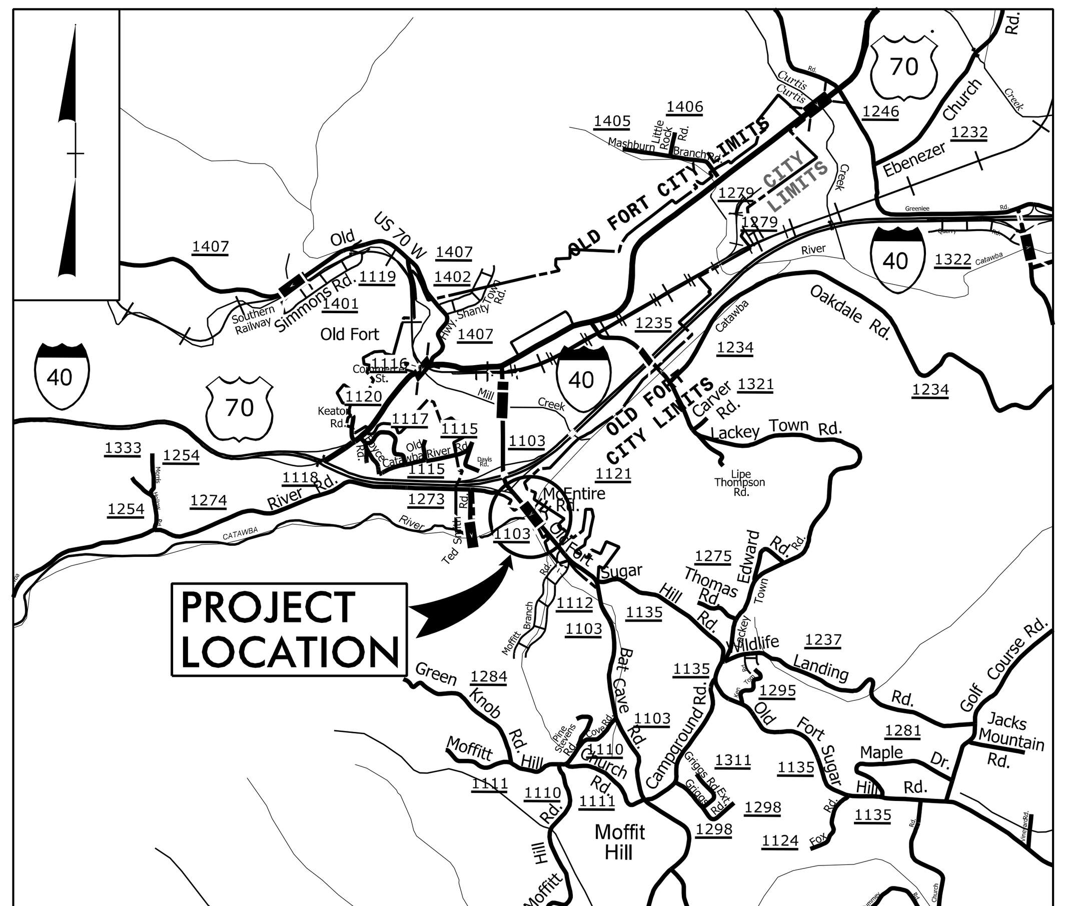
WBS: 17BP.13.R.155

CONTRACT: DM00358

See Sheet 1A For Index of Sheets
See Sheet 1B For Symbology Sheet



VICINITY MAP

100% PLAN SUBMITTAL

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

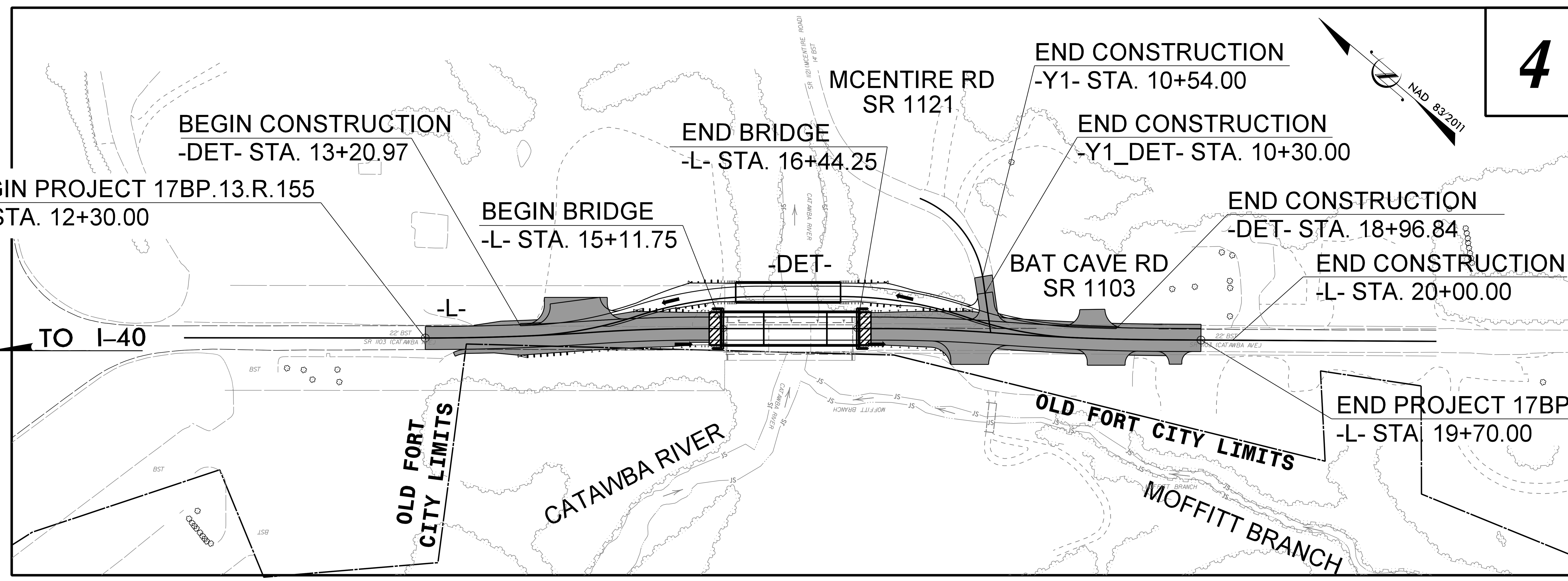
McDOWELL COUNTY

LOCATION: REPLACE EXISTING BRIDGE NO. 267 OVER CATAWBA RIVER ON BAT CAVE RD (SR 1103)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.155	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.13.PE.155	N/A	PE
17BP.13.ROW.155	N/A	ROW&UTILITY
17BP.13.CONST.155	N/A	CONSTRUCTION



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2016 = 8500
ADT 2040 = 9600
K = 8 %
D = 60 %
T = 5% *
V = 40 MPH

FUNC CLASS = MAJOR COLLECTOR

* TTST = 1 DUAL = 4

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.13.R.155	=	0.115 MI
LENGTH STRUCTURE PROJECT 17BP.13.R.155	=	0.025 MI
TOTAL LENGTH PROJECT 17BP.13.R.155	=	0.140 MI

Prepared In the Office of:
WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 14, 2021

LETTING DATE:
JUNE 15, 2022

NCDOT CONTACT:

RONYELL THIGPEN, PE
PROJECT ENGINEER

ERIC MISAK
PROJECT DESIGN ENGINEER

MICHAEL CALLOWAY
DIVISION 13 BRIDGE PROGRAM MANAGER

HYDRAULICS ENGINEER

DocuSigned by: Vidya Mohandas 5/3/2022 P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 043232 ENGINEER VIDYA MOHANDAS

ROADWAY DESIGN ENGINEER

DocuSigned by: Ronyell Thigpen 5/3/2022 P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 33290 ENGINEER RONYELL A. THIGPEN

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

09/08/99

2:21:28 PM
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5/3/2022

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I7BPJ3.RJ55	1A

ROADWAY DESIGN ENGINEER
5/4/2022
NORTH CAROLINA PROFESSIONAL SEAL 33290 ENGINEER RONYELL A THIGPEN

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INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2B-1	ROADWAY DETAIL SHEET
2B-2	DETOUR PLAN AND PROFILE
2C-1	DETAIL OF TRAILING END UNIT ASSEMBLY, AT-1 SYSTEM
2C-2	DETAIL OF GUARDRAIL ANCHOR UNIT, TYPE III
2C-3	DETAIL OF STANDARD W-BEAM GUARDRAIL
3B-1	MISCELLANEOUS SUMMARIES
3D-1	DRAINAGE SUMMARY SHEET
4	PLAN & PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL AND RIGHT OF WAY SHEETS
TMP-1 THRU TMP-6	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UC-1 THRU UC-4A	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY
X-1 THRU X-28	CROSS-SECTIONS
S-1 THRU S-29	STRUCTURE PLANS
SN	STANDARD NOTE SHEET

GENERAL NOTES: 2018 SPECIFICATIONS

EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:

POWER - DUKE ENERGY
TELECOMMUNICATIONS - FRONTIER COMM.
CATV - CHARTER/SPECTRUM
WATER & SEWER - TOWN OF OLD FORT

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

RIGHT-OF-WAY MARKERS:

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

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modified Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.14	Concrete Drop Inlet
840.15	Brick Drop Inlet
840.16	Drop Inlet Frame and Grates
840.25	Anchorage for Frames
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
866.01	Chain Link Fence
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.R55	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	CSX TRANSPORTATION
RR Signal Milepost	MILEPOST 35
Switch	SWITCH
RR Abandoned	
RR Dismantled	

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	C
Proposed Slope Stakes Fill	F
Proposed Curb Ramp	CR
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	

VEGETATION:

Single Tree	
Single Shrub	
Hedge	
Woods Line	
Orchard	
Vineyard	Vineyard

EXISTING STRUCTURES:

MAJOR:

Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW

MINOR:

Head and End Wall	CONC HW
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	CB
Paved Ditch Gutter	
Storm Sewer Manhole	S
Storm Sewer	S

UTILITIES:

POWER:

Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	P
Power Line Tower	
Power Transformer	
U/G Power Cable Hand Hole	
H-Frame Pole	
U/G Power Line LOS B (S.U.E.*)	P
U/G Power Line LOS C (S.U.E.*)	P
U/G Power Line LOS D (S.U.E.*)	P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

Gas Valve	
Gas Meter	
U/G Gas Line LOS B (S.U.E.*)	G
U/G Gas Line LOS C (S.U.E.*)	G
U/G Gas Line LOS D (S.U.E.*)	G
Above Ground Gas Line	A/G Gas

SANITARY SEWER:

Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	SS
Above Ground Sanitary Sewer	A/G Sanitary Sewer
SS Forced Main Line LOS B (S.U.E.*)	FSS
SS Forced Main Line LOS C (S.U.E.*)	FSS
SS Forced Main Line LOS D (S.U.E.*)	FSS

MISCELLANEOUS:

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

ROADWAY DETAIL SHEET

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
5/4/2022

NORTH CAROLINA PROFESSIONAL SEAL 33290 ENGINEER RONYELL A. THIGPEN

HYDRAULICS ENGINEER

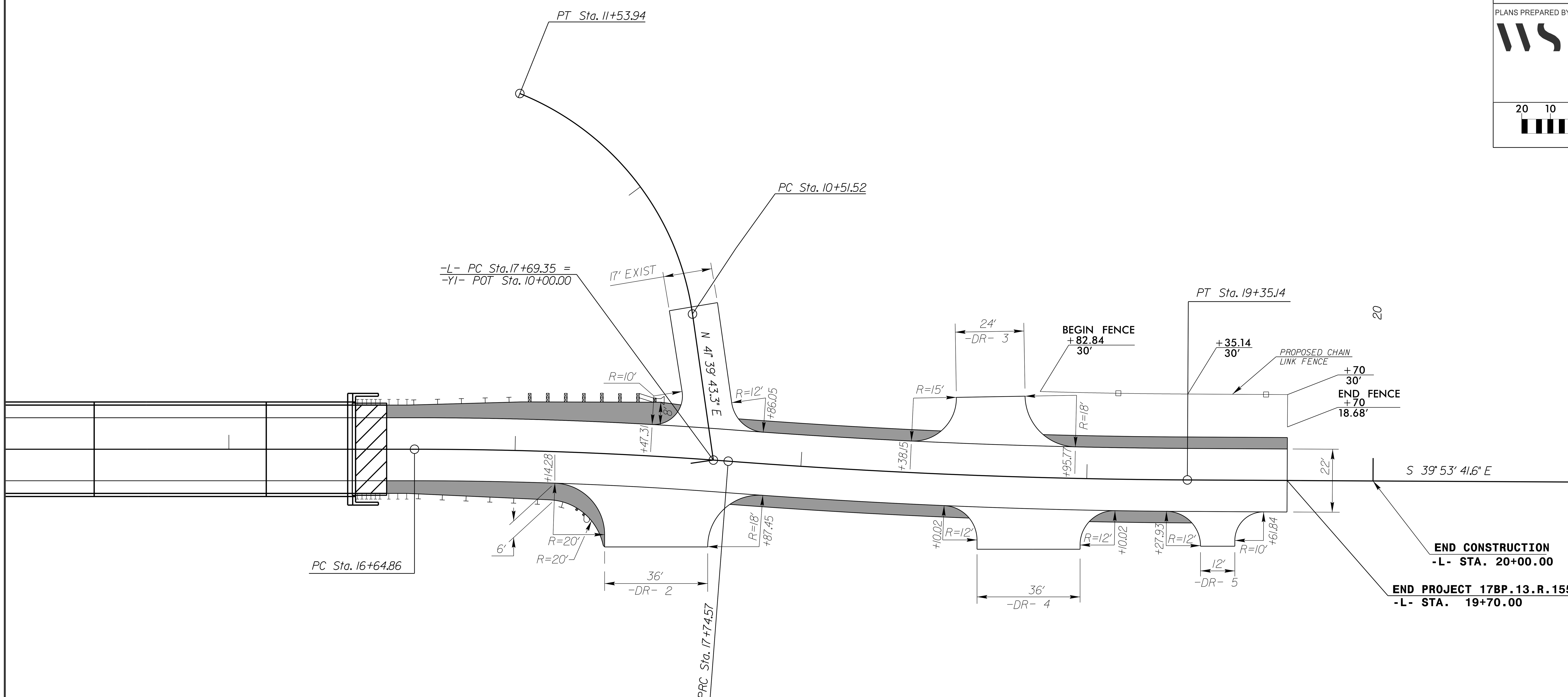
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

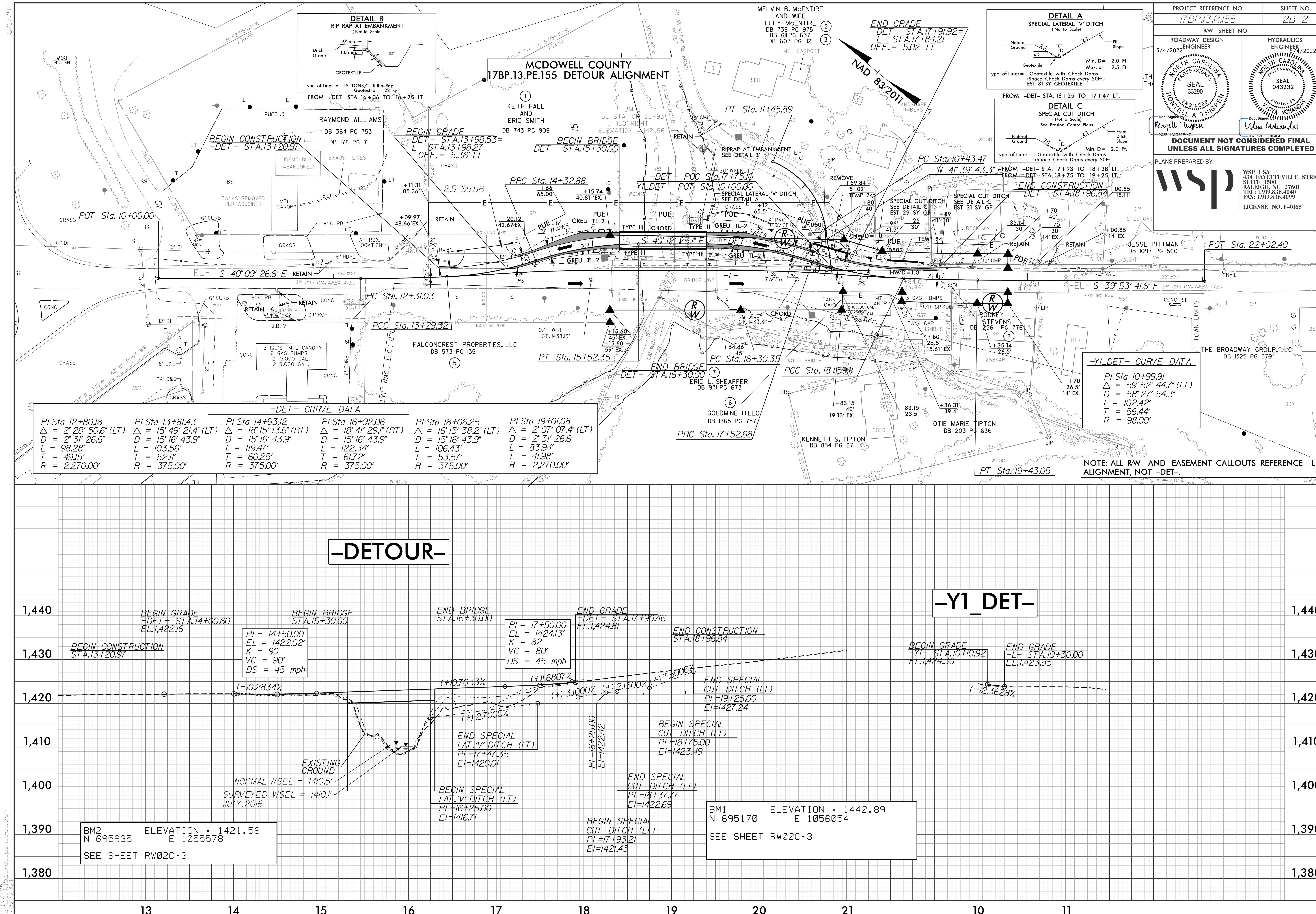
PLANS PREPARED BY:

WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

20 10 0 20 40
Graphic Scale

NAD 83/2011




PROJECT REFERENCE NO.
SHEET NO.
17BPJ3.R.155
2B-2
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
5/4/2022
NORTH CAROLINA PROFESSIONAL SEAL 33290 ENGINEER RONYELL A. THIGPEN
NORTH CAROLINA PROFESSIONAL SEAL 043232 ENGINEER VIDYA MOHANDAS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PLANS PREPARED BY:
WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165
MCDOWELL COUNTY
17BP.13.PE.155 DETOUR ALIGNMENT
NAD 83/2011
DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Type of Liner= Geotextile with Check Dams (Space Check Dams every 50Ft.)
EST. 81 SY GEOTEXTILE
FROM -DET- STA. 16+25 TO 17+47 LT.
DETAIL B
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner = 15 TONS, CL II Rip-Rap
Geotextile = 22 sy
FROM -DET- STA. 16+06 TO 16+25 LT.
DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
See Erosion Control Plans
Type of Liner= Geotextile with Check Dams (Space Check Dams every 50Ft.)
FROM -DET- STA. 17+93 TO 18+38 LT.
FROM -DET- STA. 18+75 TO 19+25 LT.
BEGIN CONSTRUCTION -DET- STA.13+20.97
BEGIN GRADE -DET- STA.13+98.53= -L- STA.13+98.27 OFF.= 5.36' LT
BEGIN BRIDGE -DET- STA.15+30.00
END BRIDGE -DET- STA.16+30.00
END GRADE -DET- STA.17+91.92= -L- STA.17+84.21 OFF.= 5.02' LT
END CONSTRUCTION -DET- STA.18+96.84
POT Sta. 10+00.00
POT Sta. 22+02.40
PC Sta. 12+31.03
PCC Sta. 13+29.32
PRC Sta. 14+32.88
PT Sta. 15+52.35
PC Sta. 16+30.35
PT Sta. 11+45.89
-Y1_DET- POT Sta. 10+00.00
-DET- POC Sta.17+75.10
PRC Sta. 17+52.68
PCC Sta. 18+59.11
PC Sta. 10+43.47
PT Sta. 19+43.05
-EL- S 40°09' 26.6" E
S 40°12' 25.1" E
-EL- S 39°53' 41.6" E
N 41°39' 43.3" E
RAYMOND WILLIAMS DB 364 PG 753 DB 178 PG 7
KEITH HALL AND ERIC SMITH DB 743 PG 909
MELVIN B. McENTIRE AND WIFE LUCY McENTIRE DB 739 PG 975 DB 611 PG 637 DB 607 PG 112
FALCONCREST PROPERTIES, LLC DB 573 PG 135
ERIC L. SHEAFFER DB 971 PG 673
GOLDMINE III LLC DB 1365 PG 757
KENNETH S. TIPTON DB 854 PG 271
OTIE MARIE TIPTON DB 203 PG 636
RODNEY L. STEVENS DB 1256 PG 776
JESSE PITTMAN DB 1097 PG 560
THE BROADWAY GROUP, LLC DB 1325 PG 579
-DET- CURVE DATA
PI Sta 12+80.18 Δ = 2° 28' 50.6" (LT) D = 2° 31' 26.6" L = 98.28' T = 49.15' R = 2,270.00'
PI Sta 13+81.43 Δ = 15° 49' 21.4" (LT) D = 15° 16' 43.9" L = 103.56' T = 52.11' R = 375.00'
PI Sta 14+93.12 Δ = 18° 15' 13.6" (RT) D = 15° 16' 43.9" L = 119.47' T = 60.25' R = 375.00'
PI Sta 16+92.06 Δ = 18° 41' 29.1" (RT) D = 15° 16' 43.9" L = 122.34' T = 61.72' R = 375.00'
PI Sta 18+06.25 Δ = 16° 15' 38.2" (LT) D = 15° 16' 43.9" L = 106.43' T = 53.57' R = 375.00'
PI Sta 19+01.08 Δ = 2° 07' 07.4" (LT) D = 2° 31' 26.6" L = 83.94' T = 41.98' R = 2,270.00'
-Y1_DET- CURVE DATA
PI Sta 10+99.91 Δ = 59° 52' 44.7" (LT) D = 58° 27' 54.3" L = 102.42' T = 56.44' R = 98.00'
NOTE: ALL R/W AND EASEMENT CALLOUTS REFERENCE -L- ALIGNMENT, NOT -DET-.
-DETOUR-
-Y1_DET-
BEGIN CONSTRUCTION STA.13+20.97
BEGIN GRADE -DET- STA.14+00.60 EL.1,422.16
BEGIN BRIDGE STA.15+30.00
END BRIDGE STA.16+30.00
END GRADE -DET- STA.17+90.46 EL.1,424.81
END CONSTRUCTION STA.18+96.84
PI = 14+50.00 EL = 1422.02' K = 90 VC = 90' DS = 45 mph
PI = 17+50.00 EL = 1424.13' K = 82 VC = 80' DS = 45 mph
(−)0.2834%
(+)0.7033%
(+)1.6807%
(+)2.7000%
(+) 3.1000%
(+) 2.1500%
(+) 7.5000%
(−)2.3628%
BEGIN GRADE -Y1- STA.10+10.92 EL.1,424.30
END GRADE -L- STA.10+30.00 EL.1,423.85
EXISTING GROUND
NORMAL WSEL = 1410.5'
SURVEYED WSEL = 1410.1' JULY, 2016
END SPECIAL LAT. 'V' DITCH (LT) PI =17+47.35 El=1420.01
BEGIN SPECIAL LAT. 'V' DITCH (LT) PI =16+25.00 El=1416.71
BEGIN SPECIAL CUT DITCH (LT) PI =17+93.21 El=1421.43
END SPECIAL CUT DITCH (LT) PI =18+37.77 El=1422.69
BEGIN SPECIAL CUT DITCH (LT) PI =18+75.00 El=1423.49
END SPECIAL CUT DITCH (LT) PI =19+25.00 El=1427.24
PI =18+25.00 El=1422.42
BM2 ELEVATION = 1421.56 N 695935 E 1055578 SEE SHEET RW02C-3
BM1 ELEVATION = 1442.89 N 695170 E 1056054 SEE SHEET RW02C-3
1,440
1,430
1,420
1,410
1,400
1,390
1,380
13
14
15
16
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21
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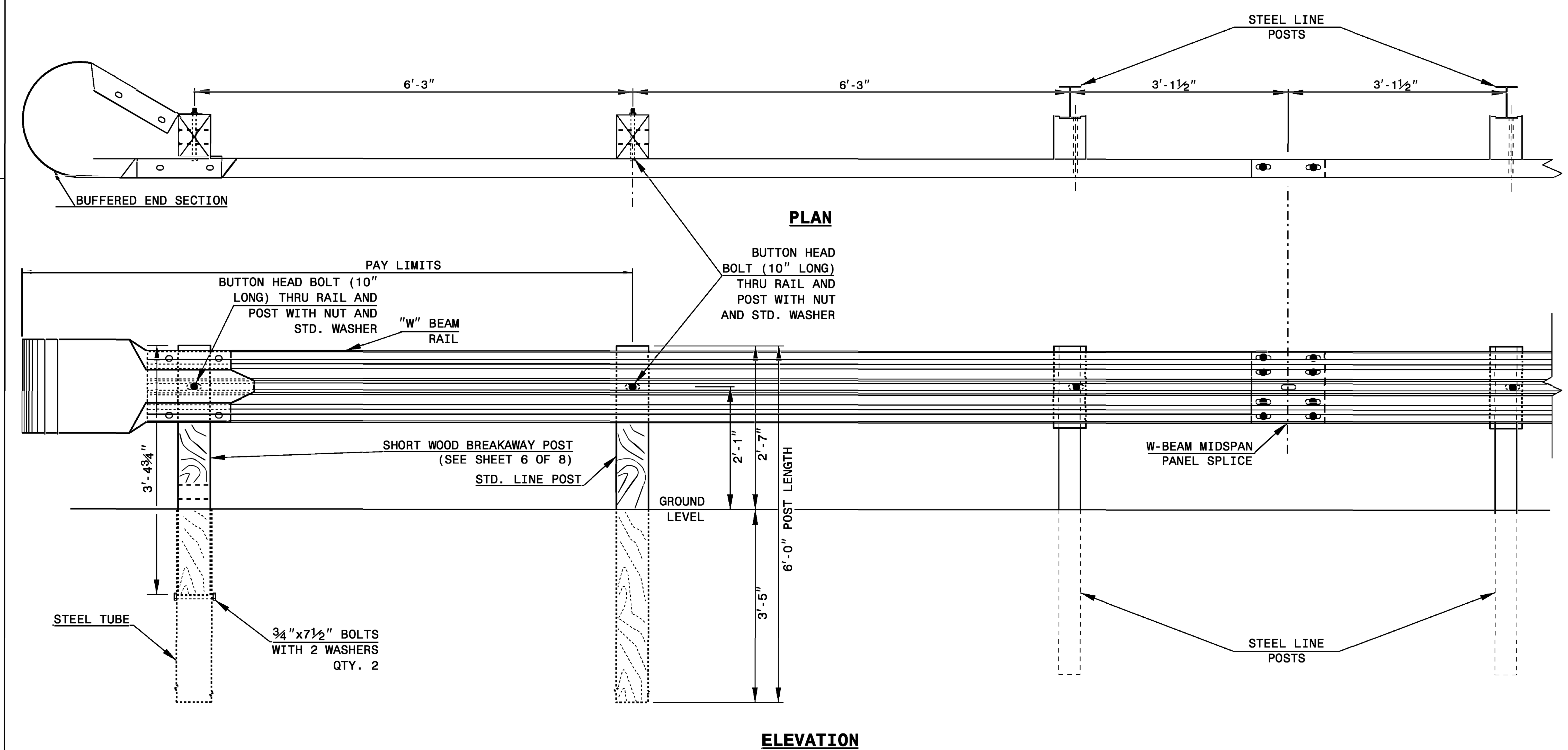
11

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ55	2C-1

PROJECT REFERENCE NO.	SHEET NO.

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION



TRAILING END UNIT ASSEMBLY

A.T.-1 SYSTEM

SHEET OF

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

NORTH CAROLINA PROFESSIONAL SEAL 022071 ENGINEER RONALD ELTON DAVENPORT, JR.

5/4/2022

DocuSigned by:
Ron Davenport
F81B6036A47A442

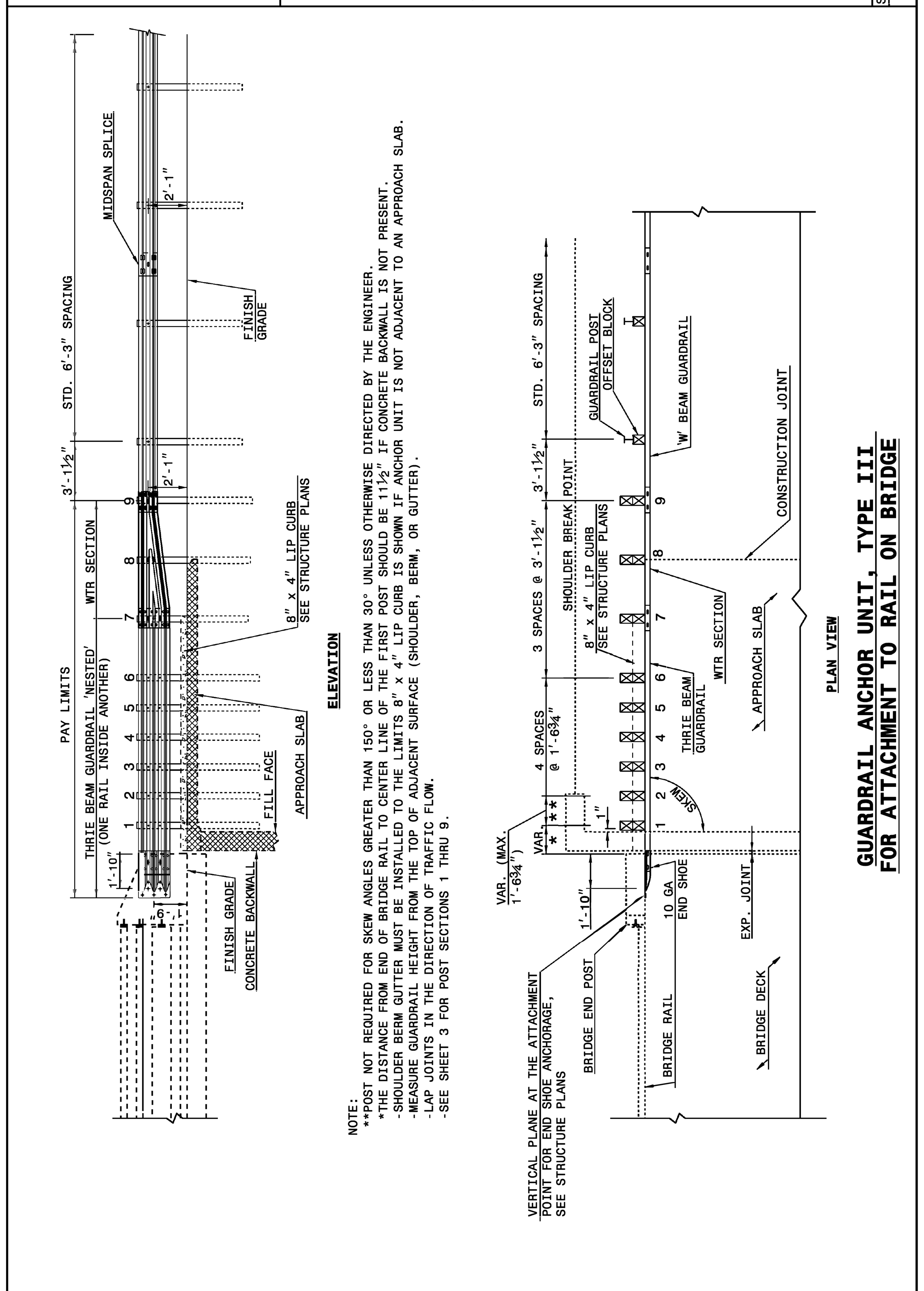
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

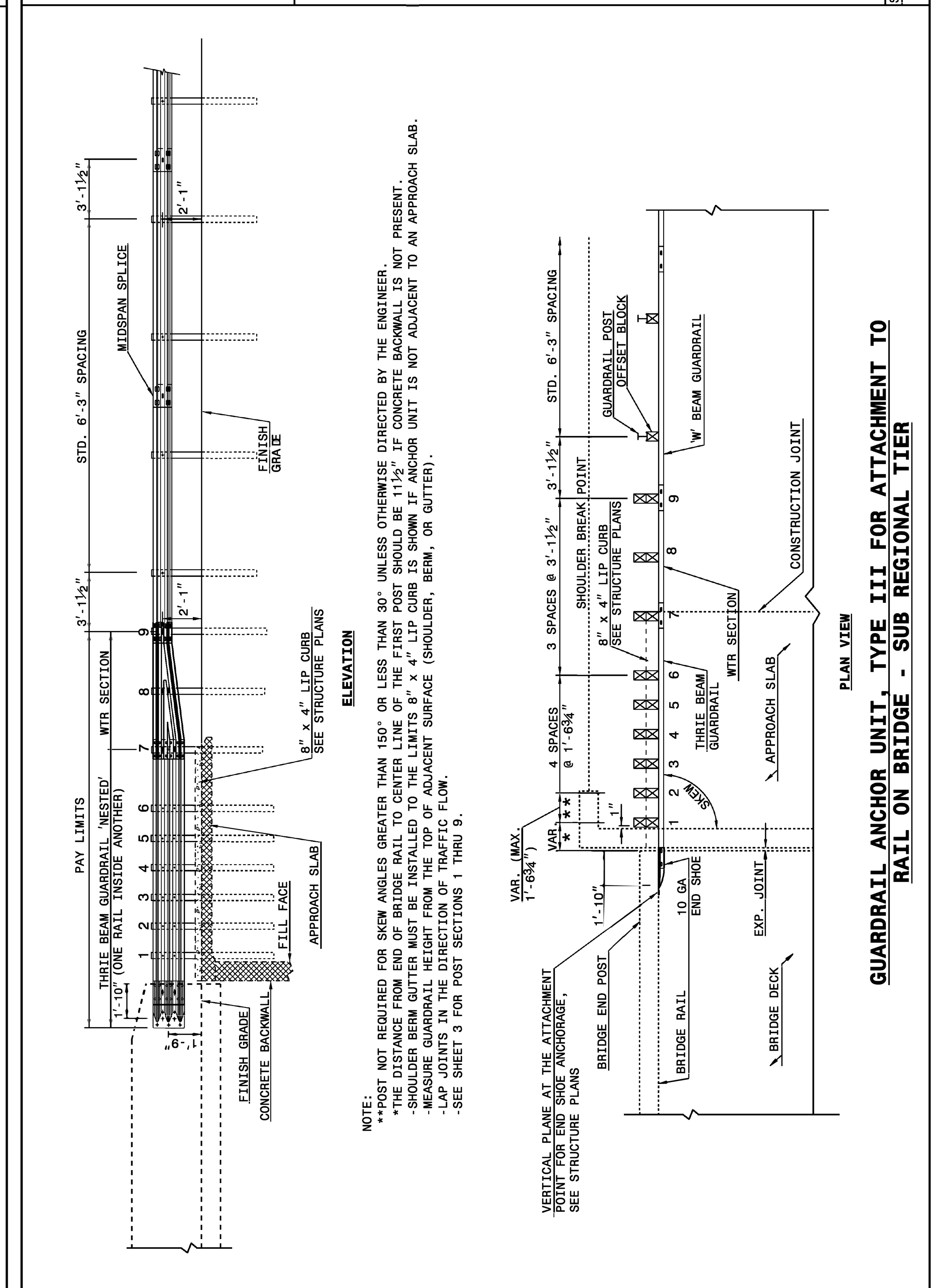
A.T.-1 SYSTEM

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

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ55	2C-2



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



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

PROJECT REFERENCE NO.	SHEET NO.

SEAL 022071 NORTH CAROLINA PROFESSIONAL ENGINEER RONALD ELTON DAVENPORT

5/4/2022

DocuSigned by: Ron Davenport F81B6038A47A442...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

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

6/2/99

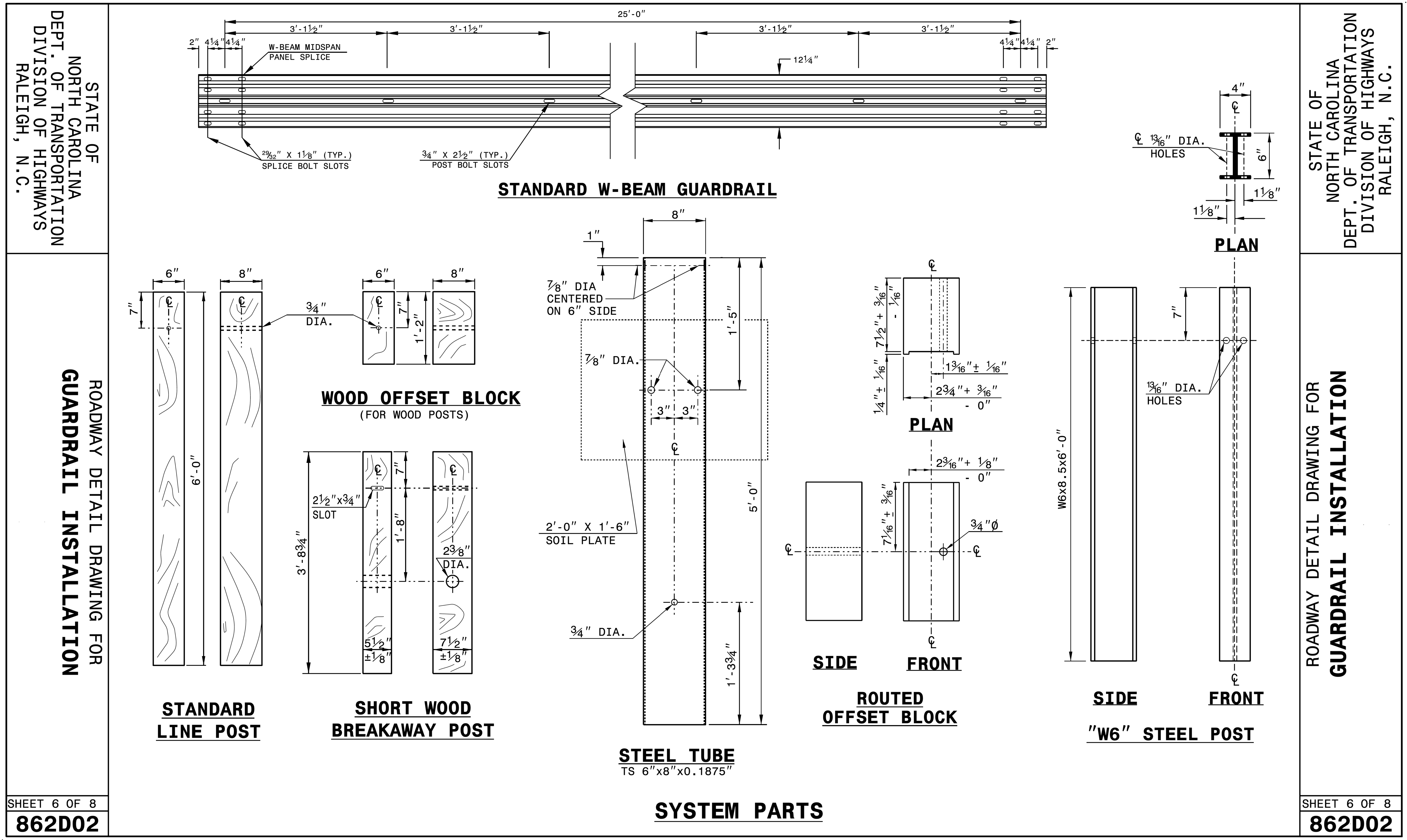
14-DEC-2017 10:36
S:\Contracts\Contracts Special Details\jhowerton\Standard Drawings\2018 Standard Drawings\Details in Lieu of Standards\Division 8\0862d0301.dgn
jhowerton AT CSU-242595

8:30:32 AM
17BPJ3.RJ55_Rdy_2C-2.dgn
5/4/2022

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ55	2C-3

PROJECT REFERENCE NO.	SHEET NO.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



SEAL 022071

5/4/2022

DocuSigned by: Ron Davenport

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

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

8:33:44 AM 17BPJ3.RJ55_Rdy_2C-3.dgn 5/4/2022

6/21/00

COMPUTED BY: DTD	DATE: 11/07/21
CHECKED BY: EDM	DATE: 11/16/21

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	3B-1

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV. (CY)	EMBANK. +% (CY)	BORROW (CY)	WASTE (CY)
12+30.00 -L-	15+11.75 -L-	9	60	51	
SUBTOTAL 1:		9	60	51	
16+30.00 -L-	19+70.00 -L-	100	106	6	
10+11.26 -Y1-	10+54.00 -Y1-	3	21	18	
SUBTOTAL 2:		103	127	24	
13+98.53 -DET-	15+30.00 -DET-	58	12	0	46
16+30.00 -DET-	17+91.92 -DET-	16	248	232	
SUBTOTAL 3:		74	260	232	46
13+98.53 -DET-	15+30.00 -DET-	20	60	40	
16+30.00 -DET-	17+91.92 -DET-	169	82	0	87
-DET REMOVAL- SUBTOTAL 4:		189	142	40	87
EARTH TO REPLACE BORROW:					
PROJECT TOTALS		375	589	347	133
WASTE IN LIEU OF BORROW				-46	-46
EST 5% TOPSOIL FOR BORROW PITS				15	
GRAND TOTALS:		375	589	316	87
SAY:		380		320	

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY WSP.
EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT.

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

PAVEMENT REMOVAL SUMMARY

LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	13+60.00	15+17.00	R	96.53
-L-	16+38.00	17+33.00	R	117.16
-L-	17+70.00	18+63.00	R	79.40
-L-	18+98.00	19+07.00	R	8.90
			TOTAL:	301.99 SY
			SAY:	310

"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

TEMPORARY GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	TYPE III	GREU TL-2	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L DET-	14+73.48	15+29.73	RT	56.25'			15+29.73		2'-11"	5'-11"	25'		0'-6"			1	1													REMOVE TEMPORARY GUARDRAIL
-L DET-	14+87.02	15+30.77	LT	43.75'				15+30.77	2'-11"	5'-11"		25'		0'-6"		1	1													REMOVE TEMPORARY GUARDRAIL
-L DET-	16+30.00	16+86.25	RT	56.25'				16+30.00	2'-11"	5'-11"		25'		0'-6"		1	1													REMOVE TEMPORARY GUARDRAIL
-L DET-	16+30.00	16+73.75	LT	43.75'			16+30.00		2'-11"	5'-11"	25'		0'-6"			1	1													REMOVE TEMPORARY GUARDRAIL
			SUBTOTAL	200.00'																										
			LESS DEDUCTIONS																											
			GREU TL-2 (4 x 25)=	100.00'																										
			AT-1 (0 x 6.25)=																											
			TYPE III (4 x 18.75)=	75.00'																										
			SUBTOTAL	175.00'																										
			TOTALS	25.00'												4	4													
			SAY	25.00'												4	4													

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	TYPE III	GREU TL-2	GREU TL-3	XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L-	13+18.00	15+11.75	RT	193.75'			15+11.75		4'-5"	7'-5"	50'		1'			1		1												
-L-	14+30.50	15+11.75	LT	81.25'				15+11.75	4'-5"	7'-5"		50'		1'		1		1												
-L-	16+44.25	17+13.00	RT	68.75'	12.50'			16+44.25	4'-5"	7'-5"						1							1							
-L-	16+44.25	17+50.50	LT	106.25'			16+44.25		4'-5"	7'-5"	50'		1'			1		1												
			SUBTOTAL	450.00'	12.50'																									
			LESS DEDUCTIONS																											
			GREU TL 3 (3 x 50)=	150.00'																										
			AT-1 (1 x 6.25)=	6.25'																										
			TYPE III (4 x 18.75)=	75.00'																										
			SUBTOTAL	231.25'																										
			TOTALS	218.75'	12.50'											4		3					1							
			SAY	225.00'	12.50'		ADDITIONAL GUARDRAIL POSTS = 5 EA									4		3					1							

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12/20/2021

COMPUTED BY:	Jonathan T. May	DATE:	11/04/2021
CHECKED BY:	Vidya Mohandas	DATE:	11/04/2021

PROJECT NO.	SHEET NO.
17BP.13.R.155	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %
L 14+87	14 RT	0401		1422.9	1417.9		
		0401	0402		1417.9	1414.0	
L 18+84	25 LT	0405		1426.9			
		0405	0404		1424.9	1421.4	
L 17+90	19 LT	0404		1424.4	1421.4		
		0404	0403		1421.4	1420.8	
L 19+27	27 LT	0406			1425.4	1425.0	
L 19+28	15 LT						
L 18+30	17 LT						
L 17+60	20 LT						
DET 17+70	20 LT	0501			1421.4	1420.0	
DET 18+57	20 LT	0502			1423.5	1422.7	
SHEET TOTALS							
PROJECT TOTALS							

C. S. PIPE (SIZE / THICKNESS OR GAUGE)

LINE & STATION	FROM	TO	12 (.064)	15 (.064)	18 (.064)	24 (.064)		30 (.079)	36 (.079)
L 14+87	0401								
	0401	0402		32					
L 18+84	0405								
	0405	0404							
L 17+90	0404								
	0404	0403							
L 19+27	0406								
L 19+28									
L 18+30									
L 17+60									
DET 17+70	0501								
DET 18+57	0502								
SHEET TOTALS				32					
PROJECT TOTALS				32					

R. C. PIPE CLASS III

LINE & STATION	FROM	TO	12	15	18	24	30	36	42	48	54	60	66	72	78	84
L 14+87	0401															
	0401	0402														
L 18+84	0405															
	0405	0404				92										
L 17+90	0404															
	0404	0403				48										
L 19+27	0406				12											
L 19+28																
L 18+30																
L 17+60																
DET 17+70	0501					44										
DET 18+57	0502					36										
SHEET TOTALS					12	220										
PROJECT TOTALS					12	220										

R. C. PIPE CLASS IV

LINE & STATION	12	15	18	24	30	36	42	48	54	60	66	72	78	84
SHEET TOTALS														
PROJECT TOTALS														

QUANTITIES FOR DRAINAGE STRUCTURES — NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)

FRAME, GRATES, AND HOOD STD. 840.03

LINE & STATION	FROM	TO	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16
L 14+87	0401		1													
	0401	0402														
L 18+84	0405															
	0405	0404														
L 17+90	0404		1												1	1
	0404	0403														
L 19+27	0406															
L 19+28																
L 18+30																
L 17+60																
DET 17+70	0501															
DET 18+57	0502															
SHEET TOTALS			2												1	1
PROJECT TOTALS			2												1	1

LINE & STATION	FROM	TO	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	15" C.S. ELBOW		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.
L 14+87	0401												1						1									
	0401	0402																					2					
L 18+84	0405																											
	0405	0404																										
L 17+90	0404																											
	0404	0403																										
L 19+27	0406																											
L 19+28																												10
L 18+30																												104
L 17+60																												31
DET 17+70	0501																											
DET 18+57	0502																											
SHEET TOTALS													1						1				2					145
PROJECT TOTALS													1						1				2					145

LINE & STATION	FROM	TO	REMARKS
L 14+87	0401		
	0401	0402	
L 18+84	0405		OPEN END PIPE
	0405	0404	
L 17+90	0404		
	0404	0403	
L 19+27	0406		
L 19+28			PIPE REMOVAL : 12" CMP
L 18+30			PIPE REMOVAL : 12" HDPE
L 17+60			PIPE REMOVAL : 18" CMP
DET 17+70	0501		TEMPORARY PIPE FOR DETOUR
DET 18+57	0502		TEMPORARY PIPE FOR DETOUR

ABBREVIATIONS

- C.A.A. CORRUGATED ALUMINIUM ALLOY
- C.B. CATCH BASIN
- C.S. CORRUGATED STEEL
- D.I. DROP INLET
- G.D.I. GRATED DROP INLET
- H.D.P.E. HIGH DENSITY POLYETHYLENE
- J.B. JUNCTION BOX
- M.H. MANHOLE
- N.S. NARROW SLOT
- P.V.C. POLYVINYL CHLORIDE
- R.C. REINFORCED CONCRETE
- T.B.D.I. TRAFFIC BEARING DROP INLET
- T.B.J.B. TRAFFIC BEARING JUNCTION BOX
- W.S. WIDE SLOT

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ55	4
R/W SHEET NO.	

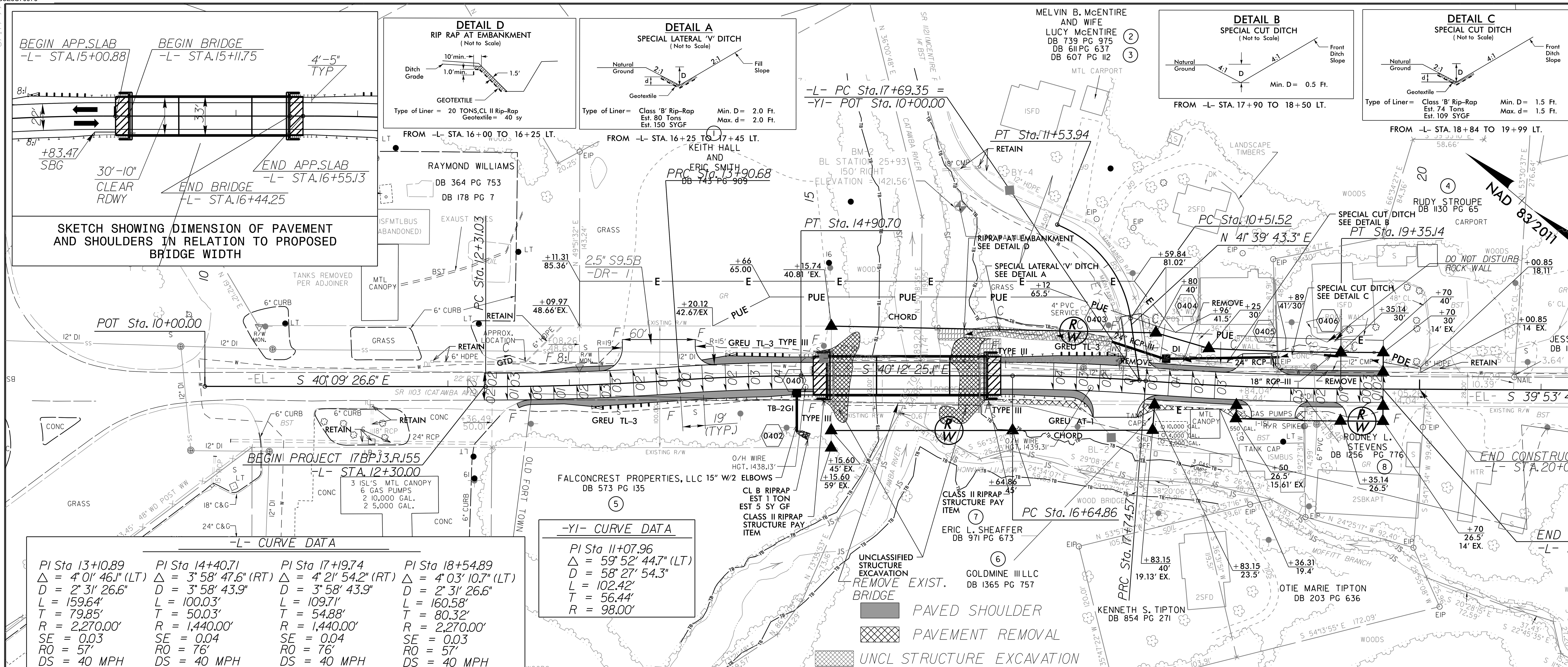
ROADWAY DESIGN ENGINEER 5/4/2022 — NORTH CAROLINA PROFESSIONAL SEAL 33290 ENGINEER RONYELL A. THIGPEN

HYDRAULICS ENGINEER 5/4/2022 — NORTH CAROLINA PROFESSIONAL SEAL 043232 ENGINEER VIDYA MOHANDAS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:

WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

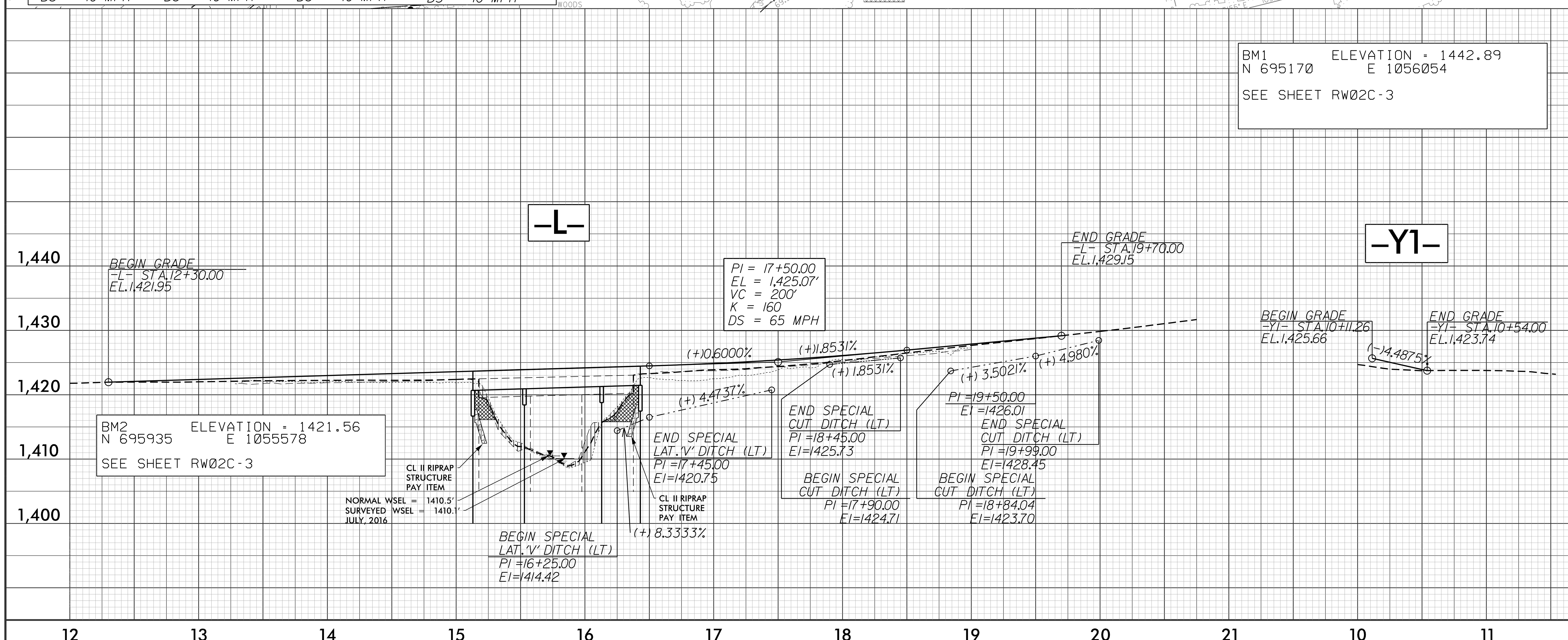


-L- CURVE DATA

PI Sta 13+10.89	PI Sta 14+40.71	PI Sta 17+19.74	PI Sta 18+54.89
Δ = 4°01' 46.1" (LT)	Δ = 3°58' 47.6" (RT)	Δ = 4°21' 54.2" (RT)	Δ = 4°03' 10.7" (LT)
D = 2°31' 26.6"	D = 3°58' 43.9"	D = 3°58' 43.9"	D = 2°31' 26.6"
L = 159.64'	L = 100.03'	L = 109.71'	L = 160.58'
T = 79.85'	T = 50.03'	T = 54.88'	T = 80.32'
R = 2,270.00'	R = 1,440.00'	R = 1,440.00'	R = 2,270.00'
SE = 0.03	SE = 0.04	SE = 0.04	SE = 0.03
RO = 57'	RO = 76'	RO = 76'	RO = 57'
DS = 40 MPH	DS = 40 MPH	DS = 40 MPH	DS = 40 MPH

-Y1- CURVE DATA

PI Sta 11+07.96
Δ = 59°52' 44.7" (LT)
D = 58°27' 54.3"
L = 102.42'
T = 56.44'
R = 98.00'



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2600	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 1417.9	FT
BASE DISCHARGE	= 4640	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1420.6	FT
OVERTOPPING DISCHARGE	= 4900	CFS
OVERTOPPING FREQUENCY	= > 100 (+)	YRS
OVERTOPPING ELEVATION	= 1421.5	FT
DATE OF SURVEY	= 07/2016	
W.S.ELEVATION AT DATE OF SURVEY	= 1410.1	FT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.155	RW01	7

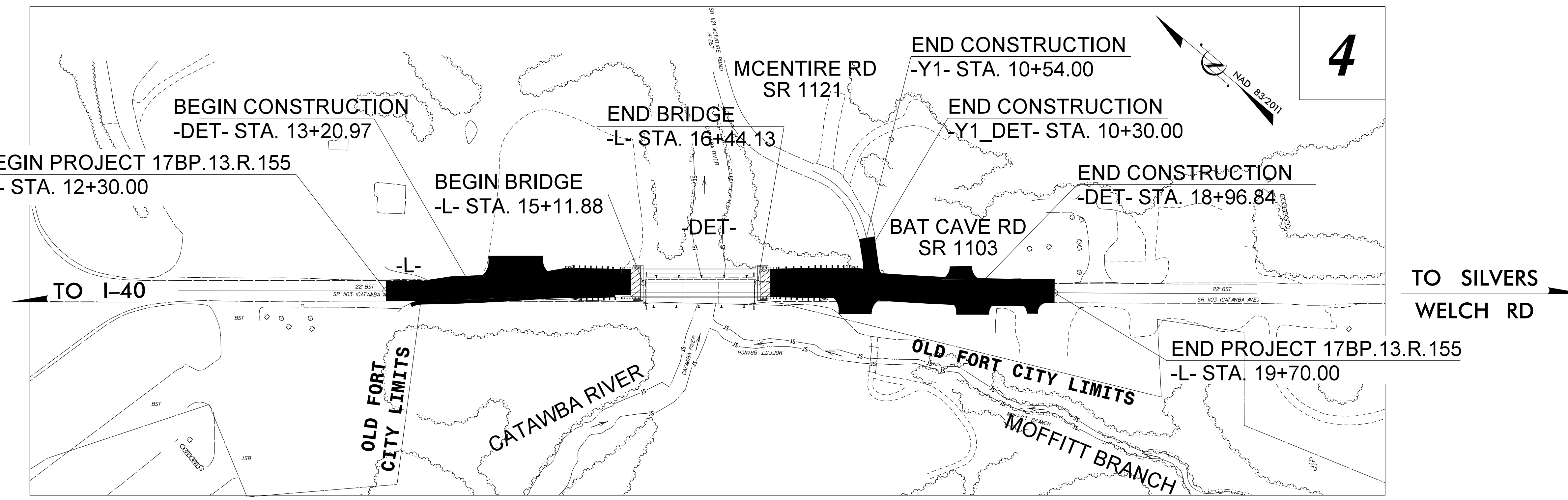
WBS: 17BP.13.R.155

09/08/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

McDOWELL COUNTY



GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5868-1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 696,504.657(ft) EASTING: 1,054,849.675(ft)
ELEVATION: 1,419.79(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99983052
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5868-1" TO -L- STATION 10+00 IS
S 48-24'36.4" E 285.56(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared In the Office of:

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: *07/10/2019*

LETTING DATE: *10/07/2019*

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A. PARRIS

DocuSigned by:
F1570CB85C7249A...

