

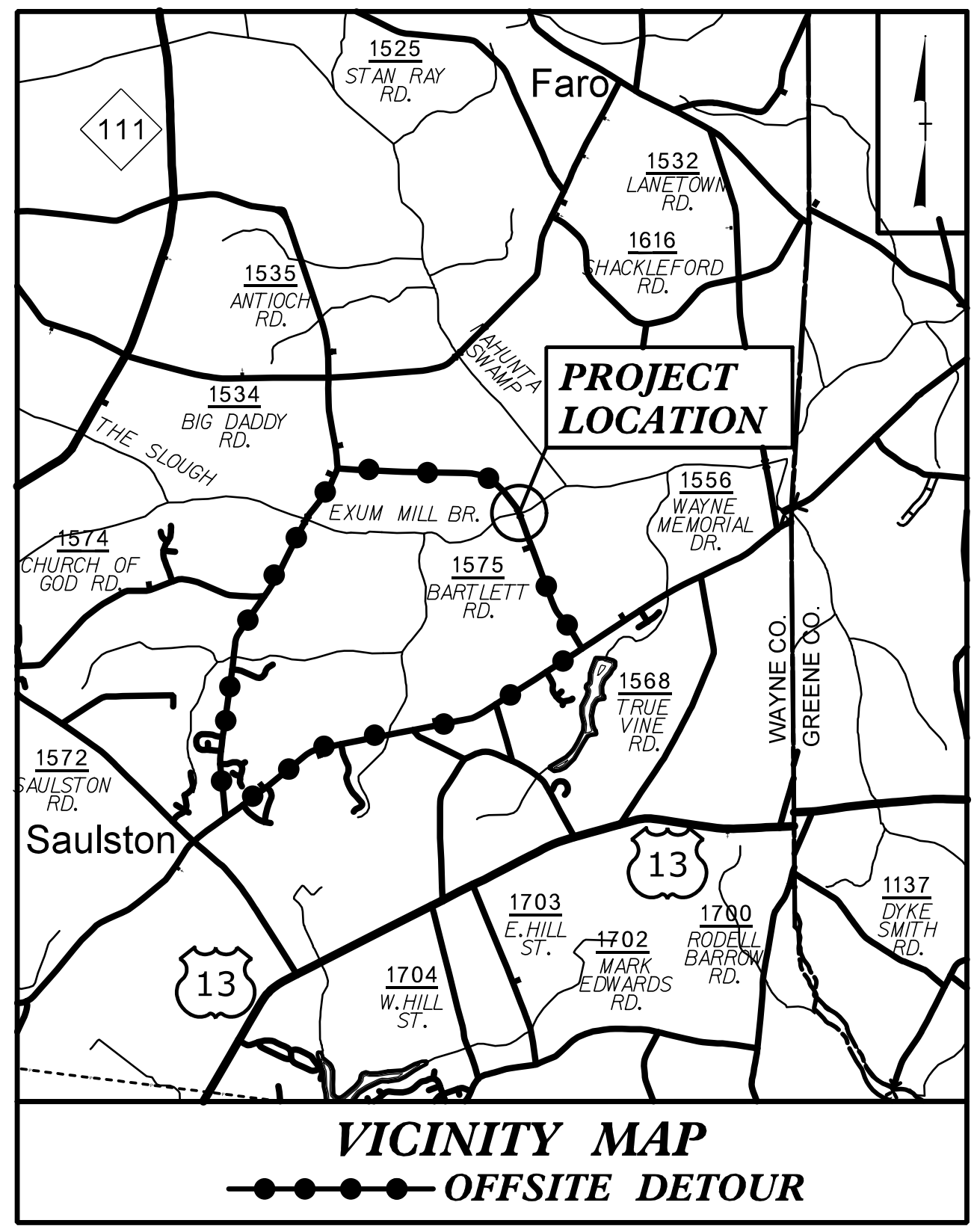
09/08/2024

6/26/2024 X:\NCDOT\Division 4 Wayne 25\Roadway\Proj\950025_RDY_TSH.dgn User:bevans

PROJECT: BP4.R021

CONTRACT: DD00411

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

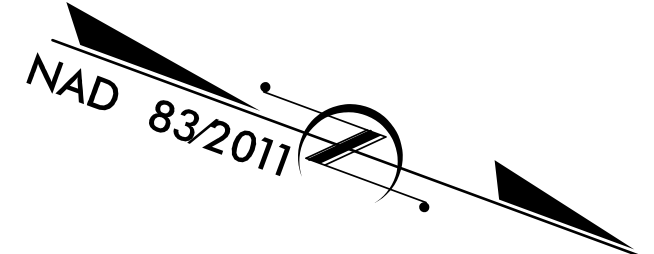


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

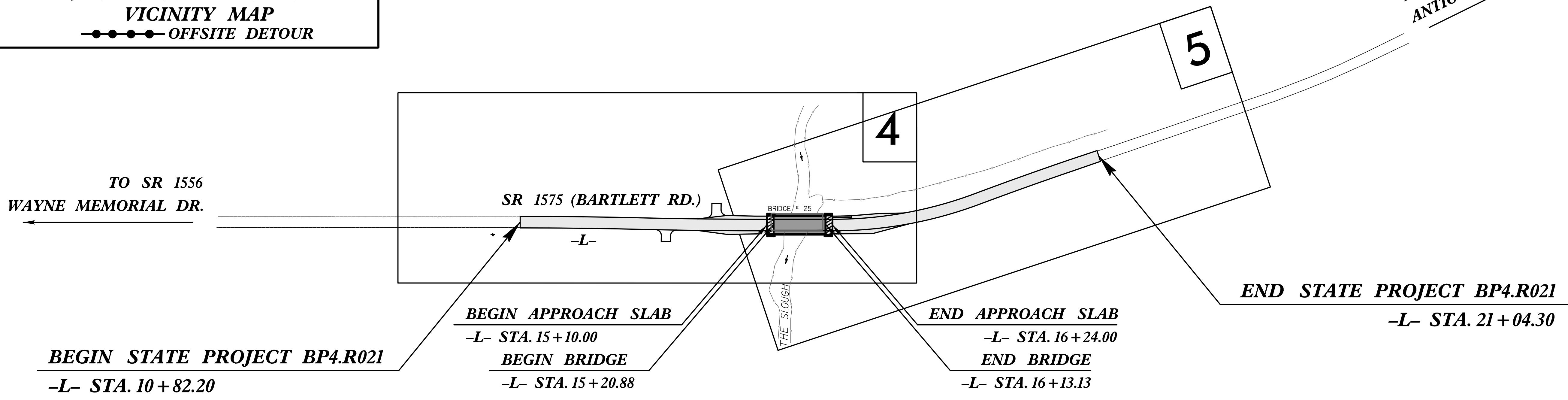
WAYNE COUNTY

LOCATION: REPLACE BRIDGE NO. 25 ON SR 1575 (BARTLETT ROAD) OVER THE SLOUGH
TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE, AND PAVING

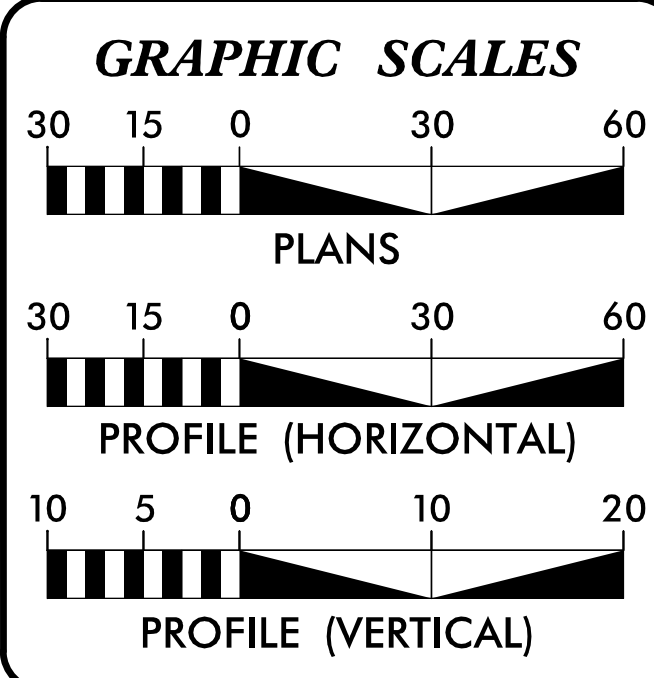
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP4.R021	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP4.R021.1		PE	
BP4.R021.2		RW & UTIL	
BP4.R021.3		CONST	



VICINITY MAP
●●●●● OFFSITE DETOUR



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2020 =	950
T =	6%
V =	55 MPH
FUNCT CLASS = RURAL	
SUB-REGIONAL TIER DESIGN STANDARDS	

PROJECT LENGTH

LENGTH ROADWAY PROJECT BP4.R021	=	0.176 mile
LENGTH STRUCTURES PROJECT BP4.R021	=	0.018 mile
TOTAL LENGTH PROJECT BP4.R021	=	0.194 mile

Prepared for NCDOT Division 4 in the Office of:

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
(919) 733-8867 | tgsengineers.com
CORP. LICENSE NO.: C-0275

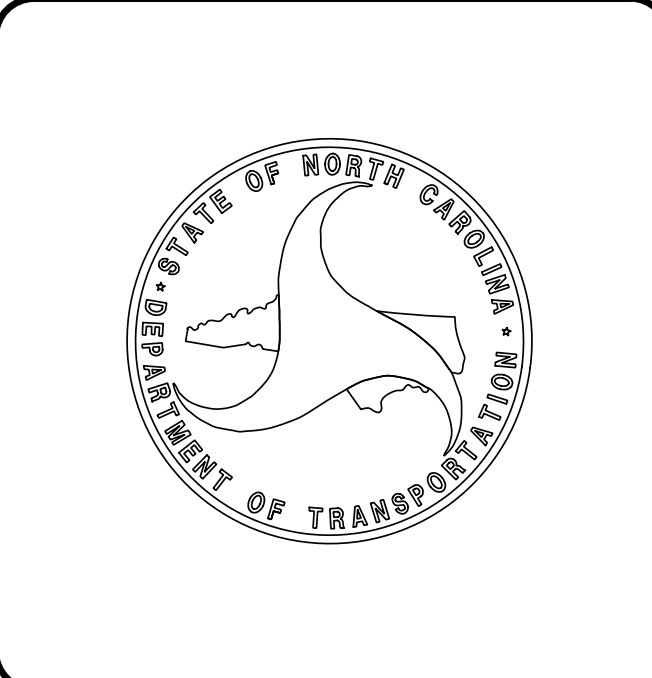
2024 STANDARD SPECIFICATIONS	BURKE EVANS, P.E. PROJECT ENGINEER
RIGHT OF WAY DATE: FEBRUARY 20, 2022	NATHAN PUERTOLLANO PROJECT DESIGN ENGINEER
LETTING DATE: SEPTEMBER 23, 2024	RUSSELL BROADWELL, P.E. PROJECT ENGINEER NCDOT DIVISION 4

HYDRAULICS ENGINEER

DocuSigned by:
Christopher R. Lewis
SIGNATURE: 8/15/2024 12:10 PM

ROADWAY DESIGN ENGINEER

DocuSigned by:
David Burke Evans
SIGNATURE: 8/15/2024 11:24 AM



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GENERAL NOTES

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL PLAN SHEET SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2D-1	DRAINAGE DETAILS
3B-1	SUMMARY OF EARTHWORK, PAVEMENT REMOVAL, SHOULDER BERM GUTTER, & GUARDRAIL
4-5	PLAN AND PROFILE SHEET
RW02C-1 THRU RW02C-3	RIGHT OF WAY SHEETS
TMP-1 THRU TMP-2A	TEMPORARY TRAFFIC CONTROL
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL SHEET
X-1	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-10	CROSS-SECTIONS
S-1 THRU S-18	STRUCTURE PLANS

GENERAL NOTES: 2024 SPECIFICATIONS EFFECTIVE: 01-16-2024

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 III.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

GUARDRAIL:

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

SUBSURFACE PLANS:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:

BELFAST-PATETOWN SANITARY DISTRICT
LARRY BRIDGES (919) 731-2310 EXT. 234
LARRY@WAYNEWATERDISTRICTS.COM

(UTILITIES LISTED BELOW ARE NOT IN CONFLICT)

AT&T NC (COMMUNICATION)
BRANDT VICKERS (919) 758-6298

DUKE ENERGY PROGRESS (ELECTRIC DISTRIBUTION)
DREW THOMAS (919) 649-6835

SPECTRUM CATV
CHRIS MINGLE (919) 903-0160

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

RIGHT-OF-WAY MARKERS:

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



706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
(919) 733-8887 | tgsengineers.com
CORP. LICENSE NO.: C-0275

PROJECT REFERENCE NO.	SHEET NO.
BPI.R021	1A
ROADWAY DESIGN ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

STANDARD DRAWINGS

2024 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2024

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
200.03 METHOD OF CLEARING - METHOD III
225.02 GUIDE FOR GRADING SUBGRADE - SECONDARY AND LOCAL
225.04 METHOD FOR 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
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

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

Note: Not to Scale

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	_____	CSX TRANSPORTATION
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	_____	—
Proposed Temporary Drainage Easement	_____	—
Proposed Permanent Drainage Easement	_____	—
Proposed Permanent Drainage/Utility Easement	_____	—
Proposed Permanent Utility Easement	_____	—
Proposed Temporary Utility Easement	_____	—
Proposed Aerial Utility Easement	_____	—

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	_____	_____
Existing Curb	_____	_____
Proposed Slope Stakes Cut	_____	C
Proposed Slope Stakes Fill	_____	F
Proposed Curb Ramp	_____	CR
Existing Metal Guardrail	_____	T
Proposed Guardrail	_____	T
Existing Cable Guiderail	_____	□
Proposed Cable Guiderail	_____	□
Equality Symbol	_____	⊕
Pavement Removal	_____	⊗
VEGETATION:		
Single Tree	_____	☼
Single Shrub	_____	☼
Hedge	_____	_____

Woods Line	_____	_____
Orchard	_____	☼ ☼ ☼ ☼
Vineyard	_____	Vineyard

EXISTING STRUCTURES:

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

UTILITIES:

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

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

TELEPHONE:

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

WATER:

Water Manhole	_____	⊙
Water Meter	_____	○
Water Valve	_____	⊗
Water Hydrant	_____	⊕
U/G Water Line Test Hole (SUE - LOS A)*	_____	⊙
U/G Water Line (SUE - LOS B)*	_____	---
U/G Water Line (SUE - LOS C)*	_____	---
U/G Water Line (SUE - LOS D)*	_____	---
Above Ground Water Line	_____	A/G Water

TV:

TV Pedestal	_____	⊠
TV Tower	_____	⊗
U/G TV Cable Hand Hole	_____	PH
U/G TV Test Hole (SUE - LOS A)*	_____	⊙
U/G TV Cable (SUE - LOS B)*	_____	TV
U/G TV Cable (SUE - LOS C)*	_____	TV
U/G TV Cable (SUE - LOS D)*	_____	TV
U/G Fiber Optic Cable (SUE - LOS B)*	_____	TV FO
U/G Fiber Optic Cable (SUE - LOS C)*	_____	TV FO
U/G Fiber Optic Cable (SUE - LOS D)*	_____	TV FO

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

5/14/24

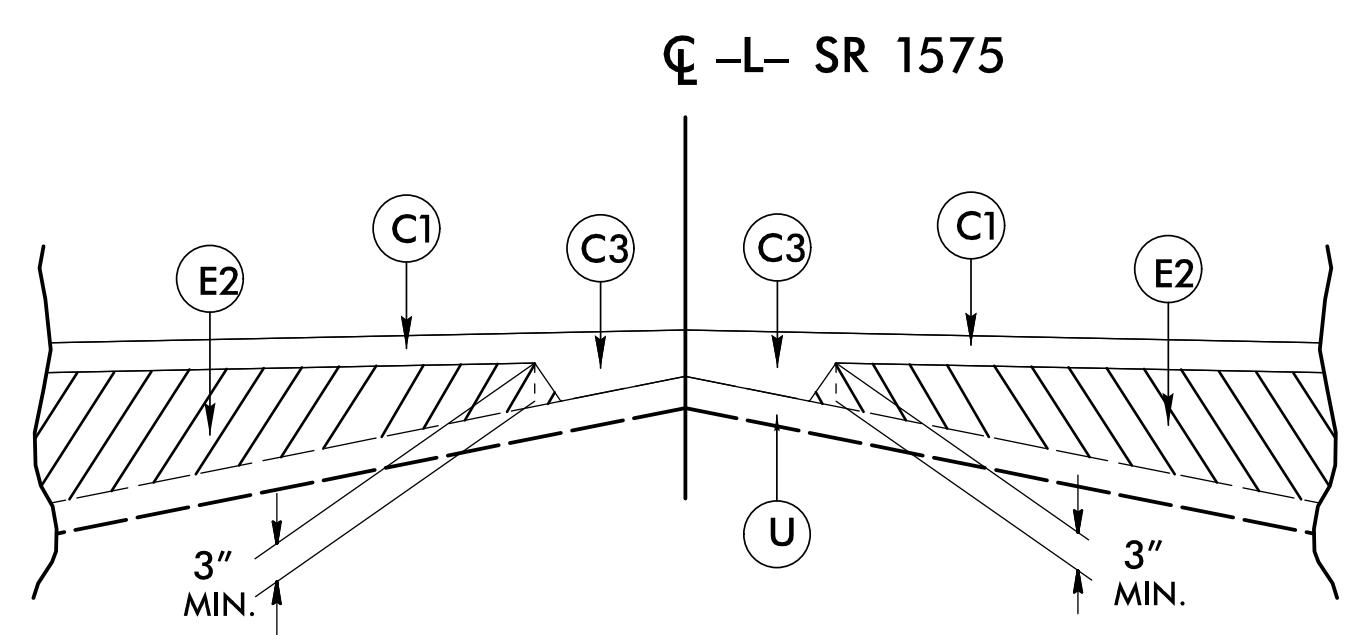
PAVEMENT SCHEDULE

FINAL PAVEMENT DESIGN:

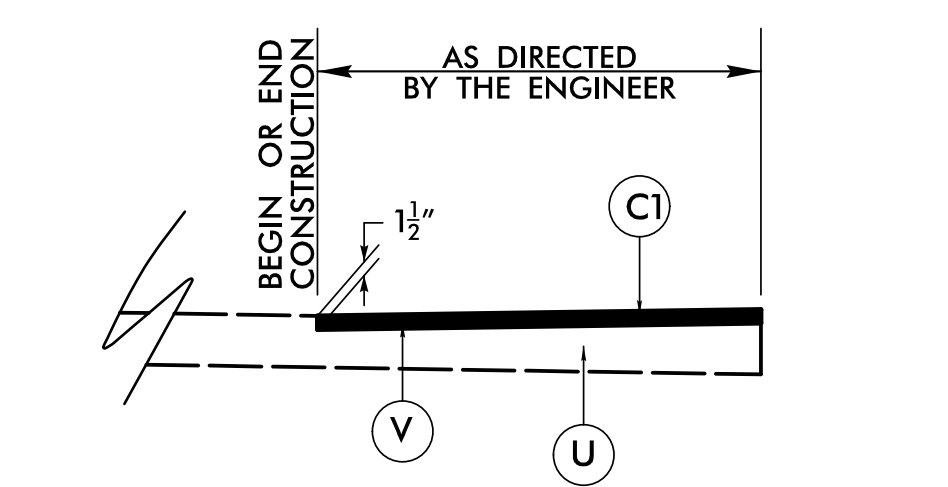
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 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.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

DETAIL SHOWING METHOD OF WEDGING

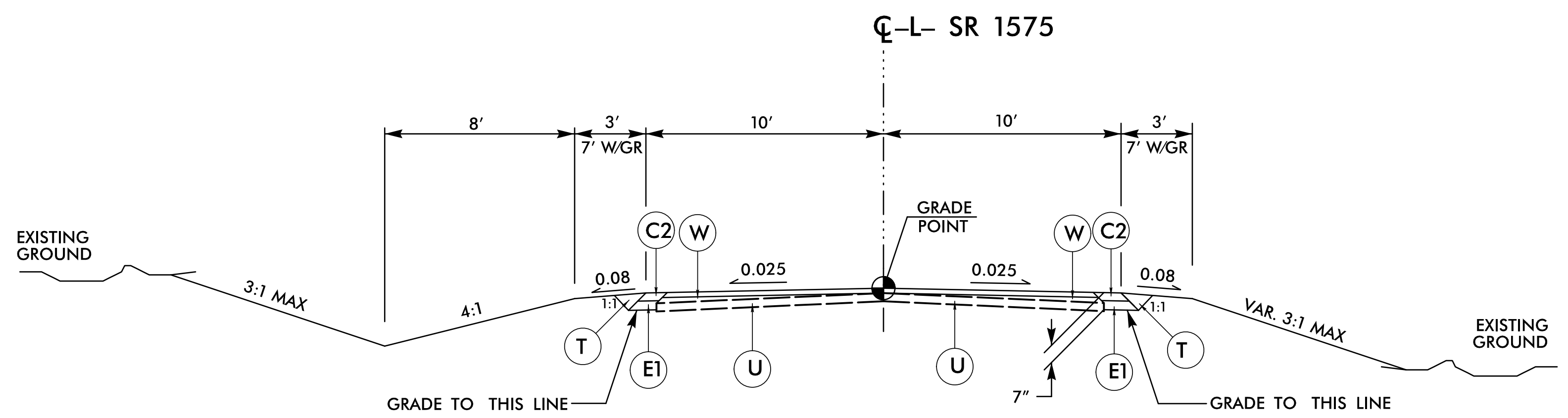


INCIDENTAL MILLING DETAIL



MILLING LIMITS:
 -L- STA. 10+82.20 TO -L- STA. 11+75.00
 -L- STA. 20+50.00 TO -L- STA. 21+04.30

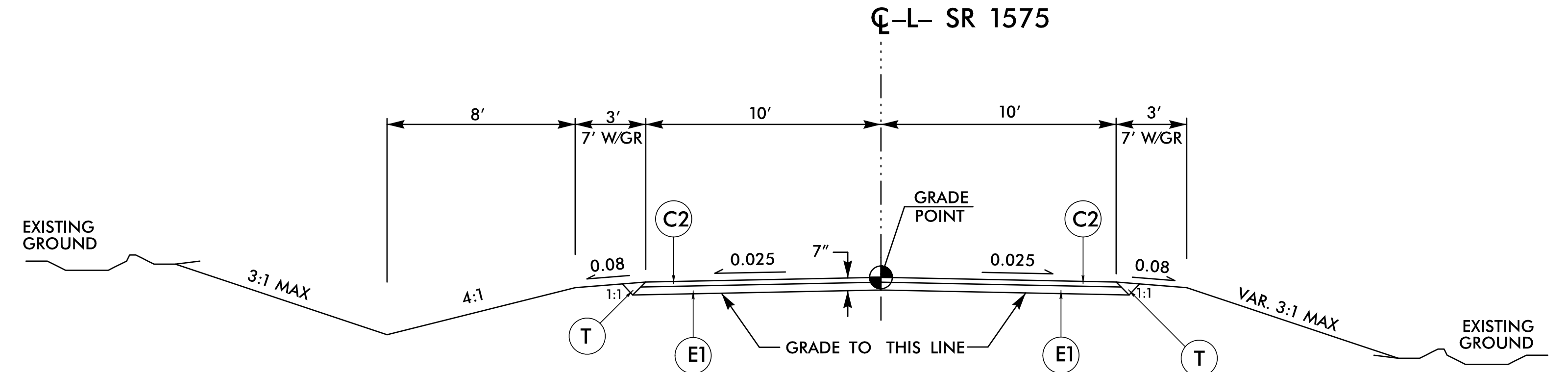
NOTE:
 MIRROR FOR END OF CONSTRUCTION
 PERFORM INCIDENTAL MILLING AT THE TIE INS AT THE DIRECTION OF THE ENGINEER.



TYPICAL SECTION NO. 1

-L- STA 10+82.20 TO STA 13+25.00
 -L- STA 19+25.00 TO STA 21+04.30

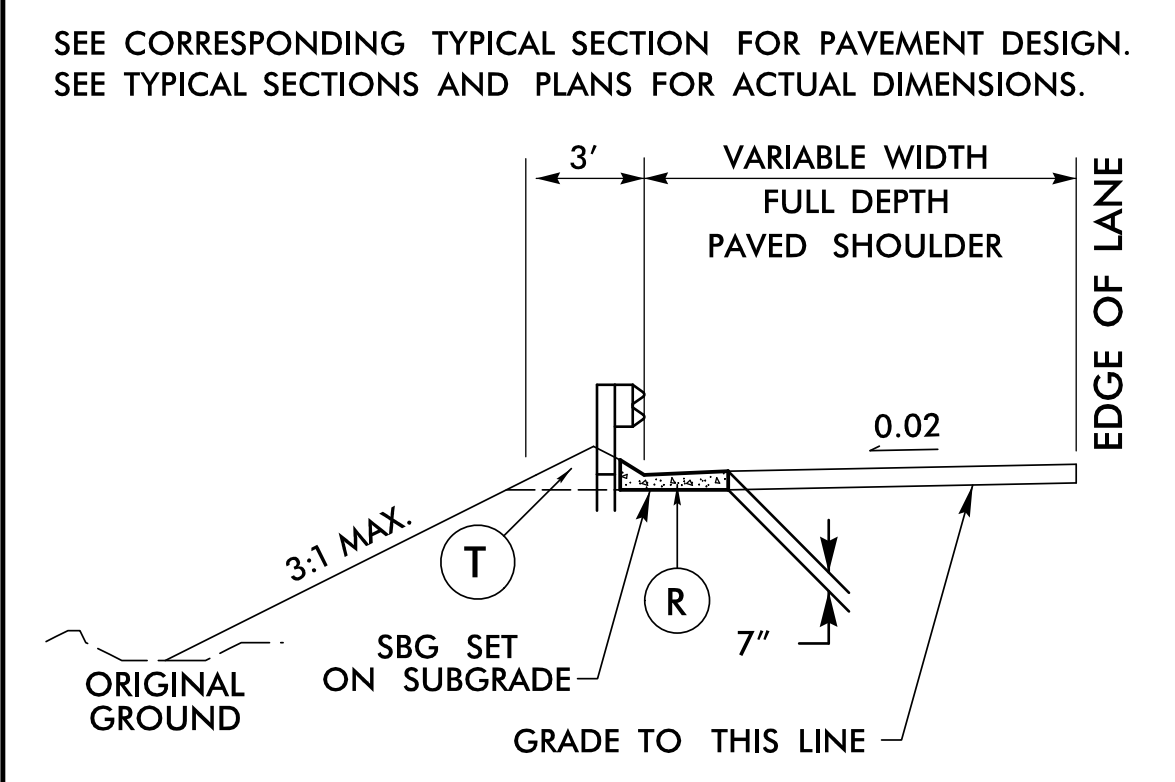
NOTE: TRANSITION FROM EXISTING PAVEMENT WIDTH TO TYPICAL SECTION NO. 1 FROM -L- STA 10+82.20 TO STA 11+32.20
 TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING PAVEMENT WIDTH FROM -L- STA 20+54.30 TO STA 21+04.30



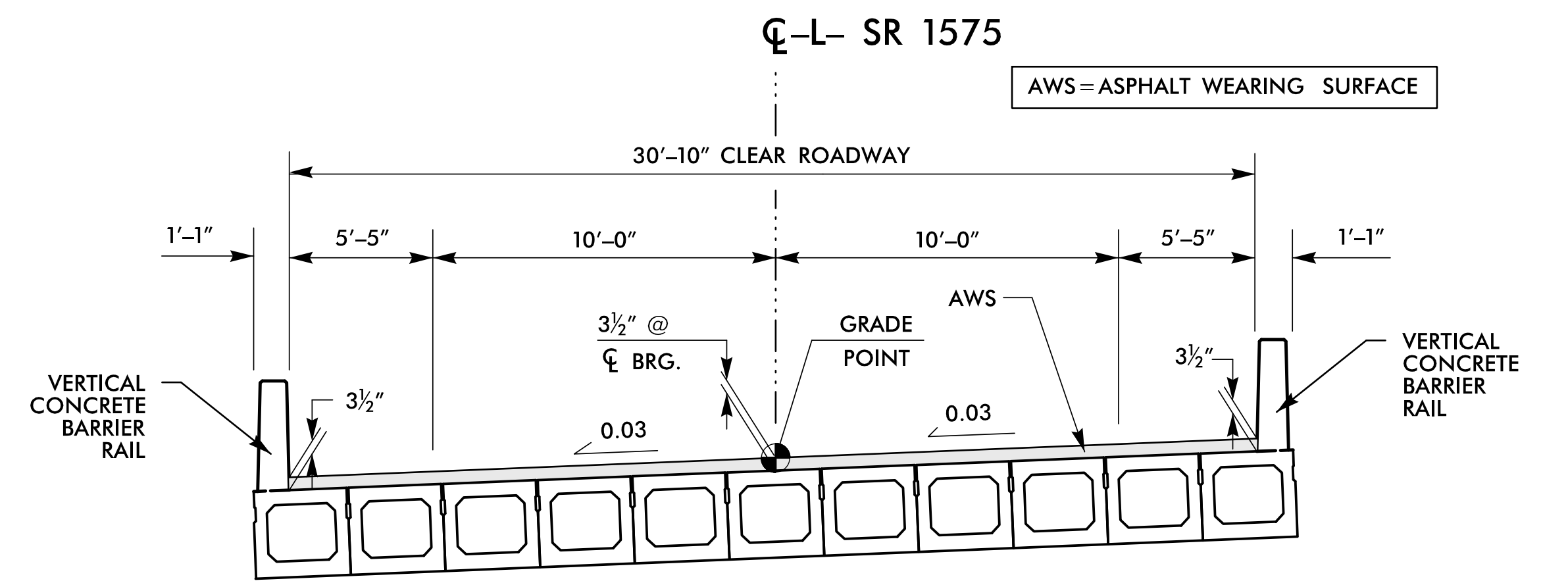
TYPICAL SECTION NO. 2

-L- STA 13+25.00 TO STA 15+20.88 (BEGIN BRIDGE)
 -L- STA 16+13.13 (END BRIDGE) TO STA 19+25.00

DETAIL FOR SHOULDER BERM GUTTER



LINE	STATIONS
-L-	16+24.00 to 16+58.00 LT



TYPICAL SECTION NO. 3

-L- STA 15+20.88 (BEGIN BRIDGE) TO STA 16+13.13 (END BRIDGE)

PROJECT REFERENCE NO. BP4.R021	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER SEAL 19724	PAVEMENT DESIGN ENGINEER SEAL 034345
8/15/2024 11:24 AM EDT	8/15/2024 11:59 AM EDT

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TGS ENGINEERS
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 (919) 733-8887 | tgsengineers.com
 CORP. LICENSE NO.: C-0275

S:\2024\2024\Division 4 - Wayne 25\Roadway\Proj\95025.RDY_TYP.dgn

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

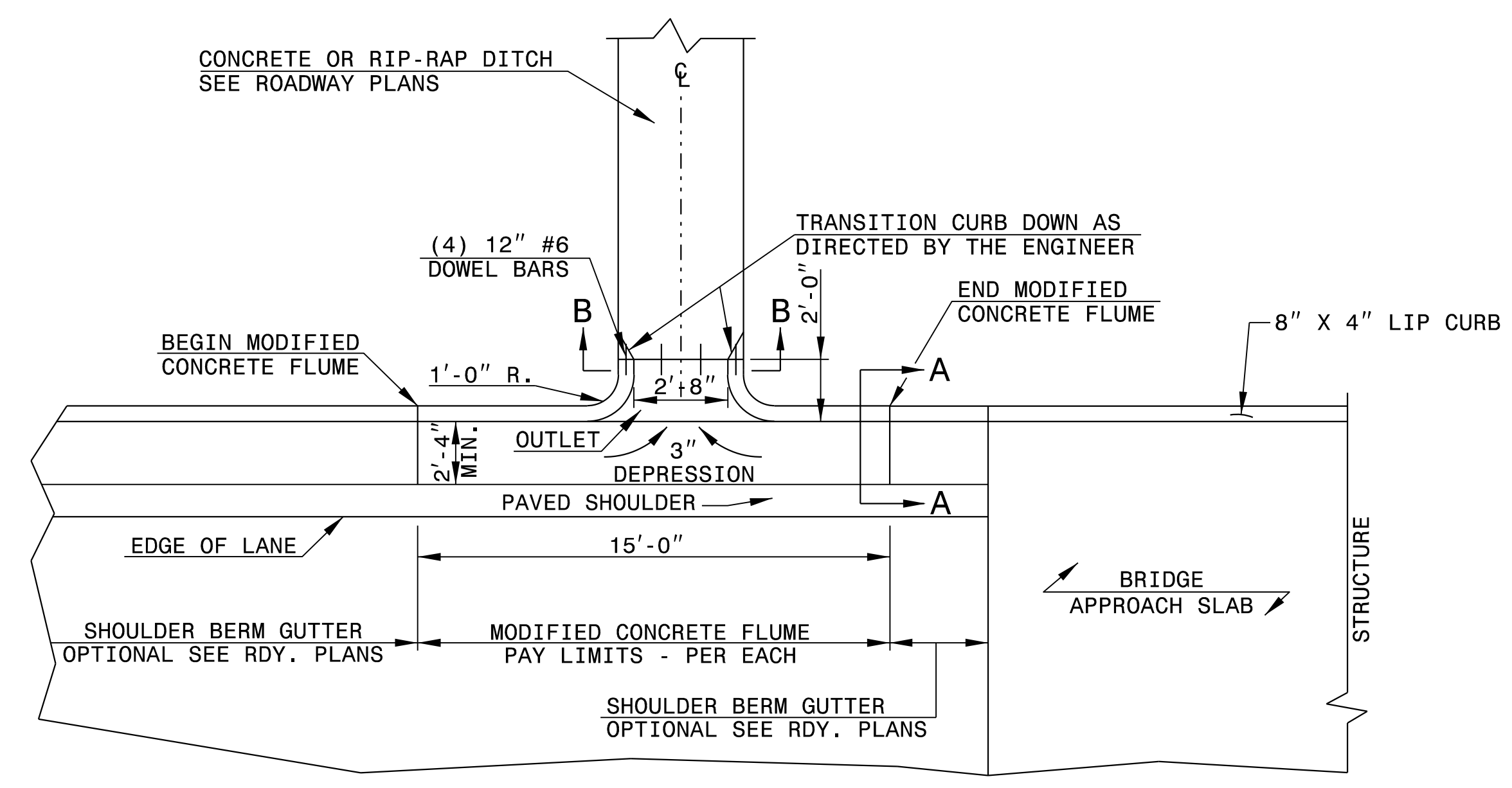
ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

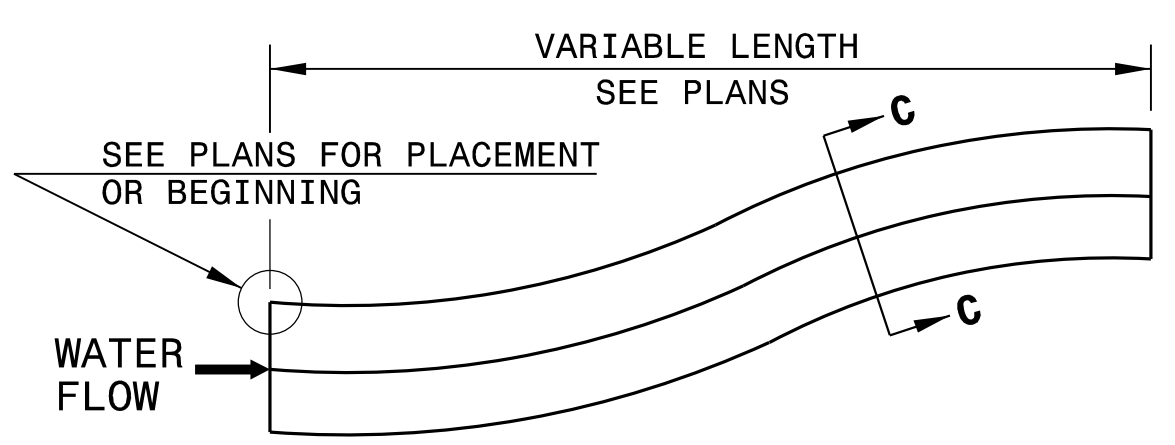
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

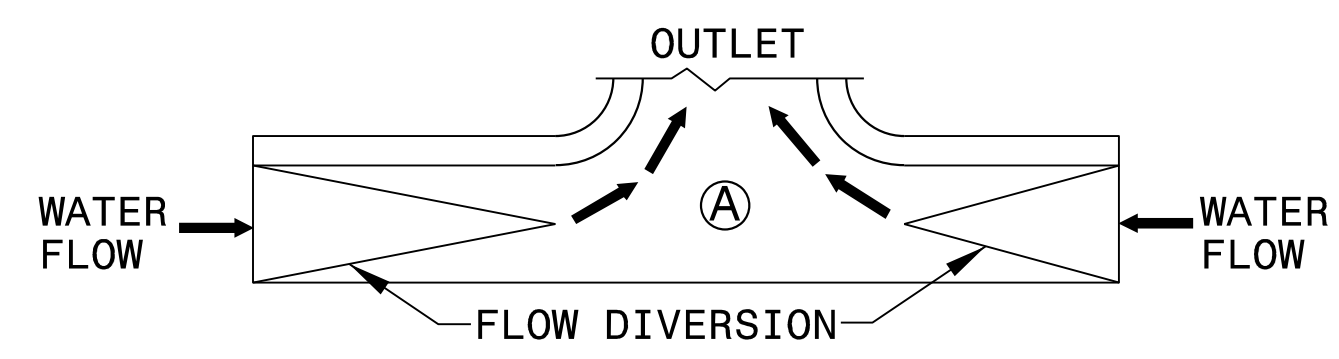
SHEET 1 OF 1
MODFLMDTCH



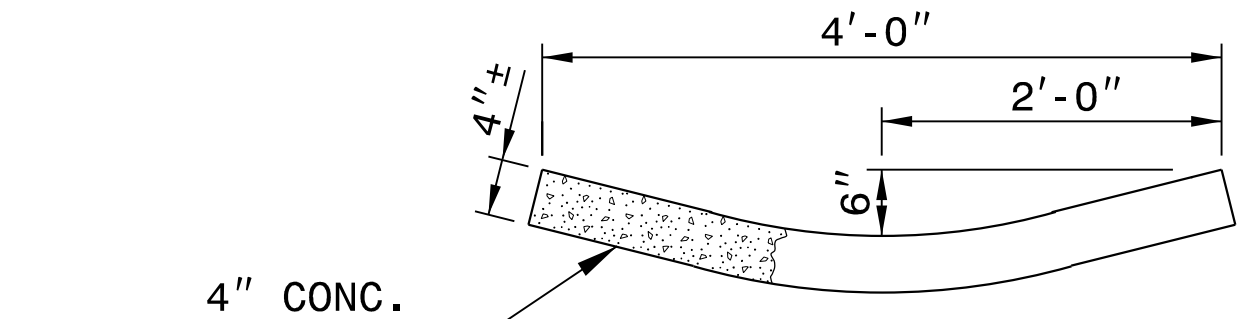
PLAN VIEW



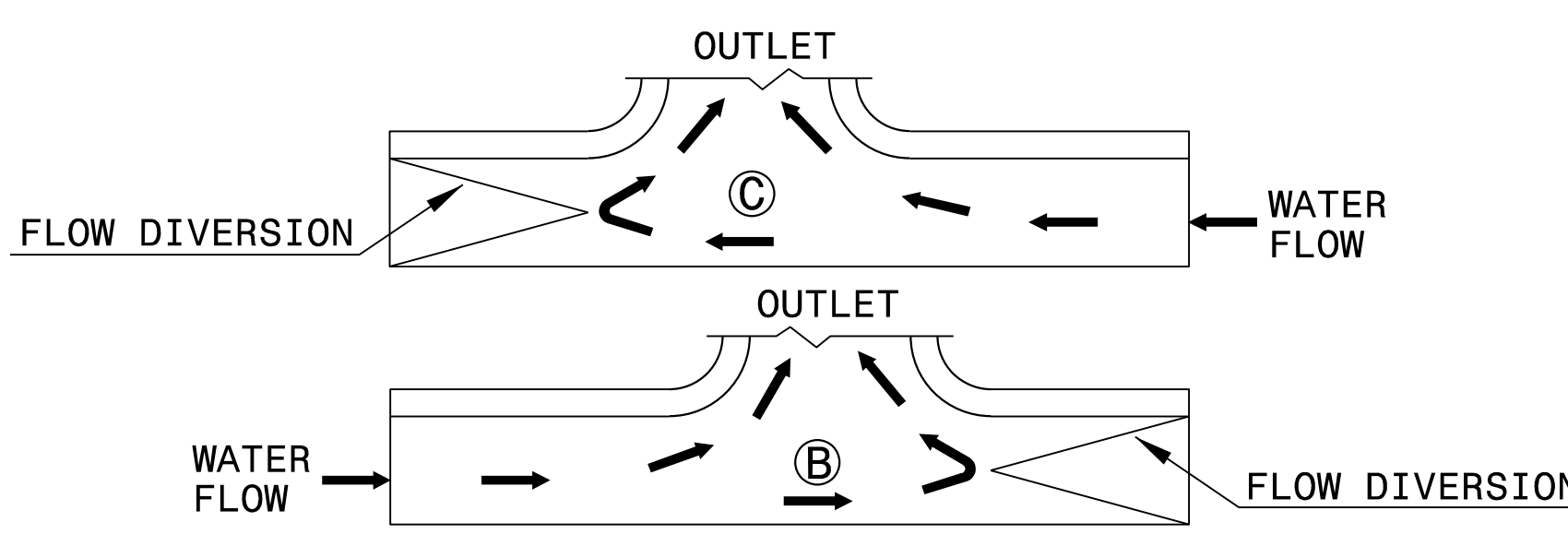
DOWNGRADE OR SAG



SAG



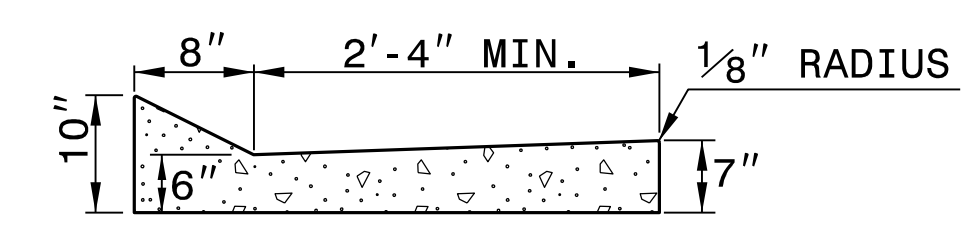
DOWN GRADE



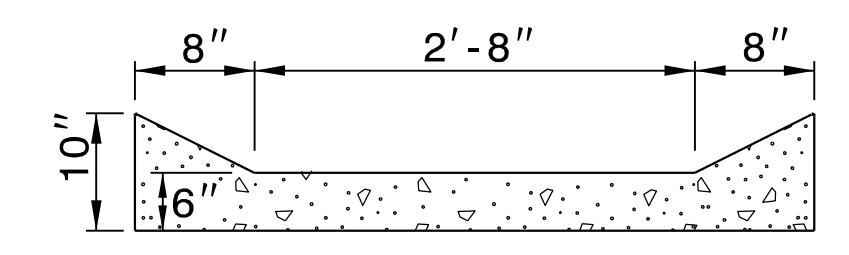
FLOW DIVERSION EXAMPLES

NOTES:

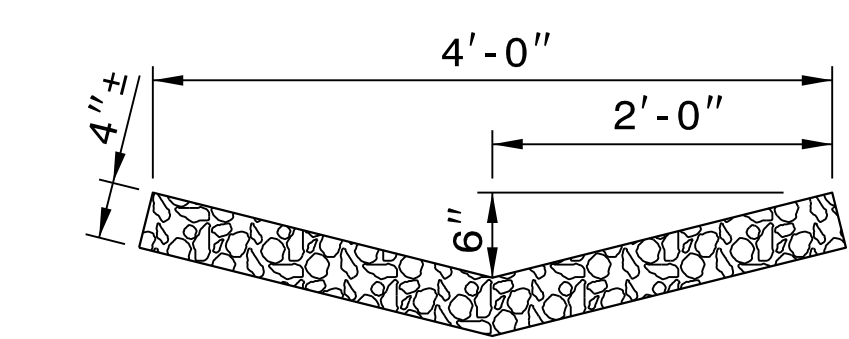
- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE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



SECTION A-A



SECTION B-B



RIP-RAP LINED DITCH

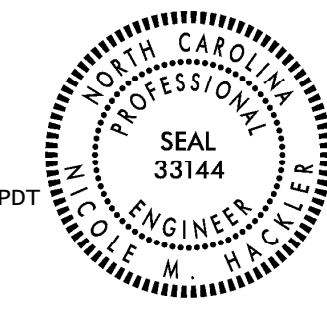
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE PLATE FOR TITLE

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

Signed by:
Nicole M. Hecker
309432034164CS.
8/15/2024 | 8:37 AM PDT



18-QCT-2017 1417
S:\Contracts\Contract\SS\Spec\01_Details\vertical\usr\details\stand\modifiedflume.dgn
Jhowerton AI CS0-272975

6/21/2020

COMPUTED BY: NGP	DATE: 10 / 4 / 22
CHECKED BY: DBE	DATE: 11 / 7 / 22

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. BP4.R021	SHEET NO. 3B-1
-----------------------------------	-------------------

SUMMARY OF EARTHWORK
IN CUBIC YARDS

STATION	STATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L- 10+82.20	-L- 15+10.00	51		774	693	
-L- 16+12.00	-L- 21+04.30	663		1,610	947	
SUBTOTAL		714		2,353	1,639	
TOTAL		714		2,353	1,639	
MATERIAL FOR SHOULDER CONSTRUCTION				28	28	
PROJECT TOTAL		714		2,380	1,666	
5% TO REPLACE TOP SOIL ON BORROW PIT		714			83	
GRAND TOTAL		714		714	1,749	
SAY		800			1,800	

APPROXIMATE QUANTITIES ONLY. CLEARING AND GRUBBING, UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, AND REMOVAL OF EXISTING ASPHALT PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".

