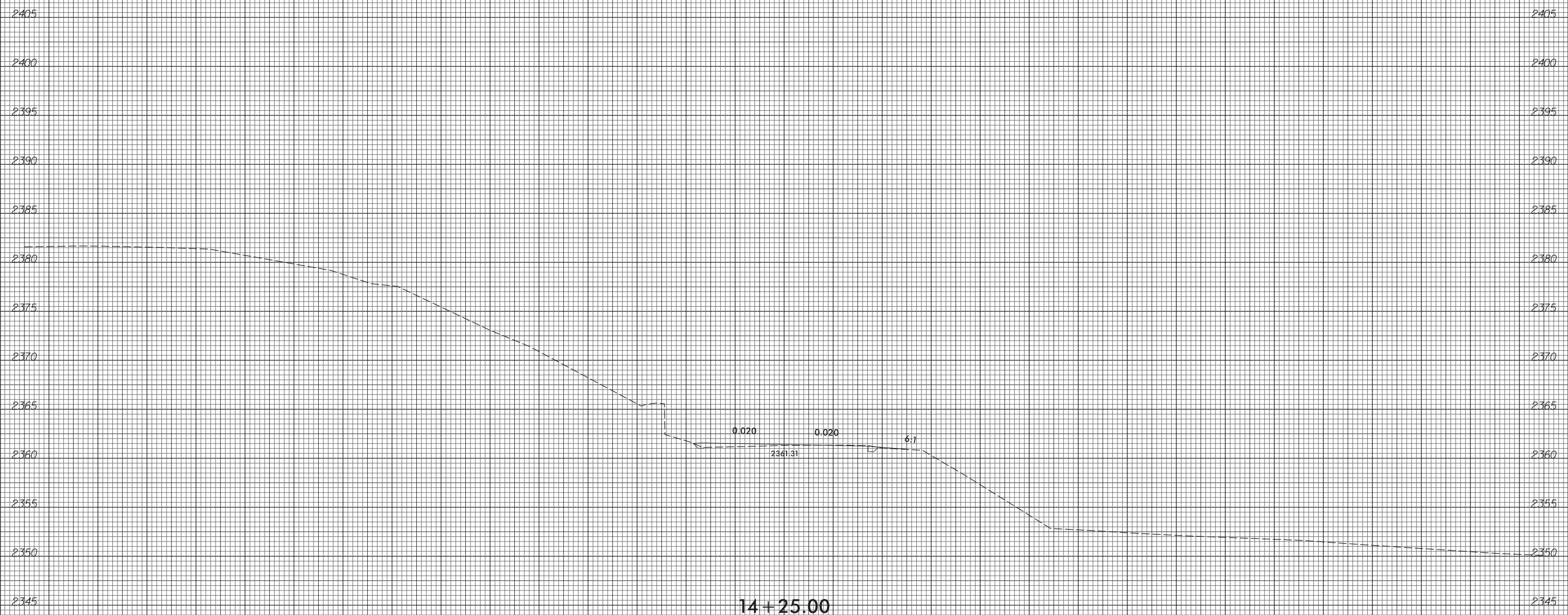
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6/23/16



PROJ. REFERENCE NO.	SHEET NO.
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14+25.00

6/23/16



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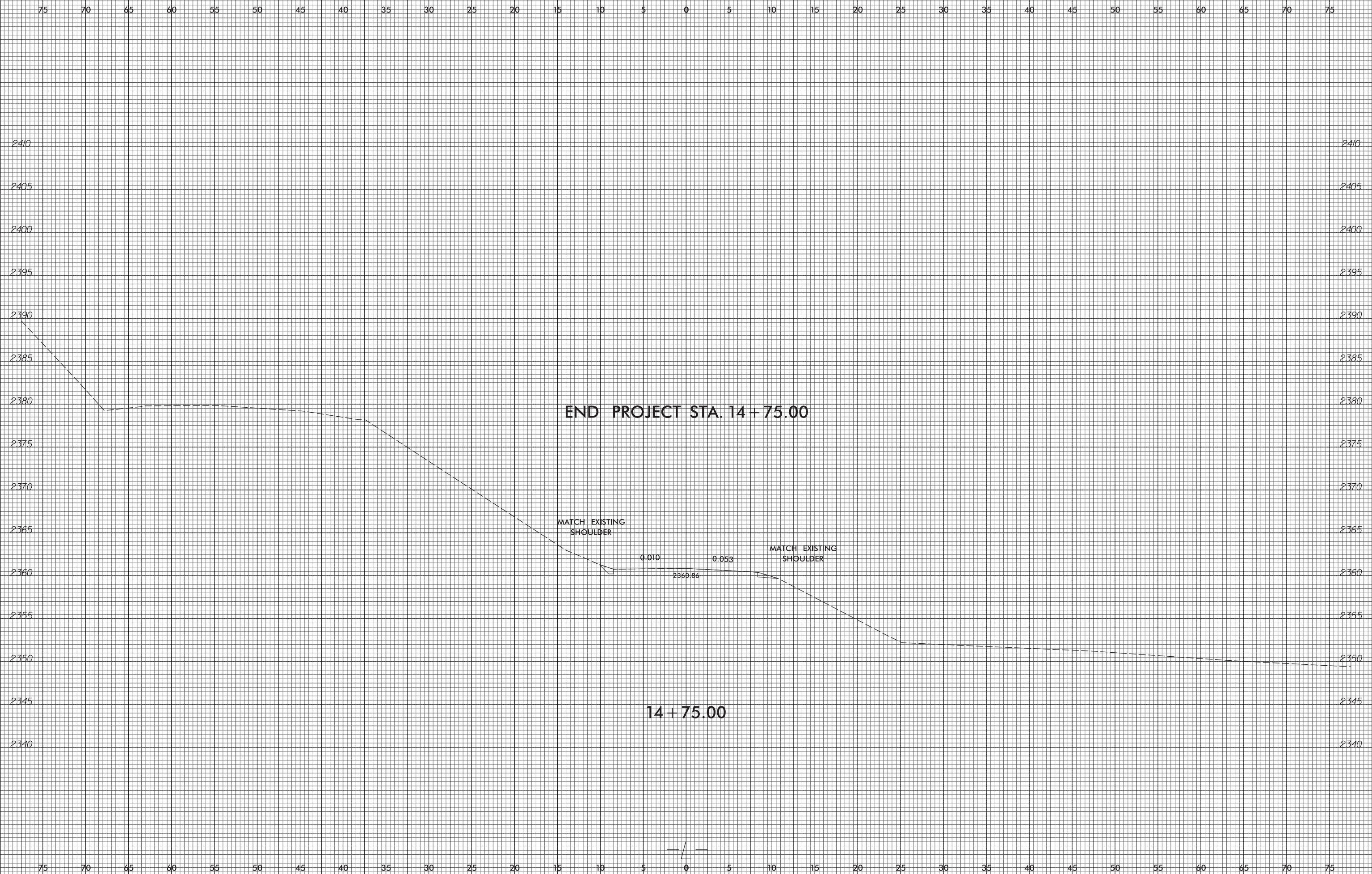


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6/23/16



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6/23/16



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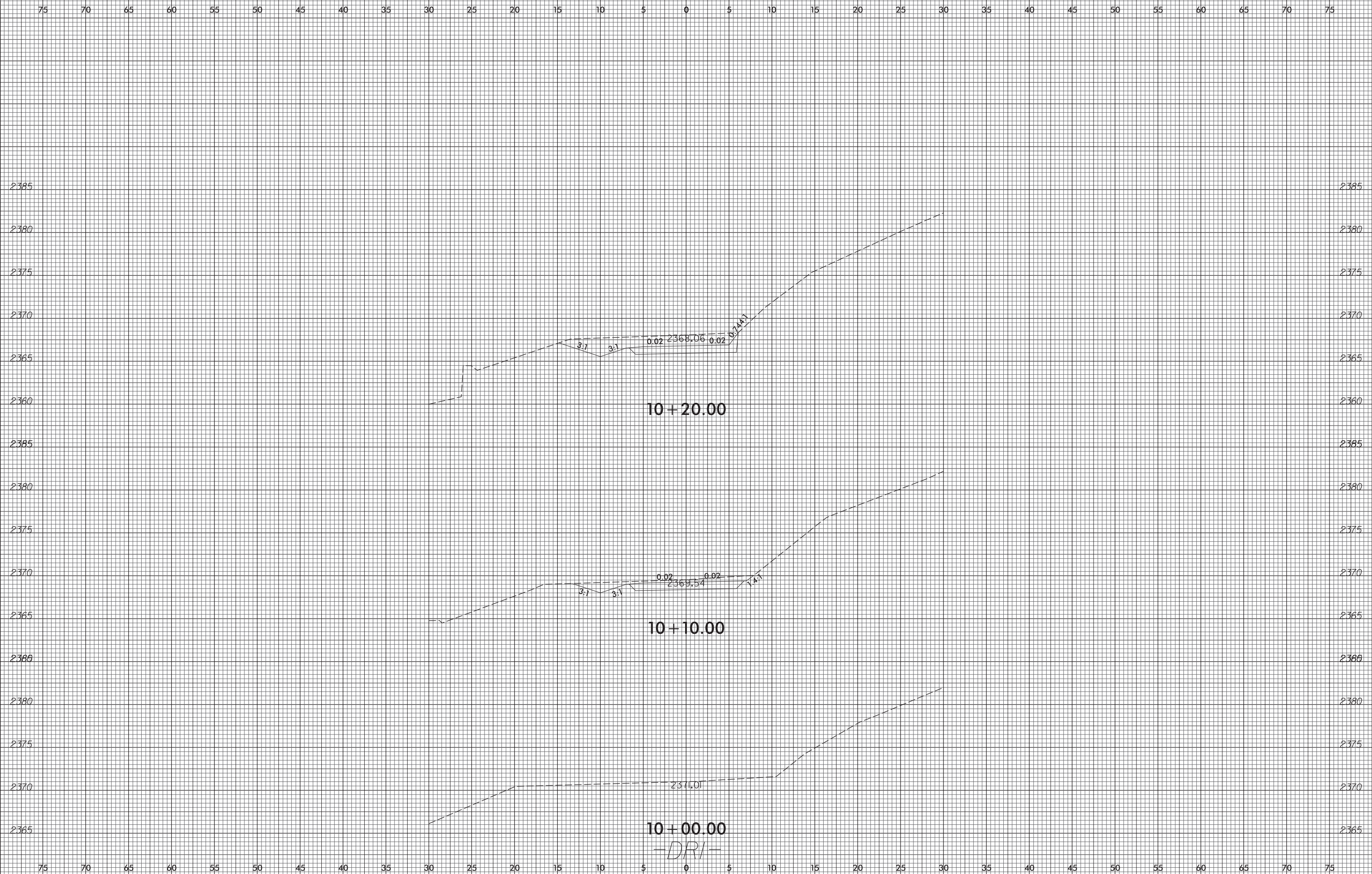
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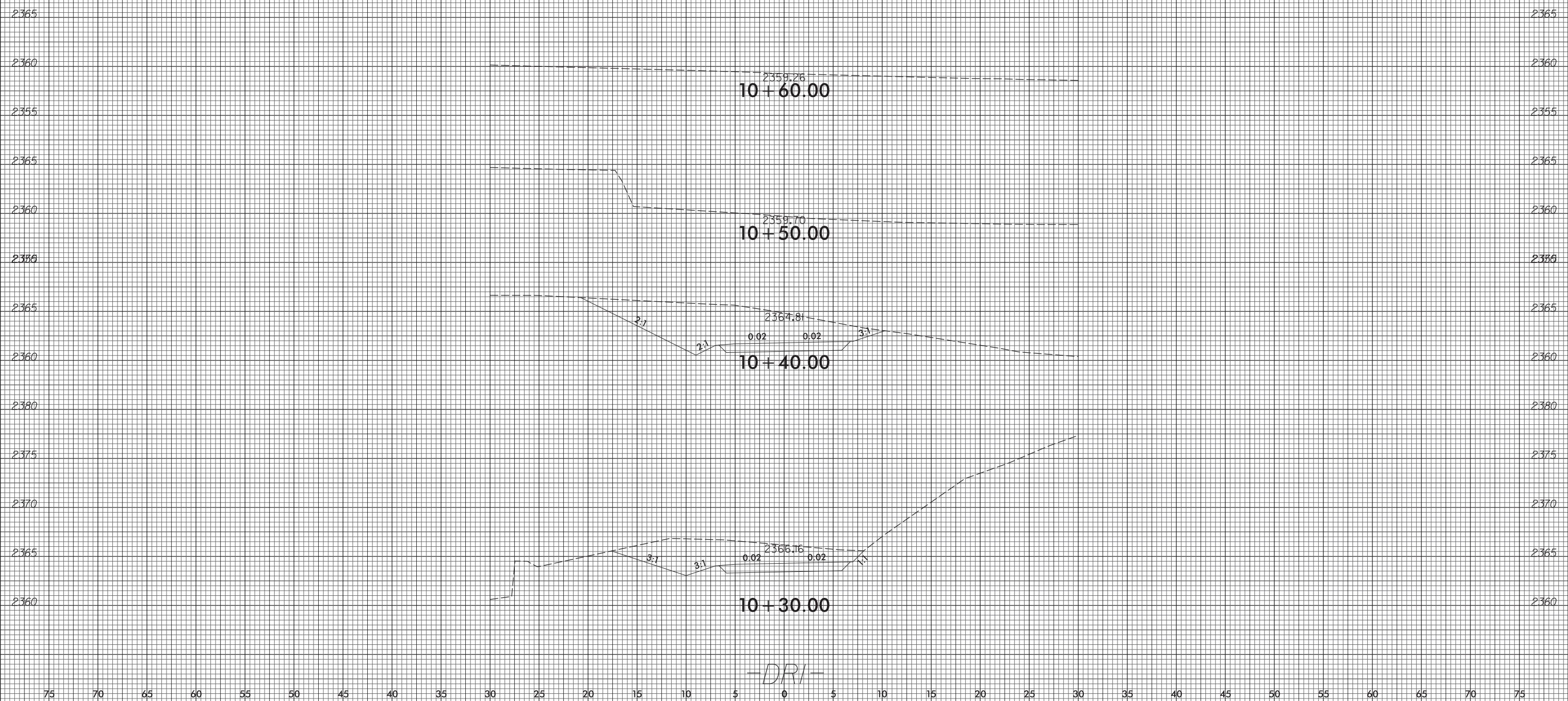
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6/23/16

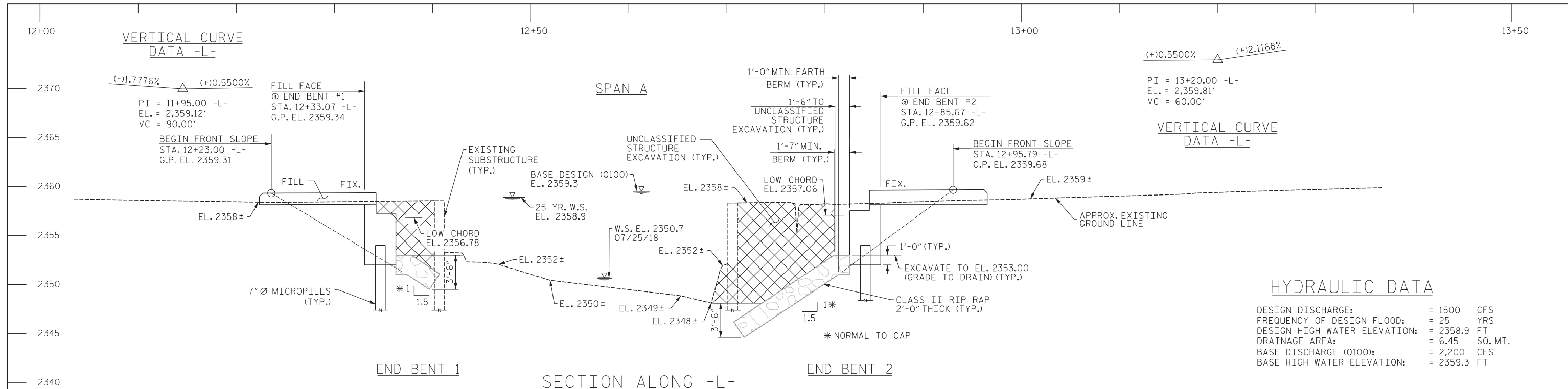


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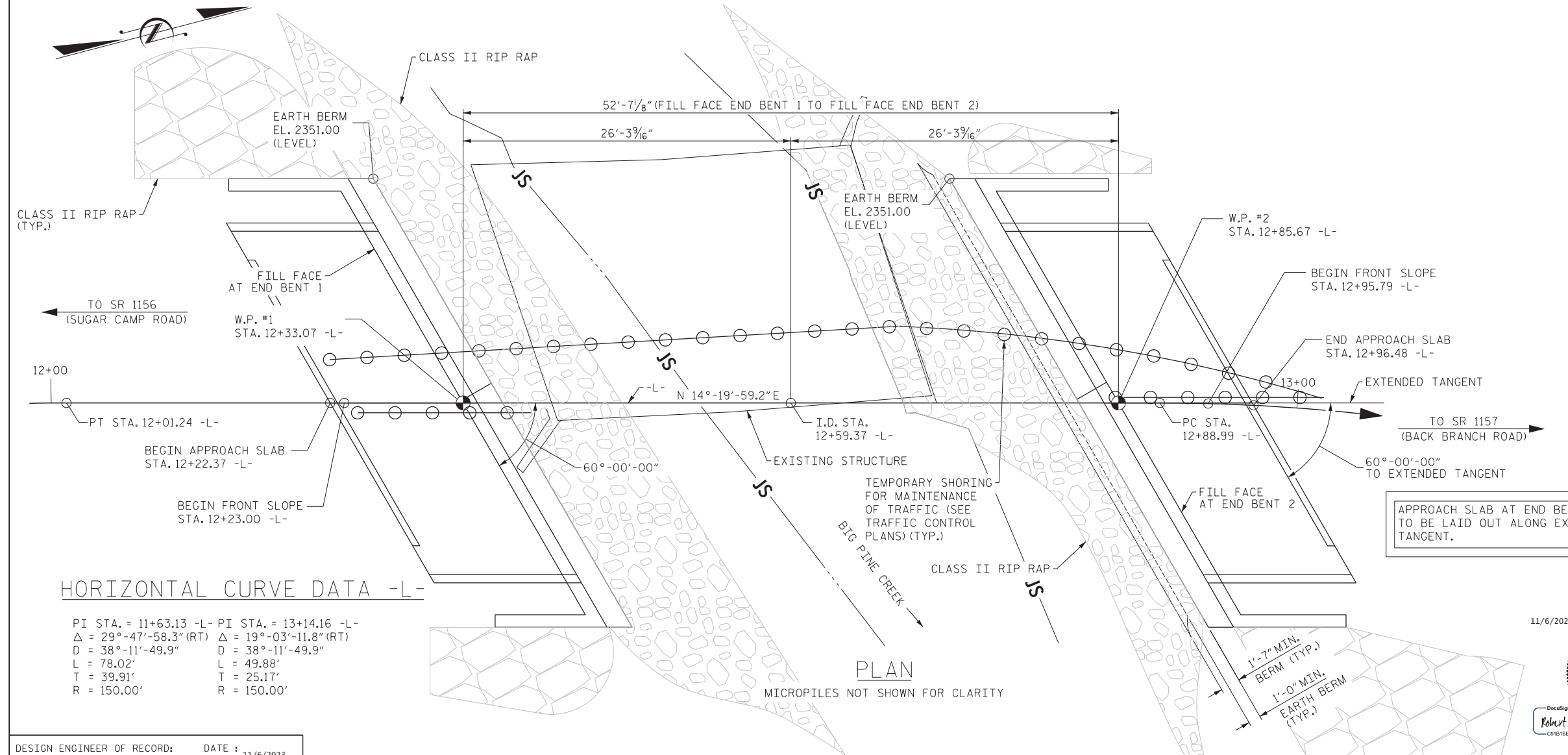


HYDRAULIC DATA

DESIGN DISCHARGE:	= 1500	CFS
FREQUENCY OF DESIGN FLOOD:	= 25	YRS
DESIGN HIGH WATER ELEVATION:	= 2358.9	FT
DRAINAGE AREA:	= 6.45	SQ. MI.
BASE DISCHARGE (Q100):	= 2,200	CFS
BASE HIGH WATER ELEVATION:	= 2359.3	FT

OVERTOPPING DATA

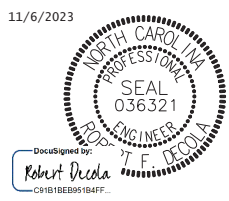
OVERTOPPING DISCHARGE:	= 3800	CFS
FREQUENCY OF OVERTOPPING:	= 500+	YRS
OVERTOPPING FLOOD ELEVATION:	= 2359.9*	FT
* STA. 12+18.87 -L- LT		



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

APPROACH SLAB AT END BENT 2 TO BE LAID OUT ALONG EXTENDED TANGENT.