5/10/2021

SIGNATURE: *Date:*

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

$$$$SYSTIME$$$$
$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	RW02C–1

Location and Surveys

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

PROJECT SURVEYOR

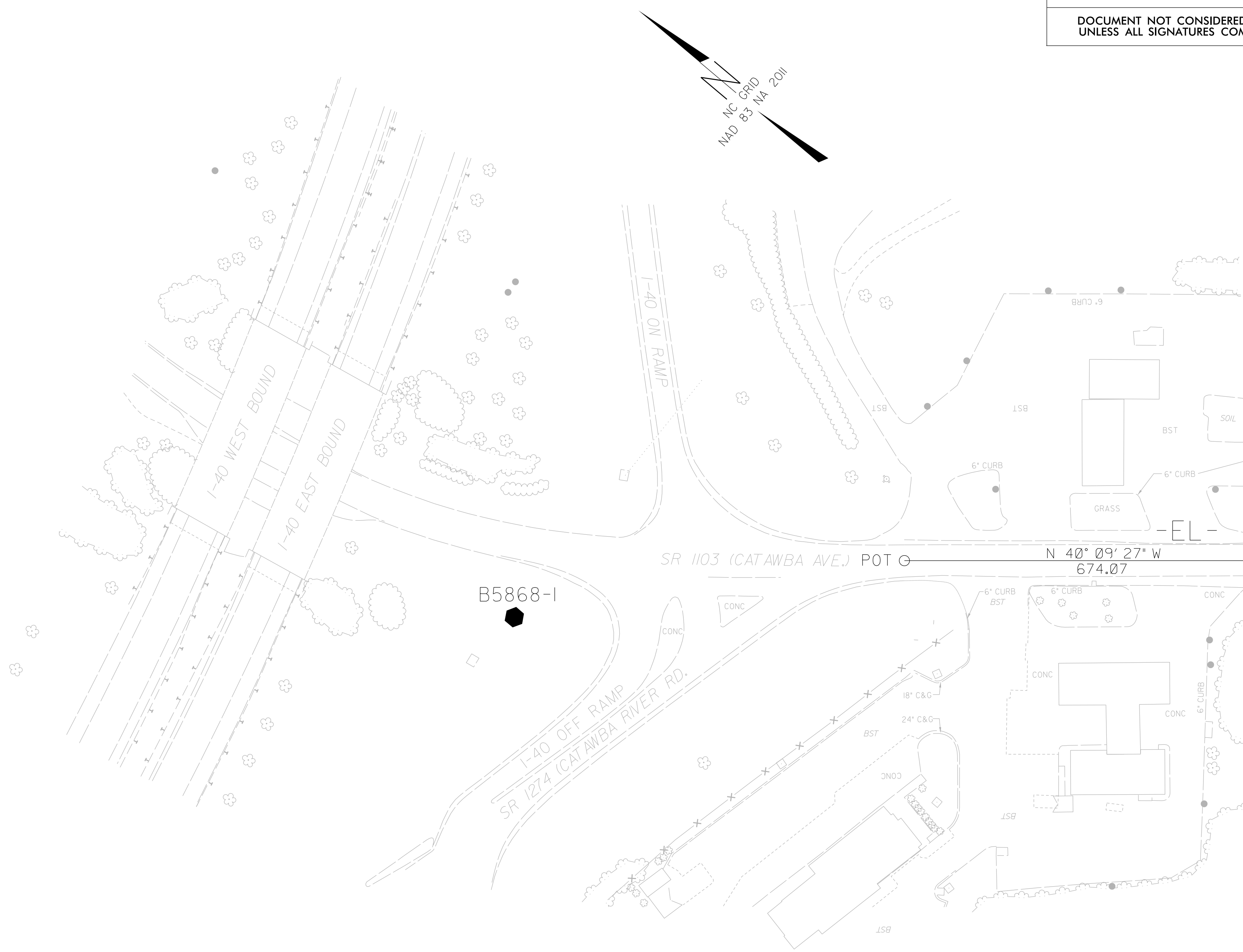
NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A. PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

B5868-2



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

Class of survey: ***AA***
Type of GPS field procedure: VRS
Dates of survey: March 2016
Datum/Epoch:NAD83 NA/2011
Published/Fixed-control use: N/A
Localized around: B5868-1
Northing:696504.657
Easting:1054849.675
Combined grid factor:0.99983052
Geoid model:12NC
Units:US Survey Feet

I also certify that the Baseline Control for this project was verified under my direct and responsible charge from an actual survey made by another firm; 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 April, 2016 to May, 2016 , 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 10th day of May, 2021.

DocuSigned by:
F1570CB85C7248A...
Professional Land Surveyor L-4529

SEE SHEET RW02C–3 FOR FURTHER ALIGNMENT DETAILS

NOTES:

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

REVISIONS

6/2/99

10-MAY-2021 11:06
V:\NC\Survey\032112-12 Brdg 267 ROW Staking\Survey\Data - Work\17BP.13.R.155_ls_RW02C-1.dgn
jcgordon AT WKS-1903PY1

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

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

Class of survey: ***AA***
Type of GPS field procedure: VRS
Dates of survey: March 2016
Datum/Epoch:NAD83 NA/2011
Published/Fixed-control use: N/A
Localized around: B5868-1
Northing:696504.657
Easting:1054849.675
Combined grid factor:0.99983052
Geoid model:12NC
Units:US Survey Feet

I also certify that the Baseline Control for this project was verified under my direct and responsible charge from an actual survey made by another firm; 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 April, 2016 to May, 2016 , 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 10th day of May, 2021.

DocuSigned by:
F1570C885C7248A...

Professional Land Surveyor L-4529

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	RW02C-2

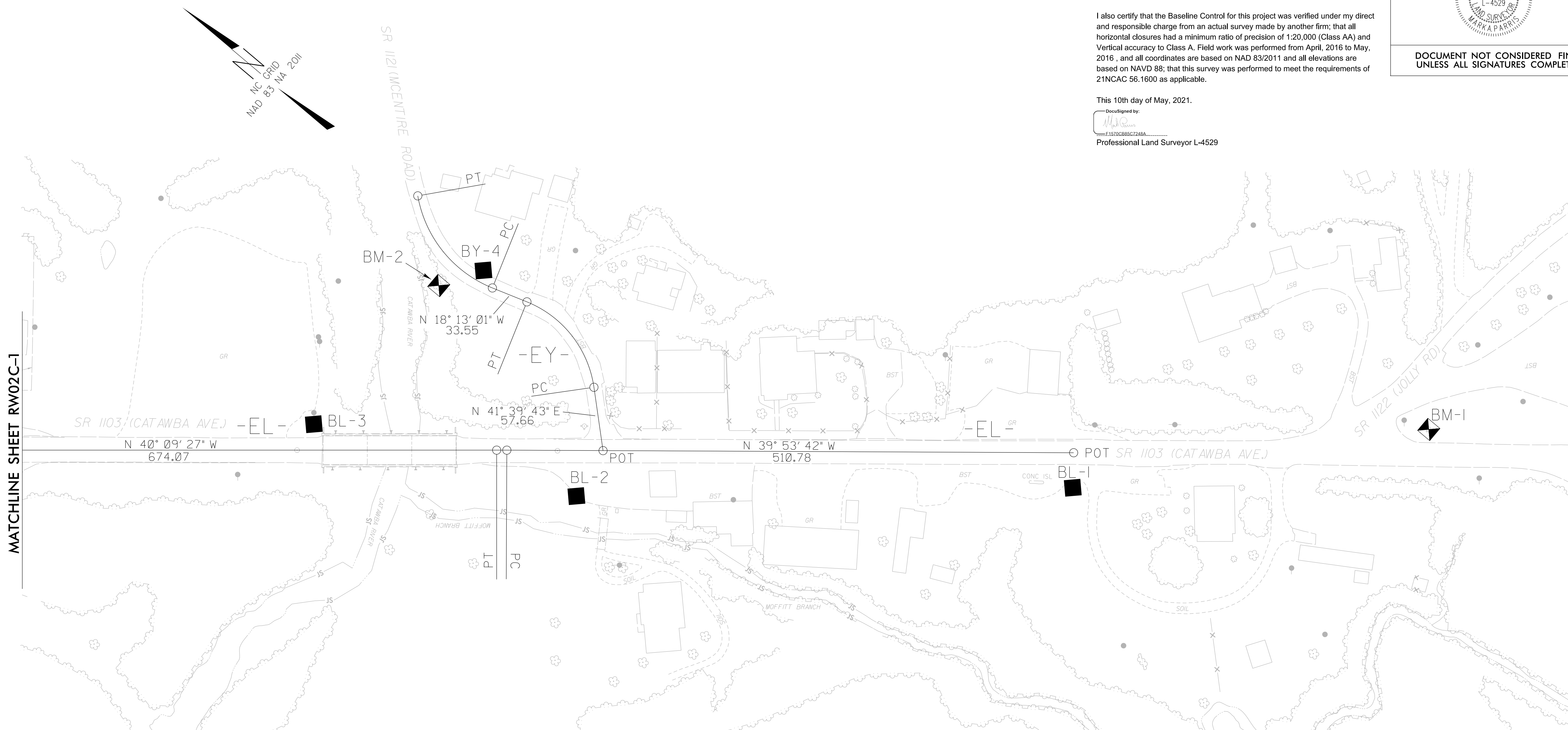
Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A. PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET RW02C–3 FOR FURTHER ALIGNMENT DETAILS

NOTES:

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

2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

10-MAY-2021 11:08
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jcgordon AT WKS-1903PY-1

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	RW02C-3

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A. PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	BL-1	695381.2850	1055806.7780	1433.13
2	BL-2	695718.2740	1055512.5390	1423.51
3	BL-3	695940.9080	1055409.4590	1421.09
GPS1	B5868-1	696504.6570	1054849.6750	1419.79

BY

POINT	DESC.	NORTH	EAST	ELEVATION
Y2	BL-2	695718.2740	1055512.5390	1423.51
4	BY-4	695913.4390	1055613.9000	1421.33

BM1 ELEVATION = 1442.89
N 695170 E 1056054
IS MARKED BOLT ON TOP FLANGE OFFIREHYDRANT

BM2 ELEVATION = 1421.56
N 695935 E 1055578
IS SPIKE SET IN BASE OF 30" WALNUT

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

Class of survey: ***AA***
Type of GPS field procedure: VRS
Dates of survey: March 2016
Datum/Epoch:NAD83 NA/2011
Published/Fixed-control use: N/A
Localized around: B5868-1
Northing:696504.657
Easting:1054849.675
Combined grid factor:0.99983052
Geoid model:12NC
Units:US Survey Feet

I also certify that the Baseline Control for this project was verified under my direct and responsible charge from an actual survey made by another firm; 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 April, 2016 to May, 2016 , 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 10th day of May, 2021.

DocuSigned by:
F1570CB85C7248A...

Professional Land Surveyor L-4529

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	695401.031	1055831.447							
LINE			N 39°53'41.6" W	510.78					
PC	695792.916	1055503.840							
CURVE			N 40°01'34.1" W	9.16	00°15'45.0"(LT)	02°51'53.2"	9.16	4.58	2000.00
PT	695799.933	1055497.947							
LINE			N 40°09'26.6" W	674.07					
POT	696315.105	1055063.249							

EY

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	695726.374	1055559.414							
LINE			N 41°39'43.3" E	57.66					
PC	695769.451	1055597.743							
CURVE			N 11°43'20.9" E	97.82	59°52'44.7"(LT)	58°27'54.3"	102.42	56.44	98.00
PT	695865.231	1055617.618							
LINE			N 18°13'01.5" W	33.55					
PC	695897.100	1055607.129							
CURVE			N 10°49'14.6" E	106.79	58°04'32.2"(RT)	52°05'13.5"	111.50	61.07	110.00
PT	696001.987	1055627.177							

NOTES:

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

2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS

6/2/99

10-MAY-2021 11:10
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jegordon AT WKS-1903PY-1

6/2/99

REVISIONS

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	RW02D-1

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A. PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

This 10th day of May, 2021.

DocuSigned by:

E1570CB85C7246A...

Professional Land Surveyor L-4529

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	696315.1048	1055063.2487
PC	12+31.03	696138.5317	1055212.2395
PRC	13+90.68	696020.2393	1055319.3957
PT	14+90.70	695946.1513	1055386.5673
PC	16+64.86	695813.1429	1055498.9958
PRC	17+74.57	695726.7431	1055566.5581
PT	19+35.14	695600.0079	1055665.1066
POT	21+94.49	695401.0309	1055831.4470

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	695730.9634	1055563.4980
PC	10+51.52	695769.4508	1055597.7432
PT	11+53.94	695865.2314	1055617.6176

NOTES:

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

2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATINO REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

10-MAY-2021 11:12
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jcgordon AT WKS-1903PY-1

6/2/99

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	RW03E-1

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A. PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , Mark A. Parris , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 5/05/21 to 5/07/21, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 10th day of May, 2021.

DocuSigned by:
F1570CB85C7248A...

Professional Land Surveyor L-4529

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	15+15.60	45.00	695898.0849	1055368.2743
L	15+15.74	-40.81	695953.3695	1055433.8992
L	16+64.86	45.00	695784.0931	1055464.6286
L	17+80.00	-40.00	695745.8425	1055602.1139
L	17+83.15	40.05	695696.2210	1055539.2260
L	17+83.15	19.13	695708.5325	1055556.1348
L	18+25.00	-30.00	695704.2943	1055620.4636
L	18+50.00	26.50	695650.1174	1055590.7813
L	18+50.00	15.61	695656.7853	1055599.3943
L	19+35.14	-30.00	695619.2493	1055688.1233
L	19+35.14	26.50	695583.0113	1055644.7752
L	19+70.00	-14.00	695582.2430	1055698.2053
L	19+70.00	-30.00	695592.5057	1055710.4804
L	19+70.00	14.00	695564.2849	1055676.7226
L	19+70.00	26.50	695556.2677	1055667.1323

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	14+20.12	-42.67	696028.0270	1055370.9038
L	14+66.00	-65.00	696007.6851	1055419.3744
L	17+12.00	-65.50	695817.2742	1055580.2123
L	17+96.00	-41.50	695734.0453	1055612.6004
L	18+89.00	-30.00	695654.4773	1055659.2766
L	18+89.00	-41.00	695661.3595	1055667.8578
L	20+00.85	-14.00	695558.5745	1055717.9917
L	20+00.85	-18.11	695561.2131	1055721.1480

REVISIONS

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED May 5,2021 TO May 7,2021 .

10-MAY-2021 11:16
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jcgordon AT WKS-1903PY-1

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	RW04

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4529 LAND SURVEYOR MARK A. PARRIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Mark A. Parris, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from 5/05/21 to 5/07/21, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 20th of December, 2021.

Professional Land Surveyor L-4529

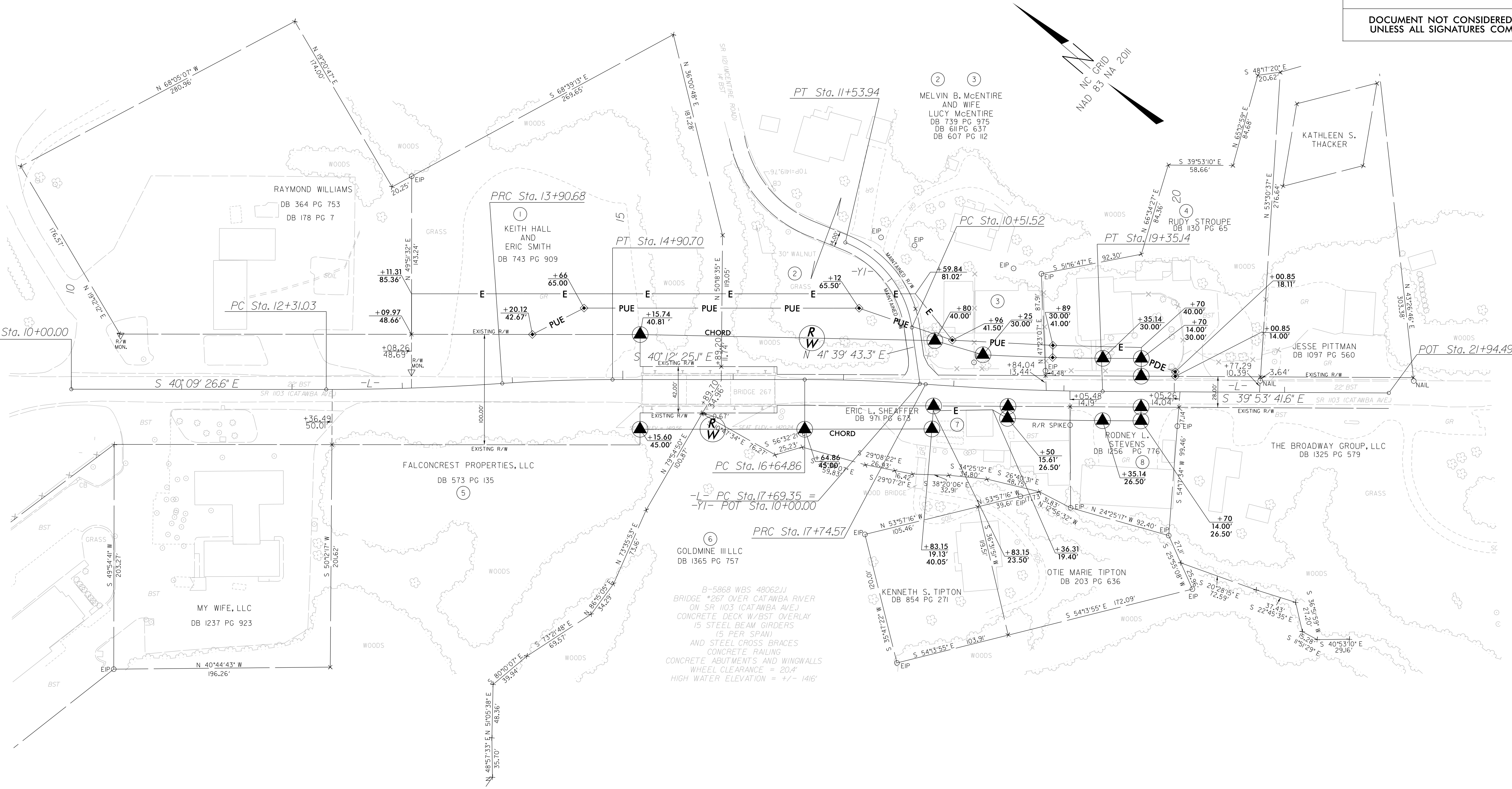
-L- CURVE DATA

PI Sta 13+10.89	PI Sta 14+40.71	PI Sta 17+19.74	PI Sta 18+54.89
△ = 4° 01' 46.1" (LT)	△ = 3° 58' 47.6" (RT)	△ = 4° 21' 54.2" (RT)	△ = 4° 03' 10.7" (LT)
D = 2° 31' 26.6"	D = 3° 58' 43.9"	D = 3° 58' 43.9"	D = 2° 31' 26.6"
L = 159.64'	L = 100.03'	L = 109.71'	L = 160.58'
T = 79.85'	T = 50.03'	T = 54.88'	T = 80.32'
R = 2,270.00'	R = 1,440.00'	R = 1,440.00'	R = 2,270.00'

-Y1- CURVE DATA

PI Sta 11+07.96
△ = 59° 52' 44.7" (LT)
D = 58° 27' 54.3"
L = 102.42'
T = 56.44'
R = 98.00'

REVISIONS



NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 5/05/21 TO 5/07/21.

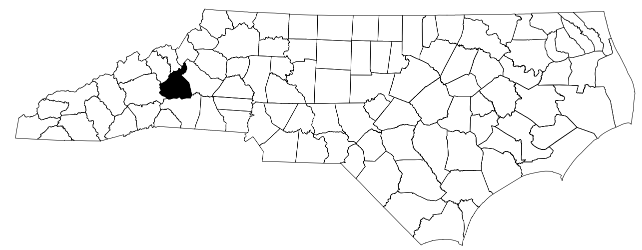
6/2/99

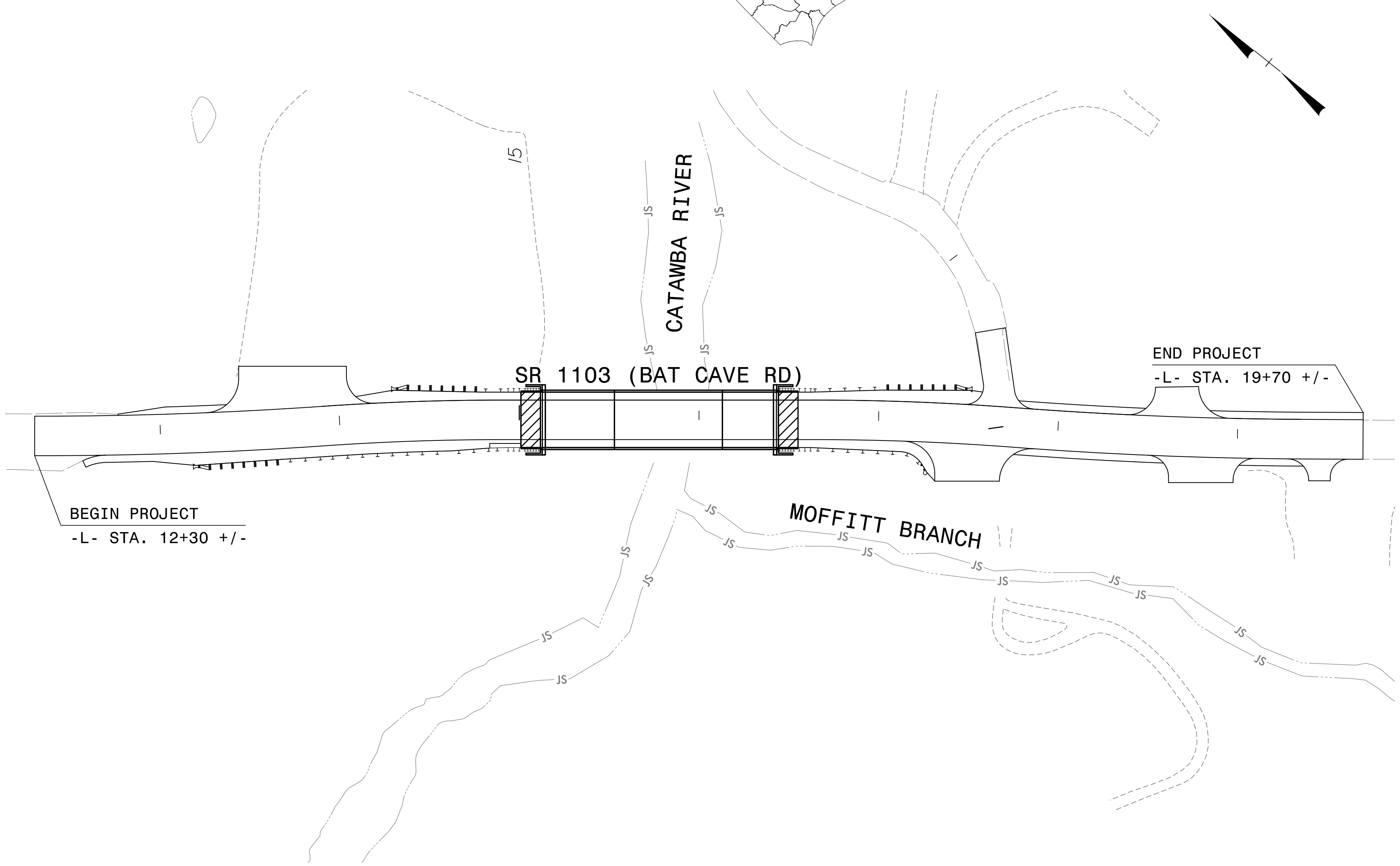
14-DEC-2021 11:15
V:\NC Survey\032112-12 Brdg 267 ROW Staking\Survey\TO SEND\17BP.13.R.155_ls_RW04.dgn
jcgordon AT WKS-1903PY-3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

McDOWELL COUNTY

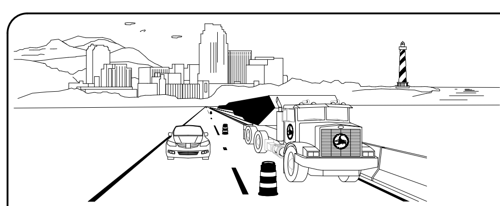




INDEX OF SHEETS

SHEET NO.	TITLE
TMP-01	TITLE SHEET, VICINITY MAP AND INDEX OF SHEETS
TMP-02	ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-03	GENERAL NOTES AND WRITTEN PHASING
TMP-04	TEMPORARY TRAFFIC CONTROL PHASE I
TMP-05	TEMPORARY TRAFFIC CONTROL PHASE II
TMP-06	TEMPORARY TRAFFIC CONTROL PHASE III

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 814-5000 FAX: (919) 771-2745

STATE TRAFFIC MANAGEMENT ENGINEER

TRAFFIC CONTROL PROJECT ENGINEER

TRAFFIC CONTROL PROJECT DESIGN ENGINEER

TRAFFIC CONTROL DESIGN ENGINEER

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

WSP
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC. NO. F-0165

APPROVED:

DATE:

NORTH CAROLINA PROFESSIONAL SEAL 037467 ENGINEER RICHARD A ODINSKI

DocuSigned by: Richard A. Odinski

SHEET NO. TMP-01

PROJECT: 17BP.13.R.155

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES - TYPE III
1150.01	FLAGGING DEVICES
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.02	GUARDRAIL END DELINEATION

LEGEND

GENERAL

DIRECTION OF TRAFFIC FLOW

DIRECTION OF PEDESTRIAN TRAFFIC FLOW

EXIST. PVMT.

NORTH ARROW

PROPOSED PVMT.

WORK AREA

TEMPORARY PAVEMENT MARKING

PAINT (4")

P1 WHITE EDGELINE

P10 YELLOW EDGELINE

P13 YELLOW DOUBLE CENTER

TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

CONE

DRUM

SKINNY DRUM

TEMPORARY CRASH CUSHION

FLASHING ARROW BOARD

FLAGGER

LAW ENFORCEMENT

TRUCK MOUNTED ATTENUATOR (TMA)

CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

PORTABLE SIGN

STATIONARY SIGN

STATIONARY OR PORTABLE SIGN

APPROVED:

DATE:

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037467 ENGINEER RICHARD A. ODYNSKI

DocuSigned by: Richard A. Odynski

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

wsp

1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203

NC LIC. NO. F-0165

TRANSPORTATION MANAGEMENT PLAN ROADWAY STANDARD DRAWINGS & LEGEND

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.155	TMP-03

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.
THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

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

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

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

F) CONTRACTOR SHALL PROVIDE ACCESS TO ALL RESIDENCES AT ALL TIMES. COORDINATE WITH PROPERTY OWNERS DURING CONSTRUCTION ACTIVITIES IMPACTING DRIVEWAYS.

PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

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

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

H) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

J) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

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

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
ALL ROADS	PAINT	NONE

M) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

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

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

PHASING NOTES

PHASE I

STEP 1: INSTALL WORK ZONE ADVANCE WARNING SIGNS ON ALL ROADS ACCORDING TO ROADWAY STANDARD DRAWING NO. 1101.01 WHERE WORK WILL BE OCCURRING NO MORE THAN THREE DAYS PRIOR TO BEGINNING CONSTRUCTION.

STEP 2: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 14, AS NEEDED, INSTALL TEMPORARY BRIDGE AND PAVEMENT FOR ON-SITE DETOUR.

PHASE II

STEP 1: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 14, AS NEEDED, INSTALL TEMPORARY SHORING, MARKINGS, GUARDRAIL AND SHIFT TRAFFIC TO TEMPORARY PATTERN AS SHOWN ON SHEET TMP-05.

STEP 2: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 14, AS NEEDED, CONSTRUCT BRIDGE IMPROVEMENTS ALONG -L-, AS SHOWN ON SHEET TMP-05.

PHASE III

STEP 1: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 14, AS NEEDED, INSTALL TEMPORARY SHORING, MARKINGS, GUARDRAIL AND SHIFT TRAFFIC TO TEMPORARY PATTERN AS SHOWN ON SHEET TMP-06.

STEP 2: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 14, AS NEEDED, CONSTRUCT BRIDGE IMPROVEMENTS ALONG -L-, AS SHOWN ON SHEET TMP-06.

STEP 3: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 14, INSTALL STOP SIGN, FINAL OVERLAY AND PAVEMENT MARKINGS.

STEP 4: ONCE CONSTRUCTION IS COMPLETE, REMOVE ALL TEMPORARY SIGNS AND DEVICES PLACE TRAFFIC IN ITS FINAL PATTERN.

APPROVED:

DATE:

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037467 RICHARD A. ODYNSKI

DocuSigned by: Richard A. Odynski

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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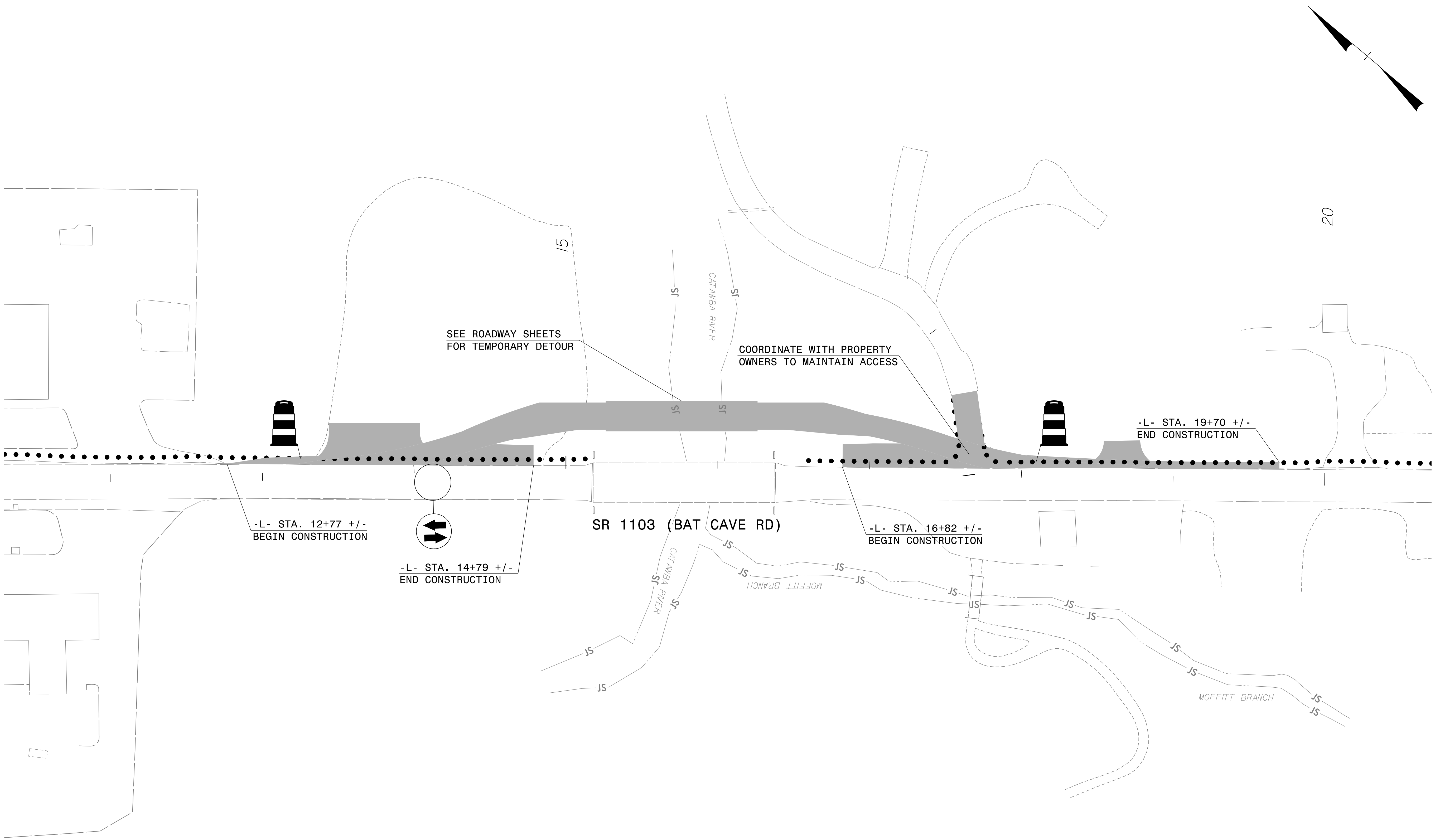
1001 Morehead Square Dr. Suite 610 Charlotte NC, 28203
NC LIC. NO. F-0165

TRANSPORTATION MANAGEMENT PLAN GENERAL NOTES AND WRITTEN PHASING

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.155	TMP-04



ALL PAVEMENT MARKINGS ARE EXISTING UNLESS OTHERWISE NOTED. SEE NCDOT RSD. 1101.02, SHEET 1 OF 14, FOR ADDITIONAL SIGN AND DEVICE INFORMATION.

APPROVED: ____________________

DATE: ____________________

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037467 RICHARD A. ODYNSKI

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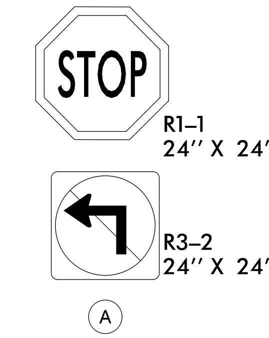
Charlotte NC, 28203

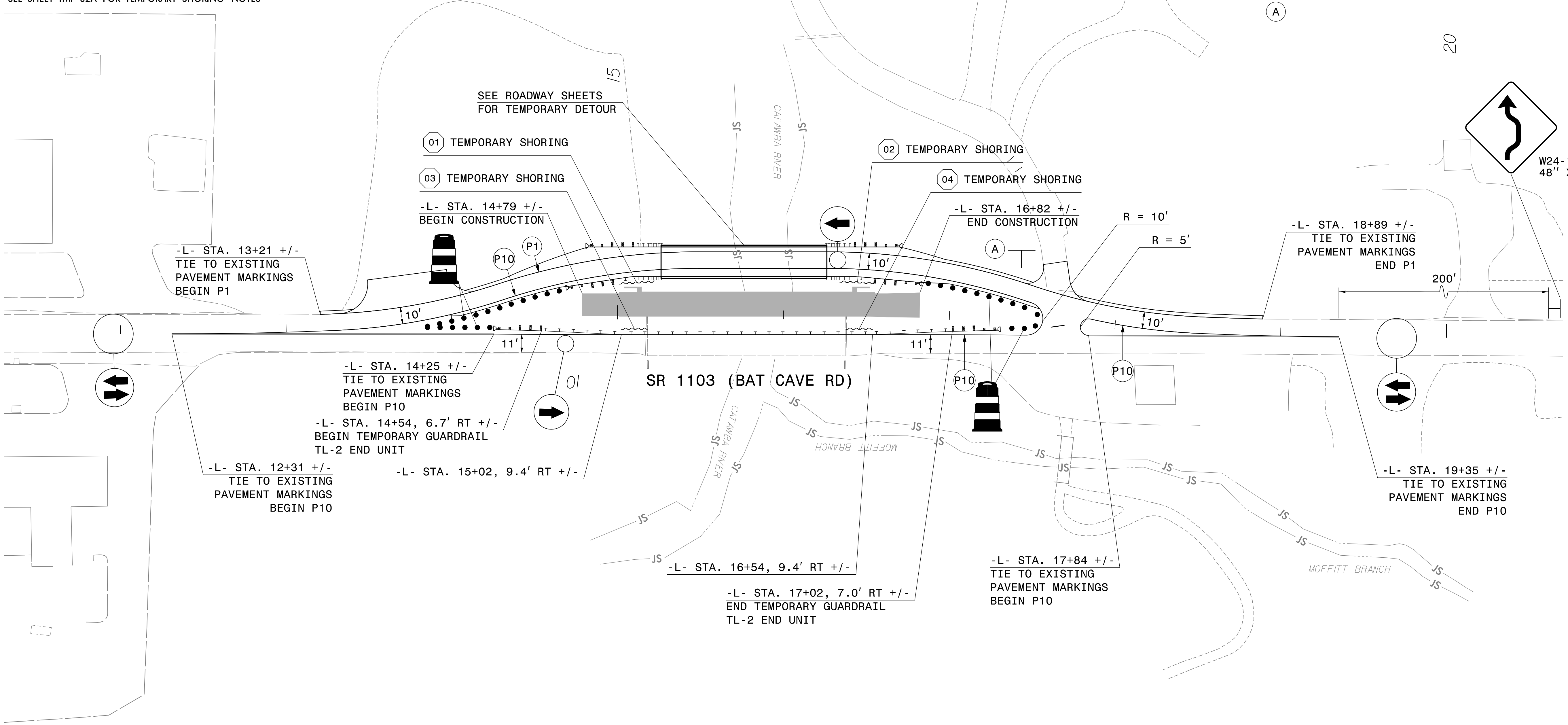
NC LIC. NO. F-0165

TRANSPORTATION MANAGEMENT PLAN
TEMPORARY TRAFFIC CONTROL
PHASE I

SHORING NO.	LOCATION/ SHORING TYPE	FROM STATION	TO STATION	OFFSET RANGE	SHORING SQ FT
01	STRUCTURE	15+04	15+25	6.0' RIGHT OF -L_DET- TO 7.0' RIGHT OF -L_DET-	73.5
02	STRUCTURE	16+38	16+60	7.8' RIGHT OF -L_DET-	77
03	STRUCTURE	15+02	15+18	5.9' RIGHT OF -L-	56
04	STRUCTURE	16+38	16+54	5.9' RIGHT OF -L-	56

*SEE SHEET TMP-02A FOR TEMPORARY SHORING NOTES





ALL PAVEMENT MARKINGS ARE EXISTING UNLESS OTHERWISE NOTED. SEE NCDOT RSD. 1101.02, SHEET 1 OF 14, FOR ADDITIONAL SIGN AND DEVICE INFORMATION.

APPROVED:

DATE:

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037467 ENGINEER RICHARD A. ODYNSKI

DocuSigned by: Richard A. Odynski

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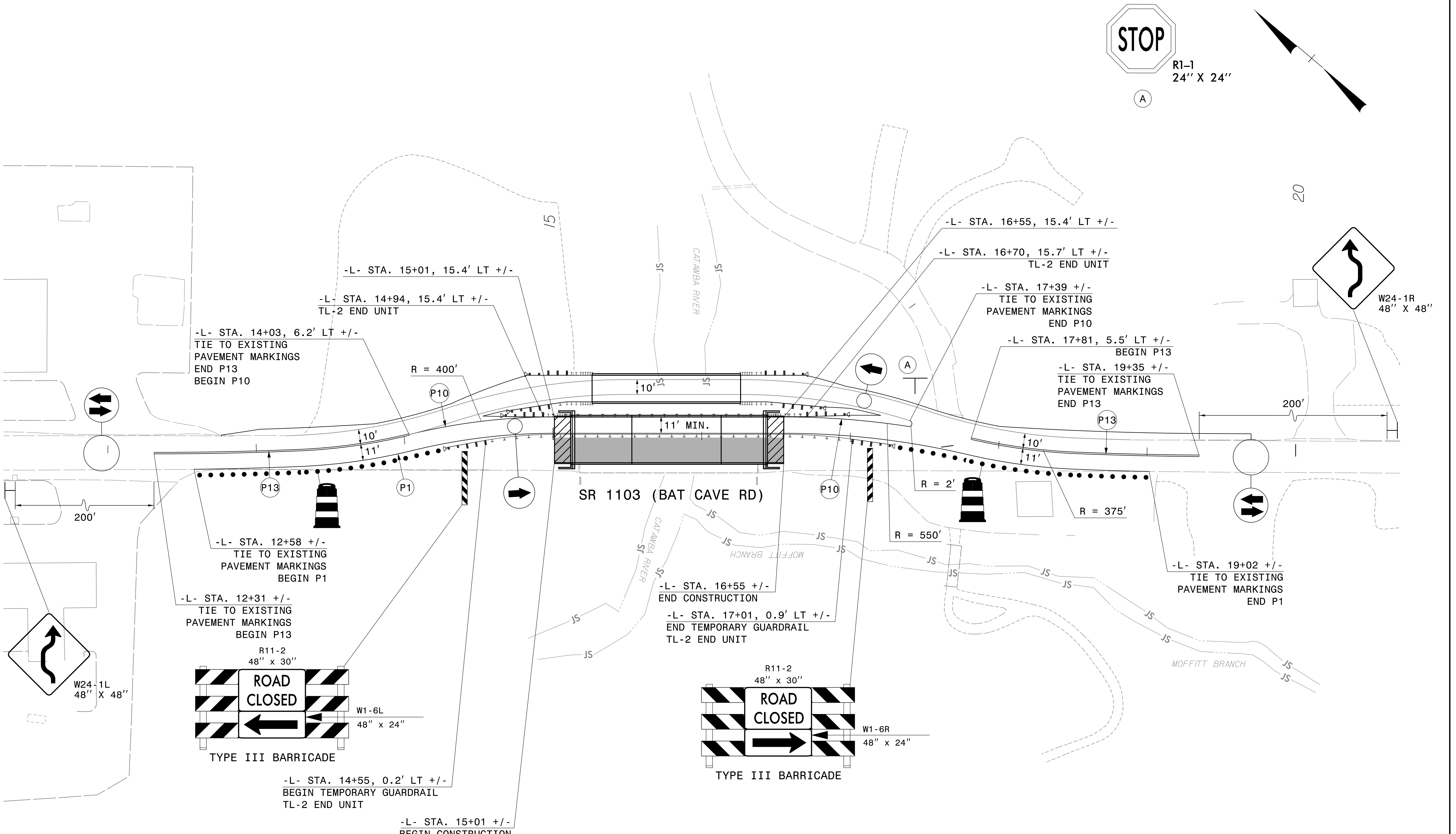
TRANSPORTATION MANAGEMENT PLAN
TEMPORARY TRAFFIC CONTROL
PHASE II

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.155	TMP-06



ALL PAVEMENT MARKINGS ARE EXISTING UNLESS OTHERWISE NOTED. SEE NCDOT RSD. 1101.02, SHEET 1 OF 14, FOR ADDITIONAL SIGN AND DEVICE INFORMATION.

APPROVED: ____________

DATE: ____________

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037467 ENGINEER RICHARD A. ODYNSKI

DocuSigned by: Richard A. Odynski

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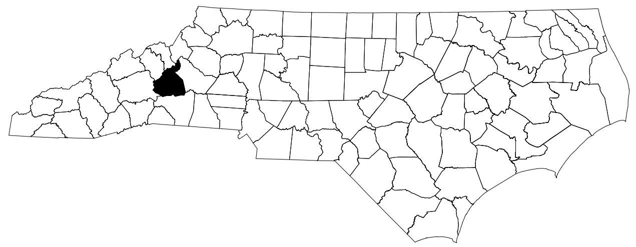
TRANSPORTATION MANAGEMENT PLAN TEMPORARY TRAFFIC CONTROL PHASE III

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PAVEMENT MARKING & SIGNING PLAN

McDOWELL COUNTY



SHEET NO. PMP-01

TIP PROJECT: 17BP.13.R.155

INDEX OF SHEETS

SHEET NO.	TITLE
PMP-01	TITLE SHEET, INDEX OF SHEETS, LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND GENERAL NOTES
PMP-02	PAVEMENT MARKING PLAN

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 JANAUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - DIVIDED AND UNDIVIDED ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS
1264.02	PLACEMENT OF OBJECT MARKERS

GENERAL NOTES / LOCAL NOTES

THE FOLLOWING NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE 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	MARKING	MARKER
ALL ROADS	PAINT	NONE

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
D) STOP BAR LOCATIONS AT NON-SIGNALIZED INTERSECTIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER. USE 10 FEET AS THE TYPICAL SETBACK DISTANCE.
E) ALL PAVEMENT MARKINGS ARE EXISTING UNLESS OTHERWISE NOTED.
F) RELOCATE ALL EXISTING SIGNS AS REQUIRED BY THE ENGINEER.

PAVEMENT MARKING LEGEND

PAINT (4", 2 COATS)

P1 WHITE EDGELINE
P5 2 FT.-6 FT./SP WHITE MINISKIP
P13 PAINT YELLOW DOUBLE CENTER LINE

PAINT (24", 2 COATS)

P61 WHITE STOPBAR

wsp

WSP USA Inc.
1001 MOREHEAD SQUARE DRIVE
SUITE 610
CHARLOTTE, NC 28203
NC LIC. NO. F-0165

PLAN PREPARED BY:

DERRICK DOHM, EI — TRAFFIC ENGINEER
RICHARD ODYNSKI, PE — SR. TRANSPORTATION DESIGNER
TRANSPORATION DESIGNER

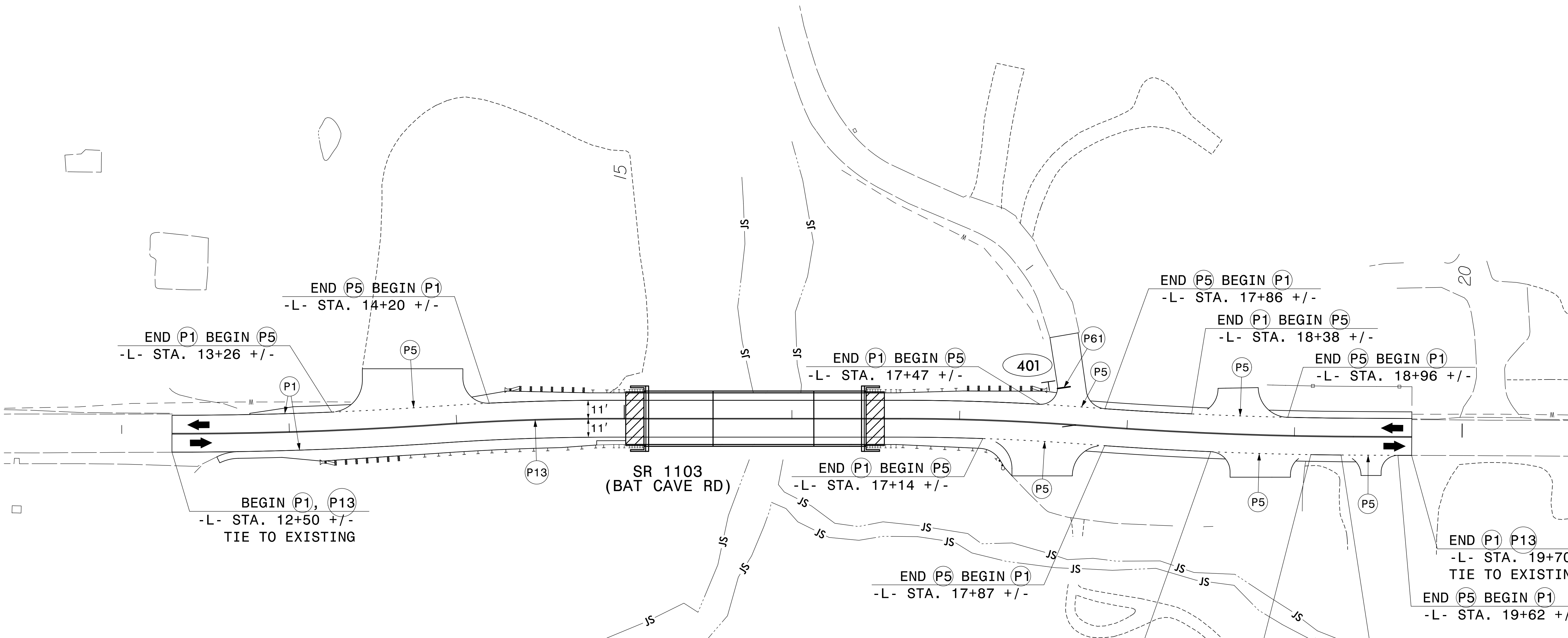
APPROVED:
DATE:

SEAL

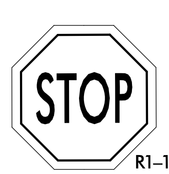
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037467 RICHARD A. ODYNSKI

DocuSigned by: Richard A. Odynski

12/13/2021
T:\NCDOT_Div13_LIBR\McDowell_267\PMP\17BP.13.R.155_PMP_TSH_01.dgn
dohmd



401 QUANTITY REQ'D: 1



R1-1
30'' x 30''

ONE "U" POST PER SIGN

PAVEMENT MARKING QUANTITIES

P61 PAY ITEM LENGTH = 8 LF	TOTAL QUANTITY = 16 LF
P5 PAY ITEM LENGTH = 350 LF	TOTAL QUANTITY = 175 LF
P1 PAY ITEM LENGTH = 1240 LF	TOTAL QUANTITY = 2480 LF
P13 PAY ITEM LENGTH = 739 LF	TOTAL QUANTITY = 2956 LF

APPROVED: ______________

DATE: ______________

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037467 RICHARD A. ODYNSKI

DocuSigned by:

Richard A. Odynski

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203

NC LIC. NO. F-0165

PAVEMENT MARKING PLAN

WBS: 17BP.13.R.155

CONTRACT:

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.155	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
17BP.13.R.155	N/A	PE

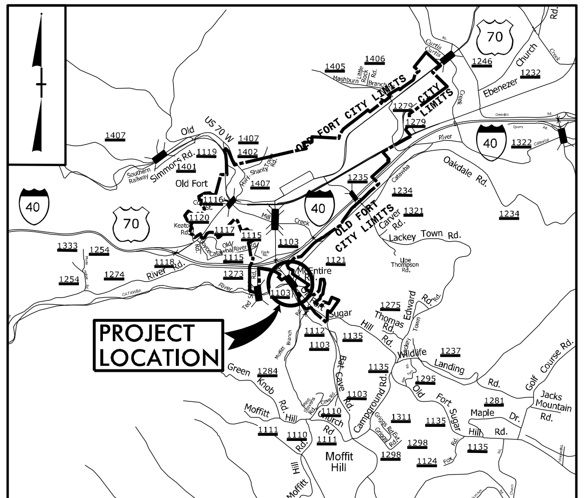
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED HIGHWAY EROSION CONTROL

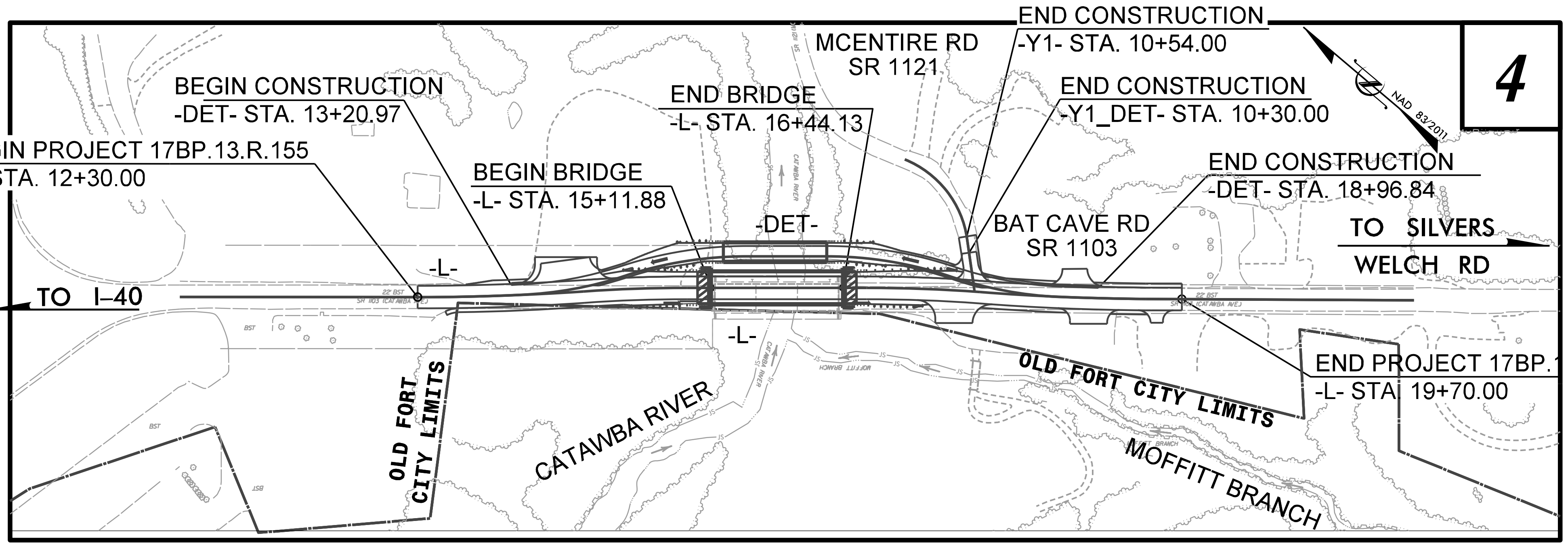
McDOWELL COUNTY

LOCATION: REPLACE EXISTING BRIDGE NO. 267 OVER CATAWBA RIVER ON BAT CAVE RD (SR 1103)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, WIDENING, CORED SLAB BRIDGE AND PAVEMENT MARKINGS



VICINITY MAP



THIS PROJECT HAS NO CONTROL OF ACCESS.
THIS PROJECT IS PARTIALLY WITHIN THE TOWN OF GARNER MUNICIPAL LIMITS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD_.

EROSION AND SEDIMENT CONTROL MEASURES

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

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE DECEMBER 1, 2018 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY AND DIVISION OF WATER RESOURCES.