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

PAVEMENT REMOVAL SUMMARY
IN SQUARE YARDS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	SY
-L-	13+25.00	15+16.78 (EX. BRIDGE)	CL	431
-L-	16+08.09 (EX. BRIDGE)	19+25.00	CL	688
TOTAL:				1119
SAY:				1175

SUMMARY OF SHOULDER BERM GUTTER
IN LINEAR FEET

STATION	STATION	LOCATION LT/RT/CL	LF
-L- 16+24.00	-L- 16+58.00	LT	34
TOTAL:			34
SAY:			34

GUARDRAIL SUMMARY

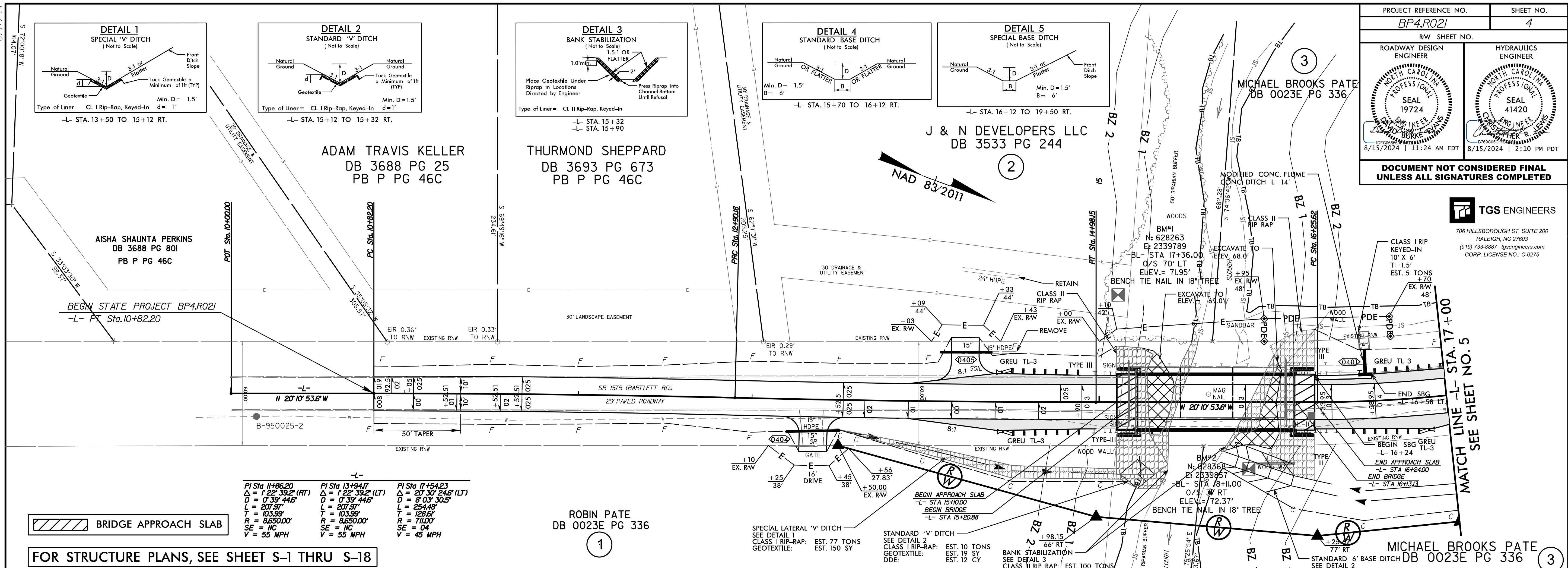
SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR TYPE 350	REMOVE EXISTING GUARDRAIL (LF)	REMARKS		
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE III	GREU, TL-3									
-L-	14+40.63	15+22.00	LT	81.25'				15+22.00	VAR.	VAR.	50'		1'	1	1										
-L-	14+41.38	15+22.00	RT	81.25'			15+22.00		VAR.	VAR.	50'		1'	1	1										
-L-	16+07.59	16+66.27	LT																			57.48			
-L-	16+12.00	17+07.51	LT	93.75'			16+12.00		VAR.	VAR.	50'		1'	1	1										
-L-	16+12.00	16+91.62	RT	81.25'			16+12.00		VAR.	VAR.	50'		1'	1	1										
SUBTOTAL (LF)				337.50'											4	4									
LESS ANCHORS (LF)				275.00'																					
TOTAL (LF)				62.50'																					
SAY (LF)				62.50'																					
ADDITIONAL GUARDRAIL POSTS: SAY 5 EA												DEDUCTION PER TYPE (LF)		75.00'	200.00'										
												TOTAL DEDUCTION (LF)		275'											

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

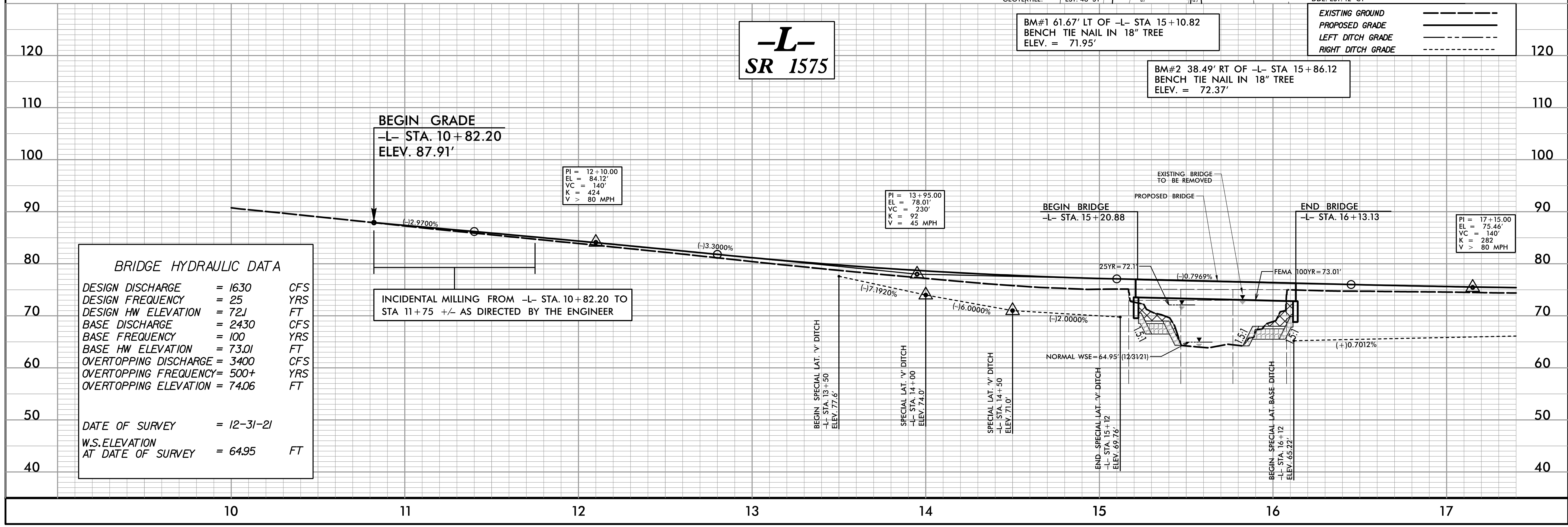
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

PROJECT REFERENCE NO. BP4.R021	SHEET NO. 4
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	SEAL 19724
PROFESSIONAL SEAL	SEAL 41420
8/15/2024 11:24 AM EDT	8/15/2024 2:10 PM PDT
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
(919) 733-8887 | tgsengineers.com
CORP. LICENSE NO.: C-0275



Station	PI	EL	VC	K	V
11+86.20	12+10.00	84.12'	140'	424	80 MPH
13+94.17	13+95.00	78.01'	230'	92	45 MPH
17+54.23	17+15.00	75.46'	140'	282	80 MPH



6/26/2024
X:\ncdot\division 4 wayne 25\roadway\proj\950025.RDY_PSH_04.dgn
User:bevans

8/17/99

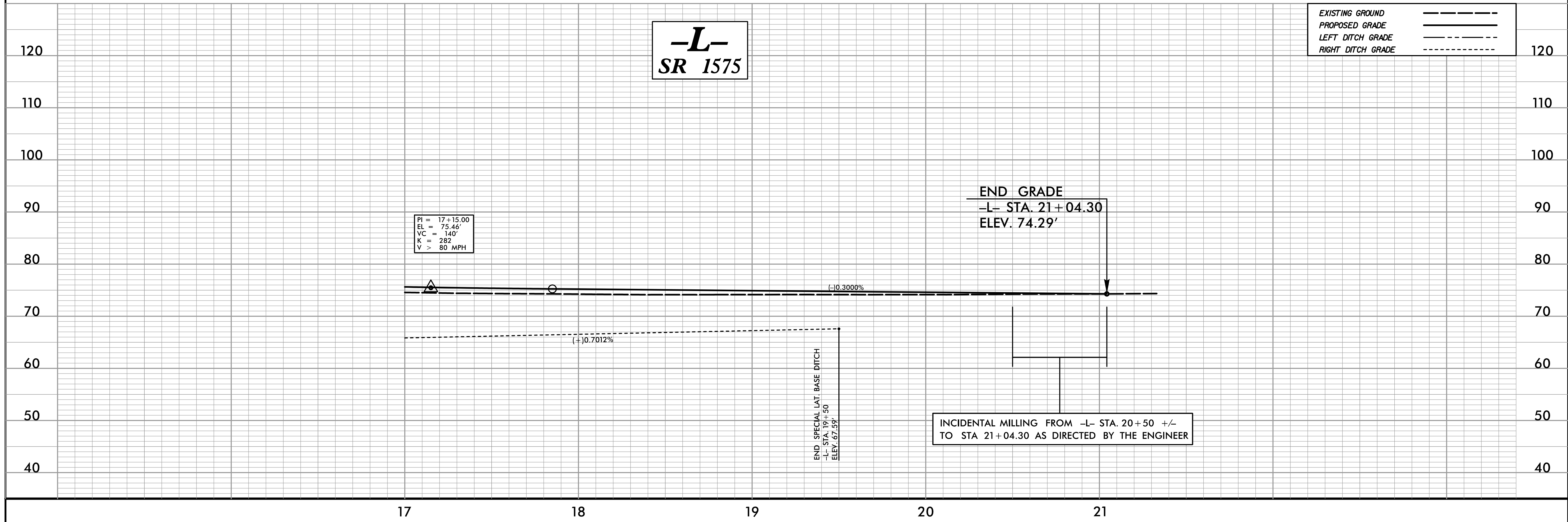
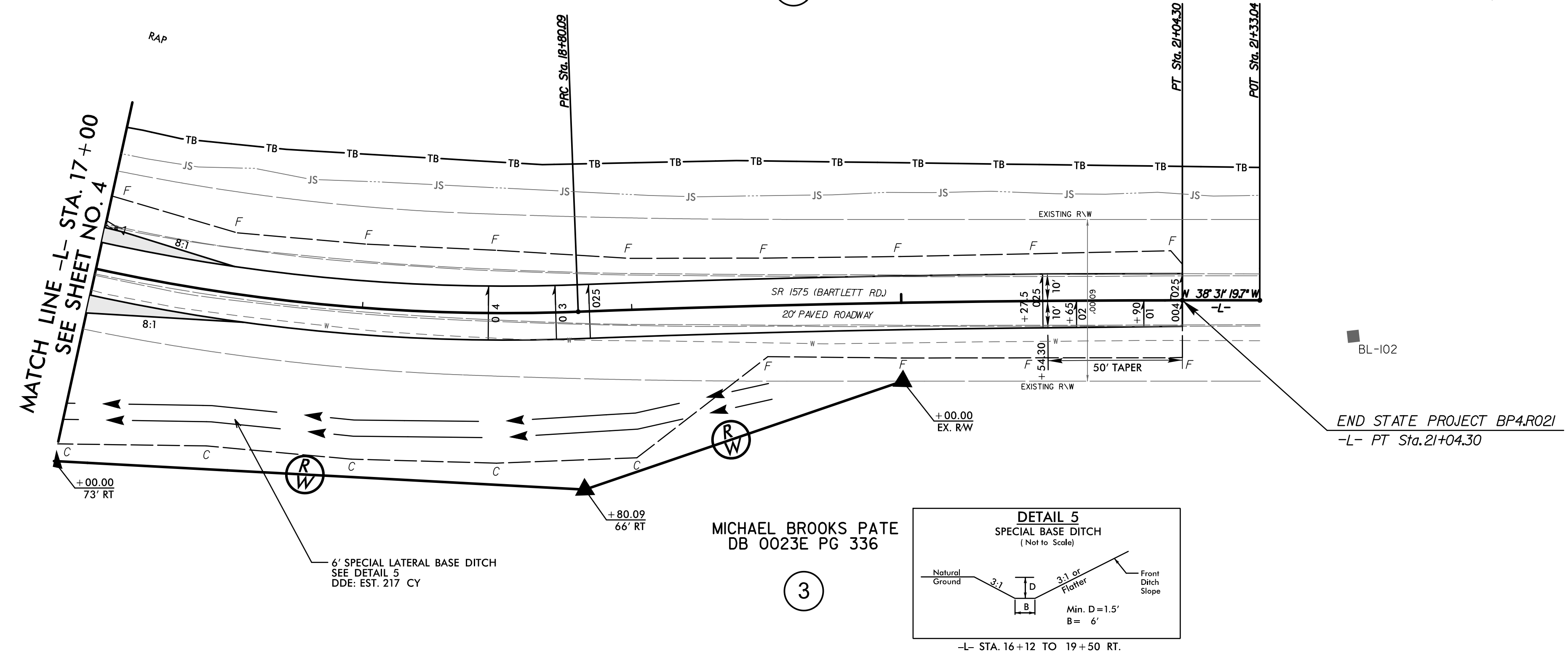
-L-	
PI Sta 17+54.23	PI Sta 19+92.21
$\Delta = 20' 30" 24.6'$ (LT)	$\Delta = 2' 09" 58.5'$ (RT)
$D = 28' 03" 30.5'$	$D = 0' 57" 58.3'$
$L = 254.48'$	$L = 224.20'$
$T = 128.61'$	$T = 112.12'$
$R = 711.00'$	$R = 5330.00'$
$SE = 04'$	$SE = NC$
$V = 45$ MPH	$V = 45$ MPH

MICHAEL BROOKS PATE
DB 0023E PG 336



PROJECT REFERENCE NO. <i>BP4.R021</i>	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>
SEAL 19724 8/15/2024 11:24 AM EDT	SEAL 41420 8/15/2024 2:10 PM PDT
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
(919) 733-8887 | tgsengineers.com
CORP. LICENSE NO.: C-0275



6/26/2024
X:\ncdot\division 4 wayne 25\roadway\proj\950025_RDY_PSH_05.dgn
User:bevans

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. B-950025	SHEET NO. rw02c-1
Location and Surveys	
 KCI Associates of N.C., P.A. 4505 Falls of Neuse Rd, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 http://www.kci.com	
PROJECT SURVEYOR	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

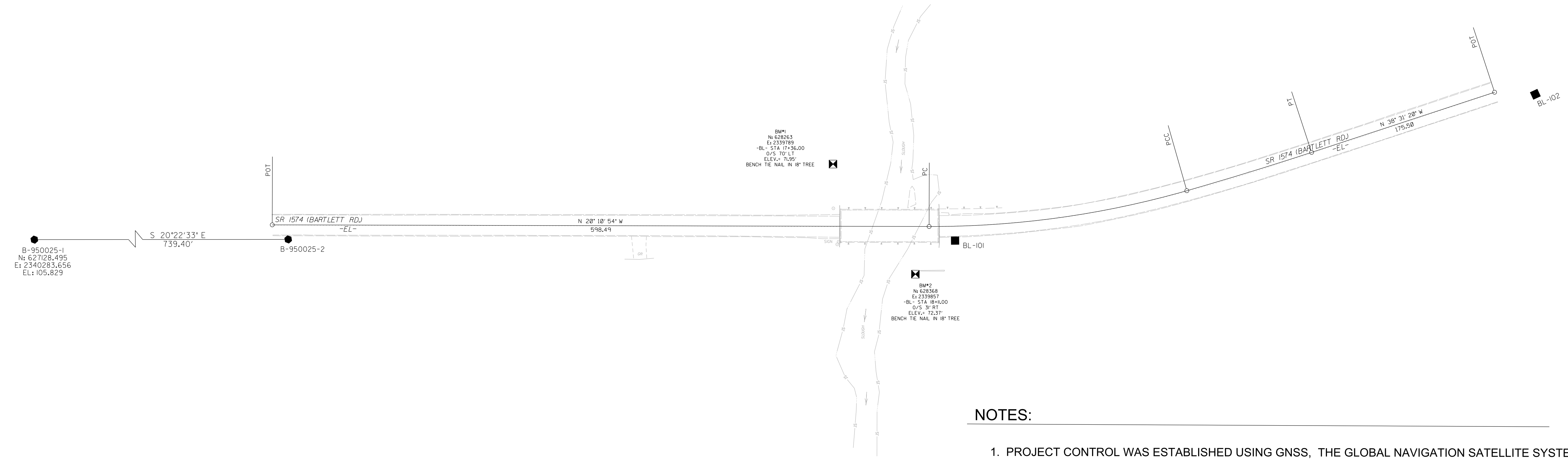
I, James M. Gellenthin, PLS, certify that the Project Control was [performed/verified] under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
 Type of GPS field procedure: RTN/VRS
 Dates of survey: 11-15-21, 11-19-21
 Datum/Epoch: NAD83/2011
 Published/Fixed-control use: N/A
 Localized around: B-950025-1
 Northing: 627128.495
 Easting: 2340283.656
 Combined grid factor: 0.999880589(1/x=1.000119425)
 Geoid model: GEOID 12A
 Units: US SURVEY FEET

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 11/15/2021 to 11/19/2021, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 8th day of DECEMBER, 2021.


 Professional Land Surveyor L-3860



NOTES:

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

08-DEC-2021 17:54
 Mr. Matthew Koss
 At KCI-D2KLB93
 NCDOT_Survey\B-950025 & 630077 BRIDGES DIV 4 DRAWINGS\B-950025_b-950025-1_s-rw02c-1.DGN

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. B-950025	SHEET NO. RW02 C-2
Location and Surveys	
<div style="display: inline-block; vertical-align: middle; margin-left: 10px;"> <p>KCI Associates of N.C., P.A. 4505 Falls of Neuse Rd, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 http://www.kci.com</p> </div>	
<p>PROJECT SURVEYOR</p> <p><i>James M. Gellenthin</i></p>	
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	

BL	POINT	DESC.	NORTH	EAST	ELEVATION
1		B-950025-1 GPS1	627128.4950	2340283.6560	105.83
2		B-950025-2 GPS2	627821.6300	2340026.2160	90.08
101		BL-101	628391.7690	2339816.1330	74.34
102		BL-102	628841.2140	2339507.4650	74.25

I, James M. Gellenthin, PLS, certify that the Project Control was [performed/verified] under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

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 Type of GPS field procedure: RTN/VRS
 Dates of survey: 11-15-21, 11-19-21
 Datum/Epoch: NAD83/2011
 Published/Fixed-control use: N/A
 Localized around: B-950025-1
 Northing: 627128.495
 Easting: 2340283.656
 Combined grid factor: 0.999880589(1/x=1.000119425)
 Geoid model: GEOID 12A
 Units: US SURVEY FEET

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This 2ND day of DECEMBER, 2021.

Professional Land Surveyor L-3860

 BM1 ELEVATION = 71.95
 N 628263 E 2339789
 18" TREE

 BM2 ELEVATION = 72.37
 N 628368 E 2339857
 18" TREE

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
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SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO. B-950025	SHEET NO. RW02 C-3
Location and Surveys	
KCI Associates of N.C., P.A. 4505 Falls of Neuse Rd, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 http://www.kci.com	
PROJECT SURVEYOR 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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 Dates of survey: 11-15-21, 11-19-21
 Datum/Epoch: NAD 83/2011
 Published/Fixed-control use: N/A
 Localized around: B-950025-1
 Northing: 627128.495
 Easting: 2340283.656
 Combined grid factor: 0.999880589(1/x=1.000119425)
 Geoid model: GEOID 12A
 Units: US SURVEY FEET

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 11/15/2021 to 11/19/2021, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 8th day of DECEMBER, 2021.

Professional Land Surveyor L-3860

EL		N	E	BEARING	DIST	DELTA	D	L	T	R
POT	LINE	627803.398	2340018.816	N 20°10'53.6" W	598.49					
PC	CURVE	628365.140	2339812.340	N 28°14'11.5" W	237.05	16°06'35.8"(LT)	06°46'25.1"	237.83	119.71	845.86
PCC	CURVE	628573.981	2339700.189	N 37°24'24.5" W	118.91	02°13'50.2"(LT)	01°52'32.8"	118.92	59.47	3054.52
PT	LINE	628668.437	2339627.954	N 38°31'19.7" W	175.50					
POT	POT	628805.746	2339518.647							

NOTES:

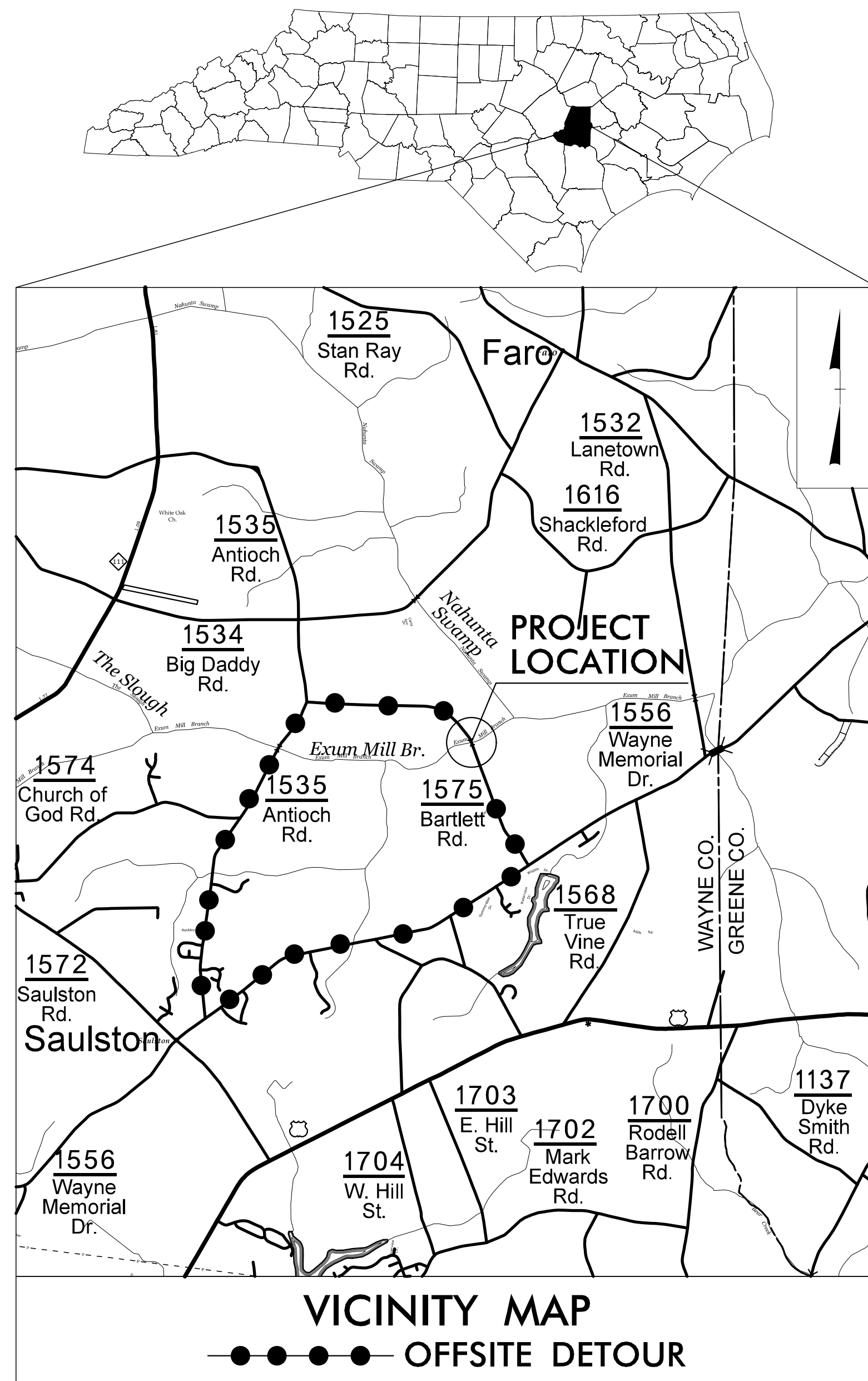
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

**WAYNE COUNTY
BRIDGE #25**

REPLACE BRIDGE NO. 25 ON SR 1575 OVER THE SLOUGH



INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, INDEX OF SHEETS, LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1A	GENERAL NOTES AND PHASING
TMP-2	SIGN DESIGN
TMP-2A	DETOUR SIGNS

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

LEGEND

GENERAL

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

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

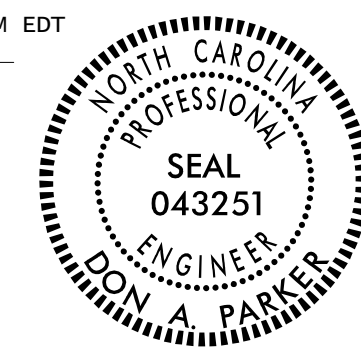
- BARRICADE (TYPE III)

TEMPORARY SIGNING

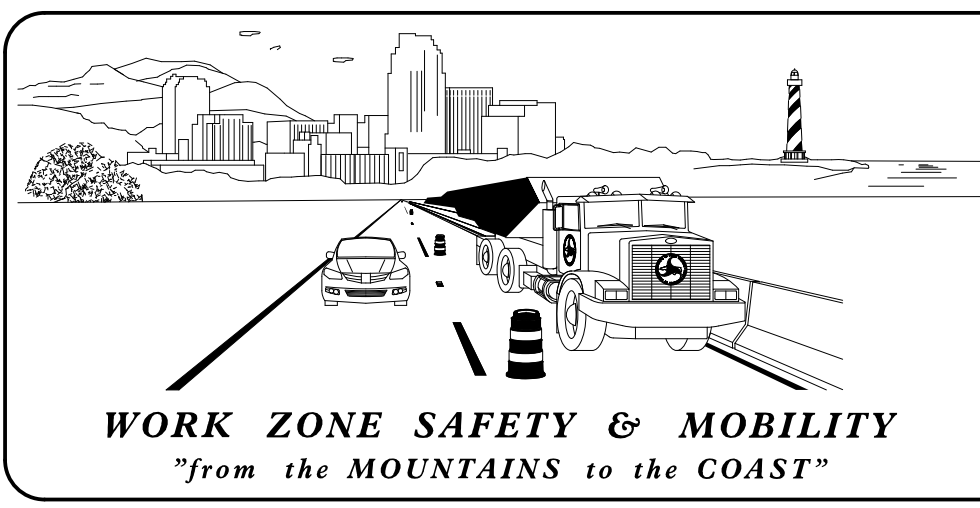
- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

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

APPROVED: Dan Parker
7508969ADEFA40
DATE: 8/15/2024 | 11:28 AM EDT



8/15/2024 X:\NCDOT\Division 4 Wayne 25\TrafficControl\TCP\950025_TC_TMP-1.dgn User: tbrannan

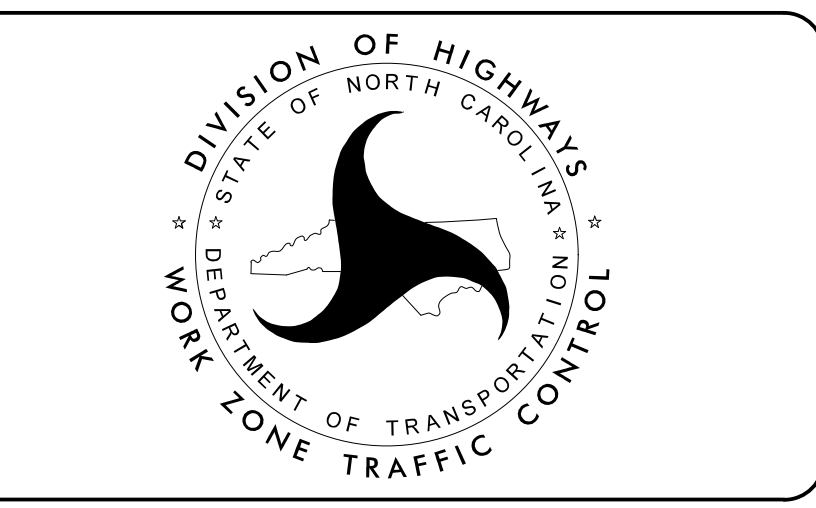


PLAN PREPARED FOR N.C.D.O.T. BY: TGS ENGINEERS

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

DON A. PARKER, P.E.
PROJECT ENGINEER

CODA BRANNAN, E.I.
DESIGN ENGINEER



PROJECT: BP4.R021

PROJ. REFERENCE NO.	SHEET NO.
BP4.R021	TMP-1A

TGS ENGINEERS
 706 HILLSBOROUGH ST. SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

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.

TRAFFIC PATTERN ALTERATIONS

- A) NOTIFY THE ENGINEER AT LEAST THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION. IN ORDER TO HAVE TIME TO ADEQUATELY REROUTE SCHOOL BUSES, WAYNE COUNTY SCHOOL WILL BE CONTACTED AT 919-731-5900 AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE. WAYNE COUNTY EMERGENCY SERVICES WILL BE CONTACTED AT 919-731-1416 AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE TO MAKE THE NECESSARY TEMPORARY REASSIGNMENTS TO PRIMARY RESPONSE UNITS.

SIGNING

- B) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR AS SHOWN IN THE TRAFFIC CONTROL PLANS.

- C) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN DETOUR IS NOT IN OPERATION.
- D) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

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

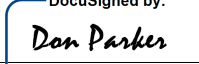
PAVEMENT MARKINGS AND MARKERS

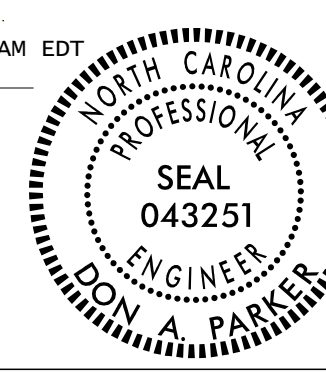
- F) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS SHOWN IN THE FINAL PAVEMENT MARKING PLAN.
- G) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

PHASING

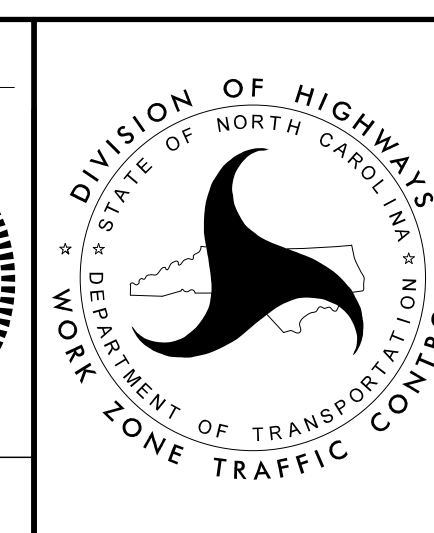
- STEP 1 -- INSTALL DETOUR ADVANCE WARNING SIGNS AND DETOUR TRAILBLAZING SIGNS. (SEE RSD 1101.03, SHEET 1 OF 9 AND TMP-2A)
- STEP 2 -- CLOSE SR 1575 TO THRU TRAFFIC.
- STEP 3 -- CONSTRUCT PROPOSED BRIDGE AND APPROACHES INCLUDING THE FINAL LAYER OF SURFACE COURSE AND PLACE FINAL PAVEMENT MARKINGS.
- STEP 4 -- REOPEN SR 1575 TO THRU TRAFFIC
- STEP 5 -- REMOVE ALL TRAFFIC CONTROL DEVICES

8/15/2024 X:\NCDOT\Division 4 Wayne 25\Traffic\TrafficControl\Tcp\950025_TC_TMP-1A.dgn User: tbrannan

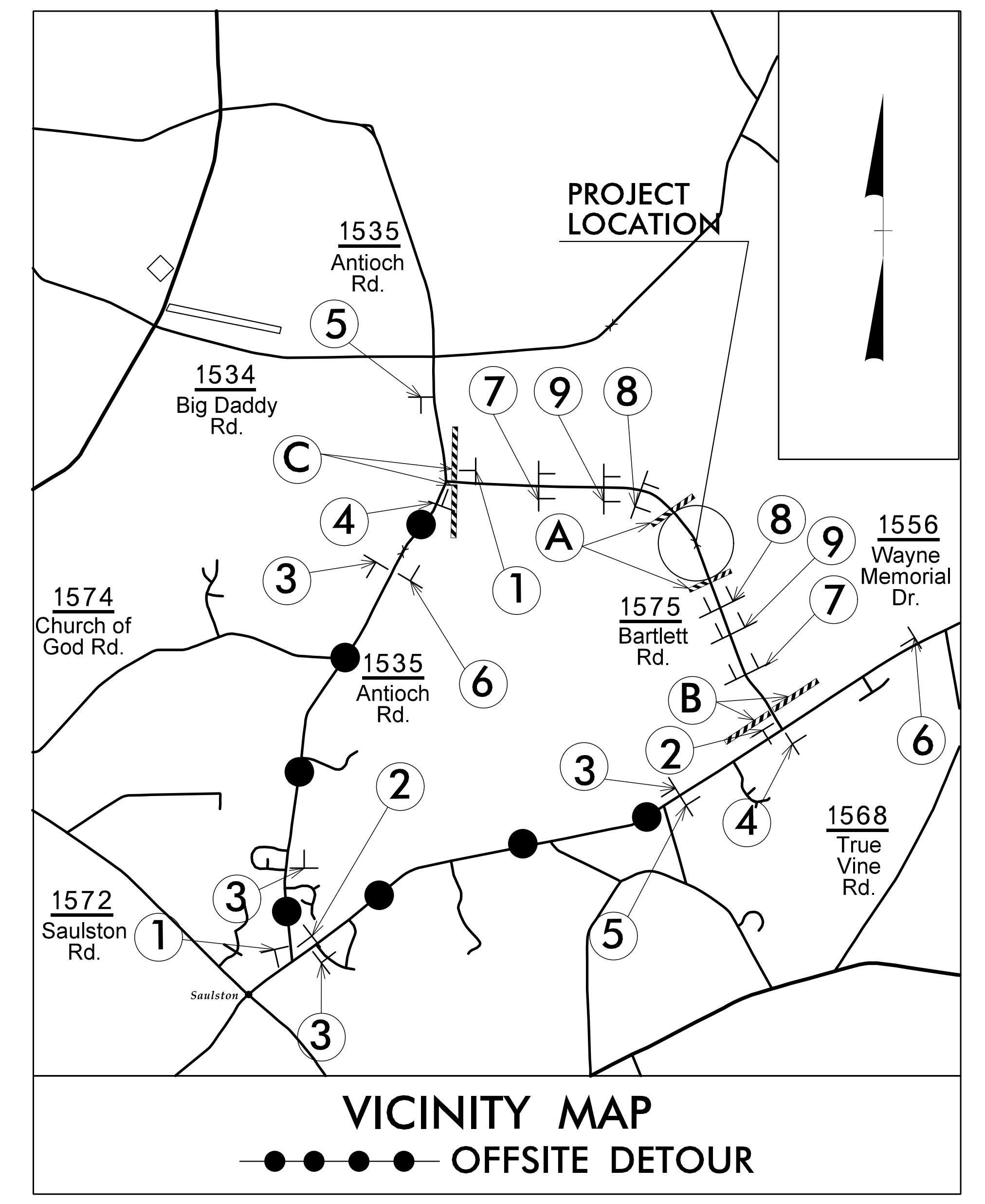
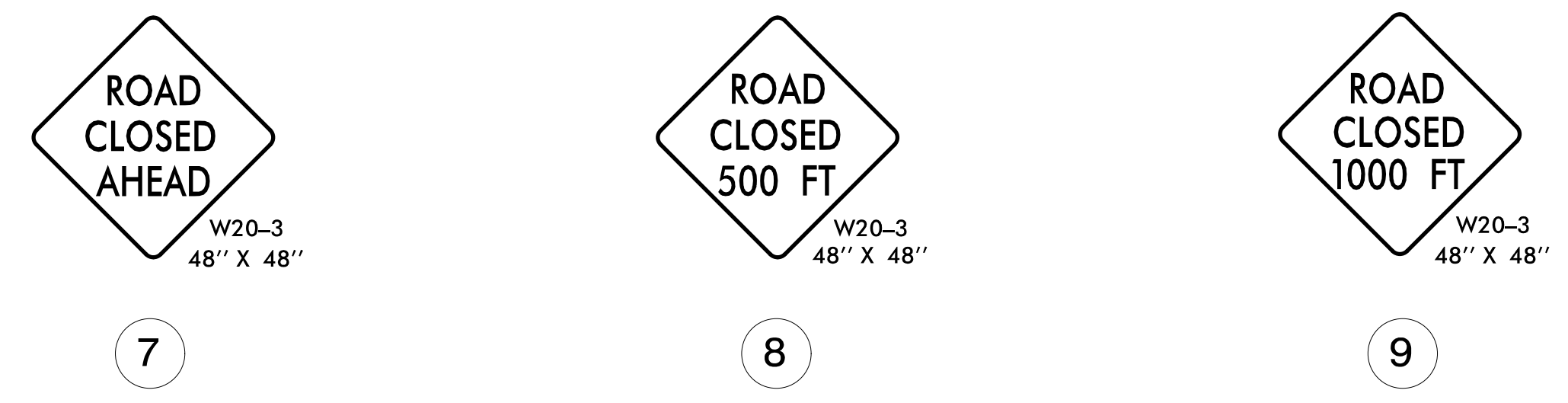
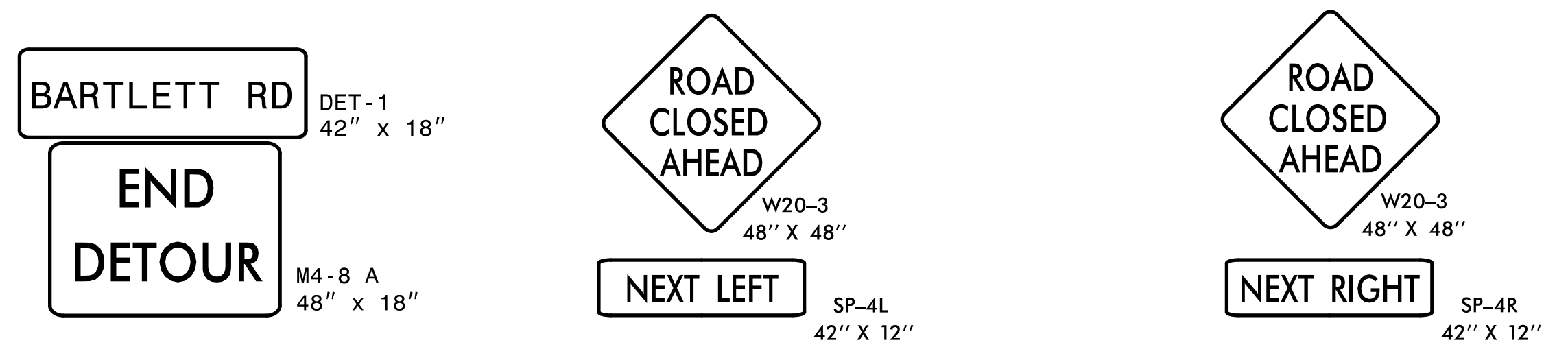
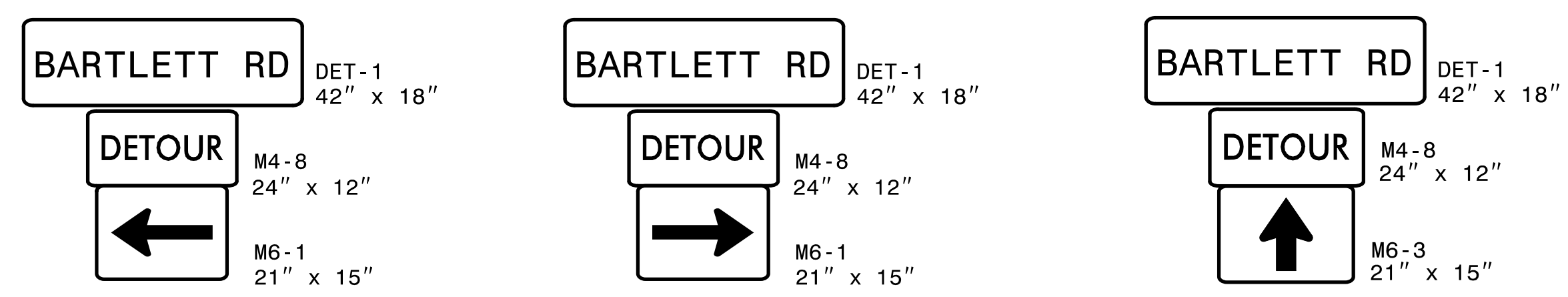
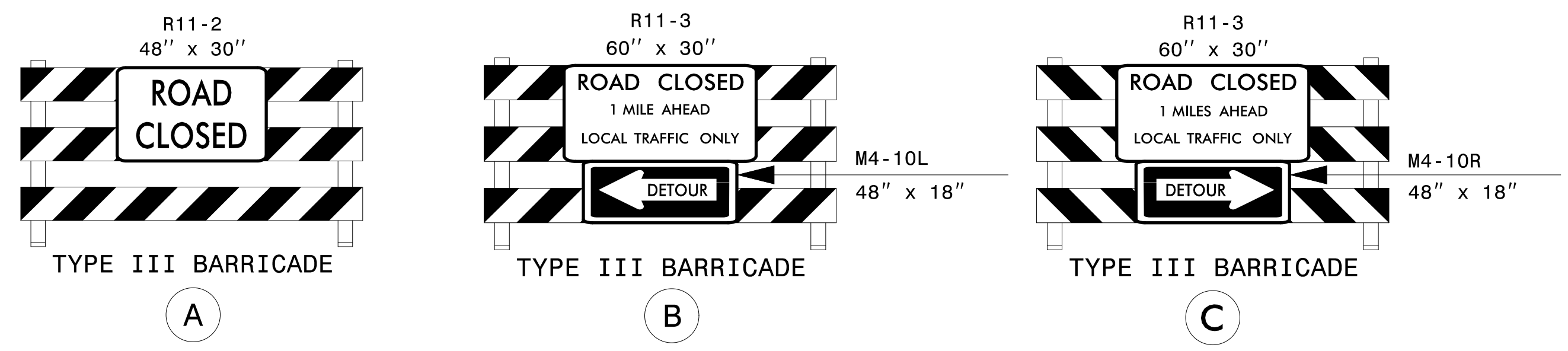
APPROVED: 
 DATE: 8/15/2024 | 11:28 AM EDT


 DON A. PARKER
 043251
 NORTH CAROLINA
 PROFESSIONAL
 ENGINEER
 SEAL

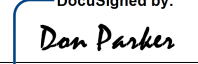
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



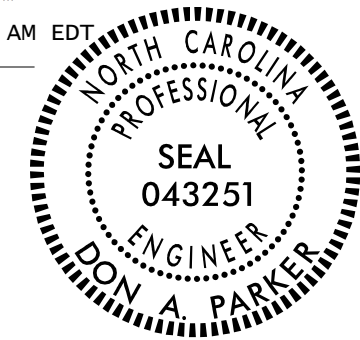
**GENERAL NOTES
&
PHASING**



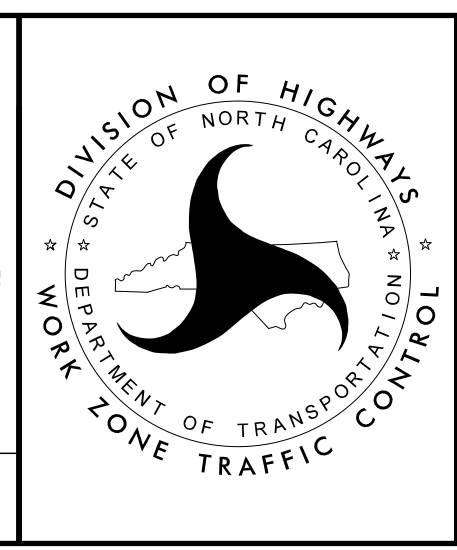
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APPROVED:  750B9E90ADEF440...

DATE: 8/15/2024 | 11:28 AM EDT



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



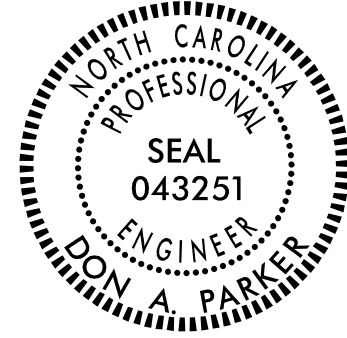
DETOUR SIGNING

PROJECT: BP4.R021

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
WAYNE COUNTY**

**LOCATION: REPLACE BRIDGE NO. 25 ON SR 1575
(BARTLETT ROAD) OVER THE SLOUGH**

TIP NO. BP4.R021	SHEET NO. PMP - 1
APPROVED: <i>Don Parker</i> <small>7598969ADE7440</small>	
DATE: 8/15/2024 11:28 AM EDT	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE, INDEX OF SHEETS, LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, GENERAL NOTES AND FINAL PAVEMENT MARKING SCHEDULE
PMP-2	PAVEMENT MARKING DETAIL

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	QUANTITY
PAVEMENT MARKINGS		
THERMOPLASTIC (4", 90 MILS)		
T1	(4") WHITE EDGELINE	2044 LF
T13	(4") YELLOW DOUBLE CENTER	2044 LF

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 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
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

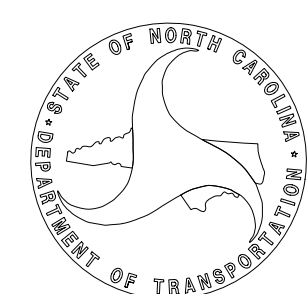
THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

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

ROAD NAME	MARKING	MARKER
-L- SR 1575	THERMOPLASTIC	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.

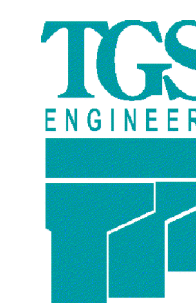
PLAN SUBMITTED TO: NCDOT

RUSSELL BROADWELL, P.E. PROJECT ENGINEER NCDOT DIV 4




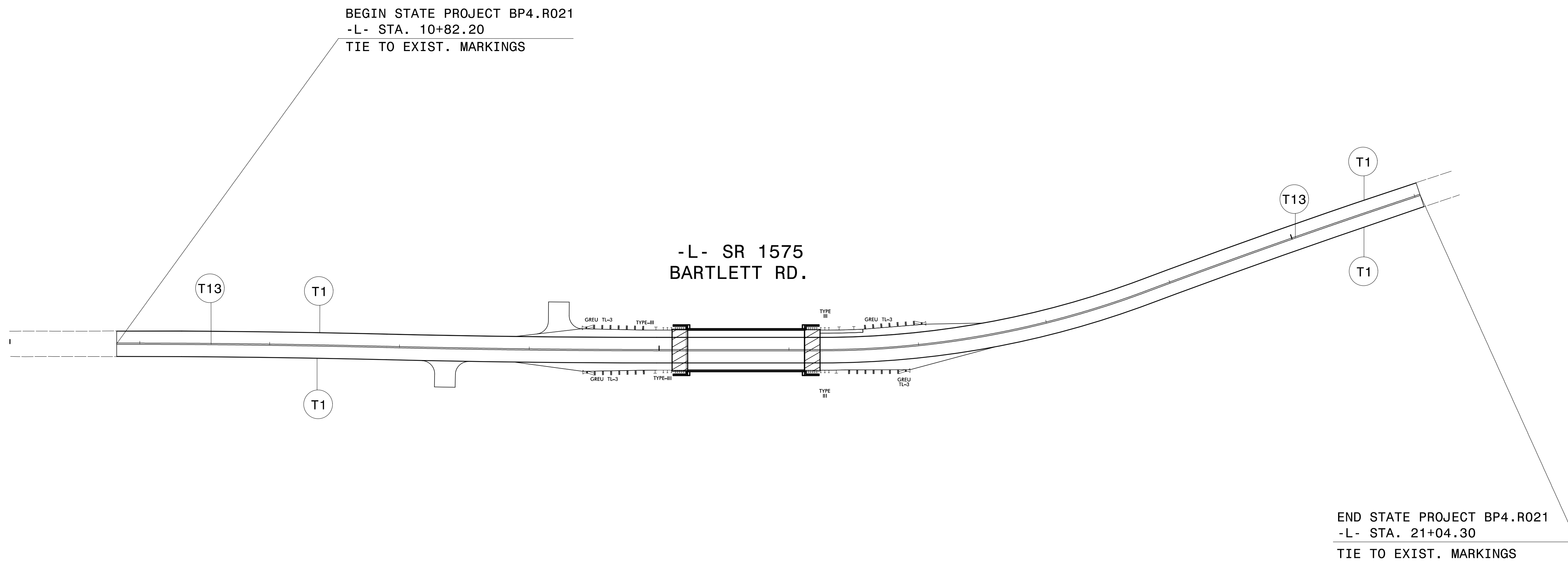
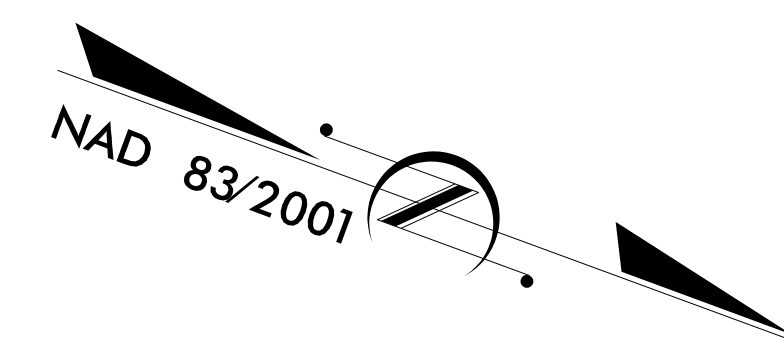
PLAN PREPARED BY: TGS ENGINEERS

DON A. PARKER, P.E. PROJECT ENGINEER
CODA BRANNAN, E.I. DESIGN ENGINEER



TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

TIP NO. BP4.R021	SHEET NO. PMP - 2
APPROVED: <i>Don Parker</i> <small>712385904267440</small>	
DATE: 8/15/2024 11:28 AM EDT	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	TGS ENGINEERS 706 HILLSBOROUGH ST. SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275



8/15/2024
x:\ncdot\division 4 wayne 25\traffic\pmp\950025_Sgn_PMP_02.dgn
User:abrannan

PAVEMENT MARKING DETAIL

PROJECT: BP4.R021

CONTRACT: DD00411

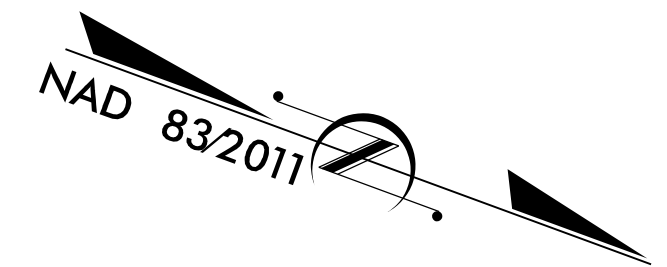
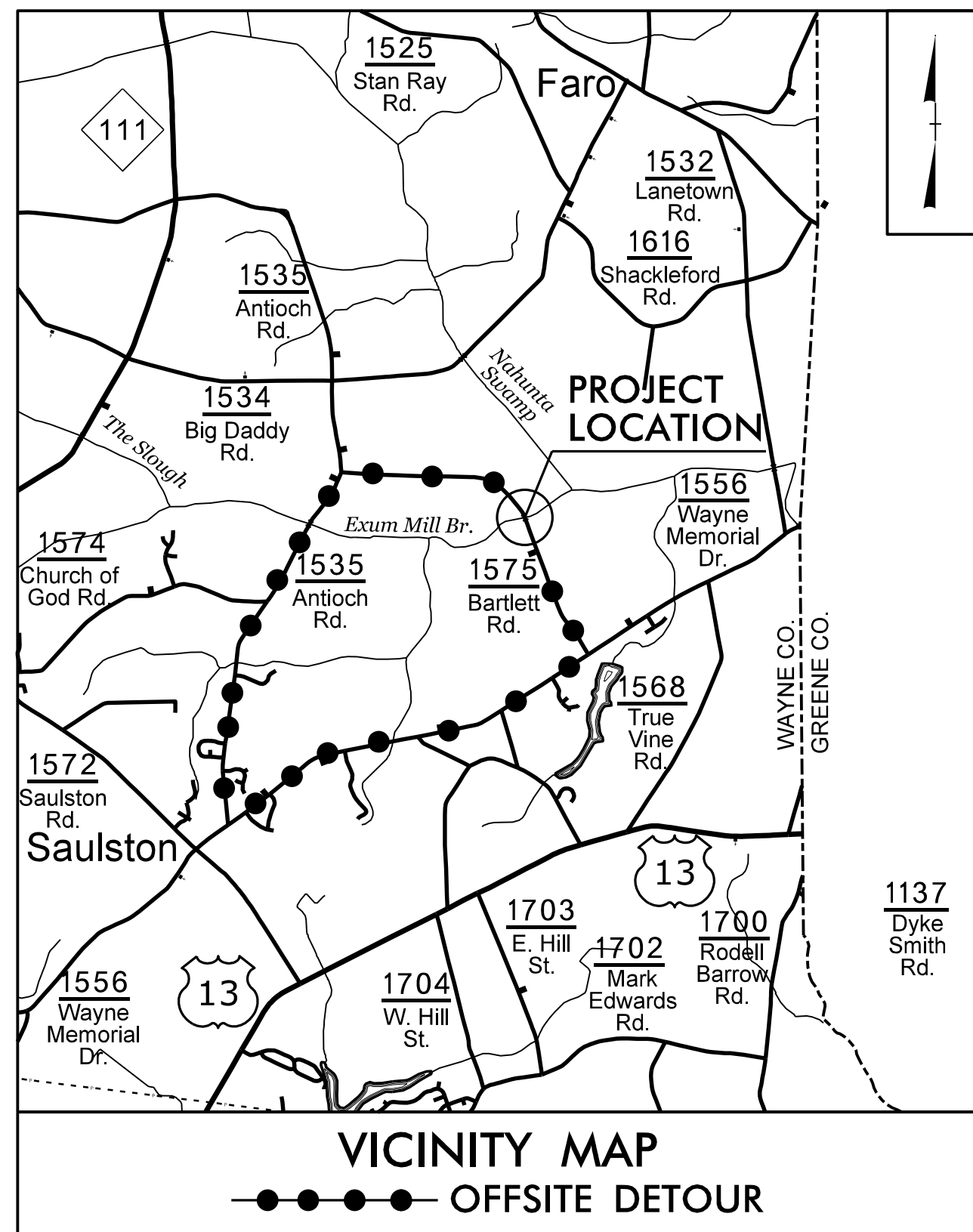
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

**UTILITIES BY OTHERS PLANS
 WAYNE COUNTY**

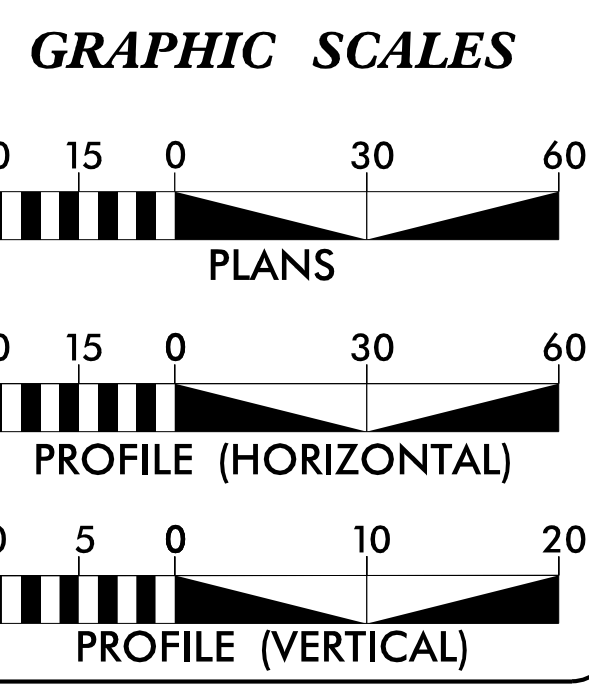
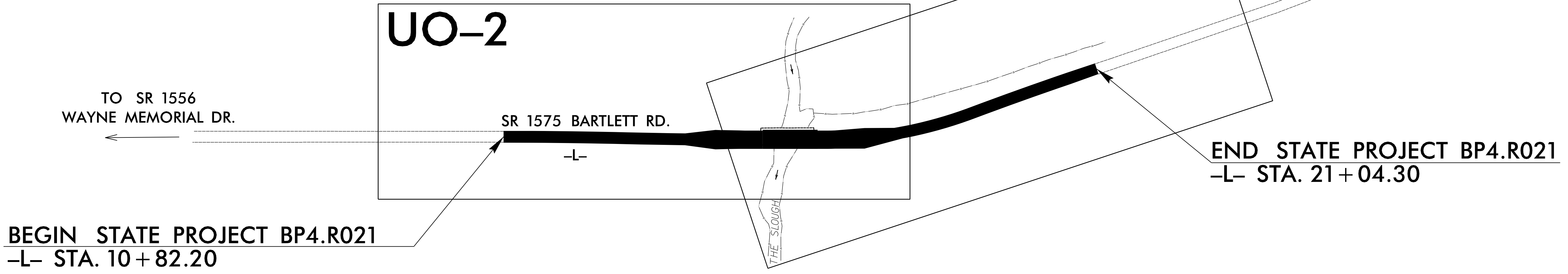
**LOCATION: REPLACE BRIDGE NO. 25 ON SR 1575
 (BARTLETT ROAD) OVER THE SLOUGH**