PROJECT NO. 17BP.13.R.156
 MADISON COUNTY
 STATION: 12+59.37 -L-
 SHEET 1 OF 4 REPLACES BRIDGE 560143



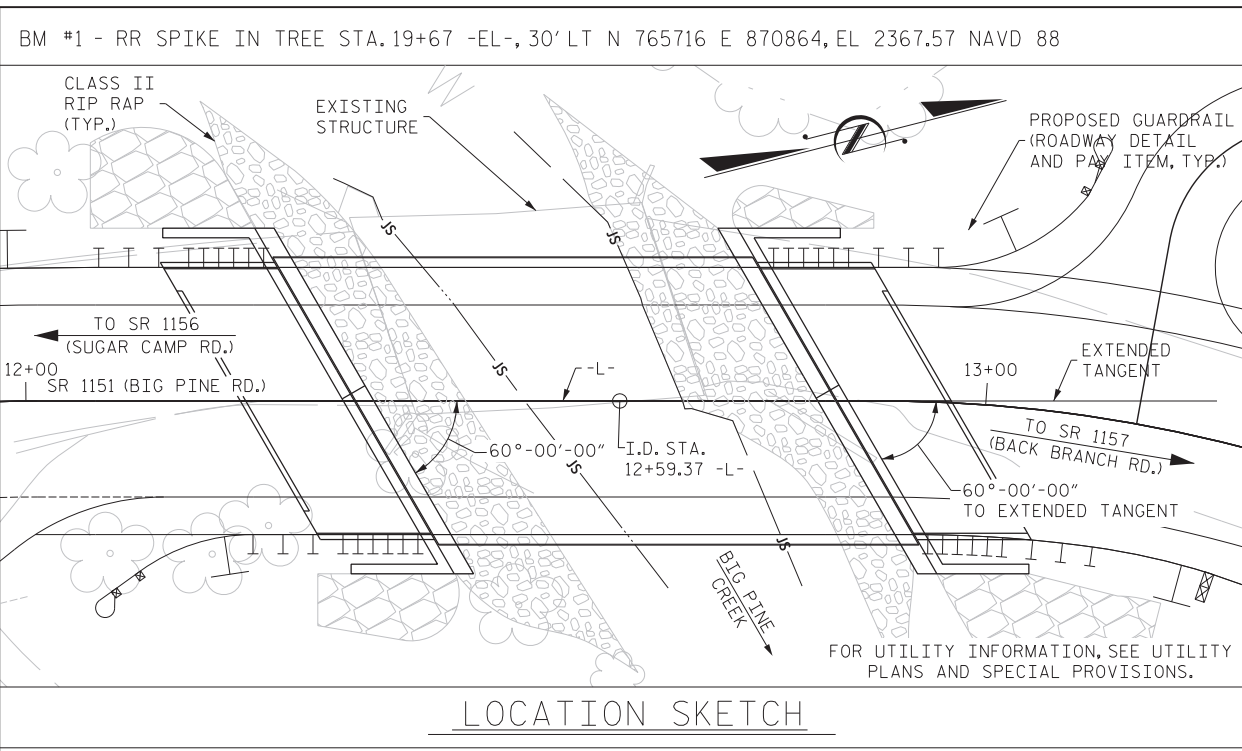
DESIGN ENGINEER OF RECORD:	DATE:	11/6/2023
R.F. DECOLA		
DRAWN BY:	DATE:	08/30/2021
R.J. FLORY		
CHECKED BY:	DATE:	08/30/2021
R.F. DECOLA		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

KCI Associates of North Carolina, P.A.
 4205 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6210 Phone (919) 783-9214

STATE OF NORTH CAROLINA		DEPARTMENT OF TRANSPORTATION		RALEIGH	
GENERAL DRAWING					
FOR BRIDGE ON SR 1151 (BIG PINE RD.) OVER BIG PINE CREEK BETWEEN SR 1156 (SUGAR CAMP RD) AND SR 1157 (BACK BRANCH RD)					
REVISIONS		SHEET NO.		S-01	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				TOTAL SHEETS	21

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 KCI PROJ. #22133395.05



NOTES:

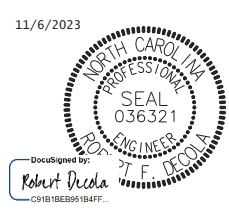
- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 12+59.37 -L-."
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 22' FT LEFT AND 18' FT RIGHT OF CENTERLINE ROADWAY AT END BENT 1 AND A DISTANCE OF 32' FT LEFT AND 32' FT RIGHT OF CENTERLINE ROADWAY AT END BENT 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
- TEMPORARY SHORING WILL BE REQUIRED IN THE AREA INDICATED IN THE PLAN VIEW.
- FOR TEMPORARY SHORING, 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.
- AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF (1) 29'-0" STEEL I GIRDER SPAN WITH A CLEAR ROADWAY OF 19'-4" WITH TIMBER FLOOR ON MASONRY ABUTMENTS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, 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 DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES."
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
- FOR MICROPILES, SEE SPECIAL PROVISIONS.

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 KCI PROJ. #22133395.05

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 12+59.37 -L-	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 12+59.37 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS @ STA. 12+59.37 -L-	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR 7" Ø MICROPILES	7" Ø MICROPILES		VERTICAL CONCRETE BARRIER RAIL	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	LUMP SUM	CU.YDS.	LUMP SUM	LBS.	EA.	NO.	LIN.FT.	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE					LUMP SUM					110.29			LUMP SUM	10	500
END BENT 1				28.6		3,127	5	5	112		51	61			
END BENT 2				28.7		3,137	5	5	95		53	61			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	57.3	LUMP SUM	6,264	10	10	207	110.29	104	122	LUMP SUM	10	500

PROJECT NO. 17BP.13.R.156
MADISON COUNTY
 STATION: 12+59.37 -L-
 SHEET 2 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1151 (BIG PINE RD.)
 OVER BIG PINE CREEK
 BETWEEN SR 1156 (SUGAR CAMP RD)
 AND SR 1157 (BACK BRANCH RD)

DESIGN ENGINEER OF RECORD: R.F. DECOLA DATE: 11/6/2023
 DRAWN BY: R.J. FLORY DATE: 02/18/21
 CHECKED BY: R.F. DeCOLA DATE: 02/20/21

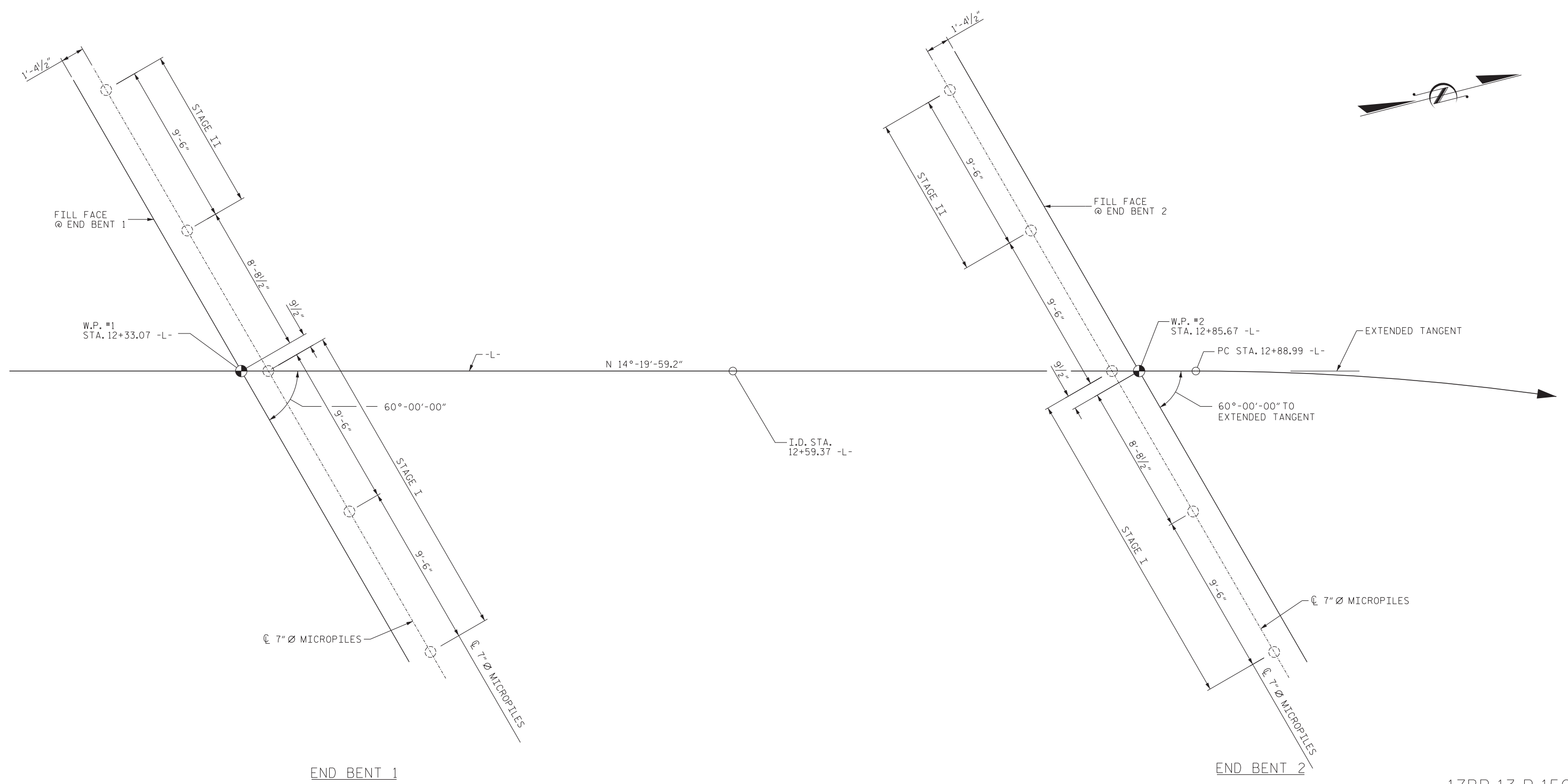
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KCI Associates of North Carolina, P.A.
 ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-011420
 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6210 Phone (919) 783-2214

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

TOTAL SHEETS: 21

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KCI PROJ. #22133395.05



FOUNDATION LAYOUT
DIMENSIONS LOCATING PILES ARE SHOWN TO CENTERLINE OF PILES

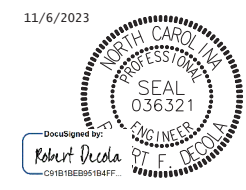
PROJECT NO. 17BP.13.R.156
MADISON COUNTY
STATION: 12+59.37 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1151 (BIG PINE RD.)
OVER BIG PINE CREEK
BETWEEN SR 1156 (SUGAR CAMP RD)
AND SR 1157 (BACK BRANCH RD)



DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
DRAWN BY : R.J. FLORY	DATE : 07/30/2021
CHECKED BY : R.F. DECOLA	DATE : 08/01/2021

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REVISIONS				SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			21
2			4			

END BENT	MICROPILE CASING SIZE IN	FACTORED RESISTANCE PER PILE TONS	MINIMUM REINF CASING TIP (TIP NO HIGHER THAN) ELEVATION FT	MINIMUM REINFORCING CASING PENETRATION INTO ROCK PER PILE LIN FT	SCOUR CRITICAL ELEVATION FT	NO REINFORCING CASING JOINTS BETWEEN ELEVATIONS FT - FT	GALVANIZING EXPOSED REINFORCING CASING REQUIRED? YES
END BENT NO.1 PILES 1-5	7" O.D. W/0.453 WALL	83	2331.7	10.0		SEE NOTES	
END BENT NO.2 PILES 1-2	7" O.D. W/0.453 WALL	83	2341.0	10.0		SEE NOTES	
END BENT NO.2 PILES 3-5	7" O.D. W/0.453 WALL	83	2331.0	10.0		SEE NOTES	

SUMMARY OF MICROPILE INFORMATION/INSTALLATION

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

END BENT	DEMONSTRATION MICROPILE REQUIRED? YES	LOAD TESTING			PERMISSIBLE TOTAL VERTICAL MOVEMENT AT TOP OF PILE INCHES
		PROOF LOAD TEST REQUIRED ? YES	VERIFICATION LOAD TEST REQUIRED ? YES	FACTORED DESIGN LOAD (FDL) TONS	
END BENT NO.1 AND 2		YES		83	1" ▲
TOTAL QUANTITY		1			

▲ LOAD TEST ACCEPTANCE AND PERMISSIBLE TOTAL VERTICAL MOVEMENT IN ACCORDANCE WITH DAVIDSON ACCEPTANCE CRITERIA.

SUMMARY OF MICROPILE TESTING

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

NOTE:

THE MICROPILE FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS SEALED BY NORTH CAROLINA PROFESSIONAL ENGINEER MICHAEL H. STEPHENS, P.E., LICENSE NO. 028893 ON 06-09-2022

FOUNDATION NOTES:

- 1) FOR MICROPILES, SEE MICROPILES PROVISIONS.
- 2) NO REINFORCING CASING JOINTS ALLOWED WITHIN 10' OF BOTTOM OF CAP OR 2' INTO ROCK, WHICHEVER IS SHALLOWER.

PROJECT NO. 17BP.13.R.156
MADISON COUNTY
 STATION: 12+59.37 -L-

SHEET 4 OF 4

11/6/2023



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1151 (BIG PINE RD.)
 OVER BIG PINE CREEK
 BETWEEN SR 1156 (SUGAR CAMP RD)
 AND SR 1157 (BACK BRANCH RD)

DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
DRAWN BY : R.J. FLORY	DATE : 07/30/2021
CHECKED BY : R.F. DECOLA	DATE : 08/01/2021

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-04
1			3			TOTAL SHEETS 21
2			4			

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KCI PROJ. #22133395.05

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 KCI PROJ. #22133395.05

LOAD AND RESISTANCE FACTOR RATING (LRFR) 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	1.35	--	1.75	0.250	1.74	50'	EL	24.423	0.656	1.35	50'	EL	9.769	0.80	0.250	1.59	50'	EL	24.423		
	HL-93(Opr)	N/A	--	1.75	--	1.35	0.250	2.25	50'	EL	24.423	0.656	1.75	50'	EL	9.769	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	②	1.586	57.108	1.75	0.250	2.15	50'	EL	24.423	0.656	1.59	50'	EL	9.769	0.80	0.250	1.97	50'	EL	24.423		
	HS-20(Opr)	36.000	--	2.056	74.028	1.35	0.250	2.79	50'	EL	24.423	0.656	2.06	50'	EL	9.769	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	4.009	54.117	1.4	0.250	5.47	50'	EL	24.423	0.656	4.31	50'	EL	9.769	0.80	0.250	4.01	50'	EL	24.423	
		SNGARBS2	20.000	--	3.168	63.352	1.4	0.250	4.32	50'	EL	24.423	0.656	3.19	50'	EL	9.769	0.80	0.250	3.17	50'	EL	24.423	
		SNAGRIS2	22.000	--	3.009	66.192	1.4	0.250	4.18	50'	EL	19.538	0.656	3.01	50'	EL	9.769	0.80	0.250	3.07	50'	EL	24.423	
		SNCOTTS3	27.250	--	2.000	54.493	1.4	0.250	2.73	50'	EL	24.423	0.656	2.16	50'	EL	9.769	0.80	0.250	2.00	50'	EL	24.423	
		SNAGGRS4	34.925	--	1.739	60.742	1.4	0.250	2.37	50'	EL	24.423	0.656	1.88	50'	EL	9.769	0.80	0.250	1.74	50'	EL	24.423	
		SNS5A	35.550	--	1.696	60.292	1.4	0.250	2.31	50'	EL	24.423	0.656	1.96	50'	EL	9.769	0.80	0.250	1.70	50'	EL	24.423	
		SNS6A	39.950	--	1.586	63.364	1.4	0.250	2.16	50'	EL	24.423	0.656	1.82	50'	EL	9.769	0.80	0.250	1.59	50'	EL	24.423	
	TTST	SNS7B	42.000	--	1.512	63.487	1.4	0.250	2.06	50'	EL	24.423	0.656	1.85	50'	EL	9.769	0.80	0.250	1.51	50'	EL	24.423	
		TNAGRIT3	33.000	--	1.943	64.127	1.4	0.250	2.65	50'	EL	24.423	0.656	2.14	50'	EL	9.769	0.80	0.250	1.94	50'	EL	24.423	
		TNT4A	33.075	--	1.96	64.837	1.4	0.250	2.67	50'	EL	24.423	0.656	2.04	50'	EL	9.769	0.80	0.250	1.96	50'	EL	24.423	
		TNT6A	41.600	--	1.633	67.938	1.4	0.250	2.23	50'	EL	24.423	0.656	2.00	50'	EL	9.769	0.80	0.250	1.63	50'	EL	24.423	
		TNT7A	42.000	--	1.658	69.634	1.4	0.250	2.26	50'	EL	24.423	0.656	1.86	50'	EL	9.769	0.80	0.250	1.66	50'	EL	24.423	
		TNT7B	42.000	--	1.728	72.595	1.4	0.250	2.36	50'	EL	24.423	0.656	1.76	50'	EL	9.769	0.80	0.250	1.73	50'	EL	24.423	
		TNAGRIT4	43.000	--	1.64	70.537	1.4	0.250	2.24	50'	EL	24.423	0.656	1.69	50'	EL	9.769	0.80	0.250	1.64	50'	EL	24.423	
EMERGENCY VEHICLE (EV)	EV2	28.750		1.834	52.729	1.3	0.250	3.24	50'	EL	24.423	0.656	1.83	50'	EL	5.420	0.80	0.250	2.35	50'	EL	24.423		
EV3	43.000	④	1.242	53.423	1.3	0.250	2.12	50'	EL	24.423	0.656	1.24	50'	EL	5.420	0.80	0.250	1.54	50'	EL	24.423			

LOAD FACTORS:

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

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
 ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

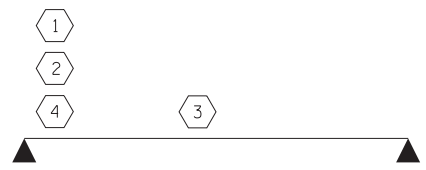
③ LEGAL LOAD RATING **

④ EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

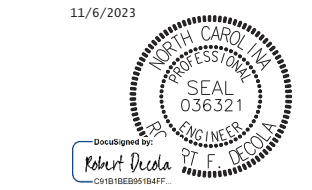


LRFR SUMMARY
FOR SPAN 'A'

PROJECT NO. 17BP.13.R.156
MADISON COUNTY
 STATION: 12+59.37 -L-

DESIGN ENGINEER OF RECORD: R.F. DECOLA DATE: 11/6/2023
 DRAWN BY: R.J. FLORY DATE: 07/30/2021
 CHECKED BY: R.F. DECOLA DATE: 08/01/2021

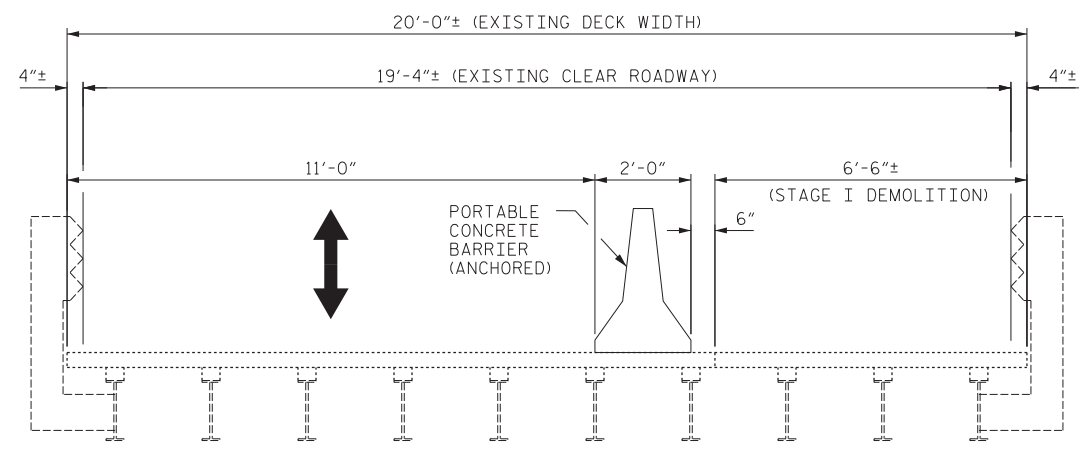
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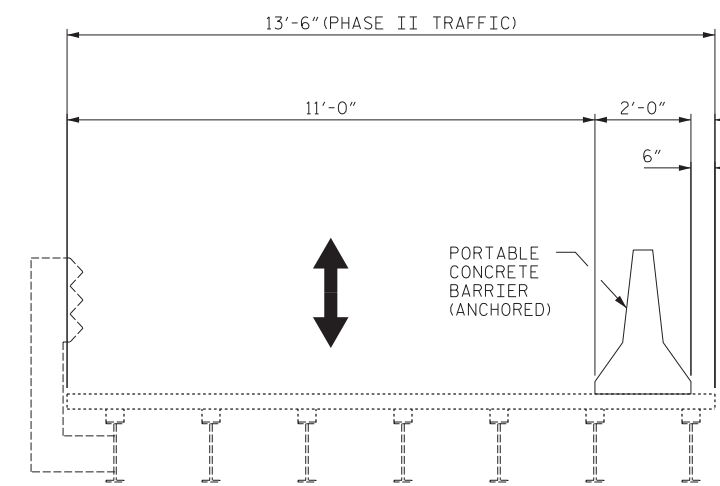
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 50' CORED SLAB UNIT
 60° SKEW
 (NON-INTERSTATE TRAFFIC)

REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	S-05
1			3	TOTAL SHEETS
2			4	21

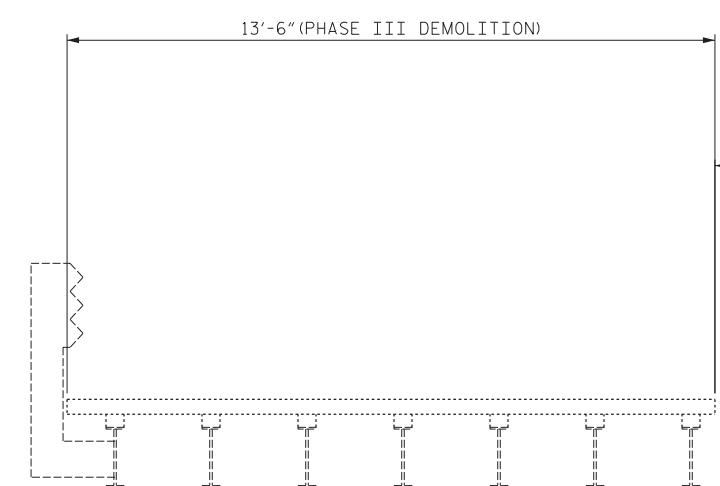
ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS • LICENSE NUMBER: C-00000000
KCI Associates
 of North Carolina, P.A.
 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6210 Phone (919) 783-9214



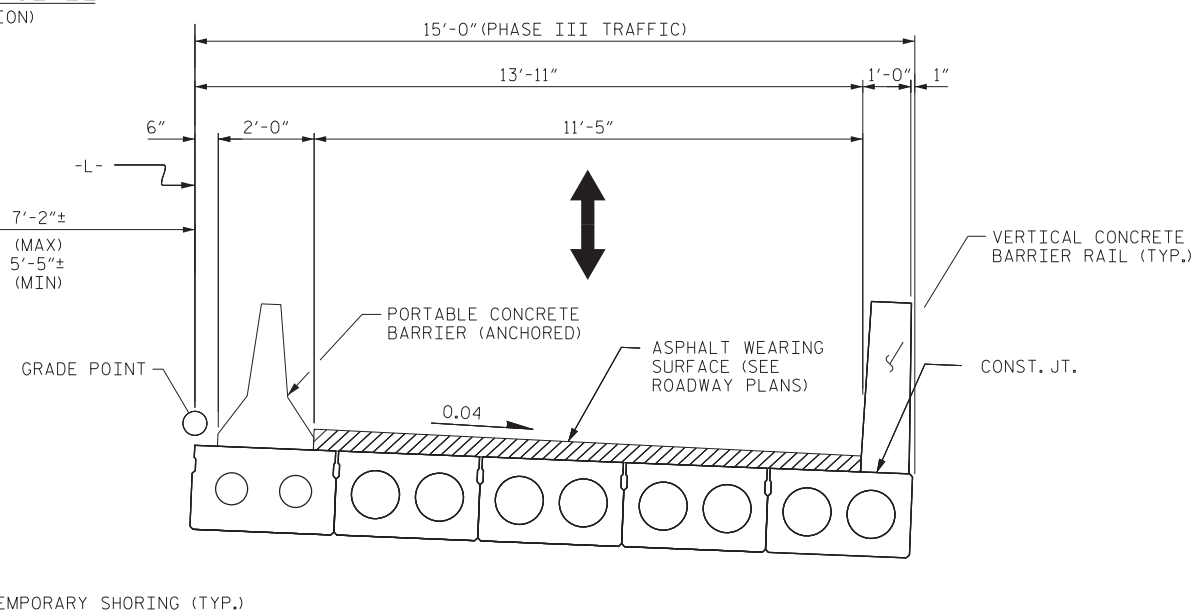
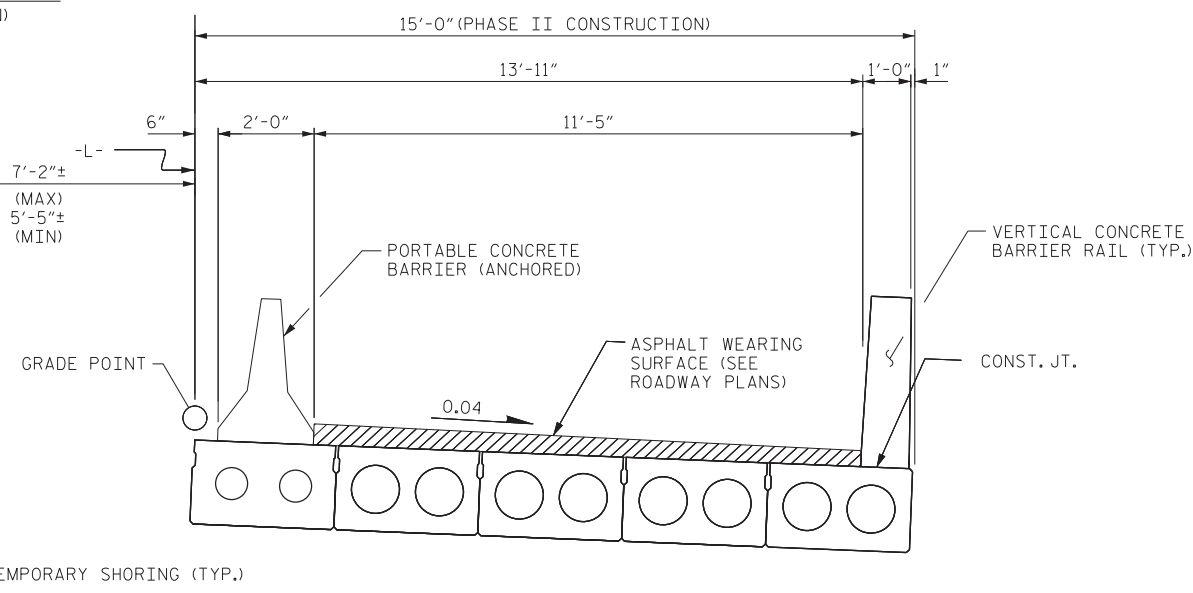
STAGE I - PHASE I
(LOOKING UPSTATION)



STAGE I - PHASE II
(LOOKING UPSTATION)



STAGE I - PHASE III
(LOOKING UPSTATION)



1. VERIFY EXISTING BRIDGE DIMENSIONS. CONTACT ENGINEER IF FIELD MEASUREMENTS VARY FROM PLAN DIMENSIONS SHOWN.
2. ANCHOR PORTABLE CONCRETE BARRIER TO EXISTING BRIDGE AND SHIFT TRAFFIC.
3. INSTALL TEMPORARY SHORING AS NEEDED AT END BENTS.
4. DEMOLISH AND REMOVE THE PORTION OF THE BRIDGE DECK, EXTERIOR THREE GIRDERS, AND SUBSTRUCTURE TO THE LIMITS SHOWN.

1. CONSTRUCT RIGHT PORTION OF PROPOSED BRIDGE AS SHOWN.
2. ANCHOR PORTABLE CONCRETE BARRIER TO PROPOSED BRIDGE.
3. PAVE ASPHALT WEARING SURFACE TO LIMITS SHOWN ON PROPOSED BRIDGE.

1. SHIFT TRAFFIC TO NEWLY CONSTRUCTED PORTION OF PROPOSED BRIDGE.
2. DEMOLISH AND REMOVE REMAINING PORTIONS OF EXISTING BRIDGE.

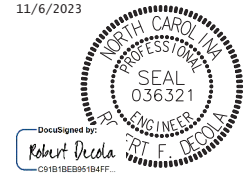
PROJECT NO. 17BP.13.R.156
MADISON COUNTY
 STATION: 12+59.37 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE STAGING PLAN

11/6/2023



DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
DRAWN BY : R.J. FLORY	DATE : 08/10/21
CHECKED BY : R.F. DECOLA	DATE : 08/11/21

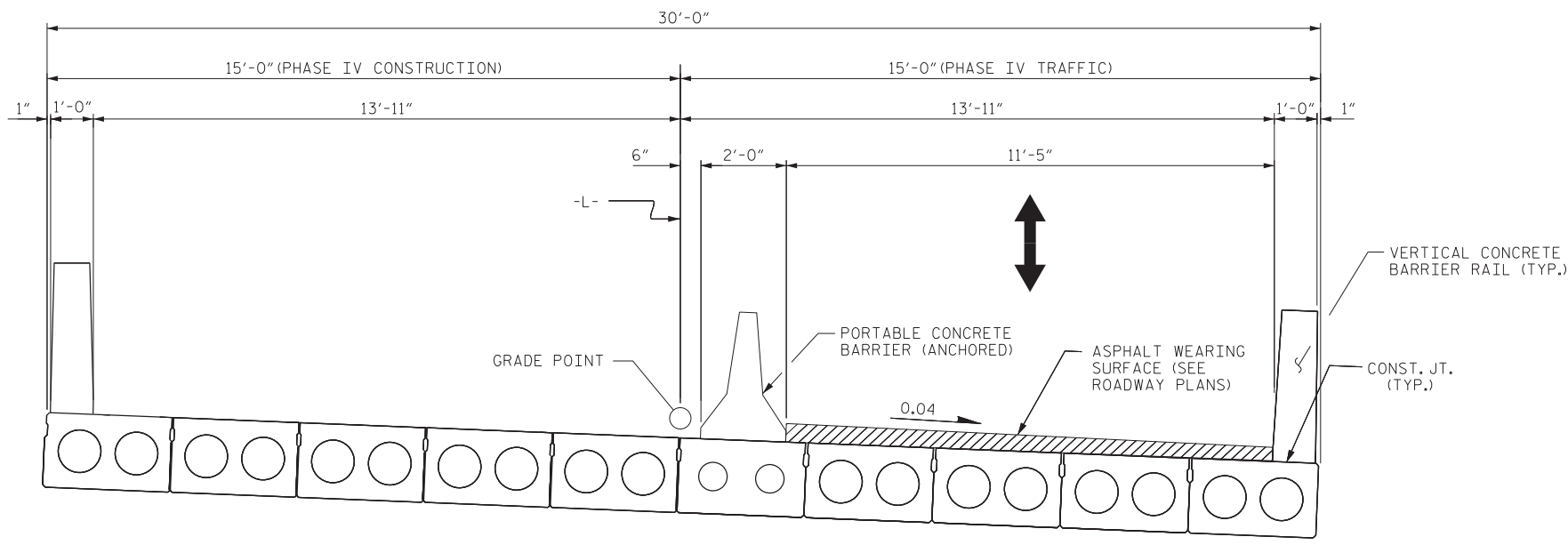
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 UNLESS ALL SIGNATURES COMPLETED**



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

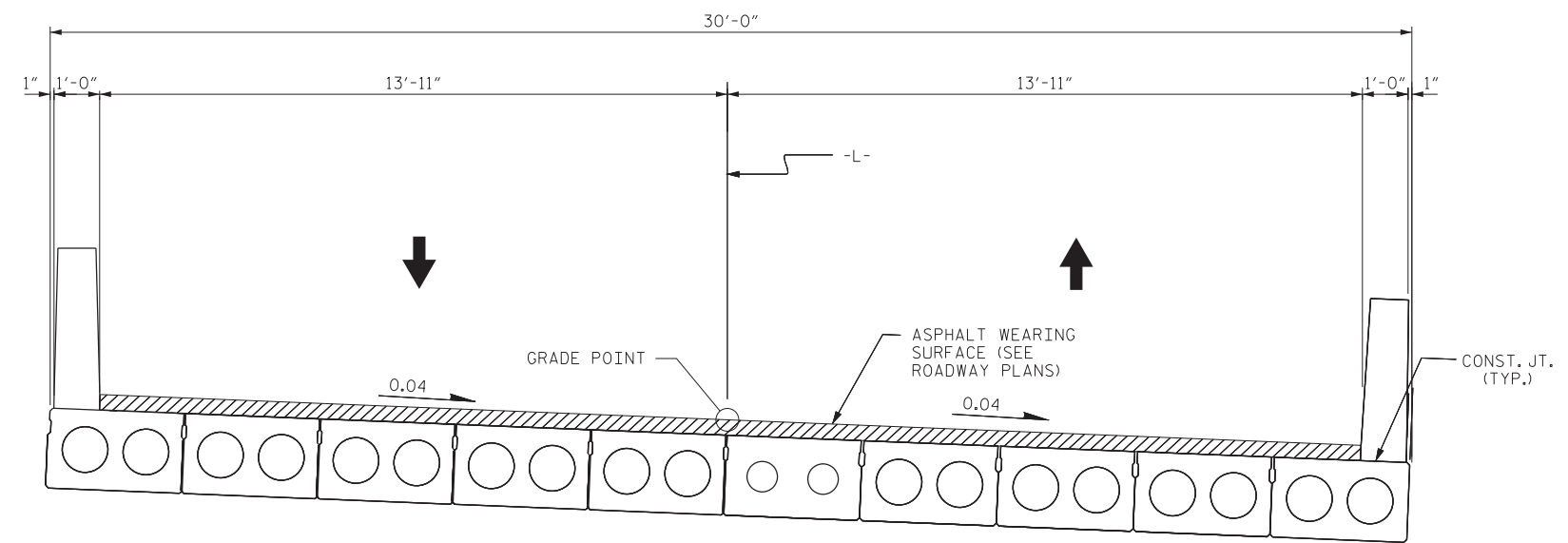
TOTAL SHEETS: 21

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 8/14/2023 5:26:58 PM Robert Decola Structures.plt:rfg
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STAGE II - PHASE IV
LOOKING UPSTATION

1. CONSTRUCT LEFT PORTION OF PROPOSED BRIDGE.



STAGE II - PHASE V
LOOKING UPSTATION

1. REMOVE ANCHORED PORTABLE CONCRETE BARRIER.
2. PAVE FULL DEPTH ASPHALT WEARING SURFACE TO THE LIMITS SHOWN.
3. SHIFT TRAFFIC TO FINAL CONFIGURATION.

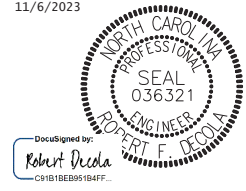
PROJECT NO. 17BP.13.R.156
MADISON COUNTY
STATION: 12+59.37 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE STAGING
PLAN

11/6/2023



DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
DRAWN BY : R.J. FLORY	DATE : 08/10/21
CHECKED BY : R.F. DECOLA	DATE : 08/11/21

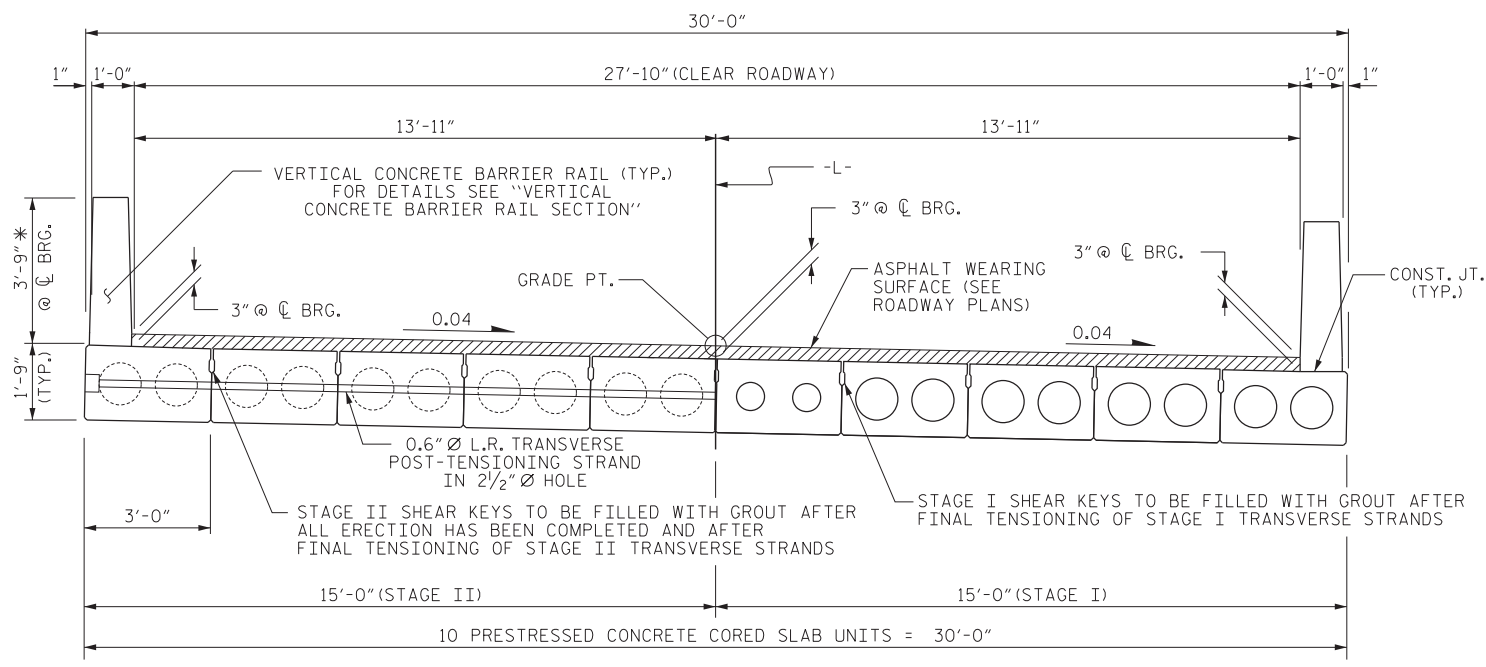
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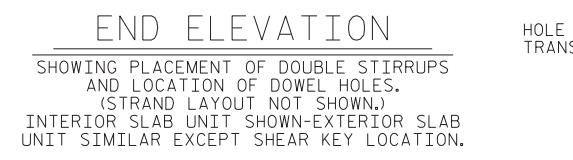
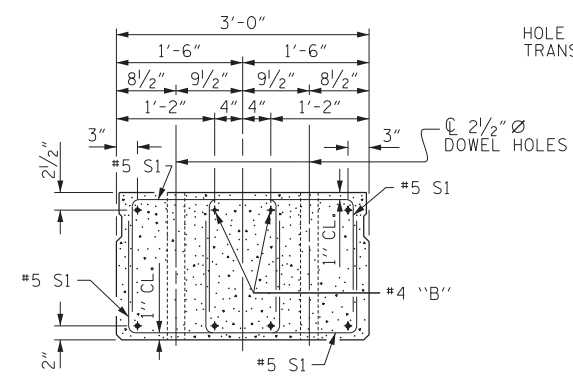
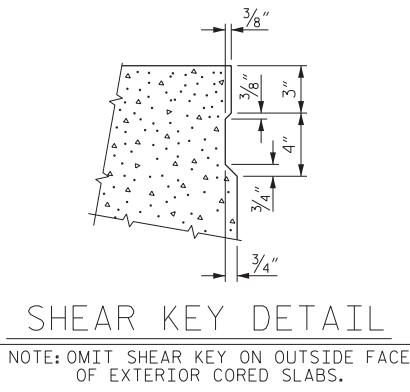
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 Structures\143.tbl Structures\p1tcfg
 Robert F. Decola
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HALF SECTION AT INTERMEDIATE DIAPHRAGMS
TYPICAL SECTION
 HALF SECTION THROUGH VOIDS