Prepared In the Office of:

WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

Designed by:

John F. Watson, PE — *3419*

NAME — *LEVEL III CERTIFICATION NO.*

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT

1 South Wilmington St.
Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS

Reviewed by:

Roadway Standard Drawings

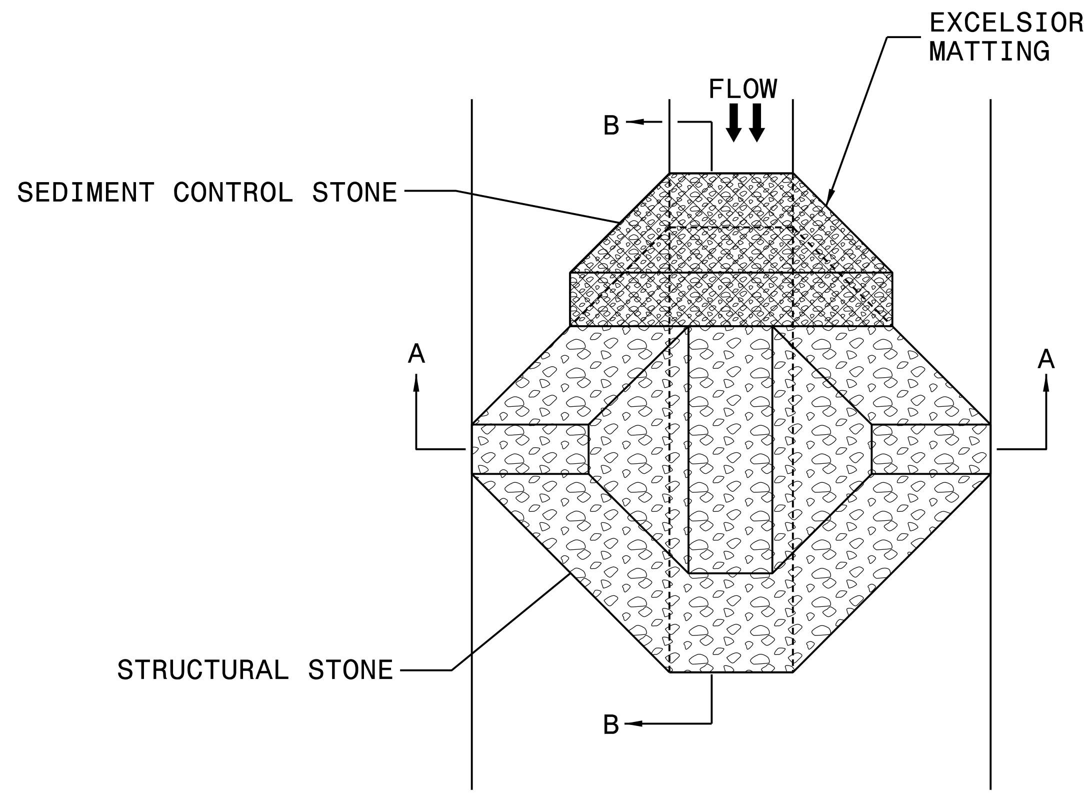
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

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

PROJECT REFERENCE NO.	SHEET NO.
I7BPJ3.RJ55	EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN

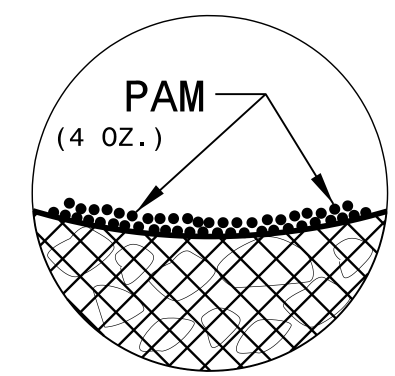
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

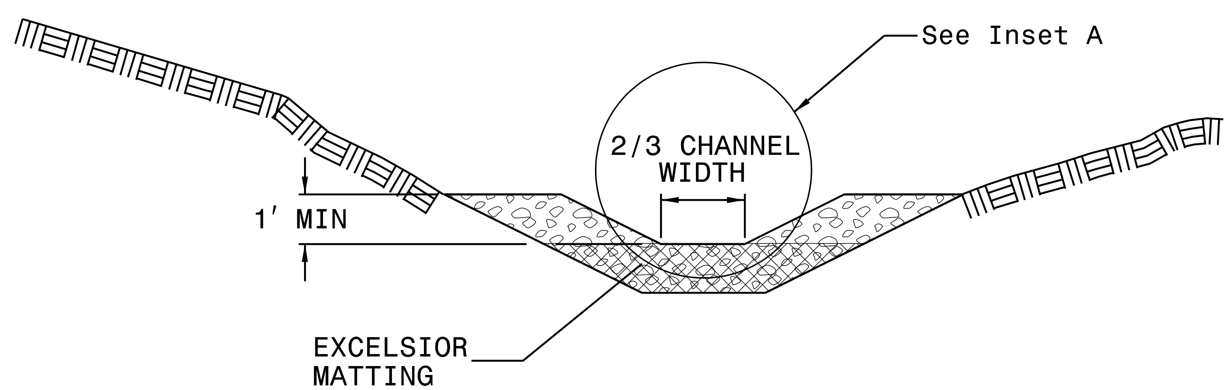
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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

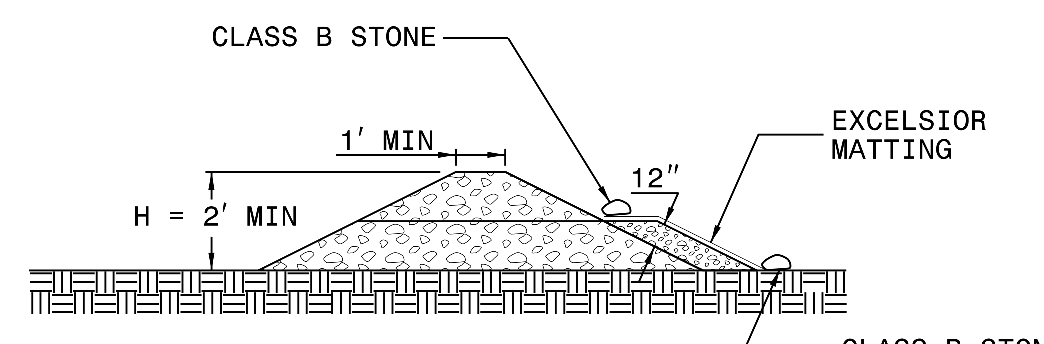
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A

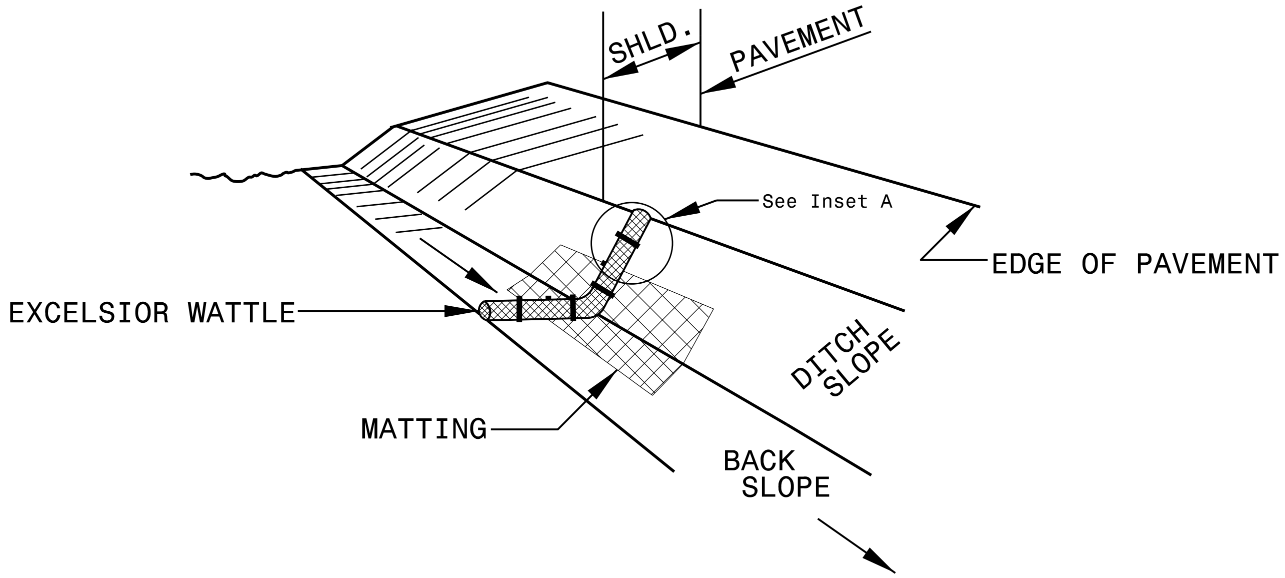


SECTION B-B

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
I7BPJ3.RJ55	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

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

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

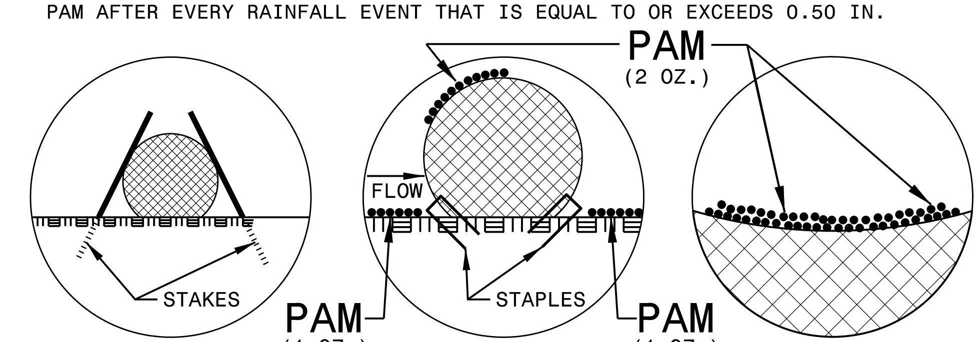
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

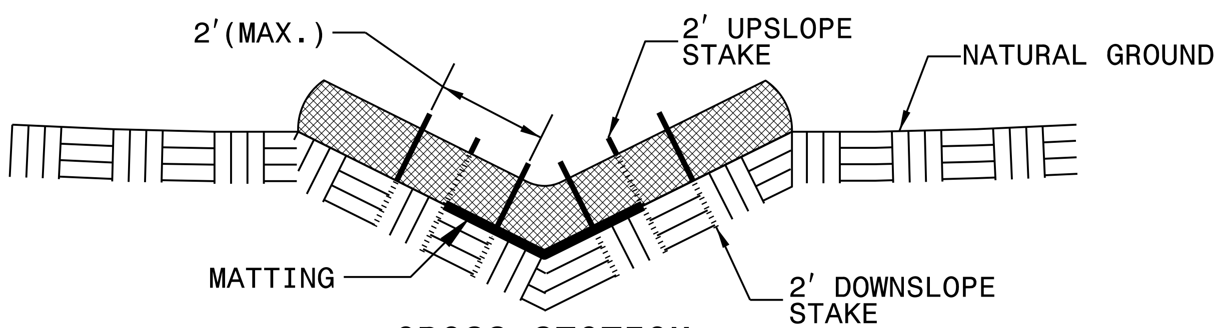
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

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

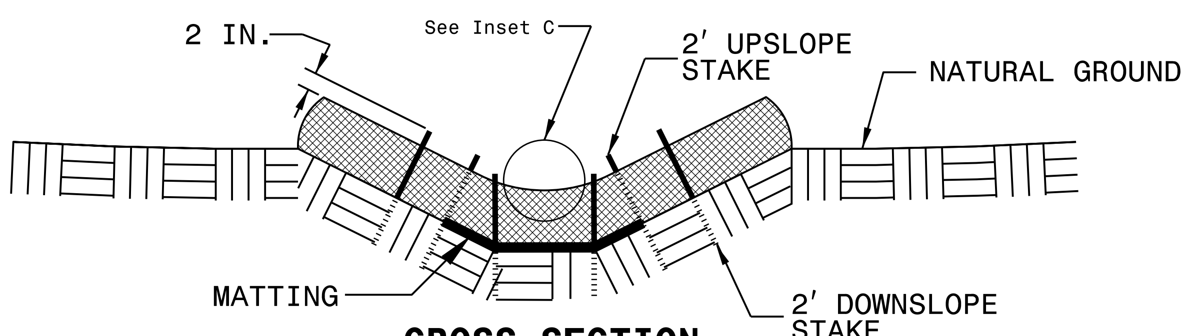
INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



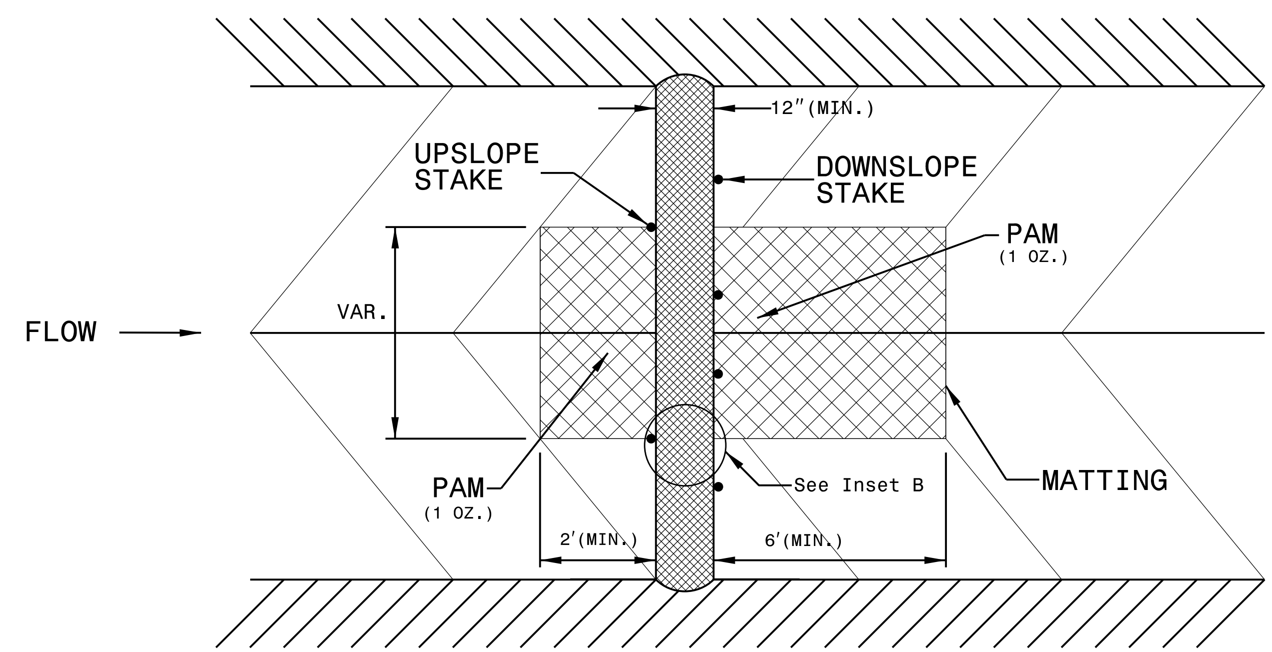
INSET A INSET B INSET C



CROSS SECTION VEE DITCH



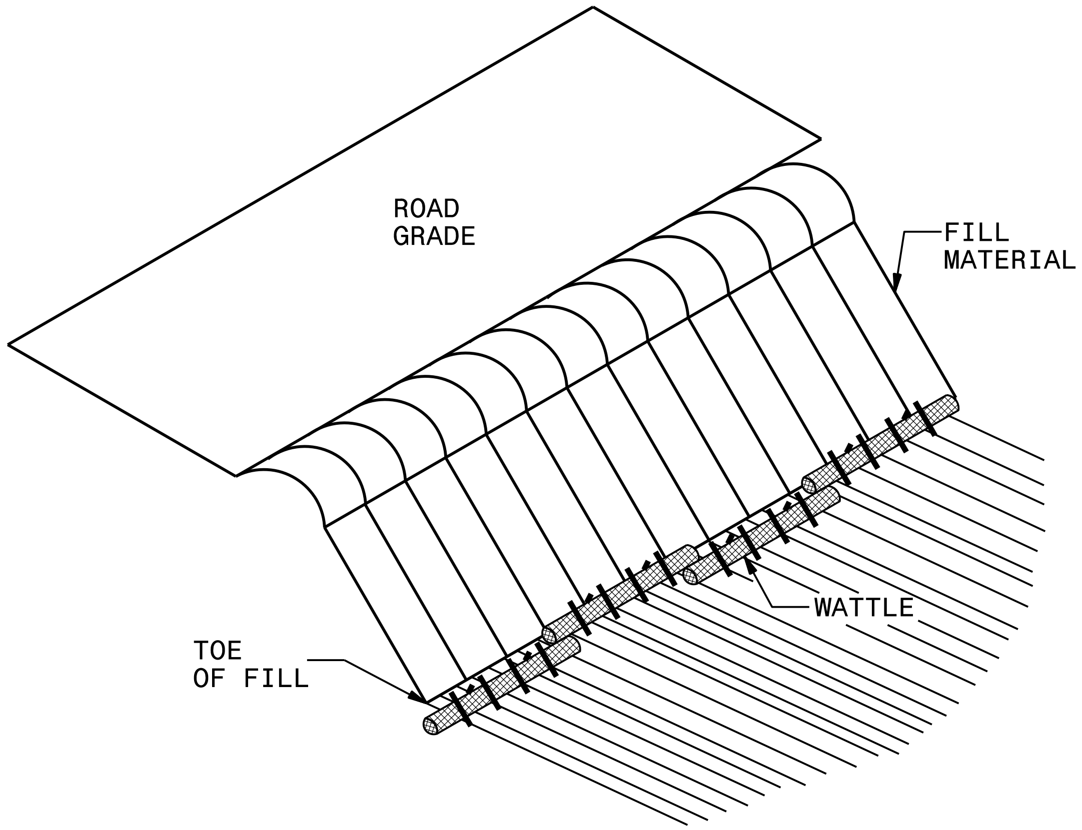
CROSS SECTION TRAPEZOIDAL DITCH



TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ55	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

COIR FIBER WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

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

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

DO NOT PLACE WATTLES ON TOE OF SLOPE.

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

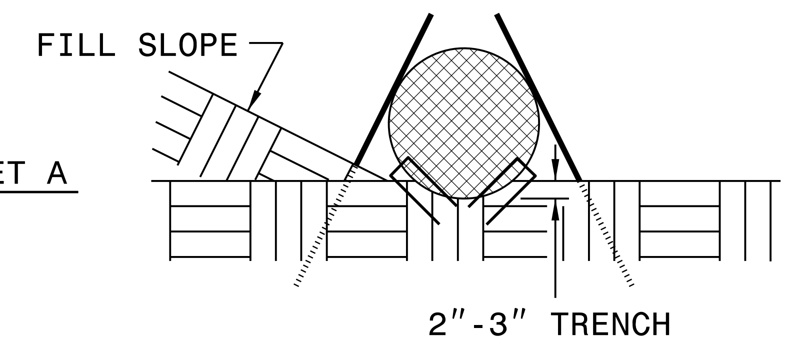
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

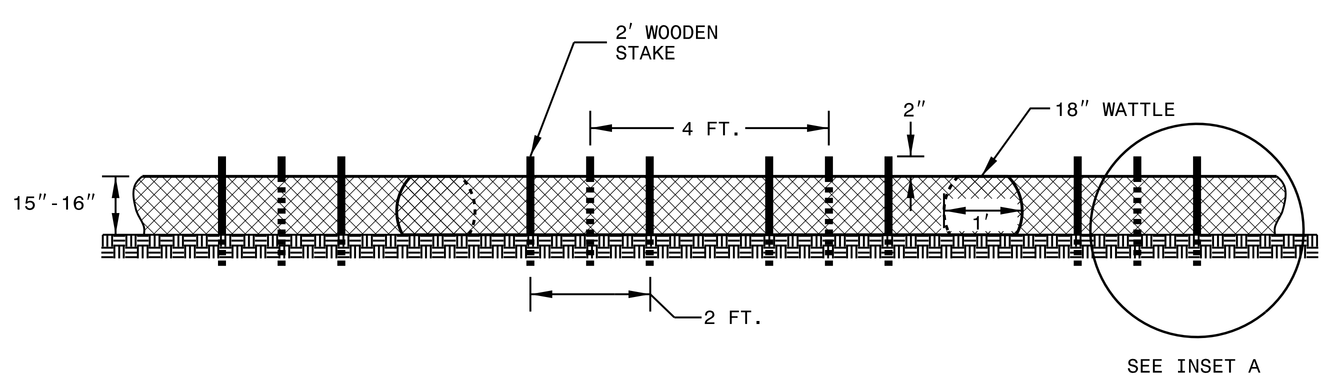
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

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

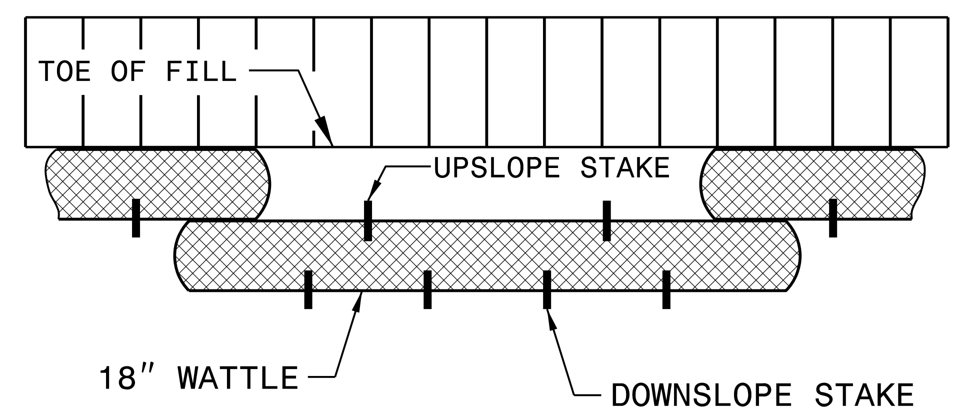
FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.

INSET A





FRONT VIEW



TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ55	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ55	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	17+90	18+50	LT	85
4	-L-	17+90	18+50	LT	300
4	-L-	18+80	19+99	LT	145
				SUBTOTAL	530
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					2500
				TOTAL	3030
				SAY	3030

PERMANENT SOIL REINFORCEMENT MAT

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

5/14/99

EROSION CONTROL PLAN

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ55	EC-4/CONST.4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

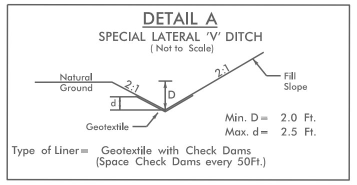
HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

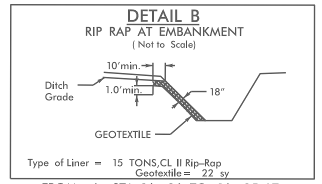
PLANS PREPARED BY:
WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

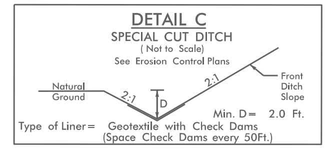
NAD 83/2011



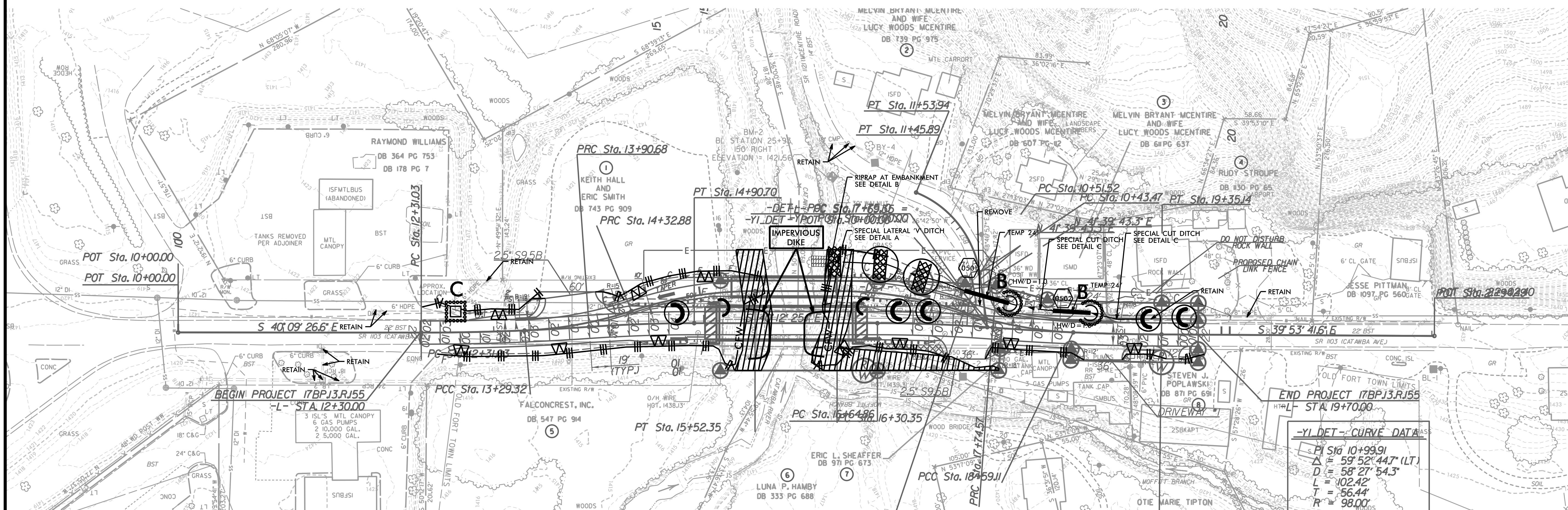
FROM -DET- STA. 16+25 TO 17+47 LT.



FROM -L- STA. 16+06 TO 16+25 LT.



FROM -DET- STA. 17+93 TO 18+38 LT.
FROM -DET- STA. 18+75 TO 19+25 LT.



TROUT STREAM BUFFER ZONE

NOTE:
PLACE TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

BRIDGE REMOVAL AND BRIDGE CONSTRUCTION SHALL BE PER REQUIREMENTS IN THE NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL

CONTRACTOR SHALL INSTALL AN ONSITE CONCRETE WASHOUT STRUCTURE PER THE NCDOT DETAIL AND SPECIAL PROVISIONS. ACTUAL LOCATION OF THE STRUCTURE SHALL BE DETERMINED IN THE FIELD. CONCRETE WASHOUT STRUCTURE SHALL BE MAINTAINED BY THE CONTRACTOR. ALL CONCRETE TRUCKS SHALL USE THE CONCRETE WASHOUT STRUCTURE. NO WASHOUT OF CONCRETE TRUCKS SHALL BE ALLOWED EXCEPT IN THE CONCRETE WASHOUT STRUCTURE.

5/14/99

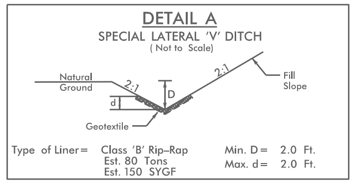
EROSION CONTROL PLAN

PROJECT REFERENCE NO.	SHEET NO.
17BPJ3.RJ55	EC-5/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

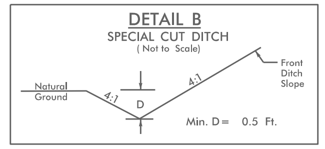
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

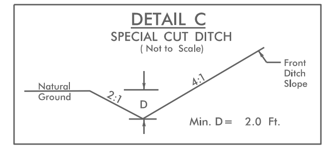
NAD 83/2011



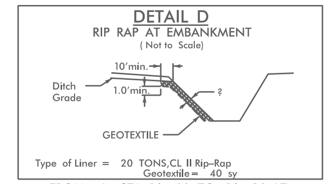
FROM -L- STA. 16+20 TO 17+45 LT.



FROM -L- STA. 17+90 TO 18+50 LT.



FROM -L- STA. 18+80 TO 19+99 LT.

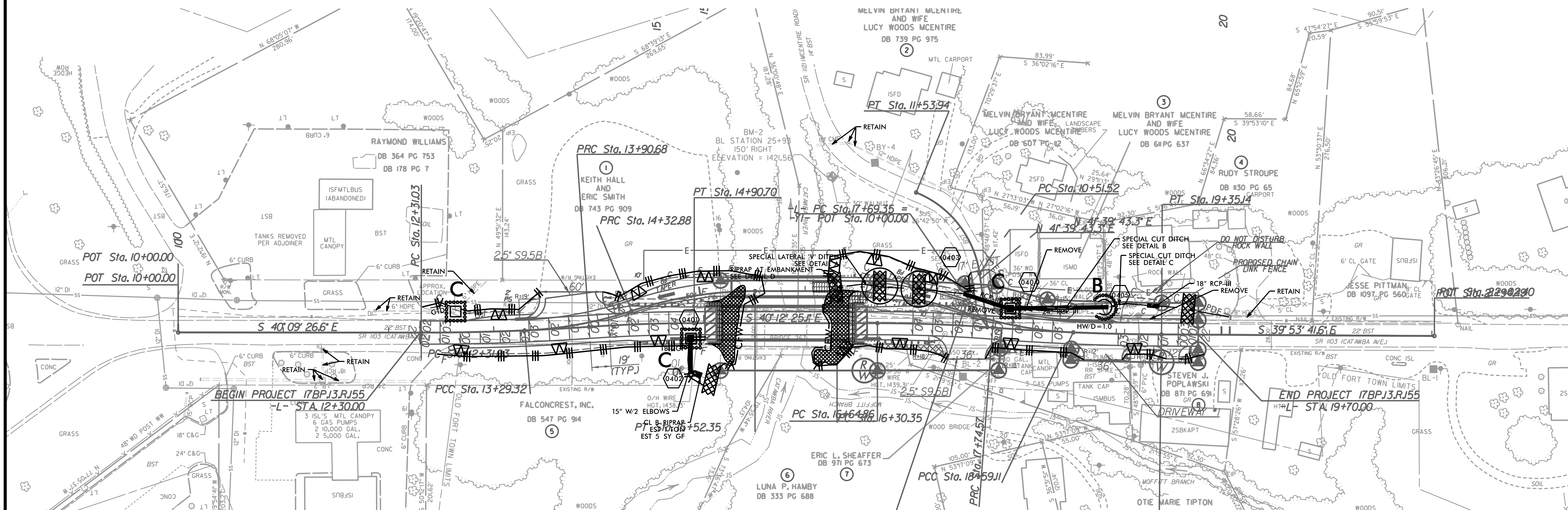


FROM -L- STA. 16+00 TO 16+20 LT.

PLACE MATTING FOR EROSION CONTROL ON SLOPE AS WORK ALLOWS.
-L- STA. 16+20 TO STA. 17+45 LT

INSTALL RIPRAP IN THE PROPOSED DITCHLINE.
-L- STA. 16+20 TO STA. 17+45 LT

PLACE MATTING IN THE PROPOSED DITCHLINE.
-L- STA. 17+90 TO STA. 18+50 LT
-L- STA. 18+80 TO STA. 19+99 LT



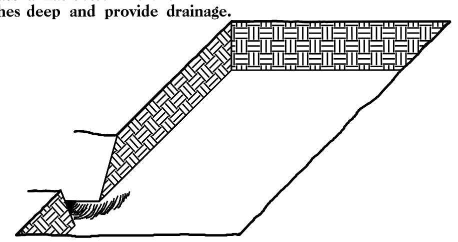
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.155	RF-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

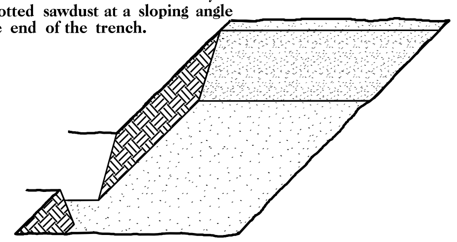
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

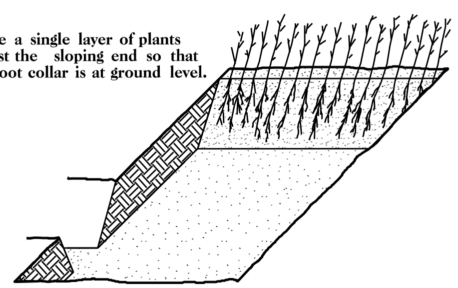
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



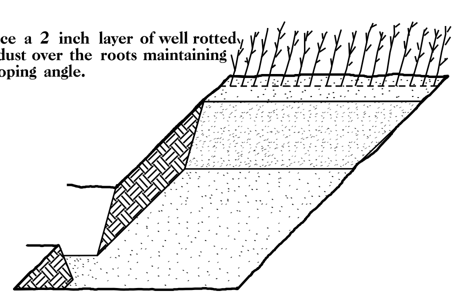
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

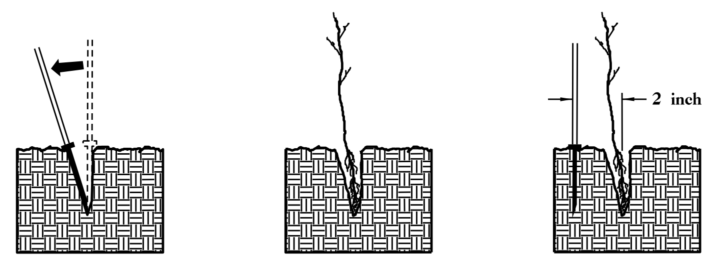


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

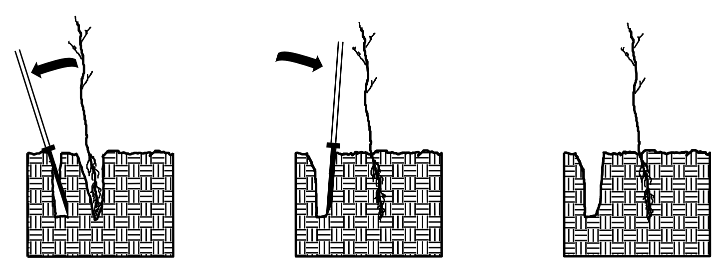


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

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.

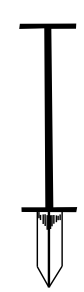


4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

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

REFORESTATION DETAIL SHEET

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

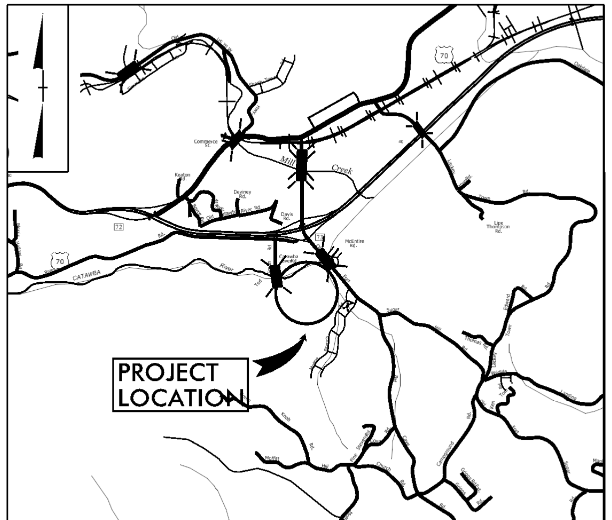
CONTRACT: 7000016202 STATE PROJECT NO.: 17BP.13.R.155

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

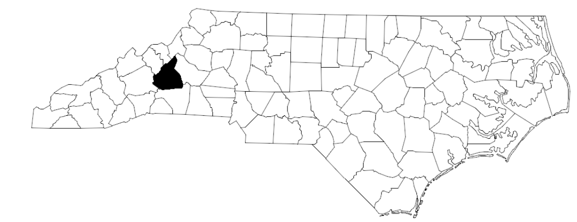
STATE PROJECT NO.	SHEET NO.
17BP.13.R.155	UC-1

UTILITY CONSTRUCTION PLANS McDOWELL COUNTY

UTILITY CONST. PLANS
DATE: OCT 14, 2021

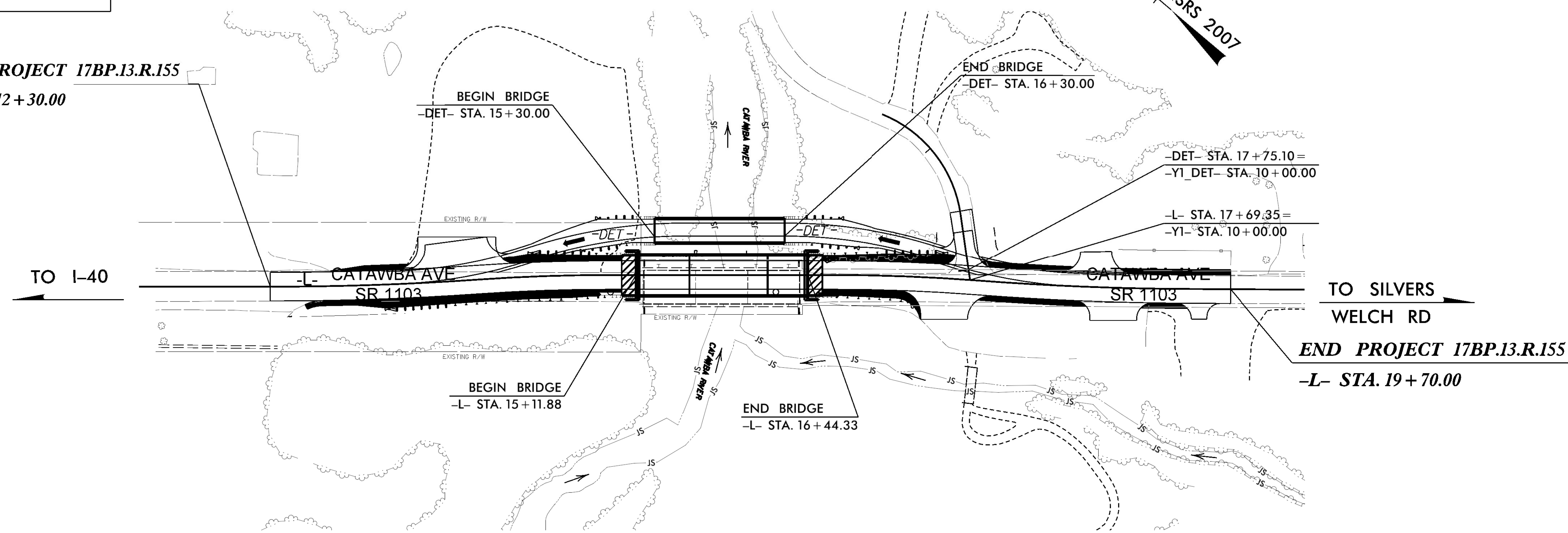


VICINITY MAP



LOCATION: REPLACE EXISTING BRIDGE NO. 267 OVER CATAWBA RIVER ON CATAWBA AVE (SR 1103)

TYPE OF WORK: WATER & SEWER LINE CONSTRUCTION



DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A - UC-3C	DETAILS
UC-4	UTILITY PLAN & PROFILE

PUBLIC UTILITY OWNERS ON PROJECT

(1) WATER & SEWER - TOWN OF OLD FORT

PREPARED IN THE OFFICE OF:
V&M
Vaughn & Melton
Consulting Engineers
1318-F Patton Avenue
Asheville, NC 28806
(828) 253-2796

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 044648 ENGINEER DEAN WARREN HELSTROM

Dean Helstrom, P.E.	UTILITY PROJECT MANAGER
Will Matthews	PROJECT UTILITY COORDINATOR
Shane Waidner	PROJECT UTILITY DESIGNER

DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

John D. Metcalf	DIVISION UTILITIES COORDINATOR
Amy York	UTILITIES AREA COORDINATOR
Keith Radcliff	SENIOR UTILITIES COORDINATOR

6-18-19
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6-18-19

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McDOWELL COUNTY

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	UC-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown) — 6" WL
- 11¼ Degree Bend
- 22½ Degree Bend
- 45 Degree Bend
- 90 Degree Bend
- Plug
- Tee
- Cross
- Reducer
- Gate Valve — GV
- Butterfly Valve — BV
- Tapping Valve — TGV
- Line Stop — LS
- Line Stop with Bypass — LS/BP
- Blow Off — BO
- Fire Hydrant — PFH
- Relocate Fire Hydrant — RFH
- Remove Fire Hydrant — REM FH
- Water Meter — PWM
- Relocate Water Meter — RWM
- Remove Water Meter — REM WM
- Water Pump Station — PS(W)
- RPZ Backflow Preventer — PRPZ
- DCV Backflow Preventer — PBFP
- Relocate RPZ Backflow Preventer — RRPZ
- Relocate DCV Backflow Preventer — RBFP

PROPOSED SEWER SYMBOLS

- Gravity Sewer Line (Sized as Shown) — PROP U/G GRAVITY SEWER LINE
- Force Main Sewer Line (Sized as Shown) — 12" FSS
- Manhole (Sized per Note)
- Sewer Pump Station — PS(SS)

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal — TEL PED
- Utility Line by Others (Type as Shown)
- Trenchless Installation — 6" TL INSTALL
- Encasement by Open Cut — 10" ENCAS BY OC
- Encasement — 10" ENCAS
- Thrust Block
- Air Release Valve — AR
- Utility Vault — UV
- Concrete Pier — CP
- Steel Pier — SP
- Plan Note — NOTE
- Pay Item Note — PAY ITEM

EXISTING UTILITIES SYMBOLS

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

*For Existing Utilities

- Utility Line Drawn from Record (Type as Shown) — W
- Designated Utility Line (Type as Shown) — W

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

2. THE EXISTING UTILITIES BELONG TO THE TOWN OF OLD FORT WATER DEPARTMENT. PLEASE CONTACT MR. MELVIN LYTLE, 38 S. CATAWBA AVE, OLD FORT, NC 28762 (828) 668-4244 EXT. 306; CHIEF@OLDFORTNC.COM

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.

4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.

5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.

9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFIC NOTES:

1. THRUST COLLARS ARE REQUIRED AT EACH END OF HDPE PIPE, IF USED ON DIRECTIONAL DRILL PIPE MATERIAL.

2. ALL FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT USING GRIP RINGS. NO GLUE OR PUSH-ON FITTINGS ARE ALLOWED. THRUST BLOCKING IS REQUIRED.

3. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107 AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCH LESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE SHALL BE ALLOWED TO RIVER, WETLANDS OR BUFFER ZONES.

4. IF HDPE PIPE IS INSTALLED BY DIRECTIONAL DRILL. IT SHALL BE FILLED WITH WATER AND NOT BE CONNECTED TO ANY OTHER PIPE OR FITTING FOR ONE WEEK FROM THE TIME OF INSTALLATION.

5. NEW WATER LINES MUST BE PRESSURE TESTED AT 200 PSI FOR 3 HOURS. TEST TO OBSERVED BY THE TOWN OF OLD FORT WATER DEPARTMENT REPRESENTATIVE.

6. SERVICE INTERRUPTIONS SHALL BE SCHEDULED WITH THE TOWN OF OLD FORT WATER DEPARTMENT.

7. ALL NC DEQ-DWR-PWS AND LOCAL TESTING MUST BE COMPLETED AND APPROVED PRIOR TO CONNECTING THE NEW CONSTRUCTION TO THE EXISTING WATER LINES.

8. HDPE PRESSURE PIPE FOR POTABLE WATER SHALL MEET THE REQUIREMENTS OF NSF 61.

9. ANY NECESSARY CONNECTIONS FOR TESTING AND FILLING THE INSTALLED WATER MAIN WILL BE REQUIRED AND CONSIDERED INCIDENTAL TO THE WATER MAIN.

10. THE UTILITY CONTRACTOR SHALL INSTALL A 4"X4" CONCRETE VALVE MARKER AT THE EDGE OF THE RIGHT-OF-WAY TO IDENTIFY THE LOCATION OF EACH GATE VALVE INSTALLED IN THE NEW WATER SYSTEM EXCEPT FOR THE FIRE HYDRANT ISOLATION VALVES. THE CONTRACTOR SHALL MEASURE THE DISTANCE FROM THE CENTER OF THE CONCRETE MARKER TO THE CENTER OF OF THE VALVE BOX. THIS DISTANCE (IN LINEAR FEET) SHALL BE STAMPED ON THE BRASS PLATE LOCATED ON THE TOP OF THE CONCRETE VALVE MARKER. IN LIEU OF INSTALLING THE CONCRETE VALVE MARKERS, THE UTILITY CONTRACTOR MAY PROVIDE AT LEAST TWO MEASUREMENTS FROM TWO INDEPENDENT PERMANENT ABOVE GROUND STRUCTURES TO THE PROFESSIONAL ENGINEER (PE) IN THE RED LINE DRAWINGS TO IDENTIFY THE VALVE LOCATIONS. THE PROFESSIONAL ENGINEER (PE) MUST INCLUDE THESE MEASUREMENTS IN THE AS-BUILT RECORD DRAWINGS SUBMITTED TO THE TOWN OF OLD FORT AND ENGINEER OF RECORD.

11. REGULAR AND PROPER INSPECTION AND MAINTENANCE OF THE AERIAL CROSSING SHALL BE PROVIDED TO INSURE THAT THE CREEK/STREAM FLOW IS NOT IMPEDED AND THAT NO DAMAGE WILL BE CAUSED TO UPSTREAM OR ADJACENT PROPERTIES.

Vaughn & Melton
Consulting Engineers
Tri-Cities, Tennessee 423·467·8401
Raleigh, NC 919·977·9455
Charlotte, NC 704·357·0488
Boone, NC 828·355·9933
Asheville, NC 828·253·2796
Knoxville, TN 865·546·5800
Spartanburg, SC 864·574·4775
Charleston, SC 843·974·5650
Middlesboro, KY 606·248·6600
Atlanta, GA 770·627·3509

STRUCTURE 267
McDOWELL COUNTY

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	UC-3A

DESIGNED BY:	SRW
DRAWN BY:	DRF
CHECKED BY:	JDN
APPROVED BY:	DWH
REVISED:	

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

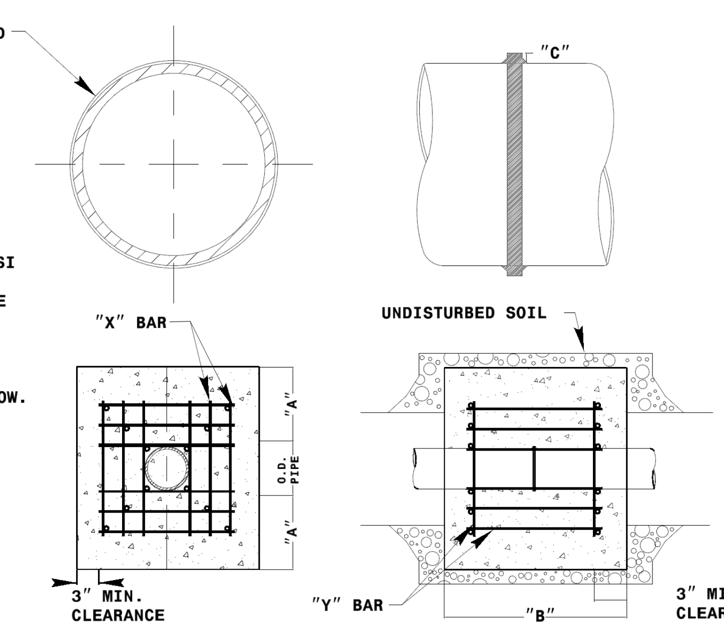
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 044648 ENGINEER DEAN WARREN HEDSTROM
DocuSigned by:
07F41A2D976C4AD...
1/24/2022

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTES:

1. CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
2. REINFORCING BARS SHALL BE FORMED AND TIED TOGETHER.
3. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE MINIMUM WIDTH AS SHOWN BELOW.
4. BACKFILL TAMPED IN 6" LIFTS.

REINFORCING REQUIREMENTS

I.D. PIPE	REBAR SIZE	"X" BAR LENGTH	"X" BAR WEIGHT	"Y" BAR LENGTH	"Y" BAR WEIGHT	NO. REQUIRED
6" - 16"	#7	2'-2"+ O.D. PIPE	2.044 LBS/FT	1'-1"	2.214 LBS. EACH	X-24, Y-12
20"- 36"	#8	3'-0"+ O.D. PIPE	2.67 LBS/FT	1'-3"	2.89 LBS. EACH	X-24, Y-12

THRUST COLLAR, AND THRUST SCHEDULE

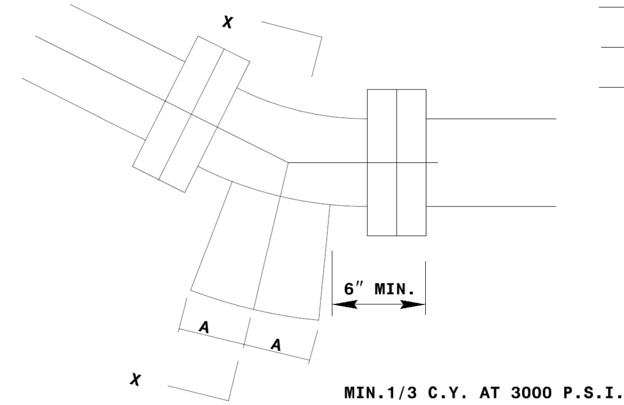
I.D. PIPE	"A"	"B"	"C-6"-16", 20"-24", 30"-36", 48"
6" - 36"	1'-4"	1'-7"	2" 3" 4"
48" & greater	1'-8"	1'-9"	6"

TYPICAL THRUST COLLAR DETAIL

NO SCALE

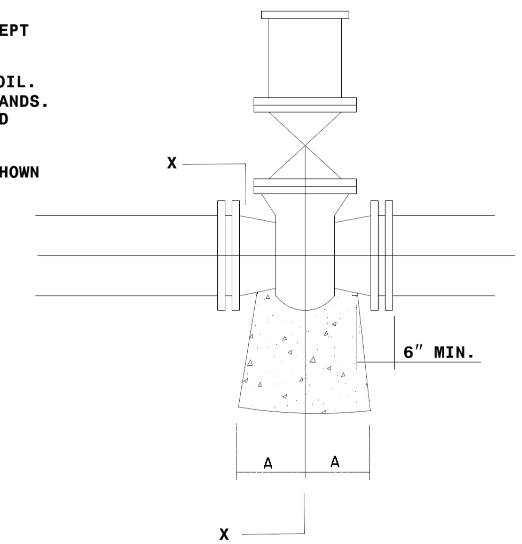
NOTES:

1. CONCRETE SHALL BE 3,000 PSI MIN.
2. CONCRETE FOR THRUST BLOCKING SHALL BE KEPT FAIRLY DRY, THUS MAKING THE CONCRETE WEDGE SHAPE MORE EASILY FORMED WITH THE WIDEST PART (BLOCKING AREA) AGAINST UNDISTURBED SOIL.
3. NO CONCRETE SHALL COVER ANY BOLTS OR GLANDS.
4. ALL PIPING AND ACCESSORIES TO BE WRAPPED WITH 10 MIL. POLYETHYLENE PRIOR TO POURING BLOCKING.
5. VOLUME OF THRUST BLOCKING SHALL BE AS SHOWN ON THE THRUST BLOCKING SCHEDULE.



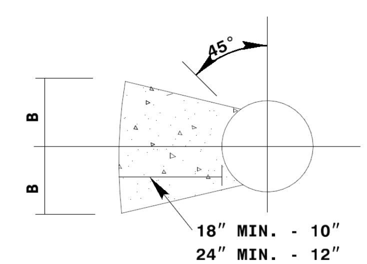
MIN.1/3 C.Y. AT 3000 P.S.I.