TYPE OF WORK: UTILITIES BY OTHERS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP4.R021	UO-1	3
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP4.R021.1		PE	
BP4.R021.2		RW & UTIL	
BP4.R021.3		CONST	



VICINITY MAP
 -●-●-●- OFFSITE DETOUR



INDEX OF SHEETS

UO-1	TITLE SHEET
UO-2	PLAN SHEET
UO-3	PLAN SHEET

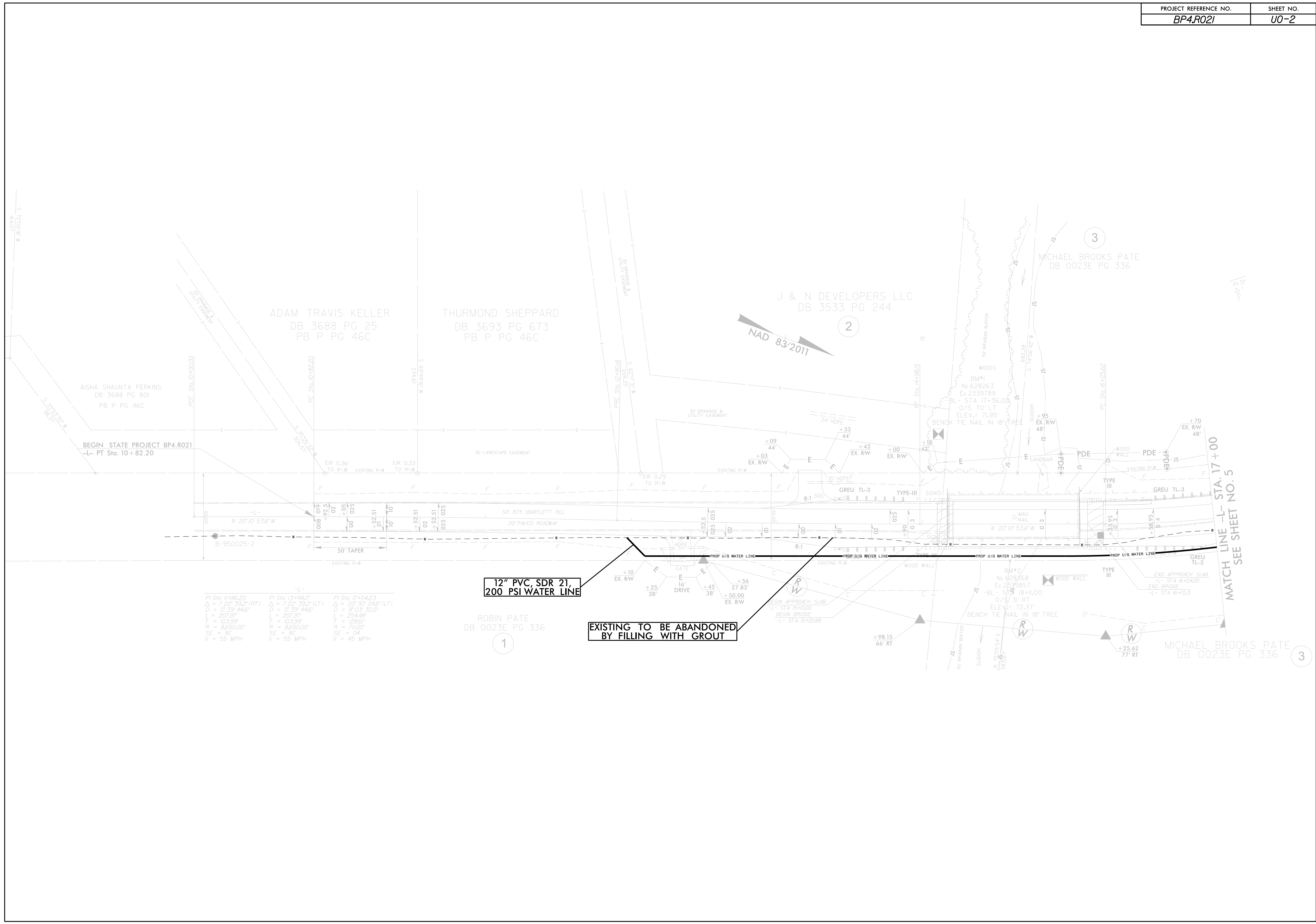
UTILITY OWNERS WITH CONFLICTS:

A. BELFAST-PATETOWN SANITARY DISTRICT (BPSD) - WATER

Prepared For:
DIVISION OF HIGHWAYS
 509 Ward Blvd, Wilson NC, 27895

KYLE PLEASANT PROJECT UTILITIES ENGINEER

ADDISON GAINNEY, PE
 PROJECT CONTACT #1



AISHA SHAUNTA PERKINS
DB 3688 PG 801
PB P PG 46C

ADAM TRAVIS KELLER
DB 3688 PG 25
PB P PG 46C

THURMOND SHEPPARD
DB 3693 PG 673
PB P PG 46C

J & N DEVELOPERS LLC
DB 3533 PG 244

3
MICHAEL BROOKS PATE
DB 0023E PG 336

12" PVC, SDR 21,
200 PSI WATER LINE

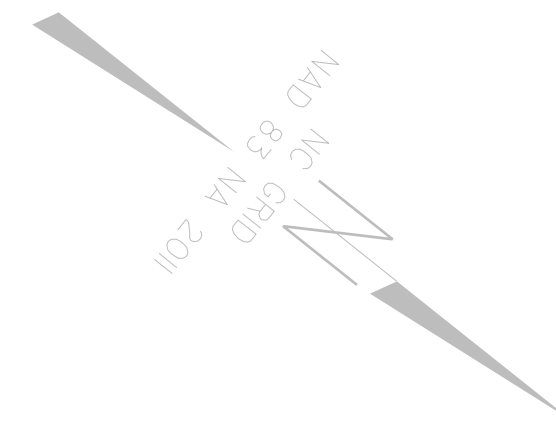
EXISTING TO BE ABANDONED
BY FILLING WITH GROUT

-L-		
PI Sta. 11+86.20	PI Sta. 13+94.17	PI Sta. 17+54.23
$\Delta = 122^\circ 39' 2" (RT)$	$\Delta = 122^\circ 39' 2" (LT)$	$\Delta = 20^\circ 30' 24" (LT)$
$D = 0' 39" 44.6"$	$D = 0' 39" 44.6"$	$D = 8' 03" 30.5"$
$L = 207.97'$	$L = 207.97'$	$L = 254.48'$
$T = 103.99'$	$T = 103.99'$	$T = 128.61'$
$R = 8,650.00'$	$R = 8,650.00'$	$R = 711.00'$
$SE = NC$	$SE = NC$	$SE = 04$
$V = 55 \text{ MPH}$	$V = 55 \text{ MPH}$	$V = 45 \text{ MPH}$

ROBIN PATE
DB 0023E PG 336

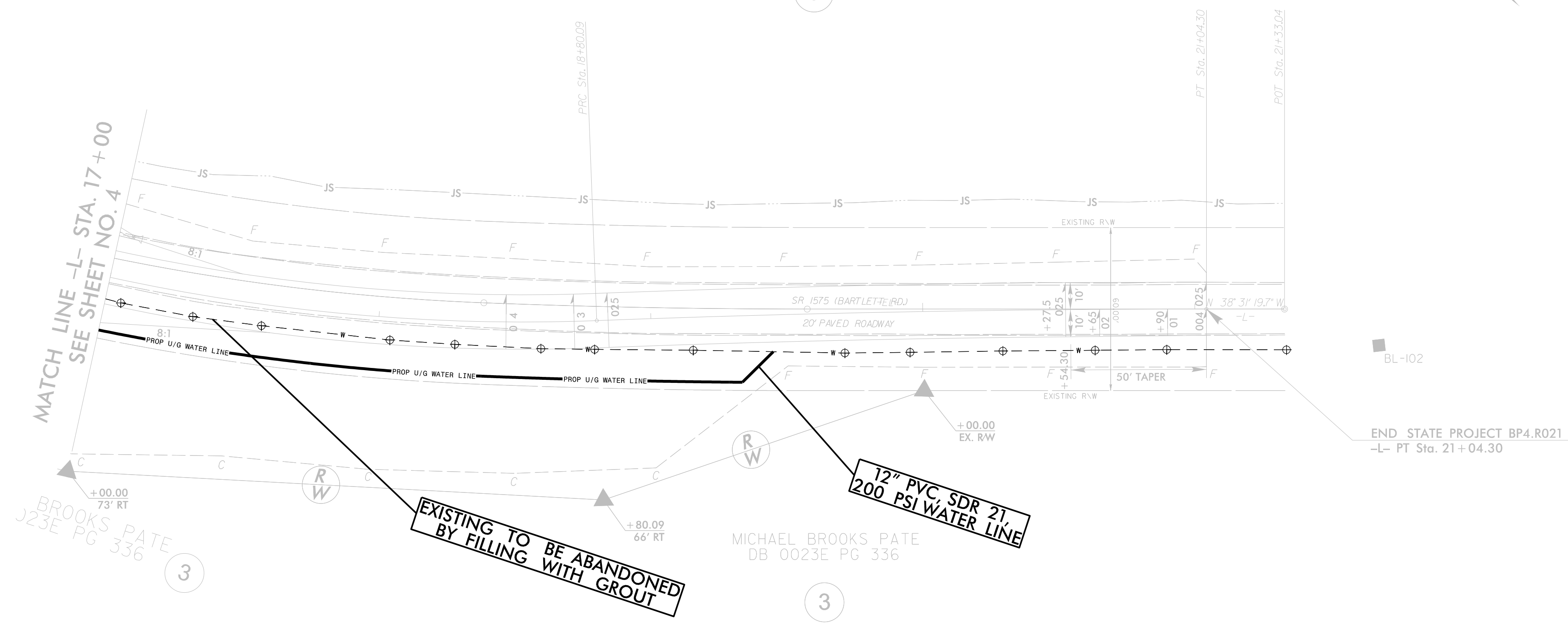
3
MICHAEL BROOKS PATE
DB 0023E PG 336

MATCH LINE -L- STA. 17+00
SEE SHEET NO. 5



-L-	
PI Sta. 17+54.23	PI Sta. 19+92.21
$\Delta = 20' 30" 24.6" (LT)$	$\Delta = 2' 09" 58.5" (RT)$
$D = 87' 03" 30.5"$	$D = 7' 57" 58.3"$
$L = 254.48'$	$L = 224.20'$
$T = 128.61'$	$T = 112.12'$
$R = 711.00'$	$R = 5,930.00'$
$SE = 04'$	$SE = 10'$
$V = 45 \text{ MPH}$	$V = 45 \text{ MPH}$

MICHAEL BROOKS PATE
DB 0023E PG 336



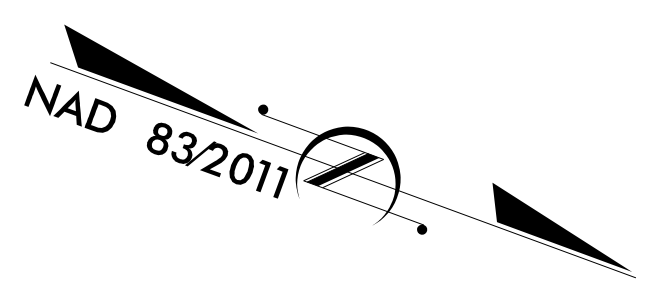
MATCH LINE -L- STA. 17+00
SEE SHEET NO. 4

BROOKS PATE
J23E PG 336

MICHAEL BROOKS PATE
DB 0023E PG 336

END STATE PROJECT BP4.R021
-L- PT Sta. 21+04.30

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP4.R021	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	



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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

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

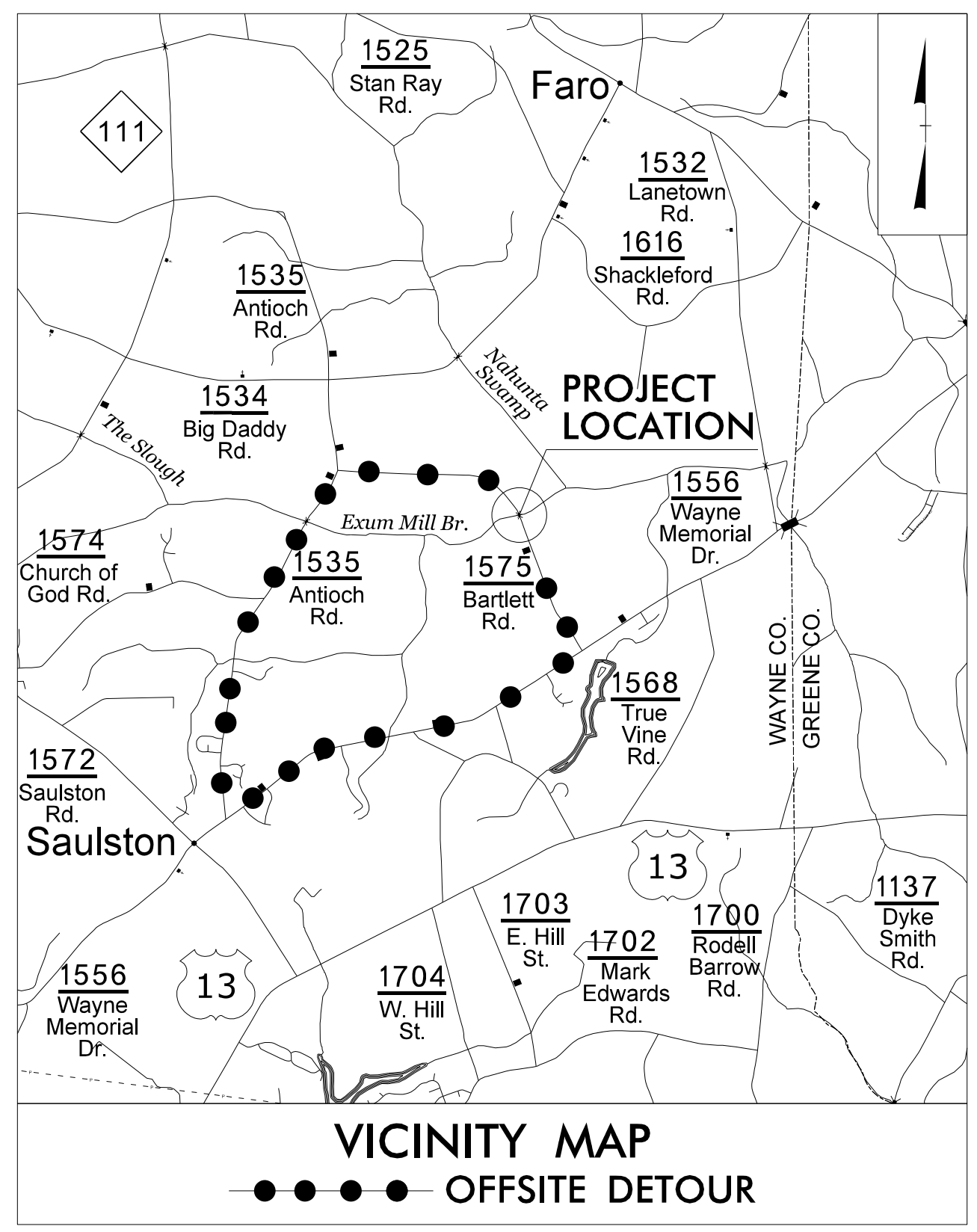
TIP PROJECT: BP4.R021

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

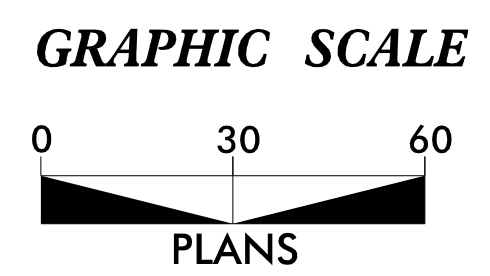
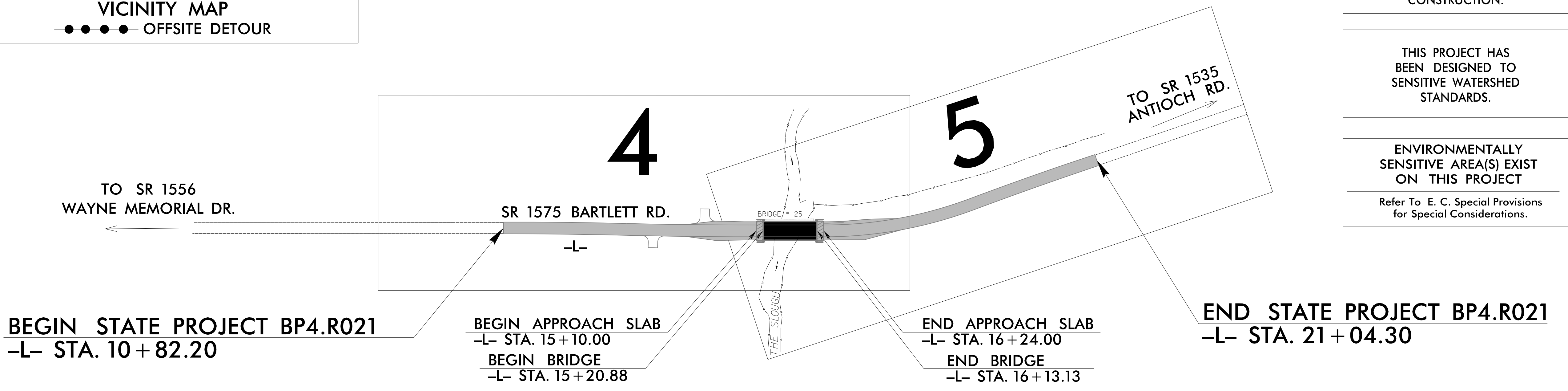
WAYNE COUNTY

LOCATION: REPLACE BRIDGE NO. 25 ON SR 1575 (BARTLETT ROAD) OVER THE SLOUGH

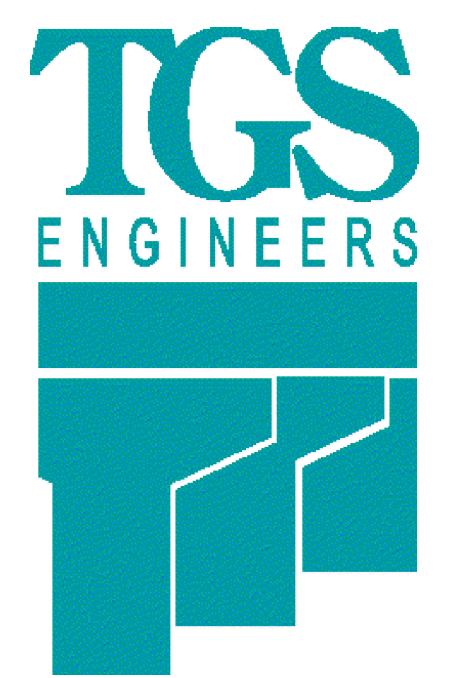
TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE AND PAVING



VICINITY MAP
●●●● OFFSITE DETOUR



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



Prepared in the Office of:
TGS Engineers
706 Hillsborough St. - Suite 200
Raleigh, NC 27603

Designed by:
Christopher R. Lewis, PE 4323
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings
The "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2024 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

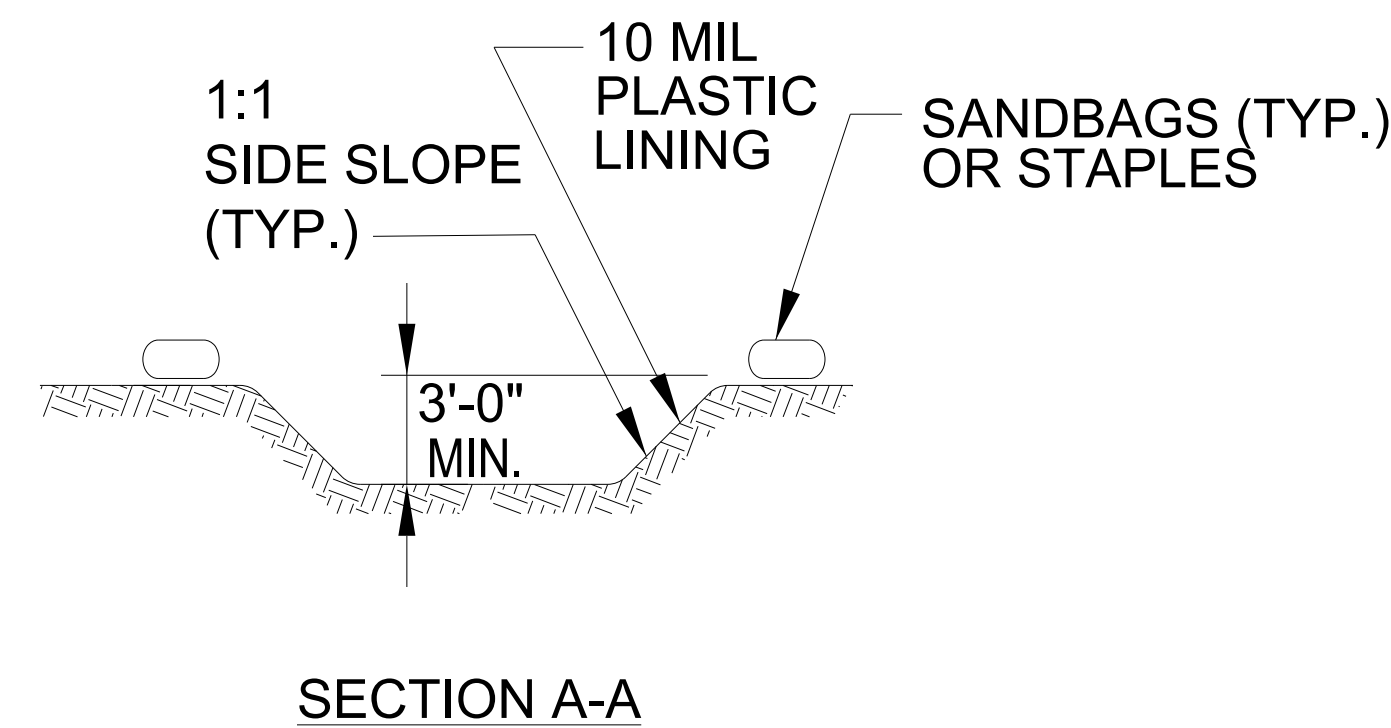
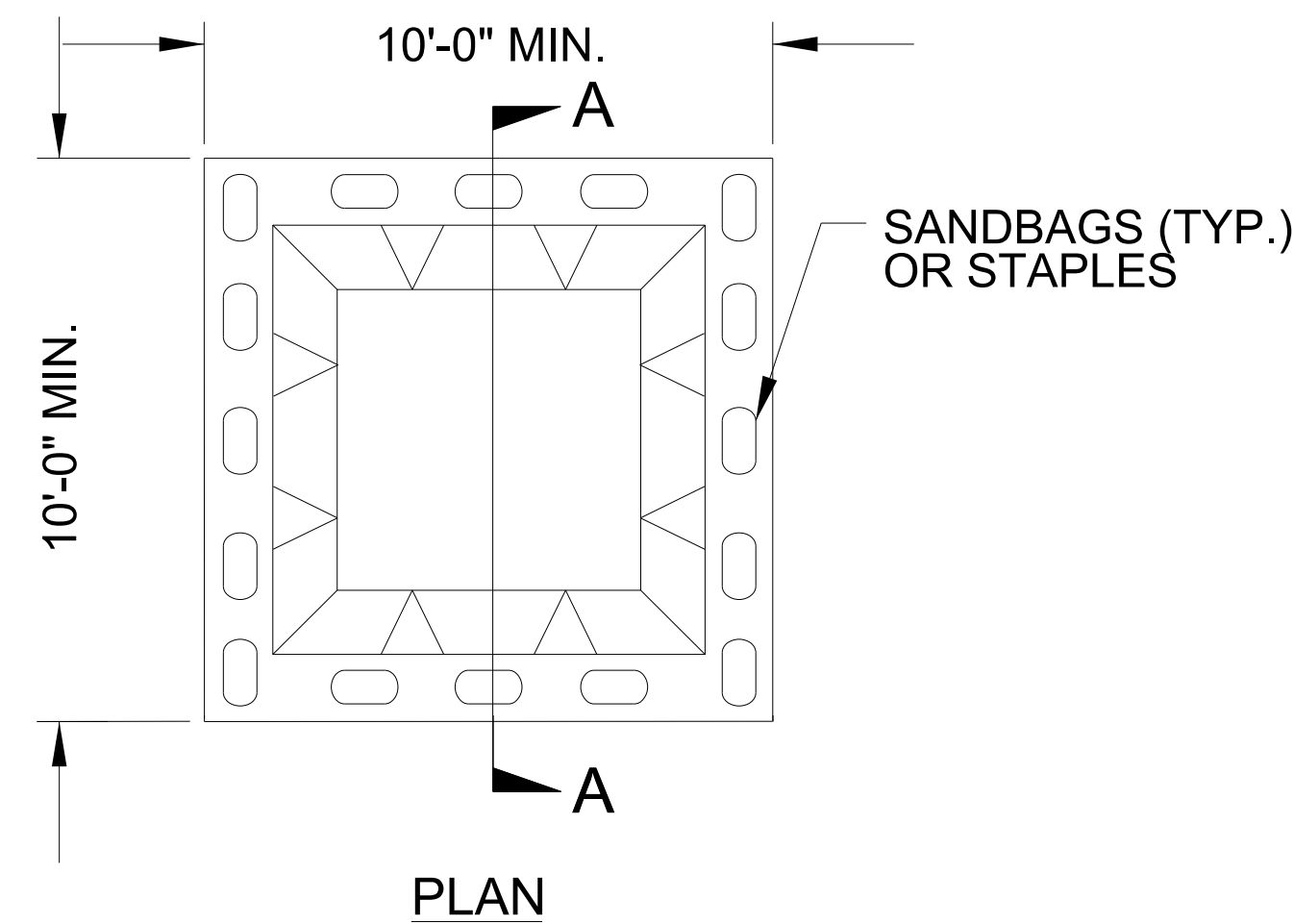
PROJECT REFERENCE NO. BP4.R021	SHEET NO. EC-2
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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		1636.03	Excelsior Wattle Barrier	
1632.02	Type B		1636.03	Coir Fiber Wattle Barrier	
1632.03	Type C				

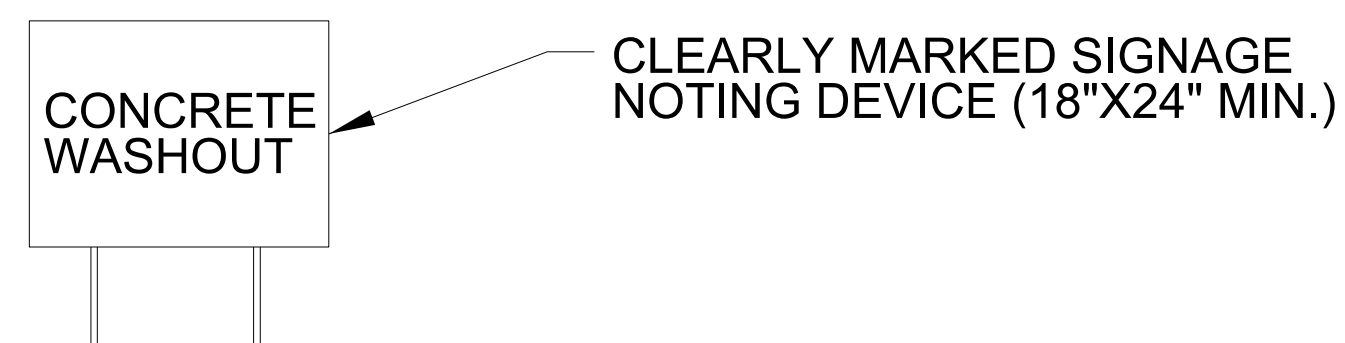
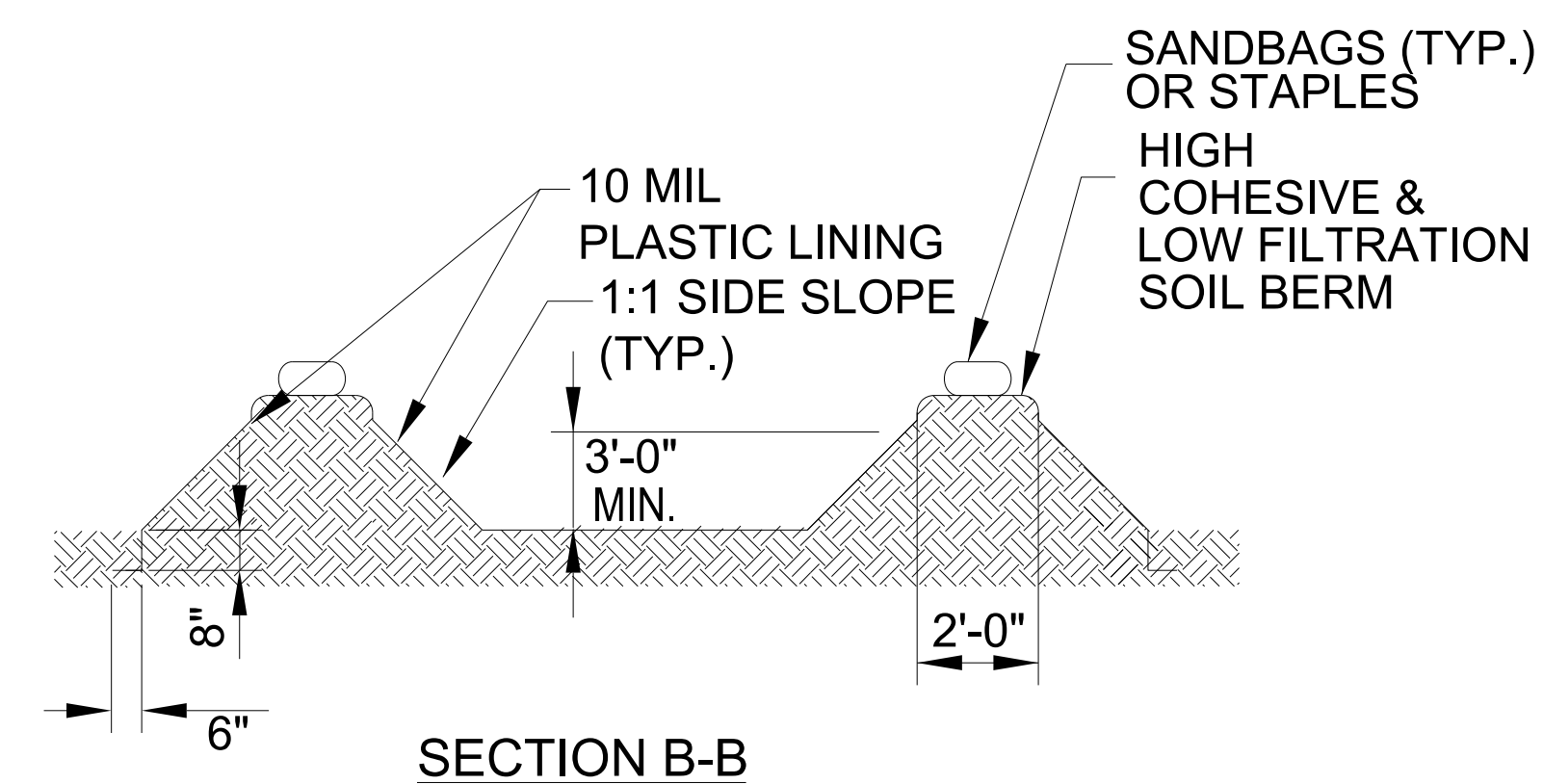
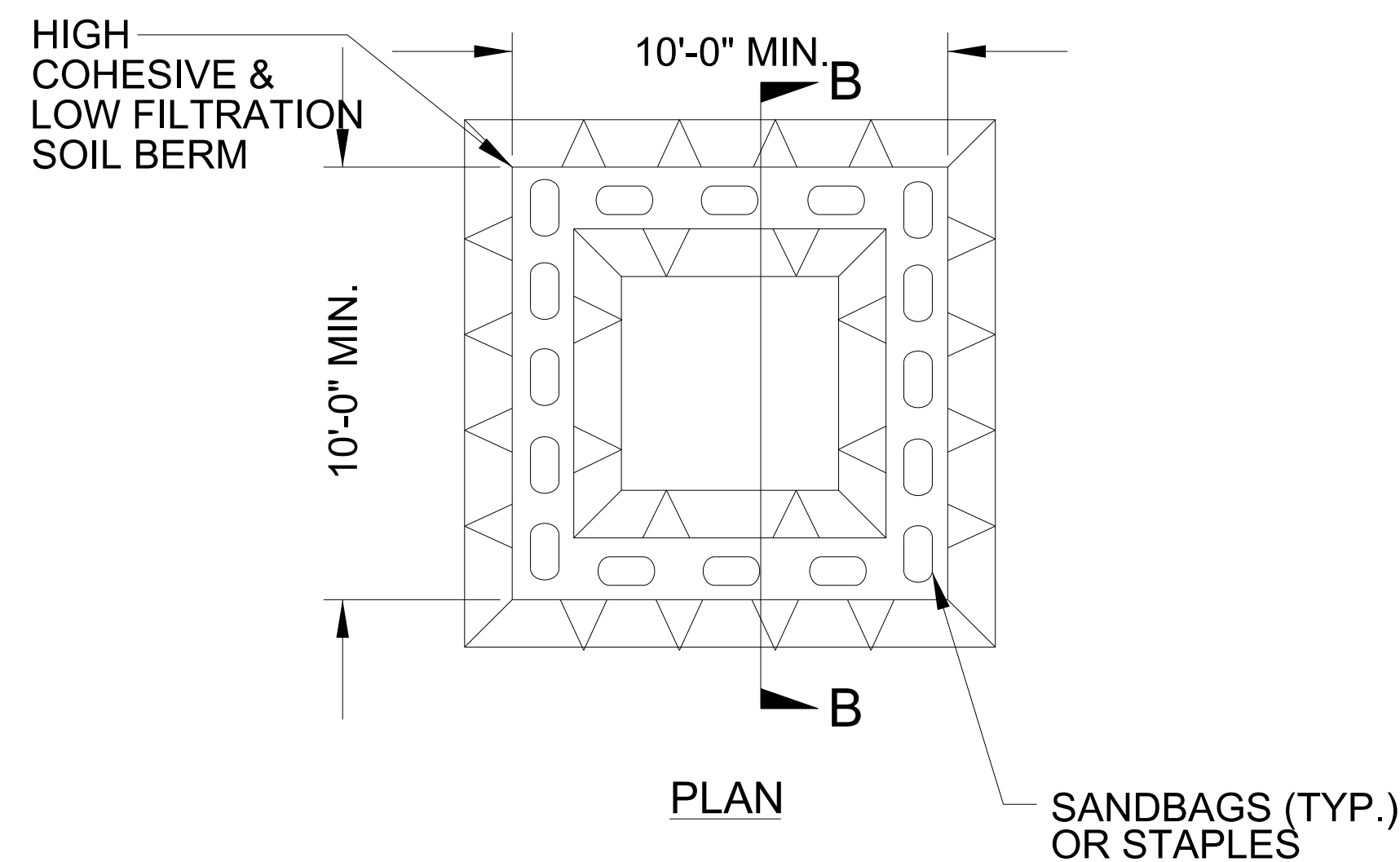
PROJECT REFERENCE NO. <i>BP4.R02I</i>	SHEET NO. <i>EC-2A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



BELOW GRADE WASHOUT STRUCTURE
NOT TO SCALE

- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.



ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>BP4.R02I</i>	SHEET NO. <i>EC-3</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

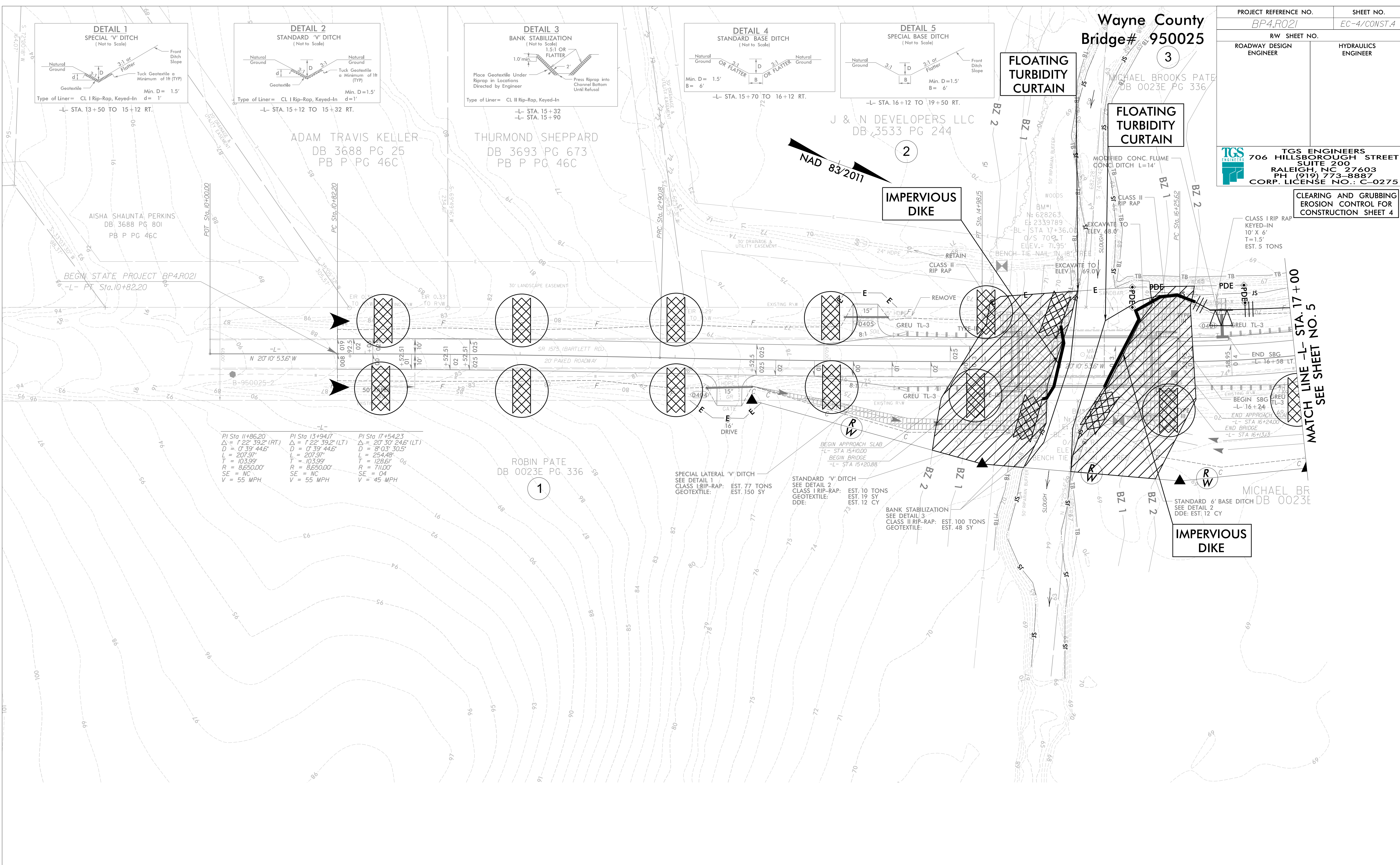
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
<i>PERIMETER DIKES, SWALES, DITCHES AND SLOPES</i>	<i>7 DAYS</i>	<i>NONE</i>
<i>HIGH QUALITY WATER (HQW) ZONES</i>	<i>7 DAYS</i>	<i>NONE</i>
<i>SLOPES STEEPER THAN 3:1</i>	<i>7 DAYS</i>	<i>IF SLOPES ARE 10' OR LESS IN LENGTH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

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE & TYPE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	<i>-L- DITCH</i>	<i>10+82</i>	<i>15+00</i>	<i>LT</i>	<i>320</i>
4	<i>-L- DITCH</i>	<i>10+82</i>	<i>13+20</i>	<i>RT</i>	<i>305</i>
4	<i>-L- SLOPE</i>	<i>13+75</i>	<i>15+00</i>	<i>RT</i>	<i>440</i>
4	<i>-L- SLOPE</i>	<i>14+00</i>	<i>15+00</i>	<i>LT</i>	<i>360</i>
4 & 5	<i>-L- SLOPE</i>	<i>16+25</i>	<i>17+50</i>	<i>LT</i>	<i>320</i>
4 & 5	<i>-L- DITCH</i>	<i>15+75</i>	<i>19+50</i>	<i>RT</i>	<i>935</i>
4 & 5	<i>-L- SLOPE</i>	<i>16+12</i>	<i>19+50</i>	<i>RT</i>	<i>1,600</i>
<i>SUBTOTAL</i>					<i>4,280</i>
<i>MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER</i>					<i>350</i>
<i>TOTAL</i>					<i>4,630</i>
<i>SAY</i>					<i>4,700</i>

Wayne County Bridge # 950025

PROJECT REFERENCE NO. BP4.R021	SHEET NO. EC-4/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275	
CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4	




ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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

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

Wayne County Bridge# 950025



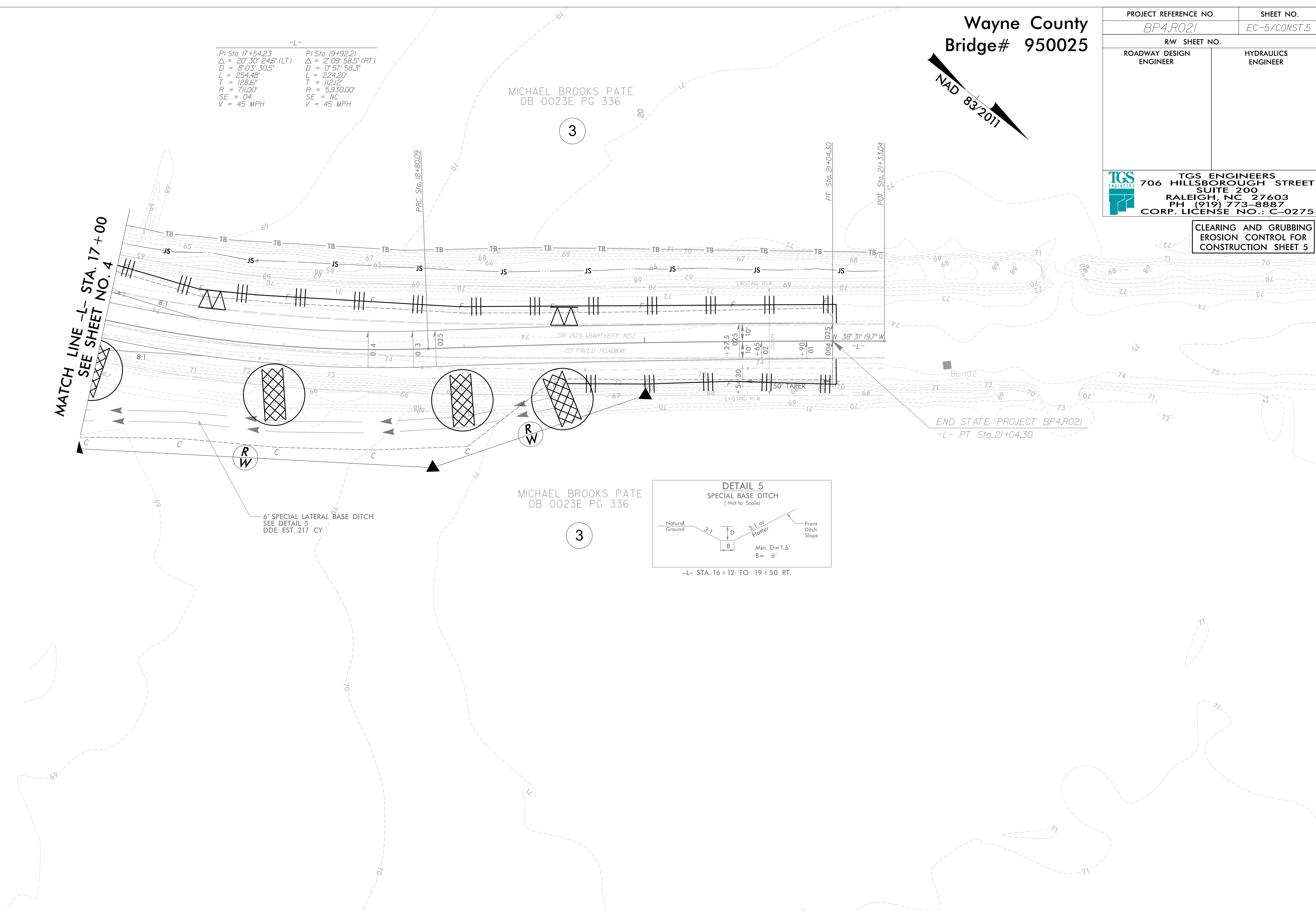
PROJECT REFERENCE NO. <i>BP4.R021</i>		SHEET NO. <i>EC-5/CONST.5</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
 TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275			

-L-

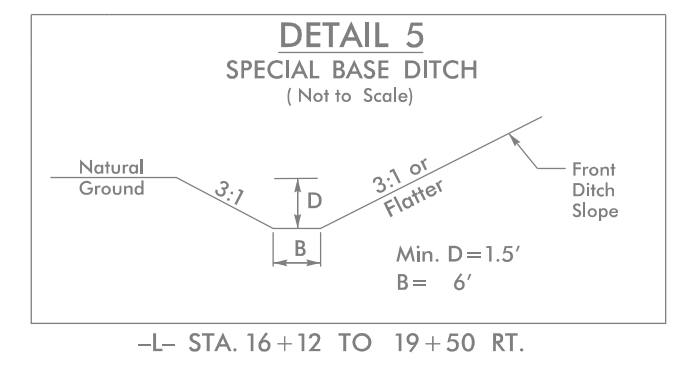
PI Sta 17+54.23 Δ = 20° 30' 24.6" (LT) D = 8' 03" 30.5" L = 254.48' T = 128.61' R = 711.00' SE = 04 V = 45 MPH	PI Sta 19+92.21 Δ = 2° 09' 58.5" (RT) D = 0' 57" 58.3" L = 224.20' T = 112.12' R = 5,930.00' SE = NC V = 45 MPH
---	--

MICHAEL BROOKS PATE
DB 0023E PG 336

MATCH LINE -L- STA. 17+00
SEE SHEET NO. 4



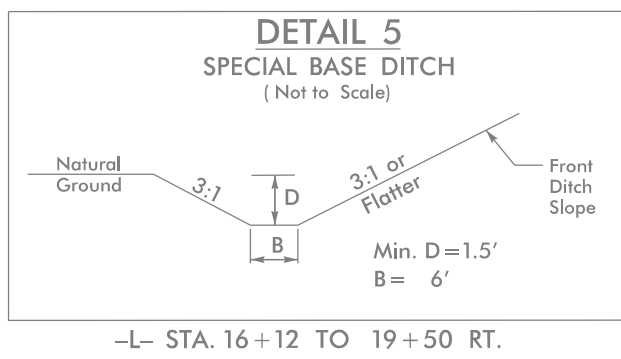
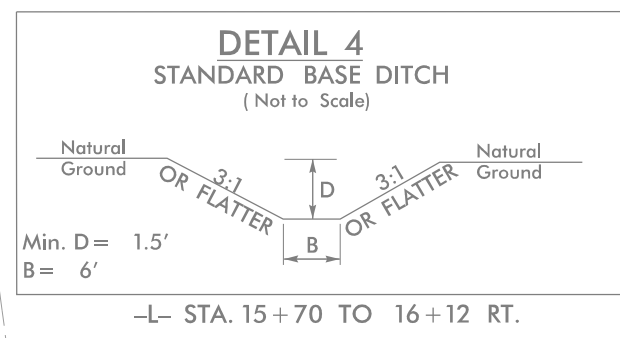
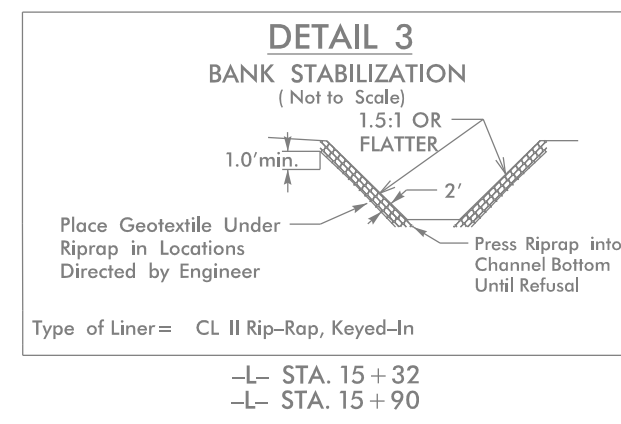
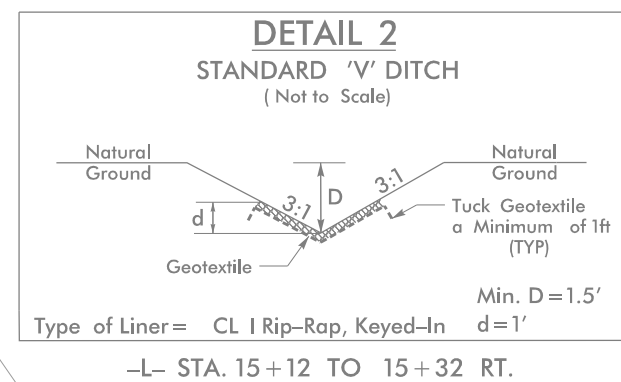
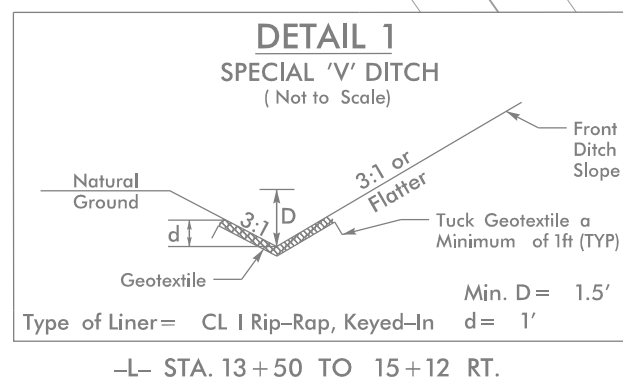
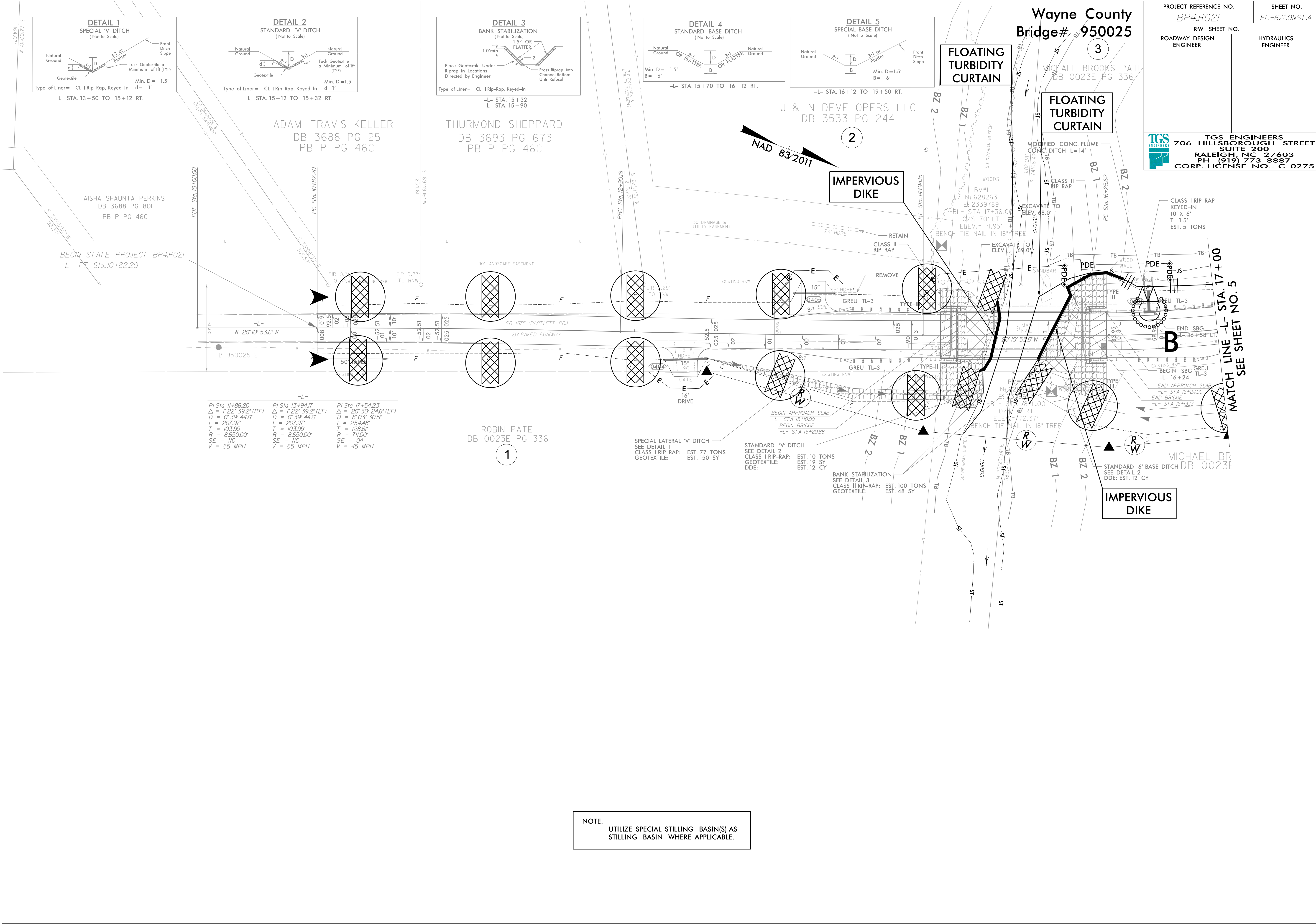
END STATE PROJECT BP4.R021
-L- PT Sta. 21+04.30