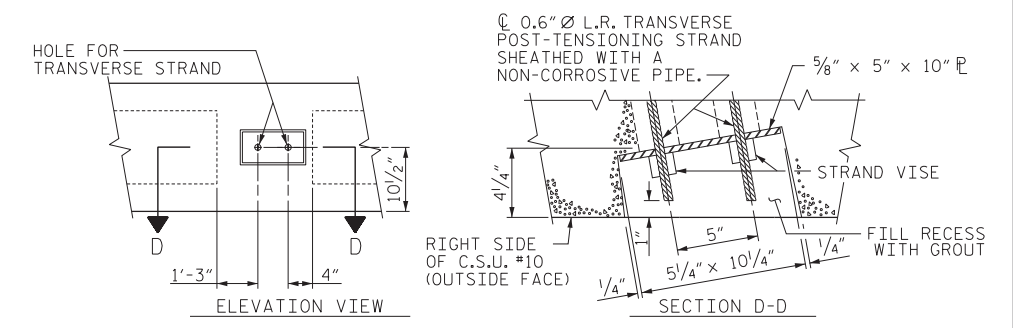
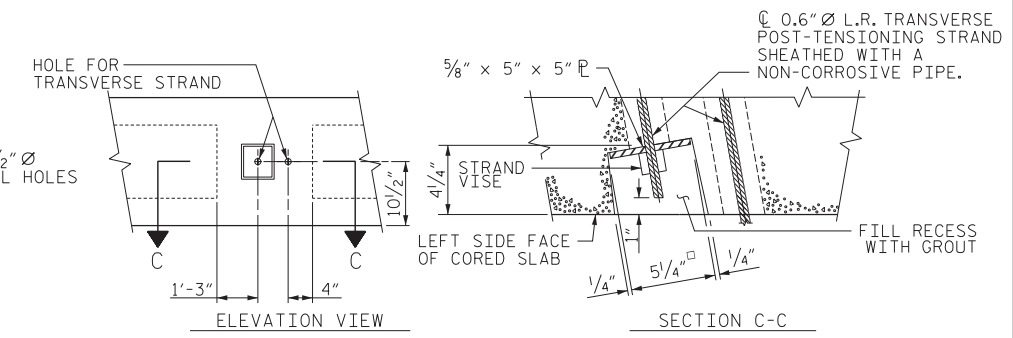
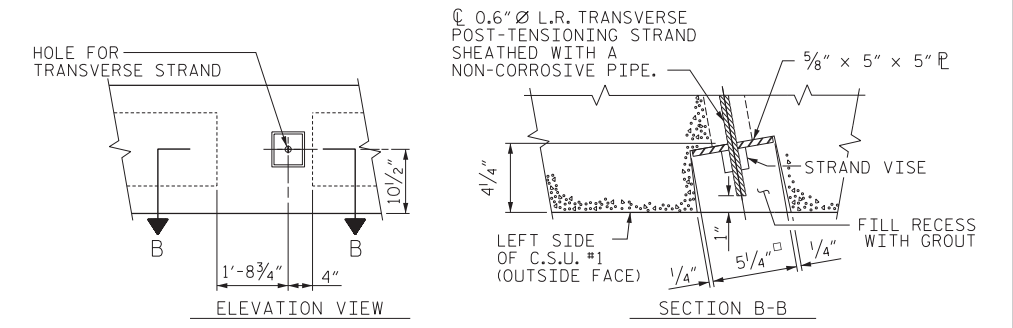
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



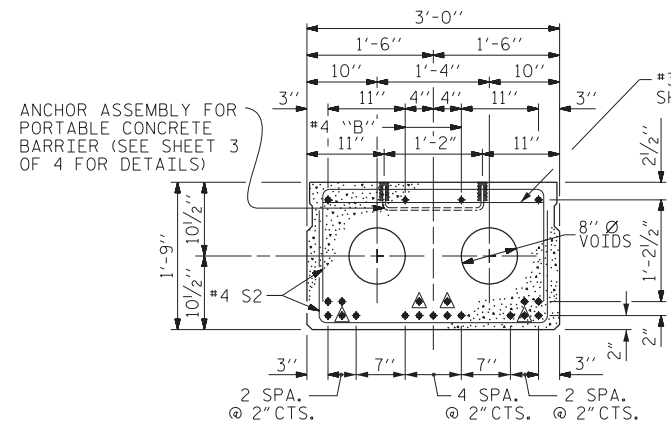
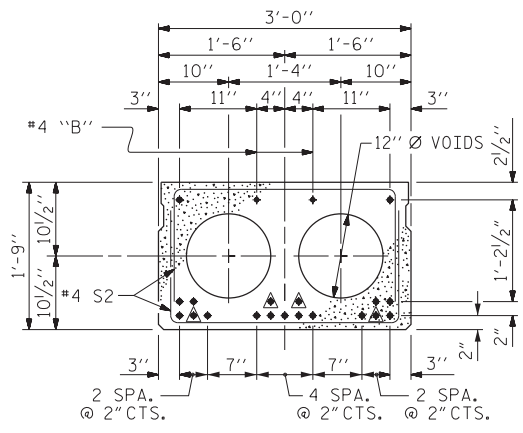
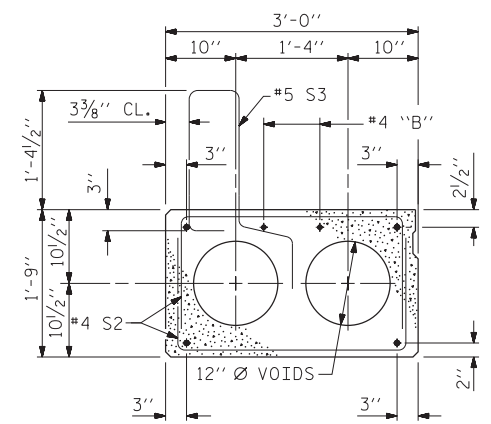
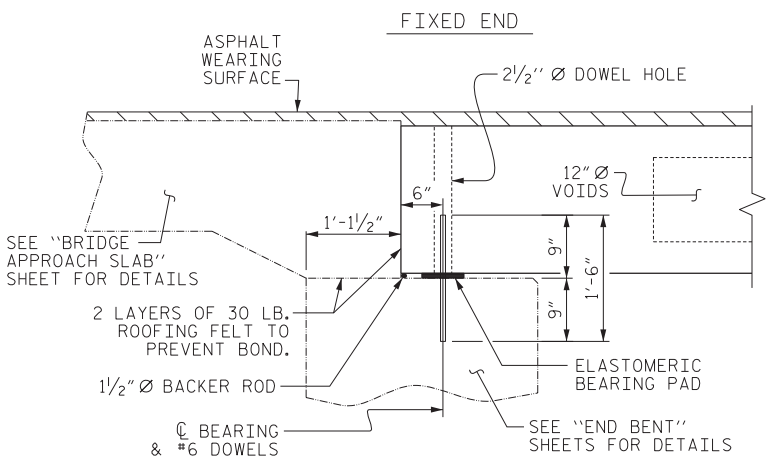
▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

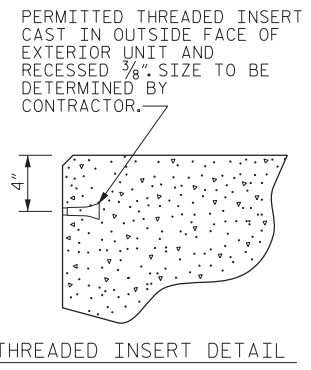
◆ THE #3 BARS ARE INCIDENTAL AND THE COST SHALL BE INCLUDED IN THE PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS



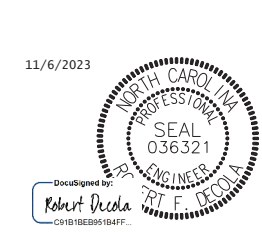
GROUTED RECESS AT END OF POST-TENSIONED STRAND



0.6" Ø LOW RELAXATION STRAND LAYOUT



PROJECT NO. 17BP.13.R.156
 MADISON COUNTY
 STATION: 12+59.37 -L-
 SHEET 1 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT

DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
DRAWN BY : R.J. FLORY	DATE : 07/30/2021
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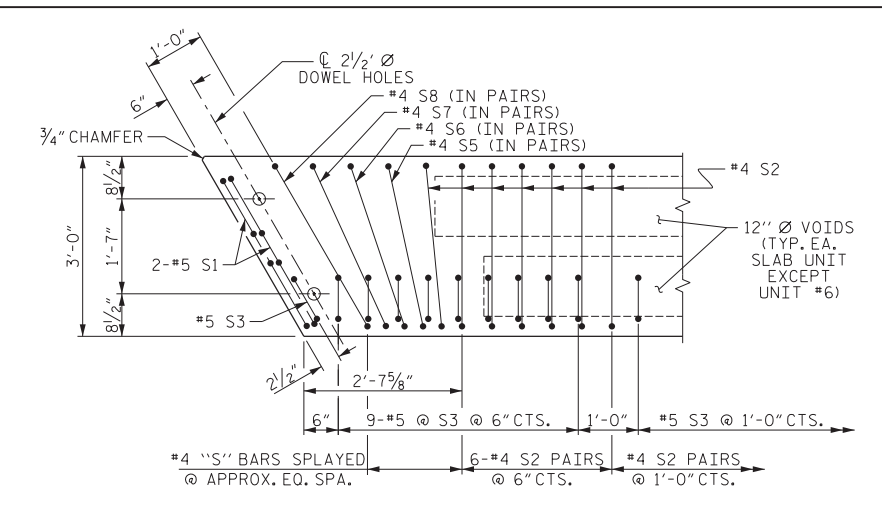
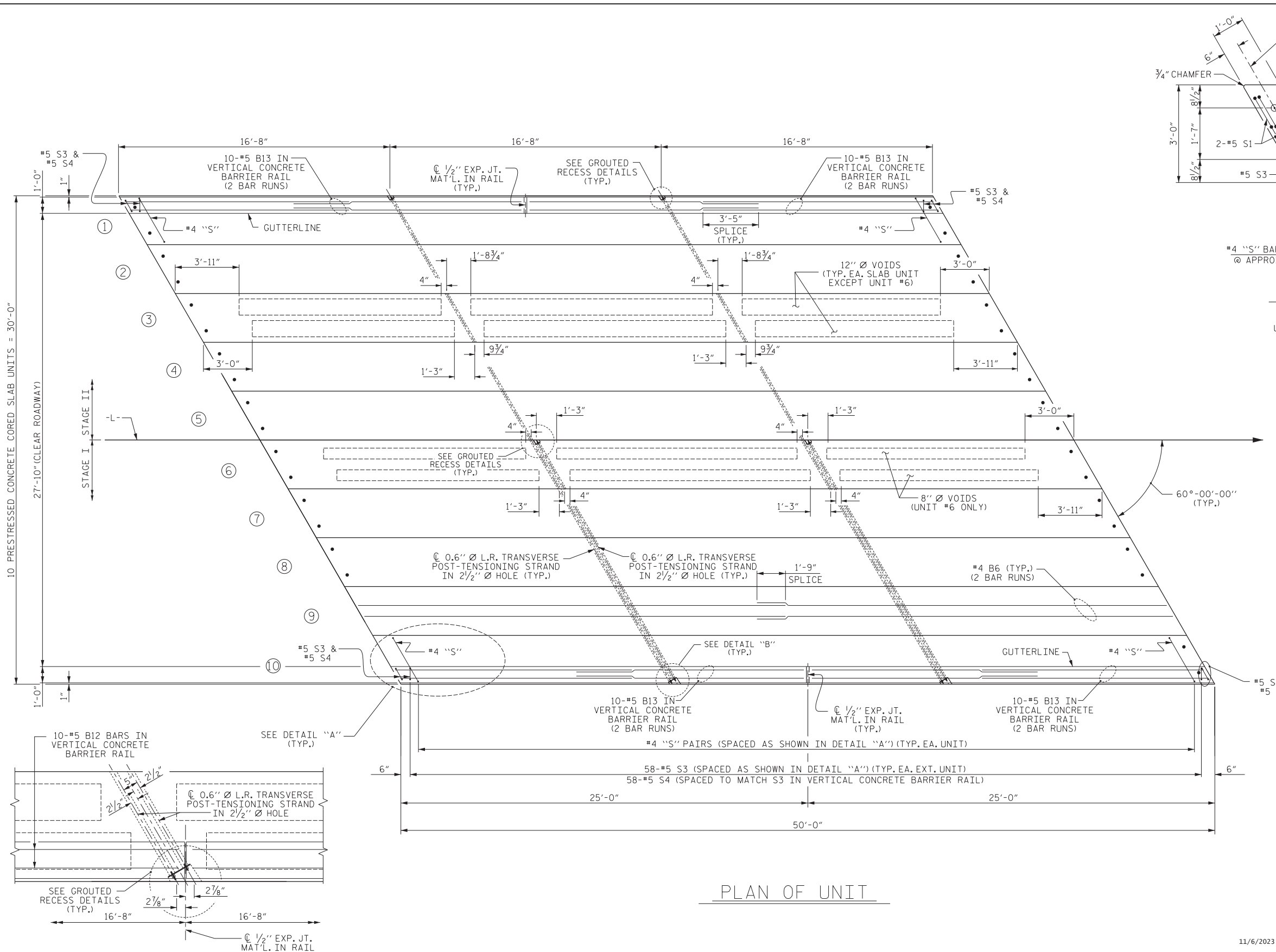


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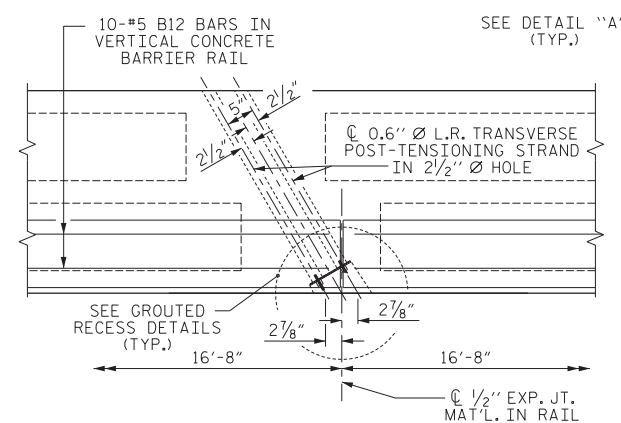
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KCI PROJ. #22133395.05



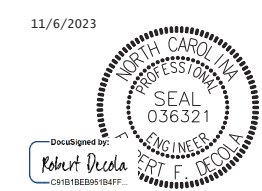
DETAIL "A"
(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.



DETAIL "B"
#4 "S" BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PLAN OF UNIT

PROJECT NO. 17BP.13.R.156
MADISON COUNTY
STATION: 12+59.37 -L-
SHEET 2 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
PLAN OF 50' UNIT
24'-10" CLEAR ROADWAY
60° SKEW

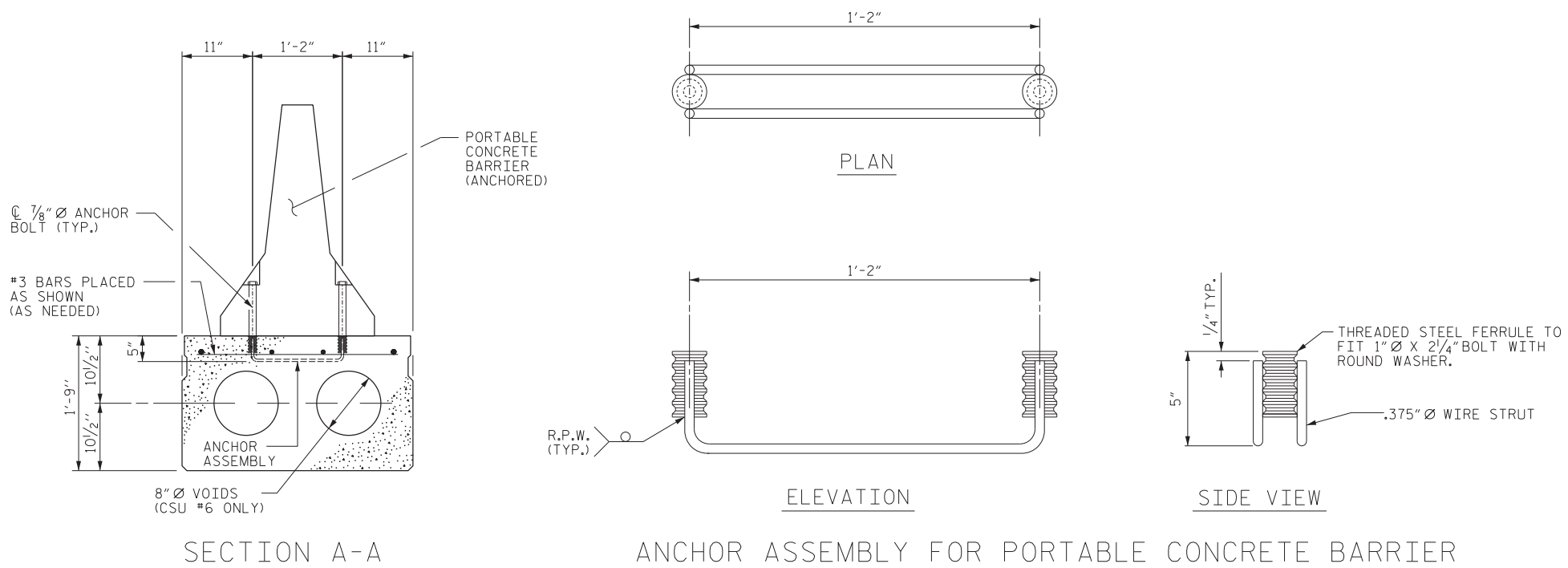
DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
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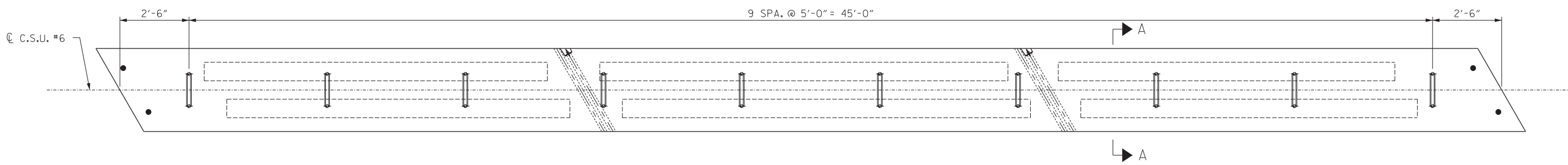
REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
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TOTAL SHEETS: 21



NOTES:

- THE ANCHOR ASSEMBLY FOR PORTABLE CONCRETE BARRIER 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 2 1/2".
 - B. 2 - 7/8" Ø BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
 - C. WIRE STRUTS SHOWN IN THE ANCHOR ASSEMBLY DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.
- ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO ENSURE FIT.
- THE COST OF THE ANCHOR ASSEMBLY COMPLETE IN PLACE SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB OR LUMP SUM FOR BRIDGE APPROACH SLABS.
- FERRULES TO BE PLUGGED DURING CASTING OF CORED SLAB UNIT OR POURING OF APPROACH SLABS AS RECOMMENDED BY THE MANUFACTURER.
- AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.
- PAYMENT FOR THE PORTABLE CONCRETE BARRIER IS INCLUDED IN THE TRAFFIC CONTROL PLANS.



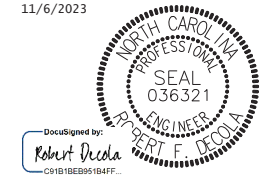
PLAN OF CORED SLAB UNIT #6

SHOWING ANCHOR ASSEMBLY SPACING
(10 ASSEMBLIES REQUIRED IN CORED SLAB UNIT)
FOR LOCATIONS AND NUMBER OF ASSEMBLIES REQUIRED
IN APPROACH SLABS, SEE APPROACH SLAB SHEETS.

PROJECT NO. 17BP.13.R.156
MADISON COUNTY
STATION: 12+59.37 -L-

SHEET 3 OF 4

11/6/2023



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
60° SKEW

DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
DRAWN BY : R.J. FLORY	DATE : 07/30/2021
CHECKED BY : R.F. DECOLA	DATE : 08/01/2021

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ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS • LICENSE NUMBER: C-00000000

KCI Associates
of North Carolina, P.A.