PLAN BENDS

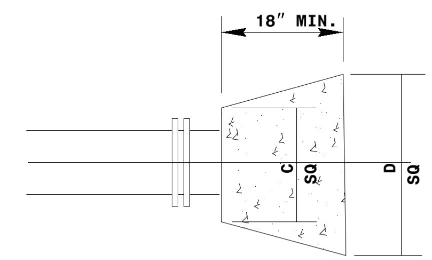


HYDRANT TEE

PLAN TEES



18" MIN. - 10" OR LESS
24" MIN. - 12" OR LESS

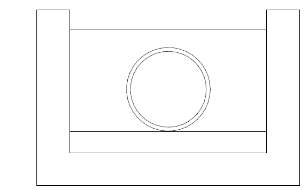


PIPE SIZE	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		TEE		PLUG	
	A	B	A	B	A	B	A	B	A	B	C	D
4"	8"	12"	8"	8"	6"	6"	6"	6"	8"	9"	10"	16"
6"	10"	12"	8"	10"	8"	8"	8"	8"	10"	10"	12"	18"
8"	15"	13"	10"	10"	8"	8"	8"	8"	10"	12"	12"	24"
10"	16"	14"	10"	12"	6"	10"	6"	10"	11"	14"	14"	25"
12"	20"	16"	12"	14"	8"	12"	8"	12"	14"	16"	16"	30"
14"	22"	18"	14"	16"	10"	14"	10"	14"	16"	18"	18"	34"
16"	26"	20"	16"	18"	12"	16"	12"	16"	18"	20"	20"	36"

TYPICAL THRUST BLOCK DETAIL

NO SCALE

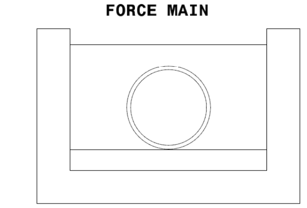
ALL DUCTILE IRON



TYPE 3

PIPE BEDDED IN 4" MININUM JOB EXCAVATED MATERIAL. COMPACTED TO 4" ABOVE TOP OF PIPE, (APPROX. 95% STANDARD PROCTOR, AASHTO T-99)

ALL PVC WATER LINE AND PVC FORCE MAIN

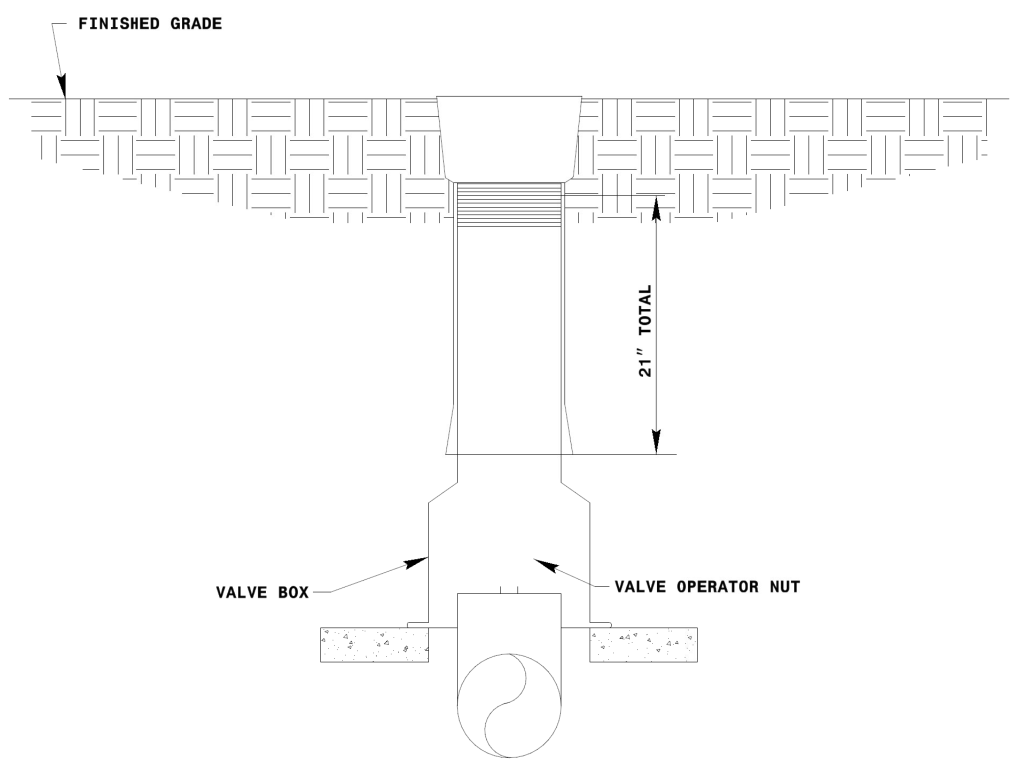


TYPE 4

PIPE BEDDED IN SAND, GRANULAR MATERIAL OR GRADED GRAVEL TO THE DEPTH OF 1/8 PIPE DIAMETER, 4" MIN. JOB EXCAVATED MATERIAL (APPROX. 95% STANDARD PROCTOR, AASHTO T-99)

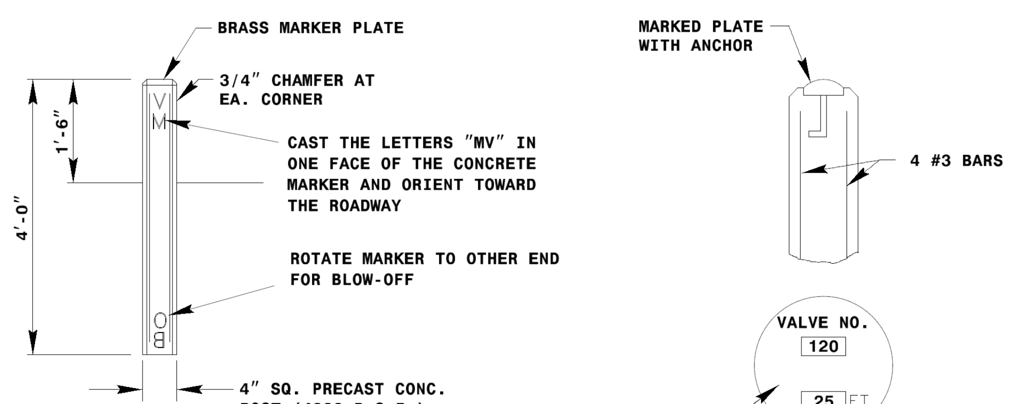
TYPICAL LAYING CONDITIONS DETAIL

NO SCALE



TYPICAL VALVE BOX DETAIL

NO SCALE



NOTES:
PAINT MARKER BLUE AFTER INSTALLATION

TYPICAL VALVE MARKER DETAIL

NO SCALE

Vaughn & Melton
Consulting Engineers
Tri-Cities, Tennessee
423·467·8401

Boone, NC 828·355·9933
Asheville, NC 828·253·2796
Knoxville, TN 865·546·5800
Spartanburg, SC 864·574·4775
Charleston, SC 843·974·5650
Middlesboro, KY 606·248·6600
Atlanta, GA 770·627·3509
Raleigh, NC 919·977·9455
Charlotte, NC 704·357·0488

STRUCTURE 267
McDOWELL COUNTY

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	UC-3B

DESIGNED BY: SRW
DRAWN BY: DRF
CHECKED BY: JDN
APPROVED BY: DWH
REVISED:

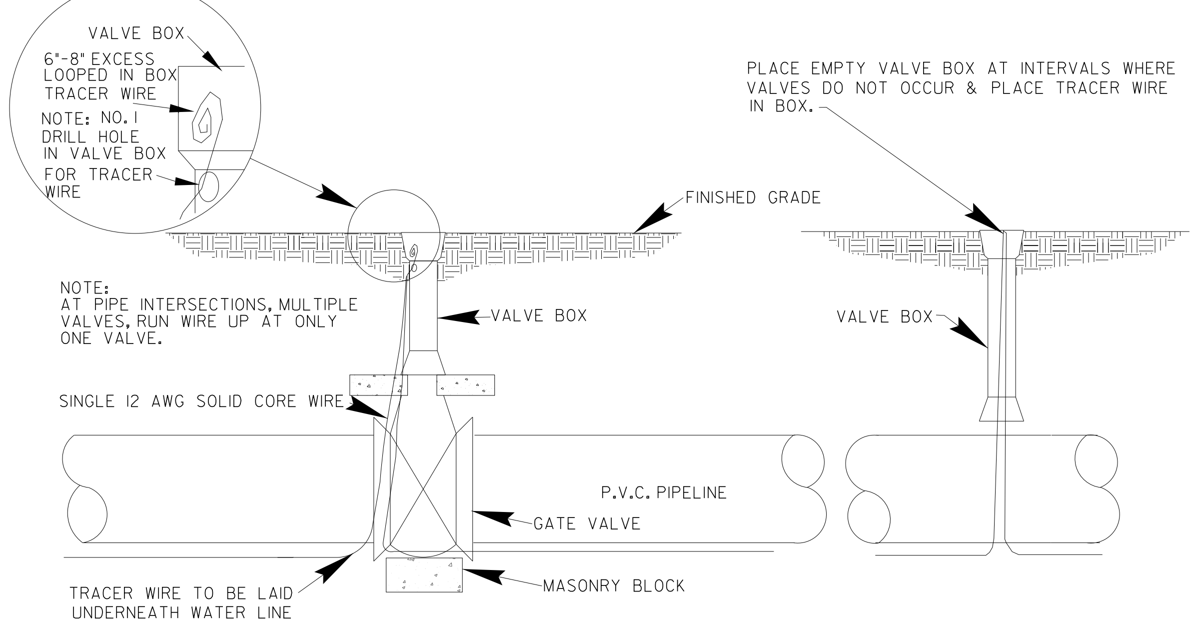
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE: (919)707-6690
FAX: (919)250-4151

UTILITY CONSTRUCTION PLANS ONLY

SEAL 044648

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTES:
1. DRILL HOLE IN VALVE BOX TO INSERT TRACER WIRE, BRING UP TO INSIDE AND ROLL UP AT LEAST 6"-8" EXCESS
2. PLACE TRACER WIRE IN VALVE BOX.
3. DO NOT SPLICE WIRE WHEN BEGINNING A NEW SPOOL. INSTEAD INSTALL A VALVE BOX AND ATTACH EACH WIRE WITH A BRASS SCREW TO THE VALVE BOX.

TYPICAL TRACER WIRE INSTALLATION DETAIL

NO SCALE

Vaughn & Melton
Consulting Engineers
Tri-Cities, Tennessee
423·467·8401

Boone, NC 828·355·9933
Asheville, NC 828·253·2796
Knoxville, TN 865·546·5800
Spartanburg, SC 864·574·4775
Charleston, SC 843·974·5650
Middlesboro, KY 606·248·6600
Atlanta, GA 770·627·3509
Raleigh, NC 919·977·9455
Charlotte, NC 704·357·0488

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	UC-3C

DESIGNED BY: SRW
DRAWN BY: DRF
CHECKED BY: JDN
APPROVED BY: DWH
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

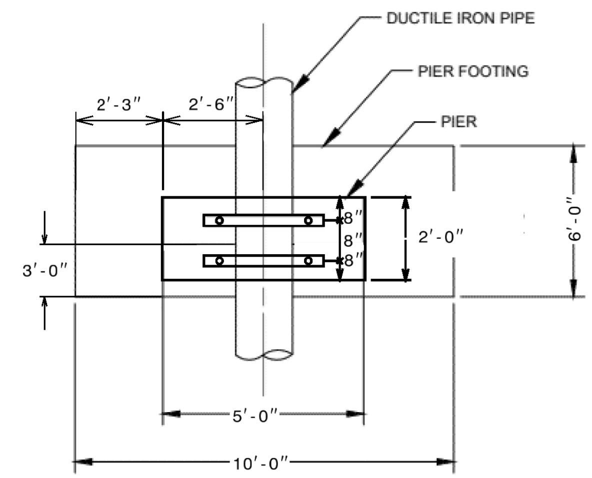
NORTH CAROLINA PROFESSIONAL SEAL 20777 ENGINEER

UTILITY CONSTRUCTION PLANS ONLY

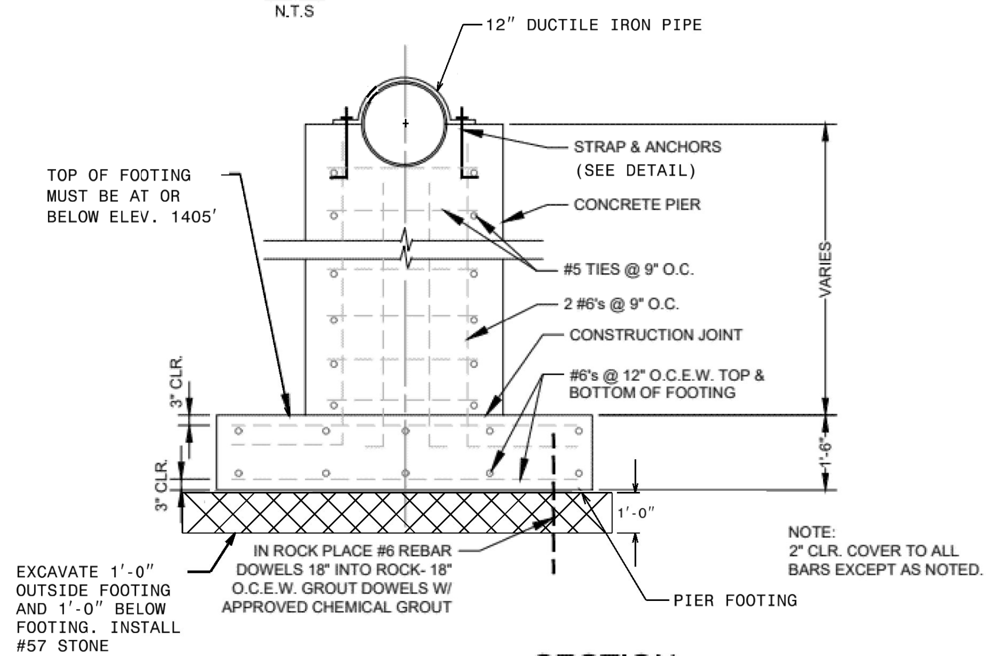
UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONCRETE PIER



PLAN
N.T.S



SECTION
N.T.S

NOTES:

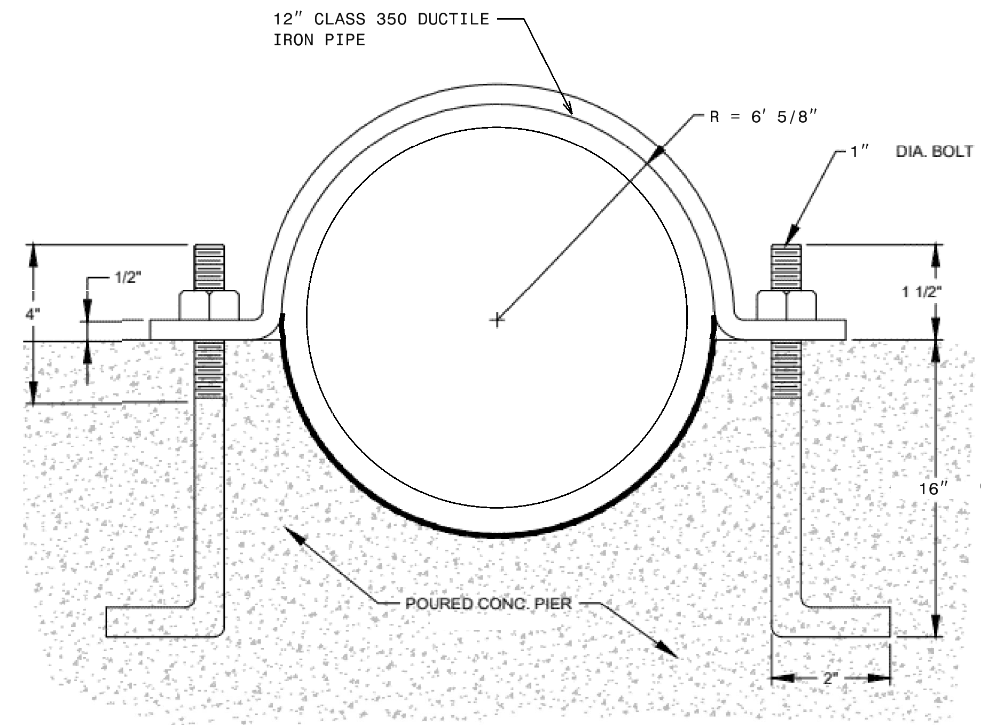
1. CONCRETE SHALL BE CLASS AA AND SHALL HAVE A STRENGTH OF 4500 PSI WITHIN 28 DAYS.

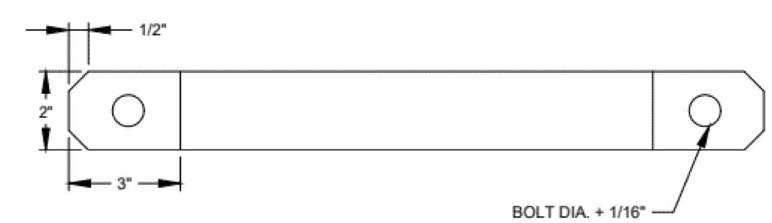
2. SEE CROSSING DETAIL AND STAP / ANCHOR DETAILS FOR ADDITIONAL INFORMATION.

3. DESIGNED BEARING CAPACITY OF 2000 PSI.

4. FOR CONCRETE PIERS, SEE SPECIAL PROVISIONS.

PIER STRAP





NOTES:

1. ANCHOR BOLTS AND STRAPS SHALL BE GAVANIZED STEEL OR STAINLESS STEEL.

2. USE 1" DIA. ANCHOR BOLTS GRADE F1554.

3. HOLES TO BE DRILLED IN STRAP.

4. PIER STRAPS AND ANCHOR BOLTS SHALL BE INCIDENTAL TO THE CONCRETE PIER.

Vaughn & Melton
Consulting Engineers
■ Tri-Cities, Tennessee 423·467·8401
☐ Boone, NC 828·355·9933
☐ Asheville, NC 828·253·2796
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488

6-19-19

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 300 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

McDOWELL COUNTY

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	UC-4

DESIGNED BY: SRW
DRAWN BY: DRF
CHECKED BY: JDN
APPROVED BY: DWH
REVISED:

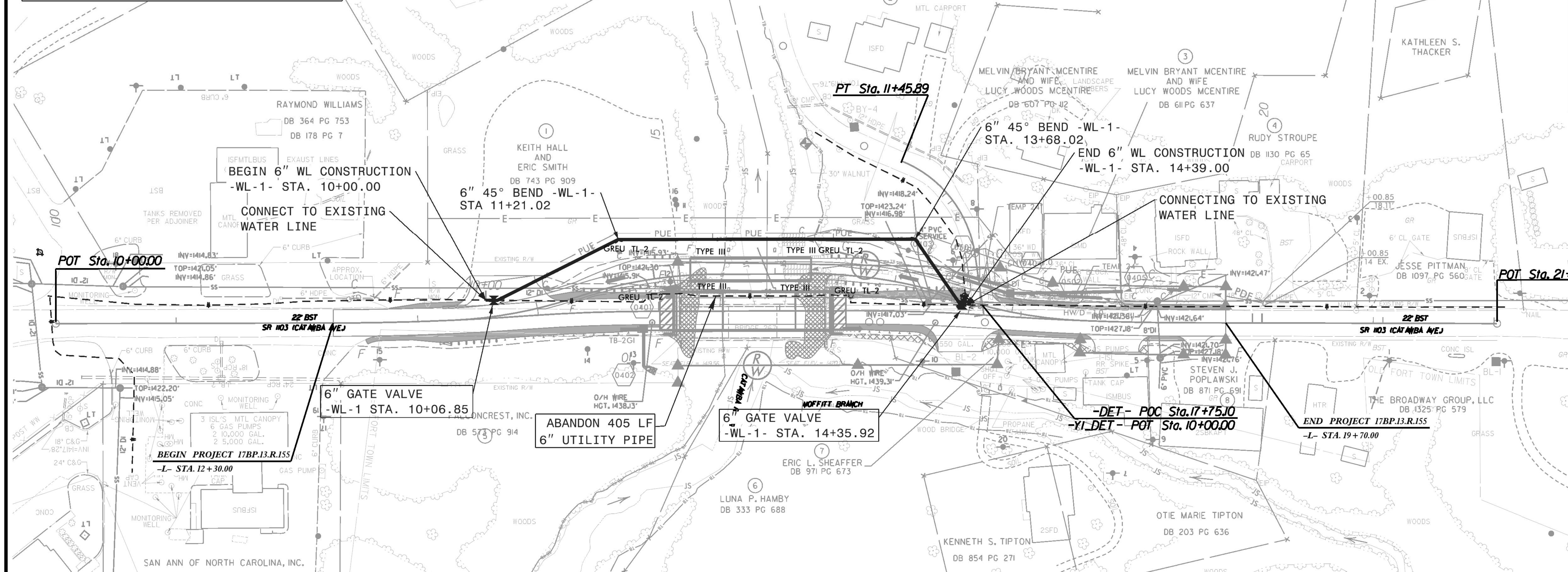
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE: (919)707-6690
FAX: (919)250-4151

UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 044648 ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED

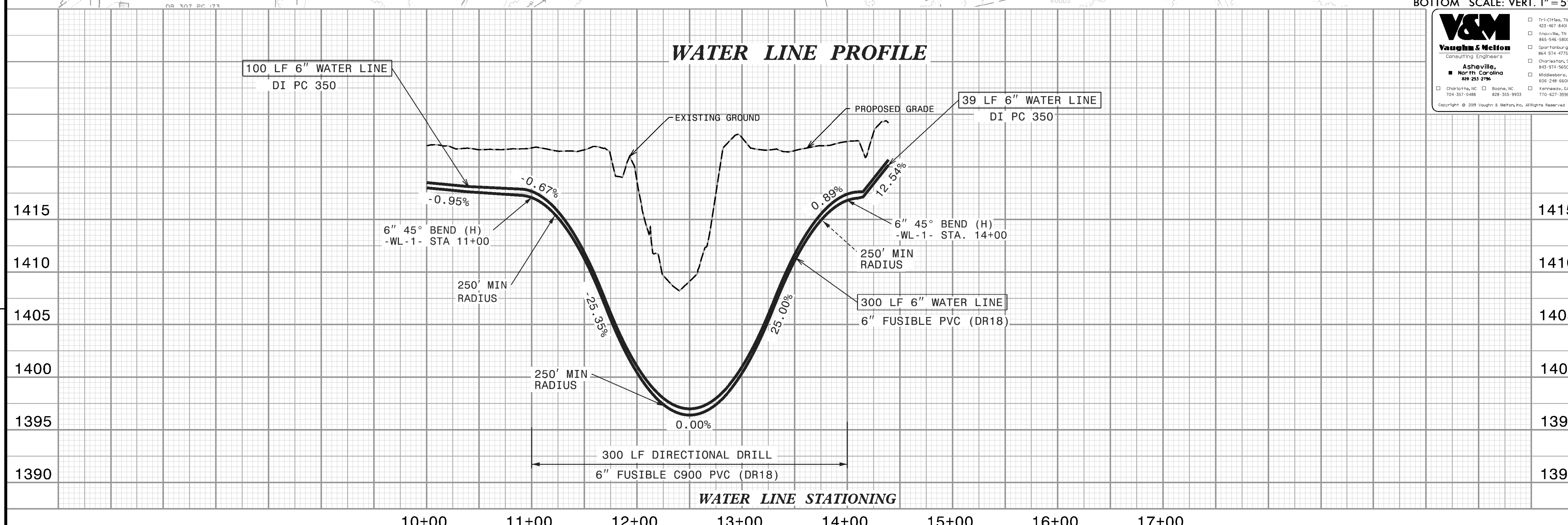
UTILITY CONSTRUCTION



50 25 0 50 100
5 2.5 0 5 10
TOP SCALE: HORIZ. 1"=50'
BOTTOM SCALE: VERT. 1"=5'

Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828-253-2796
Tri-Cities, TN · Knoxville, TN · Spartanburg, SC · Charleston, SC · Middlesboro, KY · Kennesaw, GA · Charlotte, NC · Boone, NC

WATER LINE PROFILE



V:\Asheville\transportation\31630-17 WSP Div.13\17BP.13.R.155 McDowell 267\Utilities\UC\17BP.13.R.155_utl_UC04A.dgn

6-21-19

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 0 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

McDOWELL COUNTY

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	UC-4A

DESIGNED BY: SRW
DRAWN BY: DRF
CHECKED BY: JDN
APPROVED BY: DWH
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

UTILITY CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 044648 ENGINEER

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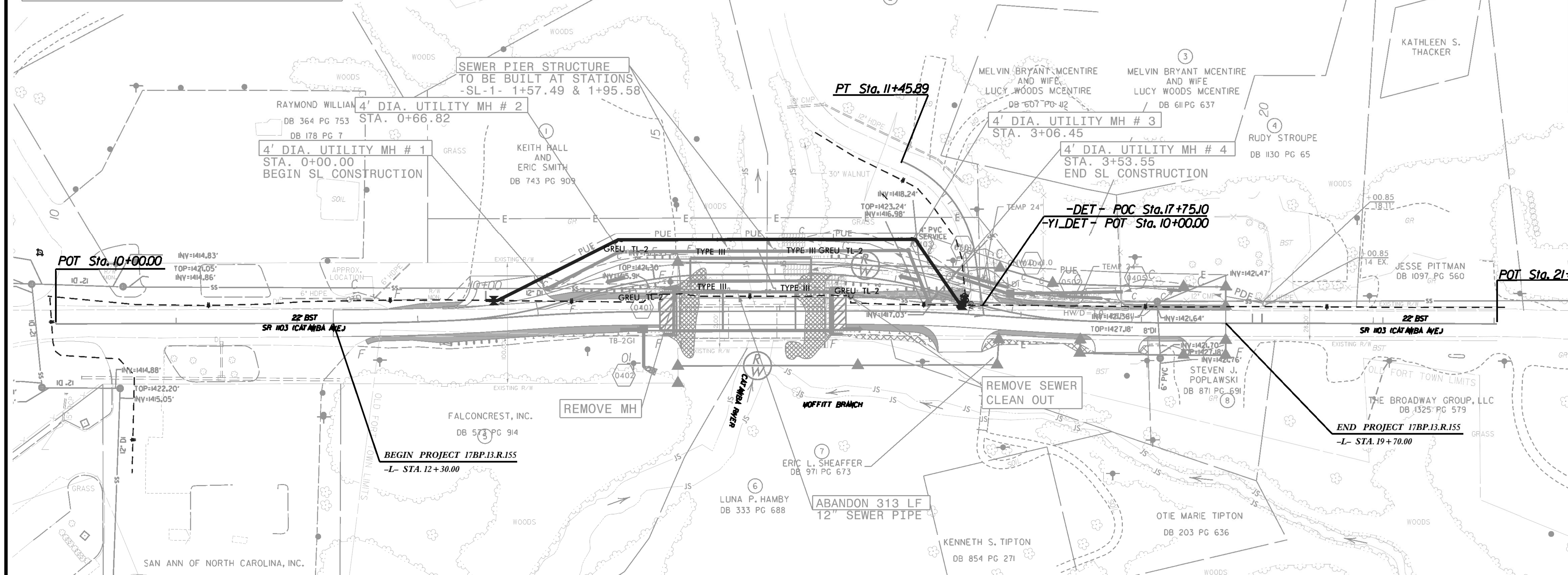
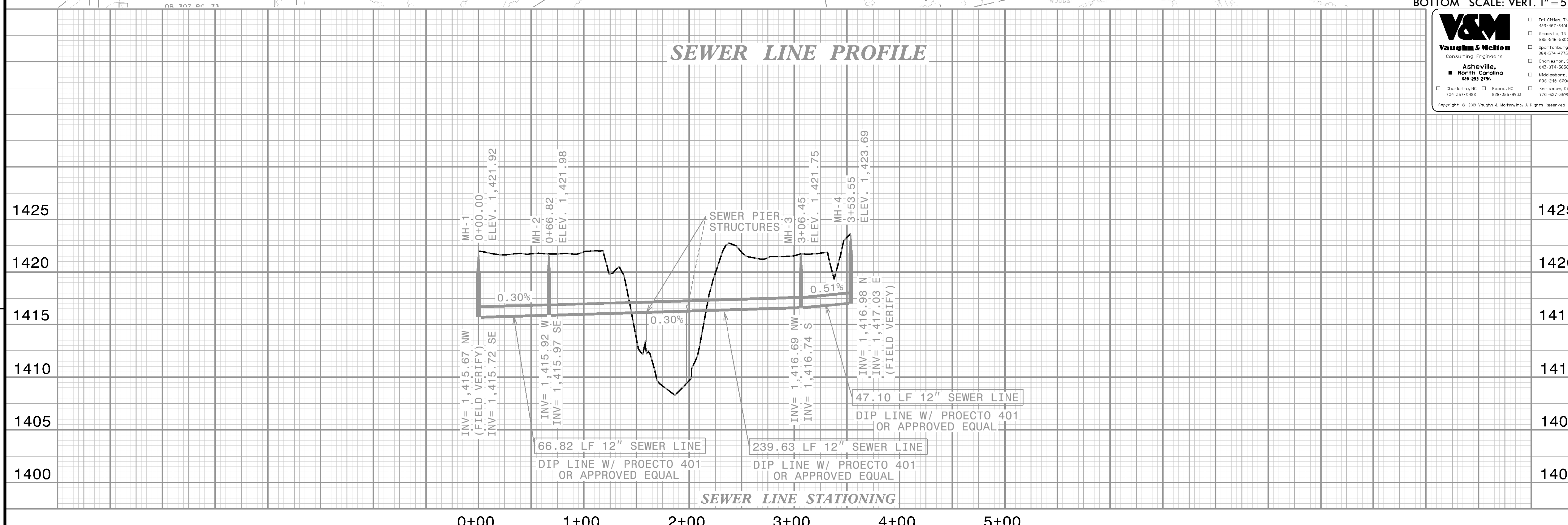
UTILITY CONSTRUCTION



TOP SCALE: HORIZ. 1" = 50'
BOTTOM SCALE: VERT. 1" = 5'

V&M Vaughn & Melton Consulting Engineers — Asheville, North Carolina



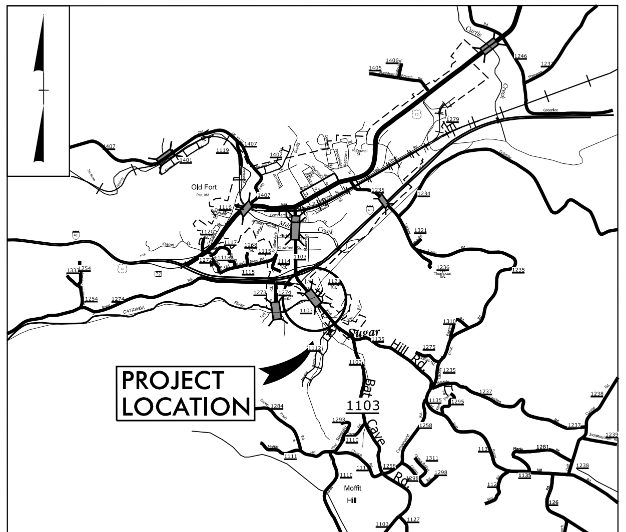
TIP PROJECT: 17BP.13.R.155

CONTRACT: 7000016202

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
17BP.13.R.155	UO–1

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

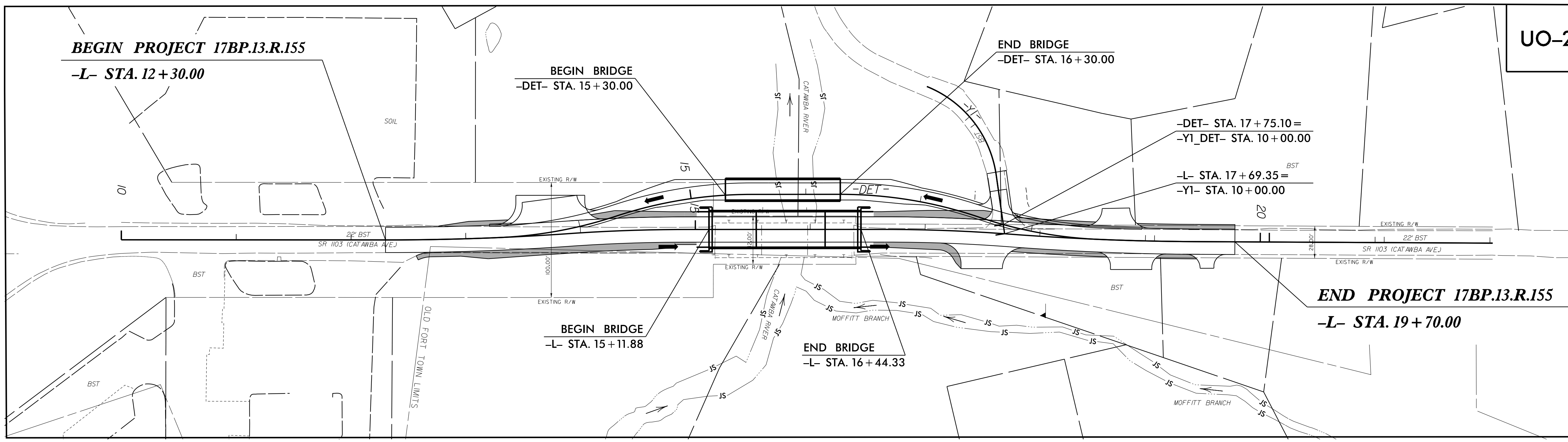


VICINITY MAP

UTILITIES BY OTHERS PLANS
MCDOWELL COUNTY

LOCATION: BRIDGE NO. 267 OVER CATAWBA RIVER ON SR 1103 (BAT CAVE ROAD)

TYPE OF WORK: RELOCATION OF AERIAL POWER, TELEPHONE AND CABLE TV



GRAPHIC SCALES

20 10 0 20 40

PLANS

INDEX OF SHEETS

SHEET NO.	*DESCRIPTION*
UO–1	*TITLE SHEET*
UO–2	*UBO PLAN SHEET*

UTILITY OWNERS WITH CONFLICTS

(1) POWER – DUKE ENERGY

(2) TELECOMMUNICATIONS – FRONTIER COMM.

(3) CATV – CHARTER/SPECTRUM

(4) WATER & SEWER – TOWN OF OLD FORT

PREPARED IN THE OFFICE OF:

V&M
Vaughn & Melton
Consulting Engineers
1318-F Patton Ave.
Asheville, NC 28806
828-253-2796

Nick Asaro — *UTILITY PROJECT MANAGER*
Will Matthews — *PROJECT UTILITY COORDINATOR*

DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

Michael Calloway — *DIV. BRIDGE PROGRAM MANAGER*
Keith Radcliff — *DIV. SR. UTILITIES COORDINATOR*

V&M PROJECT #3630-17
TRANSPORTATION\3630-17•BP.13.R.155 McDowell 267\UTILITIES\B5868_UTL_UO-1.DGN

6/7/21

DocuSign Envelope ID: 3E687F30-8B83-4462-AC37-15B497B8B316

7/9/18 Added Duke Design 8/1/18
Added Detour Temp Bridge 6/15/19
Added Revised Duke Design 6/28/19
Updated ROW and PUE 7/9/2019

PROJECT: 17BP.13.R.155

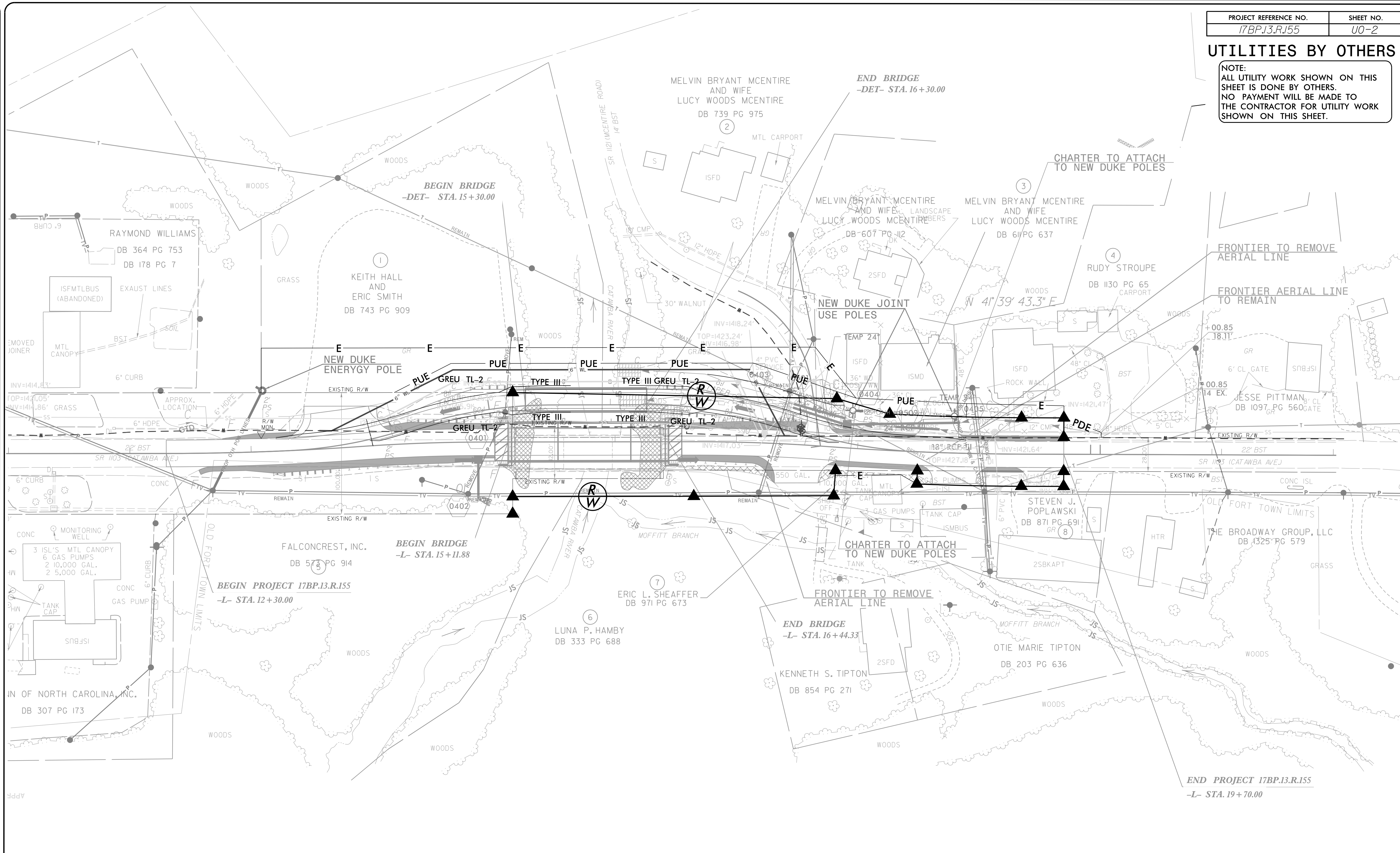
CONTRACT: 7000016202

TRANSP.\31630-17\ 17BP.13.R.155 McD 267\UTILITIES\ 17BP.13.R.155_UTL_UO-2.DGN

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.155	UO-2

UTILITIES BY OTHERS

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



THE UTILITY CONSTRUCTION (UC) PLANS FOR THE WATER AND SEWER LINES ARE SHOWN ON THESE PLANS FOR INFORMATIONAL PURPOSES ONLY, CURRENT AS OF 7/2/19. SEE THE LATEST UTILITY CONSTRUCTION (UC) PLANS FOR THE ACTUAL DESIGN PLANS.

V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828-253-2796
Charlotte, North Carolina 704-357-0488
Tri-Cities, Tennessee 423-467-8401
Knoxville, Tennessee 865-546-5800
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864-574-4775

PROJ. REFERENCE NO.	SHEET NO.
17.BP.13.R.155	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+30.00	0	0
12+50.00	2	0
12+75.00	4	1
13+00.00	1	3
13+25.00	0	5
13+50.00	0	5
13+75.00	0	3
14+00.00	0	2
14+25.00	0	1
14+50.00	0	4
14+75.00	1	7
15+00.00	1	16
15+11.75	0	5

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
16+30.00	0	0
16+50.00	4	7
16+75.00	6	31
17+00.00	2	25
17+25.00	1	8
17+50.00	2	4
17+75.00	2	0
18+00.00	0	2
18+25.00	0	5
18+50.00	0	5
18+75.00	5	3
19+00.00	21	0
19+25.00	27	1
19+50.00	20	1
19+70.00	10	0

Station Y1	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+11.26	0	0
10+25.00	0	6
10+50.00	3	12
10+54.00	0	0

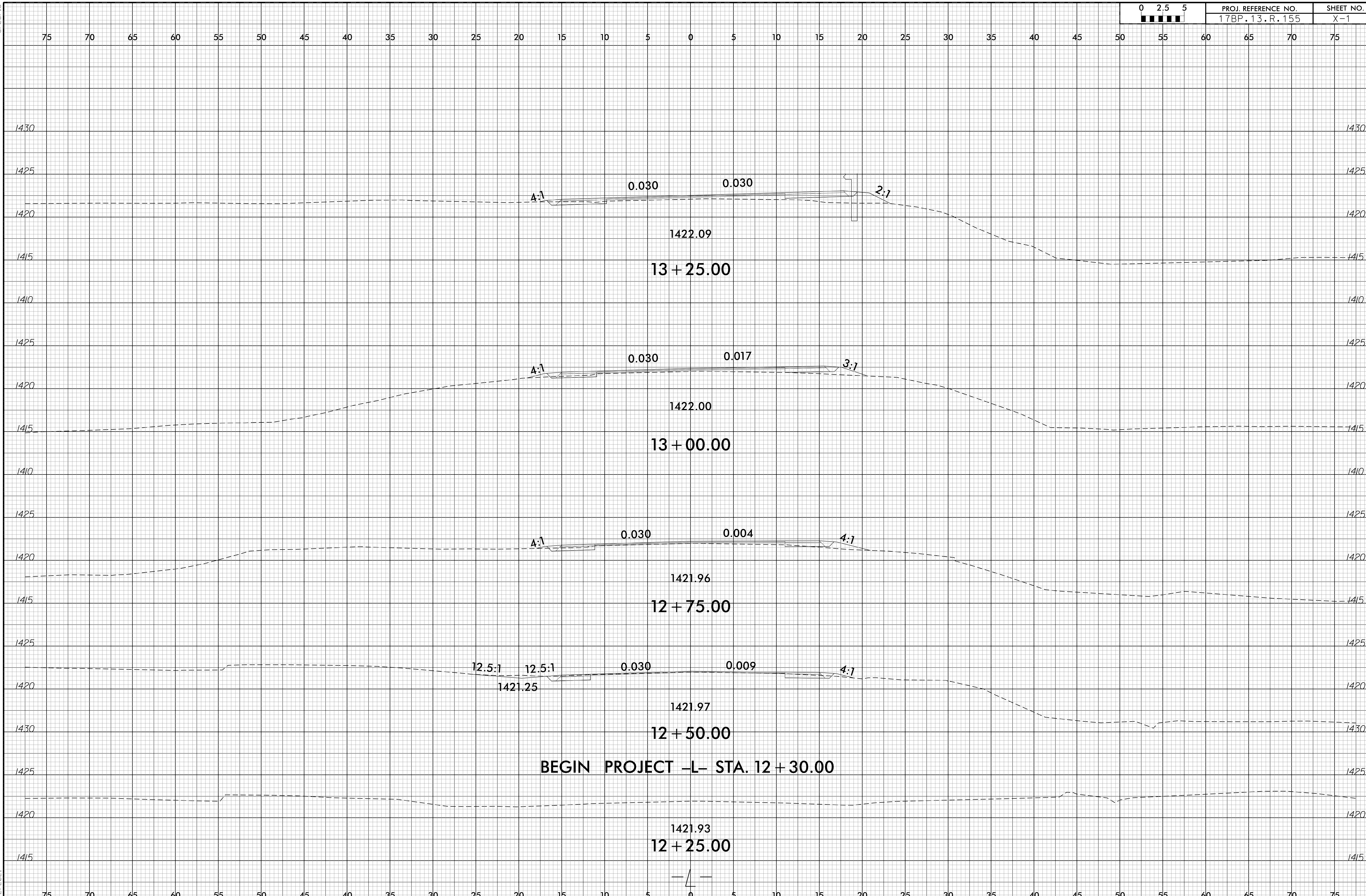
Station L_Det	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+98.53	0	0
14+00.00	1	0
14+25.00	15	0
14+50.00	12	0
14+75.00	13	0
15+00.00	12	0
15+25.00	5	8
15+30.00	0	2

Station L_Det	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
16+30.00	0	0
16+50.00	0	18
16+75.00	0	60
17+00.00	0	68
17+25.00	0	48
17+50.00	0	20
17+75.00	7	2
17+91.92	9	0

Station DET_REMOVAL	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+98.53	0	0
14+00.00	0	1
14+25.00	1	14
14+50.00	0	14
14+75.00	0	15
15+00.00	0	8
15+25.00	16	0
15+30.00	3	0

Station DET_REMOVAL	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
16+30.00	0	0
16+50.00	35	0
16+75.00	61	0
17+00.00	41	12
17+25.00	24	18
17+50.00	8	22
17+75.00	0	15
17+91.92	0	4

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.155	X-1



6/23/16

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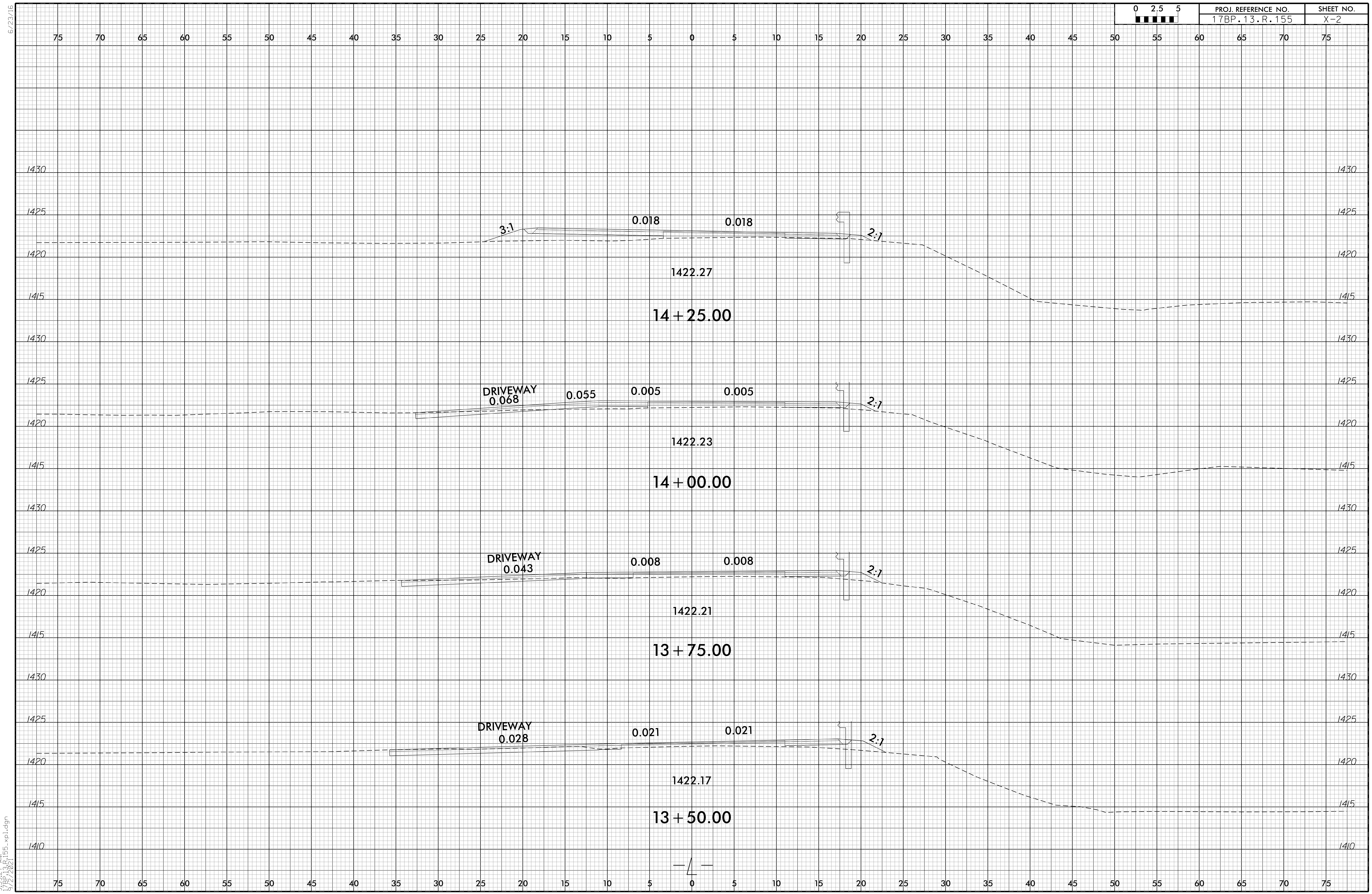
9/2/2021


6/23/16
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PROJ. REFERENCE NO.
17BP.13.R.155
SHEET NO.
X-2
3:1
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2:1
1422.27
14+25.00
DRIVEWAY
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0.055
0.005
0.005
2:1
1422.23
14+00.00
DRIVEWAY
0.043
0.008
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2:1
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9/2/2021

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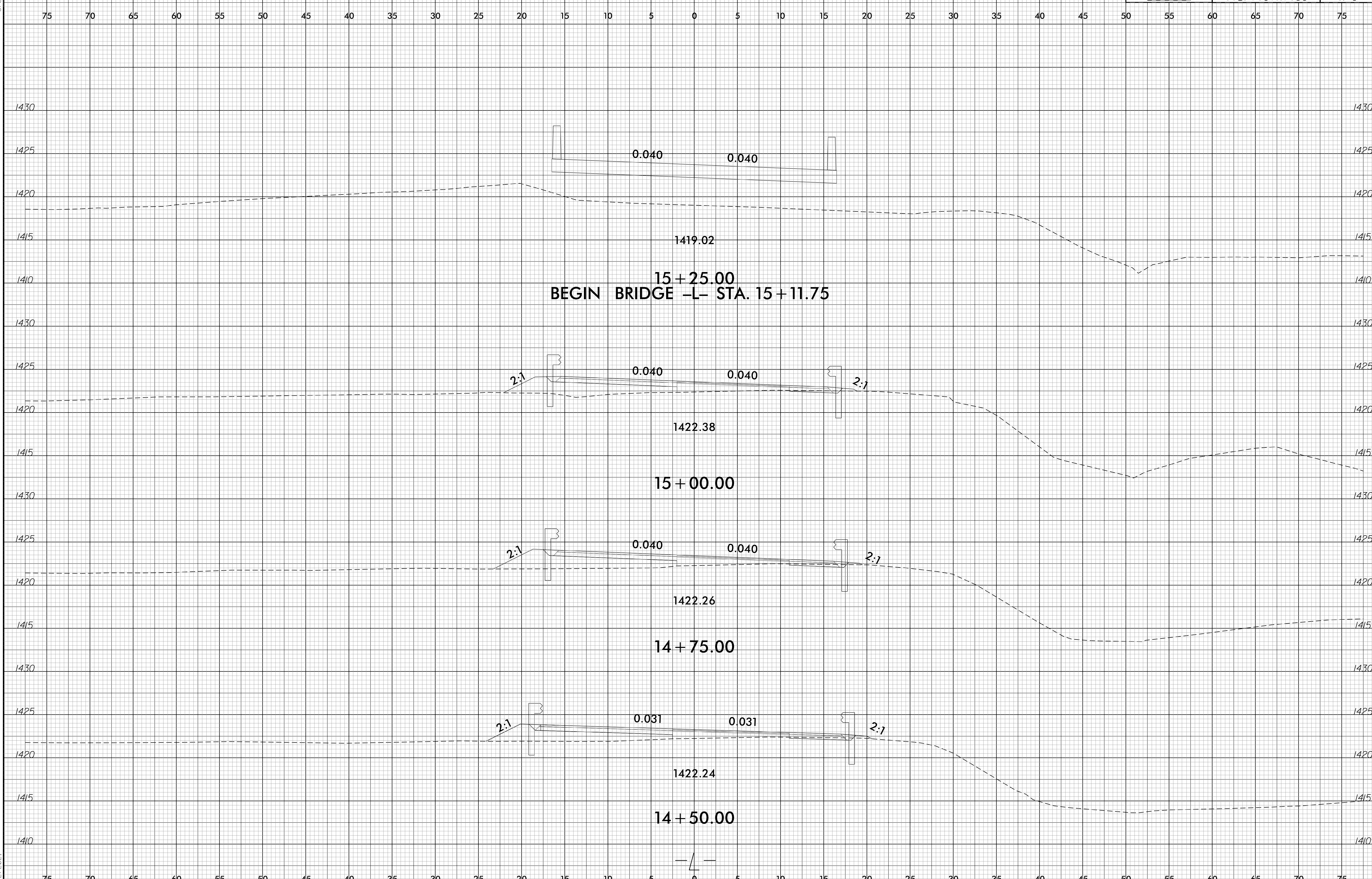

6/23/16

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9/2/2021

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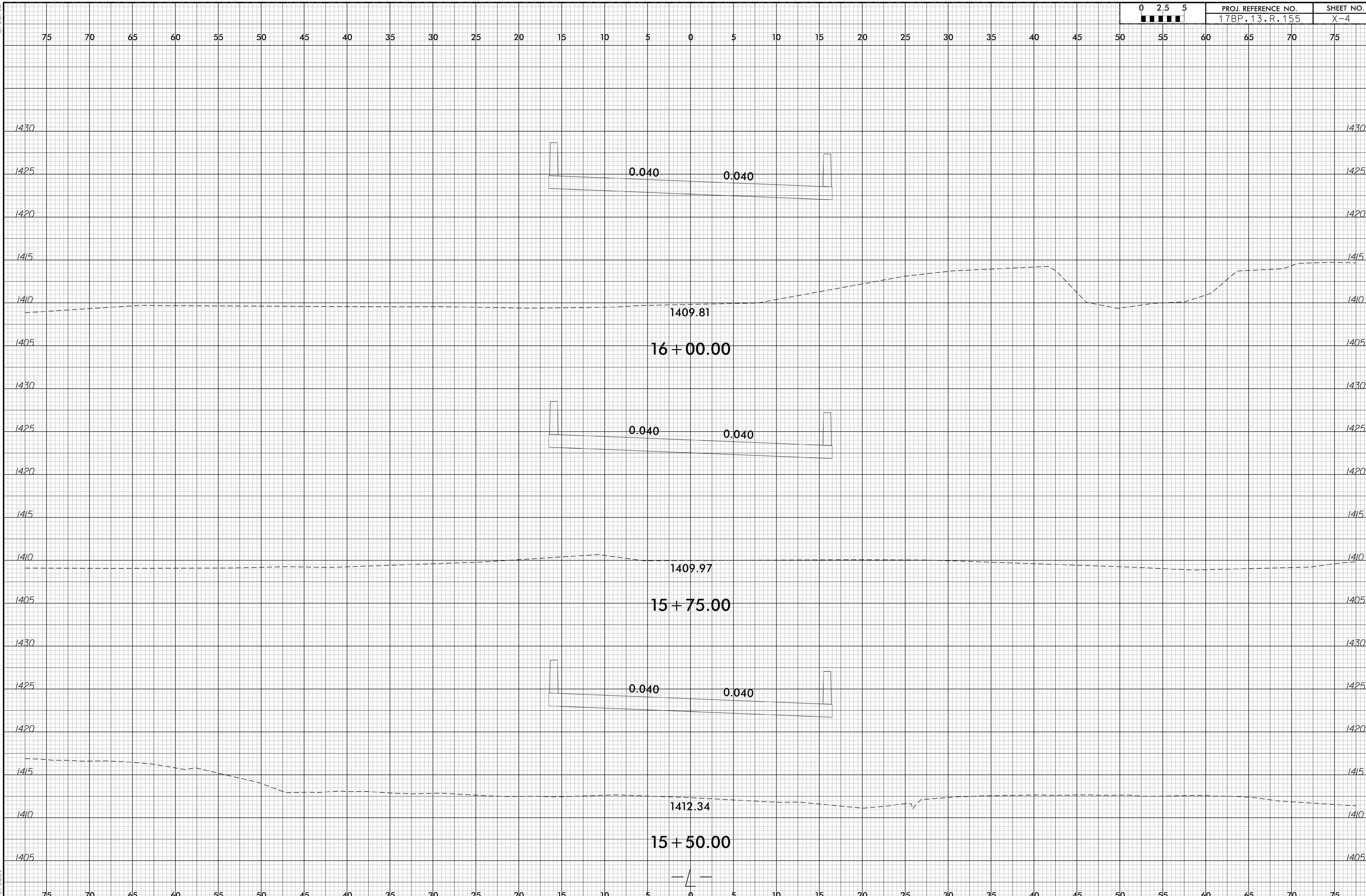
	17BP.13.R.155	X-4

6/23/16



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9/2/2021

6/23/16

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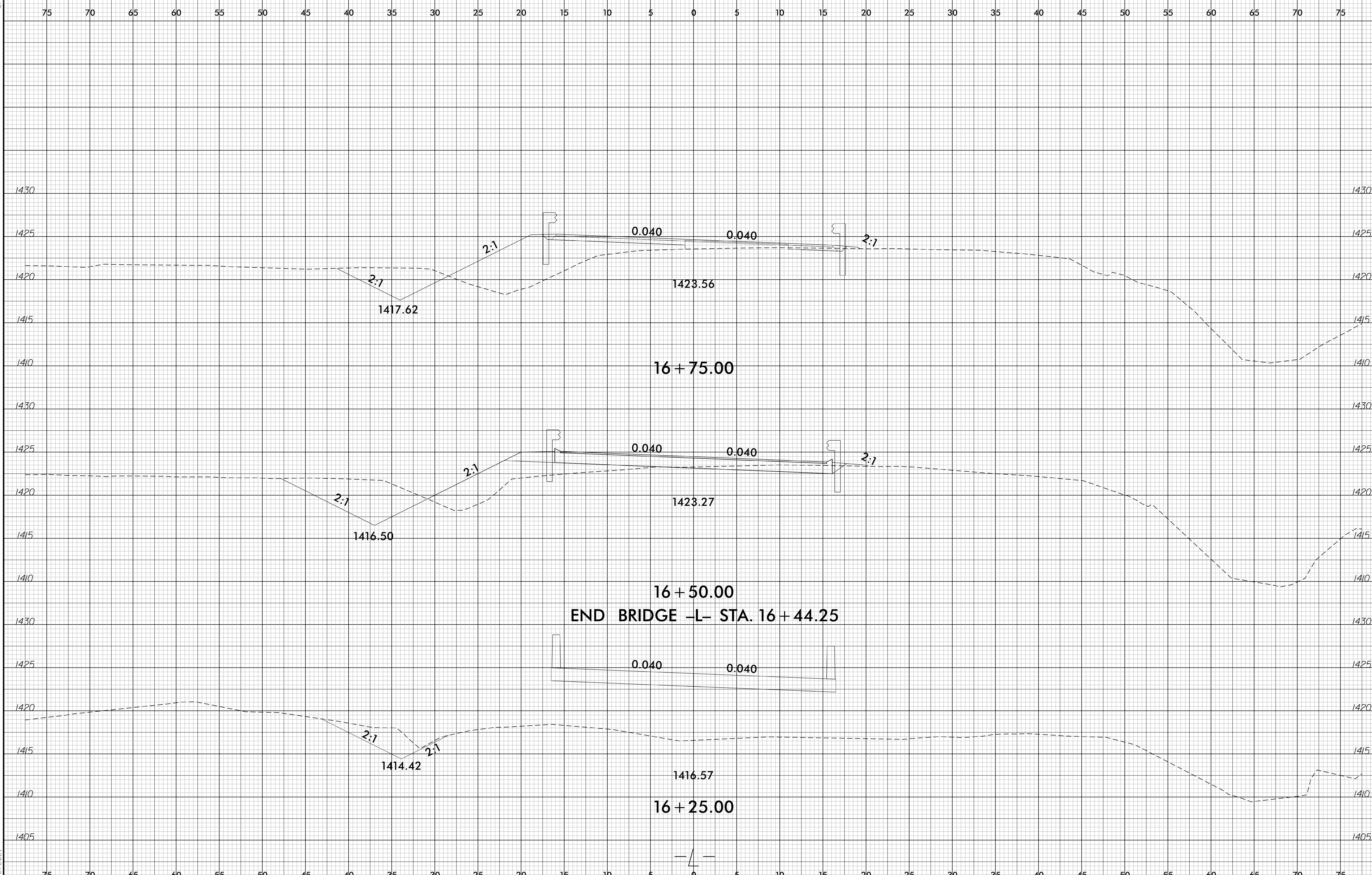