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

**Wayne County
Bridge# 950025**

PROJECT REFERENCE NO. BP4.R021		SHEET NO. EC-6/CONST.4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<p>TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275</p>			




-L-

PI Sta 11+86.20 Δ = 1' 22" 39.2' (RT) D = 0' 39" 44.6" L = 207.37' T = 103.99' R = 8650.00' SE = NC V = 55 MPH	PI Sta 13+94.17 Δ = 1' 22" 39.2' (LT) D = 0' 39" 44.6" L = 207.37' T = 103.99' R = 8650.00' SE = NC V = 55 MPH	PI Sta 17+54.23 Δ = 20' 30" 24.6' (LT) D = 8' 03" 50.5" L = 254.48' T = 128.61' R = 711.00' SE = 04 V = 45 MPH
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NOTE:
UTILIZE SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

Wayne County Bridge# 950025



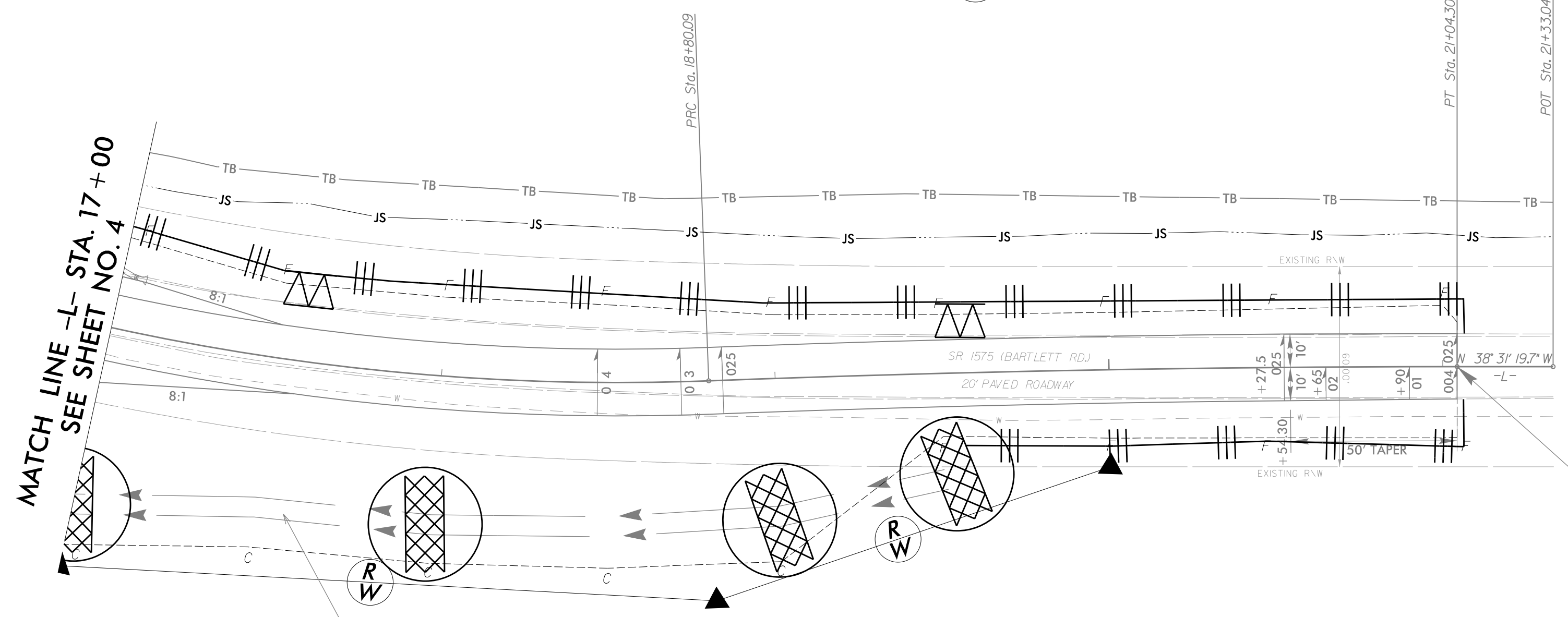
PROJECT REFERENCE NO. <i>BP4.R021</i>		SHEET NO. <i>EC-7/CONST.5</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
 TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275			

-L-

<i>PI Sta 17+54.23</i>	<i>PI Sta 19+92.21</i>
$\Delta = 20' 30" 24.6" (LT)$	$\Delta = 2' 09" 58.5" (RT)$
$D = 8' 03" 30.5"$	$D = 0' 57" 58.3"$
$L = 254.48'$	$L = 224.20'$
$T = 128.61'$	$T = 112.12'$
$R = 711.00'$	$R = 5,930.00'$
$SE = 04$	$SE = NC$
$V = 45 \text{ MPH}$	$V = 45 \text{ MPH}$

MICHAEL BROOKS PATE
DB 0023E PG 336

3



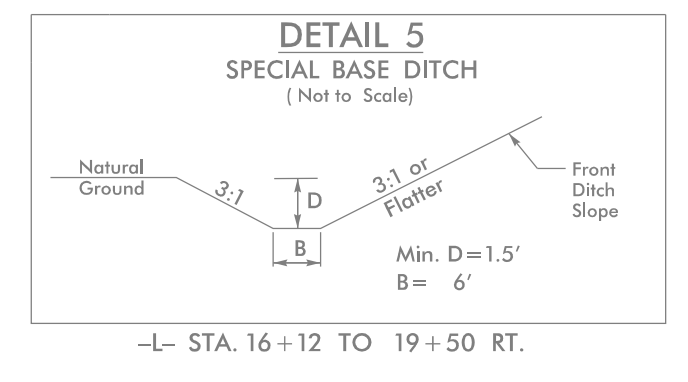
MATCH LINE -L- STA. 17+00
SEE SHEET NO. 4

END STATE PROJECT BP4.R021
-L- PT Sta. 21+04.30

6' SPECIAL LATERAL BASE DITCH
SEE DETAIL 5
DDE: EST. 217 CY

MICHAEL BROOKS PATE
DB 0023E PG 336

3



-L- STA. 16+12 TO 19+50 RT.

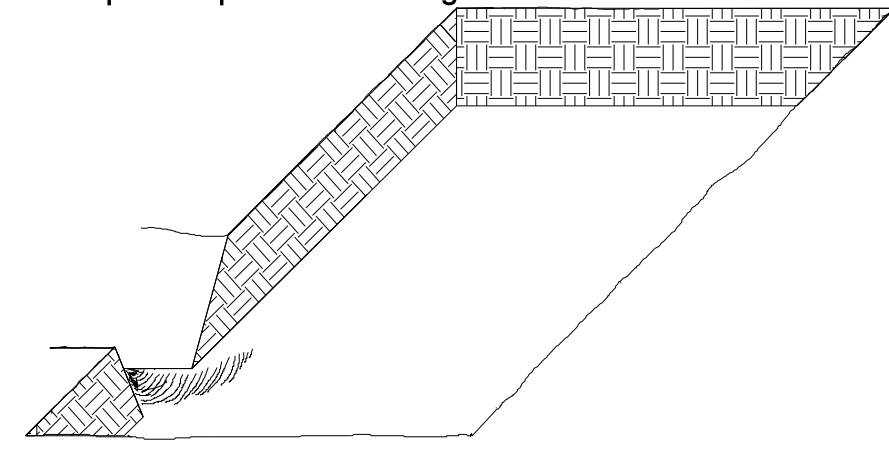
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP4.R021	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

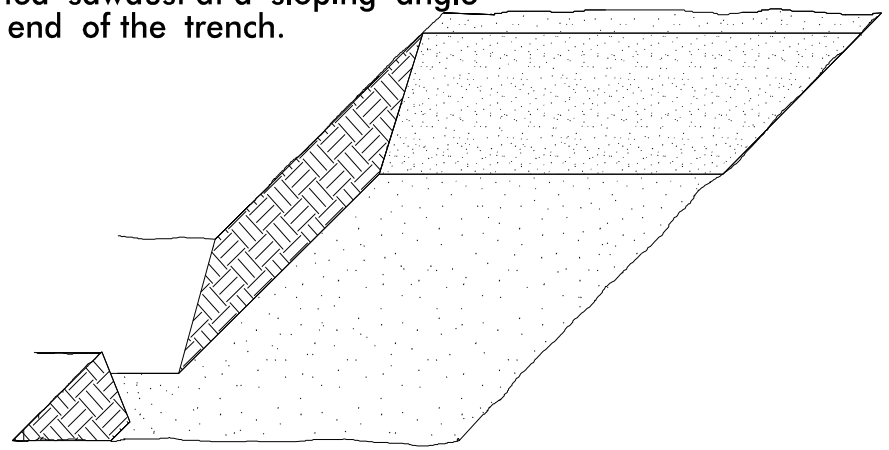
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

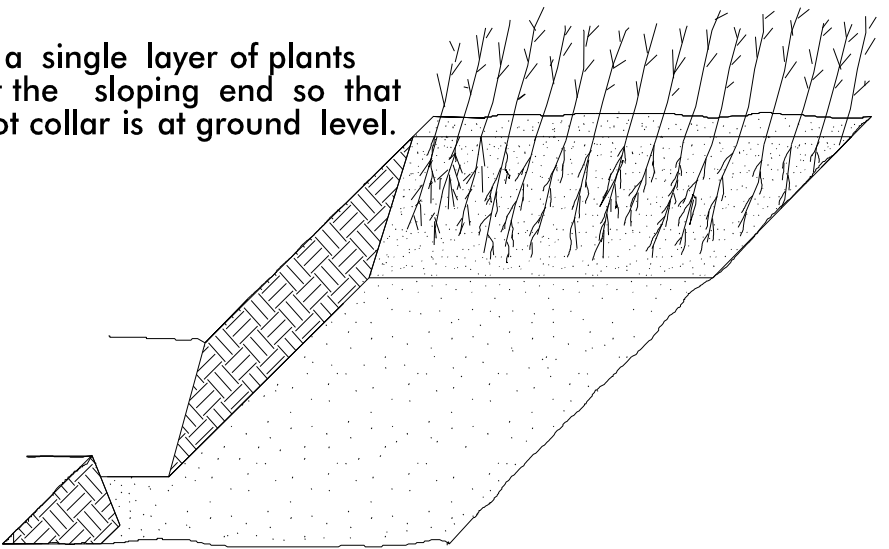
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



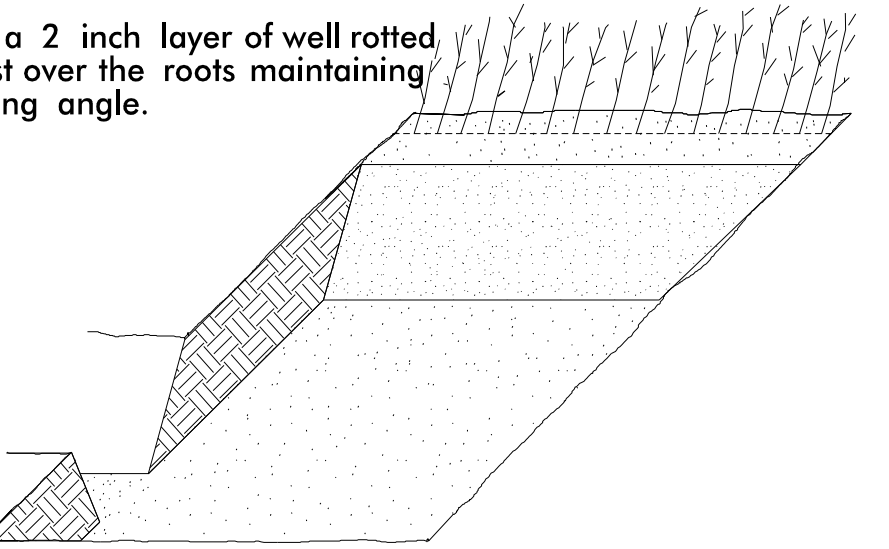
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

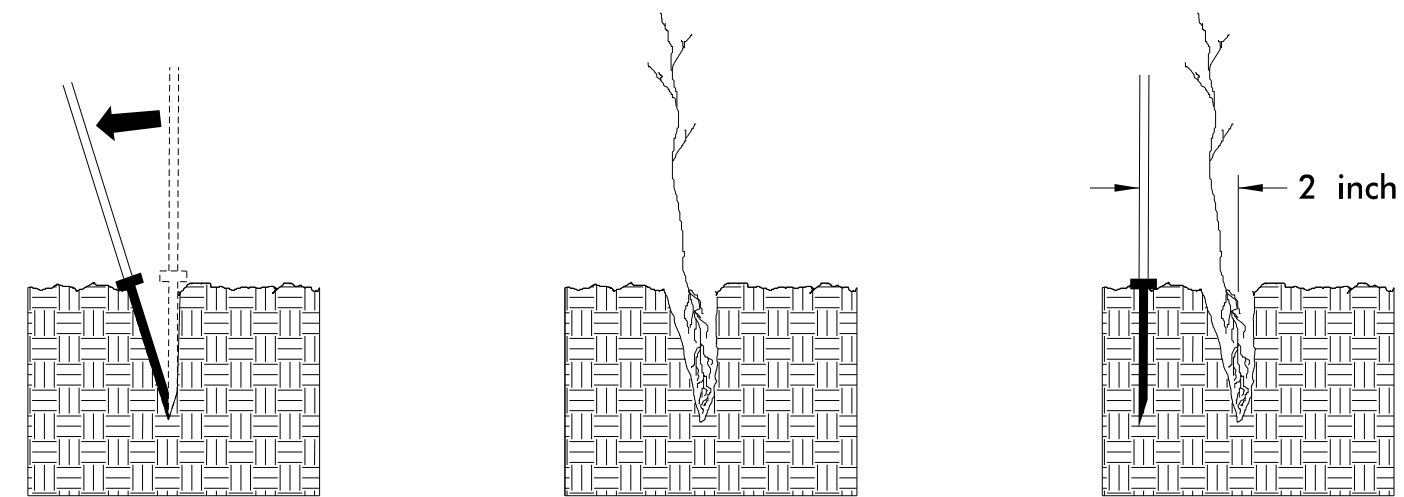


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

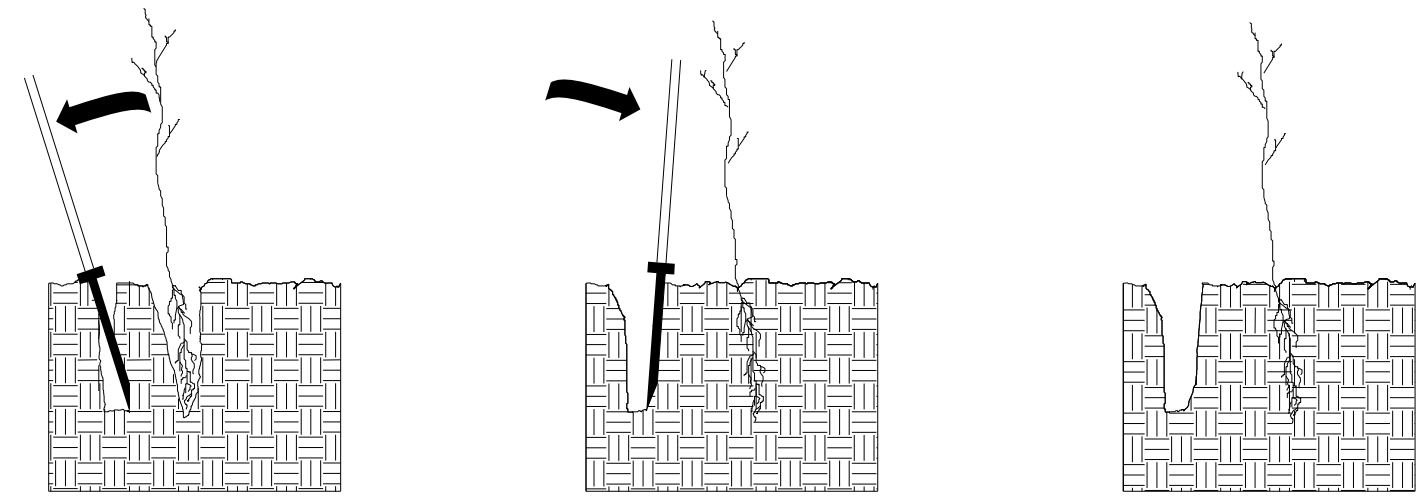


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



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



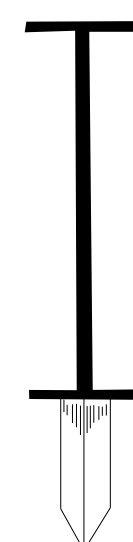
4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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



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



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

REFORESTATION

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

REFORESTATION

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

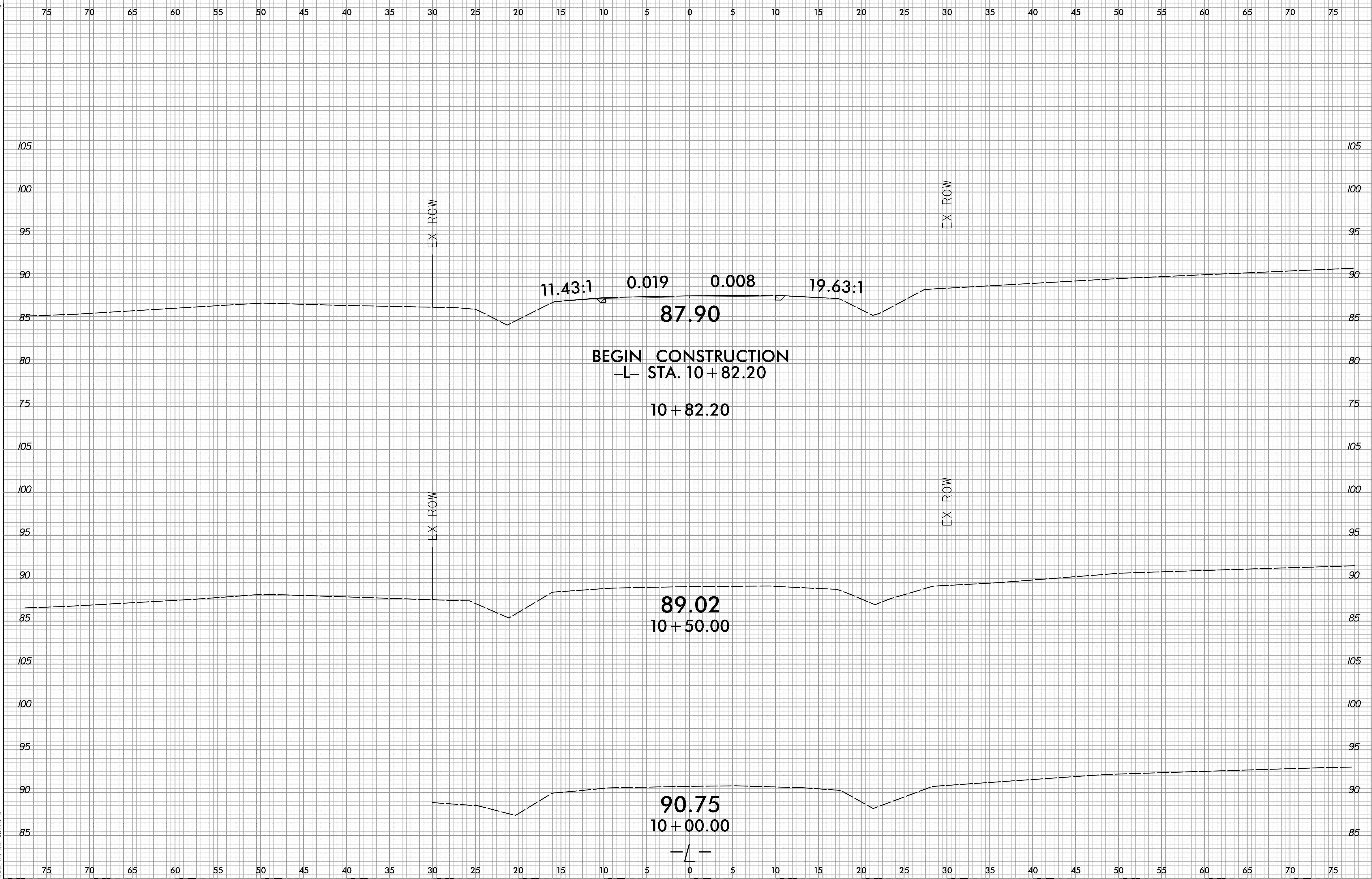
25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in – 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR
25%	NYSSA SYLVATICA	BLACK GUM	12 in – 18 in BR

REFORESTATION DETAIL SHEET

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

6/23/16

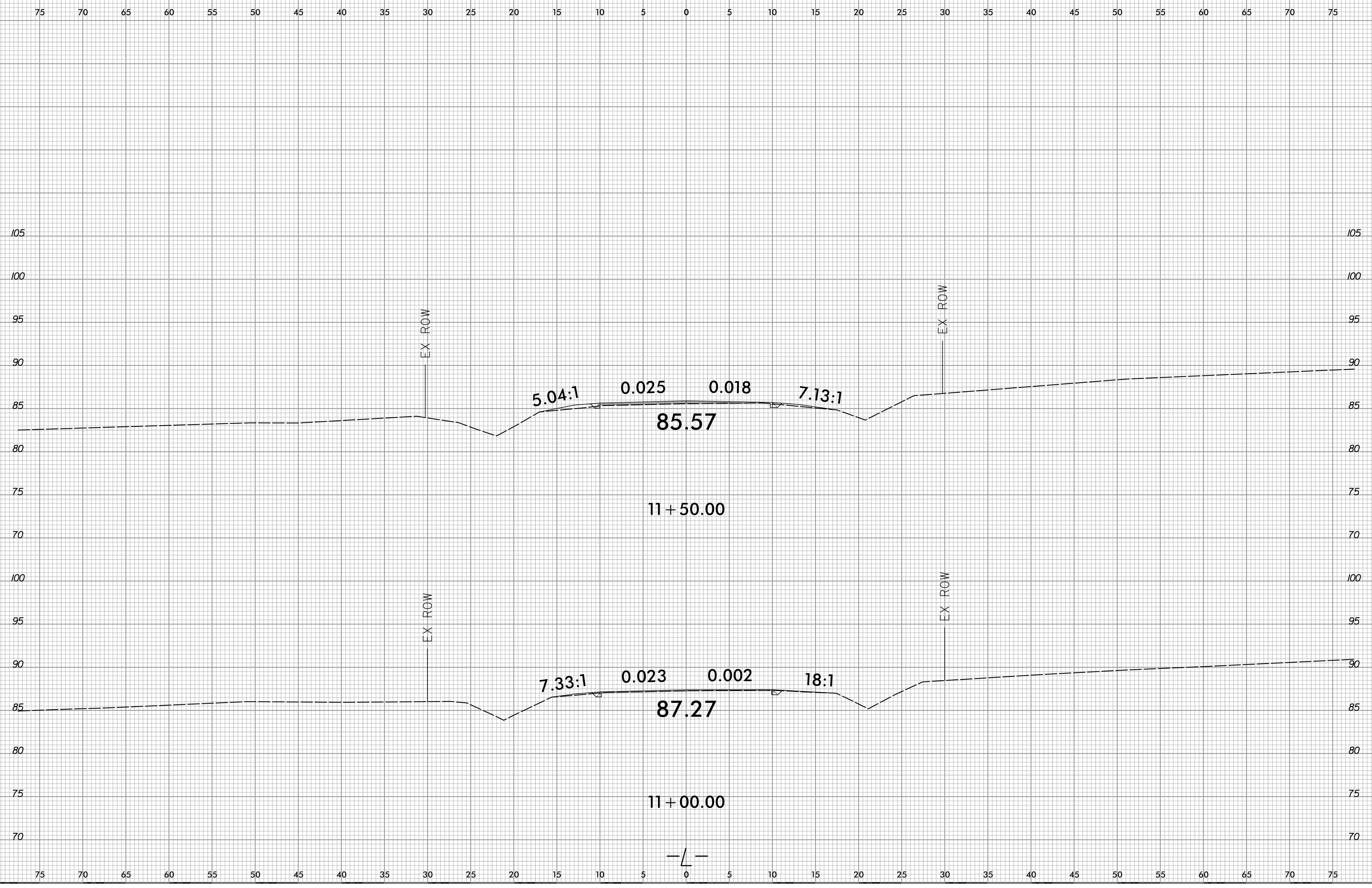
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	BP4.R021	X-2



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6/23/16

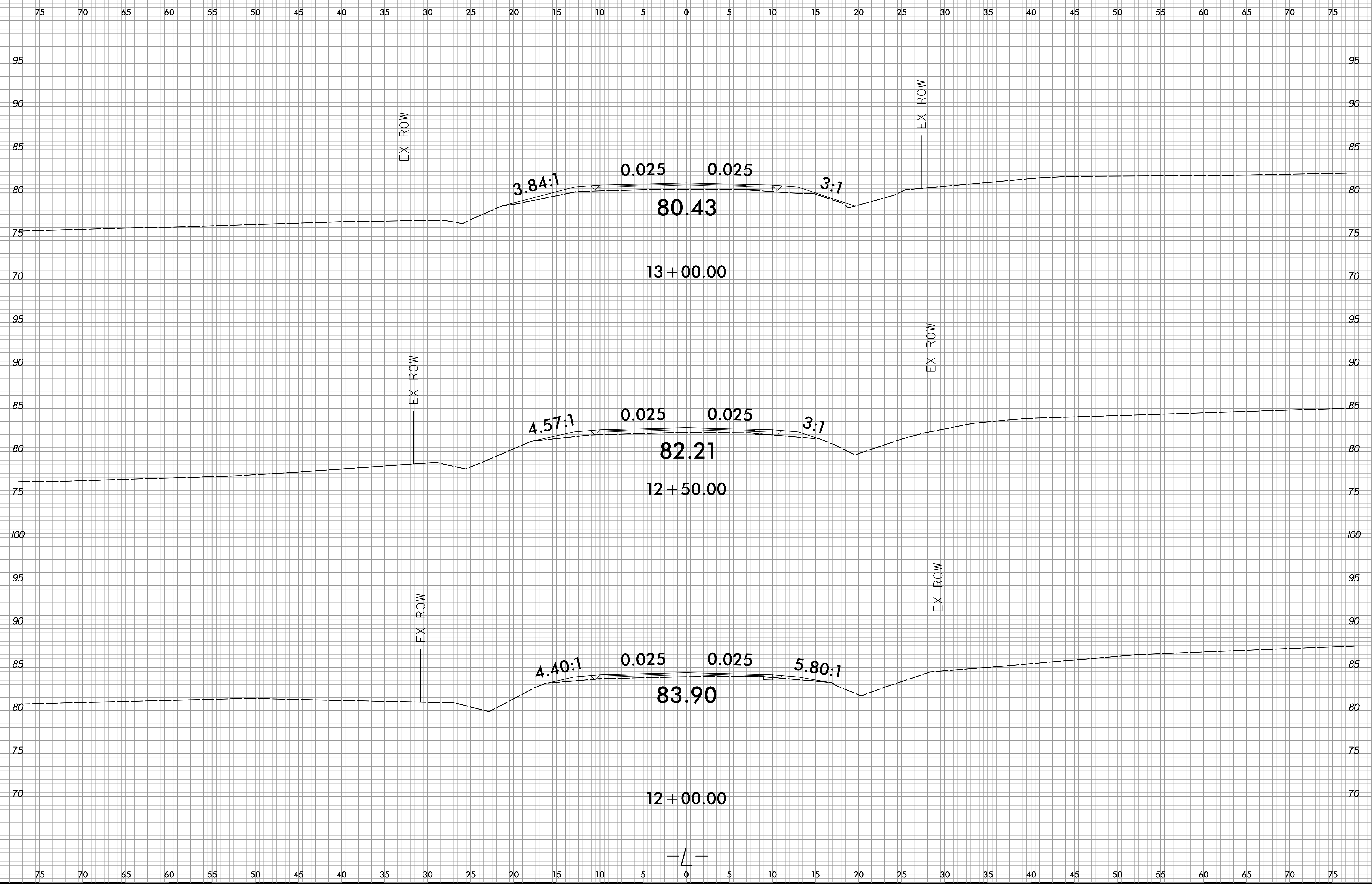
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	BP4.R021	X-3



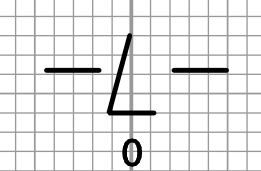
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6/23/16

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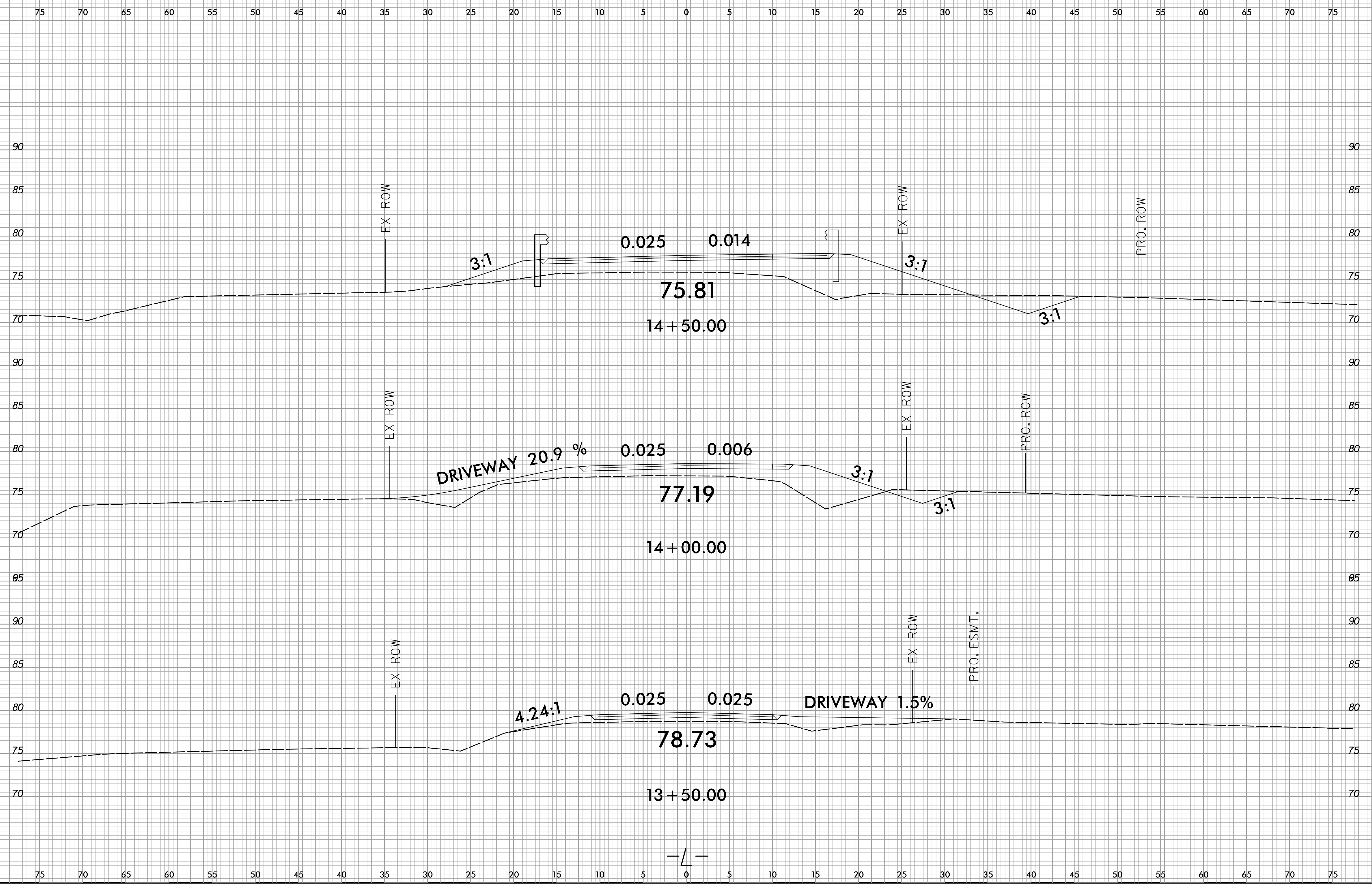


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6/23/16

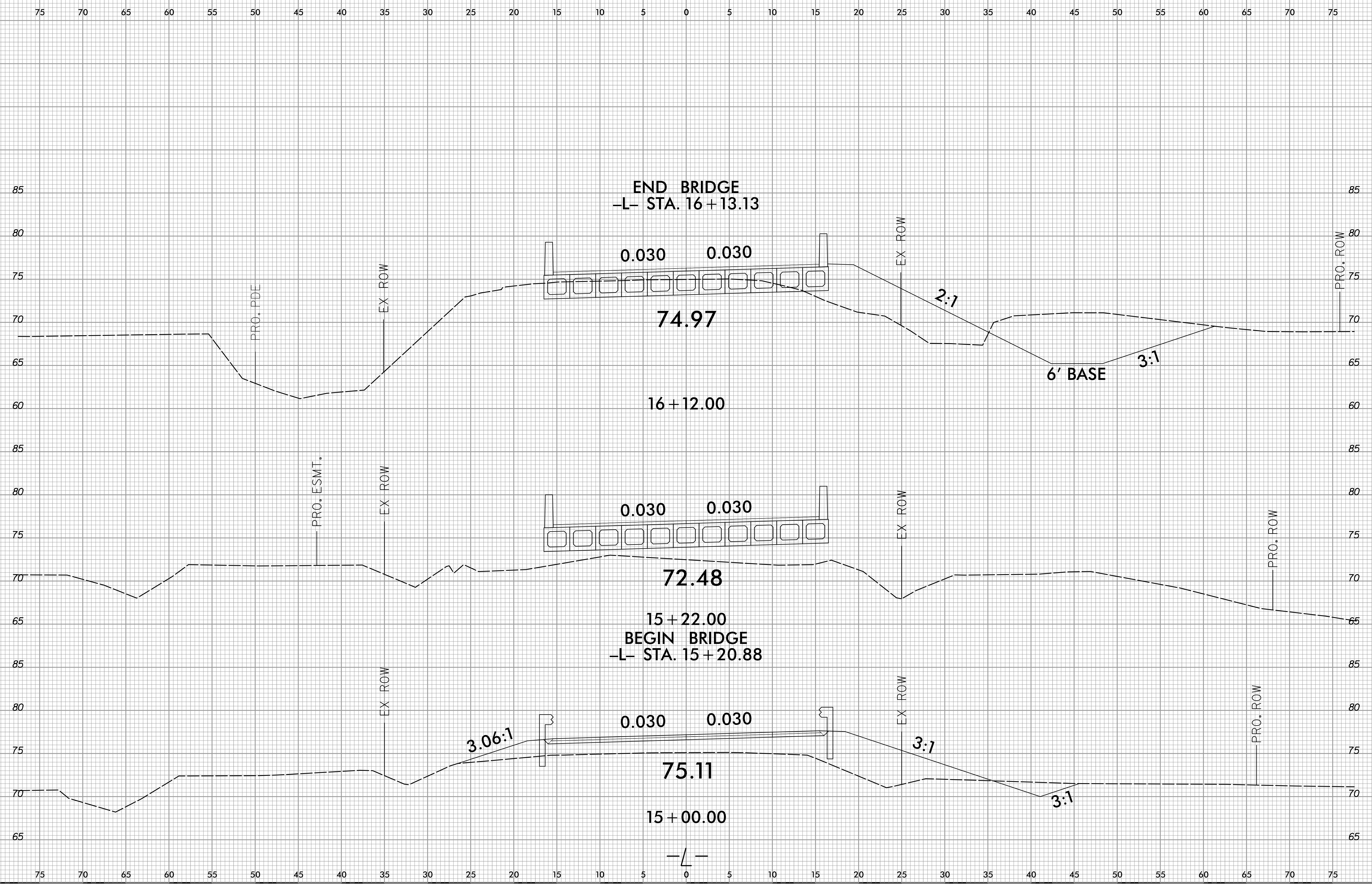
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6/23/16

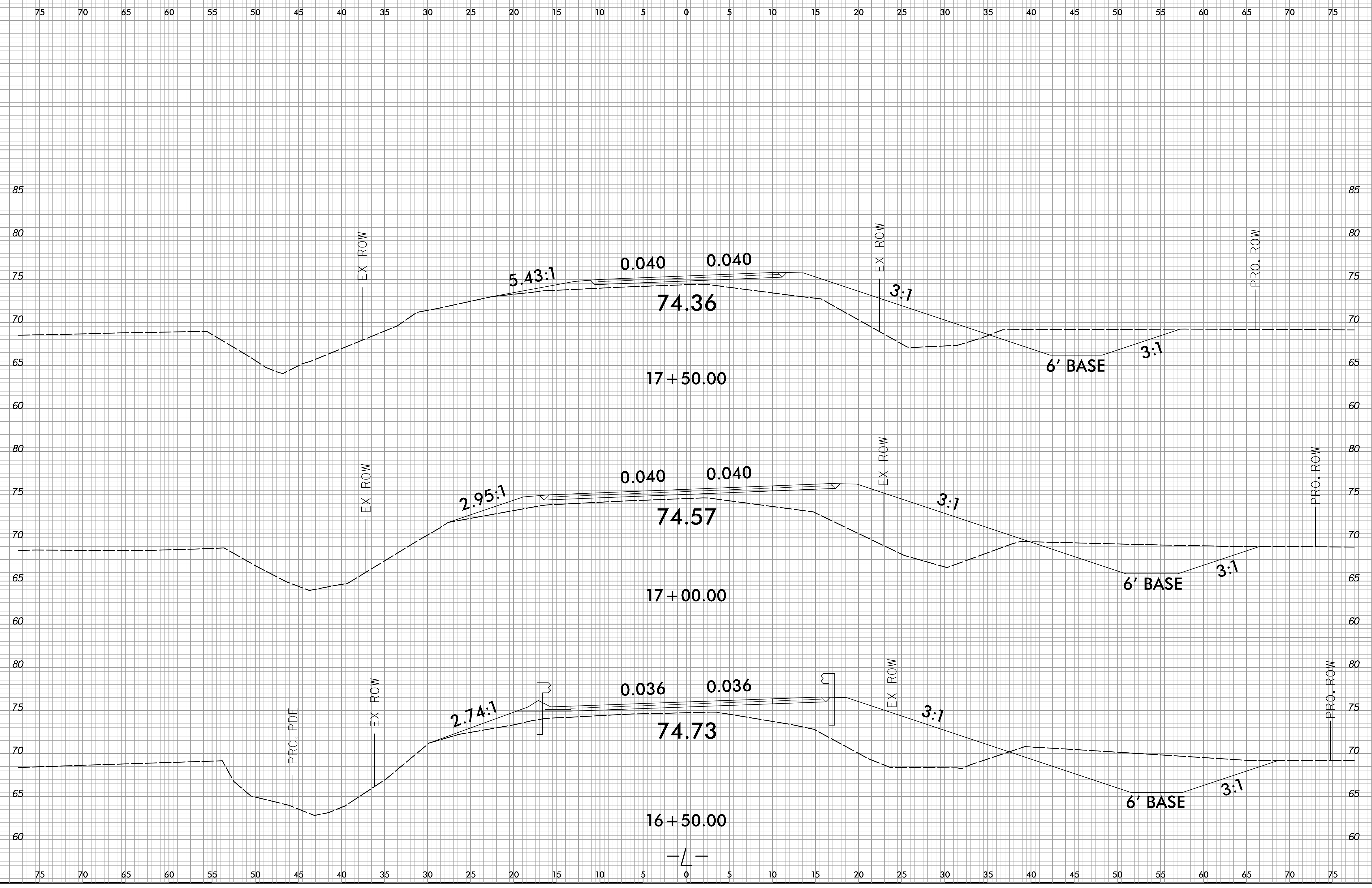
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6/23/16

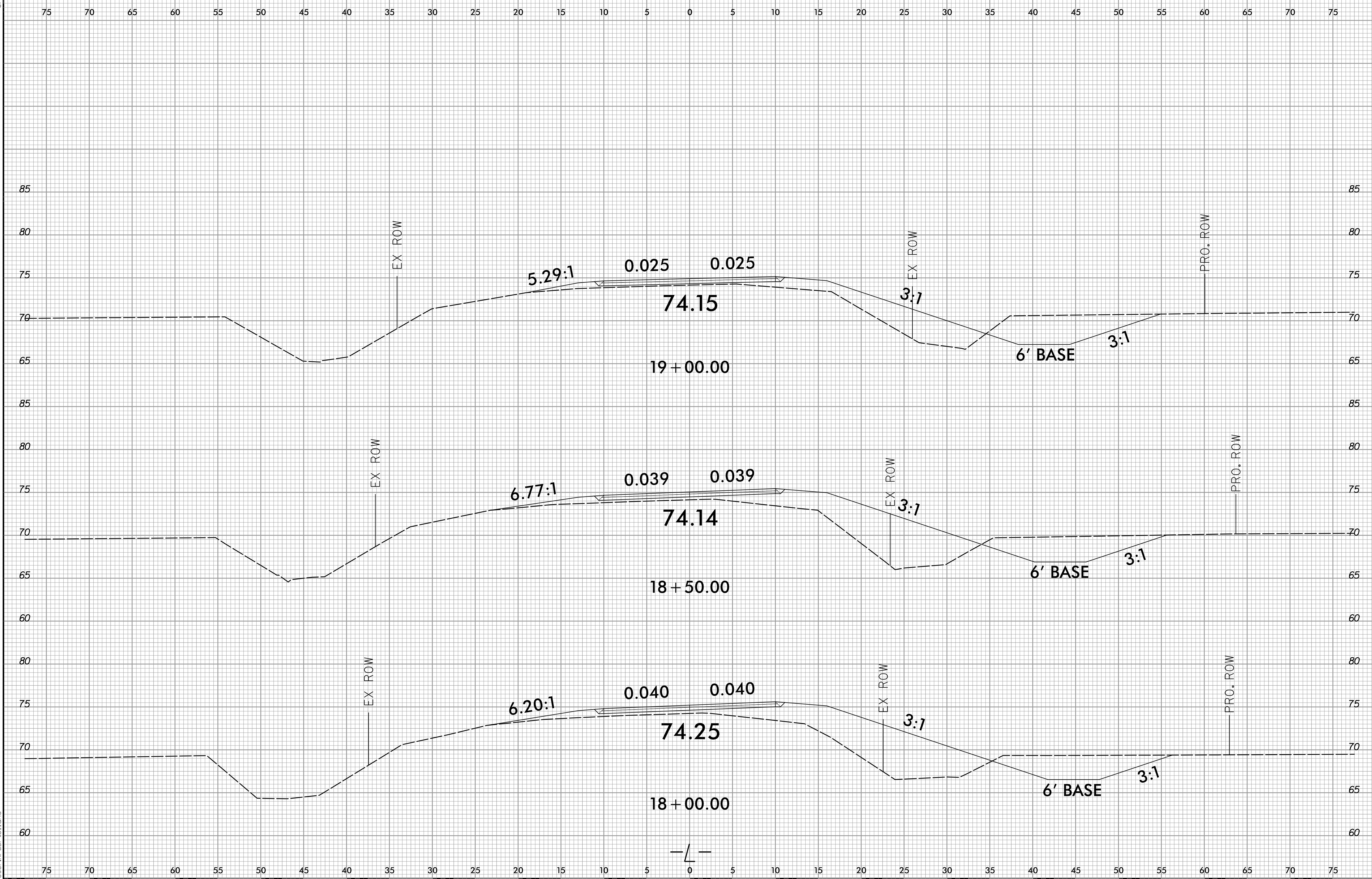
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	BP4.R021	X-7



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User:NPue-tojiano

6/23/16

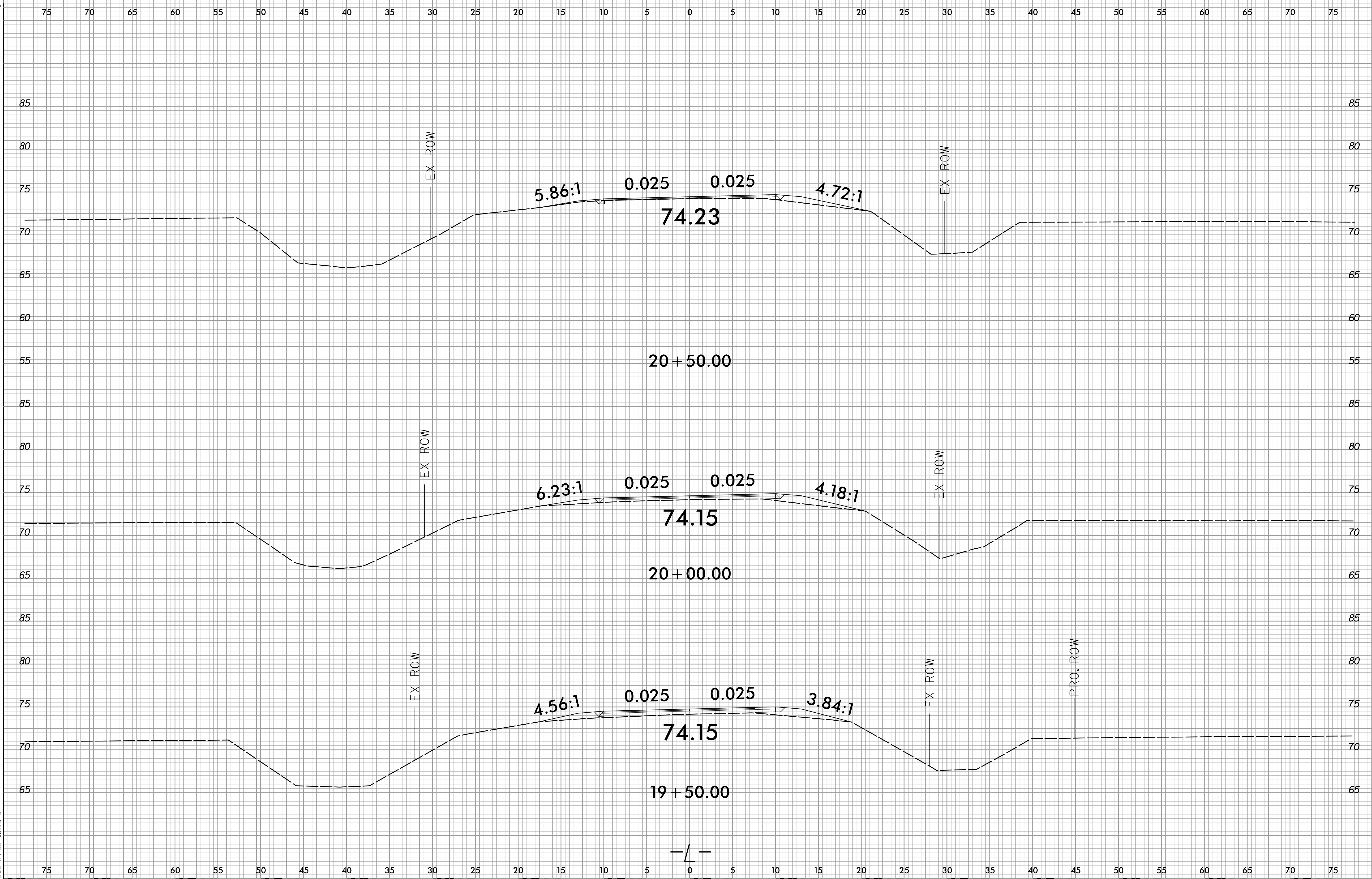
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	BP4.R021	X-8



2/1/2024
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User:NPue-tiliano

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP4.R021	X-9

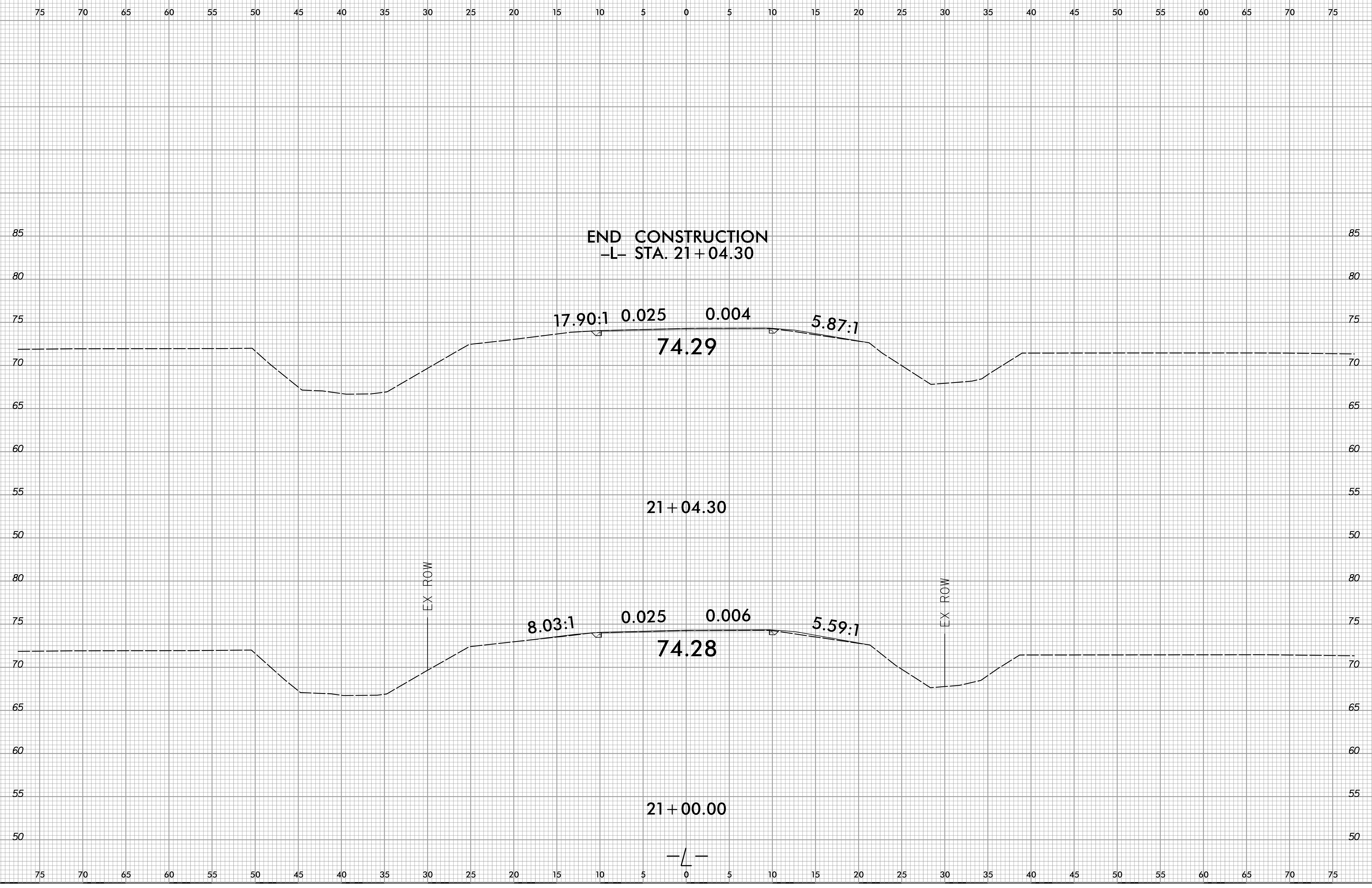


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User:NPue-tojiano

2/1/2024

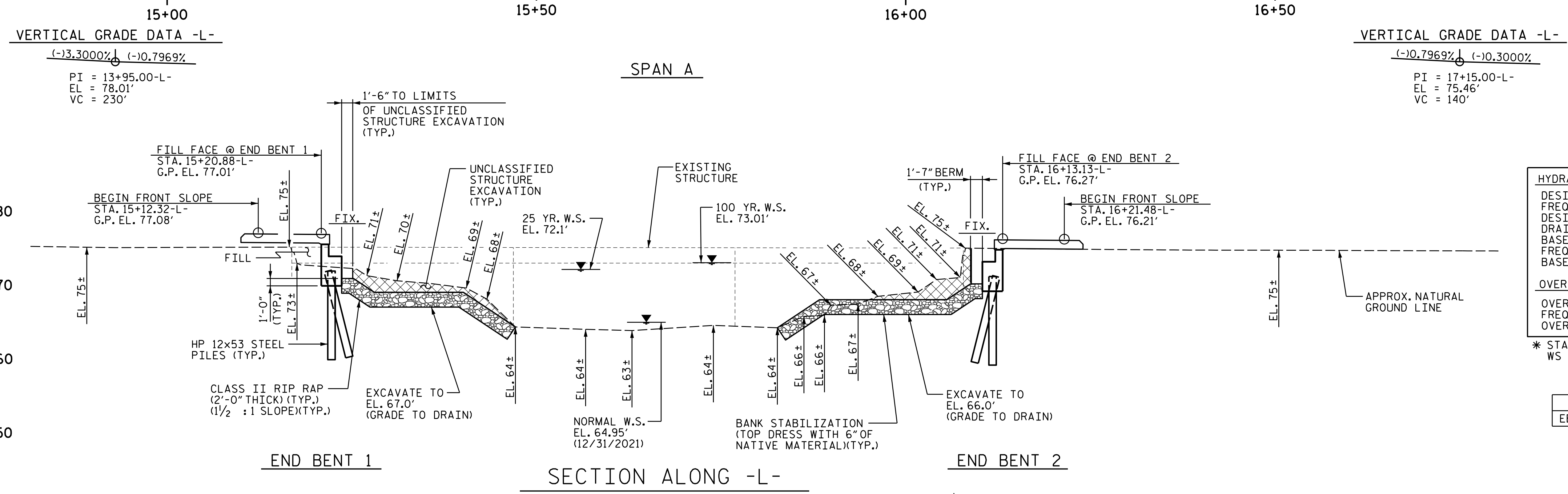
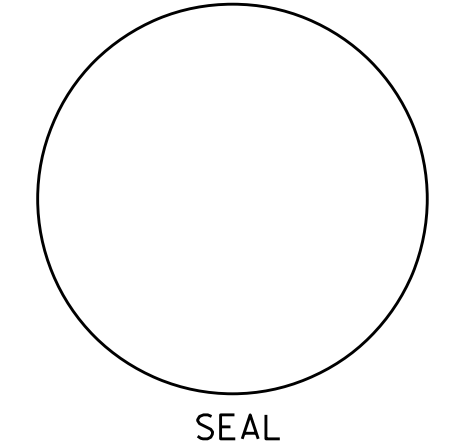
6/23/16

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	BP4.R021	X-10



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User:NPue-tiliano

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.