4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-9214

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TOTAL SHEETS: 21

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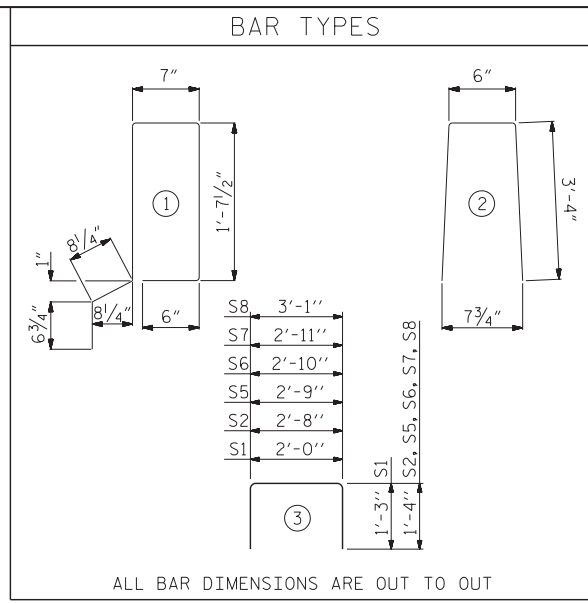
DEAD LOAD DEFLECTION AND CAMBER	
50' CORED SLAB UNIT	3'-0" x 1'-9"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/2" ↑
FINAL CAMBER	7/16" ↓
	1/16" ↑

** INCLUDES FUTURE WEARING SURFACE

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
50' UNIT						
*B13	80	80	#5	STR	14'-3"	1189
*S4	120	120	#5	2	7'-2"	897
* EPOXY COATED REINFORCING STEEL			LBS.		2086	
CLASS AA CONCRETE			CU.YDS.		12.8	
TOTAL VERTICAL CONCRETE BARRIER RAIL			LN.FT.		100.29	

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
50' UNITS	1 5/8"	3'-7 5/8"

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
50' UNIT			
EXTERIOR C.S.	2	50'-0"	100'-0"
INTERIOR C.S.	7	50'-0"	350'-0"
INTERIOR C.S. W/ 8" VOIDS	1	50'-0"	50'-0"
TOTAL			500'-0"



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT									
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT C.S.U. #1 & #10		INTERIOR UNIT C.S.U. #2-#5 & #7-#9		INTERIOR UNIT C.S.U. #6	
				LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	69	25'-9"	69
S1	8	#5	3	4'-6"	38	4'-6"	38	4'-6"	38
S2	102	#4	3	5'-4"	363	5'-4"	363	5'-4"	363
*S3	60	#5	1	5'-7"	349				
S5	4	#4	3	5'-5"	14	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15	5'-9"	15
REINFORCING STEEL				LBS.		529		529	
* EPOXY COATED REINFORCING STEEL				LBS.		349			
6500 P.S.I. CONCRETE				CU.YDS.		7.3		8.6	
0.6" Ø L.R. STRANDS				No.		19		19	

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

CONCRETE RELEASE STRENGTH	
UNIT	PSI
50' UNITS	4900

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 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

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

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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.

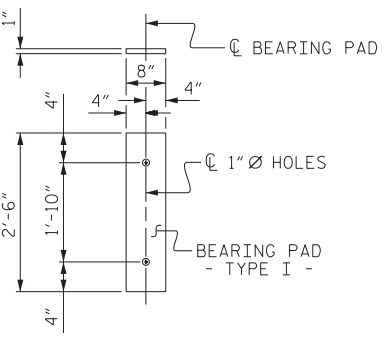
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

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.

THE #4 S2 STIRRUPS MAYBE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

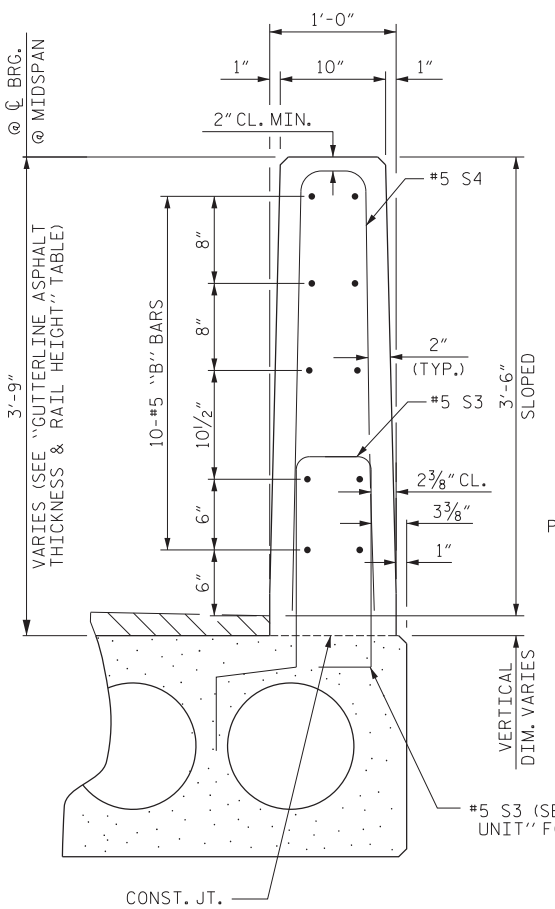
MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.



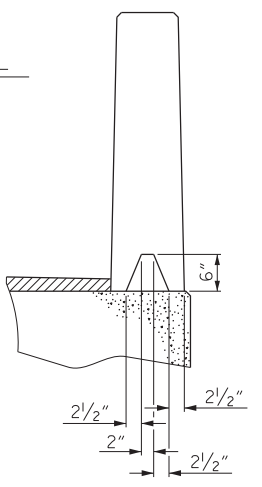
FIXED END (TYPE I - 20 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

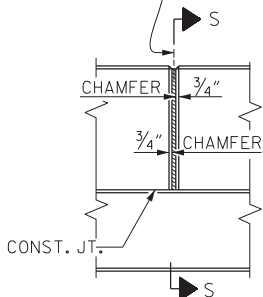


VERTICAL CONCRETE BARRIER RAIL SECTION

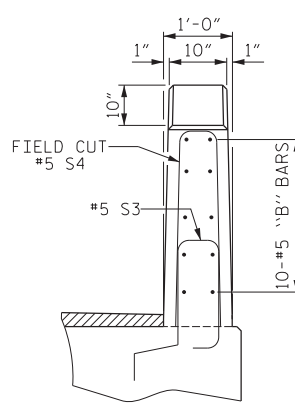


SECTION S-S AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

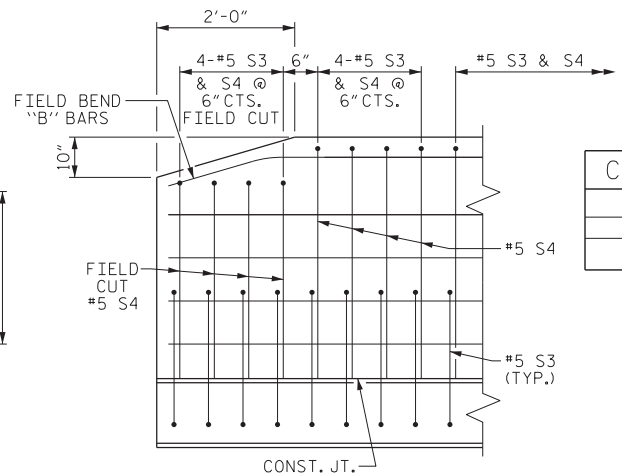
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS



END VIEW



SIDE VIEW

END OF RAIL DETAILS

DESIGN ENGINEER OF RECORD:	DATE :	11/6/2023
R.F. DECOLA		
DRAWN BY :	DATE :	07/30/2021
R.J. FLORY		
CHECKED BY :	DATE :	08/01/2021
R.F. DECOLA		

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11/6/2023
 NORTH CAROLINA PROFESSIONAL SEAL 036321
 ENGINEER
 Robert Decola
 C51818E8951844F

PROJECT NO. 17BP.13.R.156
 MADISON COUNTY
 STATION: 12+59.37 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 60° SKEW

REVISIONS				SHEET NO.
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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.)

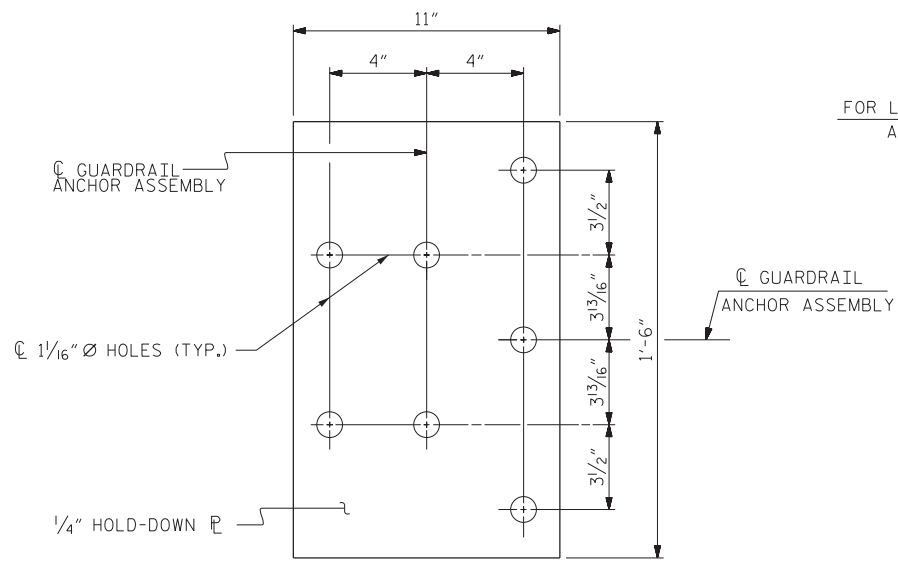
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

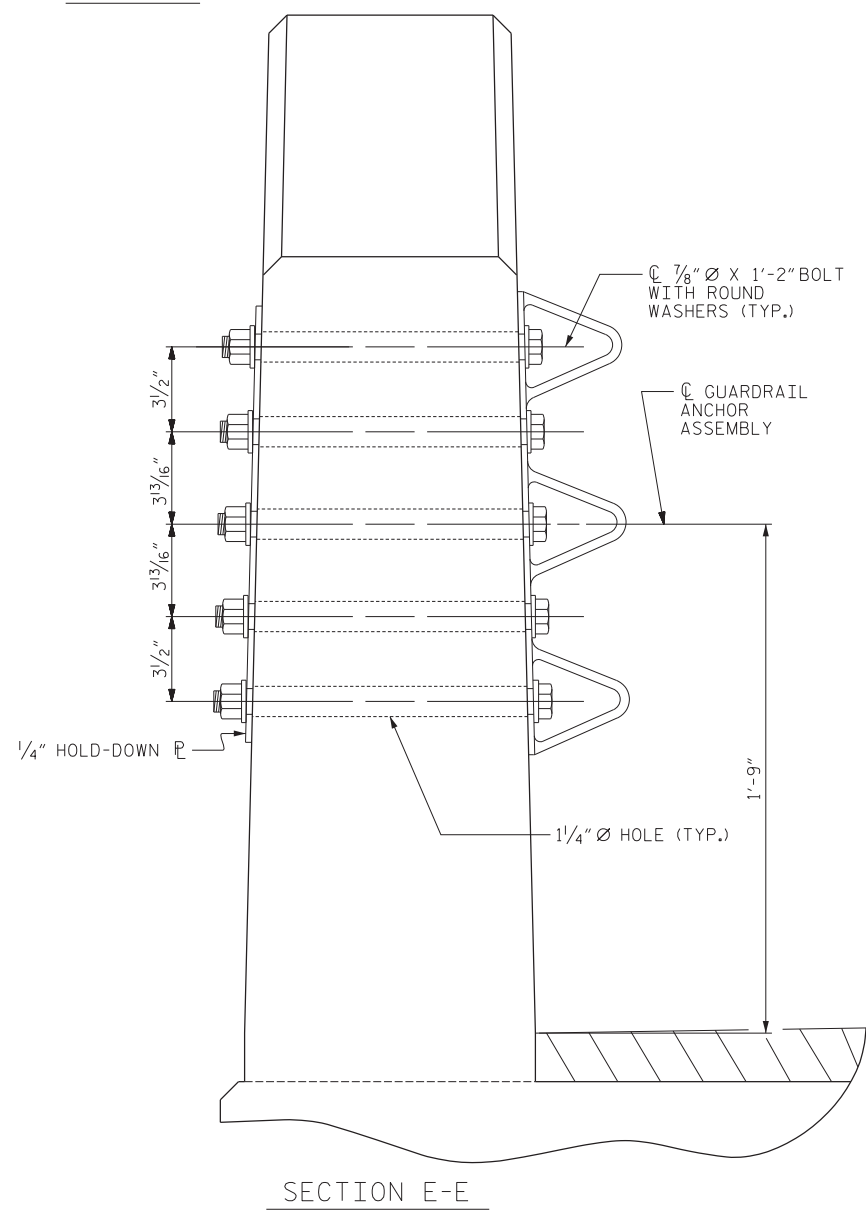
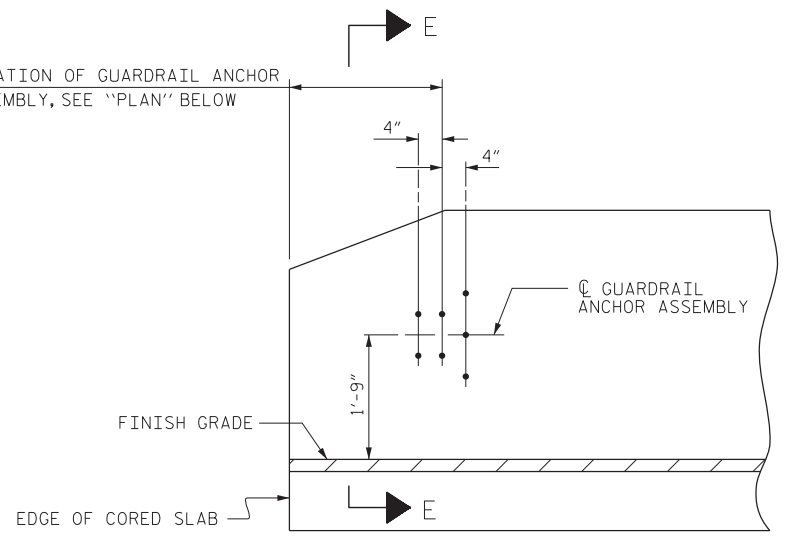
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

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

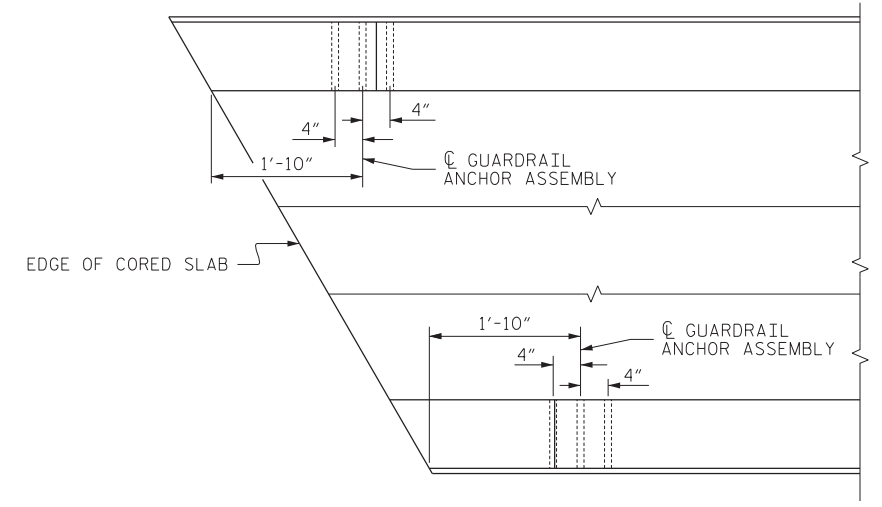
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.13.R.156
MADISON COUNTY
STATION: 12+59.37 -L-

11/6/2023



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
DETAILS
FOR VERTICAL CONCRETE
BARRIER RAIL

DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
DRAWN BY : R.J. FLORY	DATE : 07/30/2021
CHECKED BY : R.F. DECOLA	DATE : 08/01/2021

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UNLESS ALL SIGNATURES COMPLETED

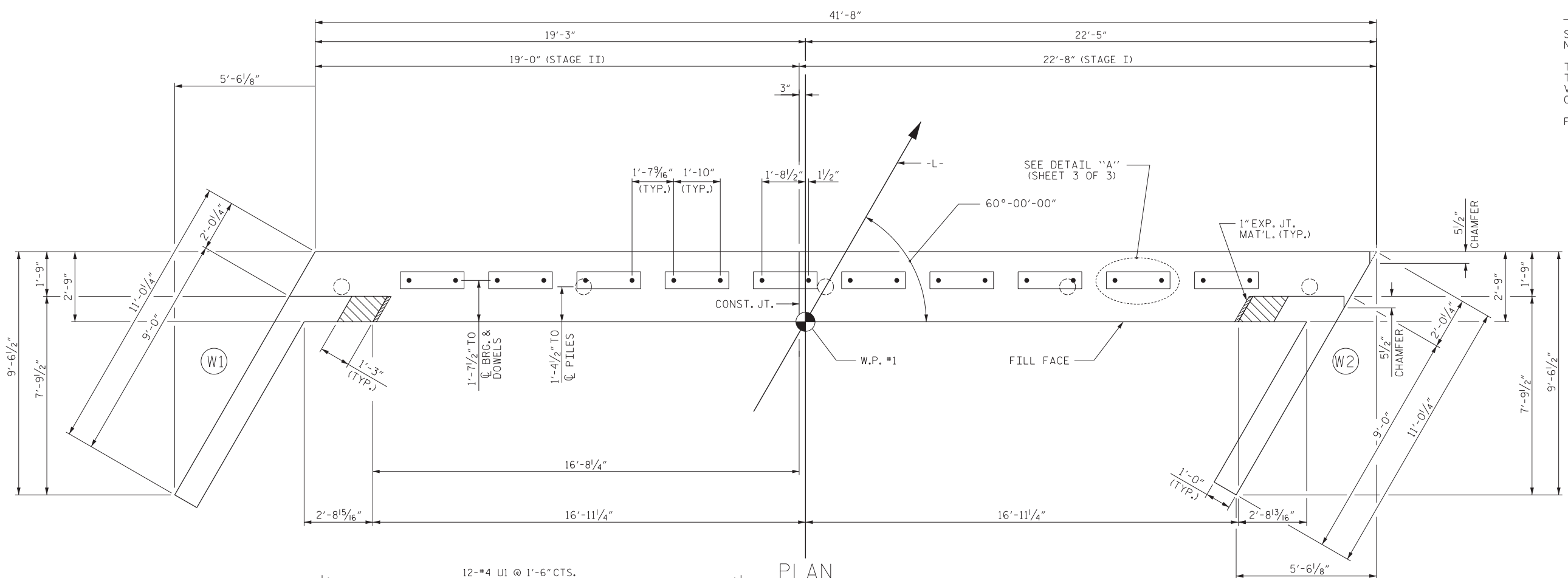


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			21

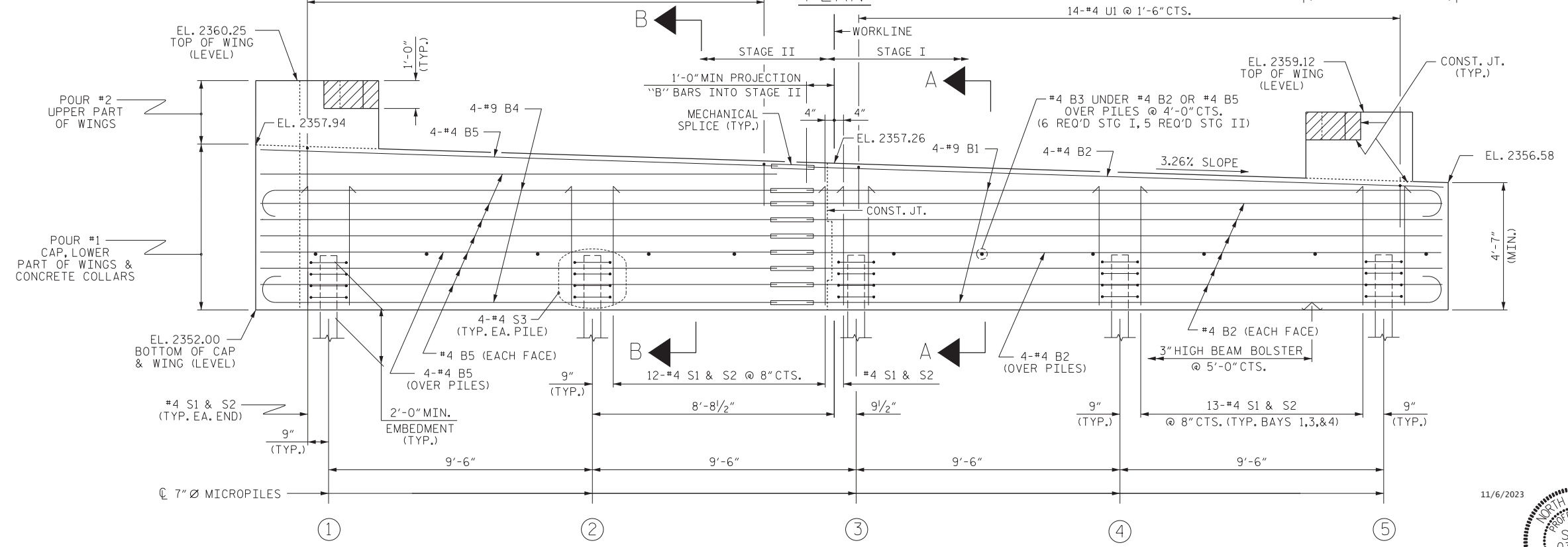
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8/14/2023 5:27:28 PM Robert F. Decola Structures.pltcf
KCI PROJ. #22133395.05

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 FOR WING DETAILS, SEE SHEET 2 OF 3.