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9/2/2021

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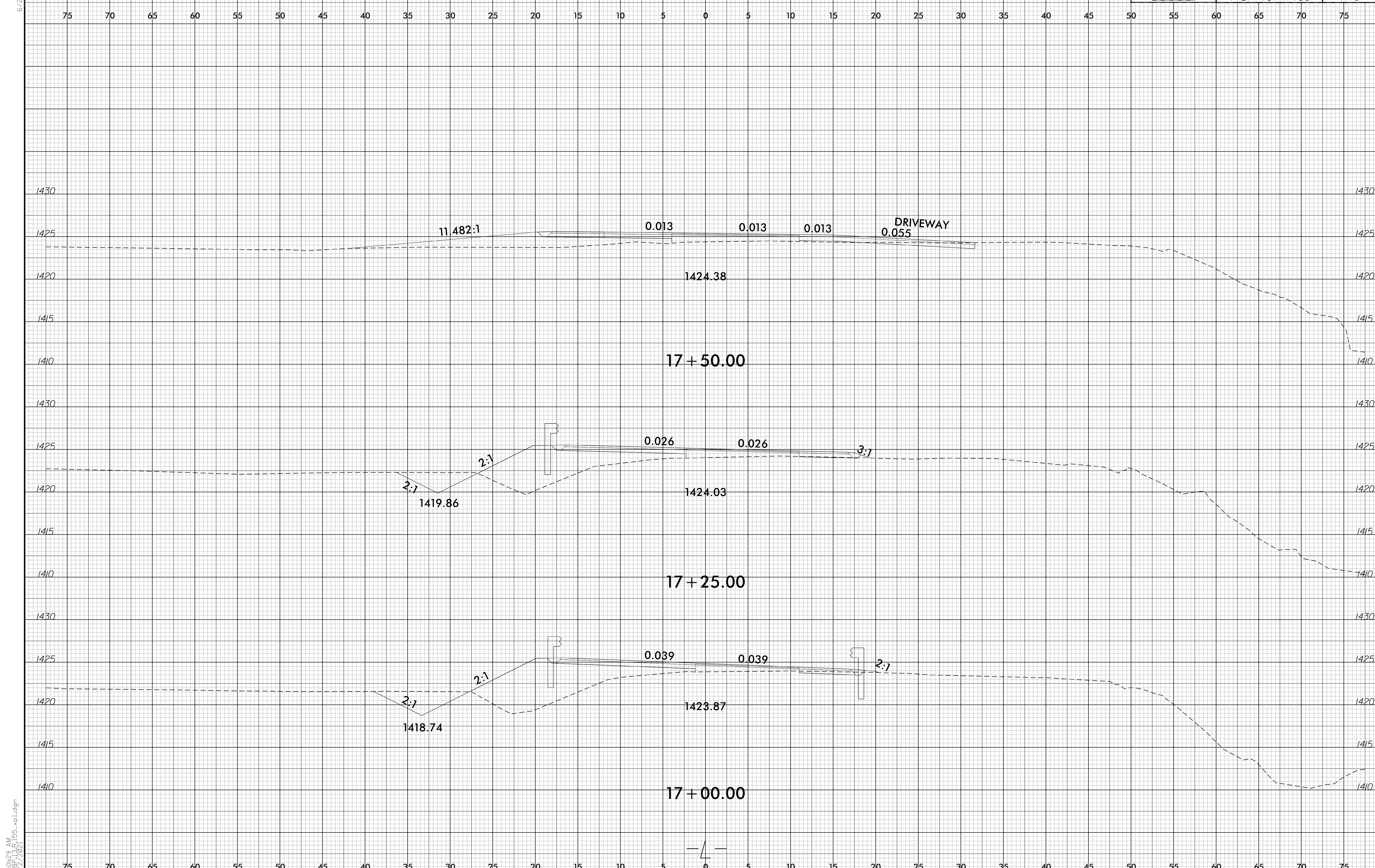

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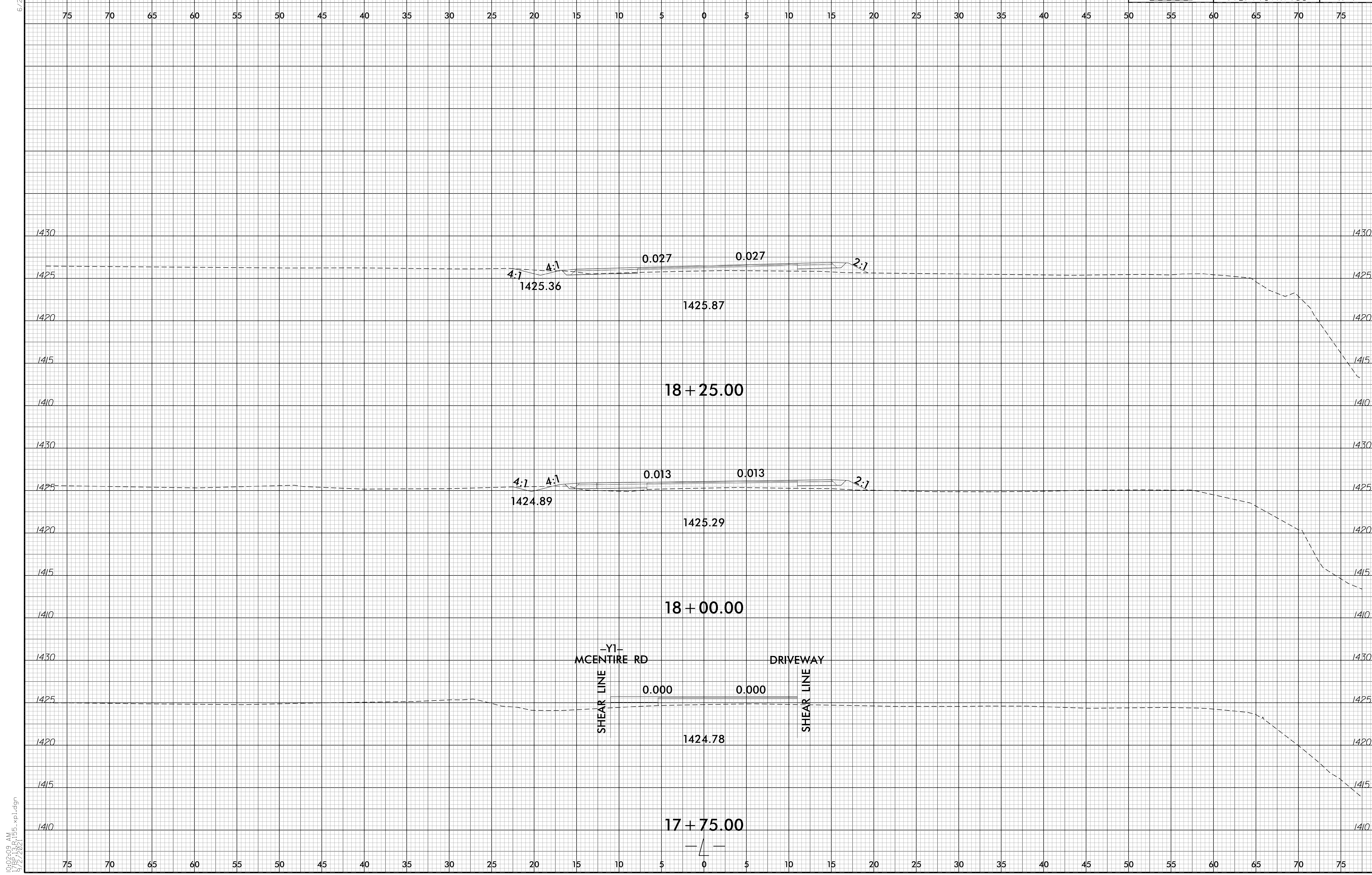

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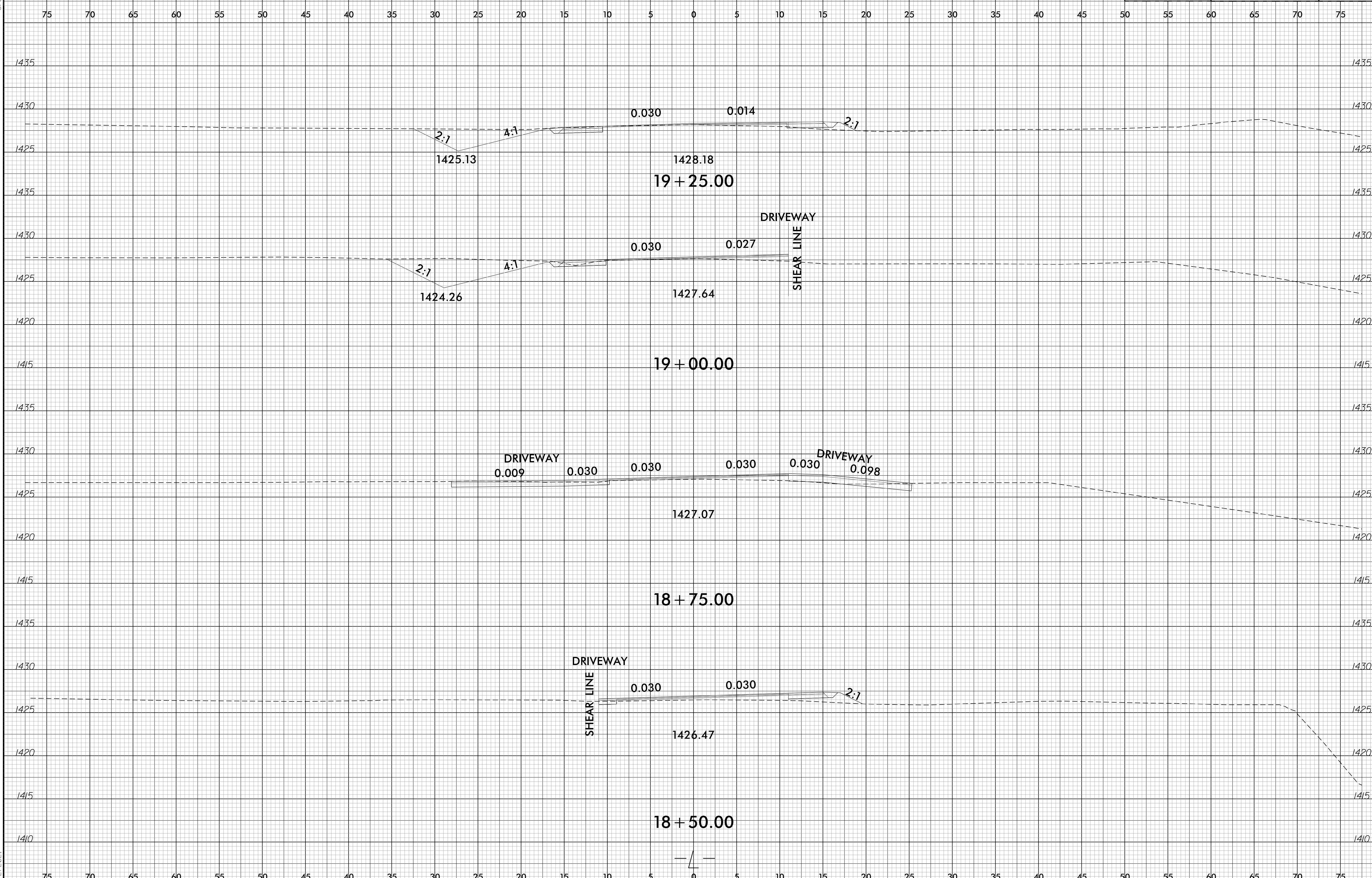

6/23/16

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9/2/2021

6/23/16

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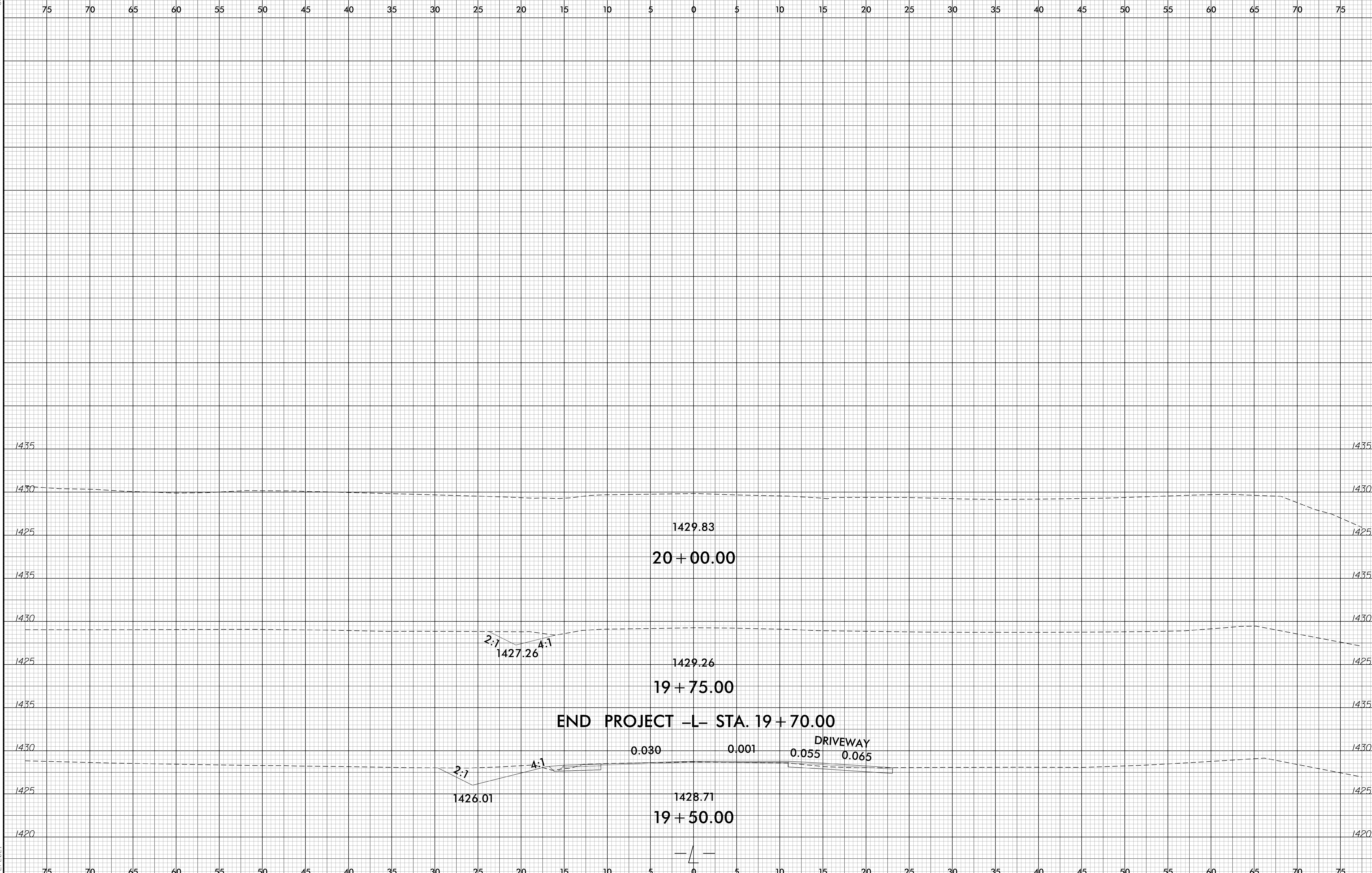

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9/2/2021

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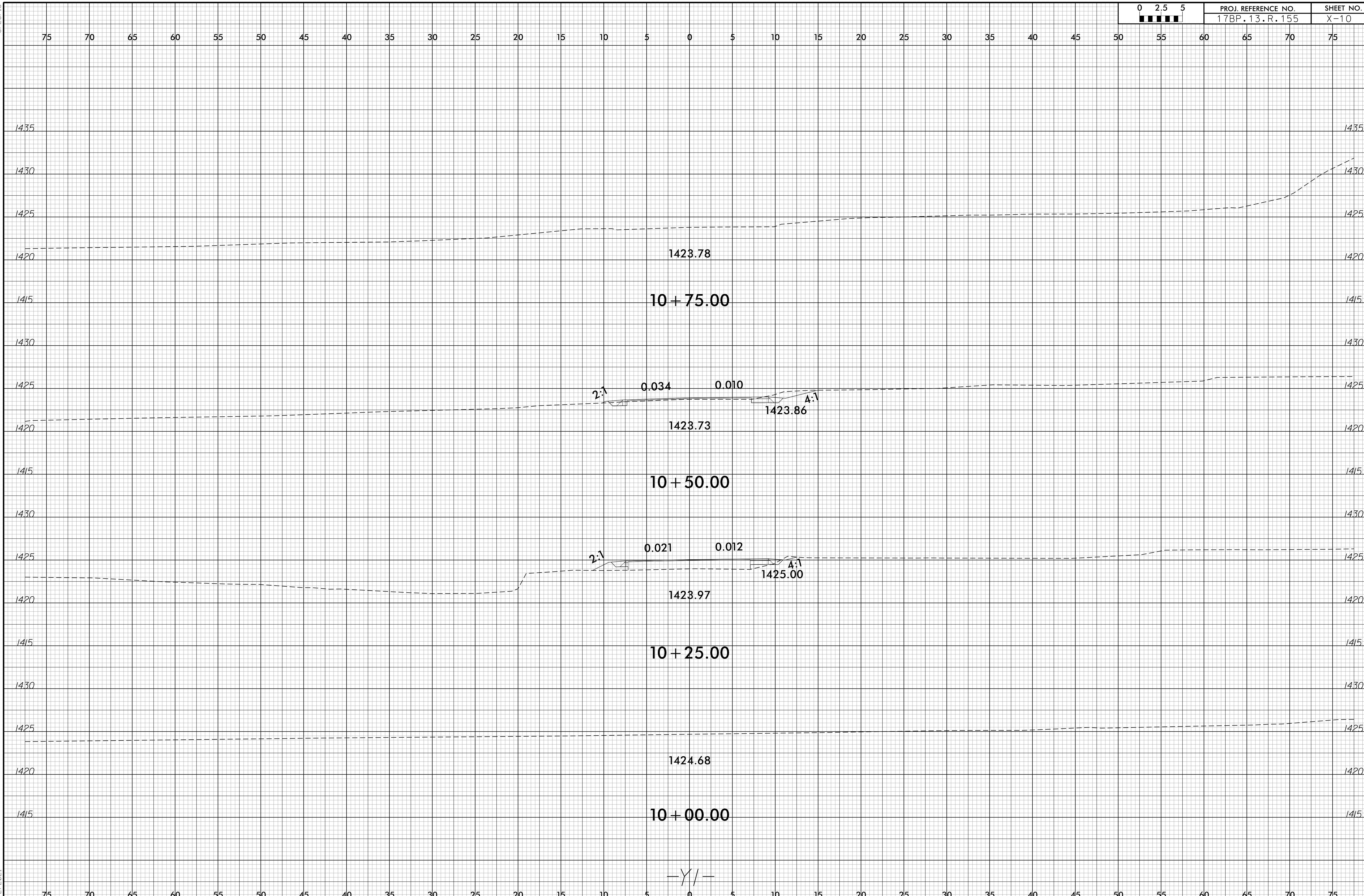

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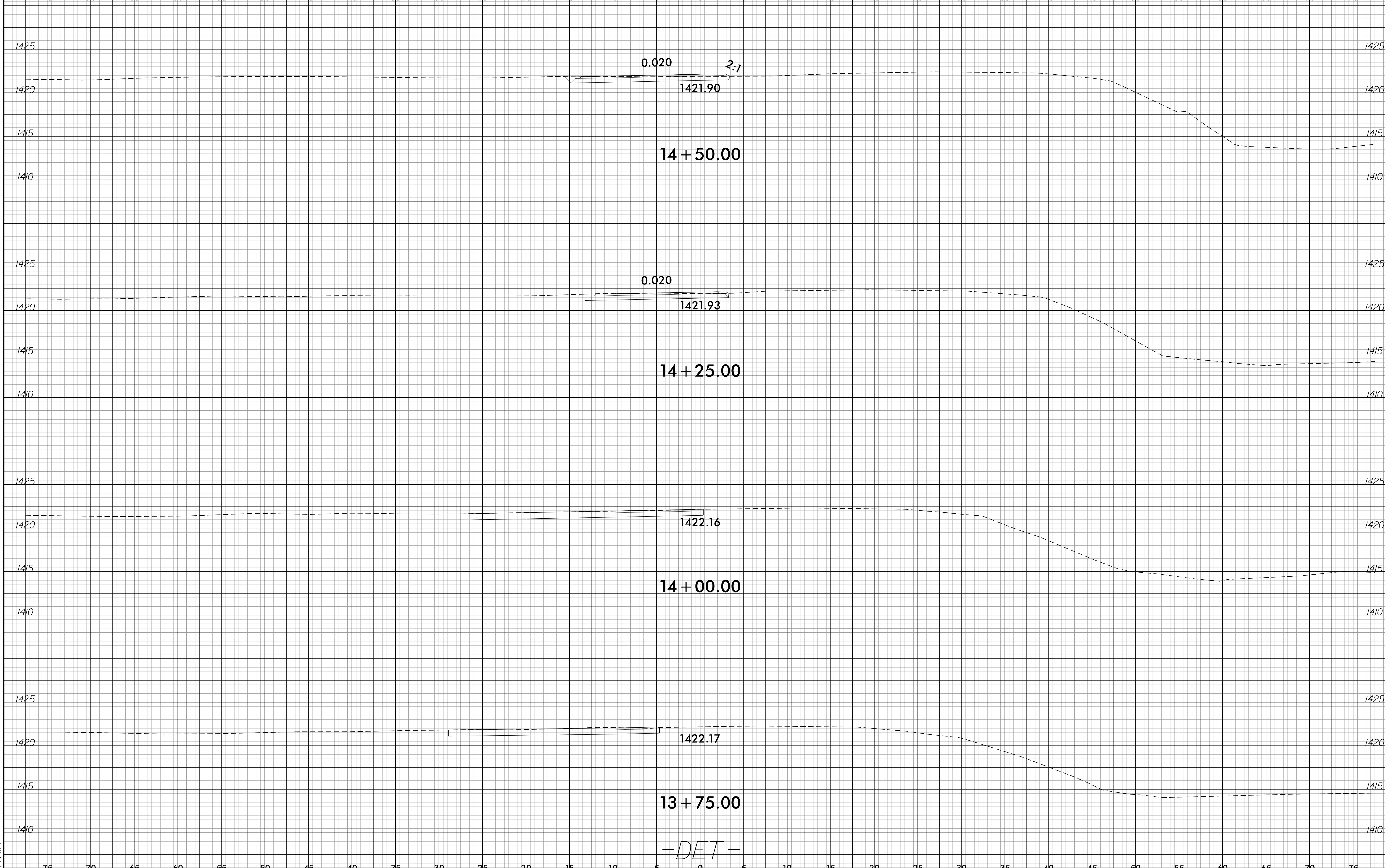
6/23/16



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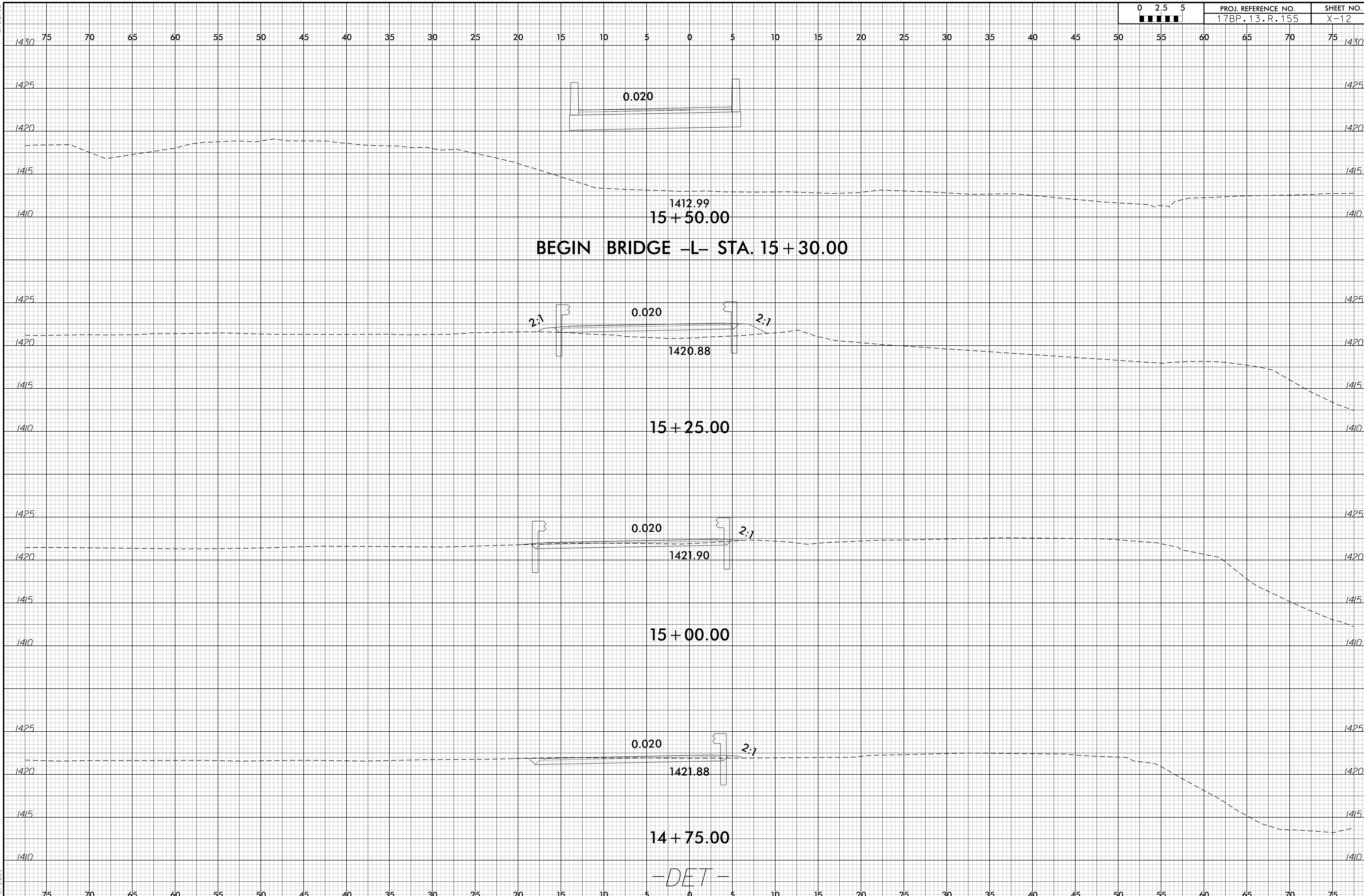

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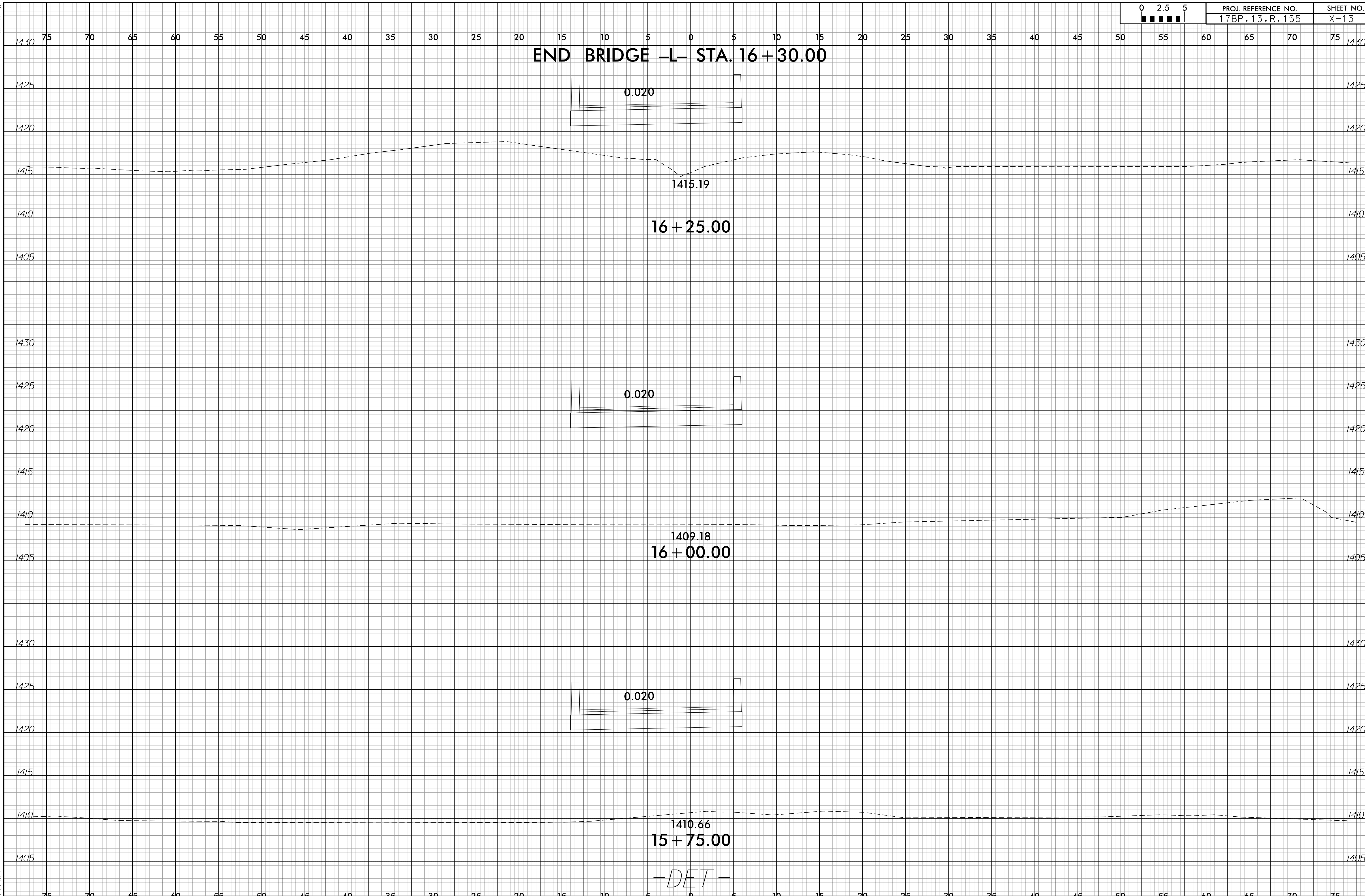

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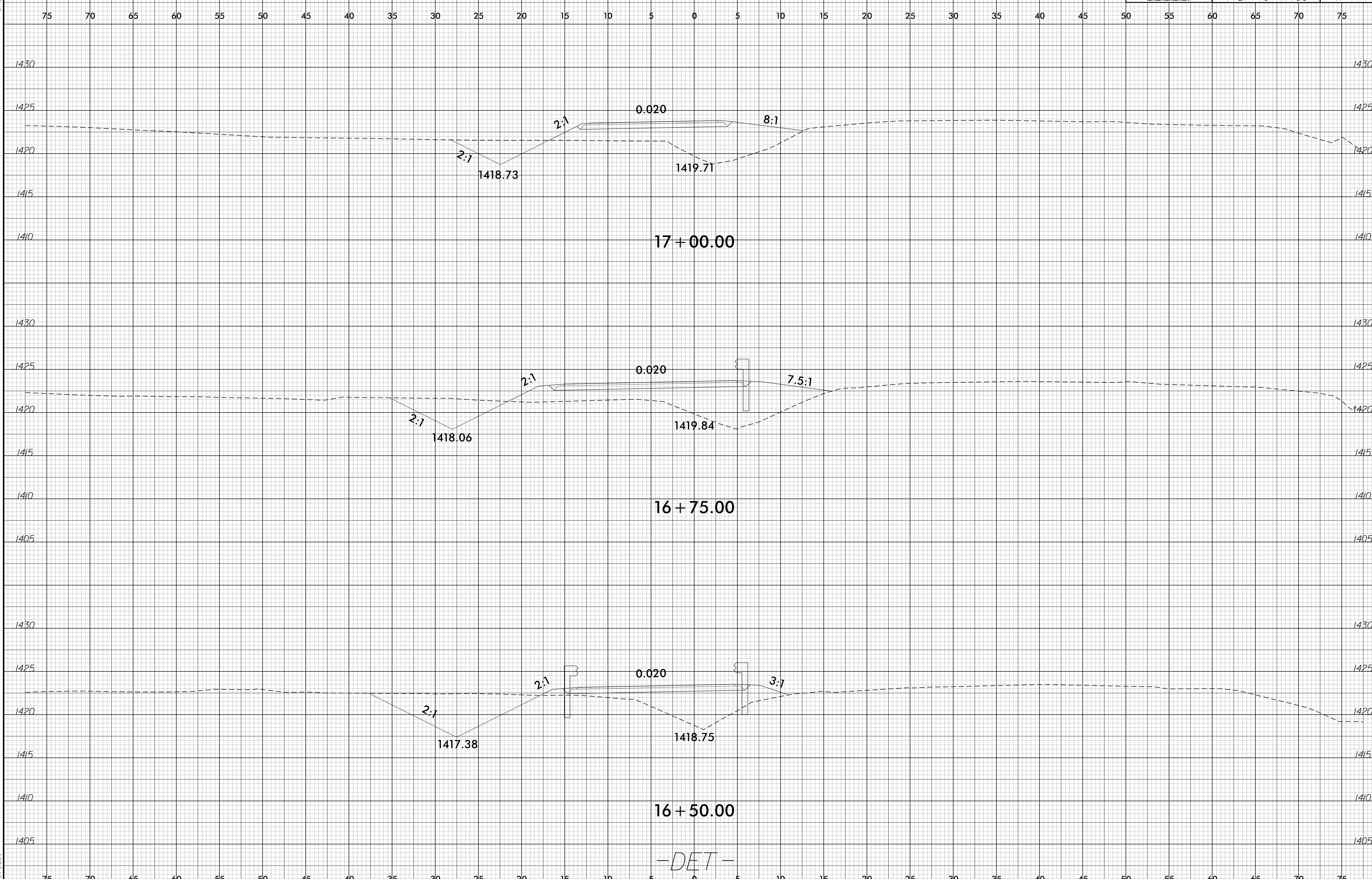

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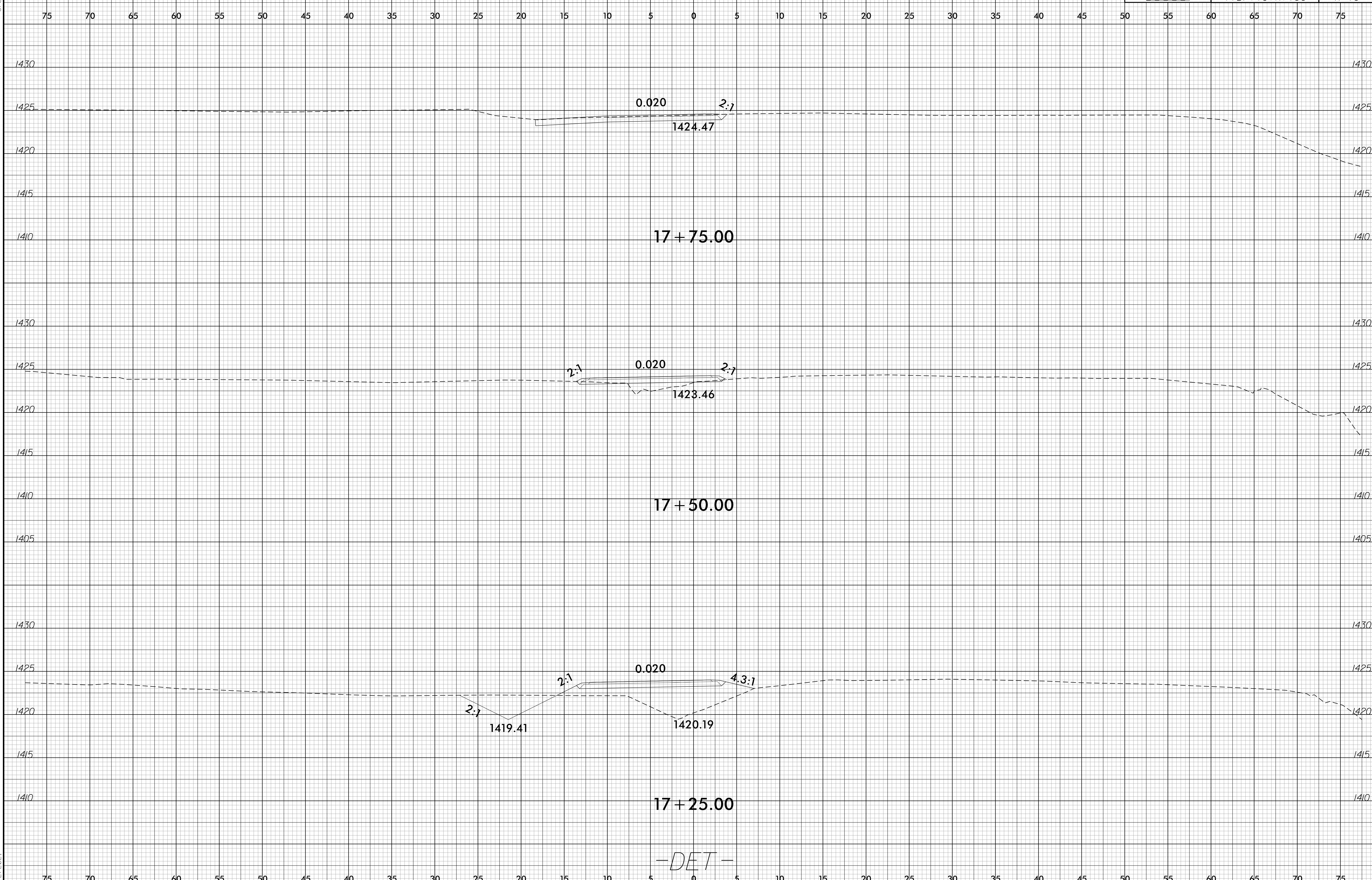

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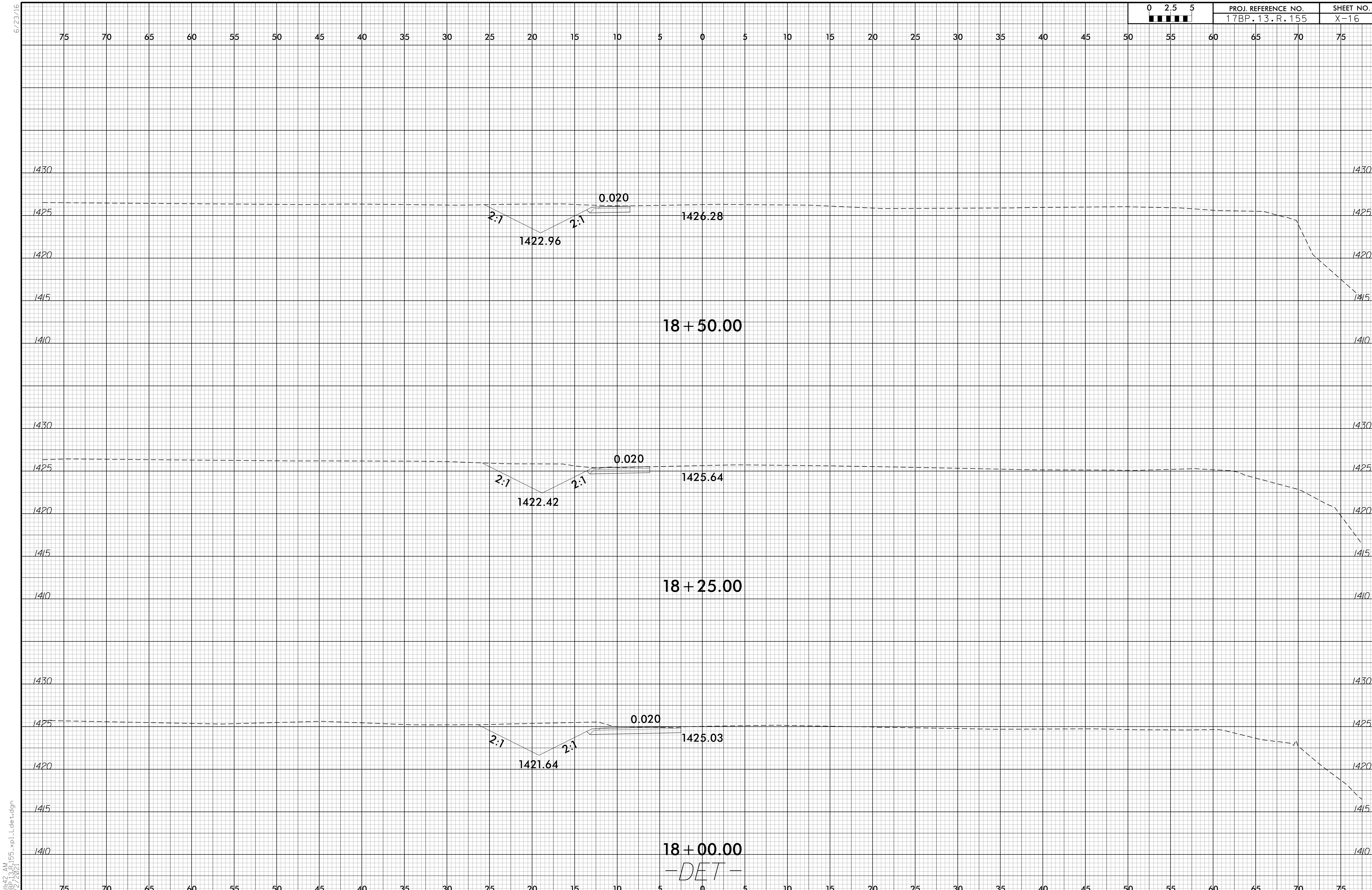
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6/23/16
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1422.96
18 + 50.00
0.020
2:1
2:1
1425.64
1422.42
18 + 25.00
0.020
2:1
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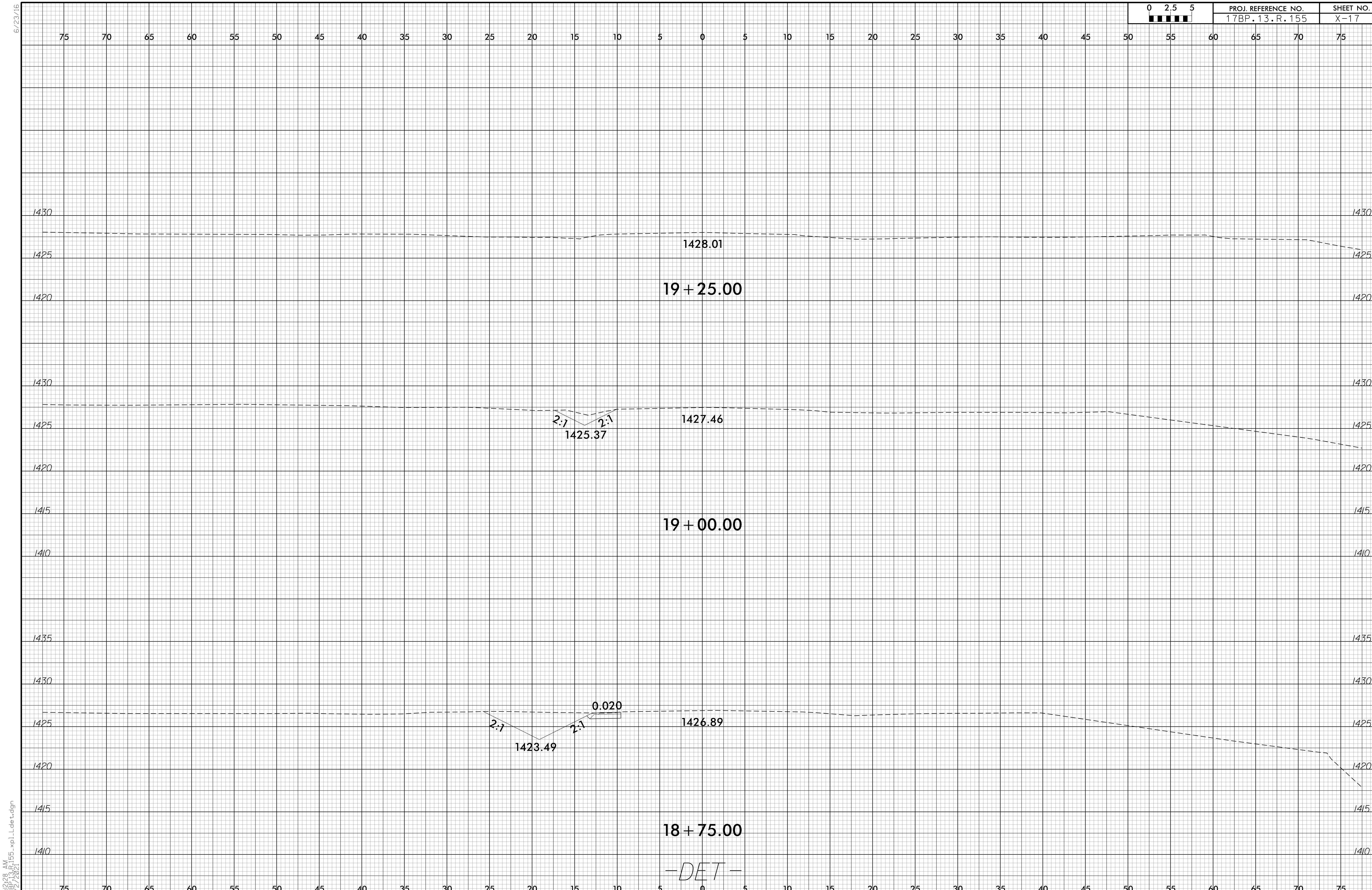

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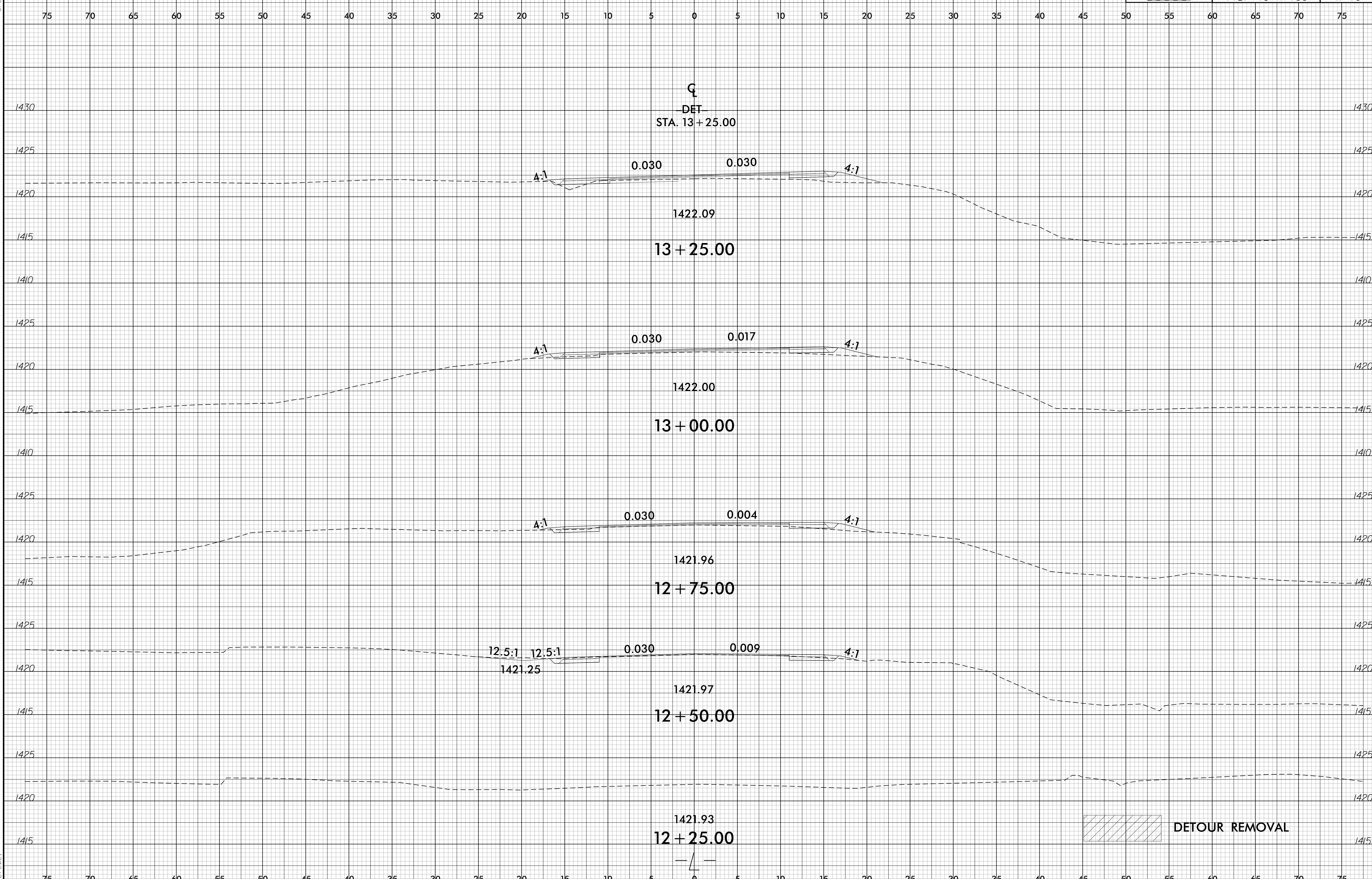

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6/23/16

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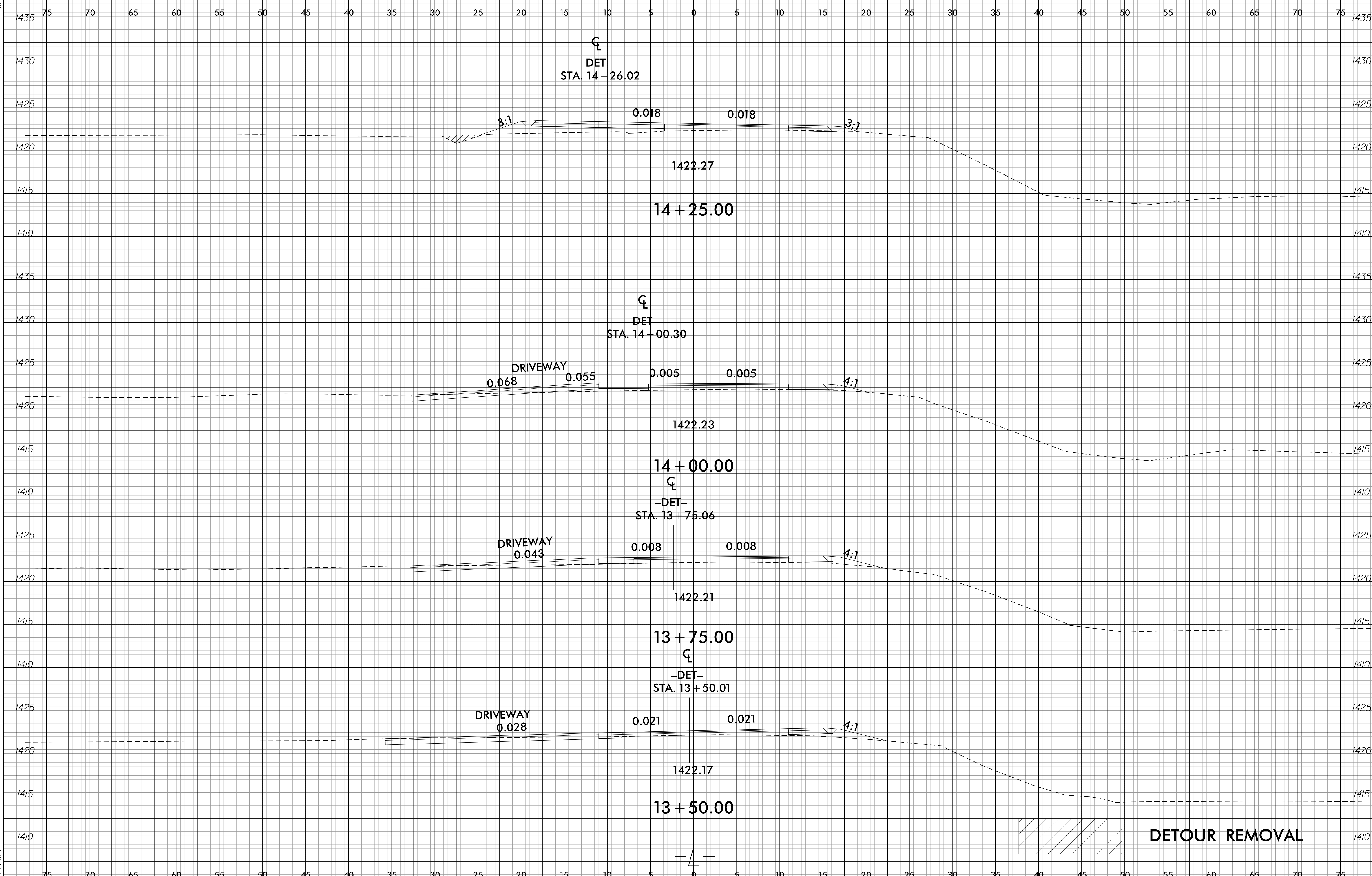

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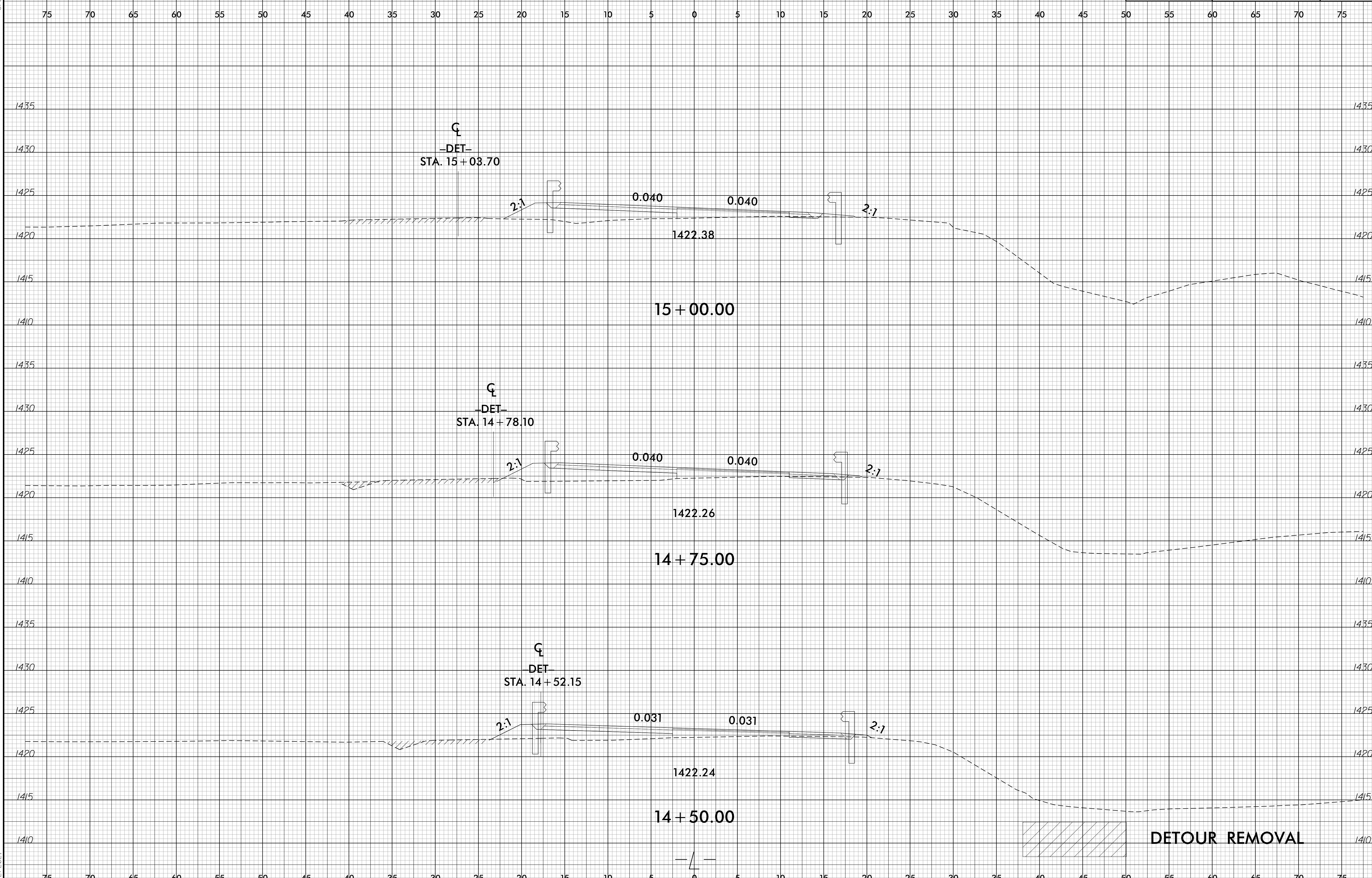