HYDRAULIC DATA:

DESIGN DISCHARGE	1,630 CFS
FREQUENCY OF DESIGN FLOOD	25 YRS.
DESIGN HIGH WATER ELEVATION	72.1'
DRAINAGE AREA	22 SQ. MI.
BASE DISCHARGE	2,430 CFS
FREQUENCY OF BASE DISCHARGE	100 YRS.
BASE HIGH WATER ELEVATION	73.01'

OVERTOPPING FLOOD DATA:

OVERTOPPING DISCHARGE	3,400+ CFS
FREQUENCY OF OVERTOPPING FLOOD	500+ YRS.
OVERTOPPING FLOOD ELEVATION	74.06*

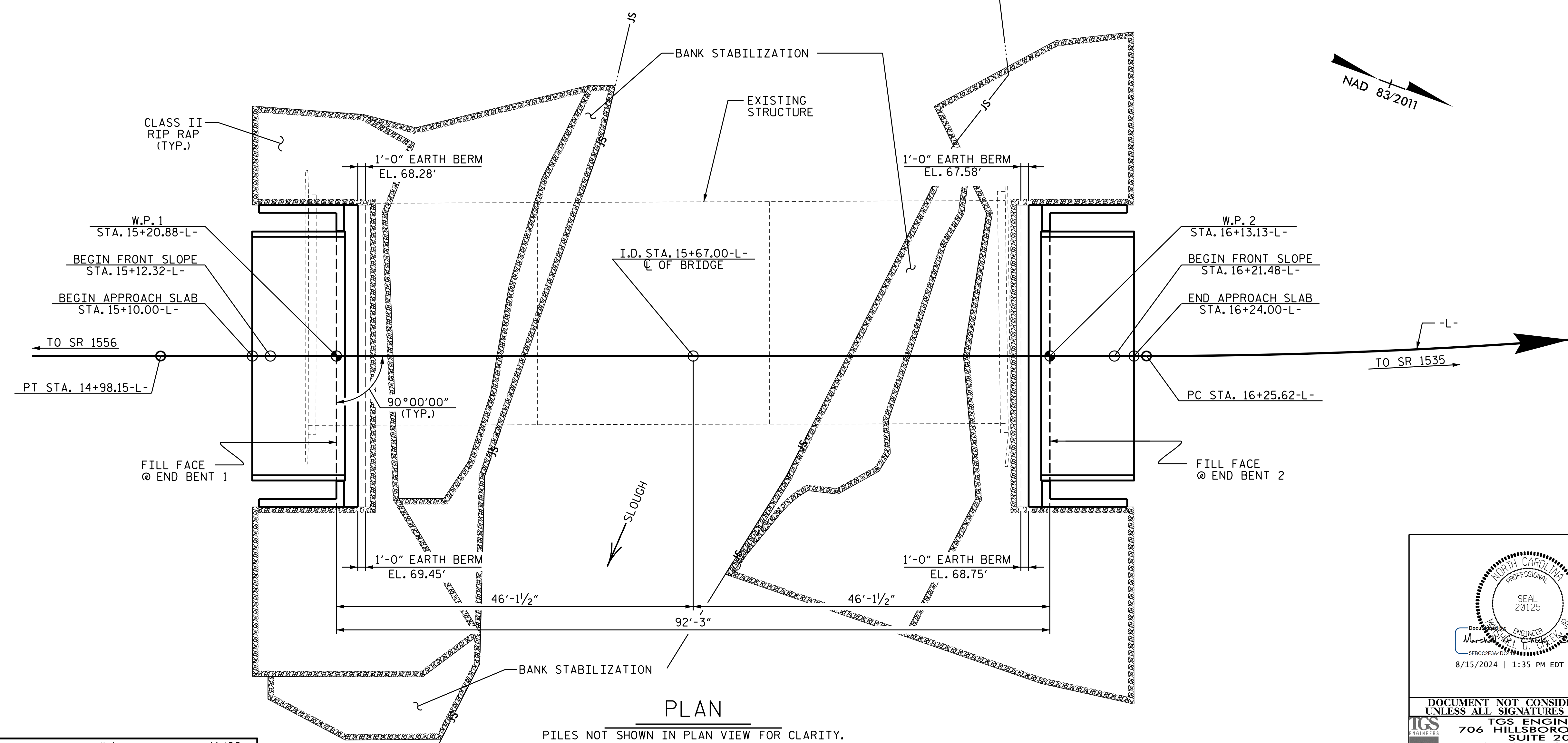
* STA. 21+00-L- EDGE OF PAVEMENT.
WS ELEV. TAKEN @ RS 2019.8

LOW CHORD ELEVATION

EB1	73.46'
EB2	72.75'

HORIZONTAL CURVE DATA

PI Sta 13+94.17-L-	PI Sta 17+54.23-L-
Δ = 1° 22' 39.2" (LT)	Δ = 20° 30' 24.6" (LT)
D = 0° 39' 44.6"	D = 8° 03' 30.5"
L = 207.97'	L = 254.48'
T = 103.99'	T = 128.61'
R = 8,650.00'	R = 711.00'



PROJECT NO. BP4.R021
 WAYNE COUNTY
 STATION: 15+67.00-L-
 SHEET 1 OF 5 REPLACES BRIDGE NO. 950025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 706 HILLSBOROUGH ST
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

8/15/2024 | 1:35 PM EDT

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

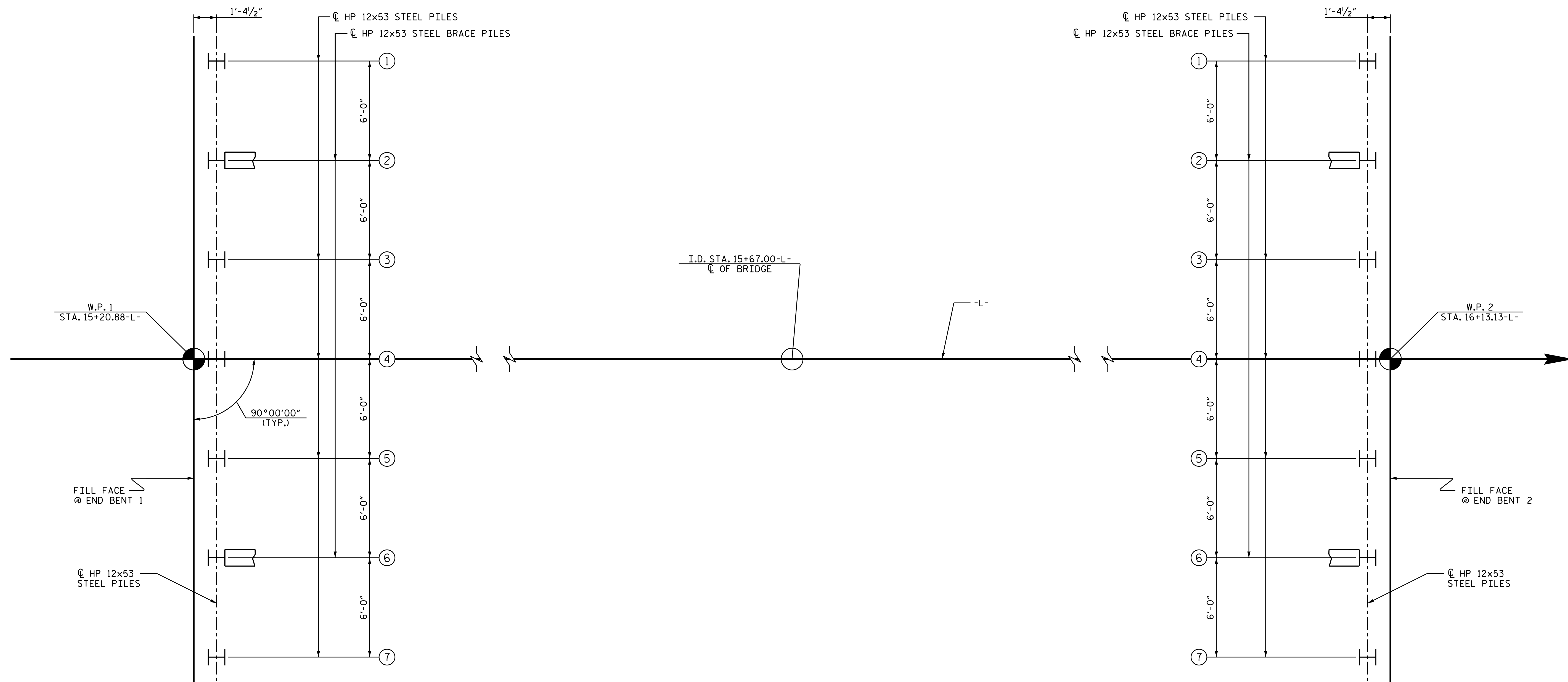
GENERAL DRAWING FOR BRIDGE OVER THE SLOUGH ON SR 1575 BETWEEN SR 1556 AND SR 1535

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

SHEET NO.	S-1
TOTAL SHEETS	18

DRAWN BY : JLA DATE : 11/22
 CHECKED BY : MGC DATE : 1/23

PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.



FOUNDATION LAYOUT

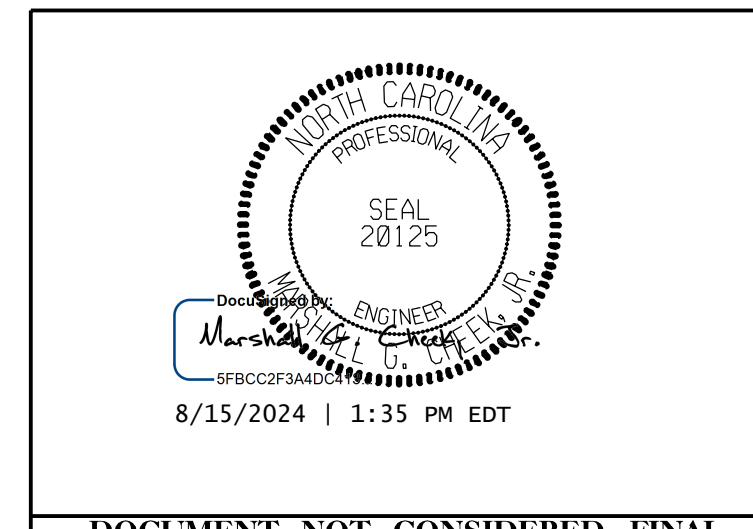
DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES. ORIENT PILES AS SHOWN.

NOTES

1. FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT AND MODIFIED BRIDGE APPROACH FILLS, IF APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT 1 AND END BENT 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. BP4.R021
WAYNE COUNTY
 STATION: 15+67.00-L-

SHEET 2 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 THE SLOUGH
 ON SR 1575 BETWEEN
 SR 1556 AND SR 1535

DOCUMENT NOT CONSIDERED FINAL
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TGS ENGINEERS
 706 HILLSBOROUGH ST
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-2
2			4			TOTAL SHEETS 18

DRAWN BY : JLA DATE : 11/22
 CHECKED BY : MGC DATE : 1/23

SUMMARY OF PILE INFORMATION/INSTALLATION

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. Pile(s) *-* (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling For Piles *			Drilled-in-Piles		
					Min. Pile Tip (Tip No Higher Than) Elev. FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Exc Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile LIN FT	Pile Exc In Soil per Pile LIN FT
End Bent 1, Piles 1-7	105	SEE END BENT SHEETS	50										
End Bent 2, Piles 1-7	105		55										

* Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.

**RDR =
$$\frac{\text{Factored Resistance} + \text{Factored Downdrag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}} + \text{Nominal Downdrag Resistance} + \frac{\text{Nominal Scour Resistance}}{\text{Scour Resistance Factor}}$$

SUMMARY OF DPT / PILE ORDER LENGTHS

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

Dynamic Pile Testing (DPT)				Pile Order Lengths	
End Bent/ Bent No.	DPT Required? YES OR MAYBE	DPT Test Pile Length FT	Total DPT Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis * EST or DPT
End Bent 1, Piles 1-7	MAYBE	55	1		
End Bent 2, Piles 1-7	MAYBE	60			

* EST = Pile Order Lengths from estimated pile lengths; DPT = Pile order lengths based on Dynamic Pile Testing. For groups of end bents/bents with pile order lengths based on Dynamic Pile Testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the DPT.

PILE DESIGN INFORMATION

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. Pile(s) *-* (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load * per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-7	104			0.60			
End Bent 2, Piles 1-7	104			0.60			

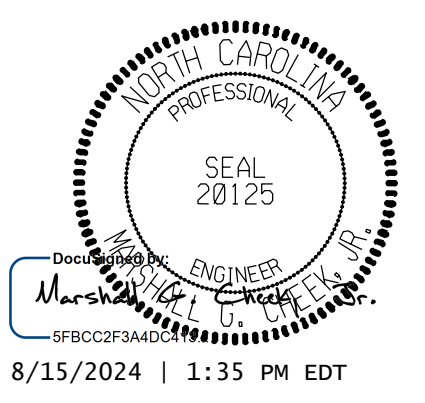
* Factored Dead Load is factored weight of pile above the ground.

PROJECT NO. BP4.R021
WAYNE COUNTY
 STATION: 15+67.00-L-

NOTES:

- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Thein Tun Zan P.E., seal 030943) on 11/18/2022.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a required Driving Resistance.
- The Engineer will determine the need for Dynamic Pile Testing, when DPTs may be required.

DRAWN BY : JLA DATE : 1/23
 CHECKED BY : MGC DATE : 1/23



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UNLESS ALL SIGNATURES COMPLETED

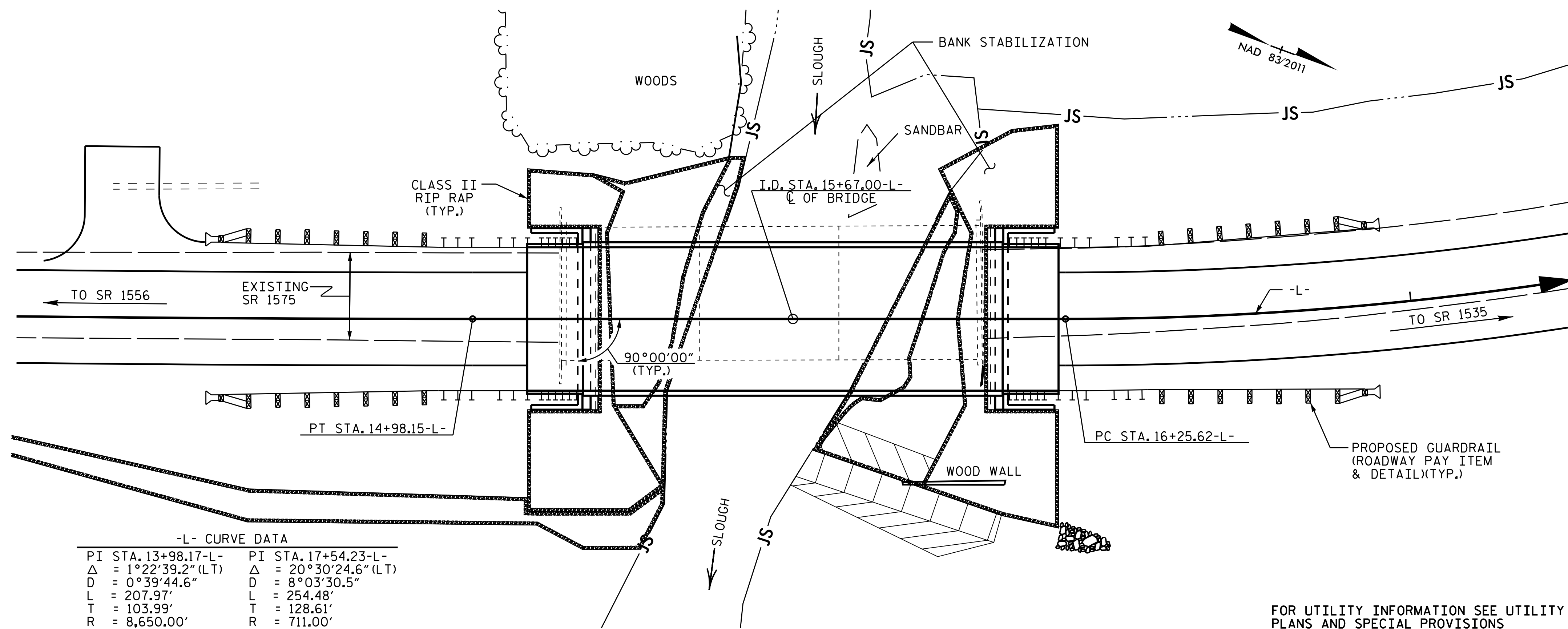
TGS ENGINEERS
706 HILLSBOROUGH ST
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER THE SLOUGH ON SR 1575 BETWEEN SR 1556 AND SR 1535

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-3
2			4			TOTAL SHEETS 18

BM#1: BENCH TIE NAIL IN 18" TREE, STA. 15+10.82-L-, 61.67' LT, ELEV. 71.95'



-L- CURVE DATA

PI STA. 13+98.17-L-	PI STA. 17+54.23-L-
$\Delta = 1^{\circ}22'39.2''$ (LT)	$\Delta = 20^{\circ}30'24.6''$ (LT)
D = 0°39'44.6"	D = 8°03'30.5"
L = 207.97'	L = 254.48'
T = 103.99'	T = 128.61'
R = 8,650.00'	R = 711.00'

FOR UTILITY INFORMATION SEE UTILITY PLANS AND SPECIAL PROVISIONS

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (3 @ 30'-0") WITH A SUPERSTRUCTURE CONSISTING OF A PCPS CONCRETE DECK WITH A 4 1/2" ASPHALT WEARING SURFACE AND A CLEAR ROADWAY WIDTH OF 29'-0" AND A SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE CAP ON TIMBER PILES AT THE END BENTS AND BENTS AND LOCATED AT THE SAME SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE INTEGRITY OF THE BRIDGE DETERIORATE, THIS LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET 1 OF 5 SHALL BE EXCAVATED FOR A DISTANCE OF 25' LEFT & 20' RIGHT OF -L- AT END BENT 1 AND 20' LEFT AND 30' RIGHT OF -L- 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.

FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. BP4.R021
WAYNE COUNTY
 STATION: 15+67.00-L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 20125
 MORGAN G. CHESTNUT
 8/15/2024 | 1:35 PM EDT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 706 HILLSBOROUGH ST
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 RALEIGH, NC 27603
 PH (919) 773-8887
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 THE SLOUGH
 ON SR 1575 BETWEEN
 SR 1556 AND SR 1535

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			18

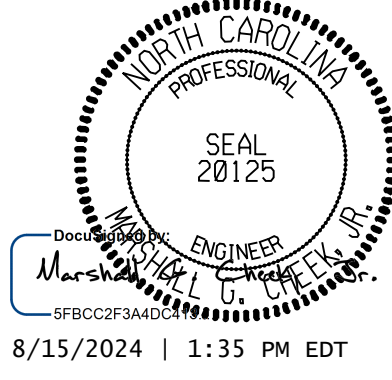
DRAWN BY : JLA DATE : 12/22
 CHECKED BY : MGC DATE : 1/23

TOTAL BILL OF MATERIAL

ITEM	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	HP 12 x 53 STEEL PILES		DYNAMIC PILE TESTING	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 2'-9" PRESTRESSED CONCRETE BOX BEAMS		EPOXY COATING
	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE	LUMP SUM	LUMP SUM			LUMP SUM						180.00				11	990.00	
END BENT 1			LUMP SUM	25.5		3,576	7	7	350			325	365				LUMP SUM
END BENT 2			LUMP SUM	25.5		3,576	7	7	385			290	325				LUMP SUM
TOTALS	LUMP SUM	LUMP SUM	LUMP SUM	51.0	LUMP SUM	7,152	14	14	735	1	180.00	615	690	LUMP SUM	11	990.00	LUMP SUM

PROJECT NO. BP4.R021
WAYNE COUNTY
 STATION: 15+67.00-L-

SHEET 5 OF 5

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH GENERAL DRAWING FOR BRIDGE OVER THE SLOUGH ON SR 1575 BETWEEN SR 1556 AND SR 1535																		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	REVISIONS																		
TGS ENGINEERS 706 HILLSBOROUGH ST SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NO.</th> <th>BY:</th> <th>DATE:</th> <th>NO.</th> <th>BY:</th> <th>DATE:</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> <td>3</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> </tr> </tbody> </table>	NO.	BY:	DATE:	NO.	BY:	DATE:	1			3			2			4		
NO.	BY:	DATE:	NO.	BY:	DATE:														
1			3																
2			4																
DRAWN BY : JLA DATE : 12/22 CHECKED BY : MGC DATE : 1/23	SHEET NO. S-5 TOTAL SHEETS 18																		

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE								SERVICE III LIMIT STATE					COMMENT NUMBER					
						MOMENT				SHEAR				MOMENT										
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)		RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(InV)	N/A	1	1.109	--	1.75	0.272	1.47	90'	EL	44.25	0.493	1.26	90'	EL	4.425	0.80	0.272	1.11	90'	EL	44.25		
	HL-93(OPr)	N/A	--	1.633	--	1.35	0.272	1.9	90'	EL	44.25	0.493	1.63	90'	EL	4.425	N/A	--	--	--	--	--		
	HS-20(InV)	36.000	2	1.507	54.255	1.75	0.272	1.99	90'	EL	44.25	0.493	1.65	90'	EL	4.425	0.80	0.272	1.51	90'	EL	44.25		
	HS-20(OPr)	36.000	--	2.14	77.039	1.35	0.272	2.59	90'	EL	44.25	0.493	2.14	90'	EL	4.425	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.519	47.501	1.4	0.272	5.82	90'	EL	44.25	0.493	5.05	90'	EL	4.425	0.80	0.272	3.52	90'	EL	44.25	
		SNGARBS2	20.000	--	2.572	51.43	1.4	0.272	4.25	90'	EL	44.25	0.493	3.55	90'	EL	4.425	0.80	0.272	2.57	90'	EL	44.25	
		SNAGRIS2	22.000	--	2.415	53.122	1.4	0.272	4	90'	EL	44.25	0.493	3.27	90'	EL	4.425	0.80	0.272	2.41	90'	EL	44.25	
		SNCOTTS3	27.250	--	1.749	47.674	1.4	0.272	2.89	90'	EL	44.25	0.493	2.52	90'	EL	4.425	0.80	0.272	1.75	90'	EL	44.25	
		SNAGGRS4	34.925	--	1.443	50.381	1.4	0.272	2.39	90'	EL	44.25	0.493	2.06	90'	EL	4.425	0.80	0.272	1.44	90'	EL	44.25	
		SNS5A	35.550	--	1.412	50.195	1.4	0.272	2.34	90'	EL	44.25	0.493	2.07	90'	EL	4.425	0.80	0.272	1.41	90'	EL	44.25	
		SNS6A	39.950	--	1.287	51.435	1.4	0.272	2.13	90'	EL	44.25	0.493	1.88	90'	EL	4.425	0.80	0.272	1.29	90'	EL	44.25	
	SNS7B	42.000	--	1.226	51.483	1.4	0.272	2.03	90'	EL	44.25	0.493	1.83	90'	EL	4.425	0.80	0.272	1.23	90'	EL	44.25		
	TTST	TNAGRIT3	33.000	--	1.568	51.733	1.4	0.272	2.59	90'	EL	44.25	0.493	2.24	90'	EL	4.425	0.80	0.272	1.57	90'	EL	44.25	
		TNT4A	33.075	--	1.572	52.007	1.4	0.272	2.6	90'	EL	44.25	0.493	2.2	90'	EL	4.425	0.80	0.272	1.57	90'	EL	44.25	
		TNT6A	41.600	--	1.278	53.17	1.4	0.272	2.11	90'	EL	44.25	0.493	1.92	90'	EL	4.425	0.80	0.272	1.28	90'	EL	44.25	
		TNT7A	42.000	--	1.281	53.782	1.4	0.272	2.12	90'	EL	44.25	0.493	1.89	90'	EL	4.425	0.80	0.272	1.28	90'	EL	44.25	
		TNT7B	42.000	--	1.315	55.229	1.4	0.272	2.18	90'	EL	44.25	0.493	1.79	90'	EL	4.425	0.80	0.272	1.31	90'	EL	44.25	
		TNAGRIT4	43.000	--	1.258	54.101	1.4	0.272	2.08	90'	EL	44.25	0.493	1.74	90'	EL	4.425	0.80	0.272	1.26	90'	EL	44.25	
TNAGT5A		45.000	--	1.19	53.537	1.4	0.272	1.97	90'	EL	44.25	0.493	1.71	90'	EL	4.425	0.80	0.272	1.19	90'	EL	44.25		
TNAGT5B	45.000	3	1.178	53.027	1.4	0.272	1.95	90'	EL	44.25	0.493	1.66	90'	EL	4.425	0.80	0.272	1.18	90'	EL	44.25			
EMERGENCY VEHICLE (EV)	EV2	28.750	--	2.296	66.005	1.3	0.272	3.25	90'	EL	44.25	0.493	2.49	90'	EL	4.425	0.80	0.272	2.30	90'	EL	44.25		
	EV3	43.000	4	1.510	64.924	1.3	0.272	2.14	90'	EL	44.25	0.493	1.67	90'	EL	4.425	0.80	0.272	1.51	90'	EL	44.25		

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)

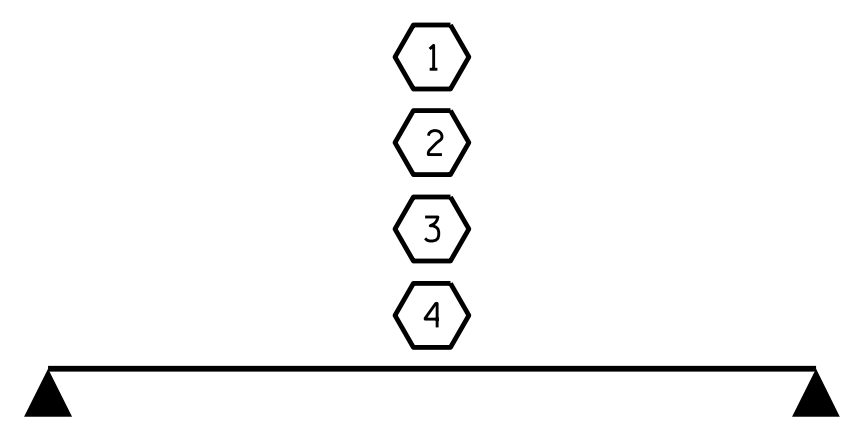
3 LEGAL LOAD RATING **

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
 SPAN A

PROJECT NO. BP4.R021
WAYNE COUNTY
 STATION: 15+67.00-L-

ASSEMBLED BY :	ZCS	DATE :	7/23
CHECKED BY :	MGC	DATE :	7/23
DRAWN BY :	TMG	REV. 06/23	AKP/AAI
CHECKED BY :	AAC		

NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL
20125
8/15/2024 | 1:35 PM EDT

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706 HILLSBOROUGH ST
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

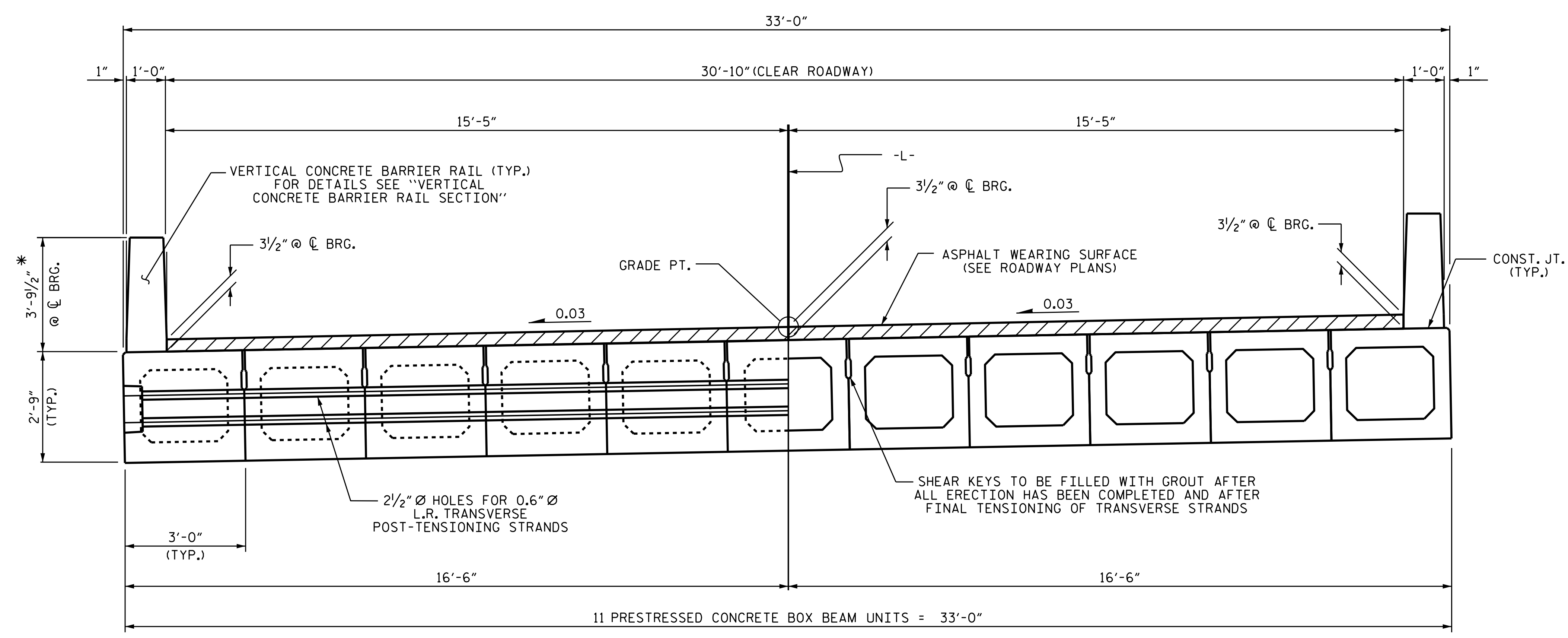
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
90' BOX BEAM UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			18

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 BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.
- FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.
- RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.
- THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM 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.
- THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.
- ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.
- PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.
- APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.
- VERTICAL 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 VERTICAL 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.
- THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.
- 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.

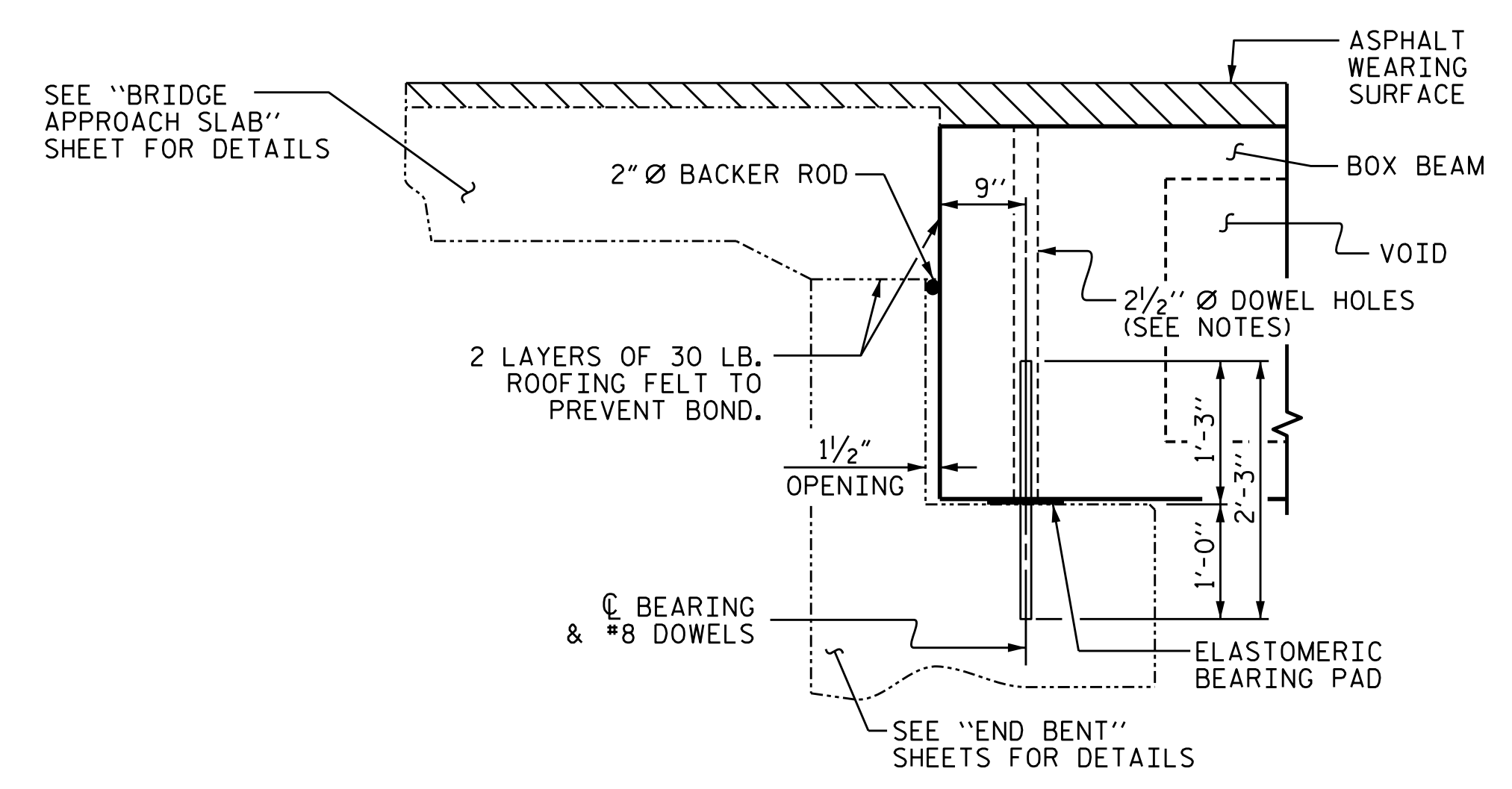


HALF SECTION AT INTERMEDIATE DIAPHRAGMS **HALF SECTION THROUGH VOIDS**

TYPICAL SECTION

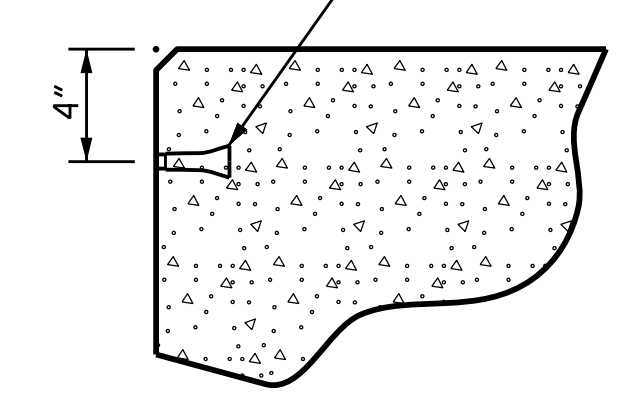
* THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END



SECTION AT END BENT

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL

PROJECT NO. BP4.R021
WAYNE COUNTY
 STATION: 15+67.00-L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

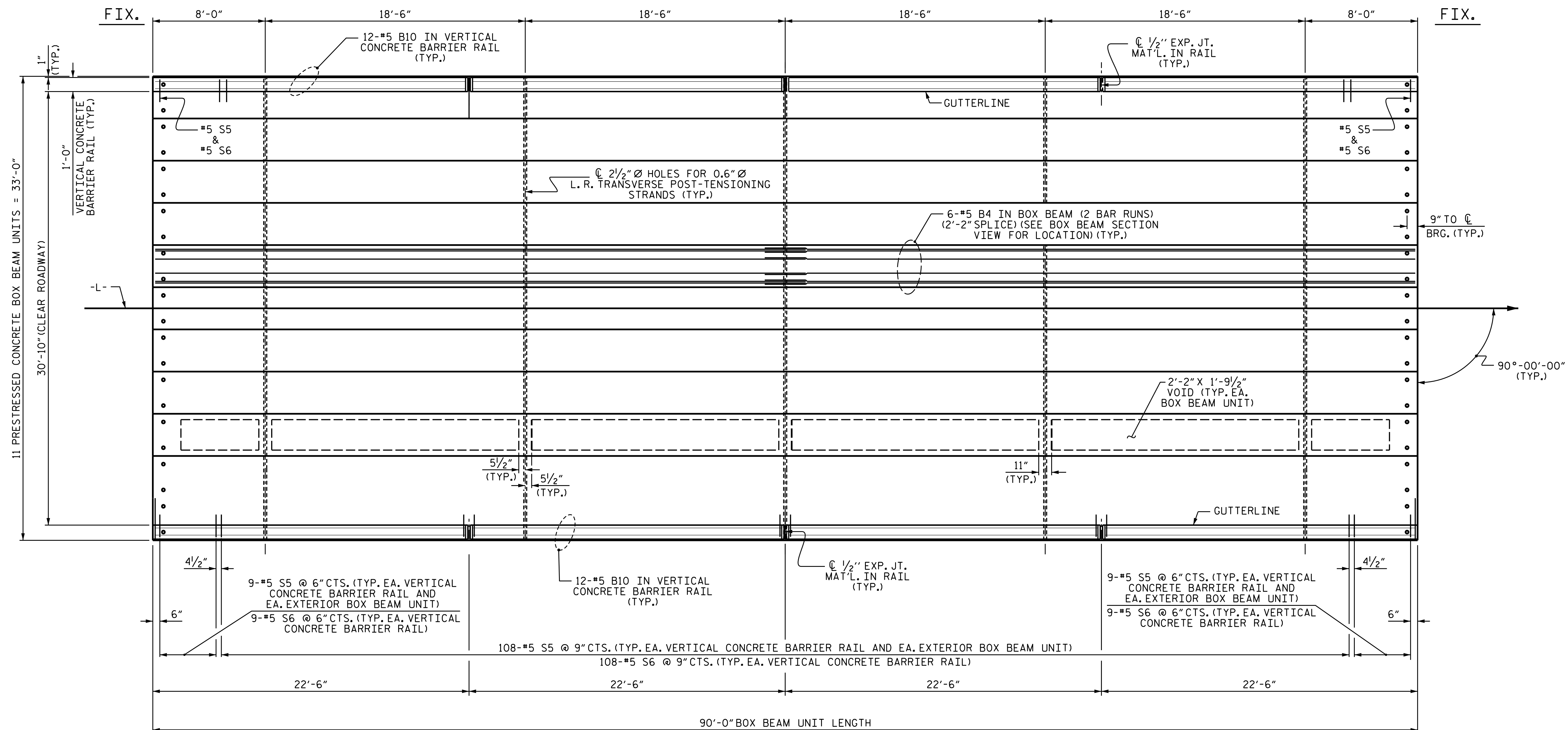
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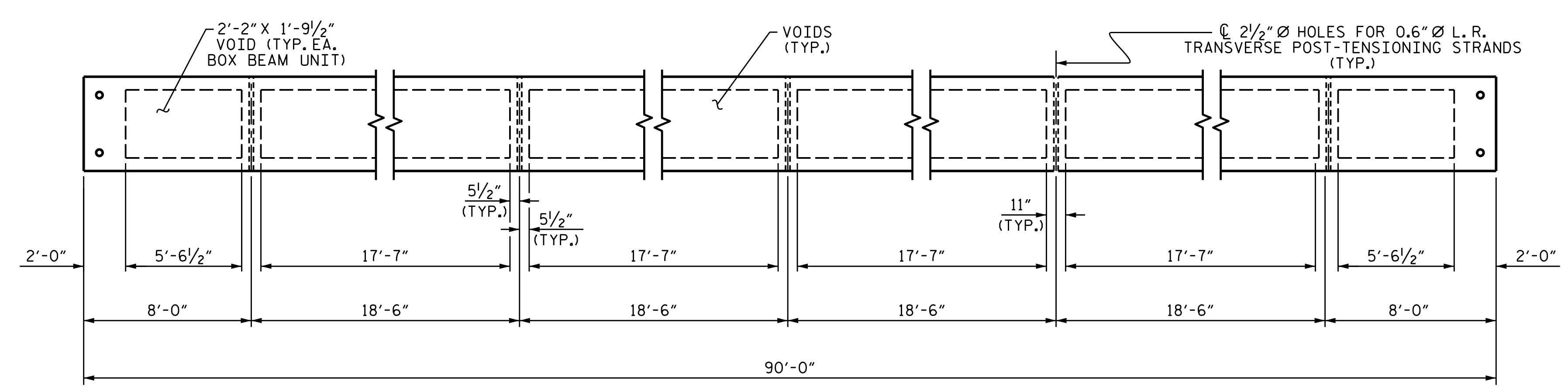
TGS ENGINEERS
 706 HILLSBOROUGH ST
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			18

ASSEMBLED BY :	JLA	DATE :	12/22
CHECKED BY :	MGC	DATE :	1/23
DRAWN BY :	DGE	8/10	REV. 8/14
CHECKED BY :	TMG	11/11	MAA/TMG



PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. BP4.R021
WAYNE COUNTY
 STATION: 15+67.00-L-

SHEET 2 OF 5

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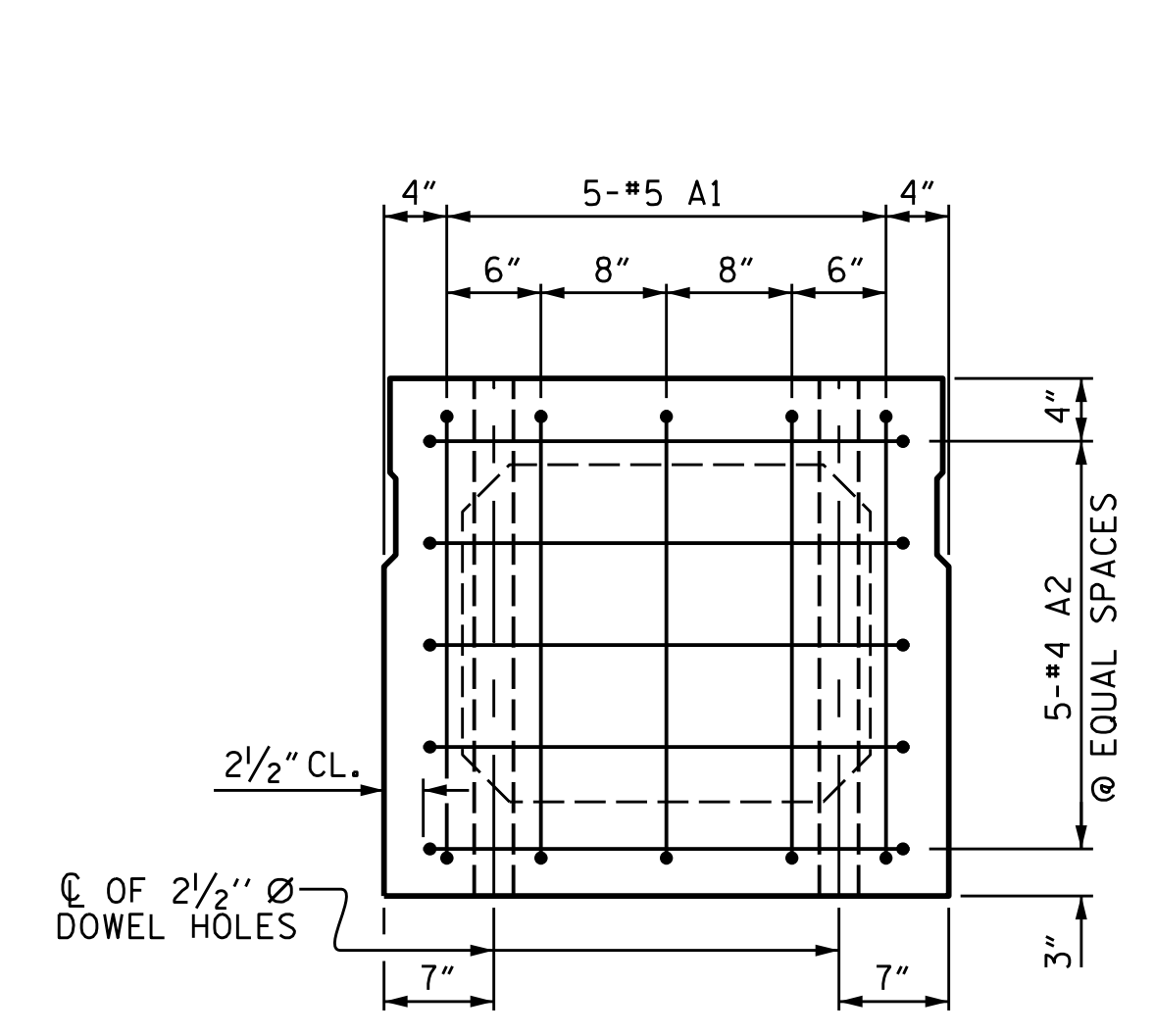
8/15/2024 | 1:35 PM EDT

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 PLAN OF 90' UNIT
 30'-10" CLEAR ROADWAY
 90° SKEW

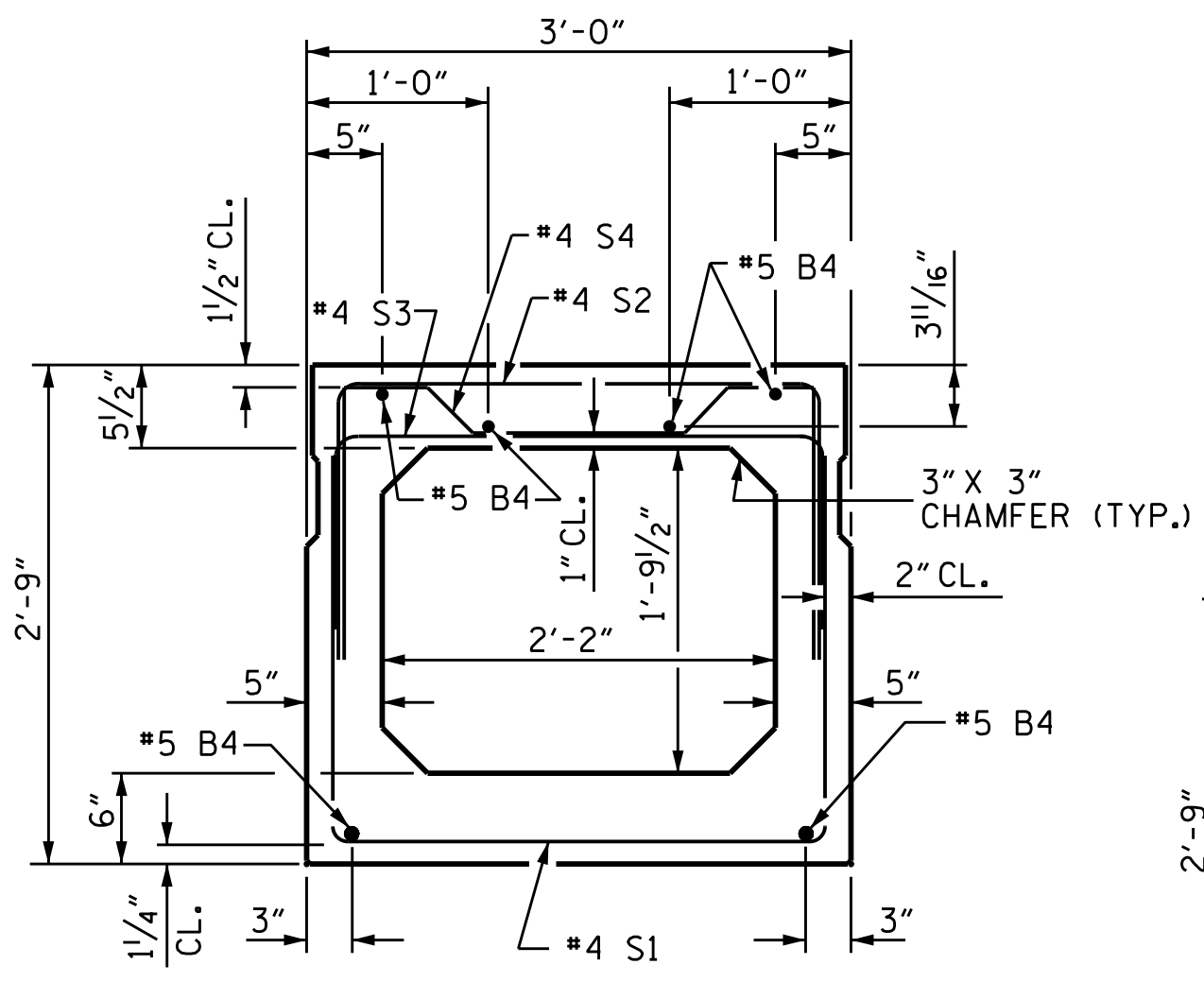
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			18