PLAN



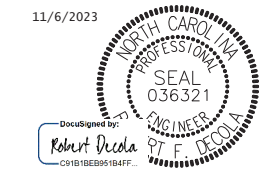
ELEVATION

WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A AND SECTION B-B, SEE SHEET 3 OF 3.

PROJECT NO. 17BP.13.R.156
 MADISON COUNTY
 STATION: 12+59.37 -L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1



DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
DRAWN BY : R.J. FLORY	DATE : 07/30/2021
CHECKED BY : R.F. DECOLA	DATE : 08/01/2021

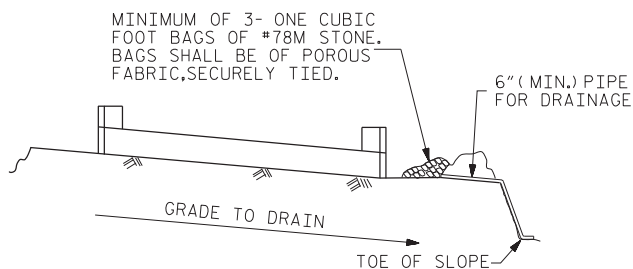
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**



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

TOTAL SHEETS: 21

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 KCI PROJ. #22133395.05

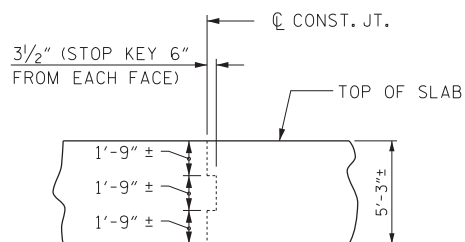


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

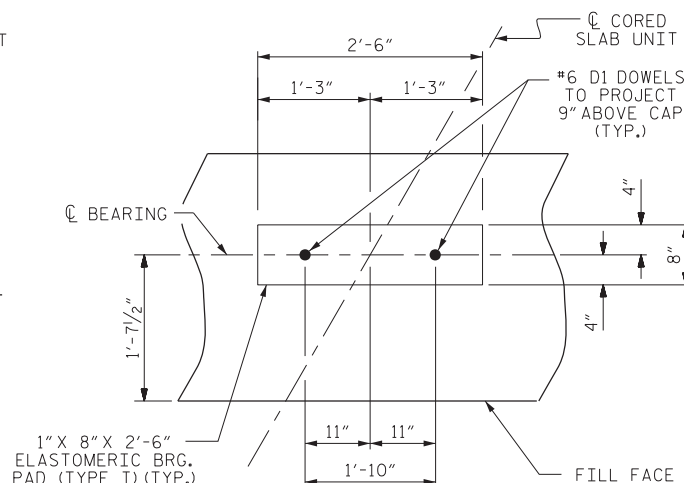
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

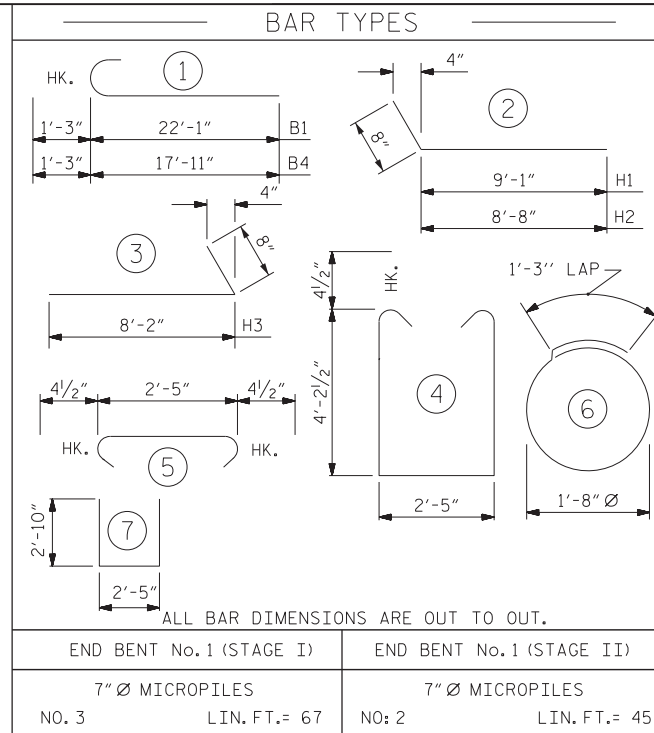


CONSTRUCTION JOINT DETAIL

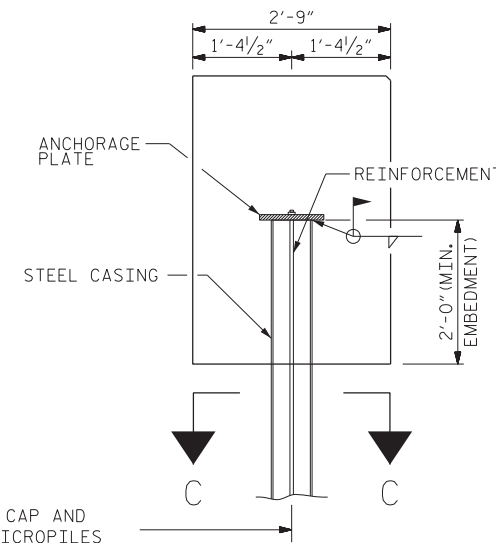
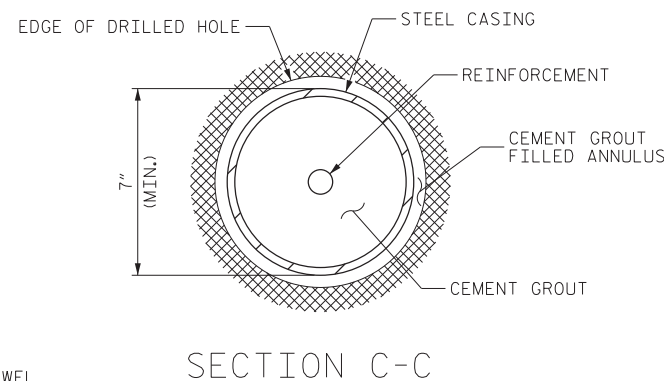
NOTE: REINFORCING STEEL IN END BENT NOT SHOWN.



DETAIL "A"



BILL OF MATERIAL									
END BENT 1 (STAGE I)					END BENT 1 (STAGE II)				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#8		23'-4"	635	B3	#4	STR	2'-5"	8
B2	#4	STR	22'-1"	295	B4	#9		19'-2"	521
B3	#4	STR	2'-5"	10	B5	#4	STR	17'-11"	263
D1	#6	STR	1'-6"	25	D1	#6	STR	1'-6"	20
H3	#4		8'-10"	130	H1	#4	2	9'-9"	85
					H2	#4	2	9'-4"	81
K1	#4	STR	3'-3"	17	K1	#4	STR	3'-3"	17
S1	#4	4	11'-7"	217	S1	#4	4	11'-7"	201
S2	#4	5	3'-2"	59	S2	#4	5	3'-2"	55
S3	#4	6	6'-6"	52	S3	#4	6	6'-6"	35
U1	#4	7	8'-1"	76	U1	#4	7	8'-1"	65
V2	#4	STR	6'-9"	117	V1	#4	STR	7'-11"	143
REINFORCING STEEL				1,633 LBS.	REINFORCING STEEL				1,494 LBS.
CLASS A CONCRETE BREAKDOWN POUR #1 CAP & LOWER PART OF WINGS				12.2 C.Y.	CLASS A CONCRETE BREAKDOWN POUR #1 CAP & LOWER PART OF WINGS				14.3 C.Y.
POUR #2 UPPER PART OF WINGS				1.1 C.Y.	POUR #2 UPPER PART OF WINGS				1.0 C.Y.
TOTAL CLASS A CONCRETE				13.3 C.Y.	TOTAL CLASS A CONCRETE				15.3 C.Y.



MICROPILE DETAIL

(TYP. EA. MICROPILE)

PROJECT NO. 17BP.13.R.156

MADISON COUNTY

STATION: 12+59.37 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

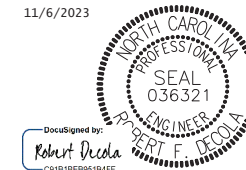
SUBSTRUCTURE

END BENT 1
DETAILS

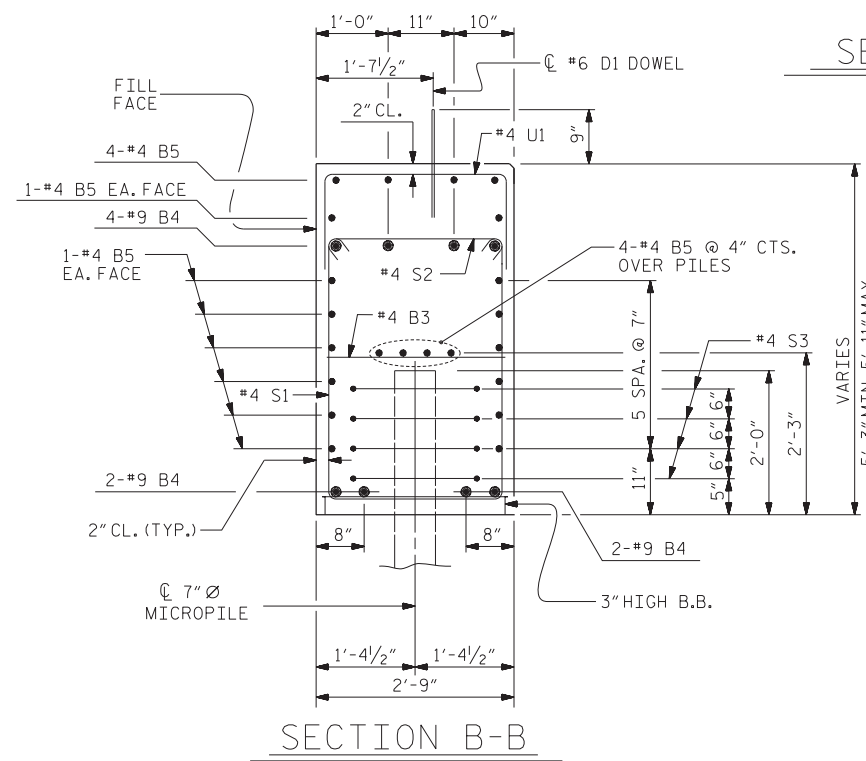
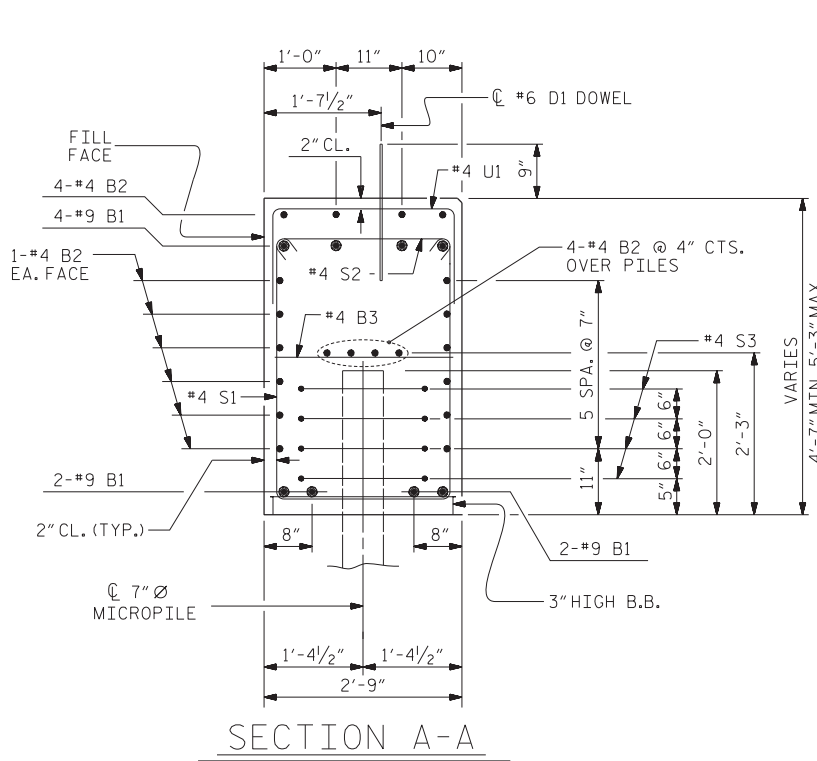
REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-15
2			4			TOTAL SHEETS 21

11/6/2023



DocuSigned by:
Robert Decola
C0181B2B9184FF..



DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
DRAWN BY : R.J. FLORY	DATE : 07/30/2021
CHECKED BY : R.F. DECOLA	DATE : 08/01/2021

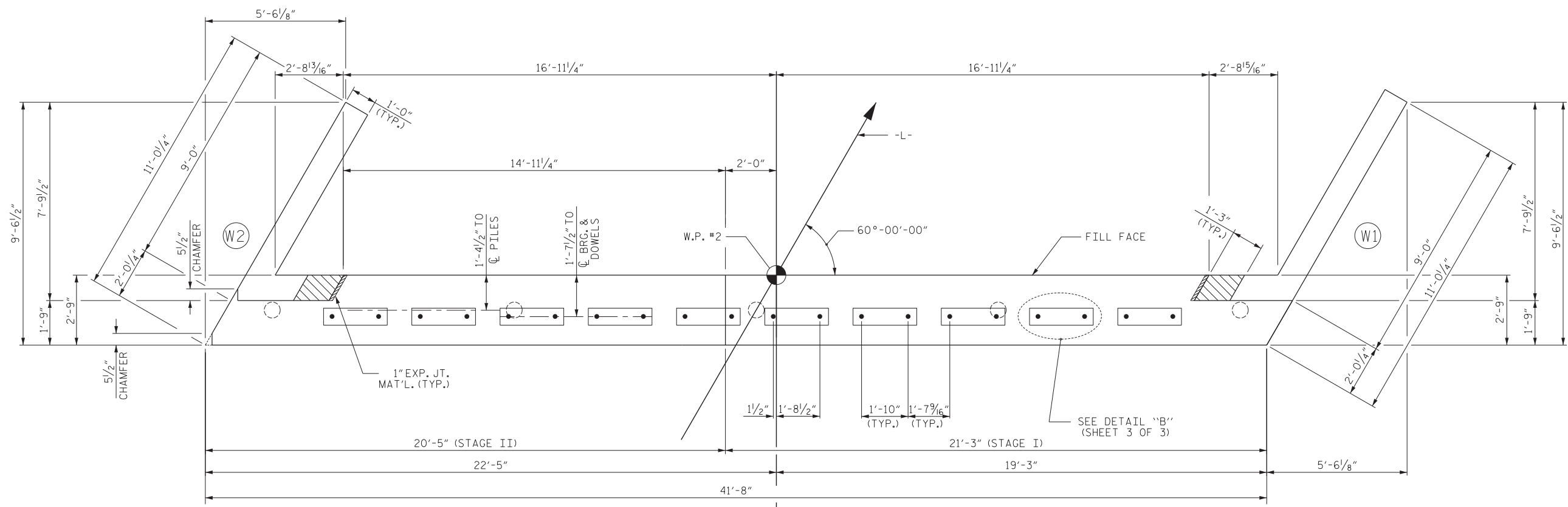
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



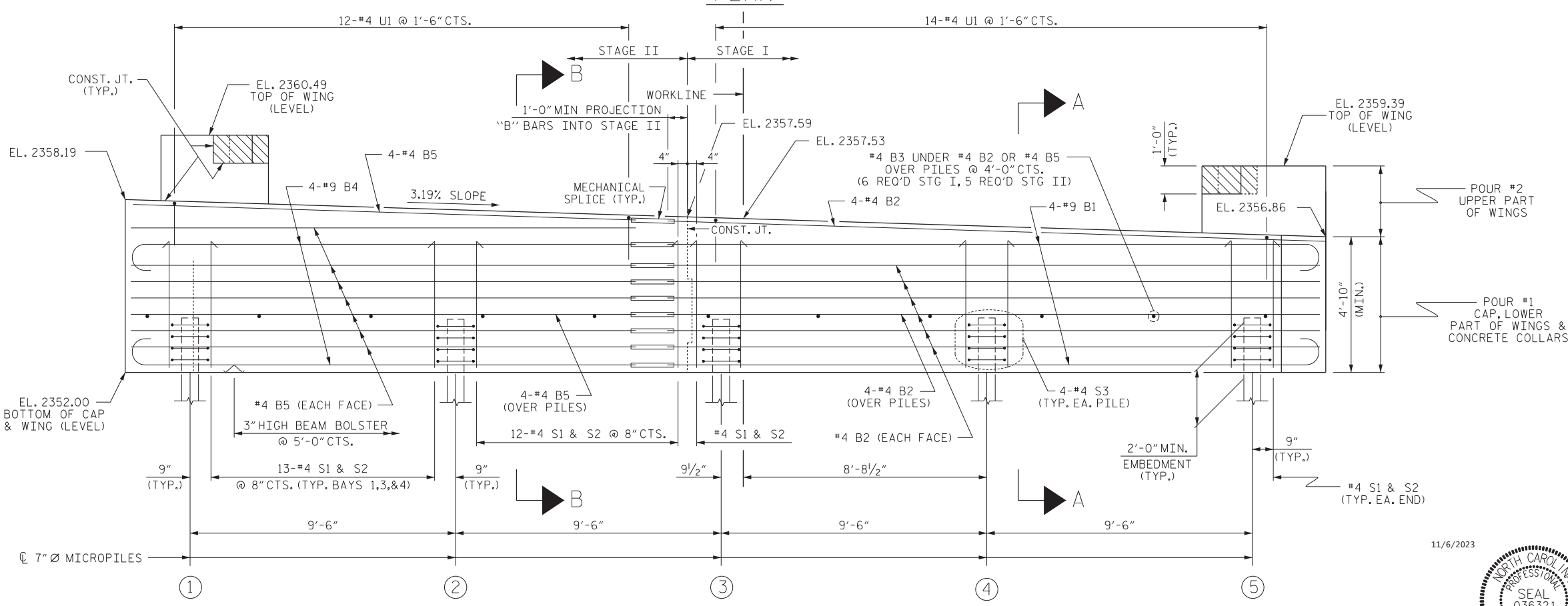
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 Robert+Decola
 KCI PROJ. #22133395.05
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NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 FOR WING DETAILS, SEE SHEET 2 OF 3.



PLAN



ELEVATION

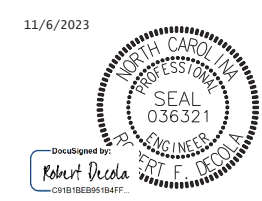
WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A AND B-B, SEE SHEET 3 OF 3.