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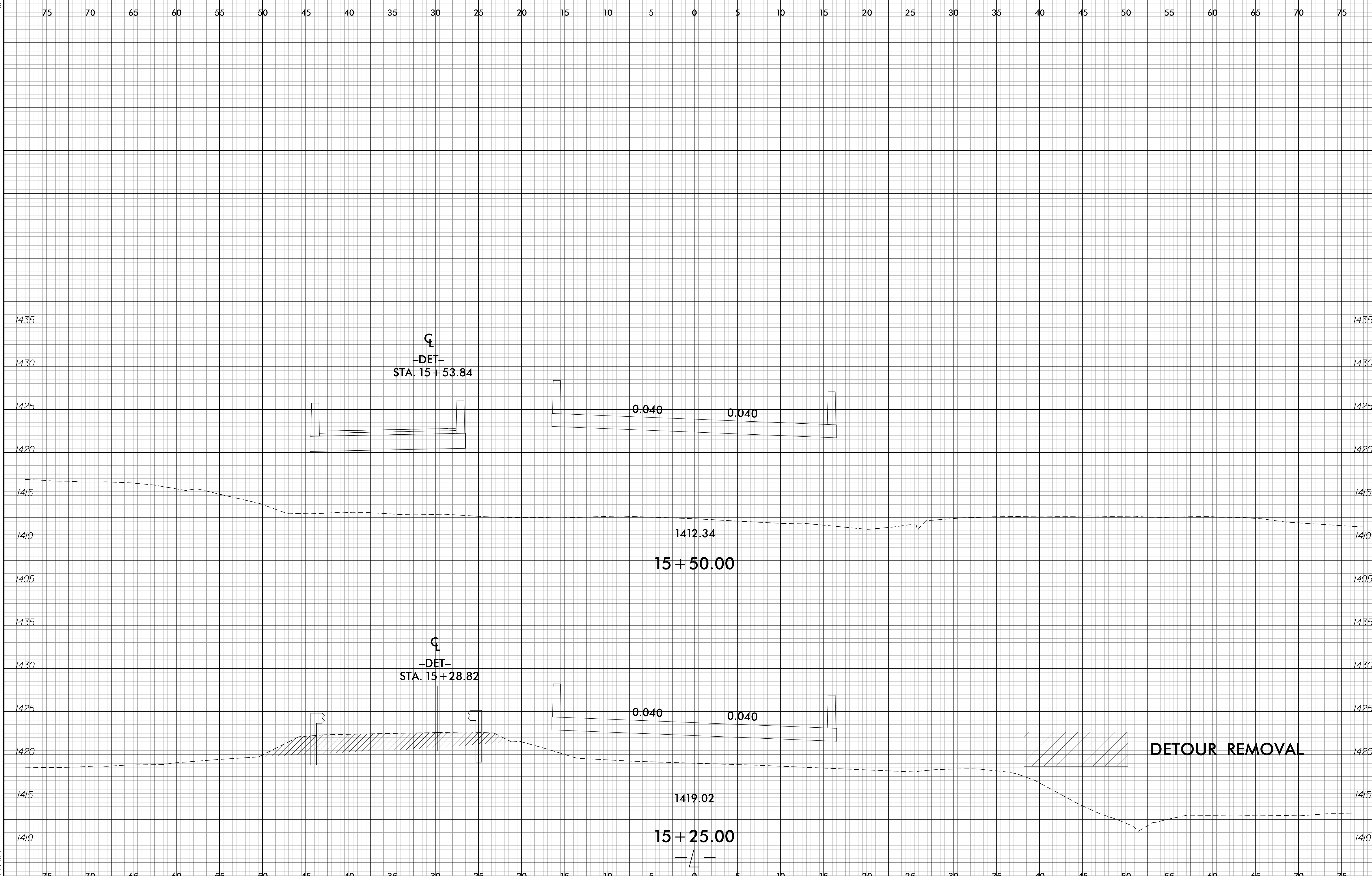
6/23/16



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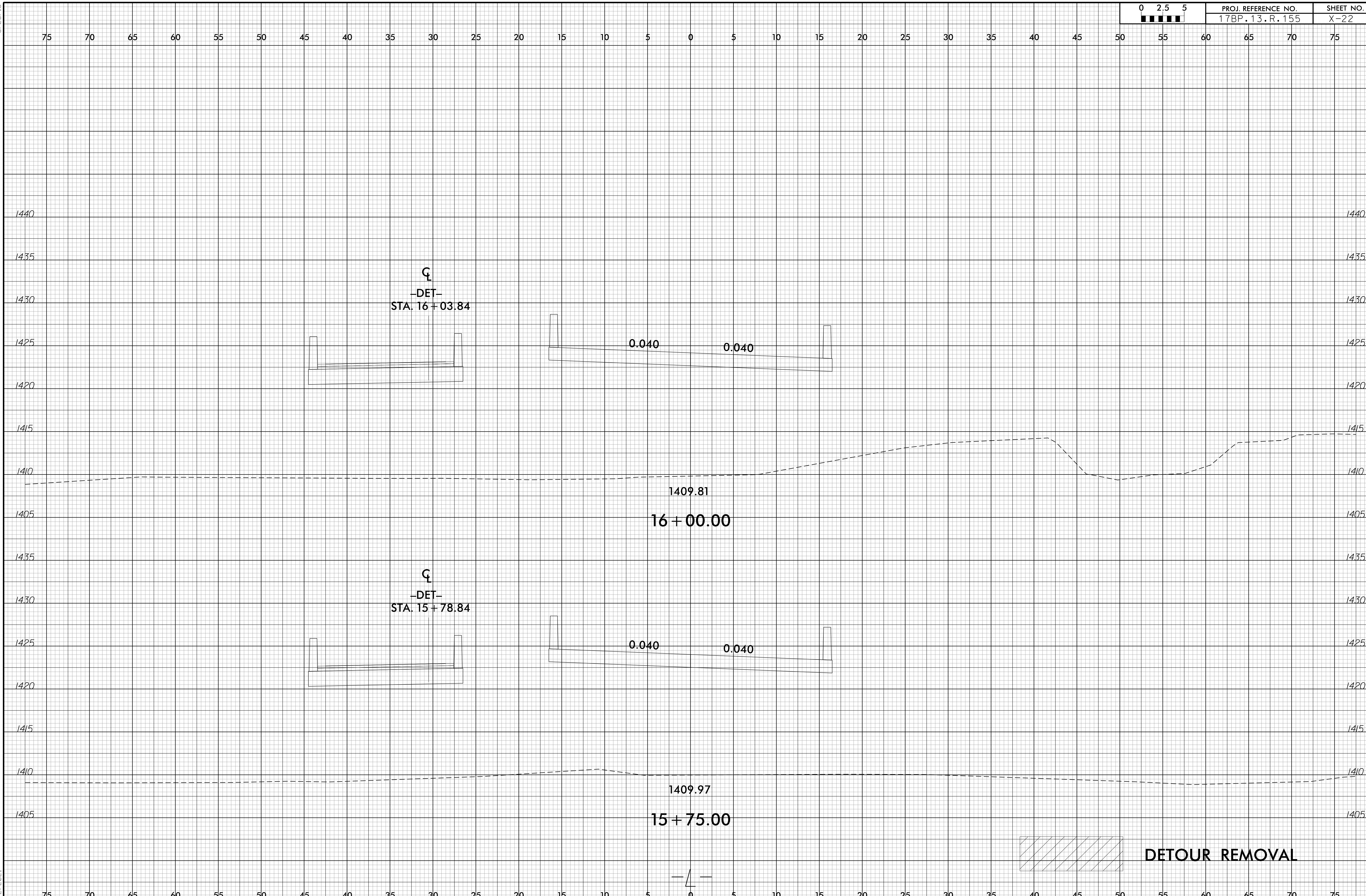

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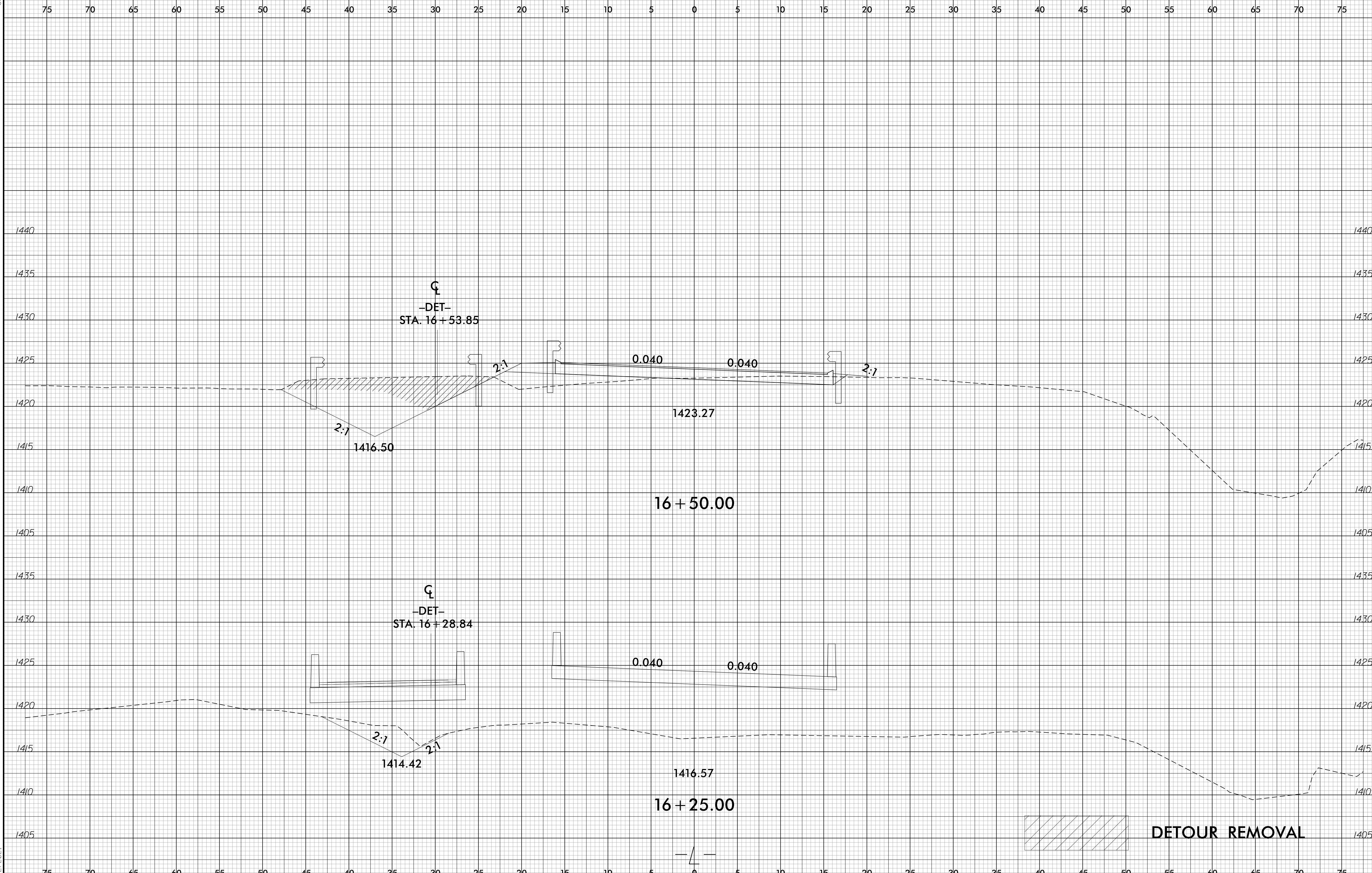

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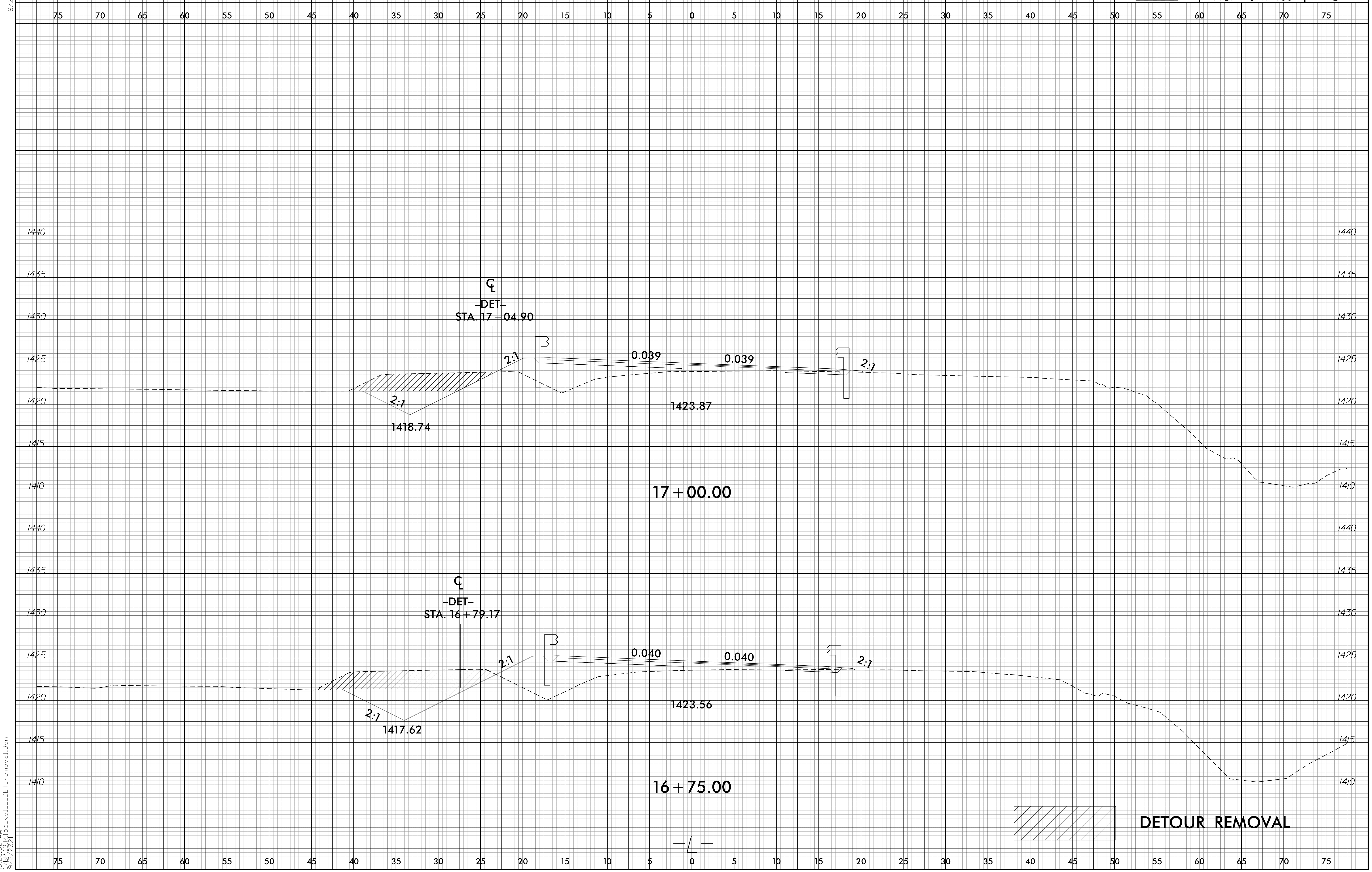

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6/23/16

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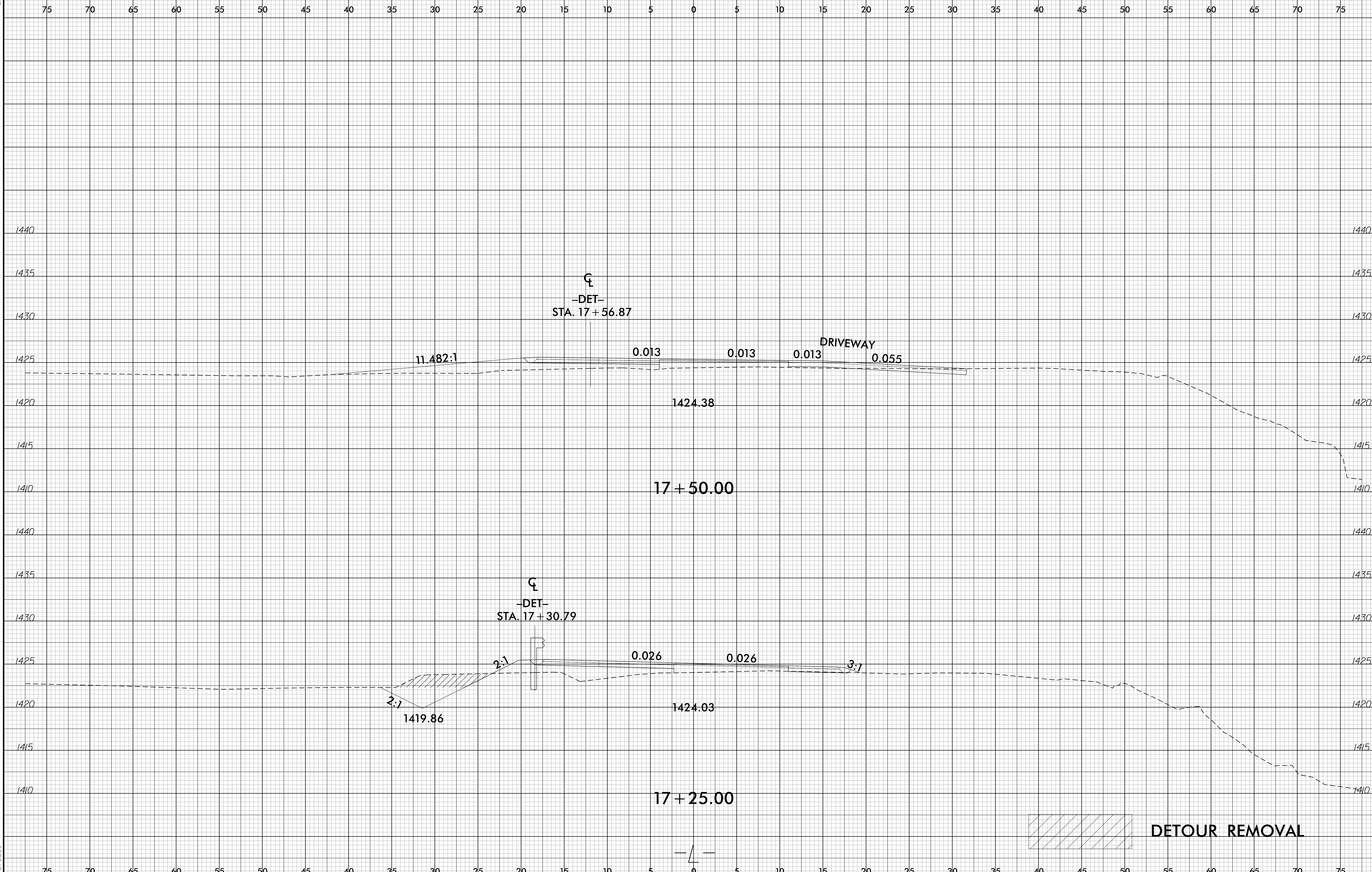

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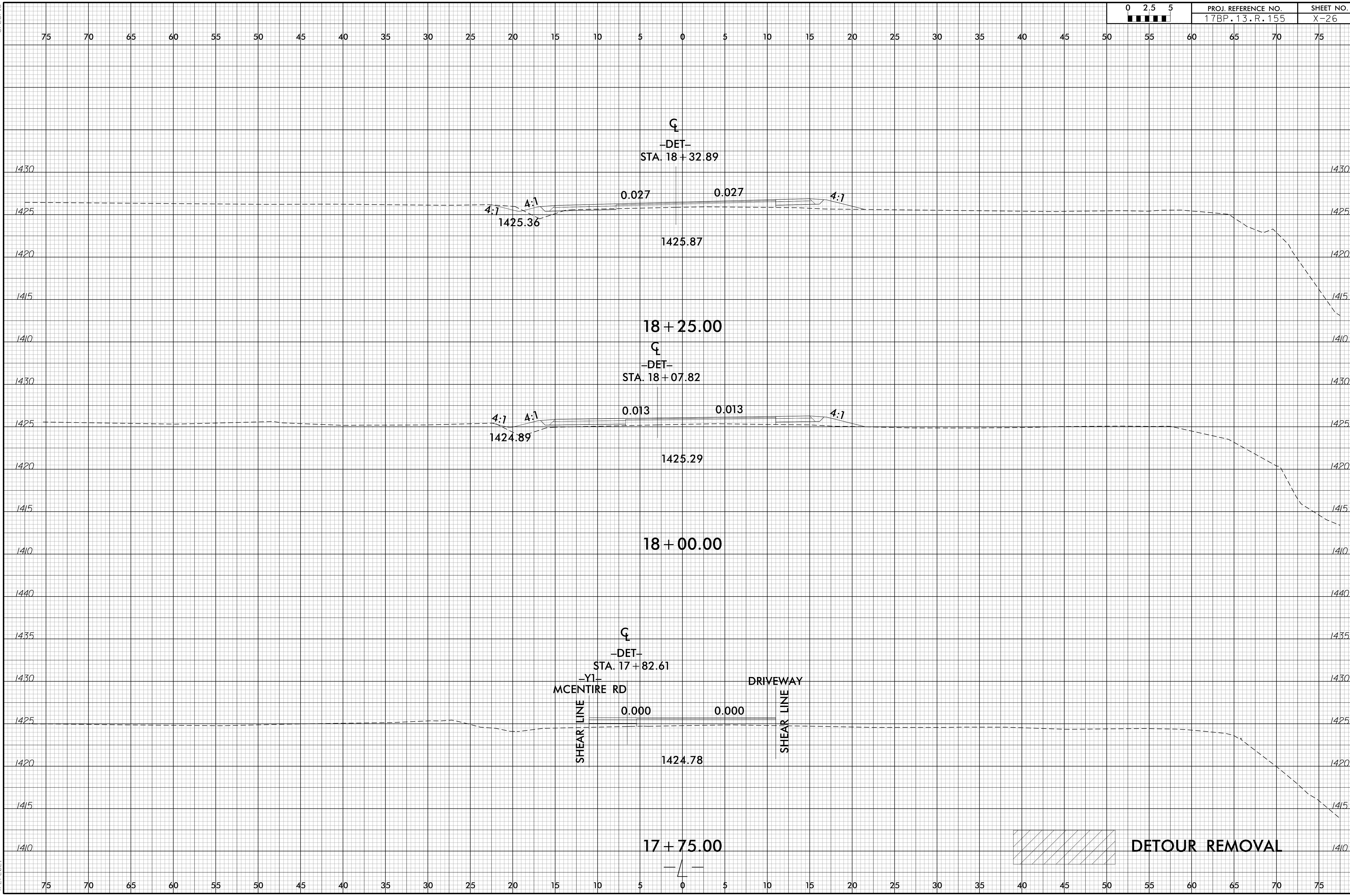
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SHEET NO.
X-26
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6/23/16
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0.027
4:1
4:1
4:1
1425.36
1425.87
18+25.00
–DET–
STA. 18+07.82
0.013
0.013
4:1
4:1
4:1
1424.89
1425.29
18+00.00
–DET–
STA. 17+82.61
–Y1–
MCENTIRE RD
DRIVEWAY
SHEAR LINE
SHEAR LINE
0.000
0.000
1424.78
17+75.00
DETOUR REMOVAL
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9/2/2021

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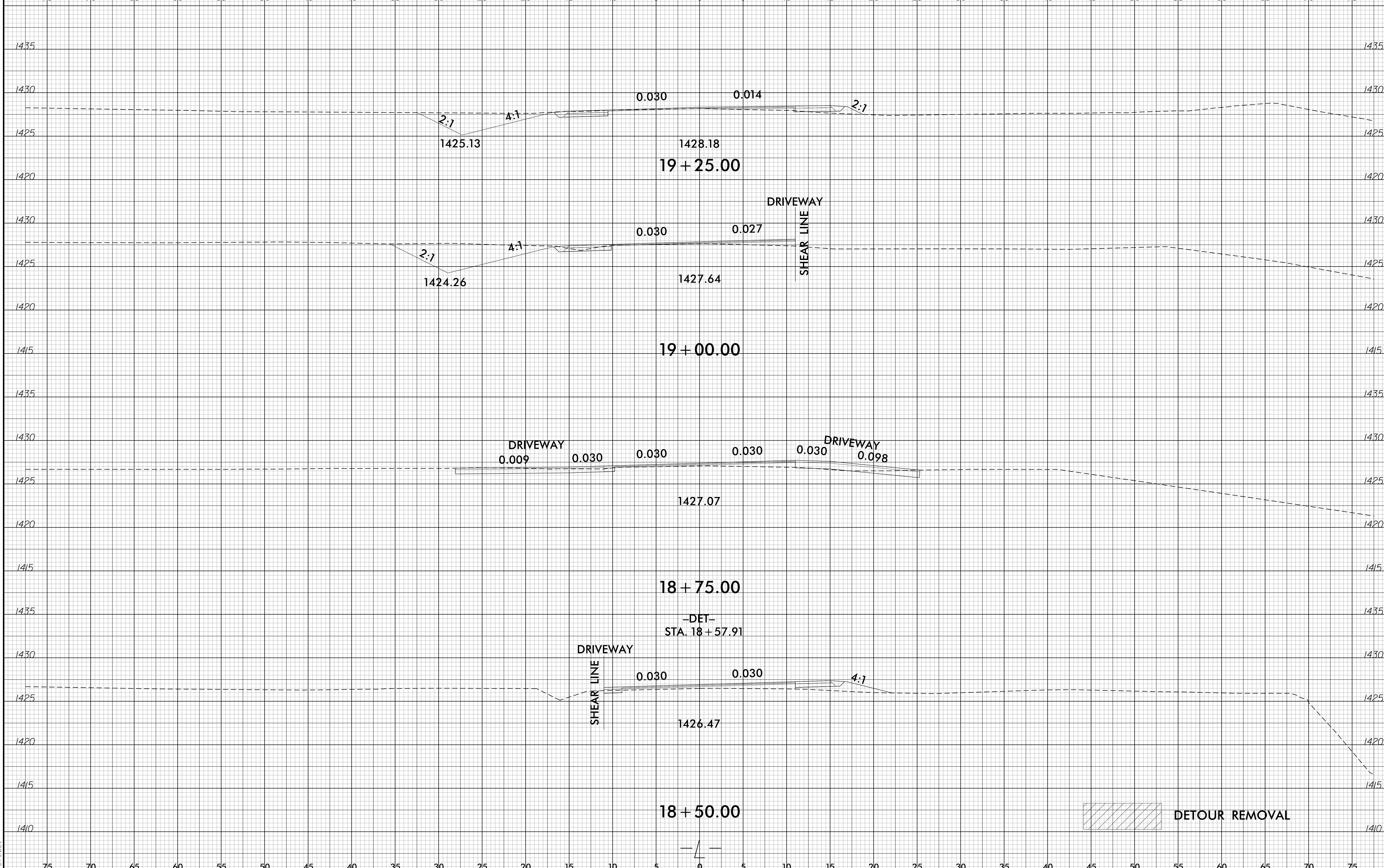

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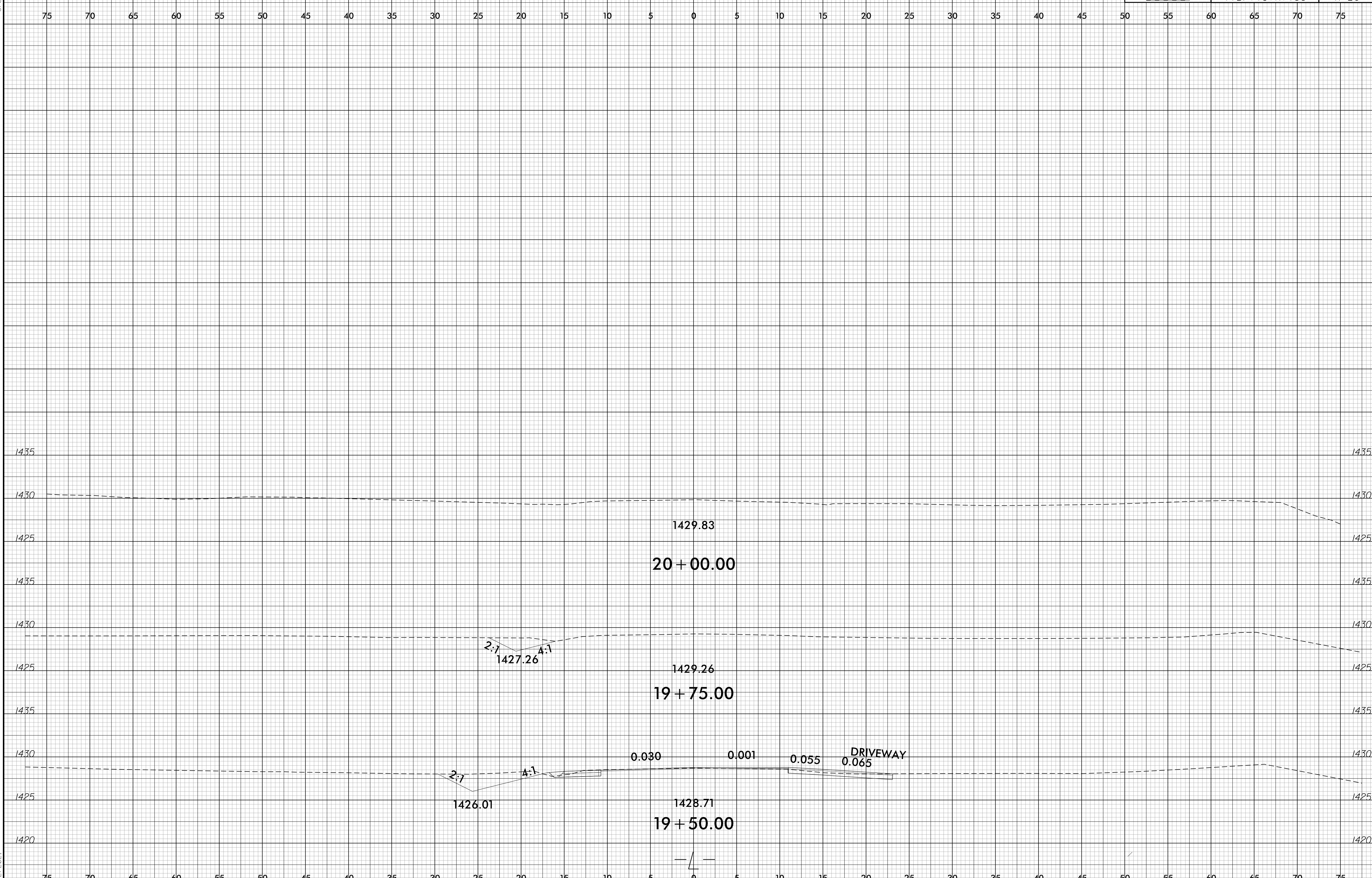

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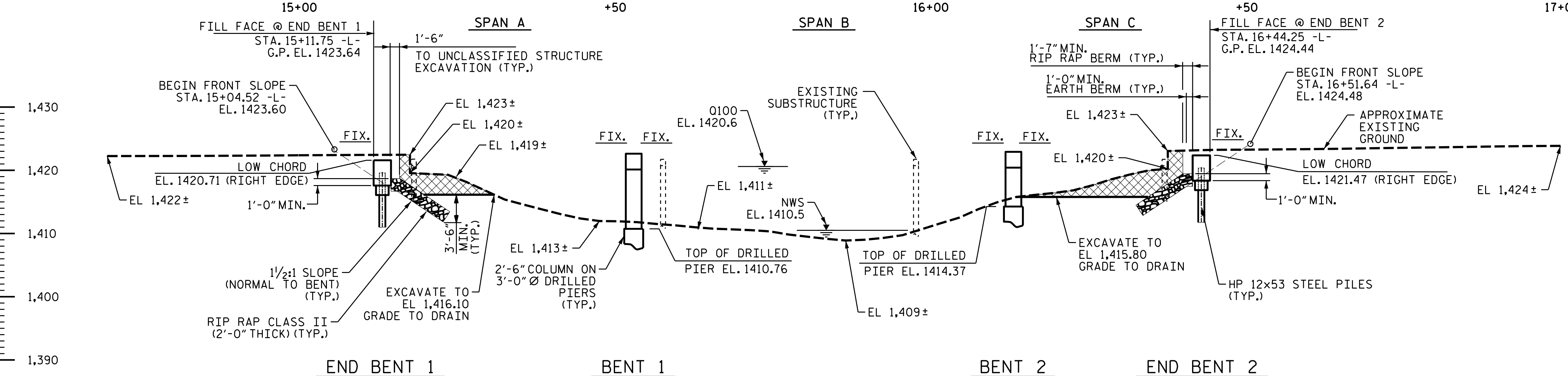


SECTION ALONG -L-

(SECTION TAKEN AT RIGHT ANGLES TO END BENTS AND BENTS)

UNCLASSIFIED STRUCTURE EXCAVATION

HYDRAULIC DATA

DESIGN DISCHARGE	2600 CFS
FREQUENCY OF DESIGN FLOOD	25 YRS.
DESIGN HIGH WATER ELEVATION	1417.9
DRAINAGE AREA	13.6 SQ.MI.
BASE DISCHARGE (Q100)	4640 CFS
BASE HIGH WATER ELEVATION	1420.6

OVERTOPPING FLOOD DATA

OVERTOPPING FLOOD DISCHARGE	4900 CFS
FREQUENCY OF OVERTOPPING FLOOD	>100(+) YRS.
OVERTOPPING FLOOD ELEVATION @ STA. 10+00.00 -L-	1421.5

(+)0.6000% (+)1.8531%

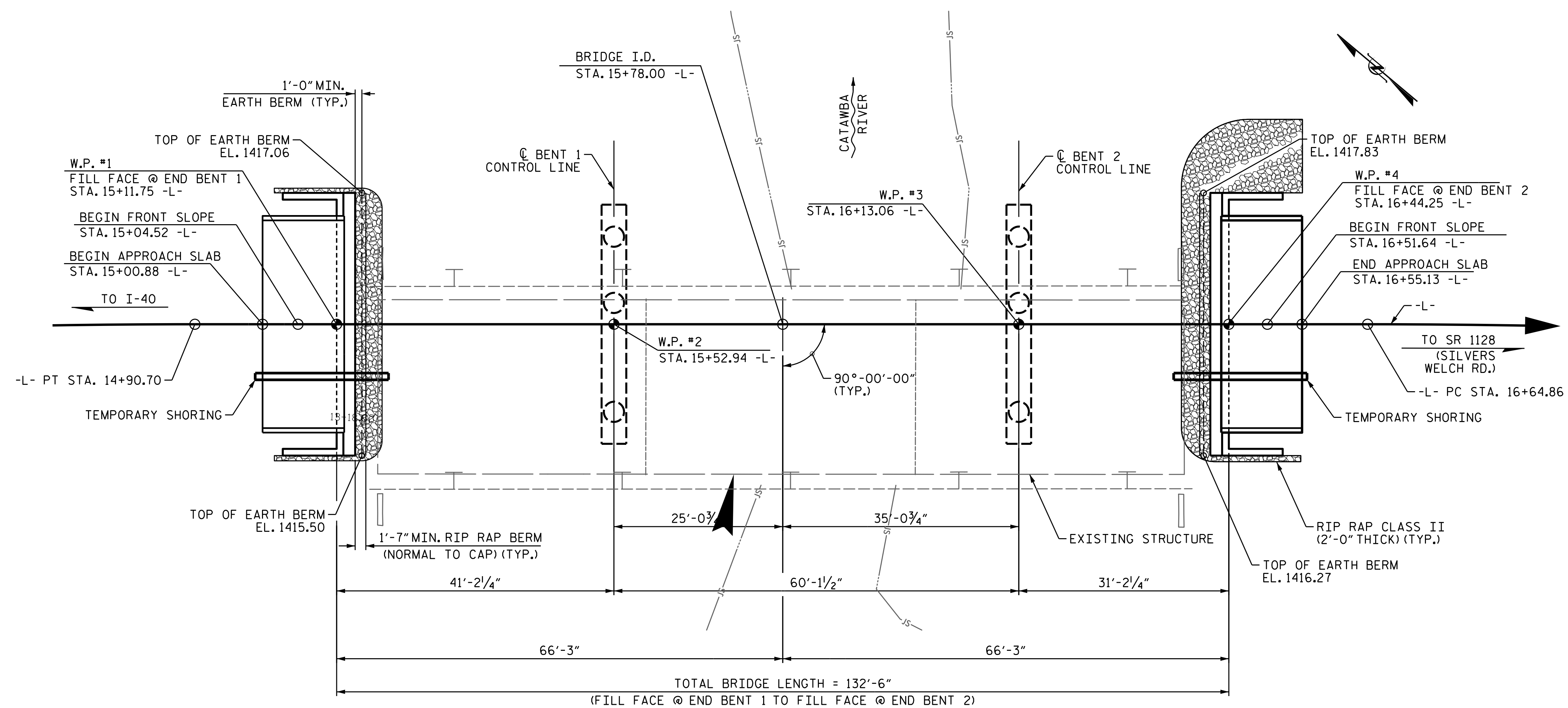
PI STA = 17+50.00 -L-
EL = 1,425.07
VC = 200'

GRADE DATA -L-

HORIZONTAL CURVE DATA

P.I. = 14+40.71 -L-	P.I. = 17+19.74 -L-
Δ = 3°-58'-47.6" (RT)	Δ = 4°-21'-54.2" (RT)
D = 3°-58'-43.9"	D = 3°-58'-43.9"
L = 100.03'	L = 109.71'
T = 50.03'	T = 54.88'
R = 1,440.00'	R = 1,440.00'

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PLAN

(FOR CLARITY, PILES ARE NOT SHOWN IN PLAN VIEW)

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 267

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1103 (BAT CAVE ROAD) OVER CATAWBA RIVER BETWEEN I-40 AND SR 1128

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS

Thomas Harris
F9EBC057AC1A4EF...
1/4/2022

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

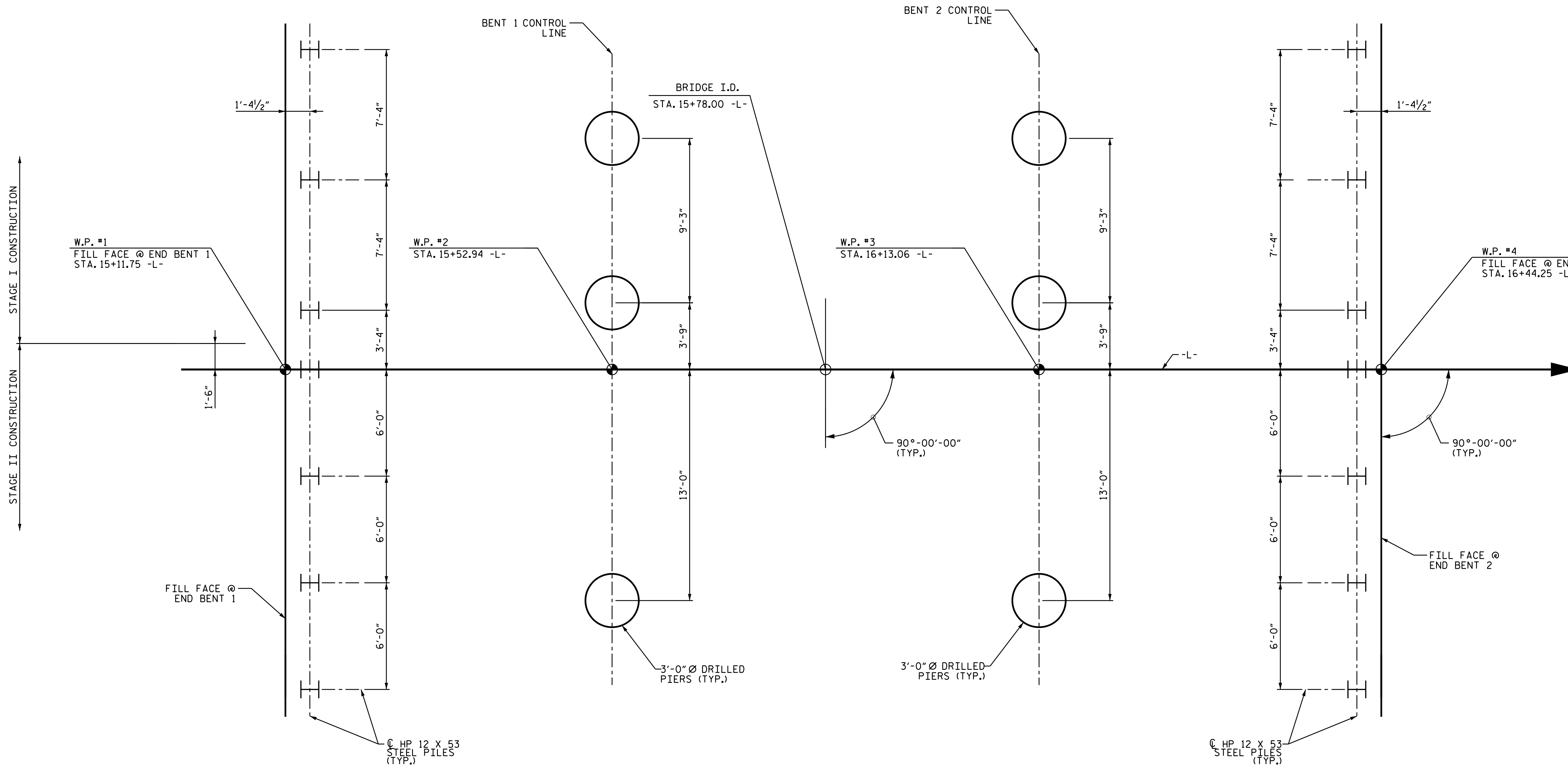
DESIGNED BY:	J. WHEATLEY	DATE:	DEC 2021
DRAWN BY:	J. WHEATLEY	DATE:	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE:	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	DEC 2021

REVISIONS

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

SHEET NO. S-1
TOTAL SHEETS 29

12/13/2021
J:\I88360C - 2015 W Divisions Planning & Design On-Call\I188360 Division 13 Bridges\17BP.13.R.155 McDowell 267\Structures\Drafting\DGNs\401_001_17BP.13.R.155_SMU_GD01.dgn



FOUNDATION LAYOUT

(END BENTS AND INTERIOR BENTS ARE PARALLEL)

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 60 TONS PER PILE.

DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 100 TONS PER PILE.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATION.

DRILLED PIERS AT BENT NO. 1 ARE DESIGN FOR A FACTORED RESISTANCE OF 360 TONS PER PIER. CHECK FILED CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.

INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 1366 FT, AND HAVE A PENETRATION OF AT LEAST 12 FT INTO ROCK OR WEATHERED ROCK.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 1400 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS 1394 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TO VERIFY BEARING STRATA, STANDARD PENETRATION TESTING (SPT) IS REQUIRED FOR DRILLED PIERS AT BENT NO. 1. PERFORM SPT TESTING AT ELEVATION 1378.2 FT TO VERIFY TOP OF PARTIALLY WEATHERED ROCK AND AGAIN AT THE FINAL TIP ELEVATION INDICATED. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT NO. 2 ARE DESIGN FOR A FACTORED RESISTANCE OF 360 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.

INSTALL DRILLED PIERS AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 1362 FT, AND HAVE A PENETRATION OF AT LEAST 12 FT INTO ROCK OR WEATHERED ROCK.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT NO. 2. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 1400 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS 1394 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TO VERIFY BEARING STRATA, STANDARD PENETRATION TESTING (SPT) IS REQUIRED FOR DRILLED PIERS AT BENT NO. 2. PERFORM SPT TESTING AT ELEVATION 1378.4 FT TO VERIFY TOP OF PARTIALLY WEATHERED ROCK AND AGAIN AT THE FINAL TIP ELEVATION INDICATED. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR THE DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 54 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 90 TONS PER PILE.

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1103 (BAT CAVE ROAD) OVER CATAWBA RIVER BETWEEN I-40 AND SR 1128

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
Thomas Harris
F9EBC057AC1A4EF...
1/4/2022

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

DESIGNED BY:	J. WHEATLEY	DATE :	DEC 2021
DRAWN BY:	J. WHEATLEY	DATE :	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

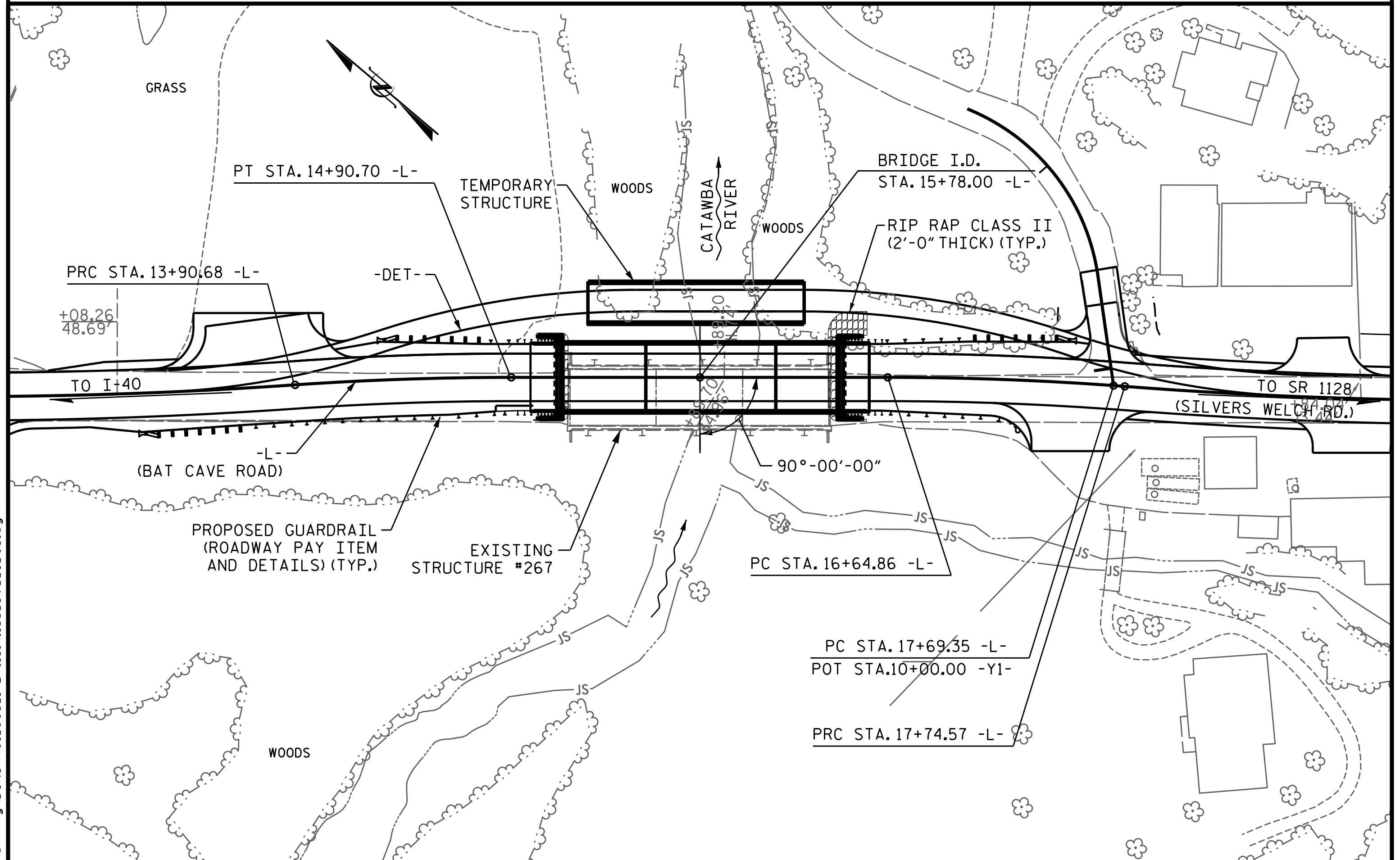
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

REVISIONS

SHEET NO. S-2
TOTAL SHEETS 29

12/13/2021
J:\188360C - 2015 W Divisions Planning & Design On-Call\I188360 Division 13 Bridges\17BP.13.R.155 McDowell 267\Structures\Drafting\DGNs\401_003_17BP.13.R.155_SMU_GD02.dgn

BM#2: SPIKE SET IN BASE OF 30 INCH WALNUT; STA. 16+22.21 -L-, OFFSET 139' LT, ELEV. 1,421.56



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

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.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE @ STA. 15+78.00 -L-".

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT (LEFT) AND 25 FT. (RIGHT) OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.

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

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

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 15+78.00 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF A THREE SPANS, 40'-0" EACH, WITH A CLEAR ROADWAY WIDTH OF 26'-0"; REINFORCED CONCRETE DECK WITH ASPHALT WEARING SURFACE ON STEEL I-BEAMS WITH CONCRETE CAPS, BENTS AND END BENTS AND LOCATED AT PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

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

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

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

TOTAL BILL OF MATERIAL

	CONST, MAINT. & REMOVAL OF TEMP STRUCTURE @ STA. 15+78.00 -L-	REMOVAL OF EXISTING STRUCTURE @ STA. 15+78.00 -L-	ASBESTOS ASSESS-MENT	3'-0" DIA. DRILLED PIERS IN SOIL	3'-0" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" DIA. DRILLED PIERS	SID INSPEC-TIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	HP 12 X 53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.	EA.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	LBS.	No.	No.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	No.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM											LUMP SUM						260.5			LUMP SUM	33	1430
END BENT 1										LUMP SUM	22.2		2,628		7	7	265		74	82			
BENT 1				104.3	30	35.3	3	6			16.7		14,759	2,774			-						
BENT 2				129.1	28	46.1	3	6			15.0		15,587	2,980			-						
END BENT 2										LUMP SUM	22.2		2,628		7	7	320		81	90			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	233.4	58	81.4	6	12	1	LUMP SUM	76.1	LUMP SUM	35,602	5,754	14	14	585	260.5	155	172	LUMP SUM	33	1430

PROJECT NO. 17BP.13.R.155

McDOWELL COUNTY

STATION: 15+78.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1103 (BAT CAVE ROAD) OVER CATAWBA RIVER BETWEEN I-40 AND SR 1128

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS

DocuSigned by: Thomas Harris 1/12/2022
F9EBC057AC1A4EF

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

REVISIONS								SHEET NO.
NO.	BY:	DATE:		NO.	BY:	DATE:		S-3
1				3				TOTAL SHEETS
2				4				29

DESIGNED BY:	J. WHEATLEY	DATE :	DEC 2021
DRAWN BY:	J. WHEATLEY	DATE :	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

1/11/2022
J:\188360C - 2015 W Divisions Planning & Design On-Call\I188360 Division 13 Bridges\17BP.13.R.155 McDowell 267\Structures\Drafting\DGNs\401_005_17BP.13.R.155_SMU_GD03.dgn

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: LIVELOAD FACTORS	STRENGTH I MOMENT: DISTRIBUTION FACTORS (DF)	STRENGTH I MOMENT: RATING FACTOR	STRENGTH I MOMENT: SPAN	STRENGTH I MOMENT: GIRDER LOCATION	STRENGTH I MOMENT: DISTANCE FROM LEFT END OF SPAN (ft)	STRENGTH I SHEAR: DISTRIBUTION FACTORS (DF)	STRENGTH I SHEAR: RATING FACTOR	STRENGTH I SHEAR: SPAN	STRENGTH I SHEAR: GIRDER LOCATION	STRENGTH I SHEAR: DISTANCE FROM LEFT END OF SPAN (ft)	SERVICE III LIMIT STATE: LIVELOAD FACTORS	SERVICE III MOMENT: DISTRIBUTION FACTORS (DF)	SERVICE III MOMENT: RATING FACTOR	SERVICE III MOMENT: SPAN	SERVICE III MOMENT: GIRDER LOCATION	SERVICE III MOMENT: DISTANCE FROM LEFT END OF SPAN (ft)	COMMENT NUMBER
DESIGN LOAD RATING		HL-93(Inv)	N/A	**1**	1.33	--	1.75	0.275	1.33	B	EL	29.5	0.52	**1.33**	B	EL	**5.9**	0.80	0.275	1.37	B	EL	29.5	1
		HL-93(Opr)	N/A	--	1.725	--	1.35	0.275	1.73	B	EL	29.5	0.52	1.72	B	EL	5.9	N/A	--	--	--	--	--	1
		HS-20(Inv)	36.000	**2**	1.601	57.643	1.75	0.275	1.69	B	EL	29.5	0.52	**1.6**	B	EL	**5.9**	0.80	0.275	1.74	B	EL	29.5	1
		HS-20(Opr)	36.000	--	2.076	74.723	1.35	0.275	2.19	B	EL	29.5	0.52	2.08	B	EL	5.9	N/A	--	--	--	--	--	1
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.745	50.557	1.4	0.275	4.55	B	EL	29.5	0.52	4.63	B	EL	5.9	0.80	0.275	3.74	B	EL	29.5	1
		SNGARBS2	20.000	--	2.867	57.338	1.4	0.275	3.48	B	EL	29.5	0.52	3.33	B	EL	5.9	0.80	0.275	2.87	B	EL	29.5	1
		SNAGRIS2	22.000	--	2.748	60.46	1.4	0.275	3.34	B	EL	29.5	0.52	3.11	B	EL	5.9	0.80	0.275	2.75	B	EL	29.5	1
		SNCOTTS3	27.250	--	1.866	50.841	1.4	0.275	2.27	B	EL	29.5	0.52	2.31	B	EL	5.9	0.80	0.275	1.87	B	EL	29.5	1
		SNAGGRS4	34.925	--	1.588	55.465	1.4	0.275	1.93	B	EL	29.5	0.52	1.95	B	EL	5.9	0.80	0.275	1.59	B	EL	29.5	1
		SNS5A	35.550	--	1.551	55.139	1.4	0.275	1.89	B	EL	29.5	0.52	1.99	B	EL	5.9	0.80	0.275	1.55	B	EL	29.5	1
		SNS6A	39.950	--	1.435	57.347	1.4	0.275	1.74	B	EL	29.5	0.52	1.83	B	EL	5.9	0.80	0.275	1.44	B	EL	29.5	1
		SNS7B	42.000	--	1.367	57.434	1.4	0.275	1.66	B	EL	29.5	0.52	1.81	B	EL	5.9	0.80	0.275	1.37	B	EL	29.5	1
	TTST	TNAGRIT3	33.000	--	1.754	57.887	1.4	0.275	2.13	B	EL	29.5	0.52	2.17	B	EL	5.9	0.80	0.275	1.75	B	EL	29.5	1
		TNT4A	33.075	--	1.765	58.389	1.4	0.275	2.15	B	EL	29.5	0.52	2.1	B	EL	5.9	0.80	0.275	1.77	B	EL	29.5	1
		TNT6A	41.600	--	1.456	60.551	1.4	0.275	1.77	B	EL	29.5	0.52	1.96	B	EL	5.9	0.80	0.275	1.46	B	EL	29.5	1
		TNT7A	42.000	--	1.469	61.714	1.4	0.275	1.79	B	EL	29.5	0.52	1.88	B	EL	5.9	0.80	0.275	1.47	B	EL	29.5	1
		TNT7B	42.000	--	1.535	64.463	1.4	0.275	1.87	B	EL	29.5	0.52	1.76	B	EL	5.9	0.80	0.275	1.53	B	EL	29.5	1
		TNAGRIT4	43.000	--	1.45	62.329	1.4	0.275	1.76	B	EL	29.5	0.52	1.7	B	EL	5.9	0.80	0.275	1.45	B	EL	29.5	1
		TNAGRT5A	45.000	--	1.361	61.247	1.4	0.275	1.65	B	EL	29.5	0.52	1.71	B	EL	5.9	0.80	0.275	1.36	B	EL	29.5	1
		TNAGRT5B	45.000	**3**	1.34	60.282	1.4	0.275	1.63	B	EL	29.5	0.52	1.61	B	EL	5.9	0.80	0.275	**1.34**	B	EL	**29.5**	1

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. LRFR FOR SPAN B ONLY. SPANS A & C DO NOT CONTROL ANY CASES.
2.
3.
4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

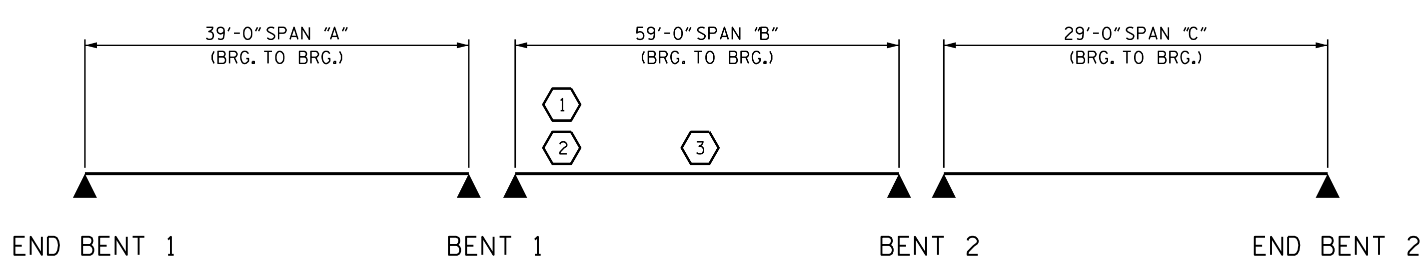
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING ✱✱

✱✱ SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

FOR SPAN B ONLY, SPANS A & C DO NOT CONTROL ANY CASES

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR CORED SLAB UNITS 90° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-4
1			3				TOTAL SHEETS
2			4				29

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

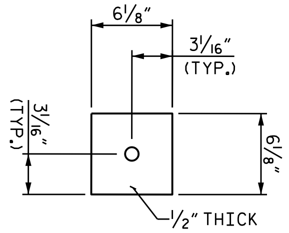
NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS

Thomas Harris
F9EBC057AC1A4EF...
1/4/2022

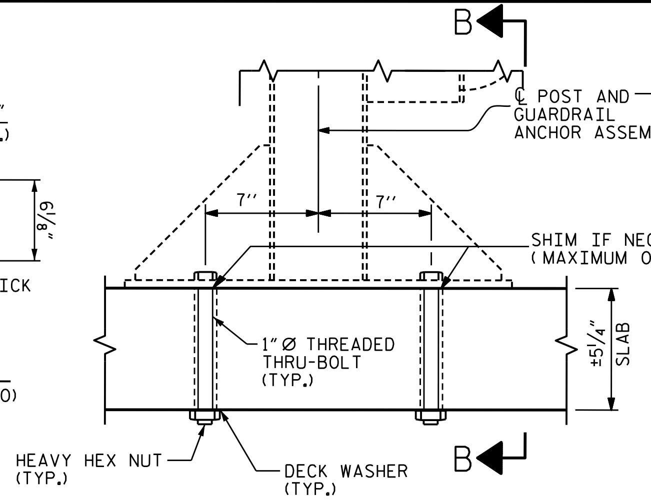
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

ASSEMBLED BY: J. WHEATLEY DATE: DEC 2021
CHECKED BY: T. KIRSCHBAUM DATE: DEC 2021
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: DEC 2021

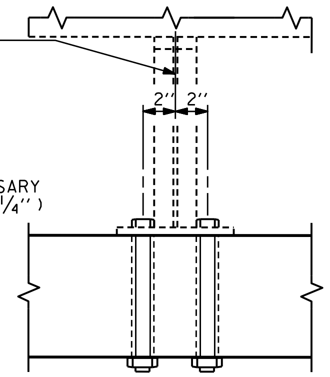
DRAWN BY: CVC 6/10
CHECKED BY: DNS 6/10



DECK WASHER
(ASTM A709 GRADE 50)



DETAIL A

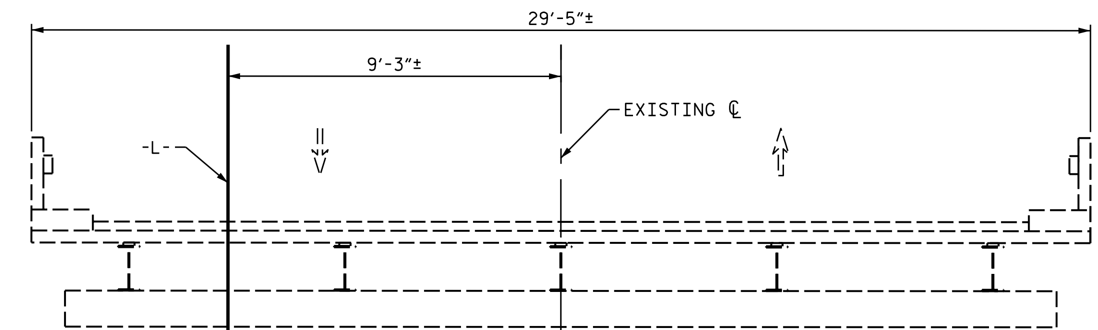


SECTION B-B

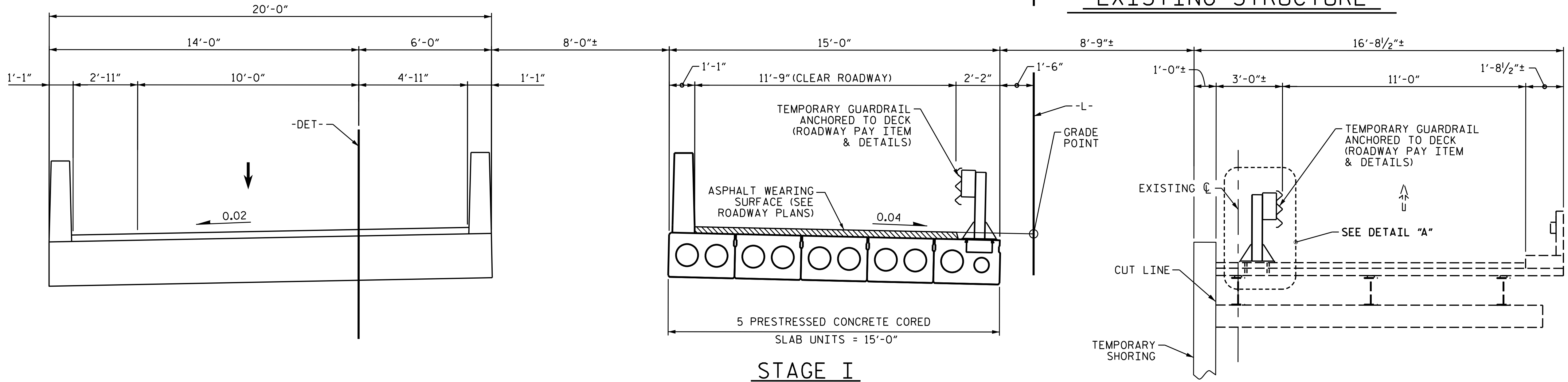
NOTES

THRU-BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449 AND SHALL BE GALVANIZED. NO SEPARATE PAYMENT WILL BE MADE FOR THE ANCHOR BOLTS AND THE COST OF MATERIALS AND INSTALLATION SHALL BE INCLUDED IN OTHER PAY ITEMS.