ASSEMBLED BY : JLA DATE : 12/22
 CHECKED BY : MGC DATE : 1/23
 DRAWN BY : DGE 8/10 REV. 8/14 MAA/TMG
 CHECKED BY : TMG 11/11



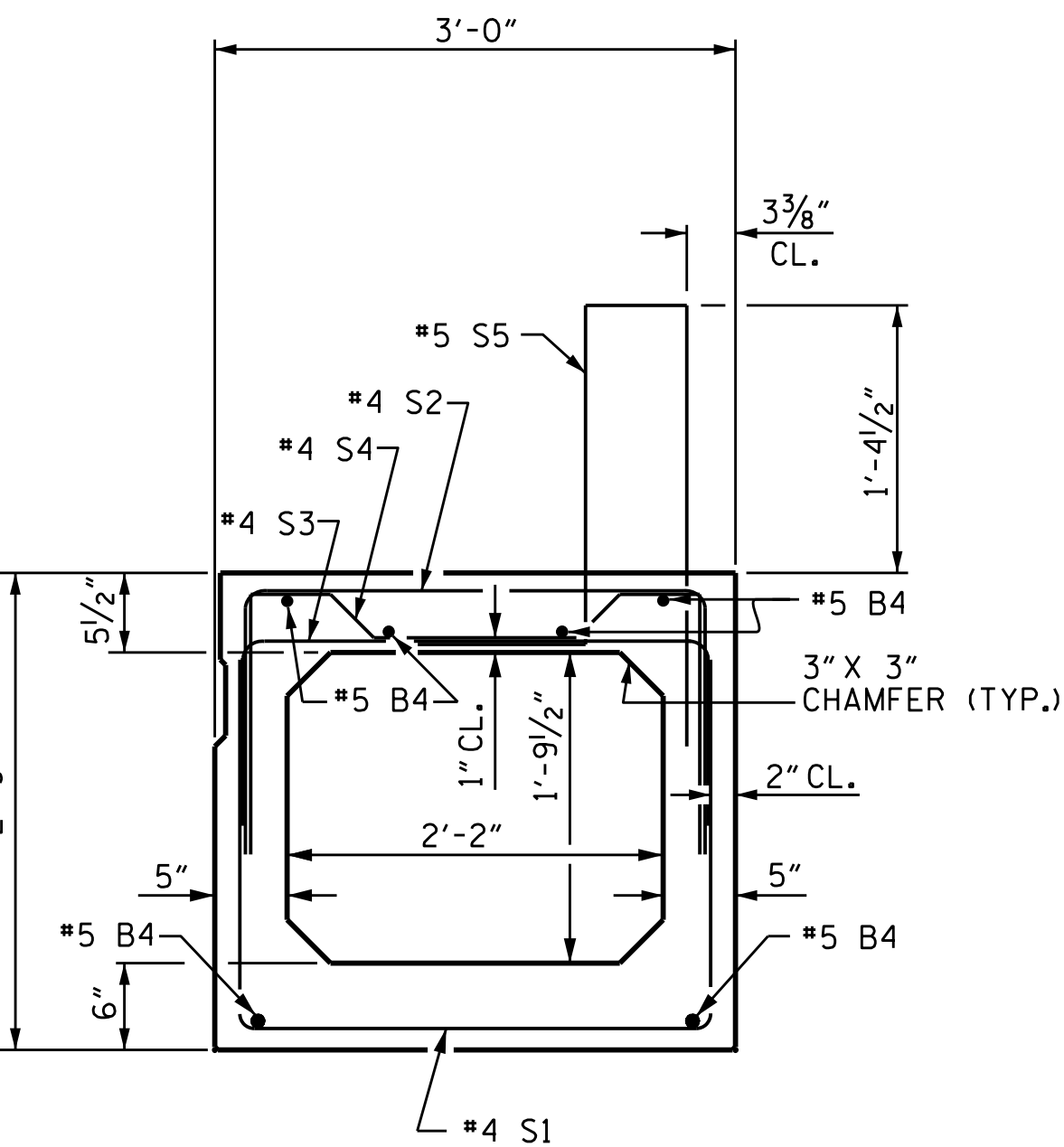
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION, STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION

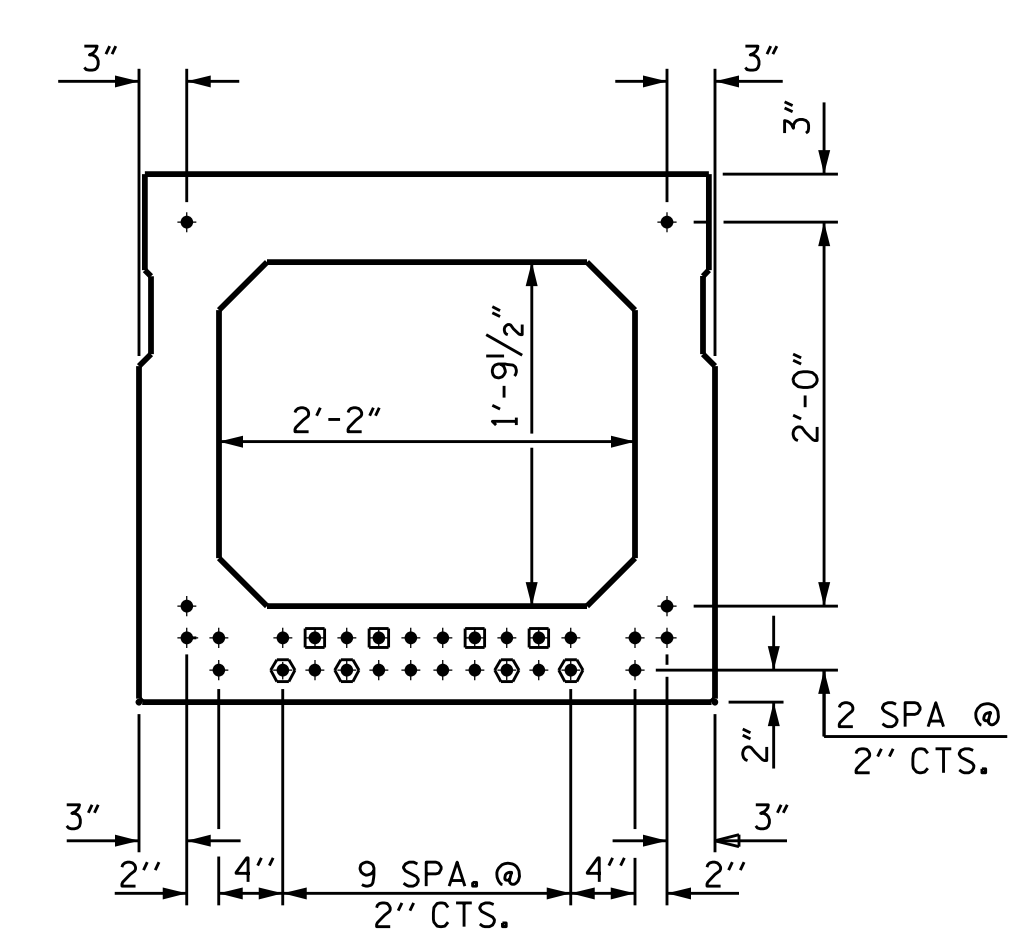
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

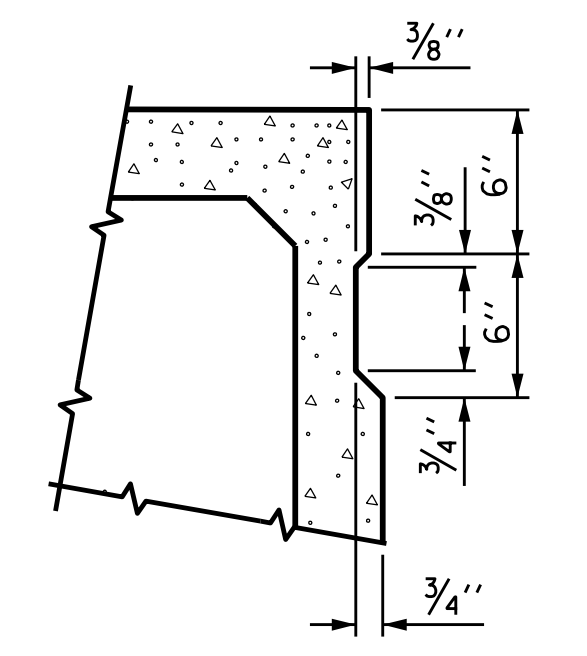
(30 STRANDS REQUIRED)

DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◻ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

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



SHEAR KEY DETAIL

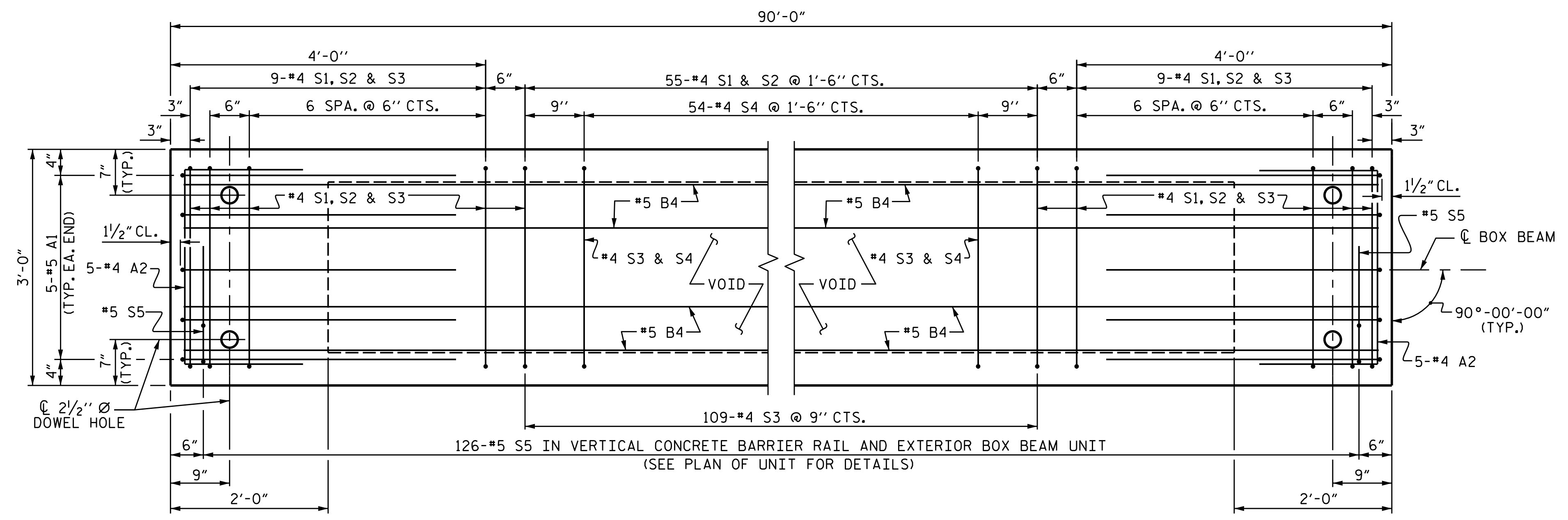
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

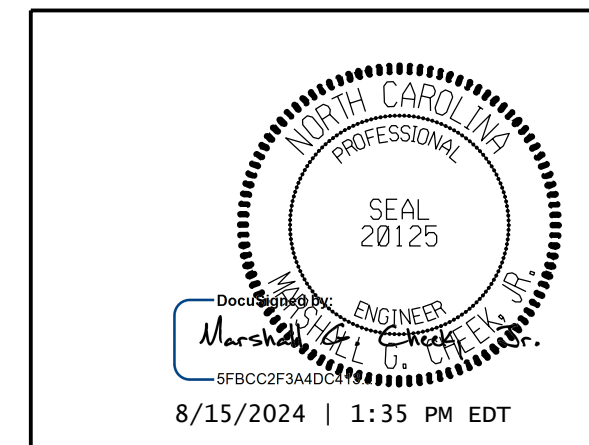
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
A1	10	#5	1	6'-8"	70	6'-8"	70
A2	40	#4	2	5'-7"	149	5'-7"	149
B4	12	#5	STR	45'-11"	575	45'-11"	575
K1	15	#4	6	6'-2"	62	6'-2"	62
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	73	#4	3	7'-6"	366	7'-6"	366
S2	73	#4	3	5'-8"	276	5'-8"	276
S3	127	#4	3	4'-10"	410	4'-10"	410
S4	54	#4	4	5'-10"	210	5'-10"	210
* S5	126	#5	5	5'-10"	767		
REINFORCING STEEL				2135	LBS.	2135	LBS.
* EPOXY COATED REINF. STEEL				767	LBS.		
8000 P.S.I. CONCRETE				16.0	CU. YDS.	15.9	CU. YDS.
0.6" Ø L.R. STRANDS				No. 30		No. 30	



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT". FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL". FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

PROJECT NO. BP4.R021
 WAYNE COUNTY
 STATION: 15+67.00-L-
 SHEET 3 OF 5



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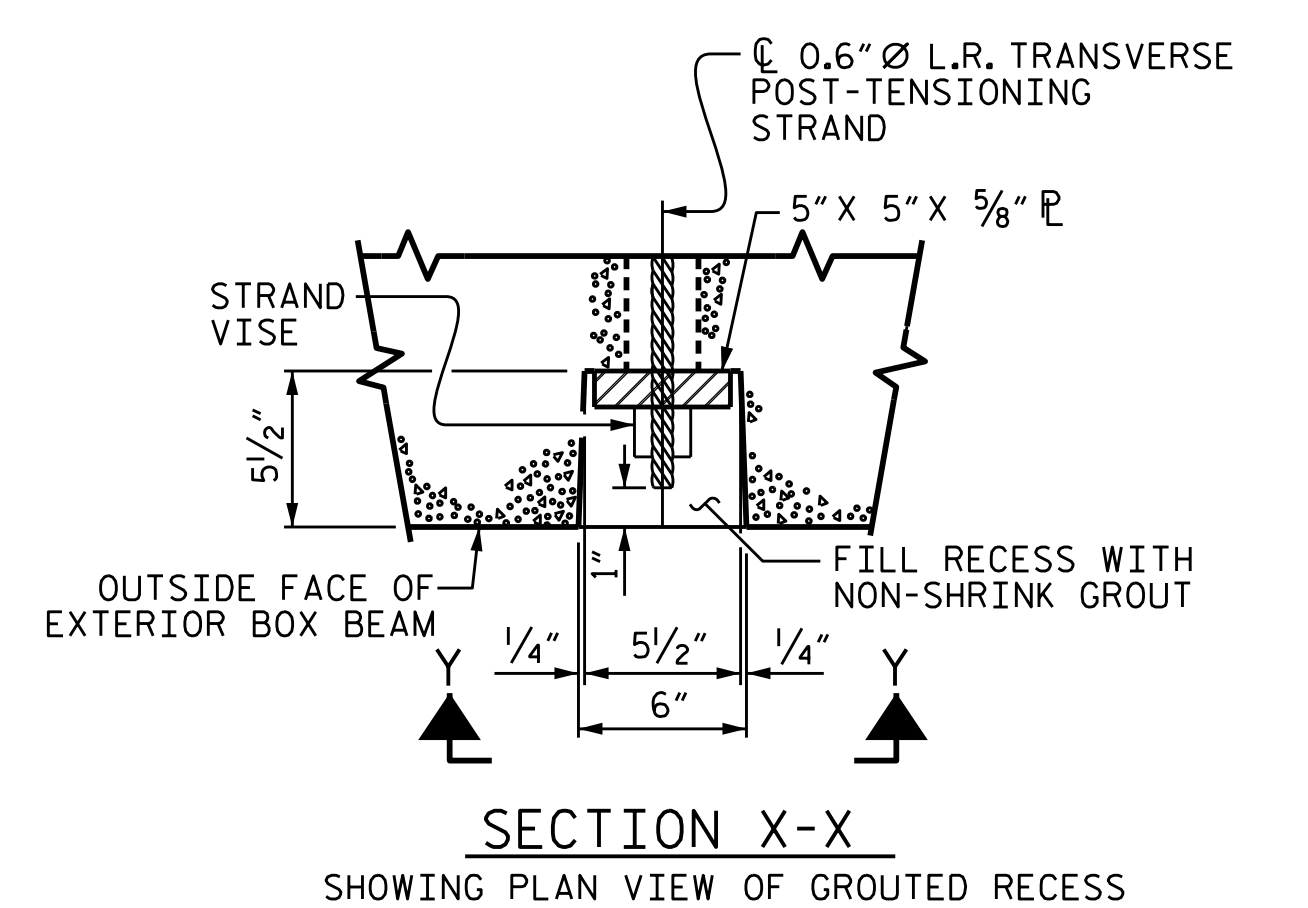
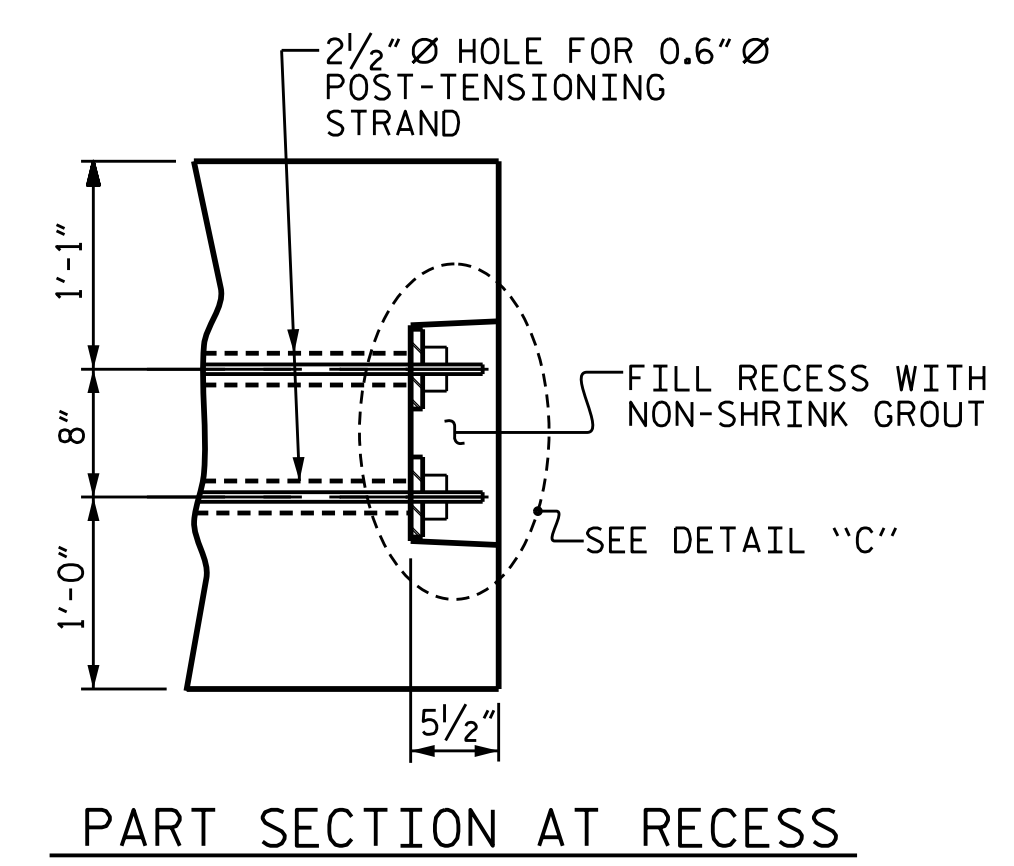
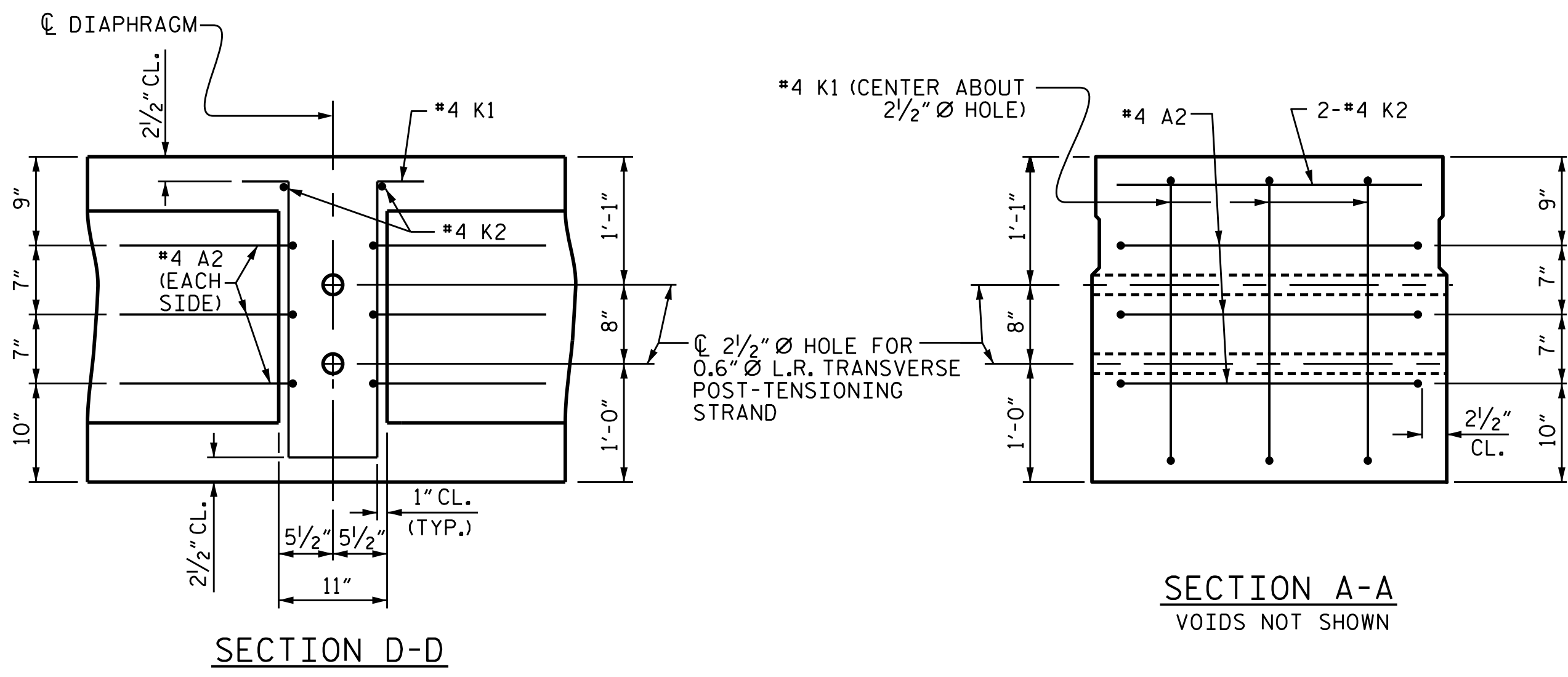
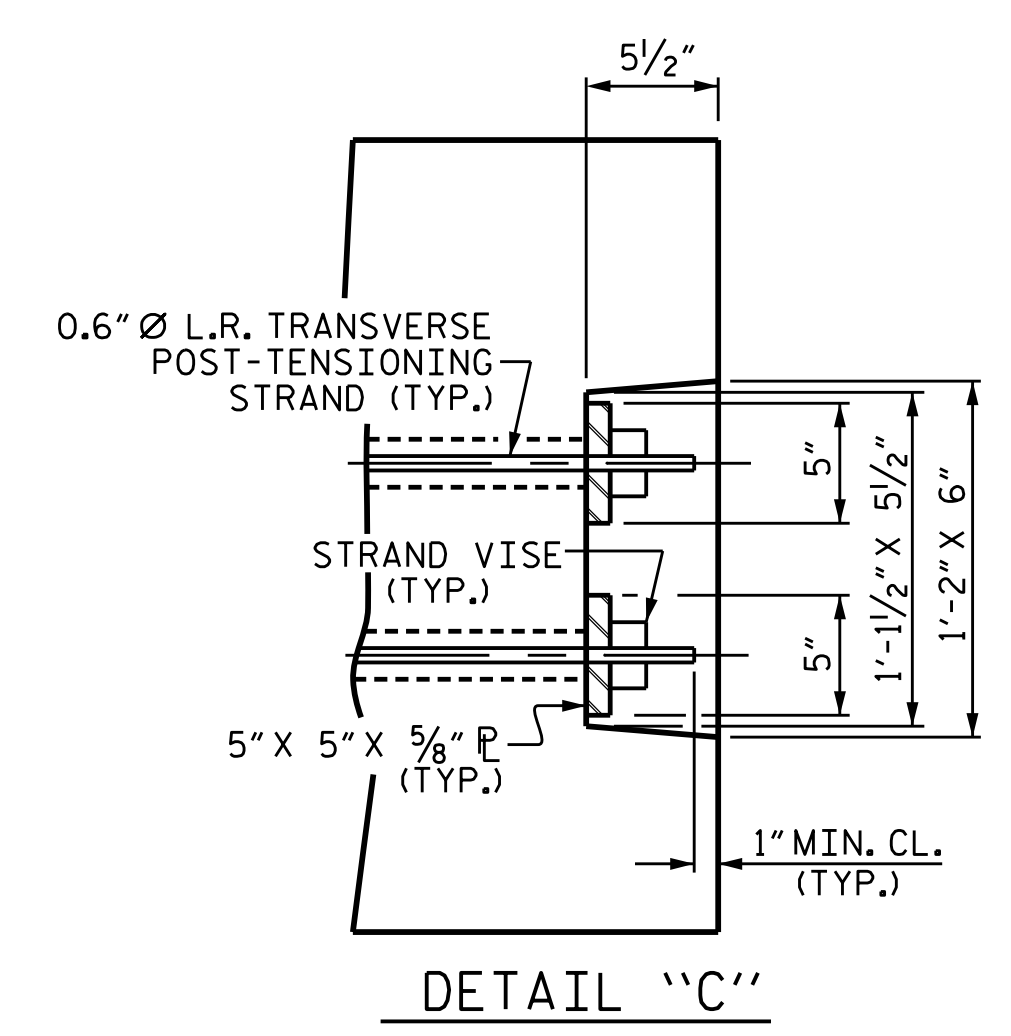
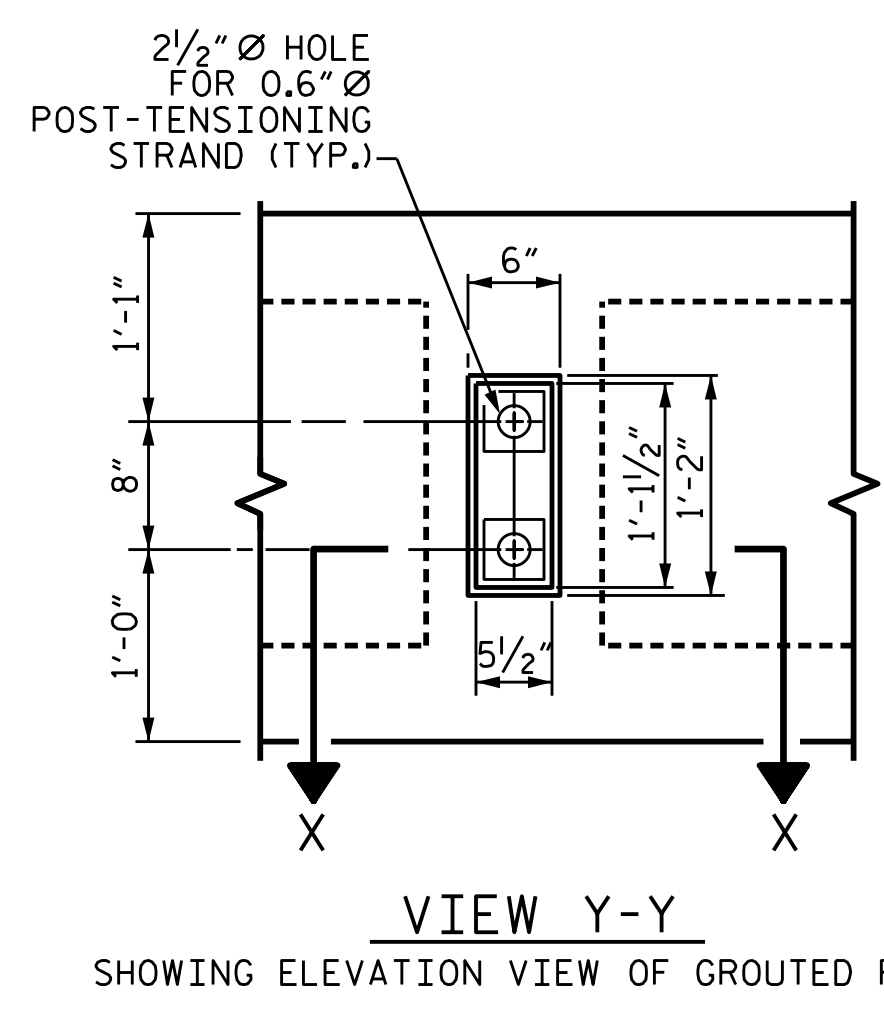
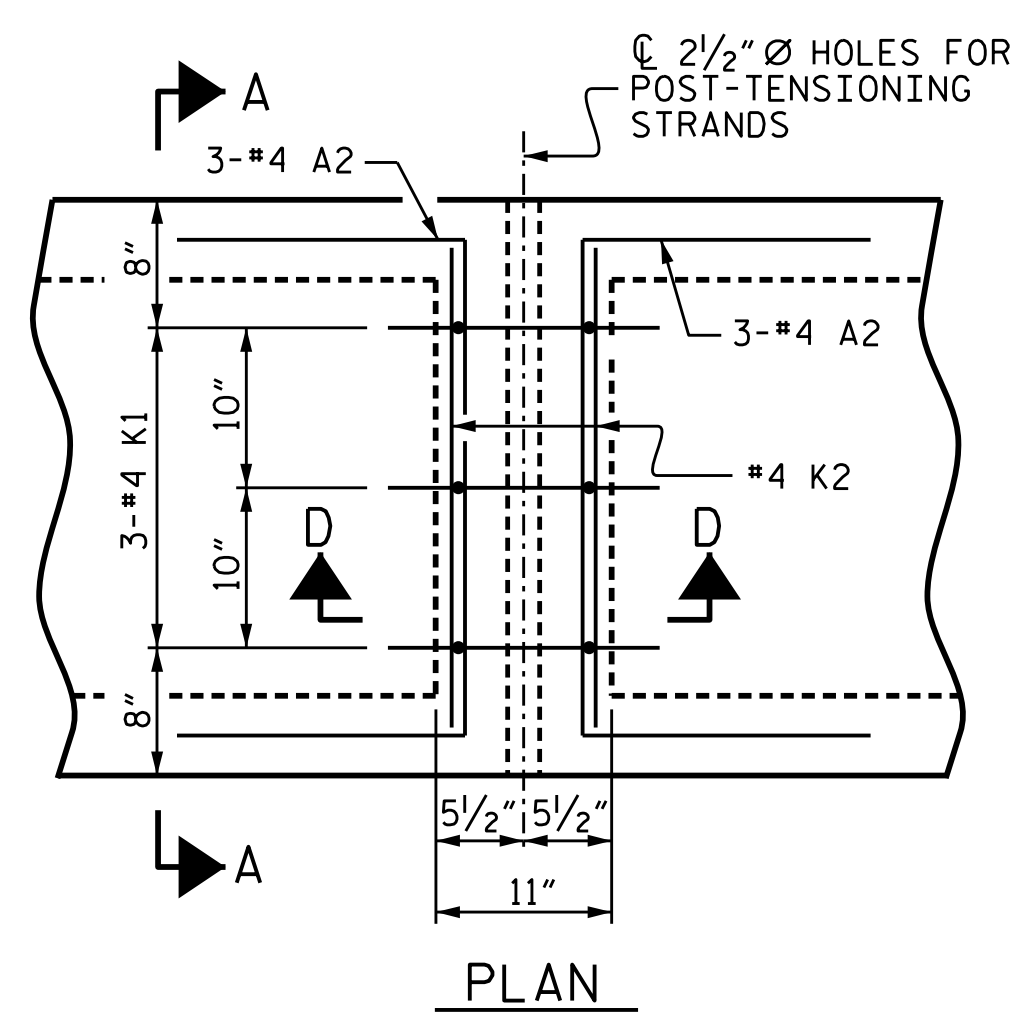
TGS ENGINEERS
 706 HILLSBOROUGH ST
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 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD

3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			18

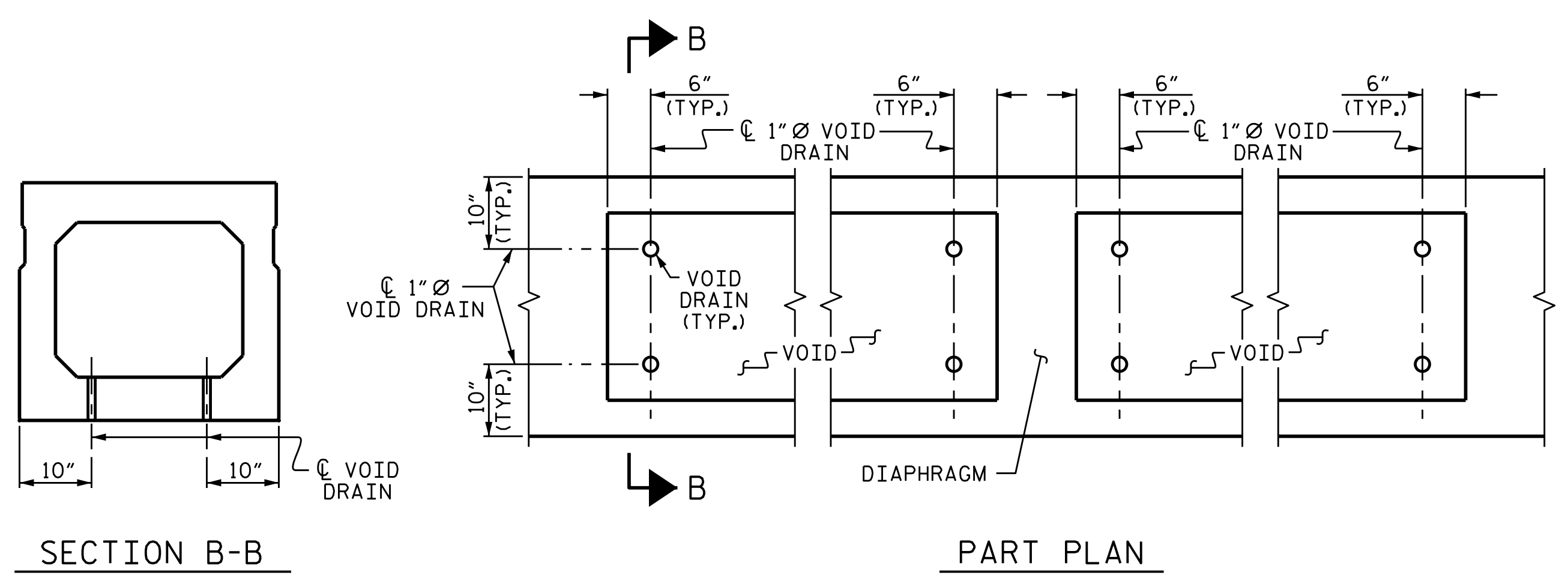
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CHECKED BY :	MGC	DATE :	1/23
DRAWN BY :	DGE	REV. 9/14	MAA/TMG
CHECKED BY :	TMG	10/11	11/11



DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.

GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM



VOID DRAIN DETAILS
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
90' BOX BEAM UNIT	3'-0" x 2'-9"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	2 3/4" ↑
FINAL CAMBER	3/4" ↓
	2" ↑

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. BP4.R021
 WAYNE COUNTY
 STATION: 15+67.00-L-

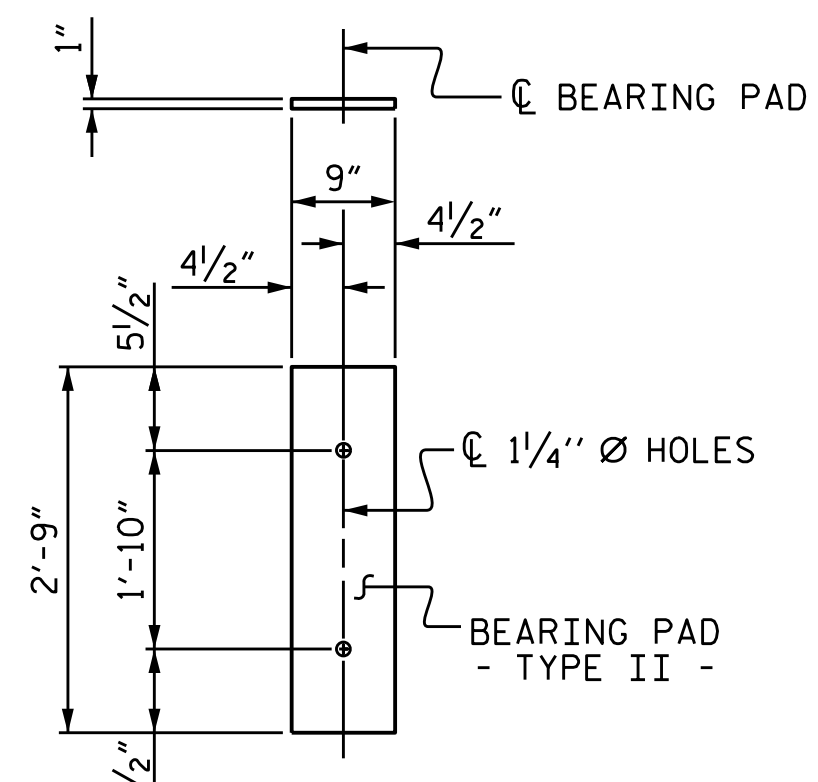
SHEET 4 OF 5

STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 20125
 TGS ENGINEERS
 706 HILLSBOROUGH ST
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275
 8/15/2024 | 1:35 PM EDT

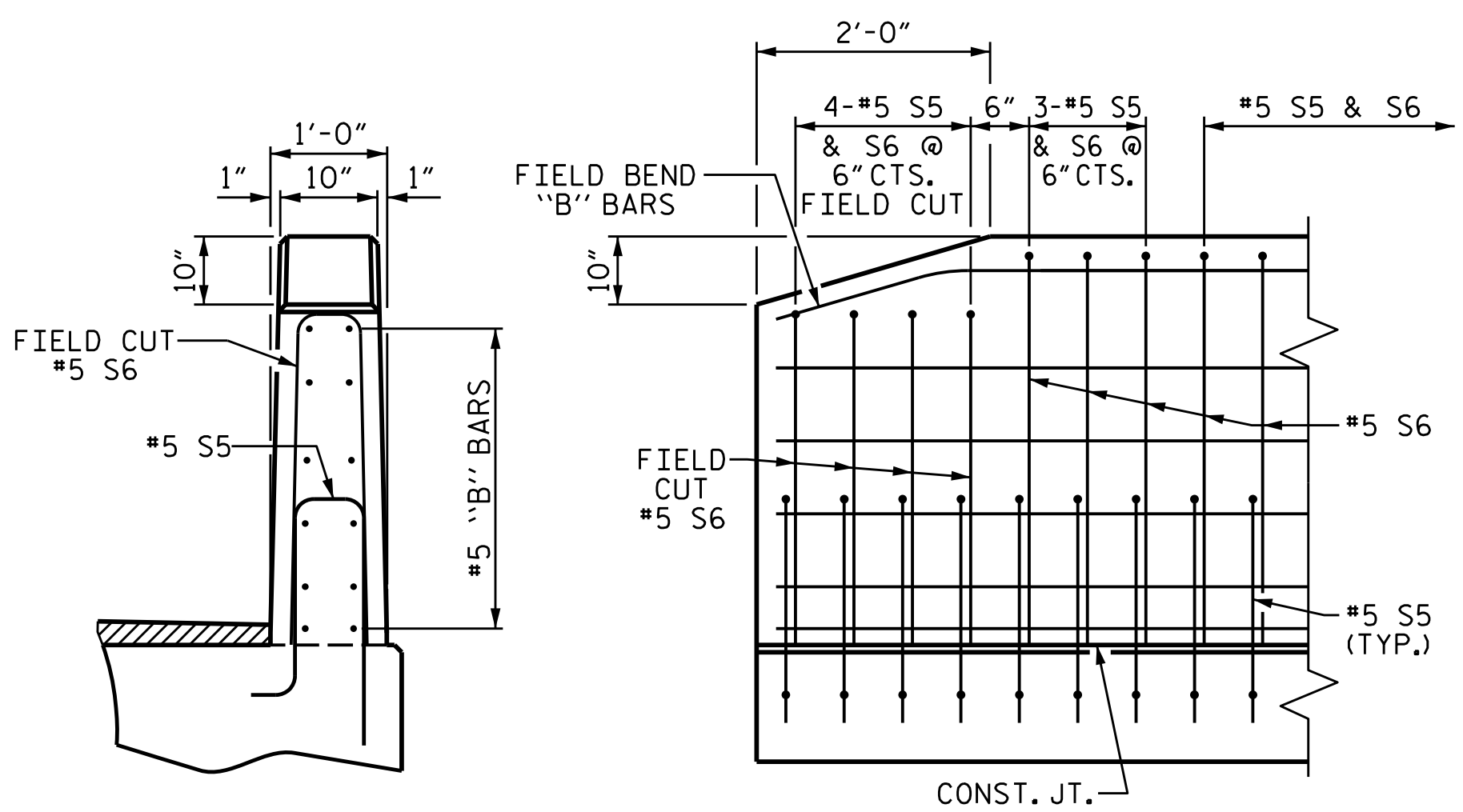
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 2'-9"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			18

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DRAWN BY :	DGE	REV. 8/14	MAA/TMG
CHECKED BY :	TMG	11/11	

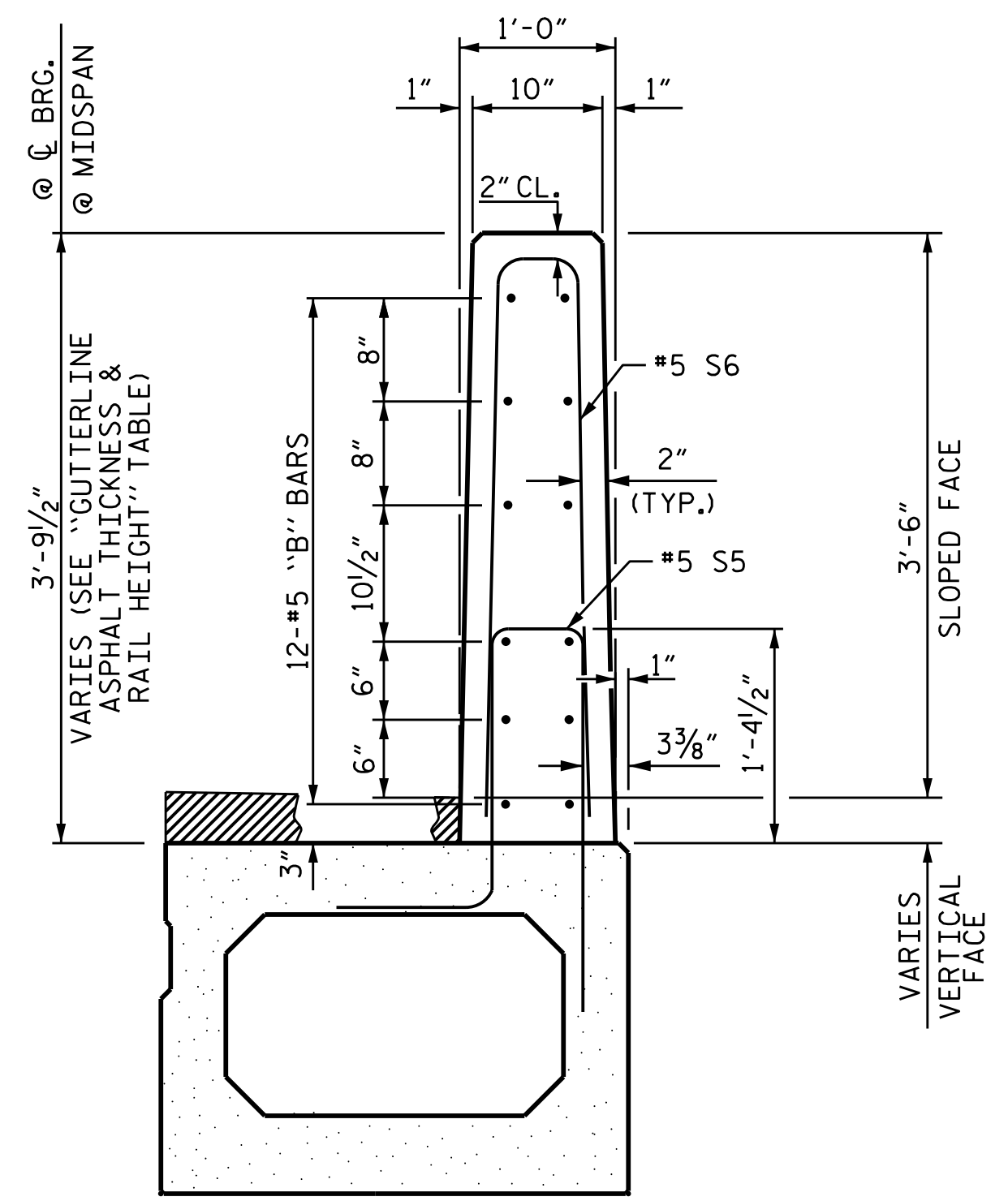


FIXED END
(TYPE II - 22 REQ'D)

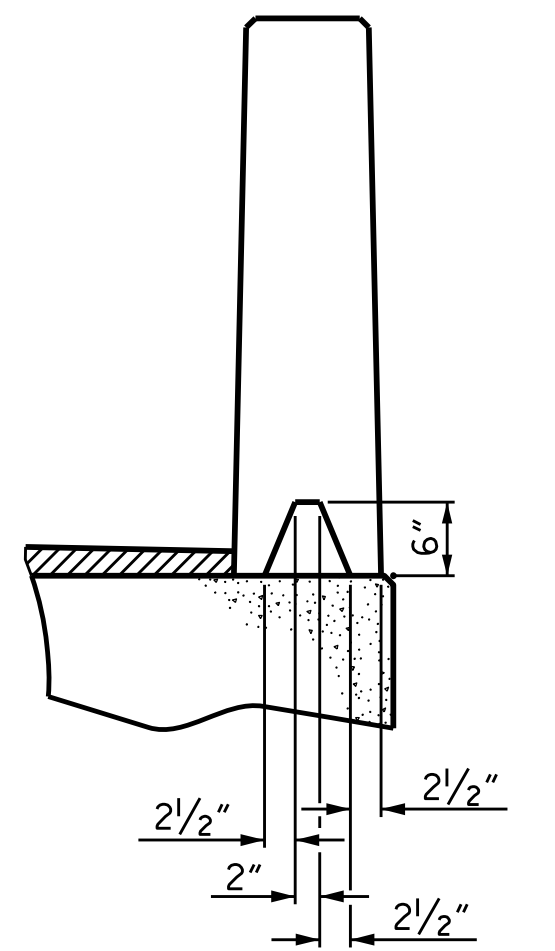


END VIEW **SIDE VIEW**
END OF RAIL DETAILS

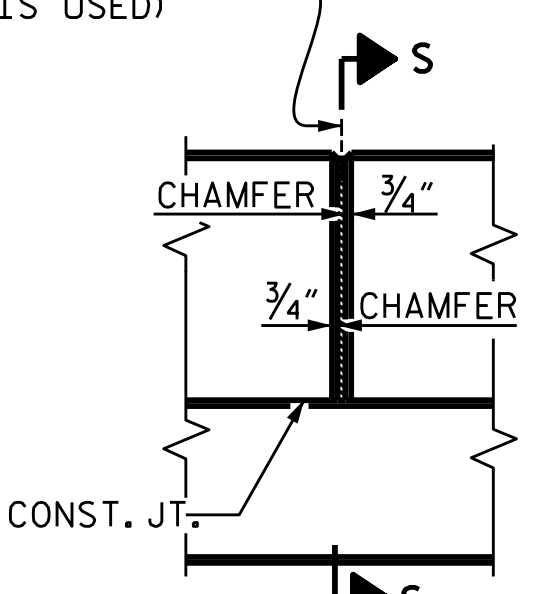
ELASTOMERIC BEARING DETAILS
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



SECTION THRU RAIL



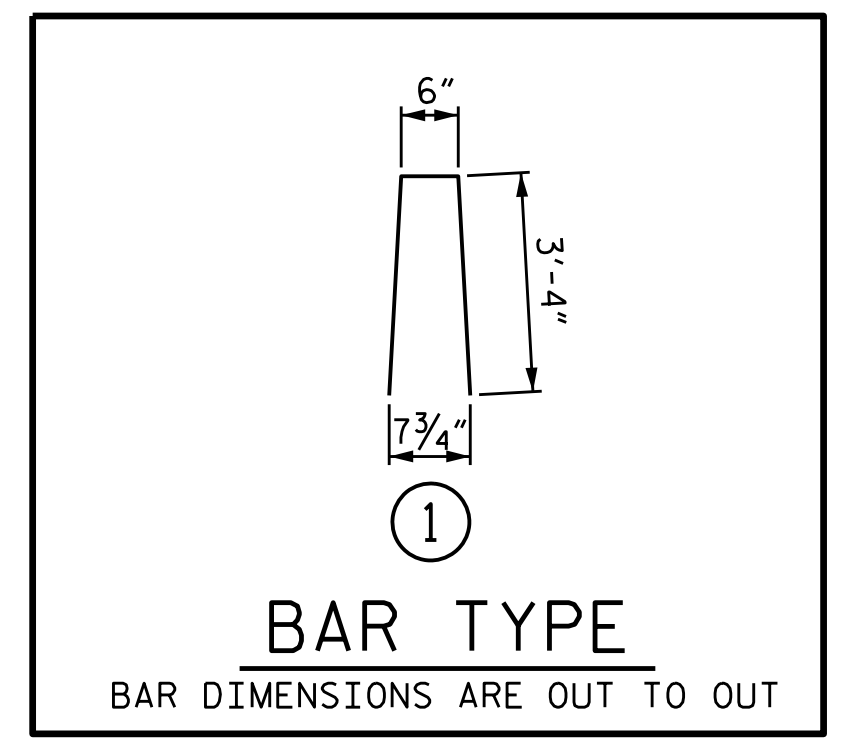
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL DETAILS

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	90'-0"	180'-0"
INTERIOR B.B.	9	90'-0"	810'-0"
TOTAL	11		990'-0"



BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL					
BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
	90' UNIT				
*B10	96	#5	STR	22'-1"	2211
*S6	252	#5	1	7'-2"	1884
* EPOXY COATED REINFORCING STEEL				LBS.	4095
CLASS AA CONCRETE				CU.YDS.	23.3
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.	180.00

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
33'		
90' UNITS	1 1/2"	3'-7 1/2"