PROJECT NO. 17BP.13.R.156
 MADISON COUNTY
 STATION: 12+59.37 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2



DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
DRAWN BY : R.J. FLORY	DATE : 07/30/2021
CHECKED BY : R.F. DECOLA	DATE : 08/01/2021

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

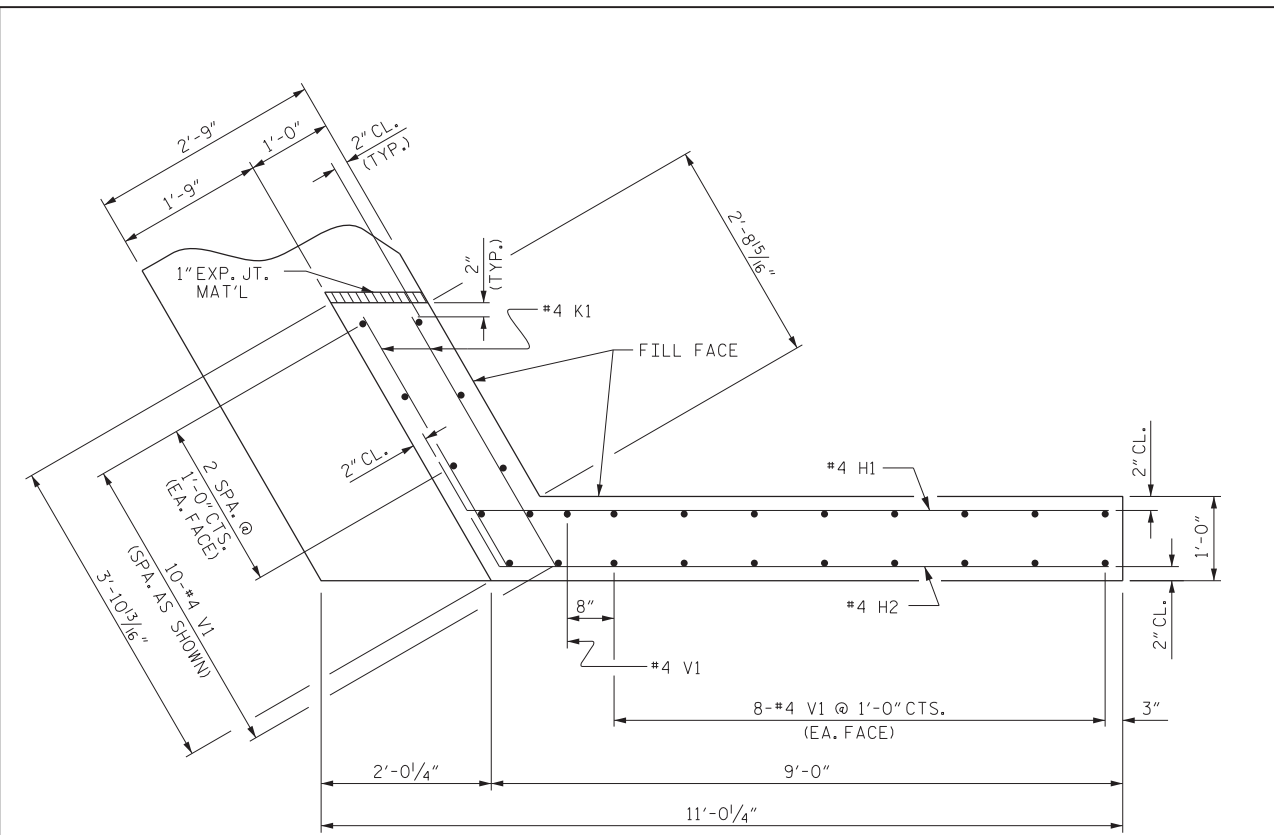


REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
1		3	
2		4	

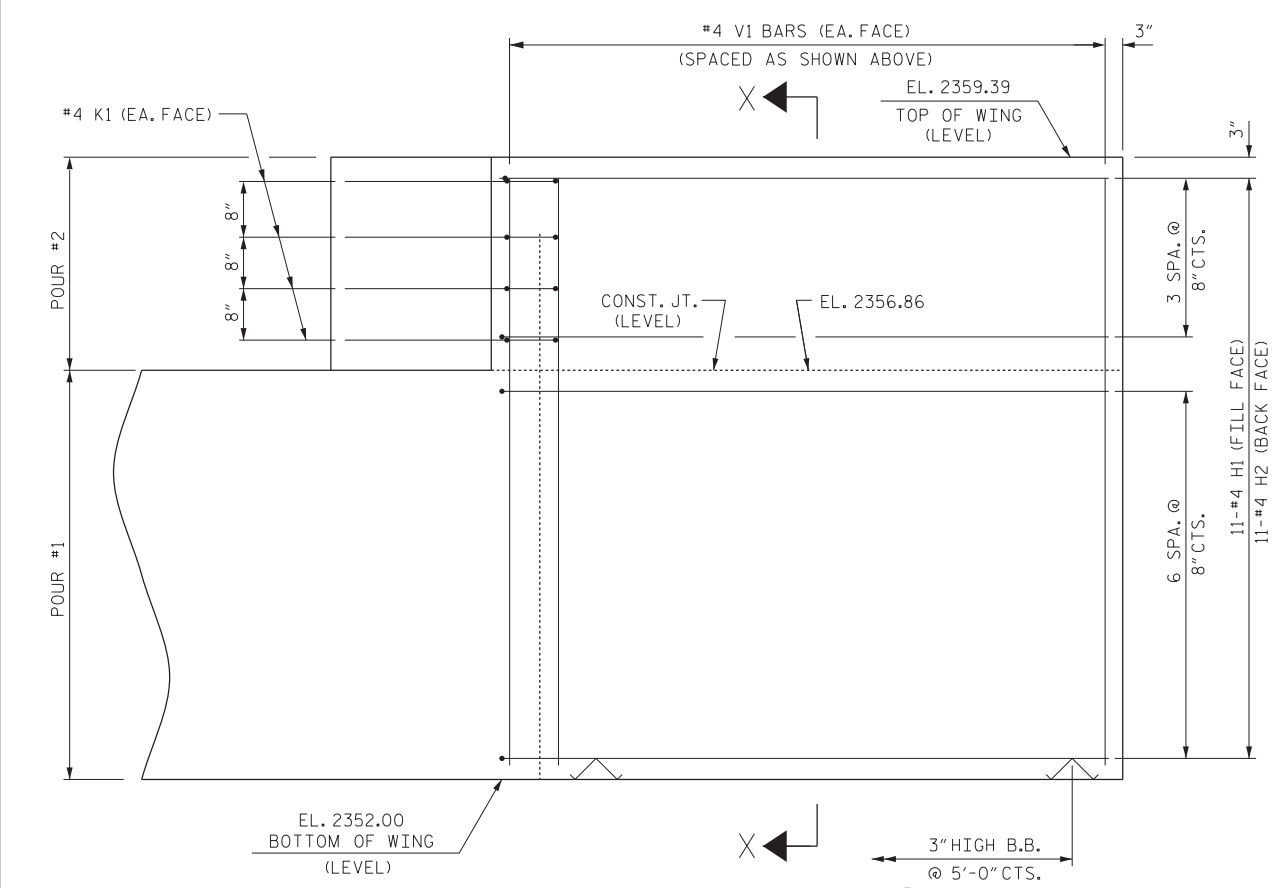
TOTAL SHEETS: 21

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 KCI PROJ. #22133395.05

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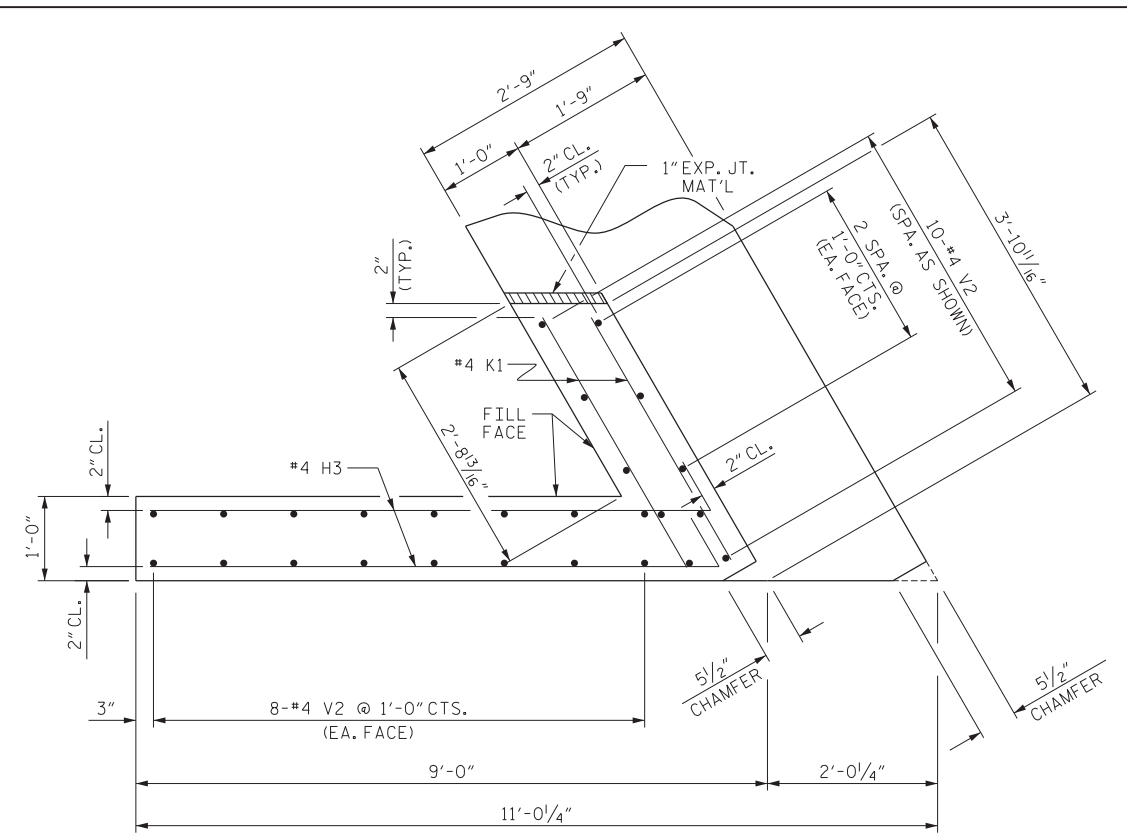


PLAN OF WING (W1)

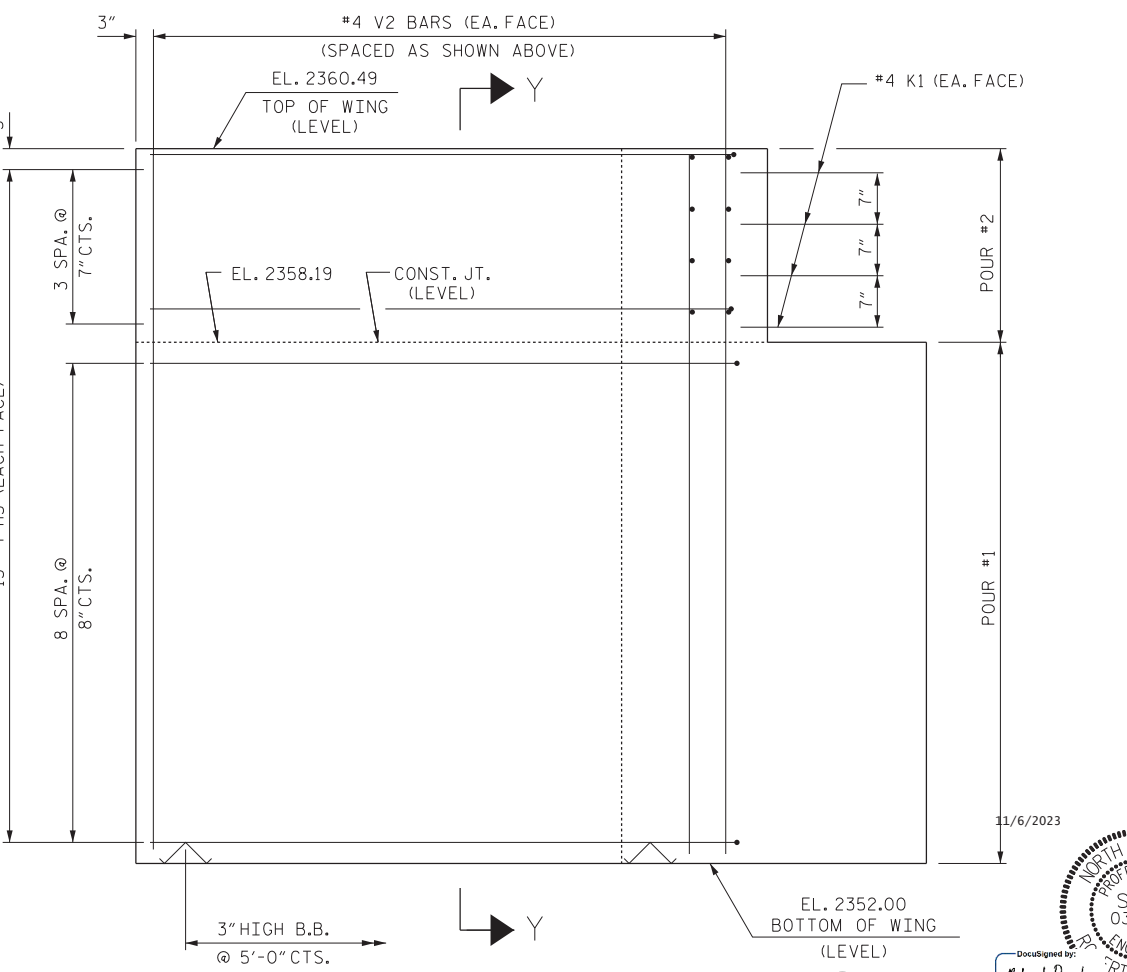


ELEVATION OF WING (W1)

DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
DRAWN BY : R.J. FLORY	DATE : 07/30/2021
CHECKED BY : R.F. DECOLA	DATE : 08/01/2021

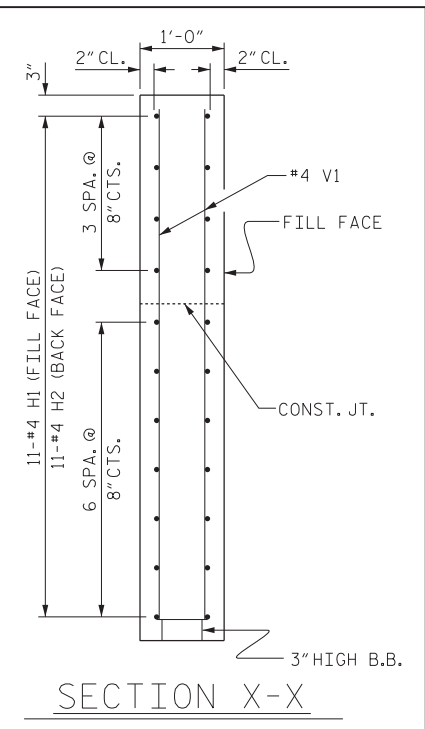


PLAN OF WING (W2)

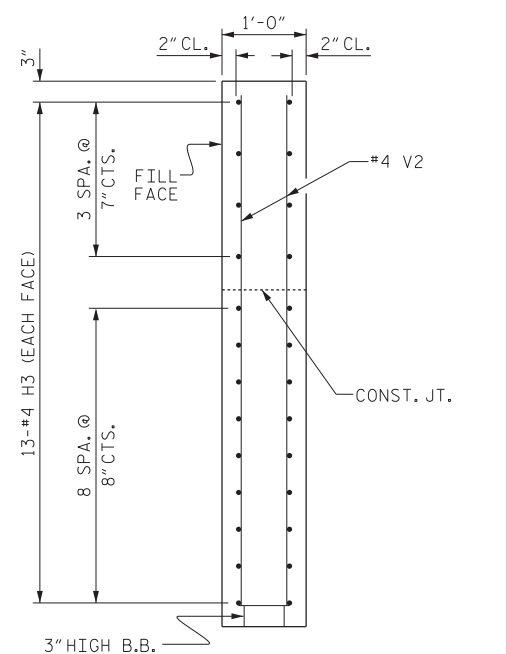


ELEVATION OF WING (W2)

WING DETAILS



SECTION X-X



SECTION Y-Y

PROJECT NO. 17BP.13.R.156
 MADISON COUNTY
 STATION: 12+59.37 -L-
 SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

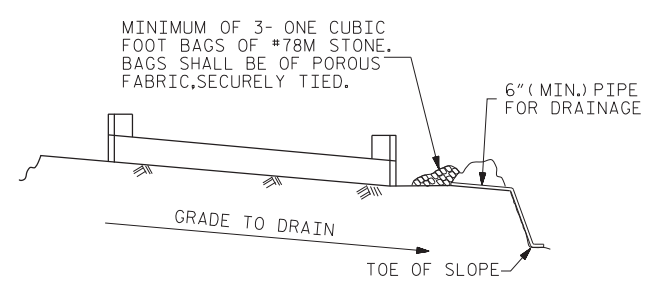
SUBSTRUCTURE
 END BENT 2
 WING DETAILS

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

TOTAL SHEETS: 21

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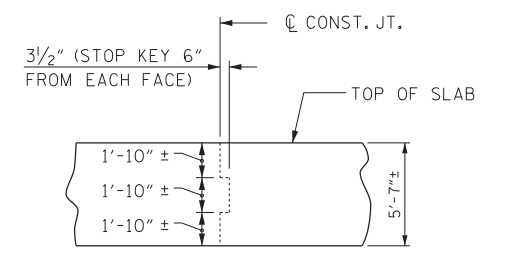


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

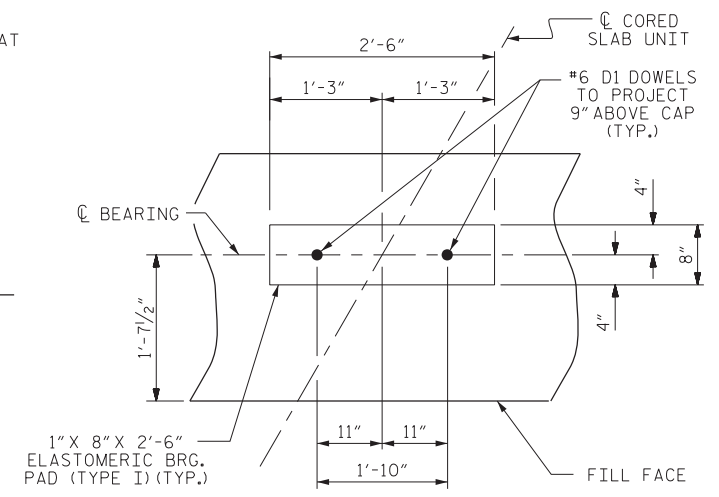
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

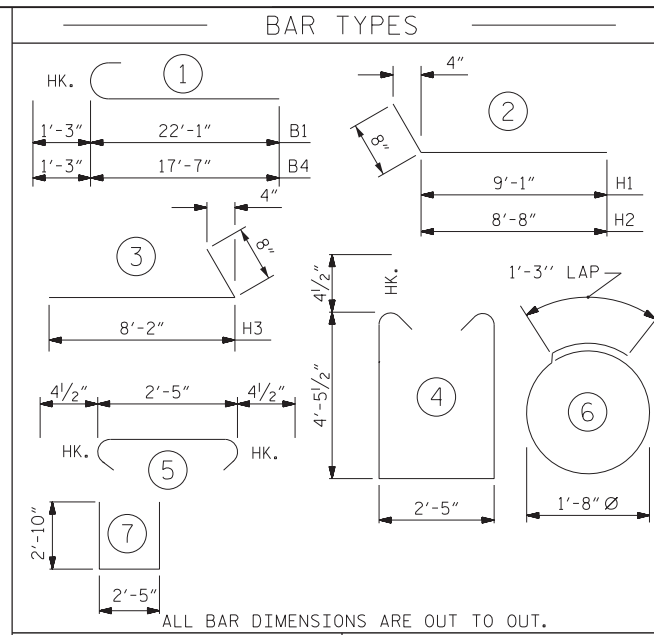


CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN END BENT NOT SHOWN.

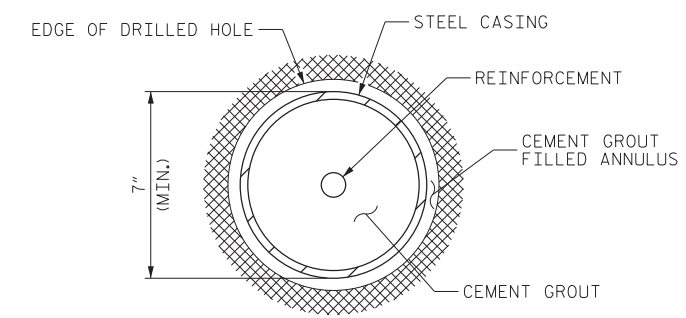


DETAIL "B"

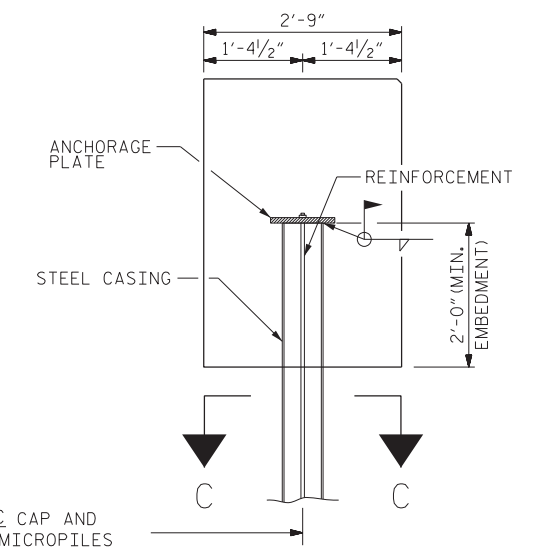


END BENT No. 2 (STAGE I)		END BENT No. 2 (STAGE II)	
7" Ø MICROPILES	NO. 3	7" Ø MICROPILES	NO: 2
	LIN. FT. = 69		LIN. FT. = 26

BILL OF MATERIAL									
END BENT 2 (STAGE I)					END BENT 2 (STAGE II)				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#8		23'-4"	635	B3	#4	STR	2'-5"	8
B2	#4	STR	22'-1"	295	B4	#9		18'-10"	512
B3	#4	STR	2'-5"	10	B5	#4	STR	17'-7"	258
D1	#6	STR	1'-6"	25	D1	#6	STR	1'-6"	20
H1	#4		9'-9"	72	H3	#4		8'-10"	153
H2	#4		9'-4"	69					
K1	#4	STR	3'-3"	17	K1	#4	STR	3'-3"	17
S1	#4		12'-1"	226	S1	#4		12'-1"	210
S2	#4		3'-2"	59	S2	#4		3'-2"	55
S3	#4		6'-6"	52	S3	#4		6'-6"	35
U1	#4		8'-1"	76	U1	#4		8'-1"	65
V1	#4	STR	7'-0"	126	V2	#4	STR	8'-2"	142
REINFORCING STEEL					1,662 LBS.				
CLASS A CONCRETE BREAKDOWN					CLASS A CONCRETE BREAKDOWN				
POUR #1 CAP & LOWER PART OF WINGS					POUR #1 CAP & LOWER PART OF WINGS				
13.2 C.Y.					13.4 C.Y.				
POUR #2 UPPER PART OF WINGS					POUR #2 UPPER PART OF WINGS				
1.1 C.Y.					1.0 C.Y.				
TOTAL CLASS A CONCRETE					TOTAL CLASS A CONCRETE				
14.3 C.Y.					14.3 C.Y.				