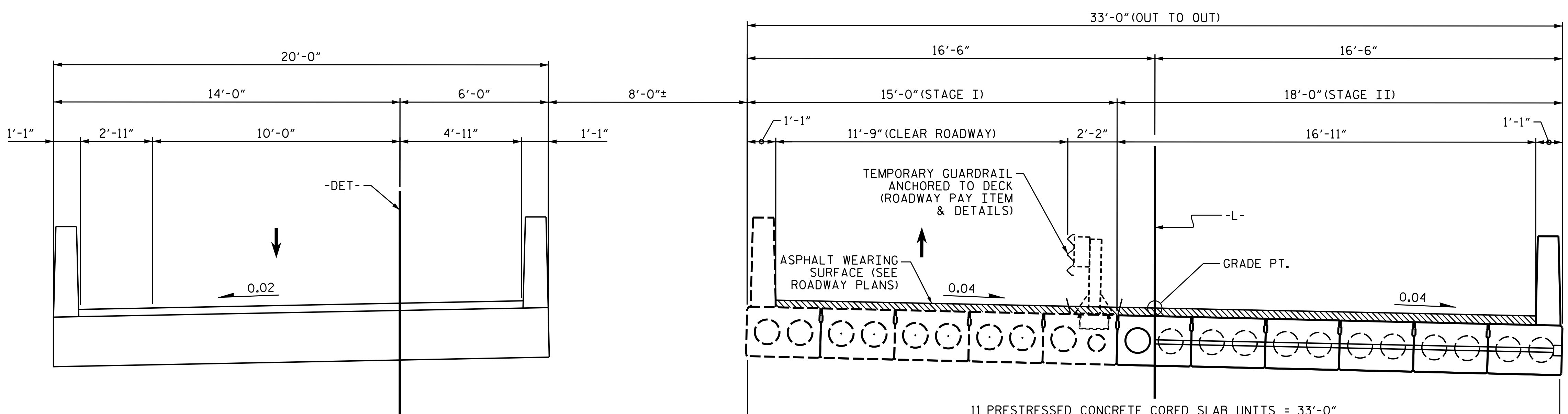
FOR TEMPORARY STRUCTURE NOTES, SEE SHEET S-3.



EXISTING STRUCTURE



STAGE I



STAGE II

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PHASE CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
DocuSigned by: Thomas Harris
F9EBC057AC1A4EF...
1/4/2022

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
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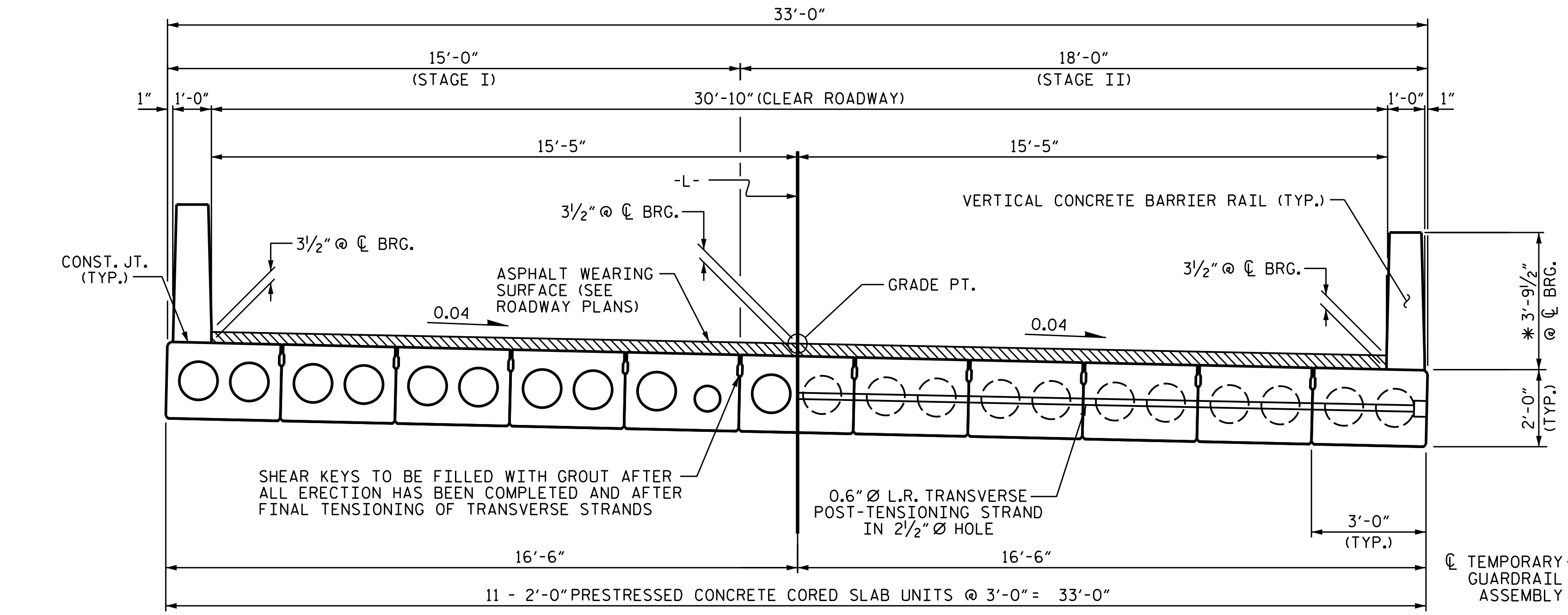
REVISIONS							SHEET NO.
NO.	BY:	DATE:		NO.	BY:	DATE:	S-5
1				3			TOTAL SHEETS
2				4			29

DESIGNED BY:	J. WHEATLEY	DATE :	DEC 2021
DRAWN BY:	J. WHEATLEY	DATE :	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

12/13/2021
J:\188360C - 2015 W Divisions Planning & Design On-Call\I188360 Division 13 Bridges\17BP.13.R.155 McDowell267\Structures\Drafting\DGNs\401_009_17BP.13.R.155_SMU_PC01.dgn

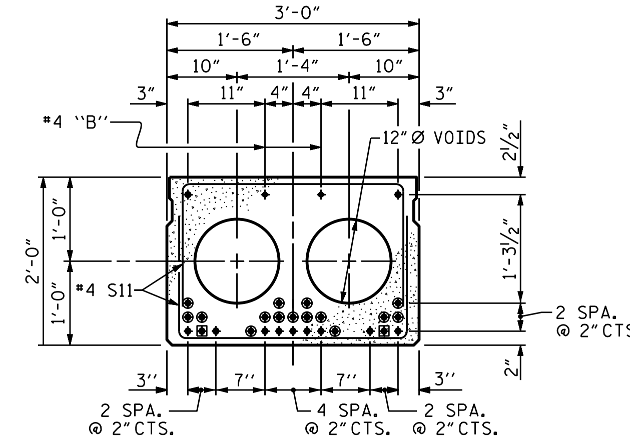


HALF SECTION
THROUGH VOIDS

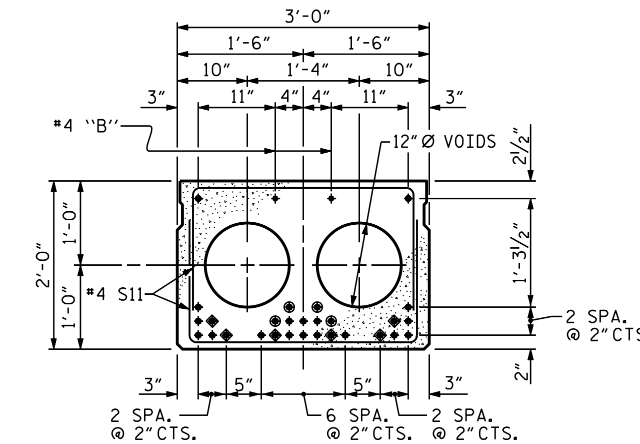
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

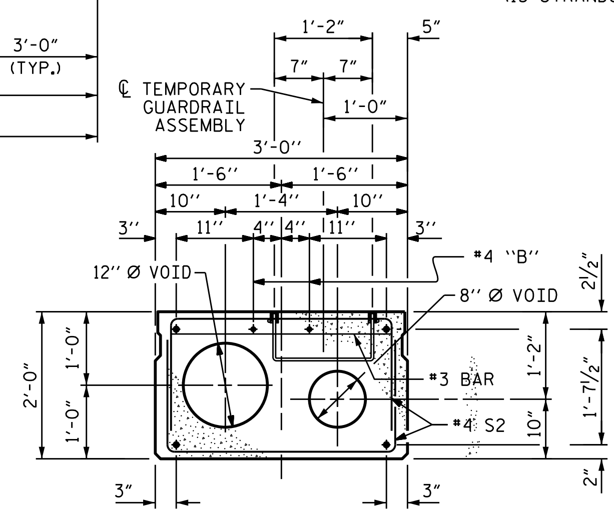
✱ - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



INT. SLAB SECT (30' & 40' UNIT)
(TYPE II UNITS)
(13 STRANDS REQUIRED)



INT. SLAB SECT (60' UNITS)
(TYPE II UNITS)
(24 STRANDS REQUIRED)



INTERIOR SLAB SECTION
TYPE III
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTIONS - TYPE II)

FOR TEMPORARY GUARDRAIL ANCHOR ASSEMBLY LOCATION, SEE SECTION OF ANCHOR ASSEMBLY LOCATION ON "ANCHORAGE DETAILS FOR TEMPORARY GUARDRAIL ANCHOR ASSEMBLY FOR TYPE III CORED SLAB UNIT" SHEET. #3 BAR SHALL BE PLAED AS NEEDED AND SHALL BE INCLUDED IN THE PRICE BID FOR PRECAST UNITS.

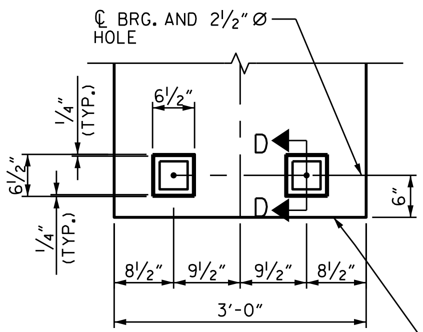
0.6" Ø LOW RELAXATION STRAND LAYOUT

■ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

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

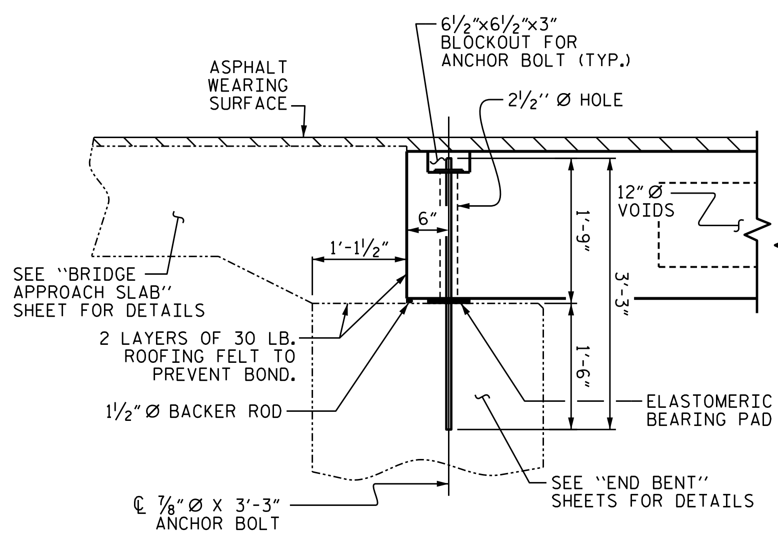
● OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



TYPICAL PLAN
(ANCHOR BOLT BLOCKOUTS)

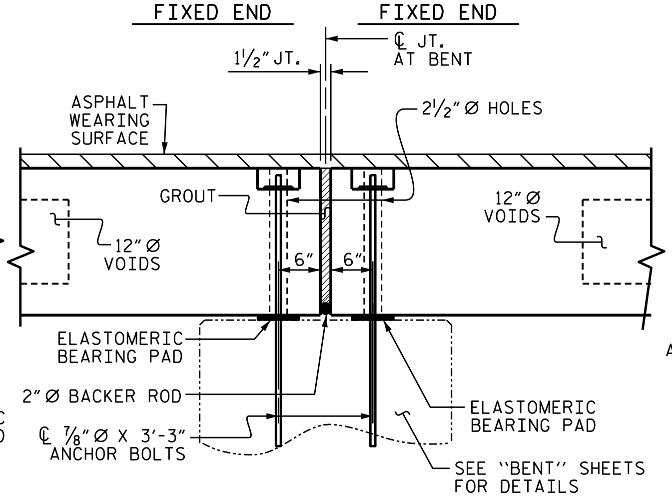
FIXED END



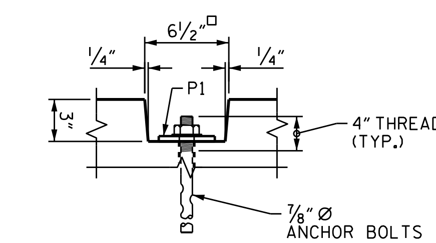
SECTION AT END BENT

THE COST OF ANCHOR BOLTS, P1 PLATES AND NUTS SHALL BE INCLUDED IN THE PRICE BID FOR PRECAST UNITS.

FIXED END   FIXED END



SECTION AT BENT



SECTION D-D
(FIXED)

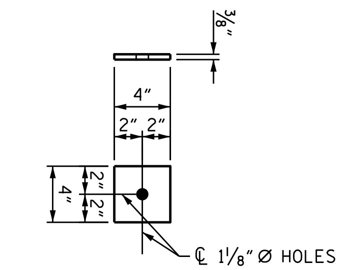
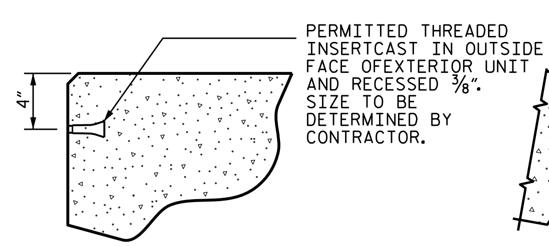


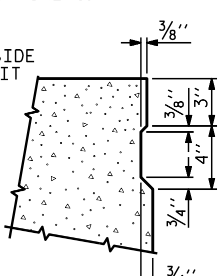
PLATE DETAILS - P1
(FIXED)
P1 (132 REQ'D)

BLOCKOUT DETAIL FOR ANCHOR BOLTS

BLOCKOUTS SHALL BE FILLED WITH NONSHRINK GROUT.

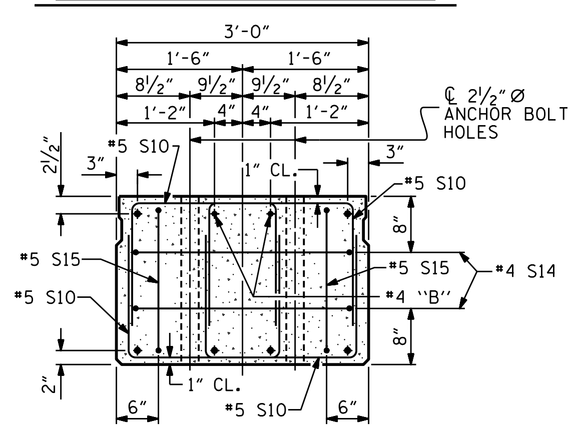


THREADED INSERT DETAIL



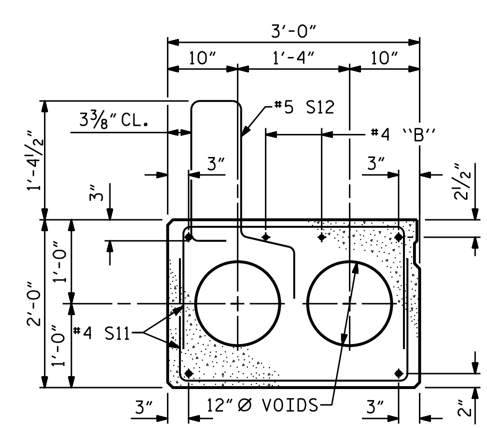
SHEAR KEY DETAIL

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



END ELEVATION

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



EXTERIOR SLAB SECTION

(TYPE I UNITS)
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTIONS.)

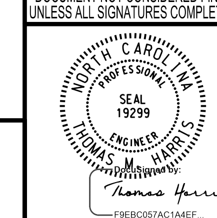
PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

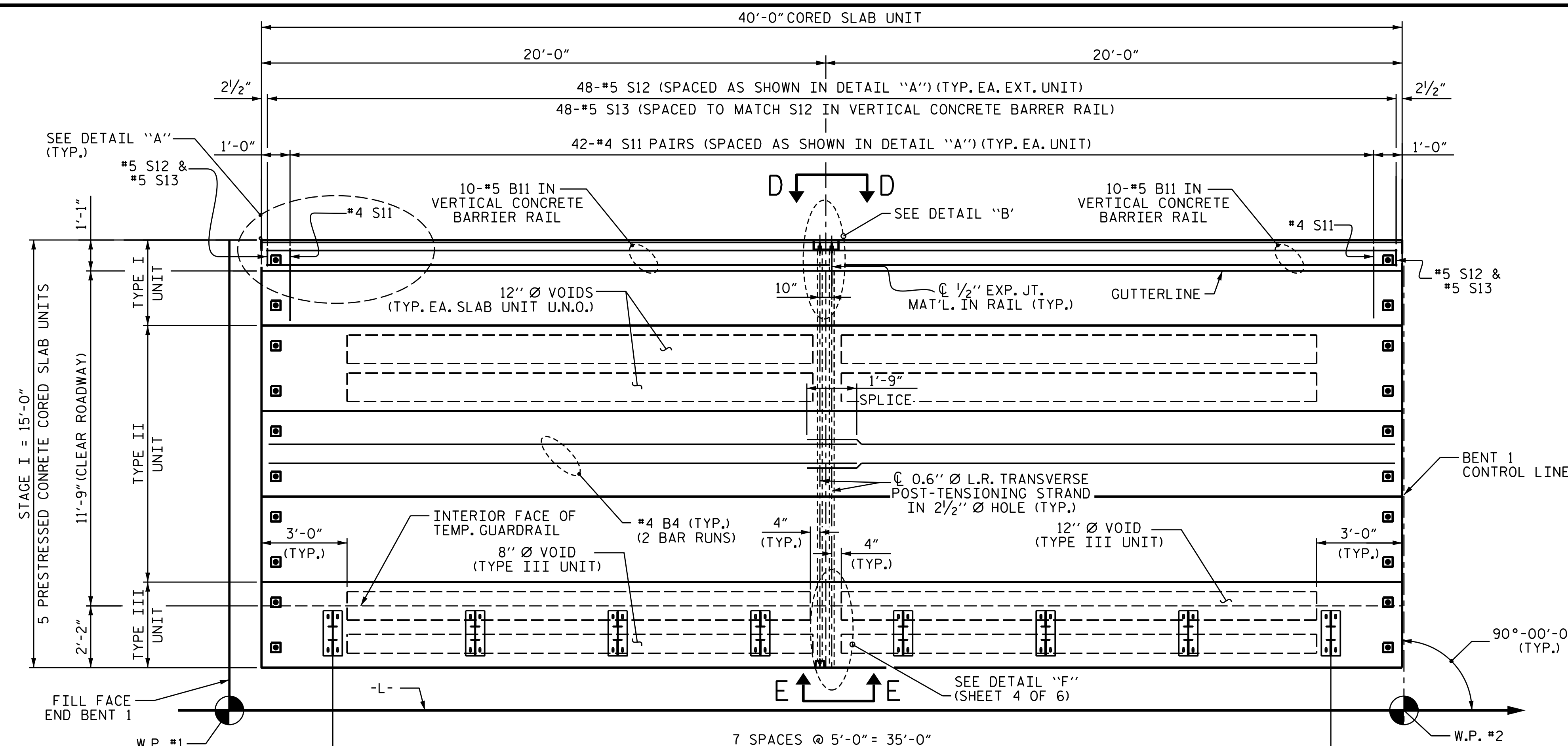


WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

DESIGNED BY:	J. WHEATLEY	DATE : DEC 2021
DRAWN BY:	J. WHEATLEY	DATE : DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE : DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE : DEC 2021

REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.	
1			3			S-6	
2			4			TOTAL SHEETS	29

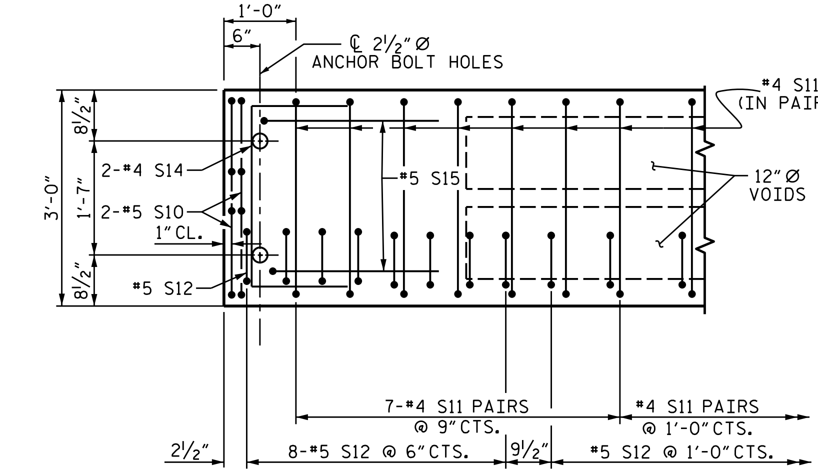
12/13/2021
J:\188360C - 2015 W Divisions Planning & Design On-Call\I188360 Division 13 Bridges\17BP.13.R.155 McDowell 267\Structures\Drafting\DGNs\401_011_17BP.13.R.155_SMU_CS01.dgn



FOR TEMPORARY GUARDRAIL ANCHOR ASSEMBLY LOCATION, SEE SECTION OF ANCHOR ASSEMBLY LOCATION ON "ANCHORAGE DETAILS FOR TEMPORARY GUARDRAIL ANCHOR ASSEMBLY FOR TYPE III CORED SLAB UNIT" SHEET

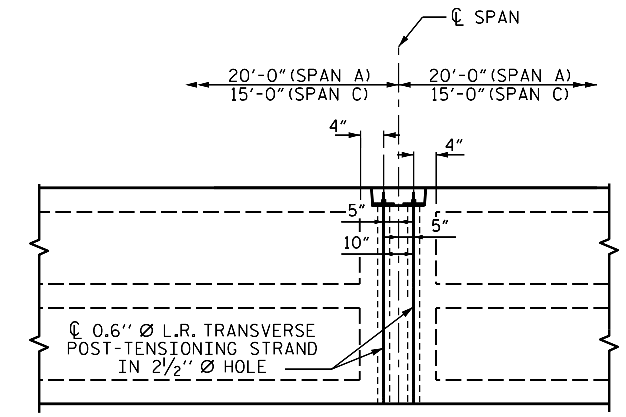
PLAN OF SPAN A - STAGE I

(SEE GROUTED RECESS DETAIL VIEWS D-D AND E-E SHEET 5 OF 6.)



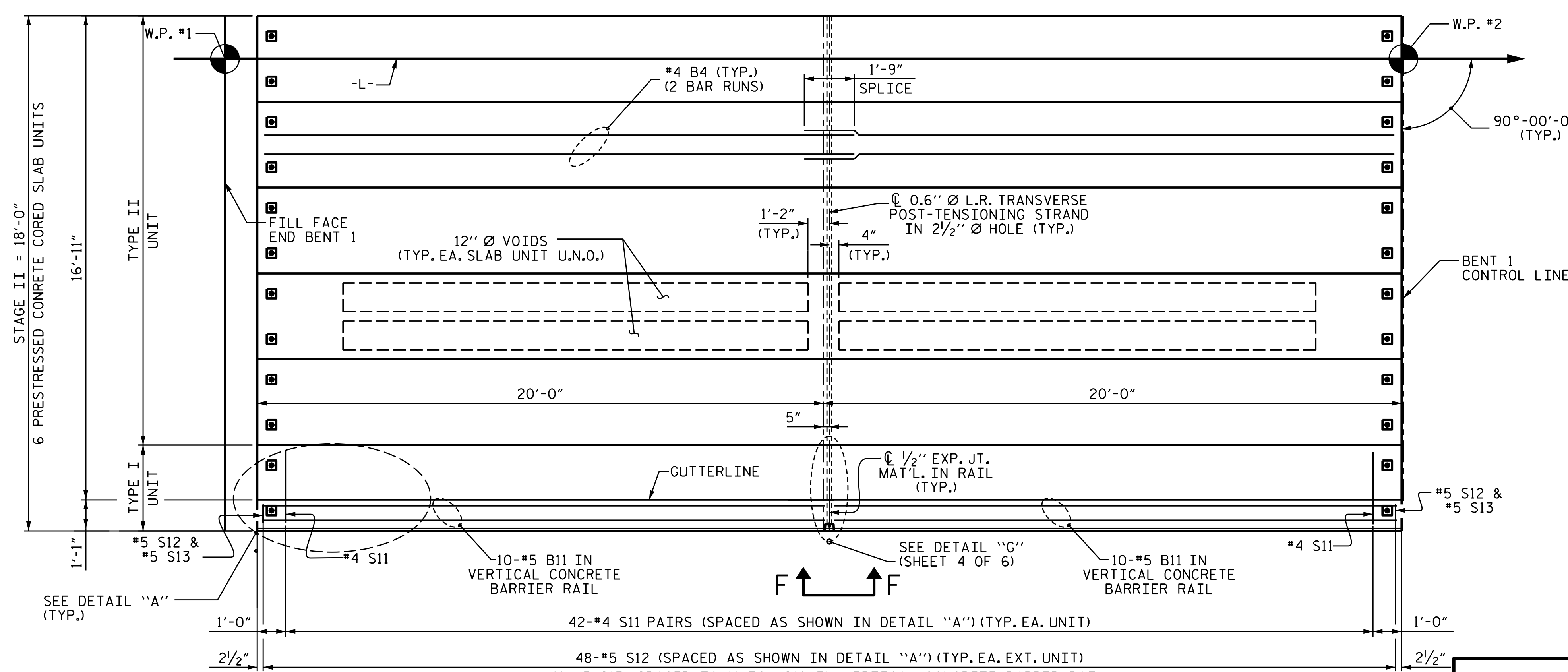
DETAIL "A"

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



DETAIL "B"

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



PLAN OF SPAN A - STAGE II

(SEE GROUTED RECESS DETAIL VIEW F-F SHEET 5 OF 6.)

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 40' UNIT 30'-10" CLEAR ROADWAY 90° SKEW - SPAN A STAGES I & II

DESIGNED BY:	J. WHEATLEY	DATE :	DEC 2021
DRAWN BY:	J. WHEATLEY	DATE :	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040

LICENSE NO. F-0165

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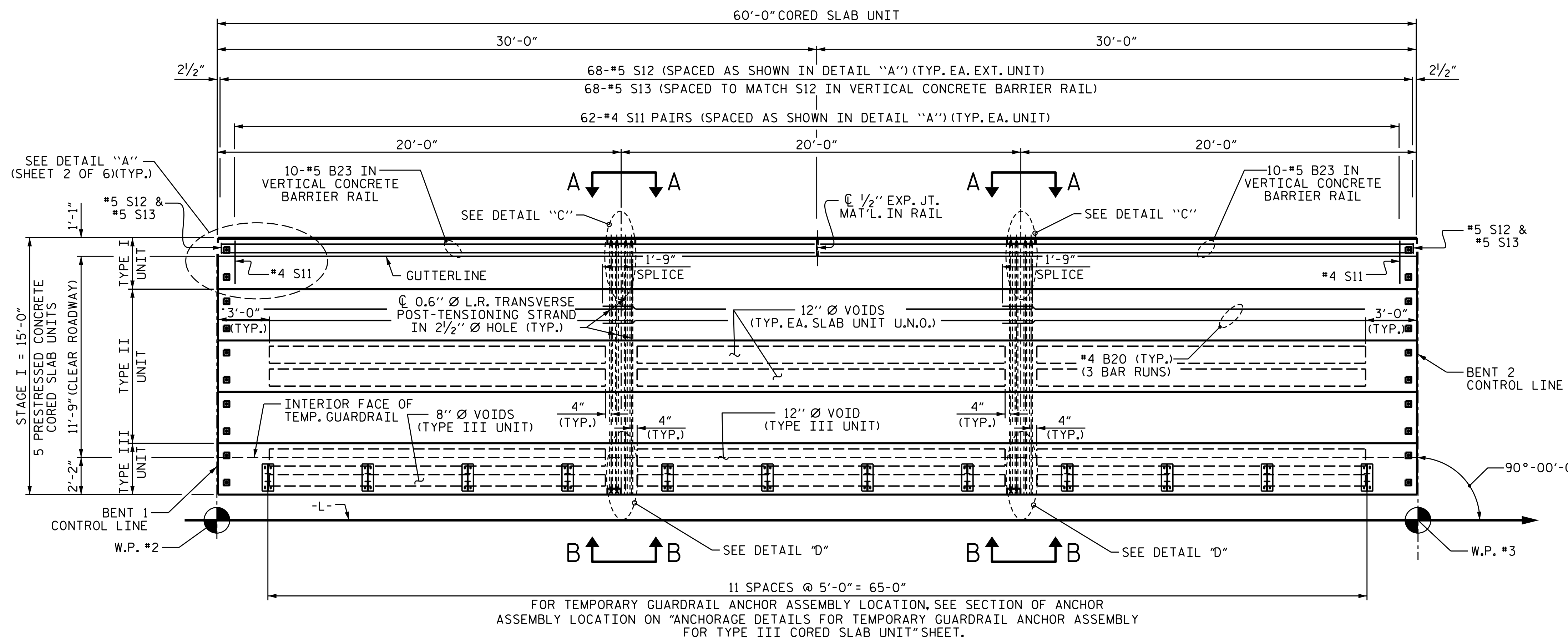
NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
F9EBC057AC1A4EF...
1/4/2022

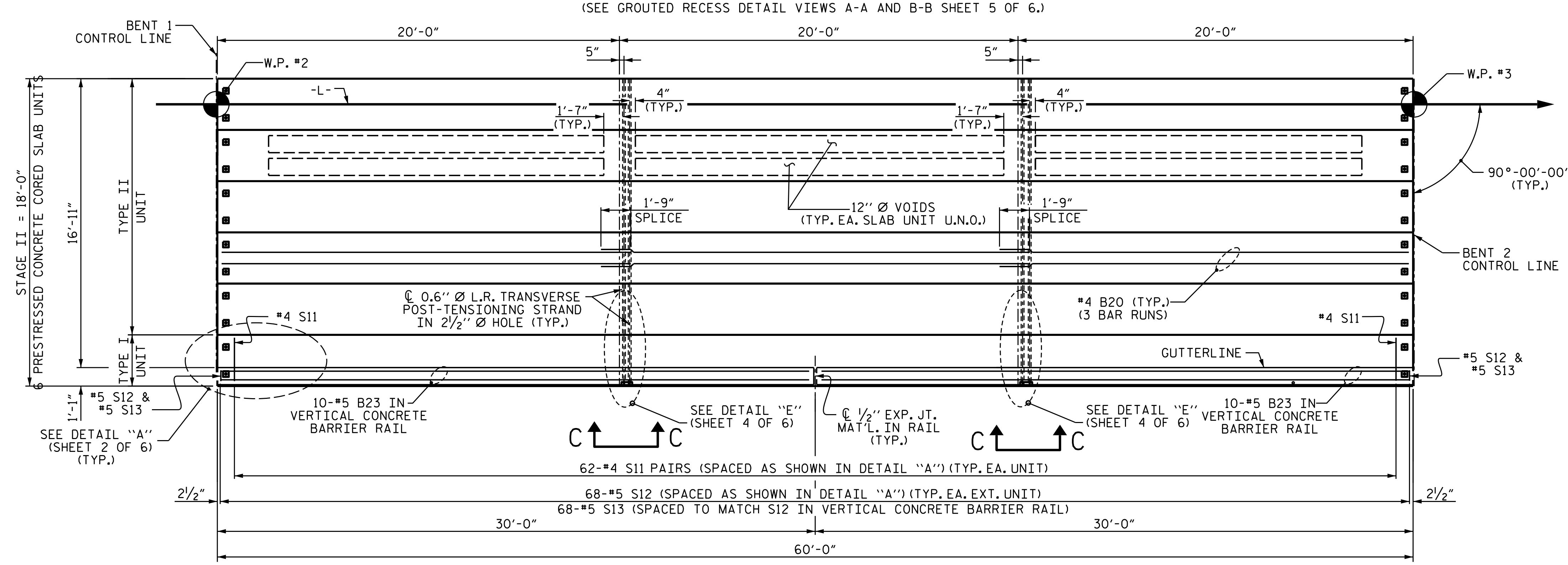
REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S-7
1			3				TOTAL SHEETS
2			4				29

12/13/2021
J:\188360C - 2015 W Divisions Planning & Design On-Call\188360 Division 13 Bridges\17BP.13.R.155 McDowell 267\Structures\Drafting\DGNs\401_013_17BP13_R155_SMU_CS02.dgn



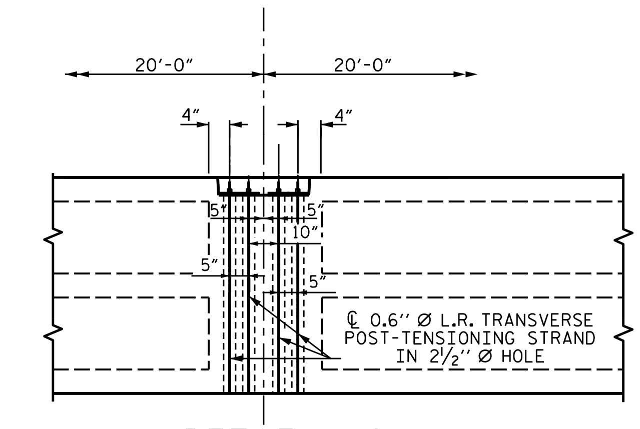
PLAN OF SPAN B - STAGE I

(SEE GROUTED RECESS DETAIL VIEWS A-A AND B-B SHEET 5 OF 6.)



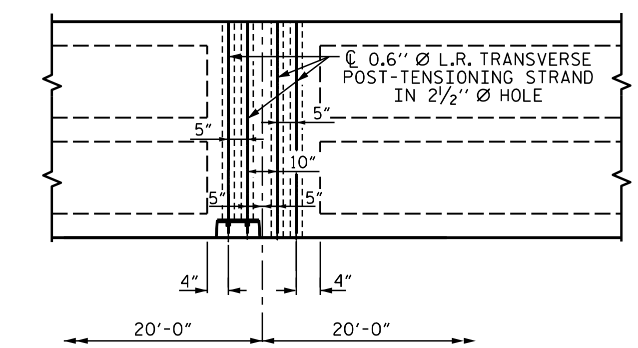
PLAN OF UNIT - SPAN B

(SEE GROUTED RECESS DETAIL VIEW C-C SHEET 5 OF 6.)



DETAIL "C"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUTED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES



DETAIL "D"

#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUTED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

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SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 60' UNIT 30'-10" CLEAR ROADWAY 90° SKEW - SPAN B STAGES I & II

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NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
Thomas Harris
F9EBC057AC1A4EF...
1/4/2022

DESIGNED BY:	J. WHEATLEY	DATE :	DEC 2021
DRAWN BY:	J. WHEATLEY	DATE :	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

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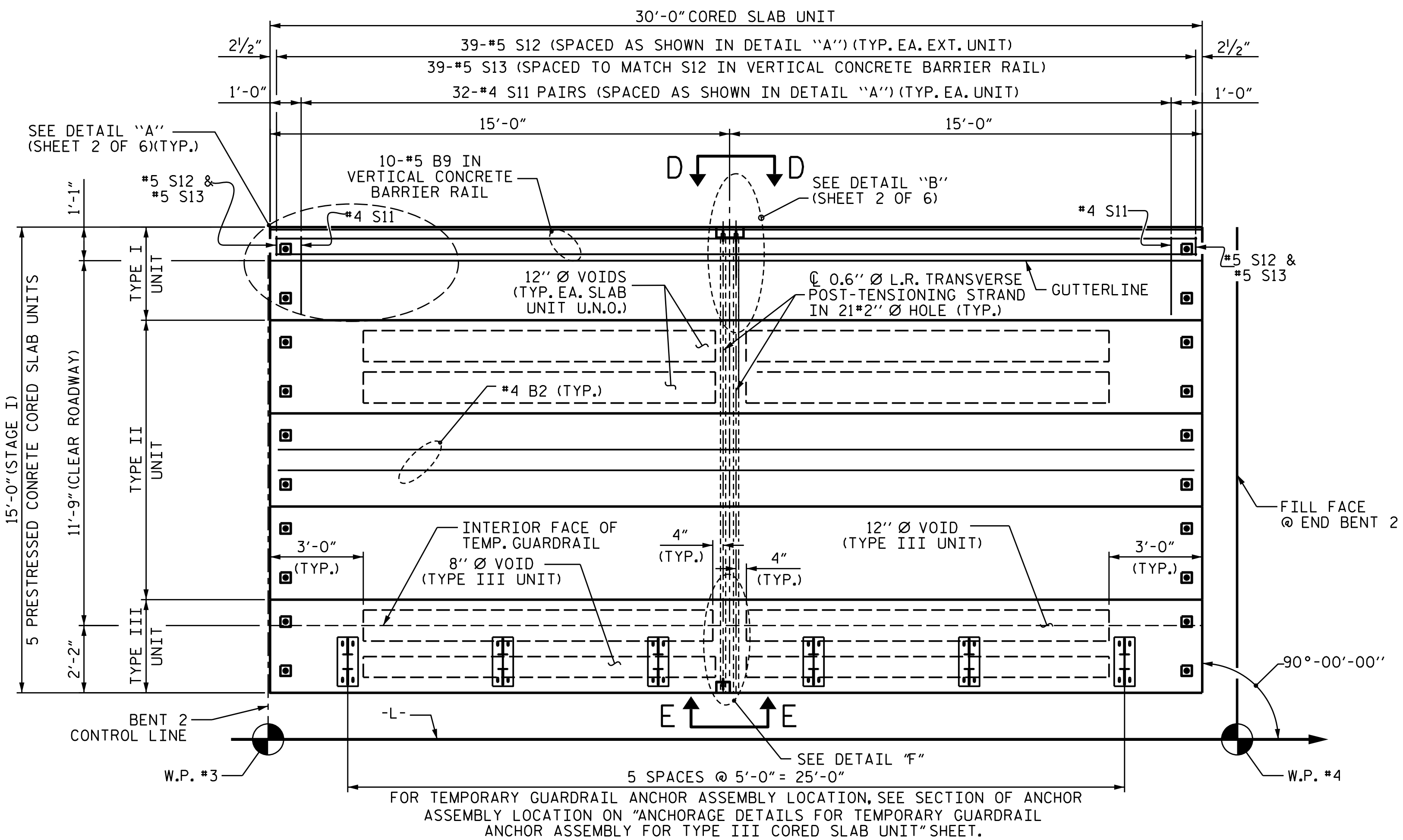
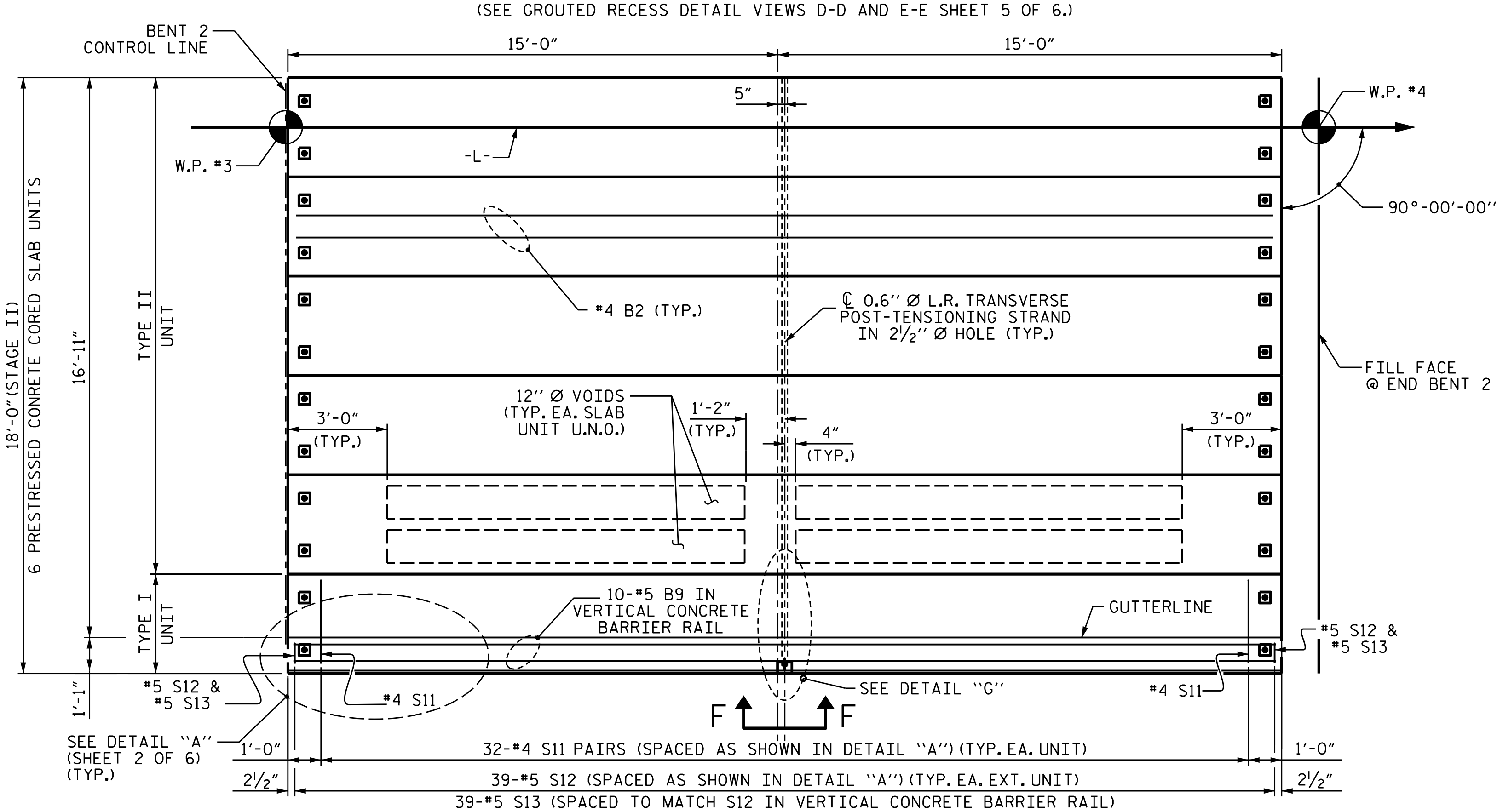


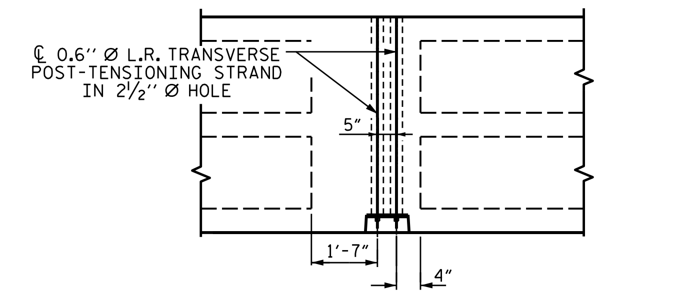
PLAN OF SPAN C - STAGE I

(SEE GROUTED RECESS DETAIL VIEWS D-D AND E-E SHEET 5 OF 6.)



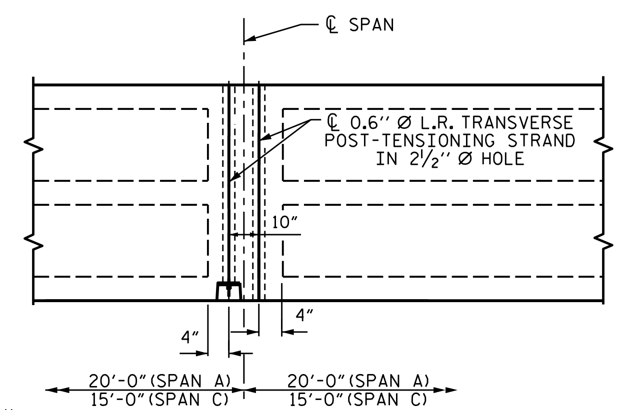
PLAN OF SPAN C - STAGE II

(SEE GROUTED RECESS DETAIL VIEW F-F SHEET 5 OF 6.)



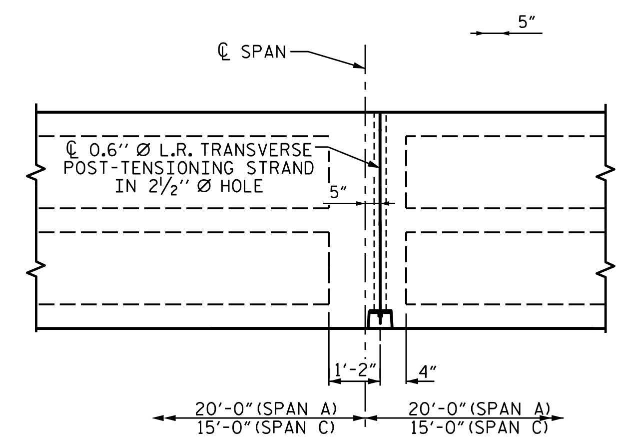
DETAIL "E"

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



DETAIL "F"

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



DETAIL "G"

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

PROJECT NO. 17BP.13.R.155

McDOWELL COUNTY

STATION: 15+78.00 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 30' UNIT 30'-10" CLEAR ROADWAY 90° SKEW - SPAN C STAGES I & II

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NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS

Thomas Harris
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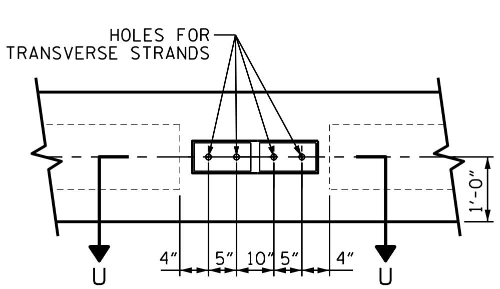
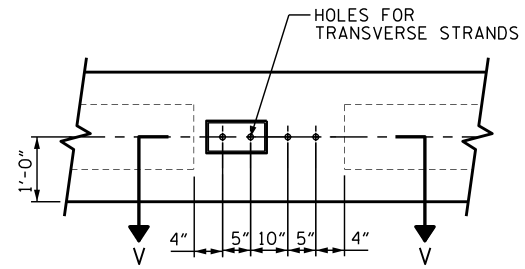
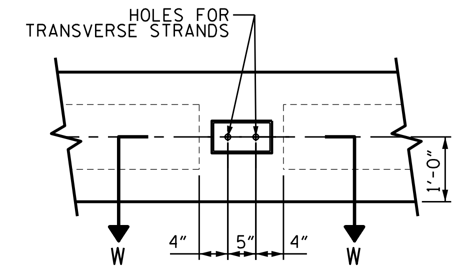


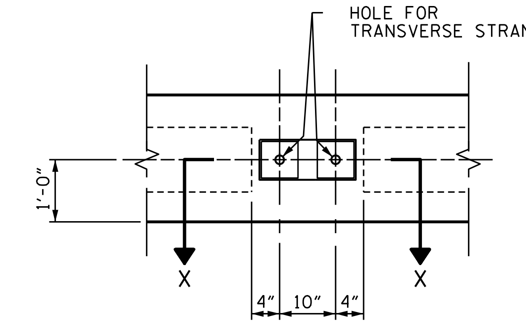
VIEW A-A



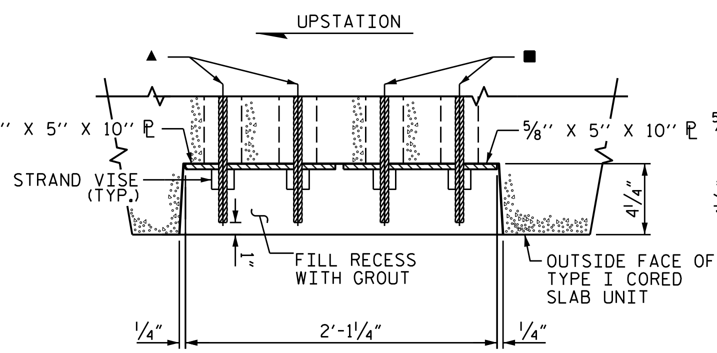
VIEW B-B



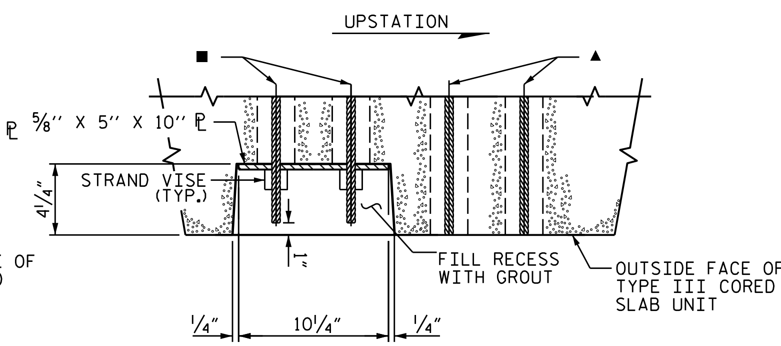
VIEW C-C



VIEW D-D



SECTION U-U



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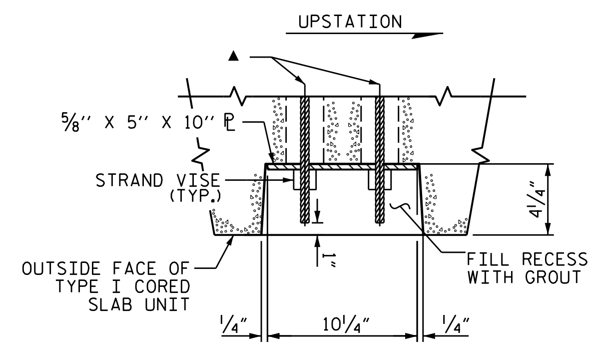
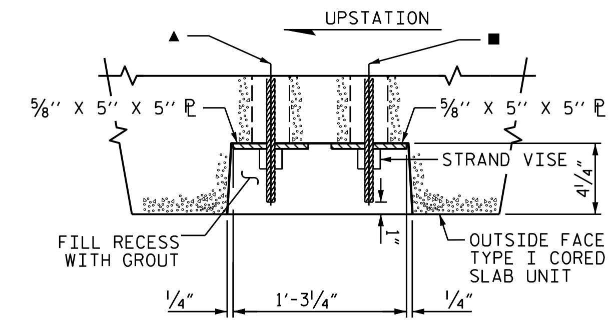


SECTION W-W



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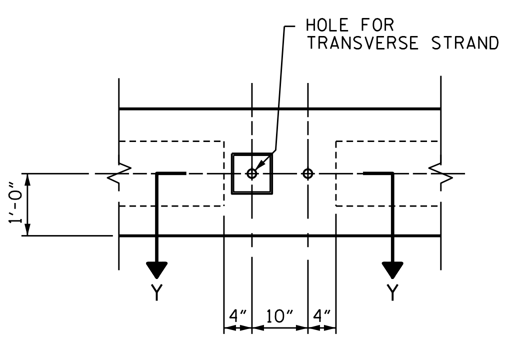
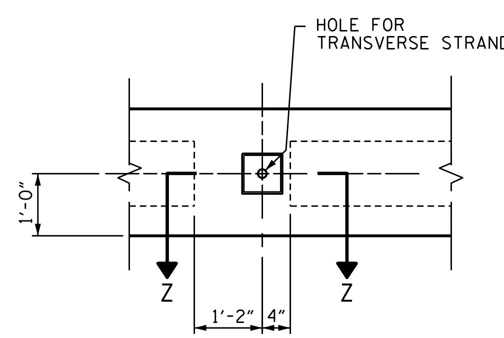
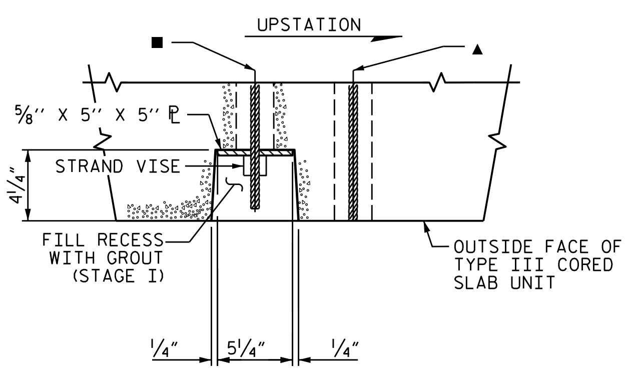


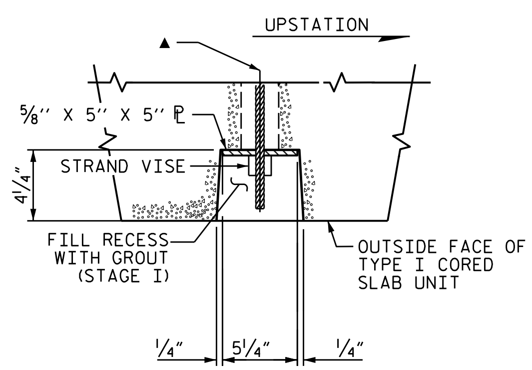
VIEW E-E



VIEW F-F



SECTION Y-Y



SECTION Z-Z

GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

■ ℄ 0.6" Ø H.S. TRANSVERSE POST-TENSIONING STRAND SHEATHED WITH A NON-CORROSIVE PIPE (TO BE TENSIONED DURING STAGE I CONST.)