PROJECT NO. BP4.R021
WAYNE COUNTY
STATION: 15+67.00-L-
SHEET 5 OF 5

STATE OF NORTH CAROLINA
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SEAL 20125
MORNINGSTAR ENGINEERS
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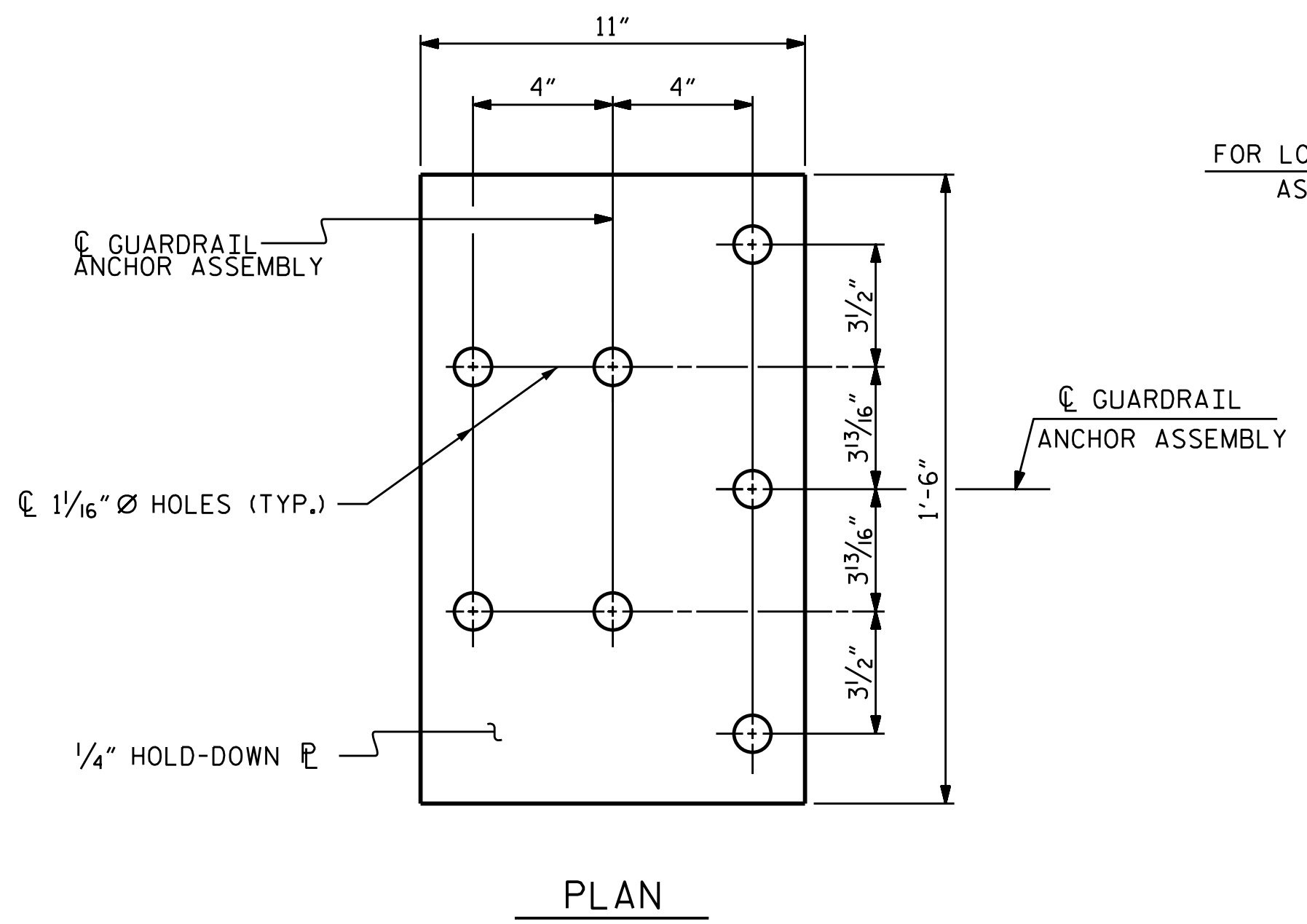
TGS ENGINEERS
706 HILLSBOROUGH ST
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

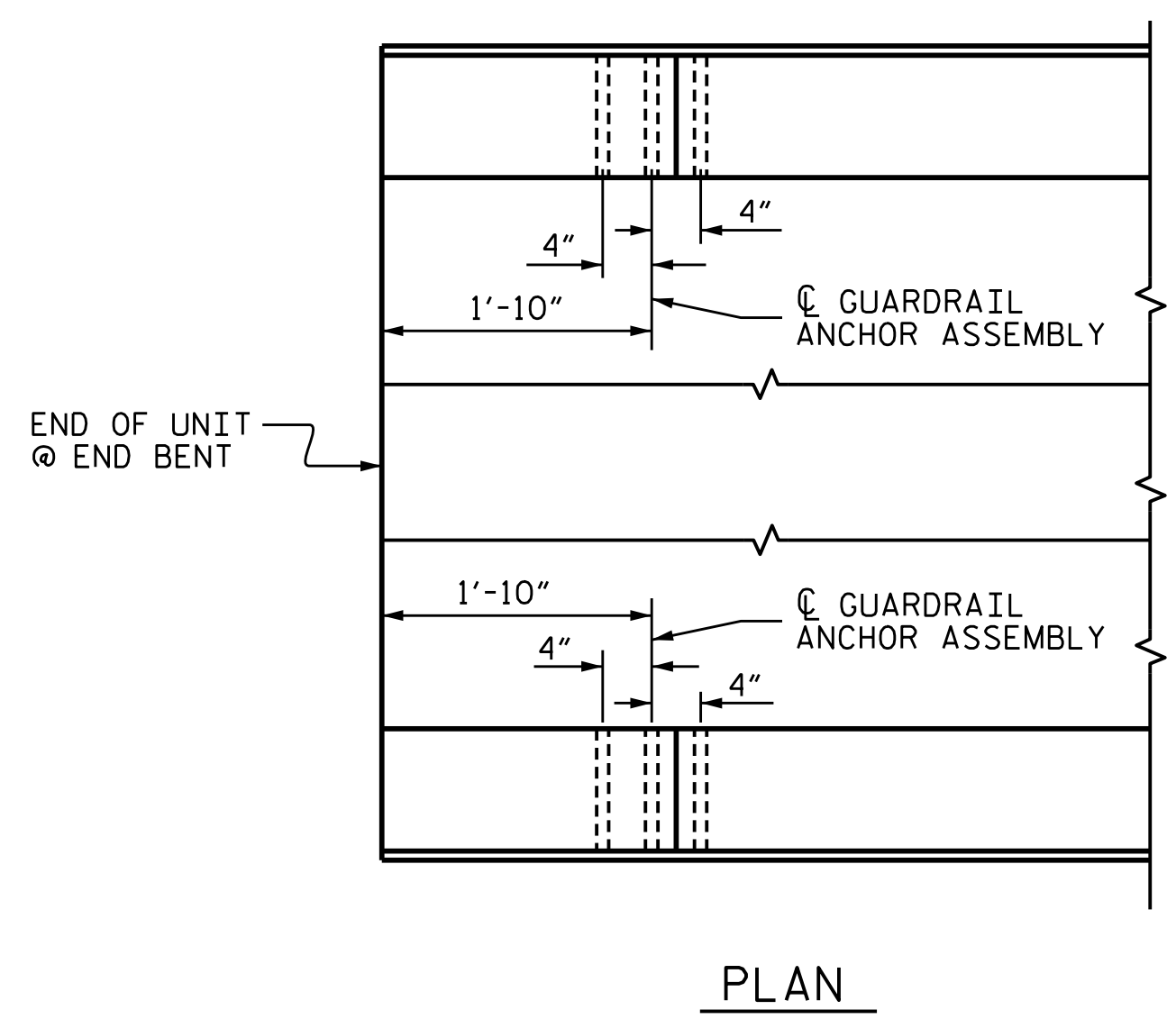
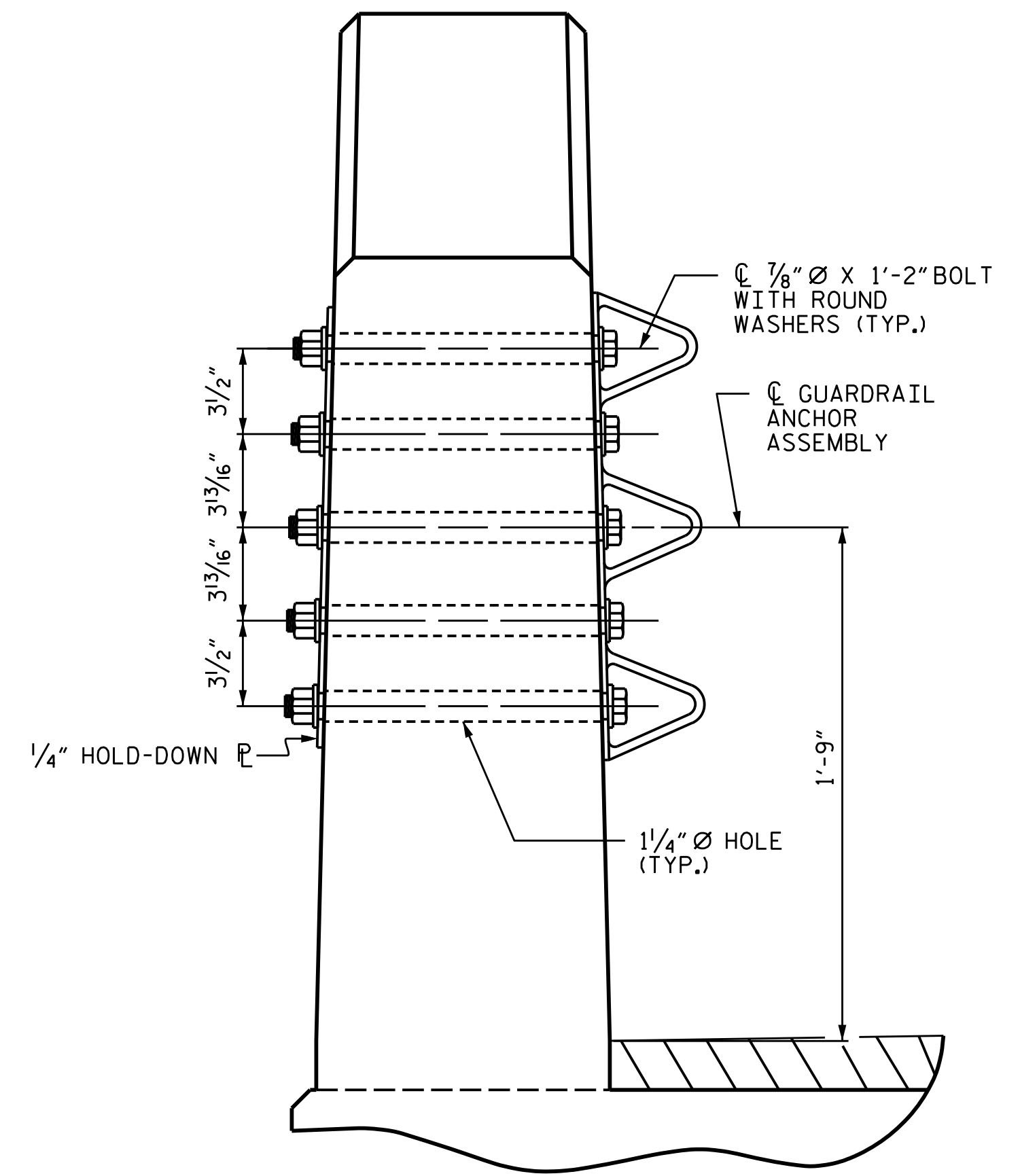
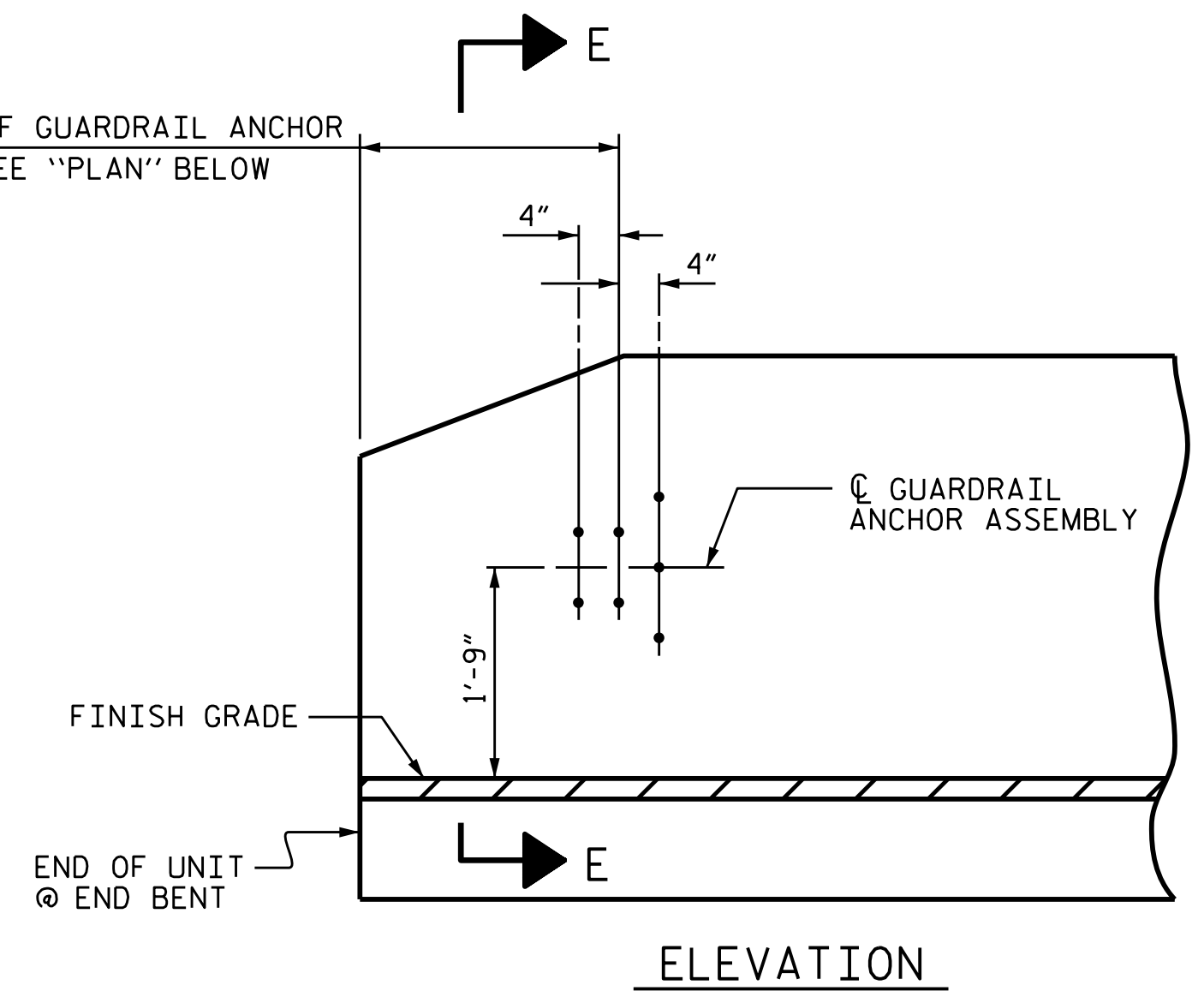
STANDARD
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

REVISIONS						SHEET NO.
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DRAWN BY :	DGE	10/11	REV. 5/18
CHECKED BY :	TMG	11/11	MAA/THC



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



LOCATION OF ANCHORS FOR GUARDRAIL
END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

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

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

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

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

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

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

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

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

SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. BP4.R021
WAYNE COUNTY
STATION: 15+67.00-L-

	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL																			
	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED																			
TGS ENGINEERS 706 HILLSBOROUGH ST SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275	REVISIONS	SHEET NO. S-12 TOTAL SHEETS 18																		
<table border="1"> <thead> <tr> <th>NO.</th> <th>BY:</th> <th>DATE:</th> <th>NO.</th> <th>BY:</th> <th>DATE:</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> <td>3</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> </tr> </tbody> </table>	NO.	BY:	DATE:	NO.	BY:	DATE:	1			3			2			4				
NO.	BY:	DATE:	NO.	BY:	DATE:															
1			3																	
2			4																	

ASSEMBLED BY :	JLA	DATE :	12/22
CHECKED BY :	MGC	DATE :	1/23
DRAWN BY :	MAA	REV. 1/15	MAA/TMG
CHECKED BY :	GM	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC

NOTES

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

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

THE TOP SURFACE OF THE CAP, EXCLUDING AREAS UNDER ELASTOMERIC BEARINGS SHALL BE EPOXY COATED. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.

TOP OF PILE ELEVATIONS

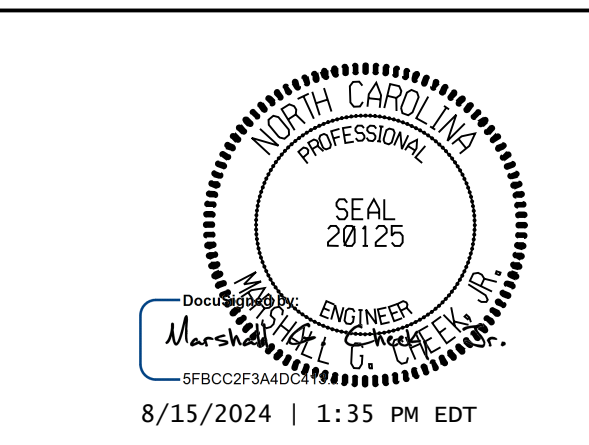
①	71.35'
②	71.53'
③	71.71'
④	71.89'
⑤	72.07'
⑥	72.25'
⑦	72.43'

PROJECT NO. BP4.R021
 WAYNE COUNTY
 STATION: 15+67.00-L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

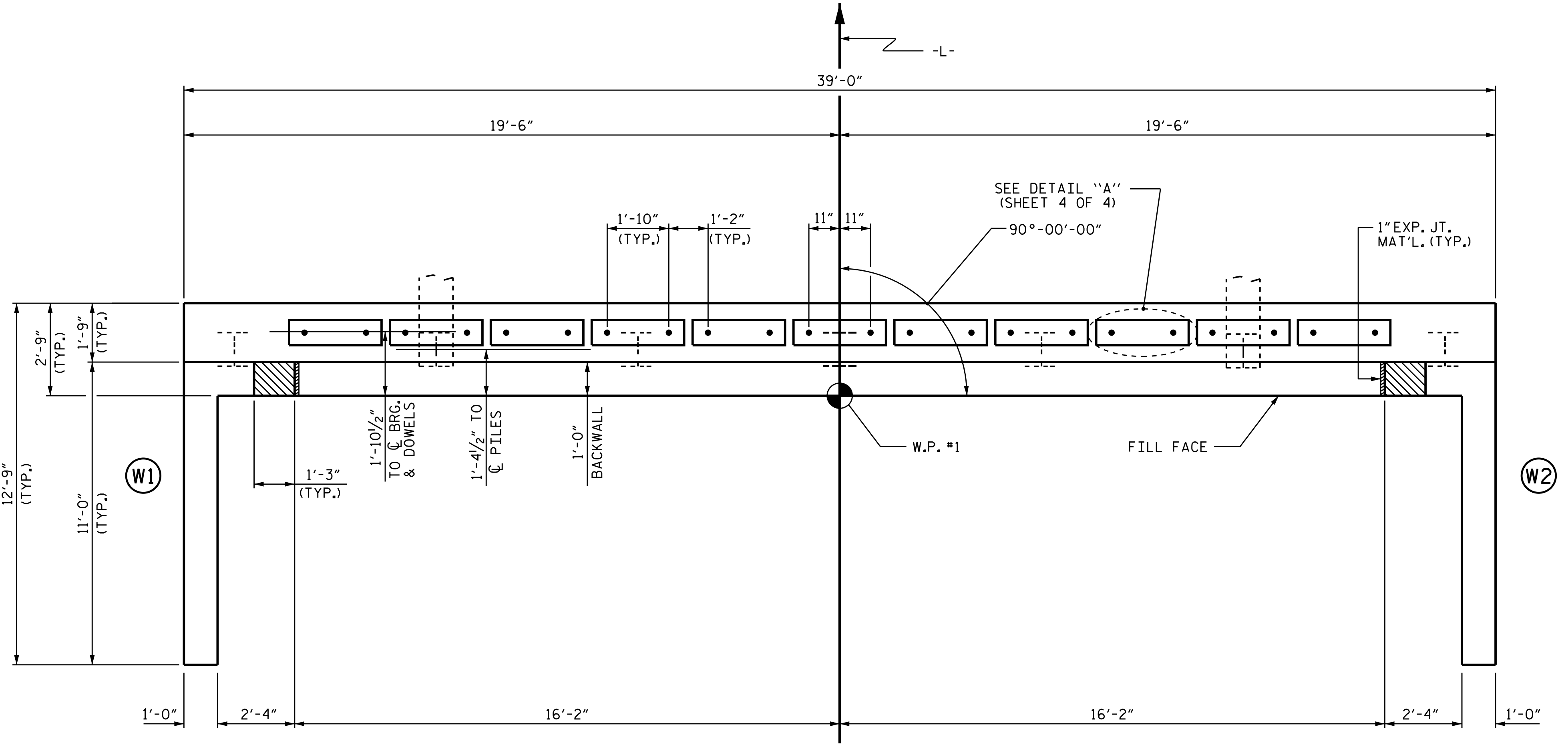
SUBSTRUCTURE
 END BENT 1



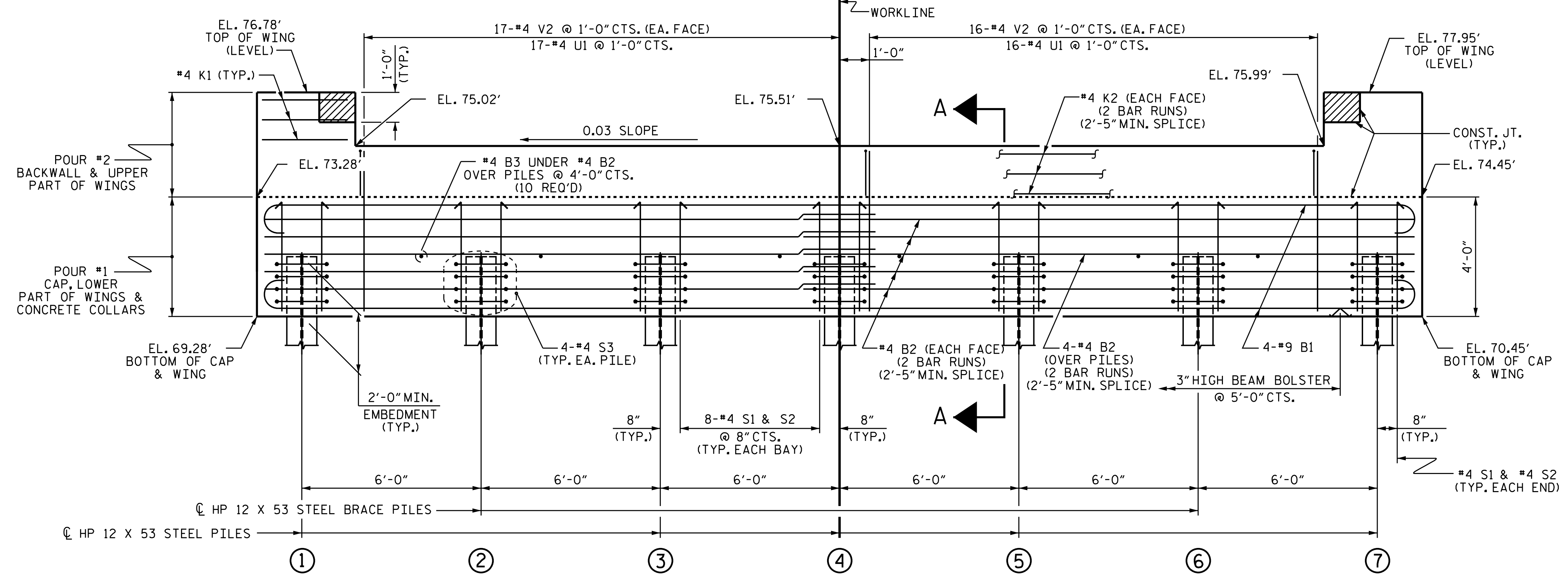
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2			4			18



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

ASSEMBLED BY :	JLA	DATE :	12/22
CHECKED BY :	MGC	DATE :	1/23
DRAWN BY :	WJH	REV. 4/15	MAA/TMG
CHECKED BY :	AAC		

NOTES

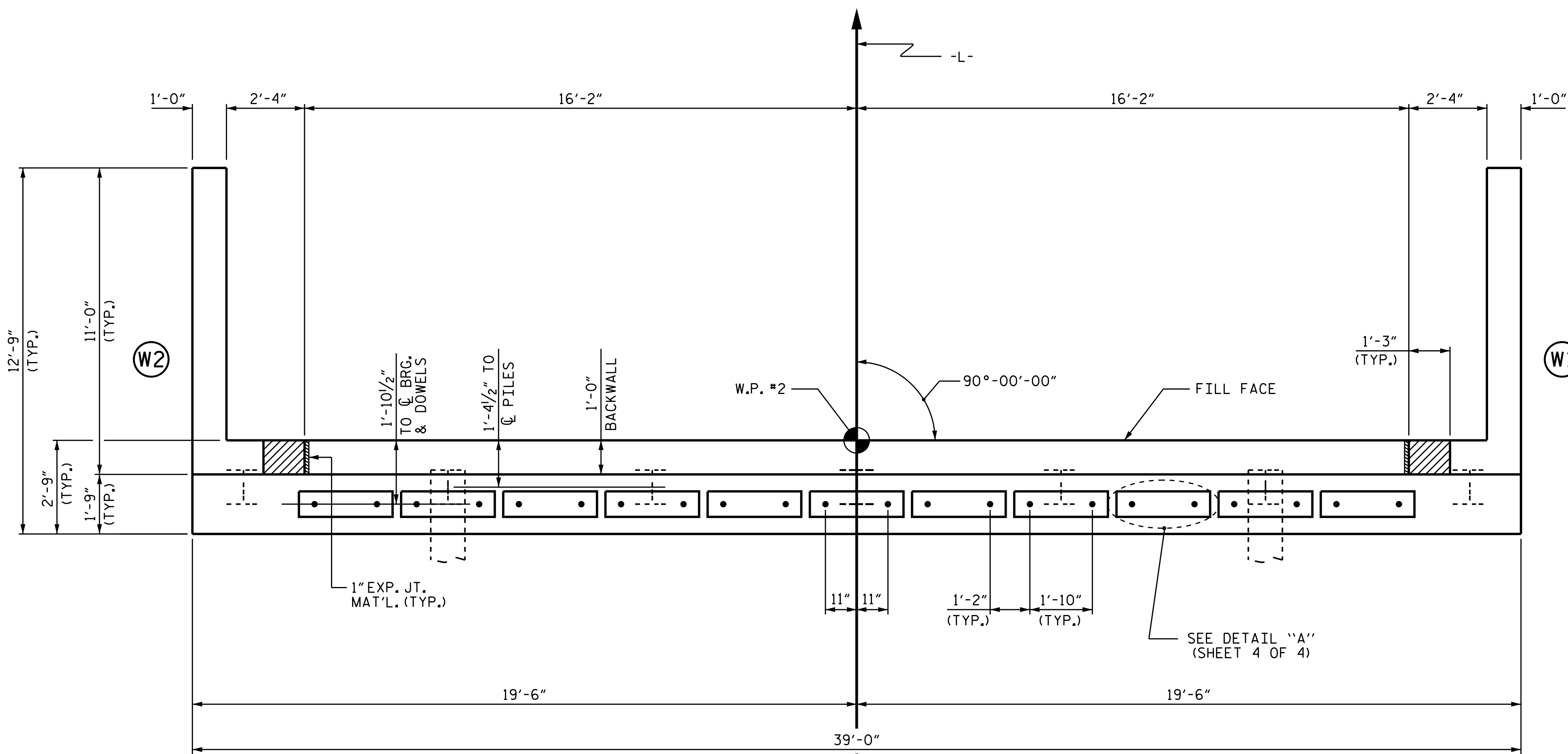
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

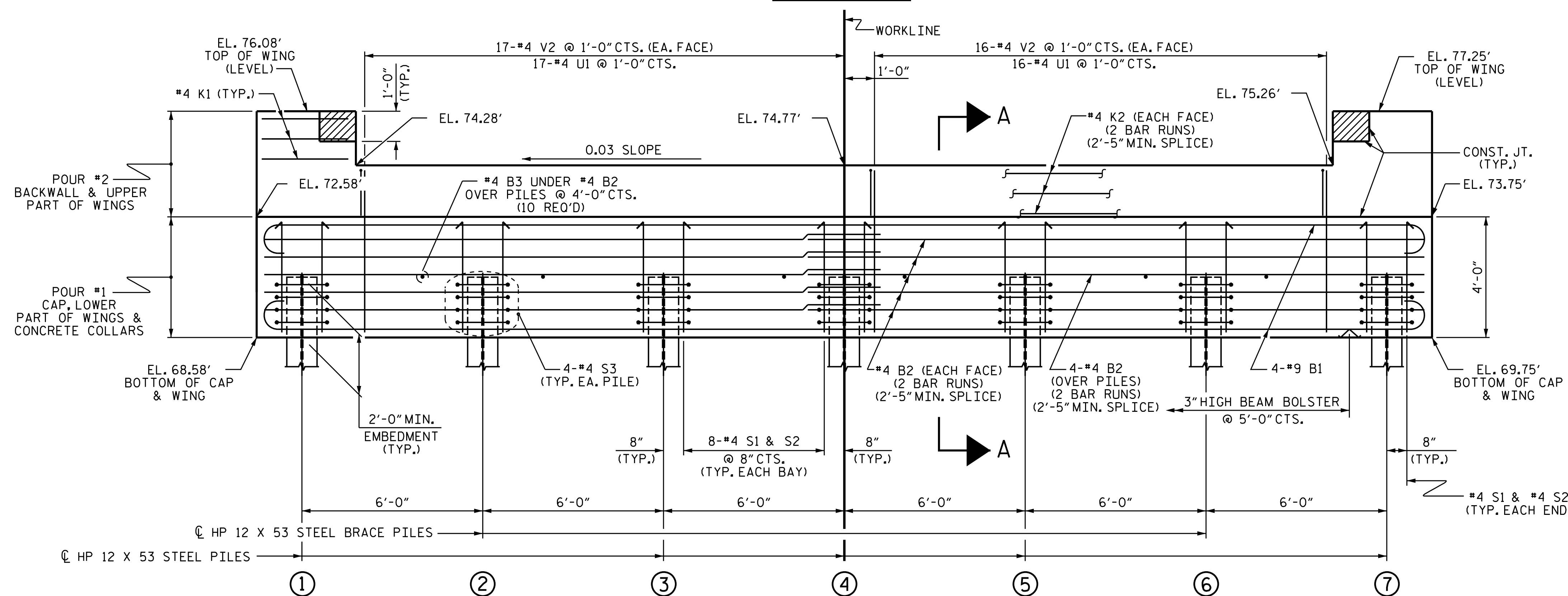
THE TOP SURFACE OF THE CAP, EXCLUDING AREAS UNDER ELASTOMERIC BEARINGS SHALL BE EPOXY COATED. FOR EPOXY COATING, SEE SPECIAL PROVISIONS.



PLAN

TOP OF PILE ELEVATIONS

①	70.64'
②	70.82'
③	71.00'
④	71.18'
⑤	71.36'
⑥	71.54'
⑦	71.72'



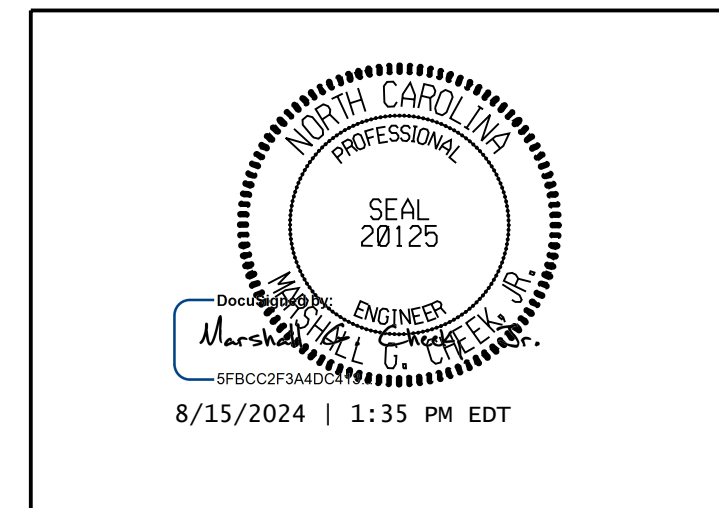
ELEVATION

PROJECT NO. BP4.R021

WAYNE COUNTY

STATION: 15+67.00-L-

SHEET 2 OF 4



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

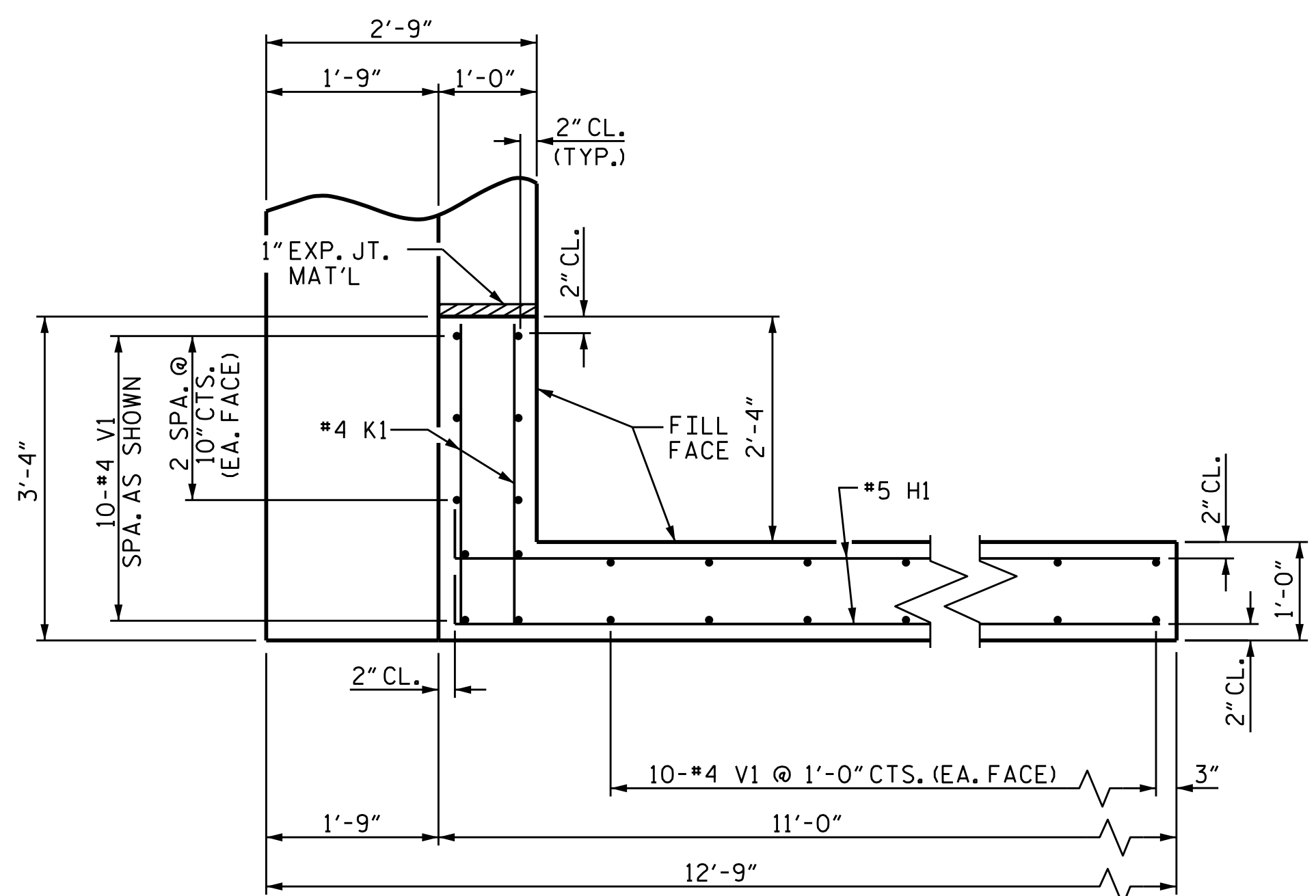
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CHECKED BY :	MGC	DATE :	1/23
DRAWN BY :	WJH	REV. 4/15	MAA/TMG
CHECKED BY :	AAC	12/11	

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

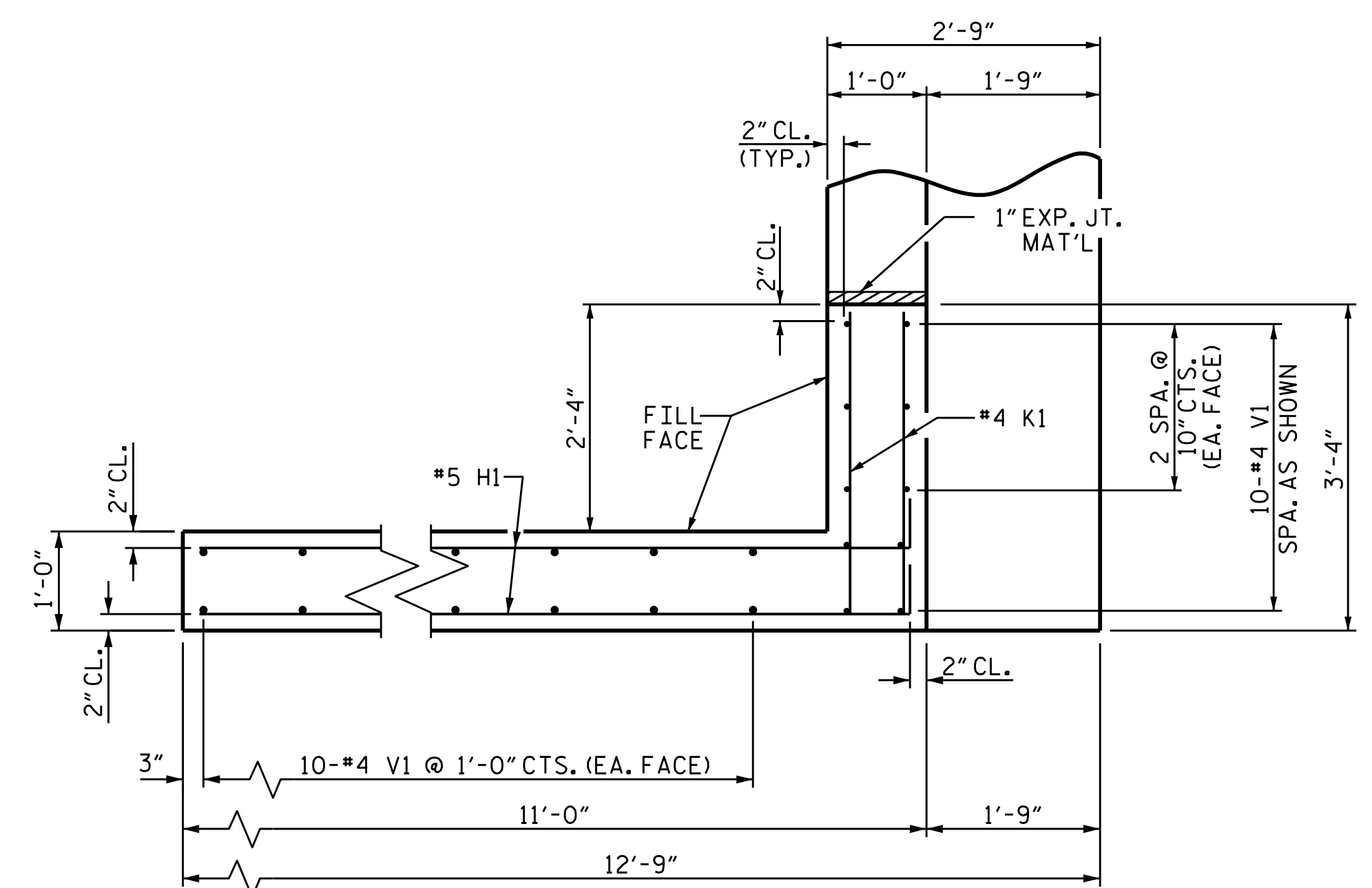
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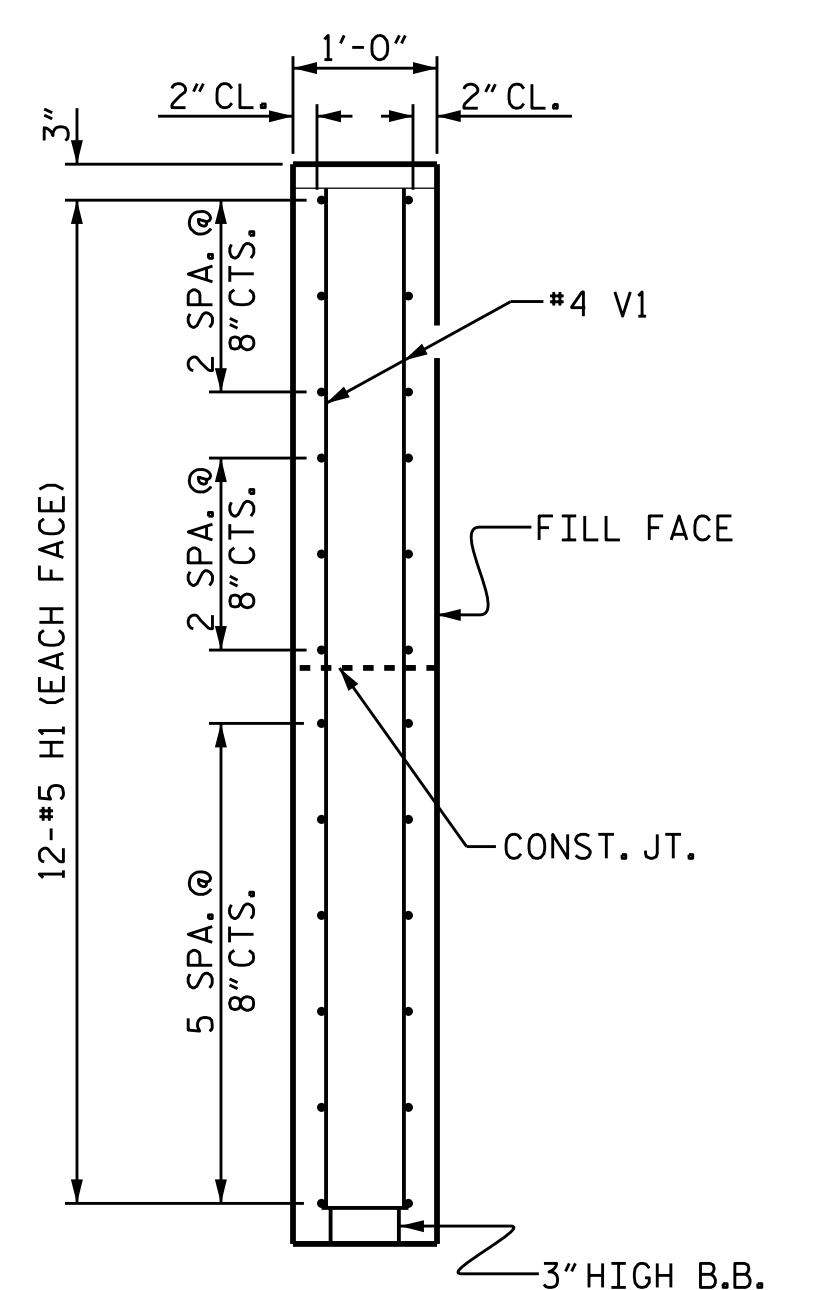
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2			4			18



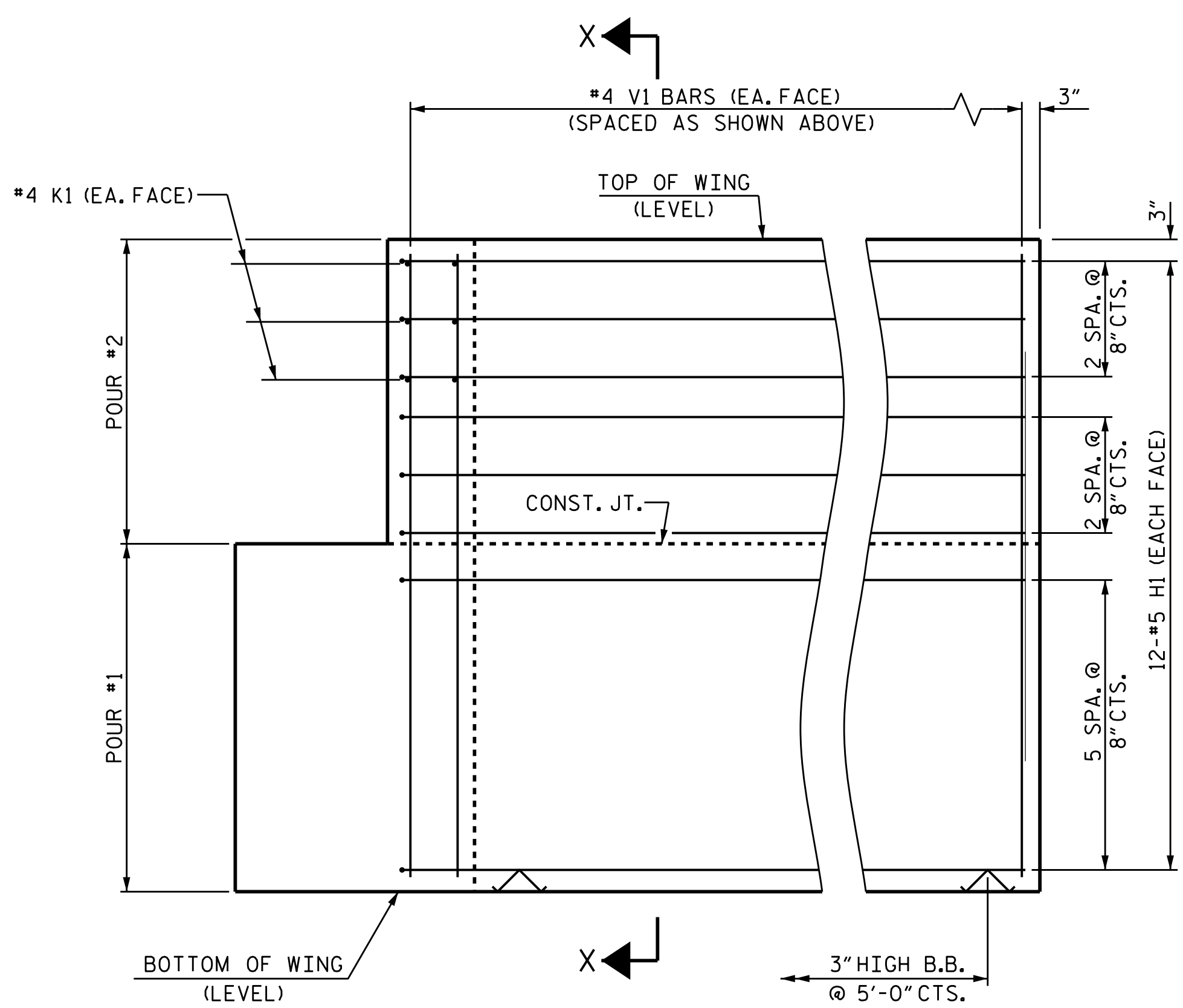
PLAN OF WING (W1)



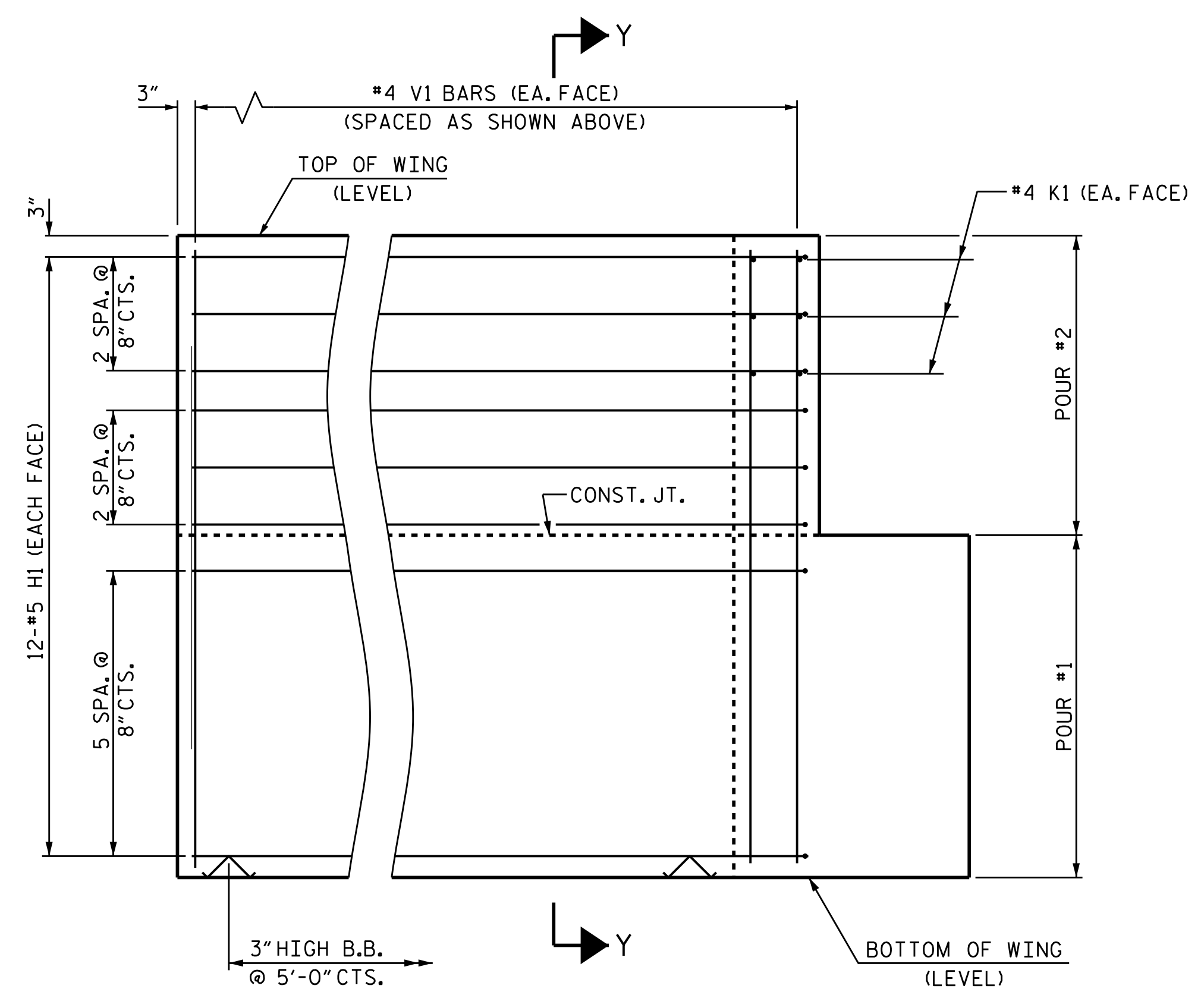
PLAN OF WING (W2)