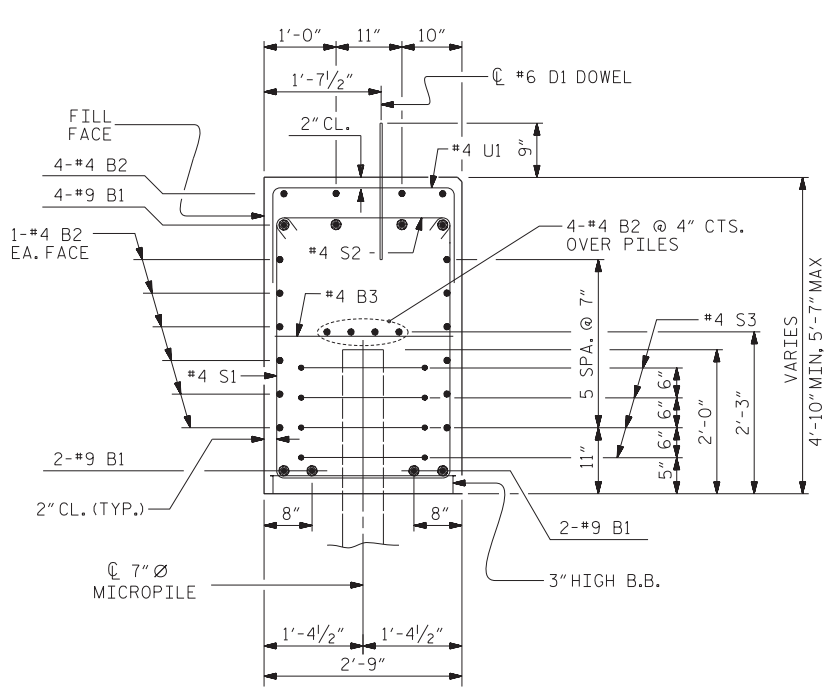
SECTION C-C



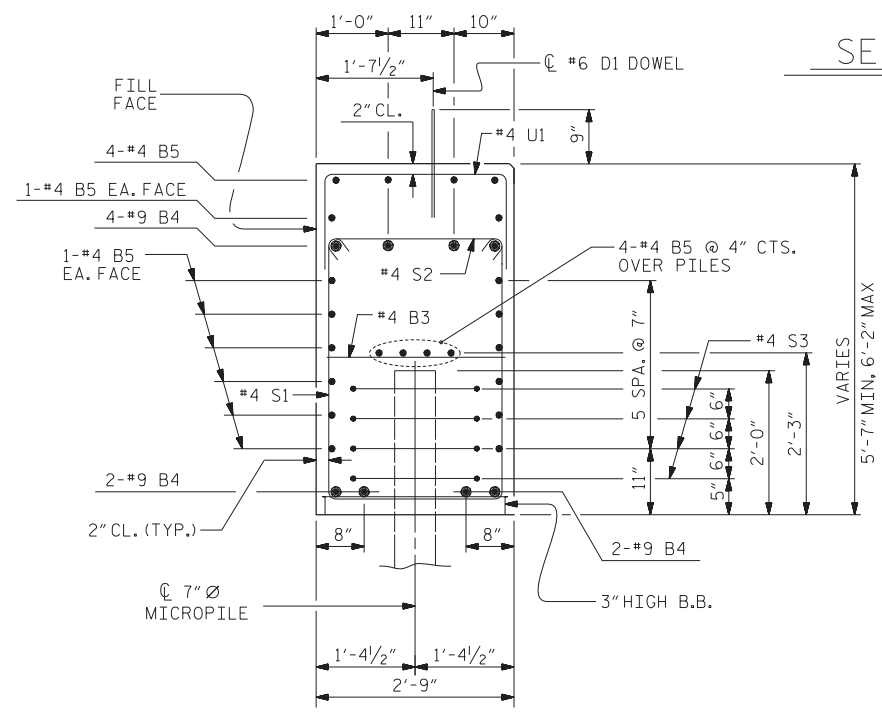
MICROPILE DETAIL

(TYP. EA. MICROPILE)

PROJECT NO. 17BP.13.R.156
 MADISON COUNTY
 STATION: 12+59.37 -L-
 SHEET 3 OF 3



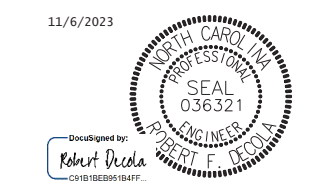
SECTION A-A



SECTION B-B

DESIGN ENGINEER OF RECORD:	R.F. DECOLA	DATE :	11/6/2023
DRAWN BY :	R.J. FLORY	DATE :	07/30/2021
CHECKED BY :	R.F. DECOLA	DATE :	08/01/2021

DOCUMENT NOT CONSIDERED FINAL
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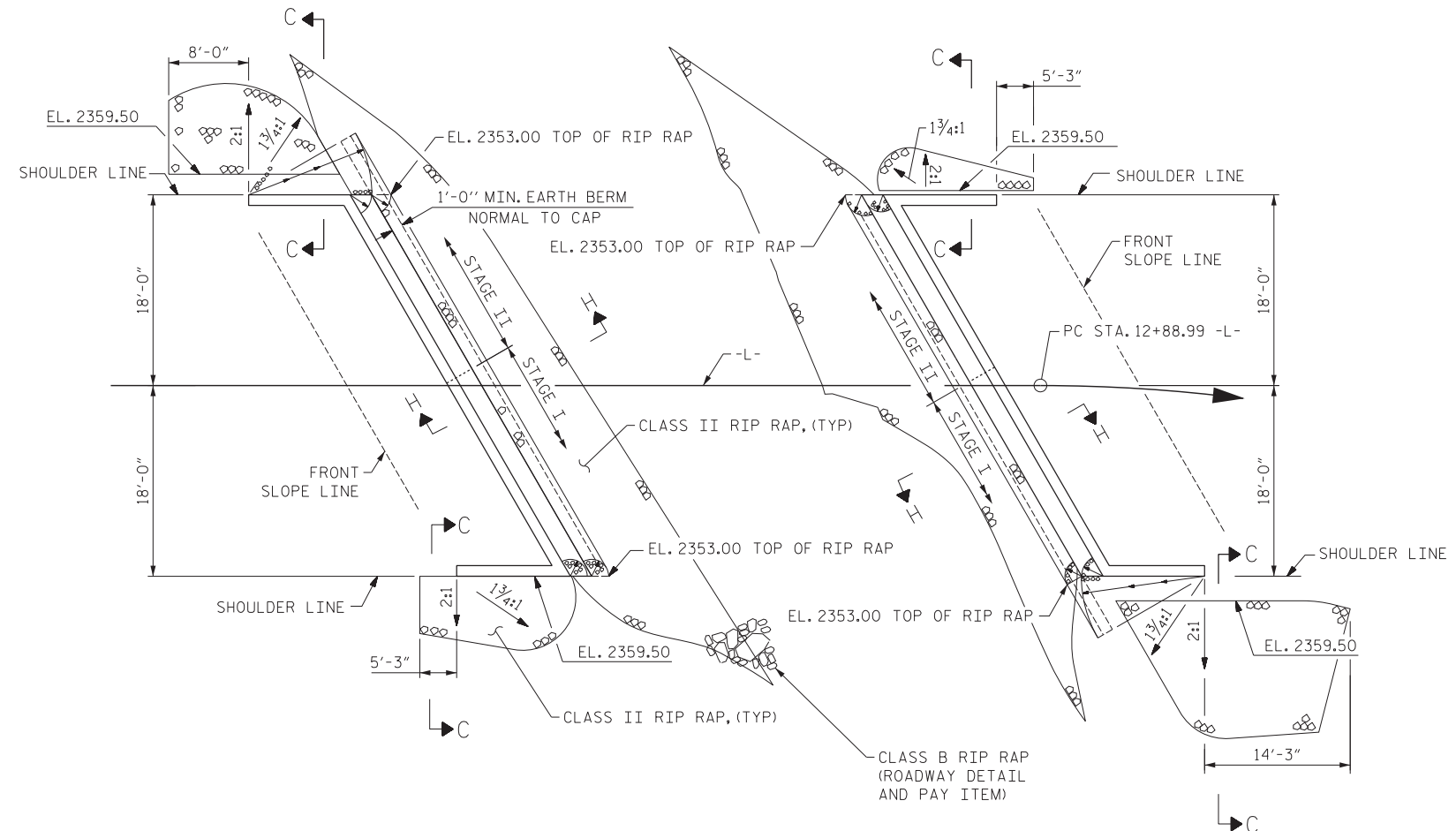
ENGINEERS	PLANNERS	SCIENTISTS	CONSTRUCTION MANAGERS	LICENSE NUMBER: C-01
KCI Associates of North Carolina, P.A.				
4205 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6210 Phone (919) 783-9214				

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

SHEET NO.	S-18
TOTAL SHEETS	21

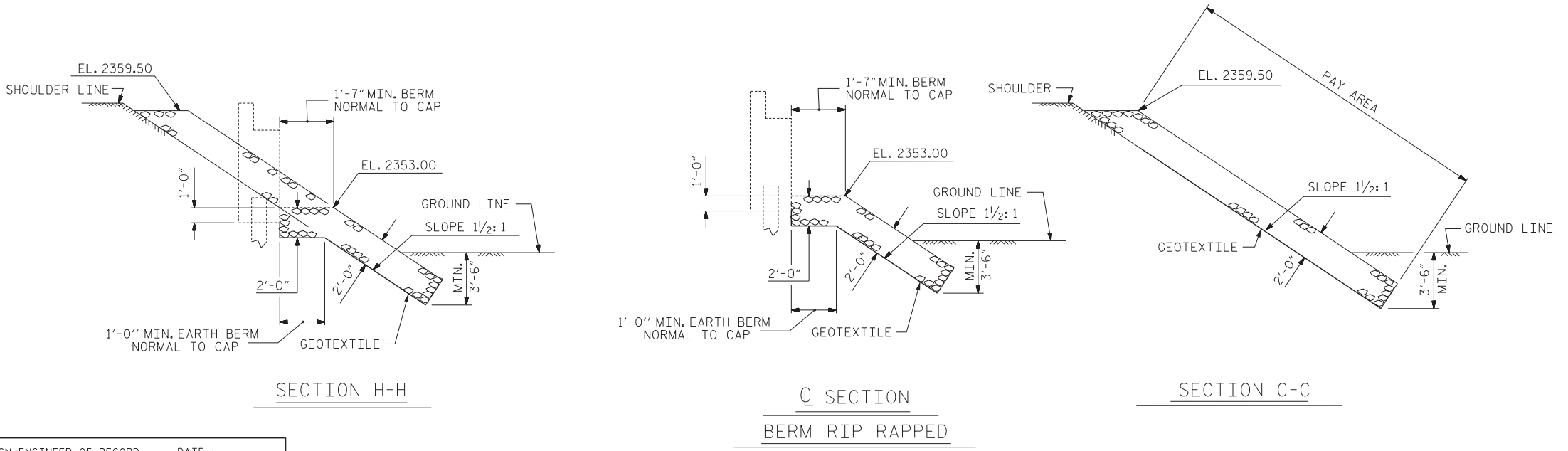
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NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

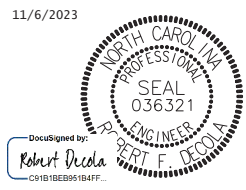


ESTIMATED QUANTITIES			
BRIDGE @ STA. 12+59.37 -L-		RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
		TONS	SQUARE YARDS
END BENT 1	STAGE I	23	30
	STAGE II	28	31
END BENT 2	STAGE I	27	31
	STAGE II	26	30

SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP



PROJECT NO. 17BP.13.R.156
MADISON COUNTY
STATION: 12+59.37 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

DESIGN ENGINEER OF RECORD: R.F. DECOLA	DATE : 11/6/2023
DRAWN BY : R.J. FLORY	DATE : 07/30/21
CHECKED BY : R.F. DECOLA	DATE : 08/01/21

END BENT 1 SHOWN, END BENT 2 SIMILAR.

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

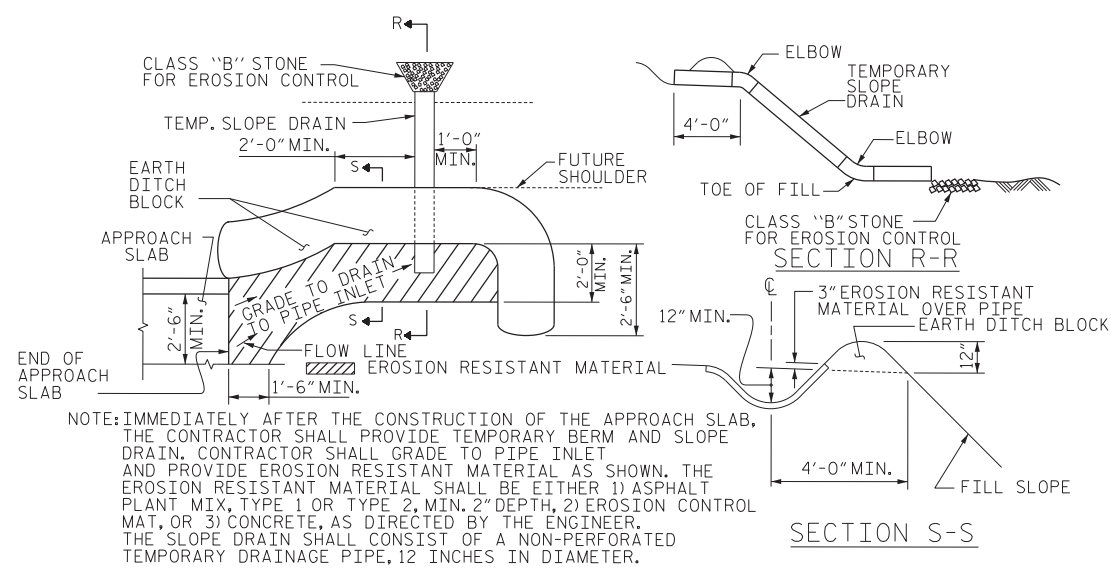
ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS LICENSE NUMBER: C-0114
KCI Associates
 of North Carolina, P.A.
 4205 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6210 Phone (919) 783-9214

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

TOTAL SHEETS: 21

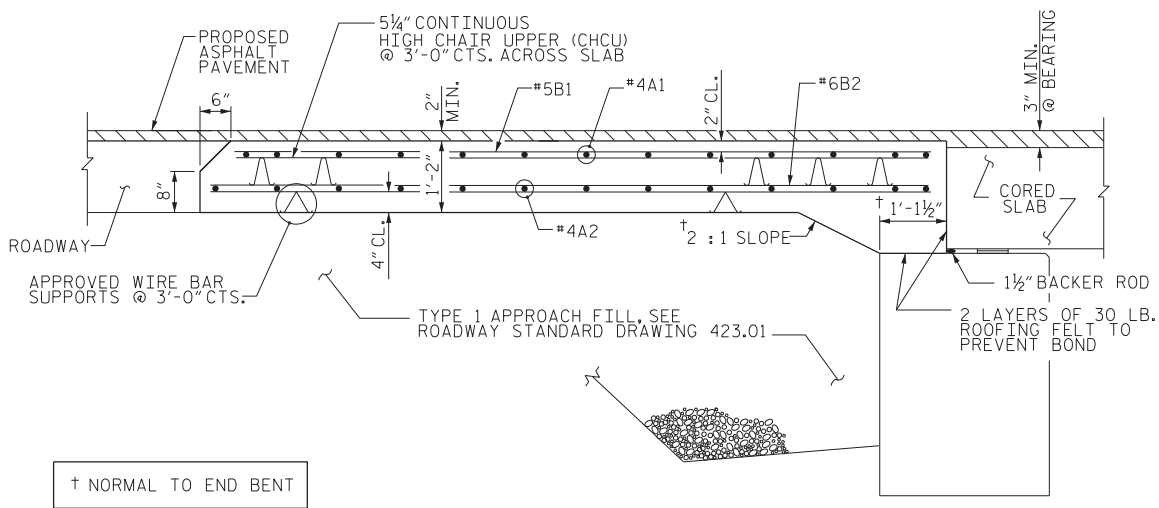
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 8/14/2023 5:26:02 PM Robert Decola Structures\143.tbl Structures\p1c.fg
 KCI PROJ. #22133395.05

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 10/18/2023 10:15:42 AM Robert+Decola Structures.pltcfgr
 KCI PROJ. #22133395.05



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.

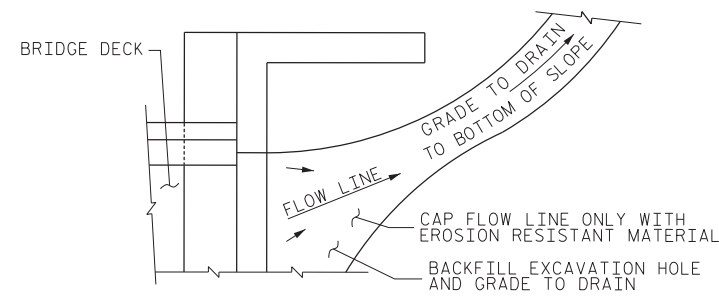
PLAN VIEW
 TEMPORARY BERM AND SLOPE DRAIN DETAILS
 (TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION THRU SLAB

NOTES

FOR BRIDGE APPROACH FILL SEE ROADWAY PLANS.
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
 APPROACH SLAB GROOVING IS NOT REQUIRED.



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.

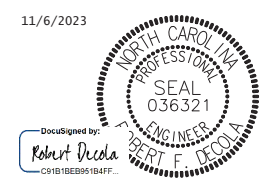
TEMPORARY DRAINAGE DETAIL

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

BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	18'-9"	163
A2	13	#4	STR	18'-5"	160
* B1	29	#5	STR	11'-1"	335
B2	29	#6	STR	11'-7"	505
REINFORCING STEEL				LBS.	665
* EPOXY COATED REINFORCING STEEL				LBS.	498
CLASS AA CONCRETE				C. Y.	8.5
APPROACH SLAB AT EB #1					
STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A3	13	#4	STR	16'-6"	143
A4	13	#4	STR	16'-6"	143
* B1	29	#5	STR	11'-1"	335
B2	29	#6	STR	11'-7"	505
REINFORCING STEEL				LBS.	648
* EPOXY COATED REINFORCING STEEL				LBS.	478
CLASS AA CONCRETE				C. Y.	8.5
APPROACH SLAB AT EB #2					
STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	13	#4	STR	18'-9"	163
A2	13	#4	STR	18'-5"	160
* B1	29	#5	STR	11'-1"	335
B2	29	#6	STR	11'-7"	505
REINFORCING STEEL				LBS.	665
* EPOXY COATED REINFORCING STEEL				LBS.	498
CLASS AA CONCRETE				C. Y.	8.5
APPROACH SLAB AT EB #2					
STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A3	13	#4	STR	16'-6"	143
A4	13	#4	STR	16'-6"	143
* B1	29	#5	STR	11'-1"	335
B2	29	#6	STR	11'-7"	505
REINFORCING STEEL				LBS.	648
* EPOXY COATED REINFORCING STEEL				LBS.	478
CLASS AA CONCRETE				C. Y.	8.5

PROJECT NO. 17BP.13.R.156
 MADISON COUNTY
 STATION: 12+59.37 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB UNIT
 (SUB-REGIONAL TIER)
 60° SKEW

DESIGN ENGINEER OF RECORD:	R.F. DECOLA	DATE :	11/6/2023
DRAWN BY :	R.J. FLORY	DATE :	07/30/2021
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REVISIONS				SHEET NO.
NO.	DATE:	BY:	DATE:	S-21
1		3		TOTAL SHEETS
2		4		21

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.
	- -	27,000 LBS. PER SQ. IN.
	- -	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 3/16" 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.

ENGLISH

JANUARY, 1990

STD. NO. SN