SECTION X-X

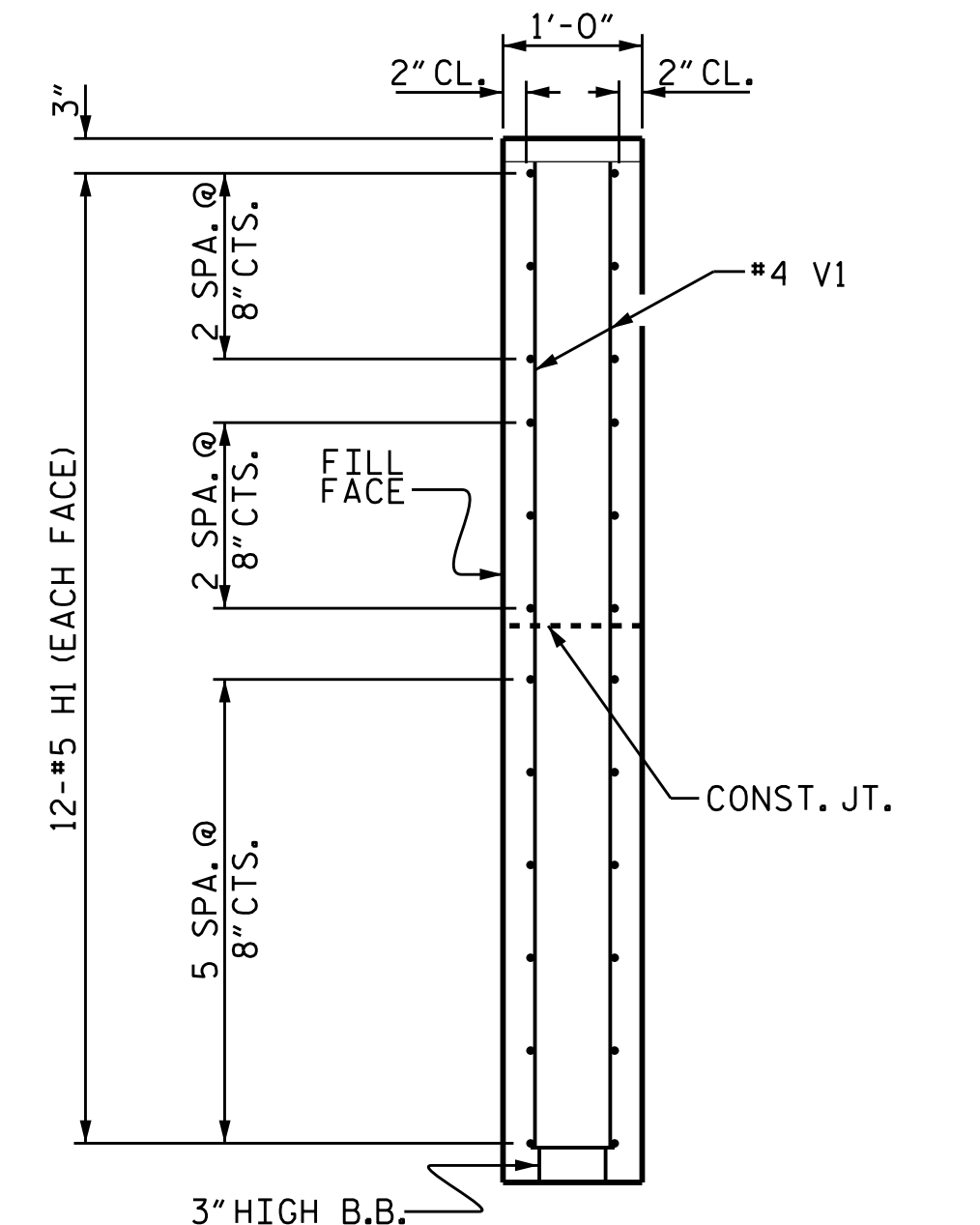


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS



SECTION Y-Y

PROJECT NO. BP4.R021
 WAYNE COUNTY
 STATION: 15+67.00-L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

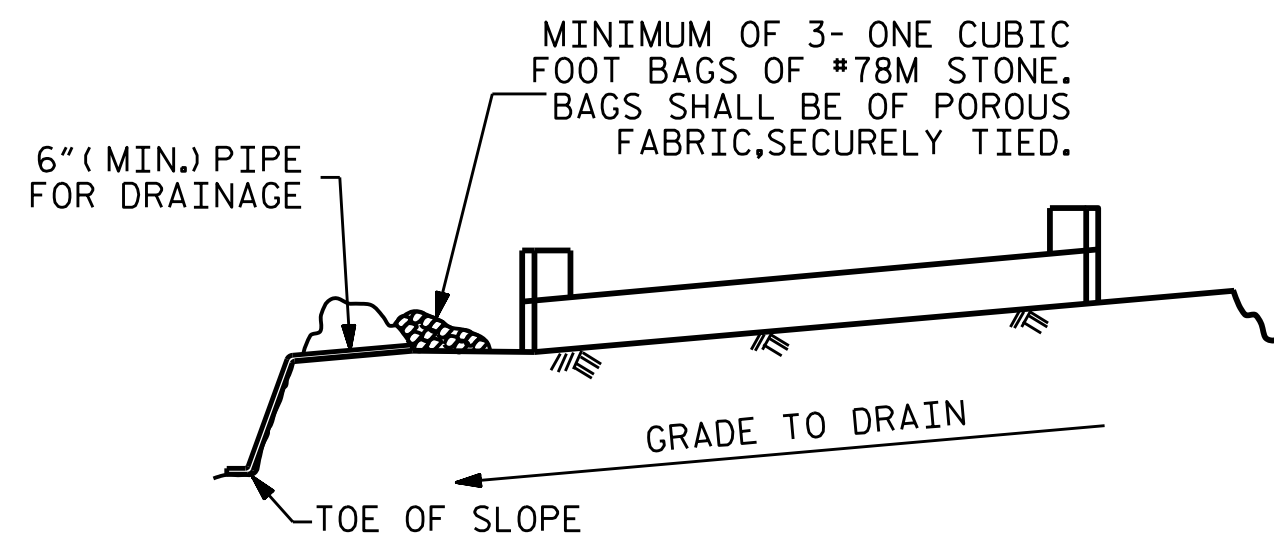
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DRAWN BY :	WJH	REV. 4/15	MAA/TMG
CHECKED BY :	AAC		

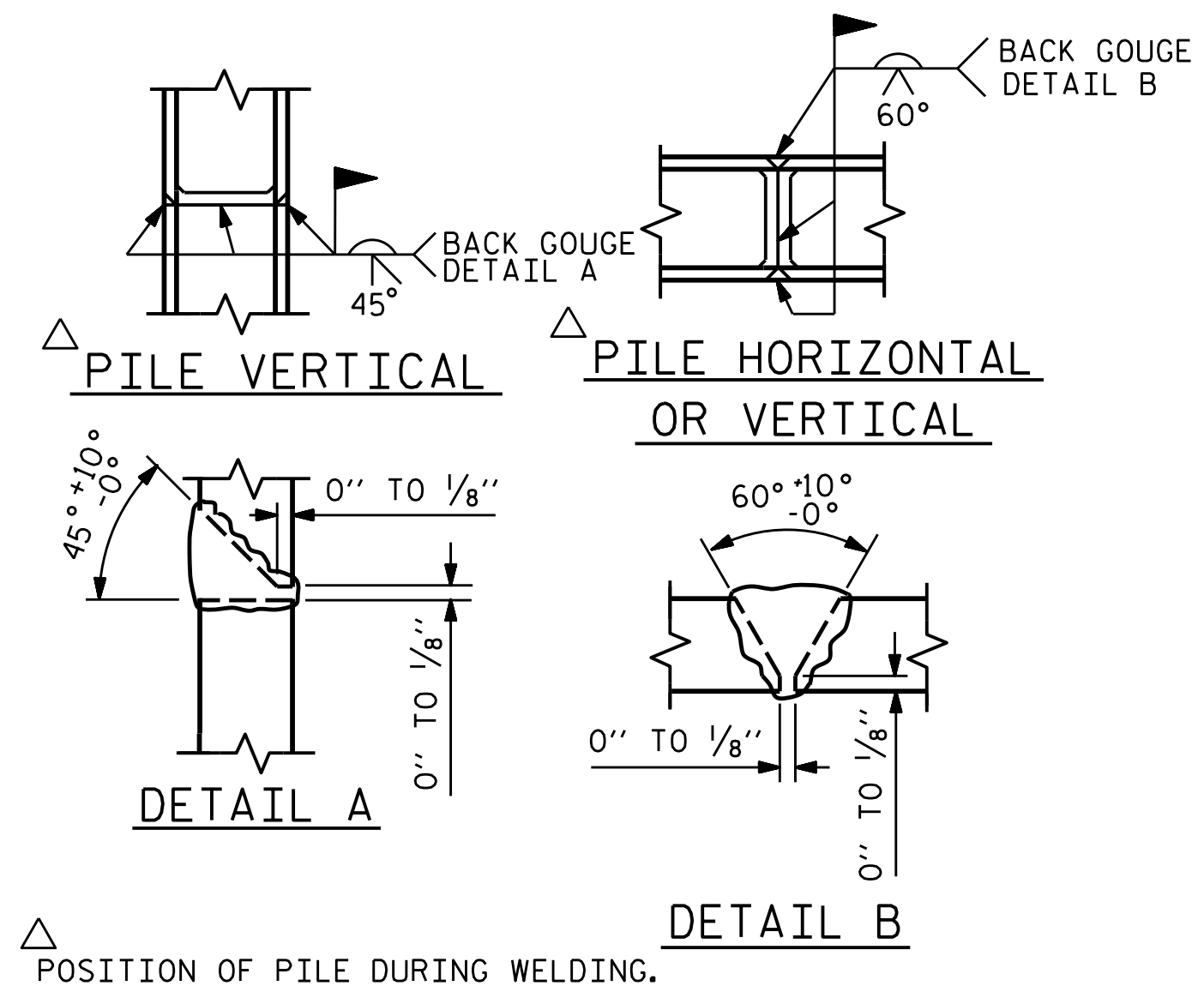


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

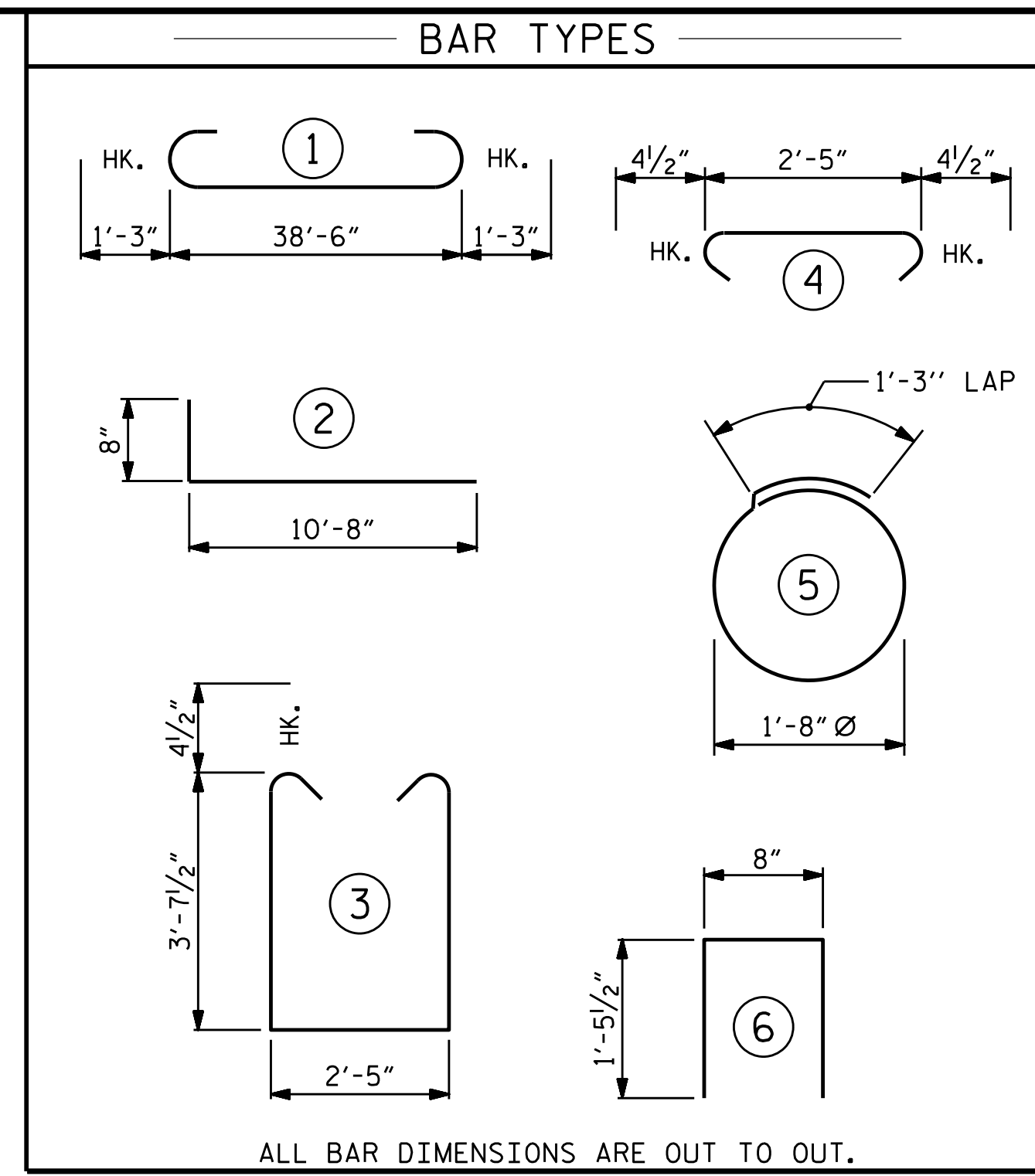
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

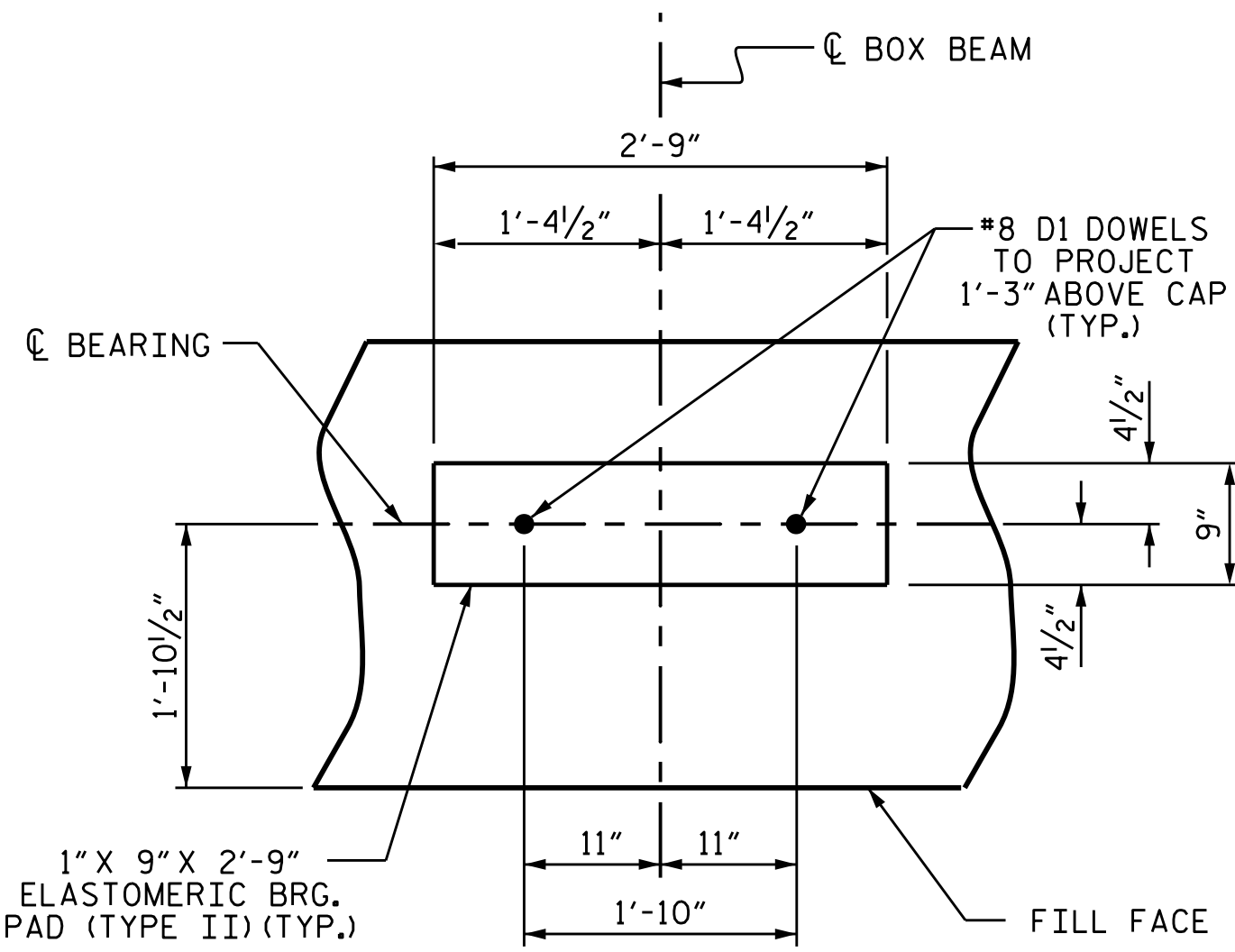
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

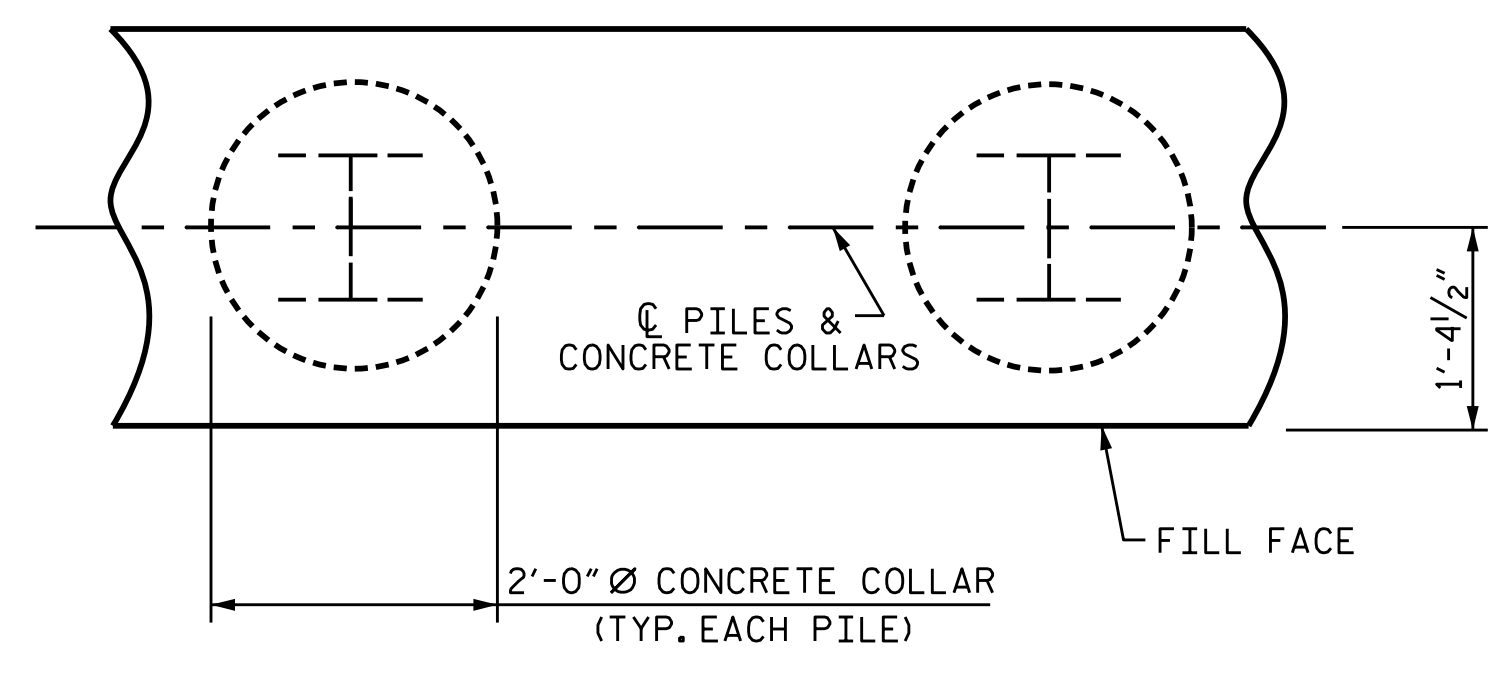


BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#8		41'-0"	1115	
B2	#4	STR	20'-7"	385	
B3	#4	STR	2'-5"	16	
D1	#8	STR	2'-3"	132	
H1	#5		11'-4"	567	
K1	#4	STR	2'-11"	23	
K2	#4	STR	20'-7"	165	
S1	#4		10'-5"	348	
S2	#4		3'-2"	106	
S3	#4		6'-6"	122	
U1	#4		3'-7"	79	
V1	#4	STR	7'-2"	287	
V2	#4	STR	5'-3"	231	
REINFORCING STEEL (FOR ONE END BENT)				3576 LBS.	
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS			20.1 C.Y.	
POUR #2	BACKWALL & UPPER PART OF WINGS			5.4 C.Y.	
TOTAL CLASS A CONCRETE				25.5 C.Y.	



DETAIL "A"

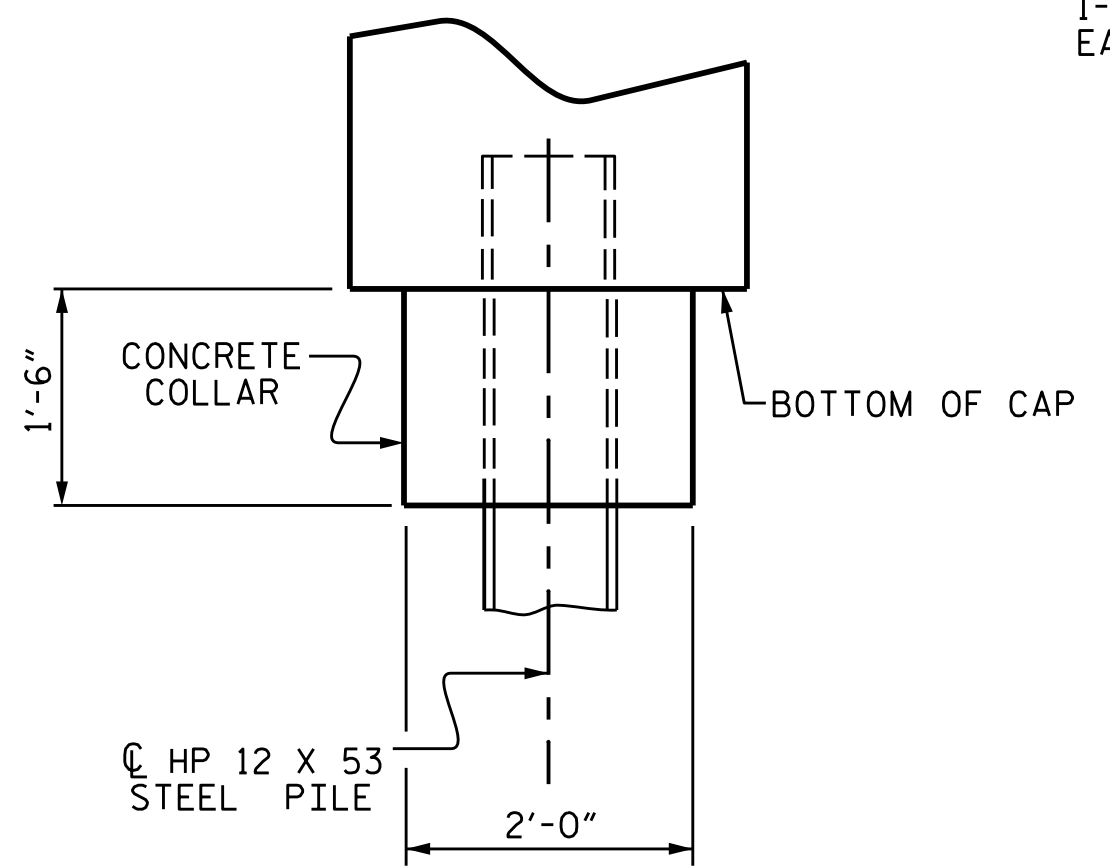
(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



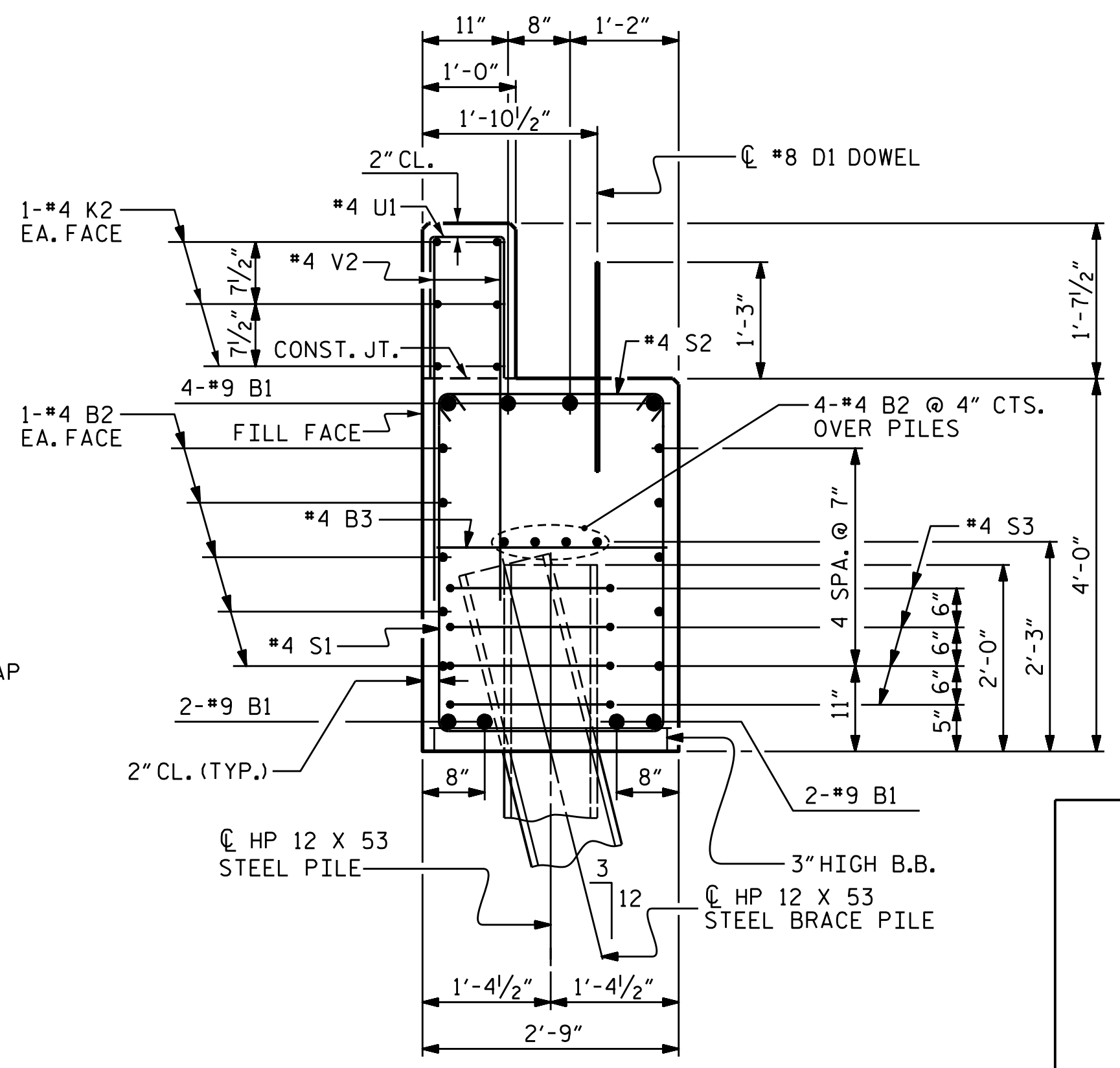
PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



ELEVATION



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

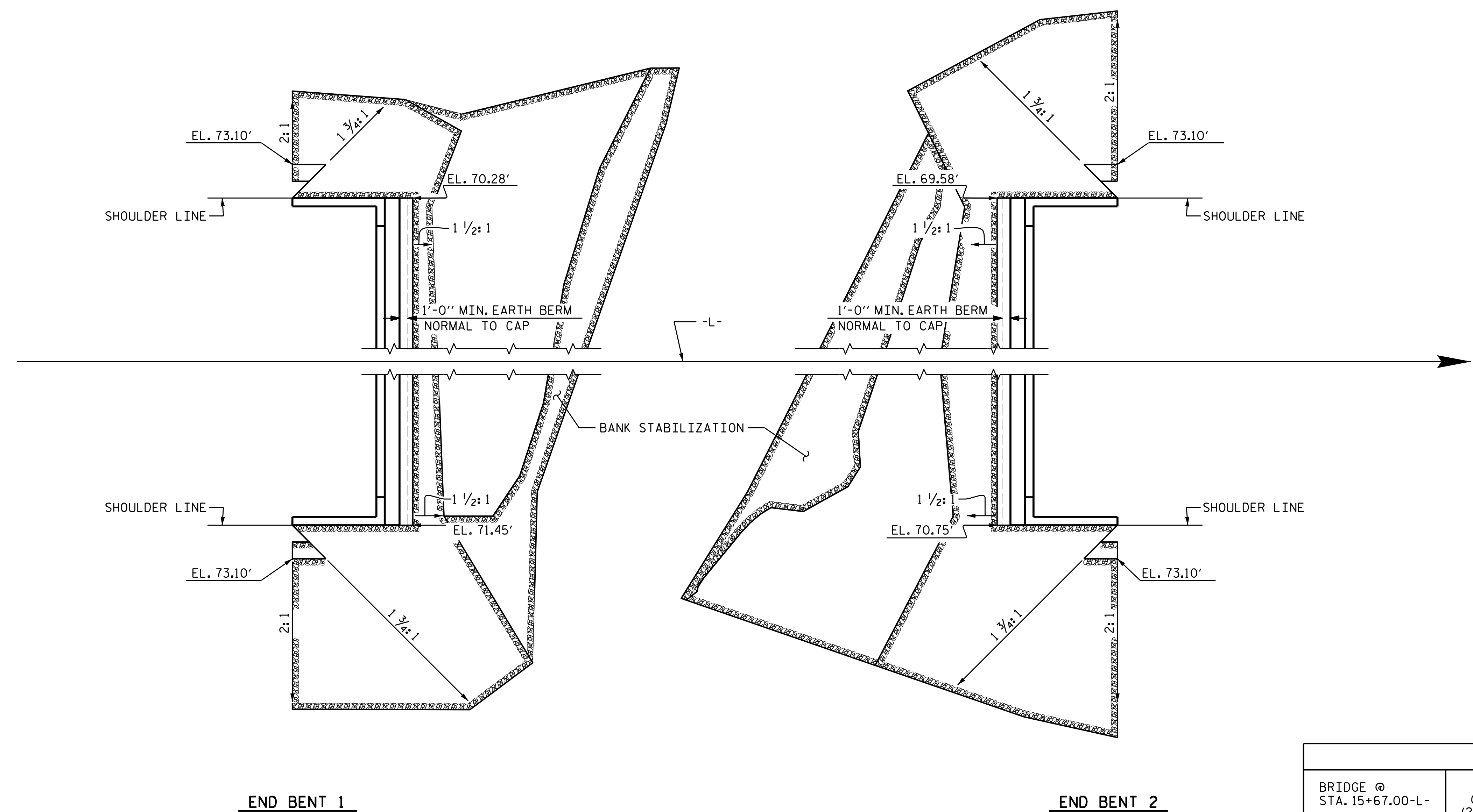
PROJECT NO. BP4.R021
 WAYNE COUNTY
 STATION: 15+67.00-L-
 SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1 & 2
 DETAILS
 8/15/2024 | 1:35 PM EDT
 TGS ENGINEERS
 706 HILLSBOROUGH ST
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

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2			4			TOTAL SHEETS 18

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CHECKED BY :	MGC	DATE :	1/23
DRAWN BY :	WJH	12/11	REV. 4/17
CHECKED BY :	AAC	12/11	MAA/THC

NOTES :
 FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.
 THE ENTIRE COST OF THE WORK REQUIRED TO PLACE IN NATIVE MATERIAL AS SHOWN SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR UNCLASSIFIED STRUCTURE EXCAVATION.
 NATIVE MATERIAL SHALL BE STOCK PILED TO USE AS BACKFILL ON TOP OF THE BANK STABILIZATION AS SHOWN. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE PROJECT SITE DURING CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER.

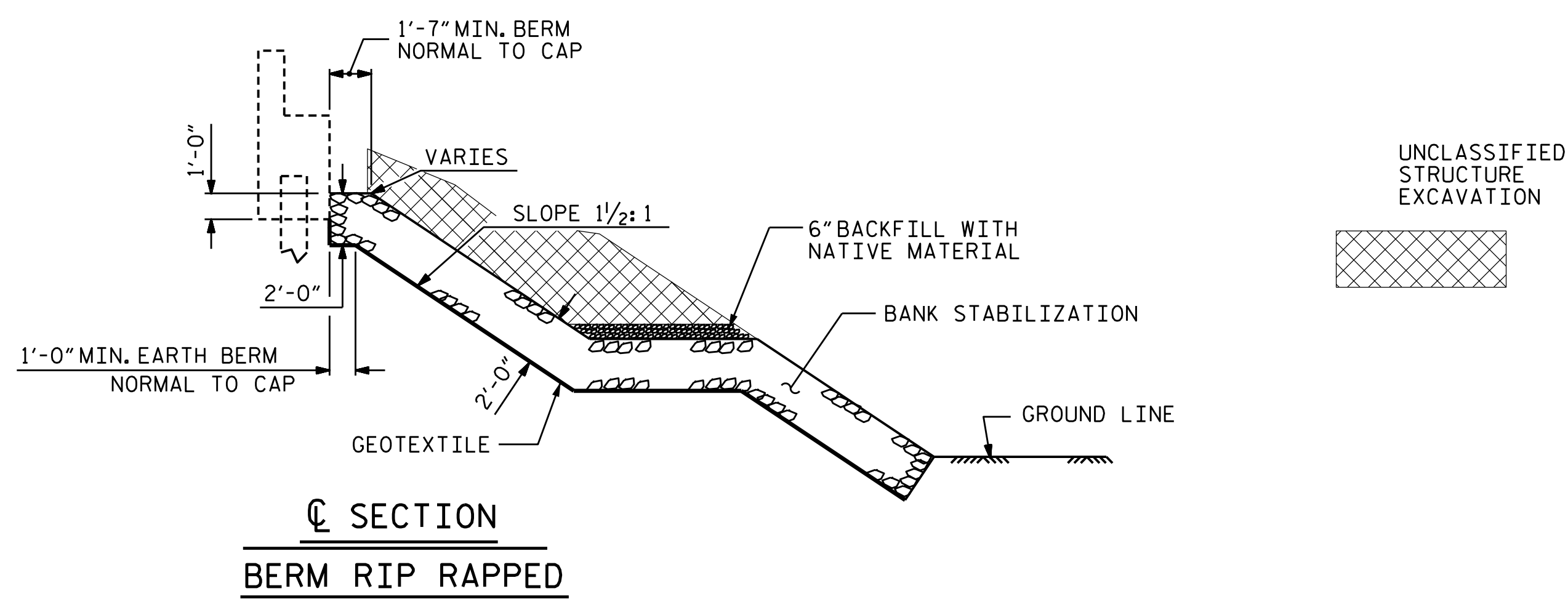


END BENT 1

END BENT 2

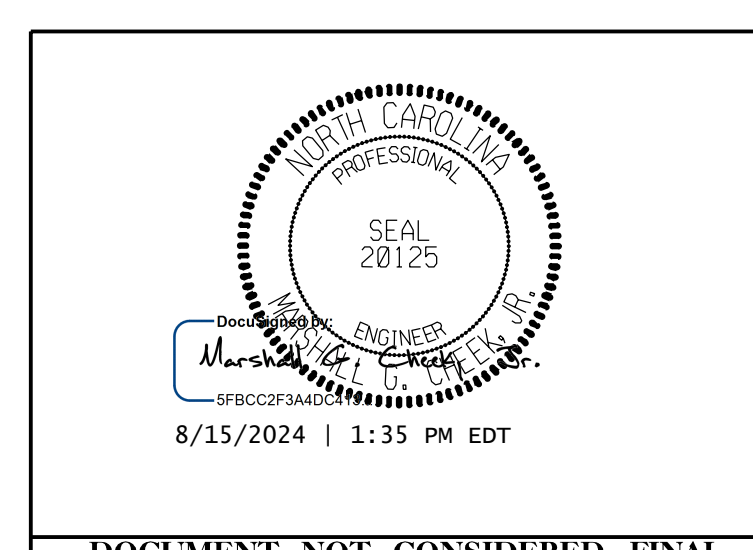
PLAN

ESTIMATED QUANTITIES				
BRIDGE @ STA. 15+67.00-L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	BANK STABILIZATION RIP RAP CLASS II (2'-0" THICK)	BANK STABILIZATION GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS	TONS	SQUARE YARDS
END BENT 1	160	180	165	185
END BENT 2	170	190	120	135



SECTION
 BERM RIP RAPPED

PROJECT NO. BP4.R021
WAYNE COUNTY
 STATION: 15+67.00-L-



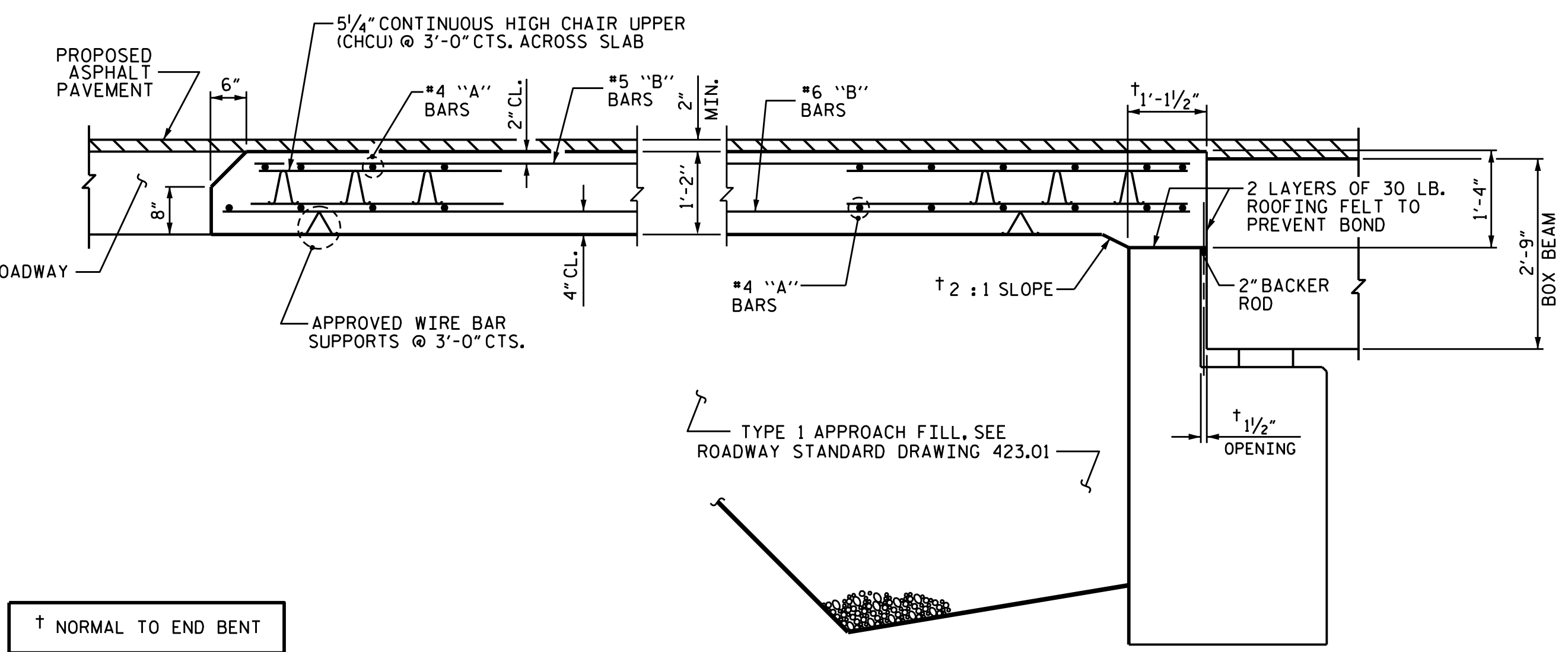
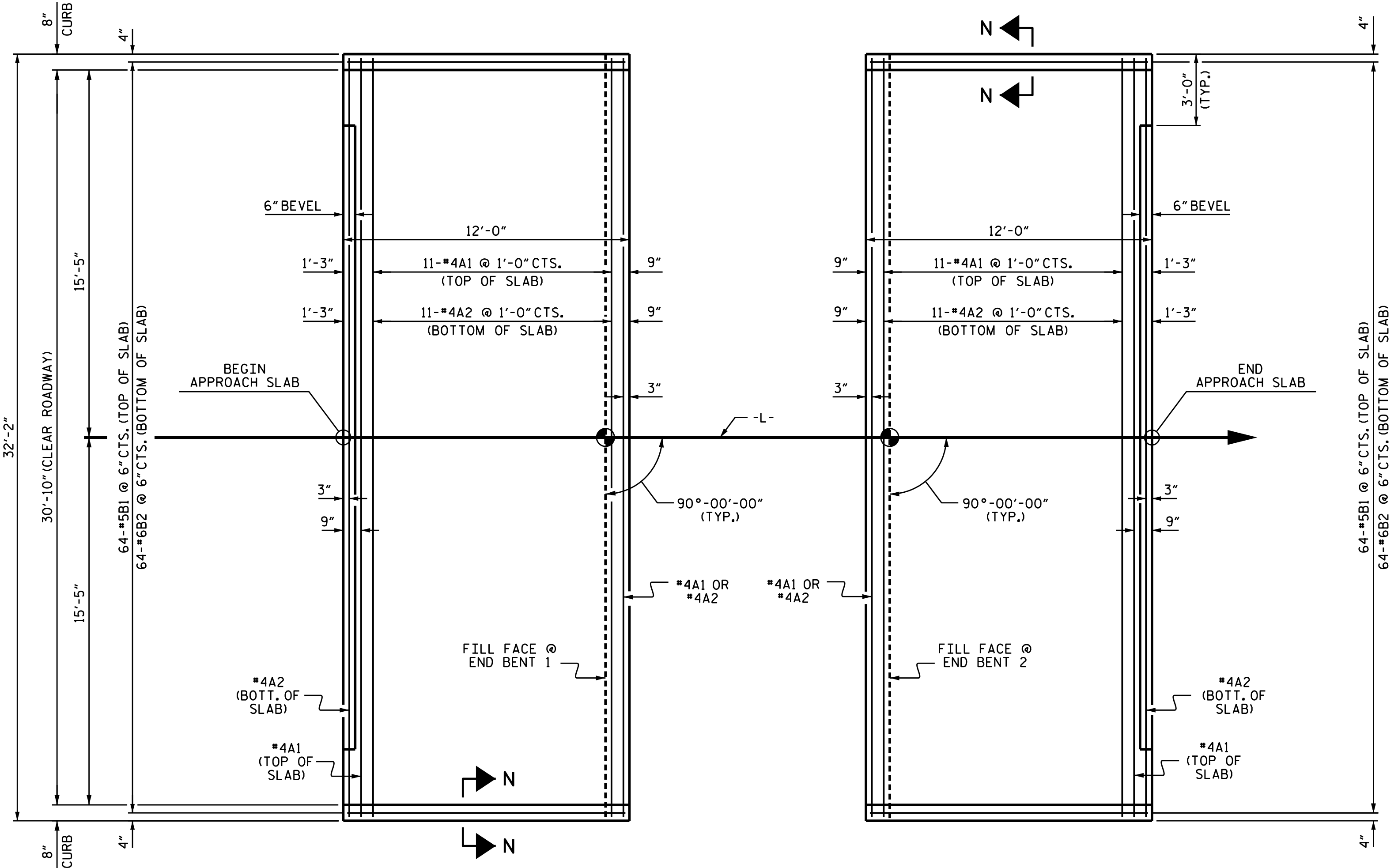
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 RIP RAP DETAILS

ASSEMBLED BY :	JLA	DATE :	12/22
CHECKED BY :	MGC	DATE :	2/23
DRAWN BY :	REK	1/84	REV. 10/17/11
CHECKED BY :	RDU	1/84	REV. 12/21/11
			REV. 12/17

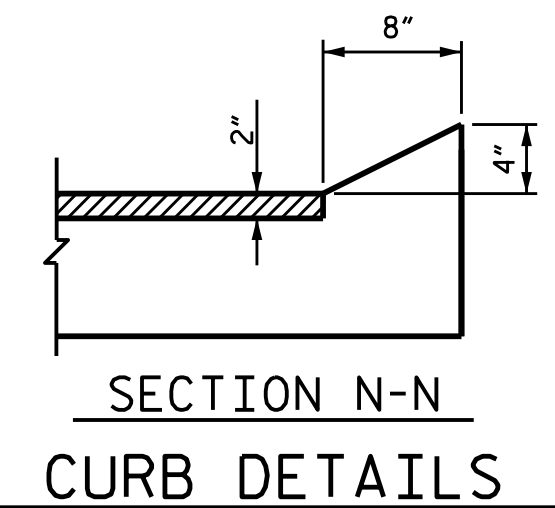
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 TGS ENGINEERS
 706 HILLSBOROUGH ST
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 18
2			4			

STD. NO. RR1

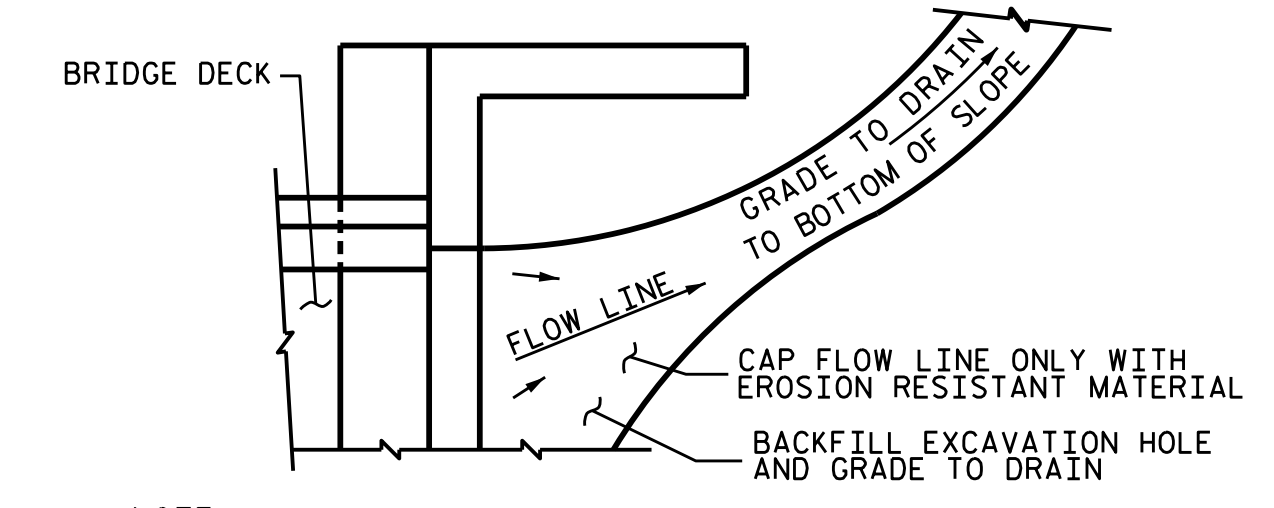


SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



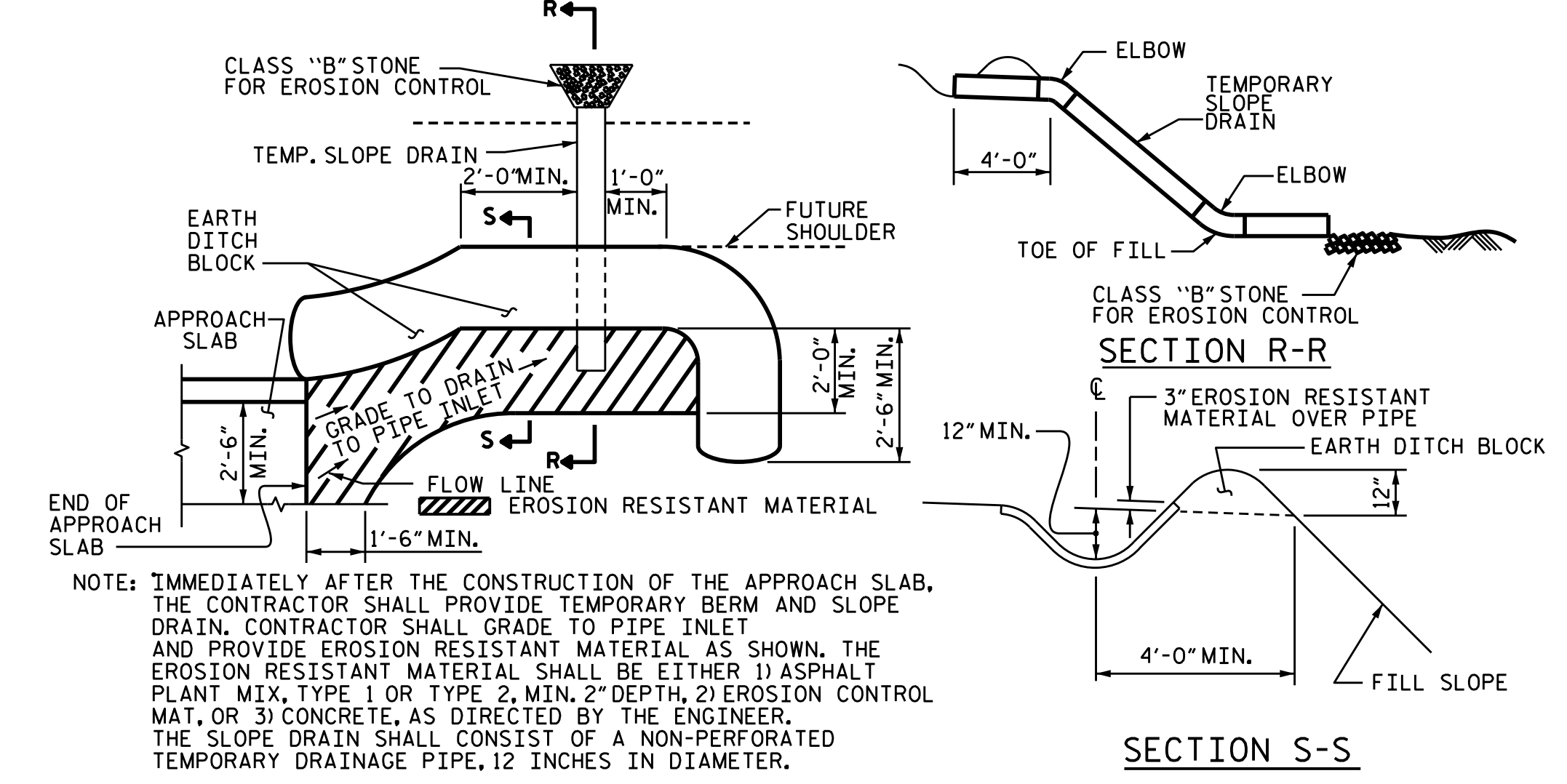
NOTES

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



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.

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. BP4.R021
 WAYNE COUNTY
 STATION: 15+67.00-L-

STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 20125
 8/15/2024 | 1:35 PM EDT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 706 HILLSBOROUGH ST
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM UNIT (SUB-REGIONAL TIER) 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-18
2			4			TOTAL SHEETS 18

ASSEMBLED BY : JLA	DATE : 12/22
CHECKED BY : MGC	DATE : 1/23
DRAWN BY : SHS/MAA	REV. 06-19 MAA/THC
CHECKED BY : BCH	REV. 08-19 BNB/THC
	REV. 07-23 BNB/SNM

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	AASHTO (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE AASHTO
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W ...	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE AASHTO
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 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY $\frac{1}{16}$ " 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.