▲ ℄ 0.6" Ø H.S. TRANSVERSE POST-TENSIONING STRAND SHEATHED WITH A NON-CORROSIVE PIPE (TO BE TENSIONED DURING STAGE II CONST.)

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

DESIGNED BY:	J. WHEATLEY	DATE :	DEC 2021
DRAWN BY:	J. WHEATLEY	DATE :	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

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Thomas Harris
F9EBC057AC1A4EF...
1/4/2022

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BILL OF MATERIAL FOR ONE 30' CORED SLAB UNIT

				TYPE I UNIT		TYPE II UNIT		TYPE III UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B2	2	#4	STR	29'-8"	40	29'-8"	40	29'-8"	40
S10	8	#5	2	4'-9"	40	4'-9"	40	4'-9"	40
S11	64	#4	2	5'-10"	249	5'-10"	249	5'-10"	249
* S12	39	#5	1	5'-7"	227	-	-	-	-
S14	4	#4	2	5'-7"	15	5'-7"	15	5'-7"	15
S15	4	#5	2	7'-1"	30	7'-1"	30	7'-1"	30
REINFORCING STEEL	LBS.				374		374		374
* EPOXY COATED REINFORCING STEEL	LBS.				227		-		-
5000 P.S.I. CONCRETE	CU. YDS.				5.2		5.2		5.6
0.6" Ø L.R. STRANDS	No.				13		13		13

BILL OF MATERIAL FOR ONE 40' CORED SLAB UNIT

				TYPE I UNIT		TYPE II UNIT		TYPE III UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B4	4	#4	STR	20'-9"	55	20'-9"	55	20'-9"	55
S10	8	#5	2	4'-9"	40	4'-9"	40	4'-9"	40
S11	84	#4	2	5'-10"	327	5'-10"	327	5'-10"	327
* S12	48	#5	1	5'-7"	280	-	-	-	-
S14	4	#4	2	5'-7"	15	5'-7"	15	5'-7"	15
S15	4	#5	2	7'-1"	30	7'-1"	30	7'-1"	30
REINFORCING STEEL	LBS.				467		467		467
* EPOXY COATED REINFORCING STEEL	LBS.				280		-		-
5000 P.S.I. CONCRETE	CU. YDS.				6.9		6.9		7.4
0.6" Ø L.R. STRANDS	No.				13		13		13

BILL OF MATERIAL FOR ONE 60' CORED SLAB UNIT

				TYPE I UNIT		TYPE II UNIT		TYPE III UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B20	6	#4	STR	21'-2"	85	21'-2"	85	21'-2"	85
S10	8	#5	2	4'-9"	40	4'-9"	40	4'-9"	40
S11	124	#4	2	5'-10"	483	5'-10"	483	5'-10"	483
* S12	68	#5	1	5'-7"	396	-	-	-	-
S14	4	#4	2	5'-7"	15	5'-7"	15	5'-7"	15
S15	4	#5	2	7'-1"	30	7'-1"	30	7'-1"	30
REINFORCING STEEL	LBS.				653		653		653
* EPOXY COATED REINFORCING STEEL	LBS.				396		-		-
6000 P.S.I. CONCRETE	CU. YDS.				10.2		10.2		11.0
0.6" Ø L.R. STRANDS	No.				24		24		24

30' CORED SLABS REQUIRED

		NUMBER	LENGTH	TOTAL LENGTH
STAGE I	TYPE I	1	30'-0"	30'-0"
	TYPE II	3	30'-0"	90'-0"
	TYPE III	1	30'-0"	30'-0"
STAGE II		NUMBER	LENGTH	TOTAL LENGTH
	TYPE I	1	30'-0"	30'-0"
	TYPE II	5	30'-0"	150'-0"
	TOTAL	11		330'-0"

40' CORED SLABS REQUIRED

		NUMBER	LENGTH	TOTAL LENGTH
STAGE I	TYPE I	1	40'-0"	40'-0"
	TYPE II	3	40'-0"	120'-0"
	TYPE III	1	40'-0"	40'-0"
STAGE II		NUMBER	LENGTH	TOTAL LENGTH
	TYPE I	1	40'-0"	40'-0"
	TYPE II	5	40'-0"	200'-0"
	TOTAL	11		440'-0"

60' CORED SLABS REQUIRED

		NUMBER	LENGTH	TOTAL LENGTH
STAGE I	TYPE I	1	60'-0"	60'-0"
	TYPE II	3	60'-0"	180'-0"
	TYPE III	1	60'-0"	60'-0"
STAGE II		NUMBER	LENGTH	TOTAL LENGTH
	TYPE I	1	60'-0"	60'-0"
	TYPE II	5	60'-0"	300'-0"
	TOTAL	11		660'-0"

DEAD LOAD DEFLECTION AND CAMBER

30' CORED SLAB UNIT	3'-0" x 2'-0" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	7/16" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8" ↓
FINAL CAMBER	5/16" ↑

** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER

40' CORED SLAB UNIT	3'-0" x 2'-0" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	5/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/2" ↓
FINAL CAMBER	1/8" ↑

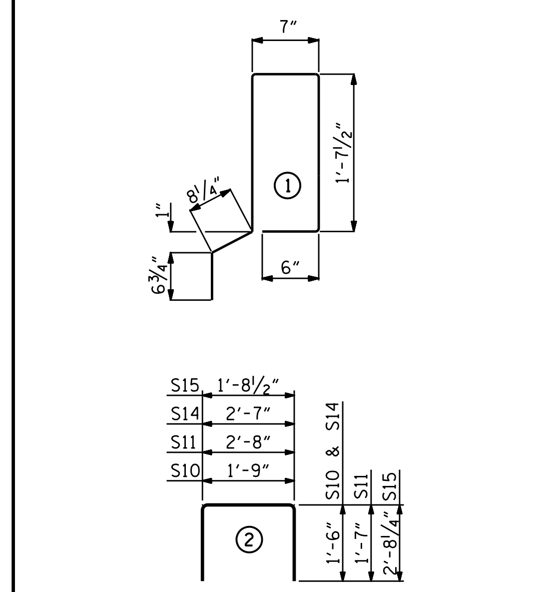
** INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER

60' CORED SLAB UNIT	3'-0" x 2'-0" 0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 7/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/2" ↓
FINAL CAMBER	1 3/8" ↑

** INCLUDES FUTURE WEARING SURFACE

BAR TYPES



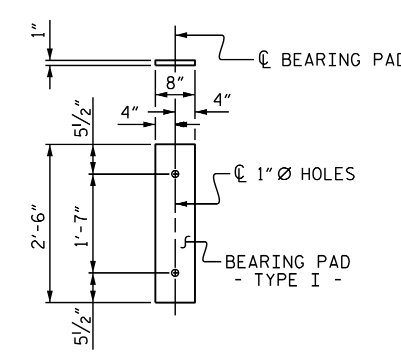
ALL BAR DIMENSIONS ARE OUT TO OUT

CONCRETE RELEASE STRENGTH

UNIT	PSI
30' & 40' UNITS	4000
60' UNITS	4800

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



FIXED END
(TYPE I - 66 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

NOTES

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

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

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

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

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

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449 AND SHALL BE GALVANIZED. NO SEPARATE PAYMENT WILL BE MADE FOR THE ANCHOR BOLTS AND THE COST OF MATERIALS AND INSTALLATION SHALL BE INCLUDED IN OTHER PAY ITEMS.

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McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
Thomas Harris
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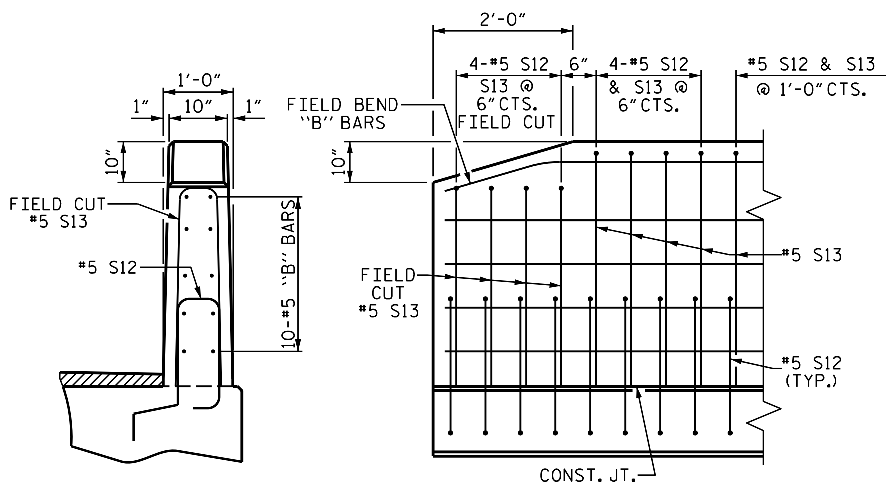
GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

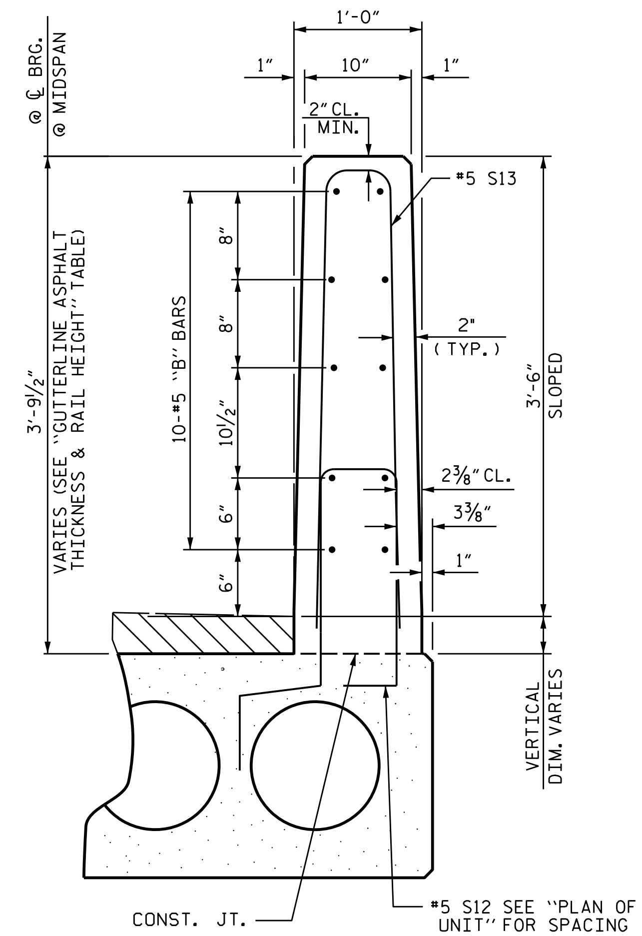
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
30' UNITS (SPAN C)	3 3/16"	3'-9 3/16"
40' UNITS (SPAN A)	3 3/8"	3'-9 3/8"
60' UNITS (SPAN B)	2 1/8"	3'-8 1/8"



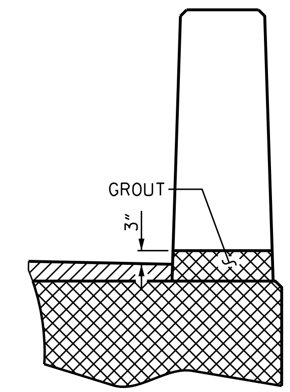
END VIEW

SIDE VIEW

END OF RAIL DETAILS

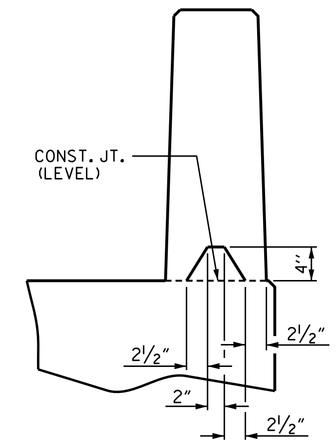


SECTION THRU RAIL



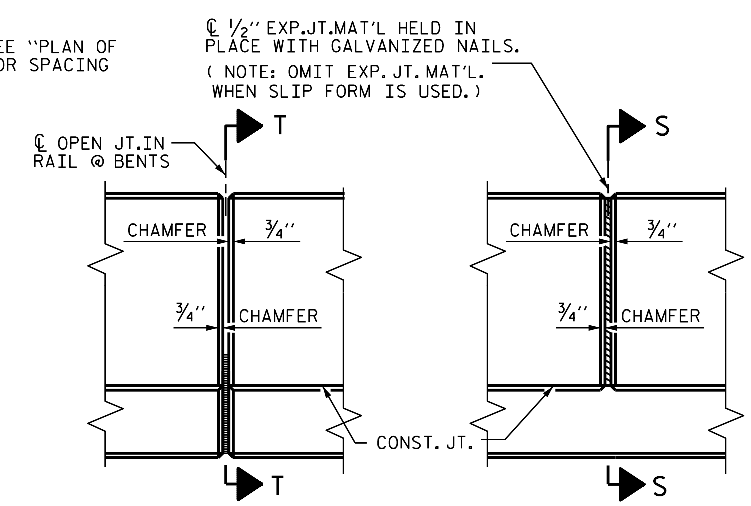
SECTION T-T

AT OPEN JOINT AT BENT (THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)



SECTION S-S

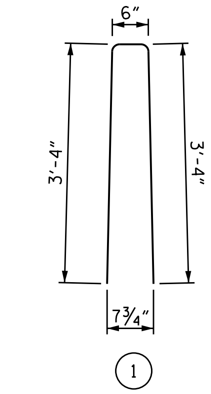
AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL-STAGE I

FOR VERTICAL CONCRETE BARRIER RAIL ONLY

	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SPAN C	* B9	10	#5	STR	29'-7"	309
SPAN A	* B11	20	#5	STR	19'-7"	409
SPAN B	* B23	20	#5	STR	29'-7"	617
	* S13	155	#5	1	7'-2"	1159

* EPOXY COATED REINFORCING STEEL — LBS. 2493
CLASS AA CONCRETE — CU. YDS. 16.8
VERTICAL CONCRETE BARRIER RAIL — LIN. FT. 130.25

BILL OF MATERIAL-STAGE II

FOR VERTICAL CONCRETE BARRIER RAIL ONLY

	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SPAN C	* B9	10	#5	STR	29'-7"	309
SPAN A	* B11	20	#5	STR	19'-7"	409
SPAN B	* B23	20	#5	STR	29'-7"	617
	* S13	155	#5	1	7'-2"	1159

* EPOXY COATED REINFORCING STEEL — LBS. 2493
CLASS AA CONCRETE — CU. YDS. 16.8
VERTICAL CONCRETE BARRIER RAIL — LIN. FT. 130.25

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
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RALEIGH

STANDARD
VERTICAL CONCRETE BARRIER RAIL DETAILS

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DRAWN BY : MAA 5/10	REV. 6/13	MAA/GM
CHECKED BY : GM 5/10	REV. 12/17	MAA/THC
	REV. 5/18	MAA/THC

ASSEMBLED BY: J. WHEATLEY DATE: DEC 2021
CHECKED BY: T. KIRSCHBAUM DATE: DEC 2021
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: DEC 2021

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TOTAL SHEETS 29

STD. NO. CBR2 (SHT 1)

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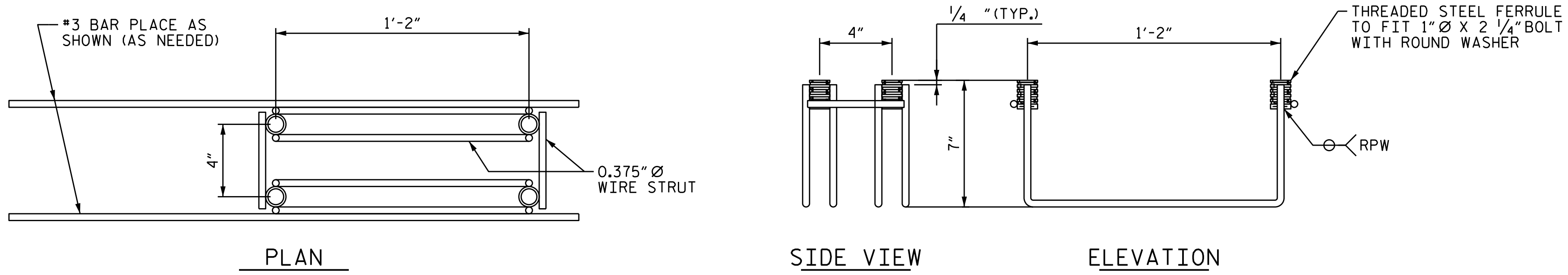
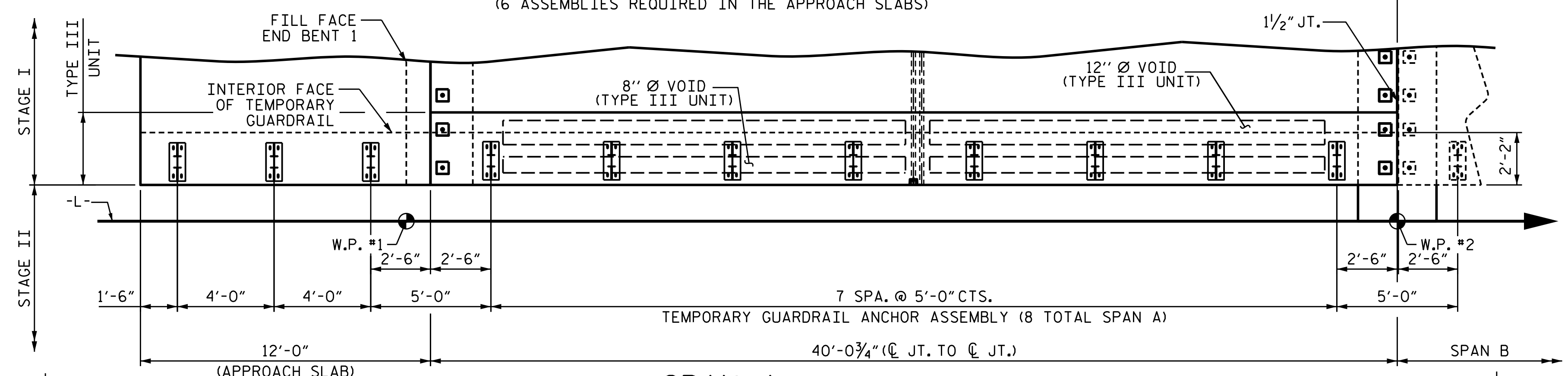
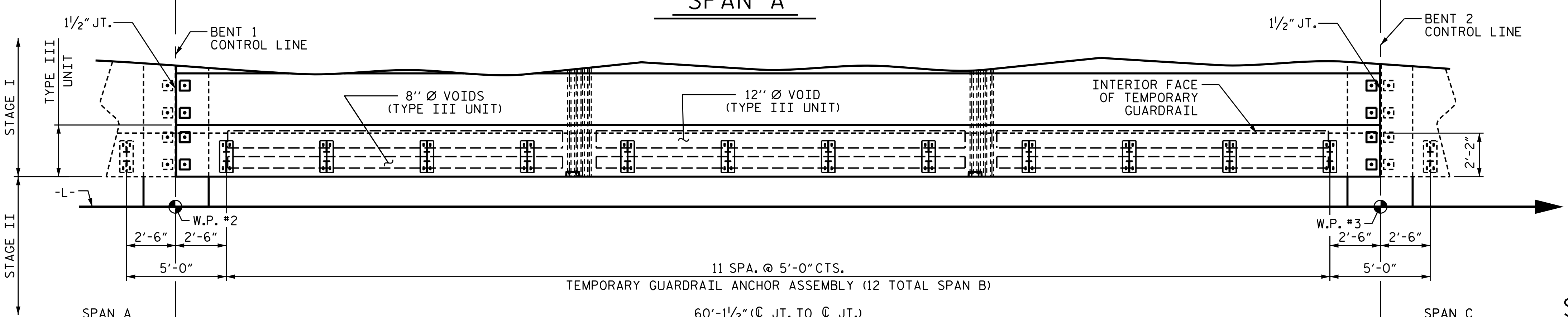


TEMPORARY GUARDRAIL ANCHOR ASSEMBLY

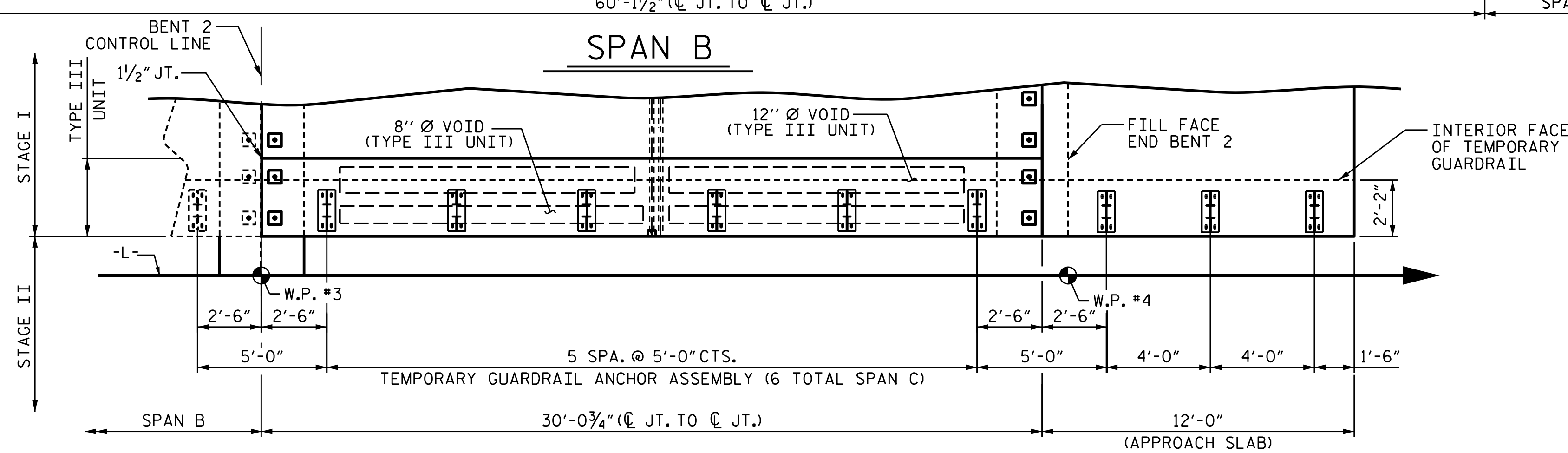
(26 ASSEMBLIES REQUIRED IN THE TYPE III CORED SLAB UNIT)
(6 ASSEMBLIES REQUIRED IN THE APPROACH SLABS)



SPAN A



SPAN B



SPAN C

RAIL POST SPACING FOR TEMPORARY GUARDRAIL - STAGE I

NOTES

THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2½".

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

C. WIRE STRUTS SHOWN IN THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY DETAIL ARE THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.

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

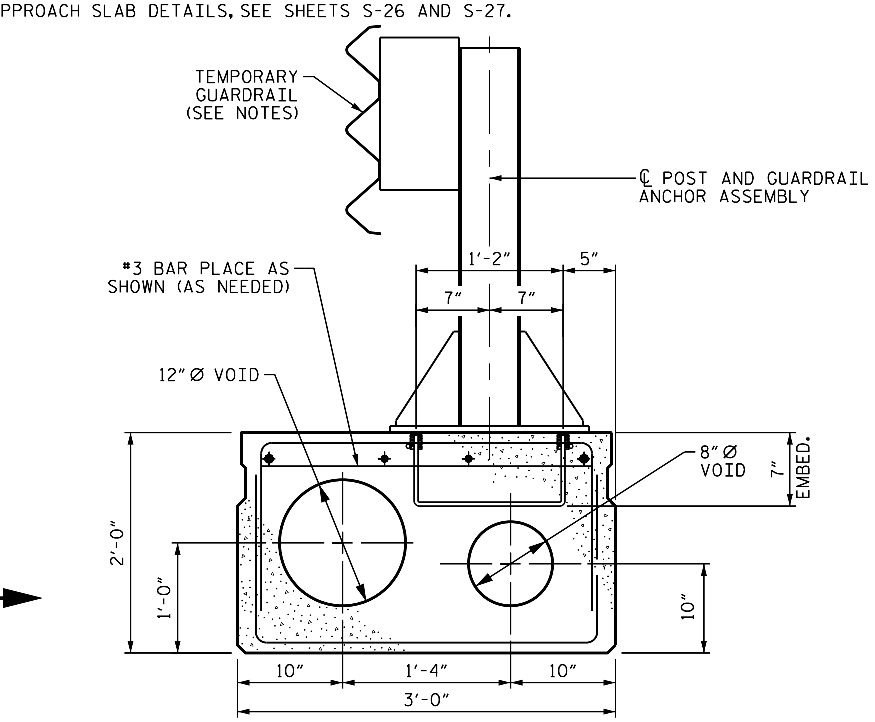
THE COST OF THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY COMPLETE IN PLACE, SHALL BE INCLUDED, AS APPLICABLE, IN THE UNIT CONTRACT PRICE BID FOR 3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB OR LUMP SUM PRICE BID FOR APPROACH SLABS.

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

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

PAYMENT FOR TEMPORARY GUARDRAIL, POST AND POST PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

FOR APPROACH SLAB DETAILS, SEE SHEETS S-26 AND S-27.



SECTION OF ANCHOR ASSEMBLY LOCATION

(TYPE III UNIT OF STAGE I)
THE #3 BARS ARE INCIDENTAL AND THEIR COST SHALL BE INCLUDED IN THE PRICE BID FOR THE PRESTRESSED CONCRETE CORED SLABS.

PROJECT NO. 17BP.13.R.155
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ANCHORAGE DETAILS FOR TEMPORARY GUARDRAIL ANCHOR ASSEMBLY FOR TYPE III - STAGE I

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DRAWN BY:	J. WHEATLEY	DATE :	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

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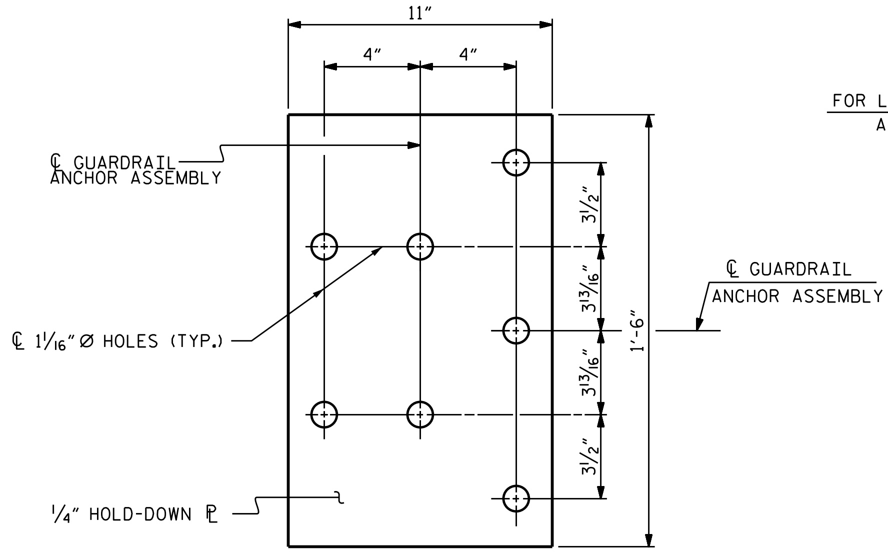
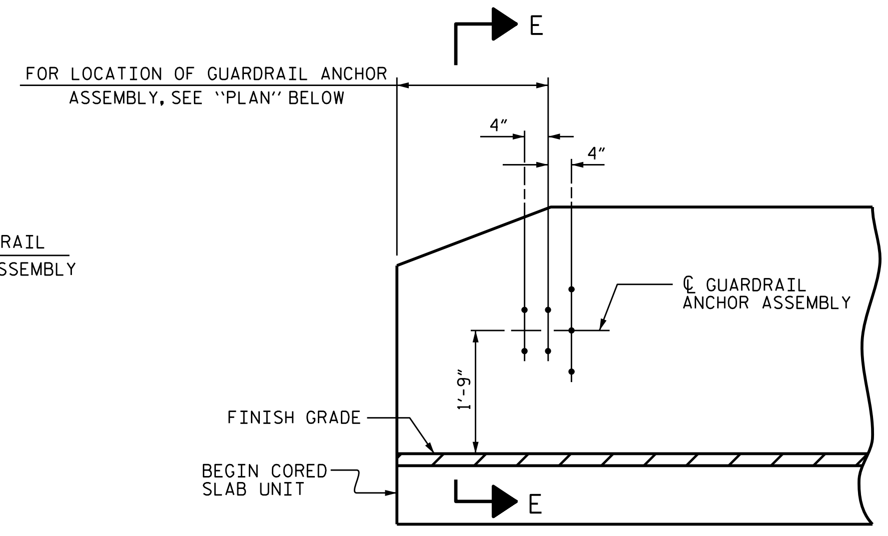
TOTAL SHEETS 29



PLAN



ELEVATION

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A $\frac{1}{4}$" HOLD DOWN PLATE AND 7 - $\frac{7}{8}$" 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 $\frac{7}{8}$" 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.)

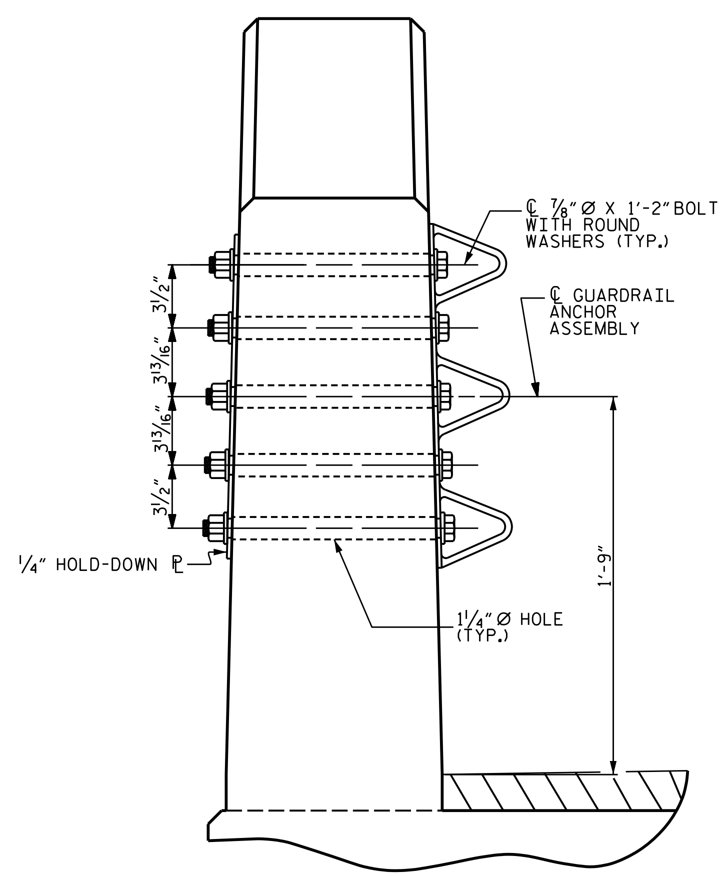
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

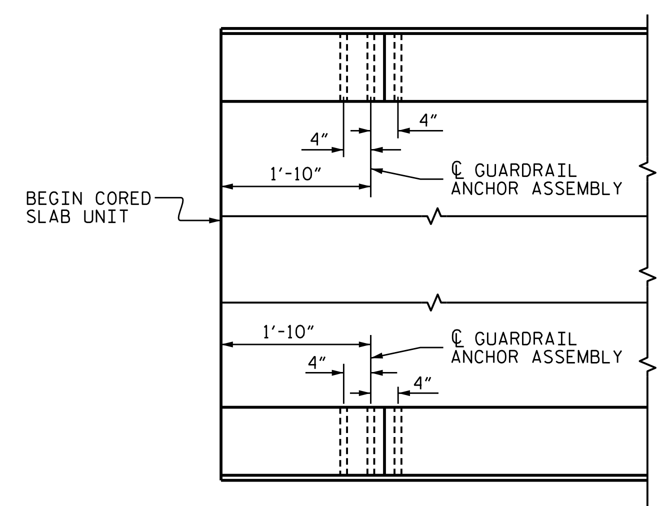
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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



SECTION E-E

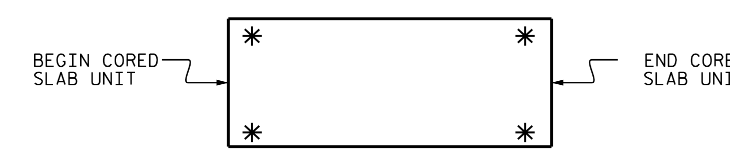
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 17BP.13.R.155

McDOWELL COUNTY

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS

DocuSigned by: Thomas Harris F9EBC057AC1A4EF...

1/4/2022

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CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021	CHECKED BY :	GM	5/10	REV. 12/17	MAA/THC	
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021				REV. 5/18	MAA/THC	

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NO.	BY:	DATE:	NO.	BY:	DATE:		S-14
1			3				TOTAL SHEETS
2			4				29

STD. NO. GRA3

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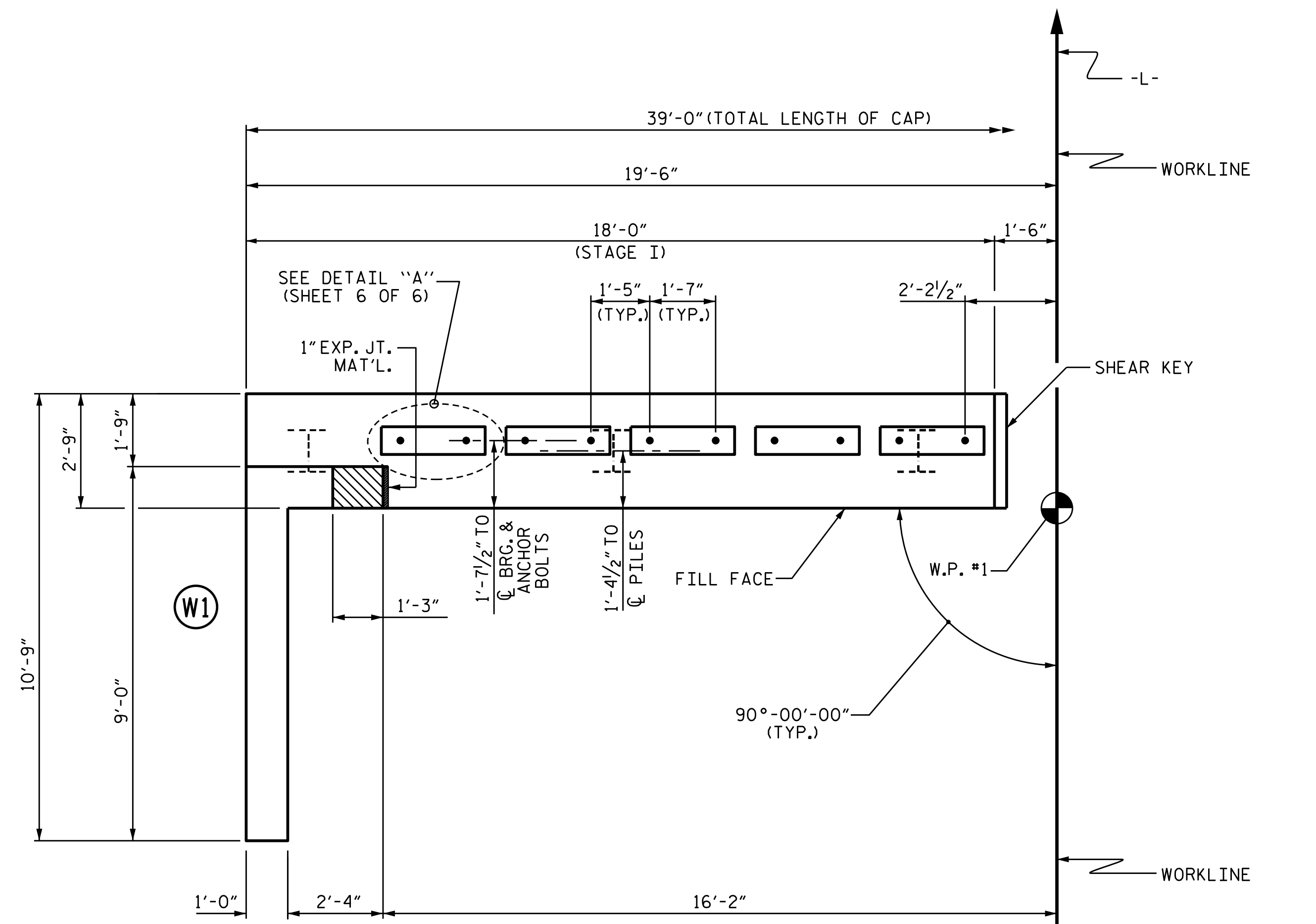
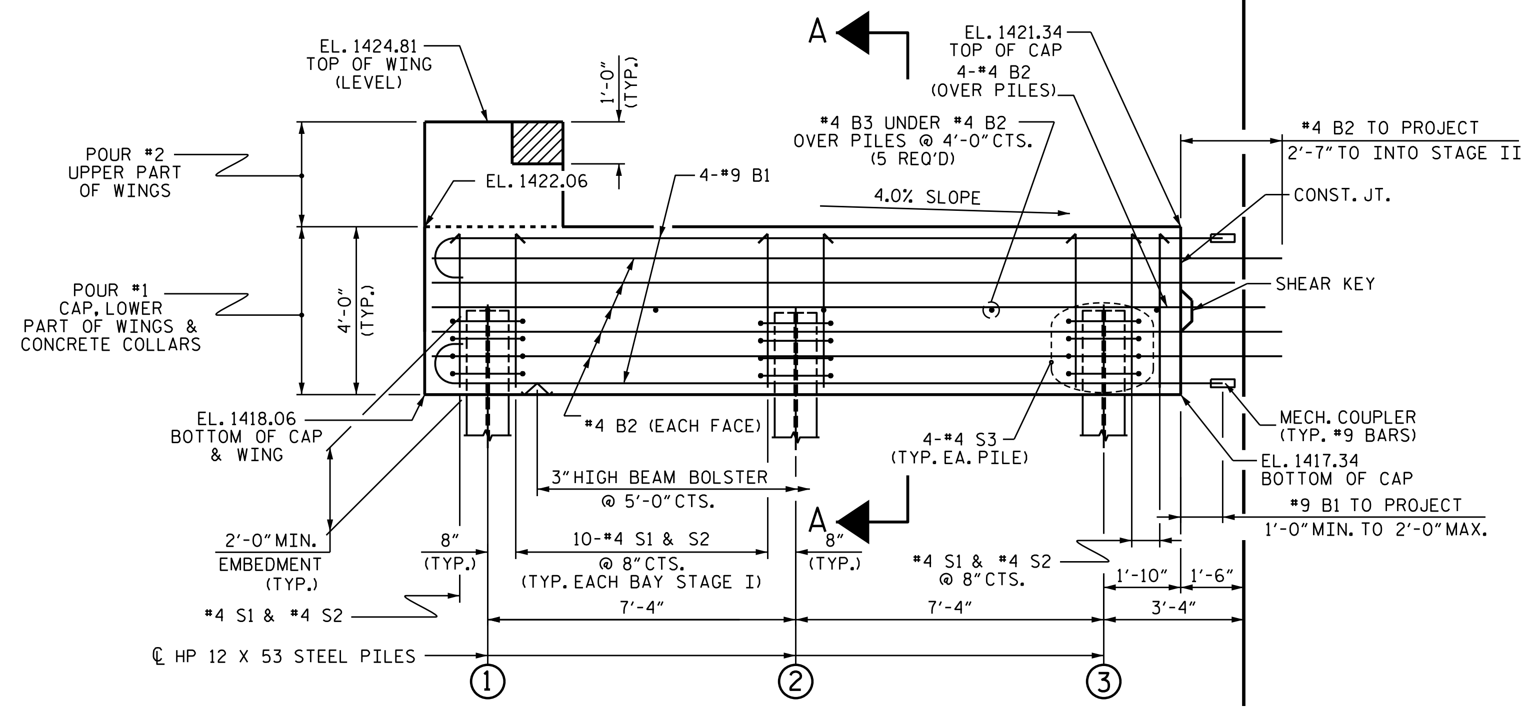


PLAN



ELEVATION

WING NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 6 OF 6.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 6 OF 6.

NOTES

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

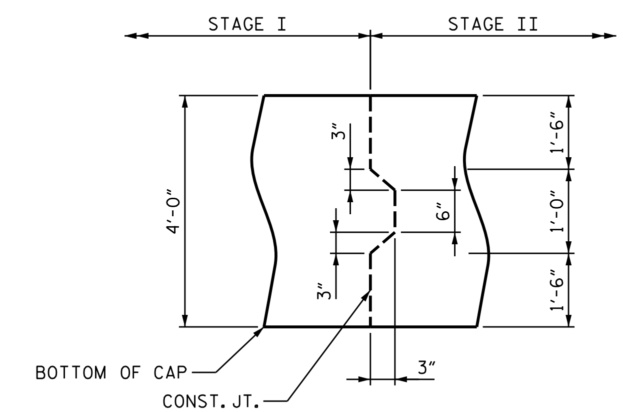
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE PARAPET IS CAST IF SLIP FORMING IS USED.

MECHANICAL COUPLERS SHALL BE USED TO JOIN #9 "B" BARS IN STAGE I WITH #9 "B" BARS IN STAGE II. THE LOCATION OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1 FOOT AND THE BARS SHALL BE CUT ACCORDINGLY TO ALLOW A MINIMUM OF 1'-0" EXTENSION INTO STAGE II CONSTRUCTION.

FOR PILE SPLICE DETAILS, SEE SHEET 6 OF 6.

FOR WING DETAILS, SEE SHEET 5 OF 6.

TOP OF PILE ELEVATIONS	
1	1420.02
2	1419.72
3	1419.43



SECTION THRU SHEAR KEY

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SHEET 1 OF 6

STATE OF NORTH CAROLINA
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SUBSTRUCTURE
END BENT No. 1
STAGE I

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1			3		
2			4		

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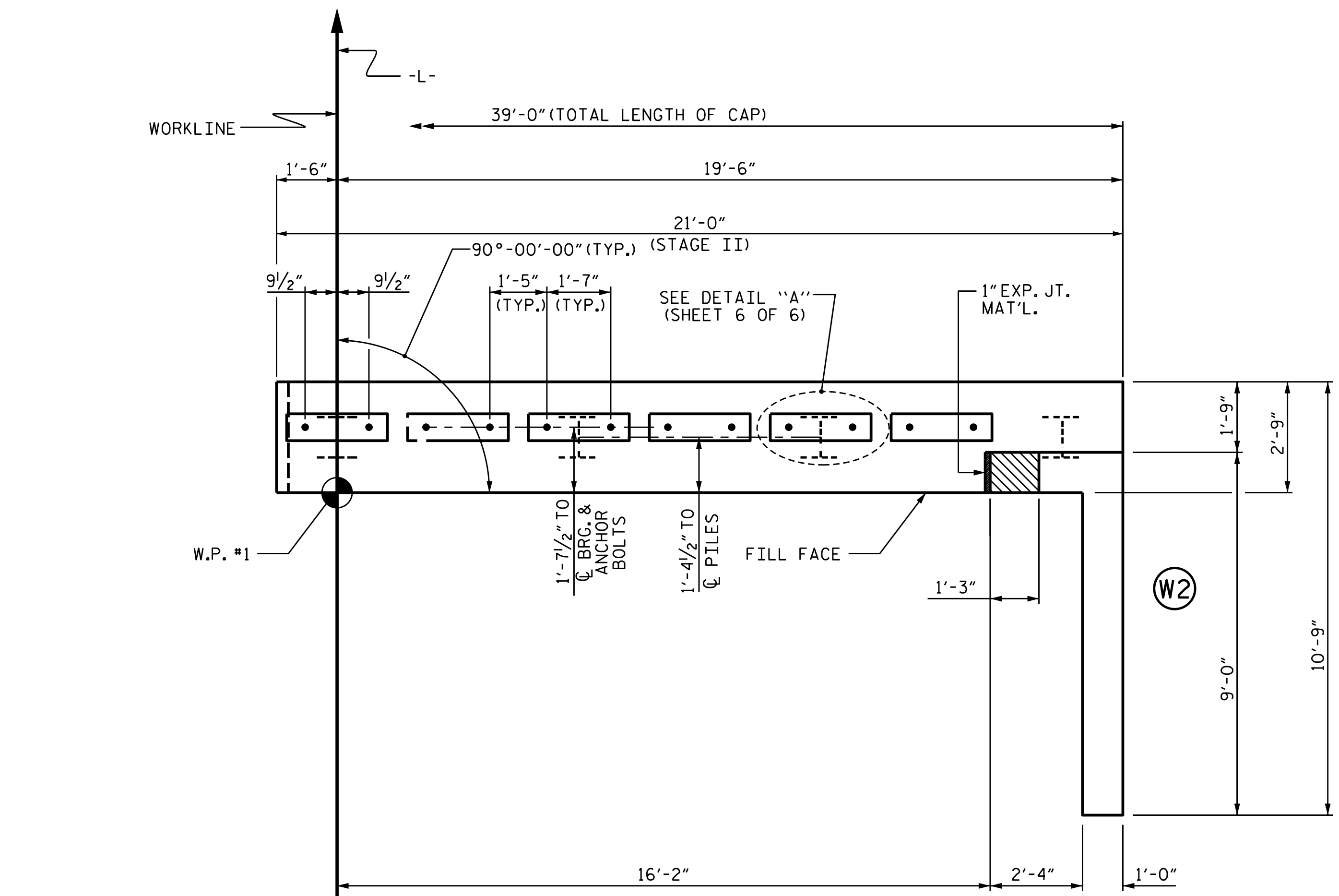
NOTES

FOR NOTES, SEE SHEET 1 OF 6.

TOP OF PILE ELEVATIONS	
4	1419.30
5	1419.06
6	1418.82
7	1418.58



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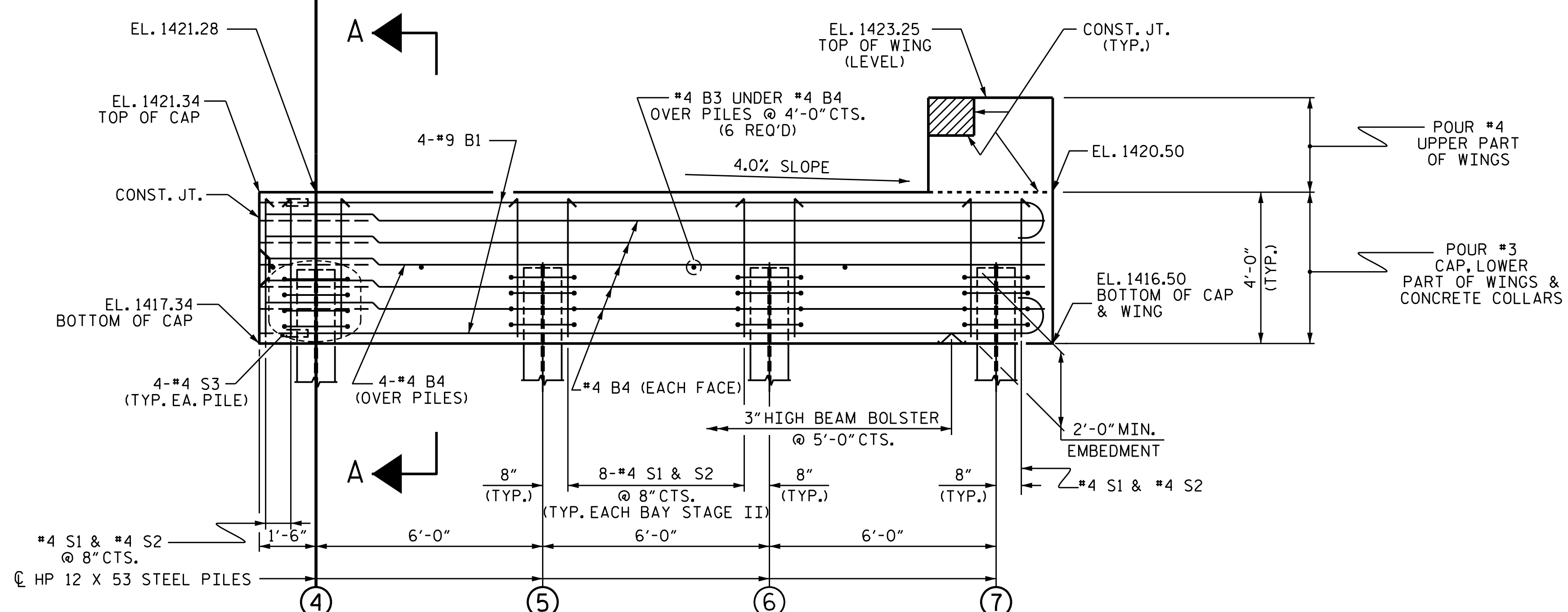

ELEVATION

WING NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 6 OF 6.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 6 OF 6.

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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SUBSTRUCTURE
END BENT No. 1
STAGE II

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SHEET NO. S-16
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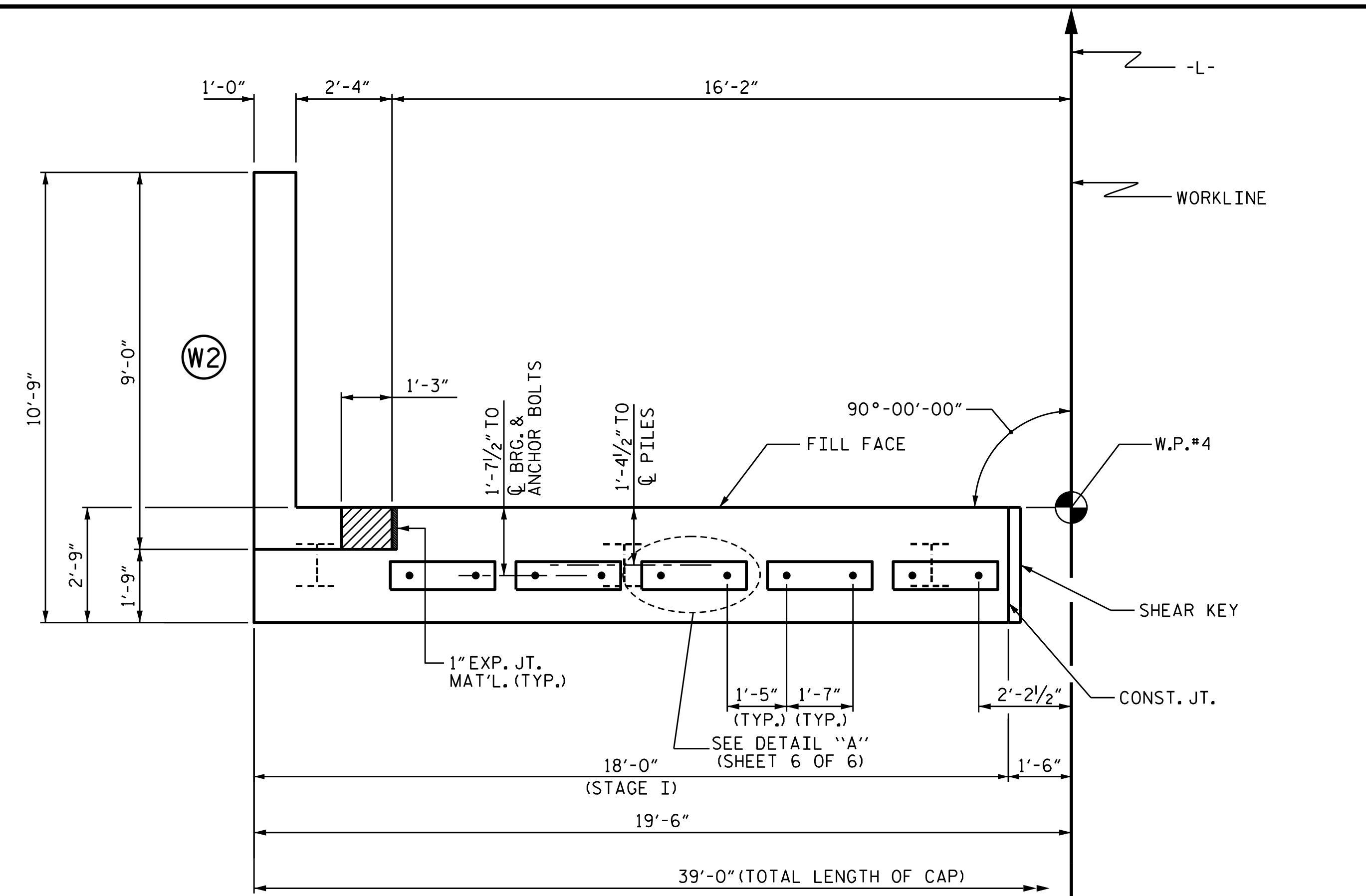
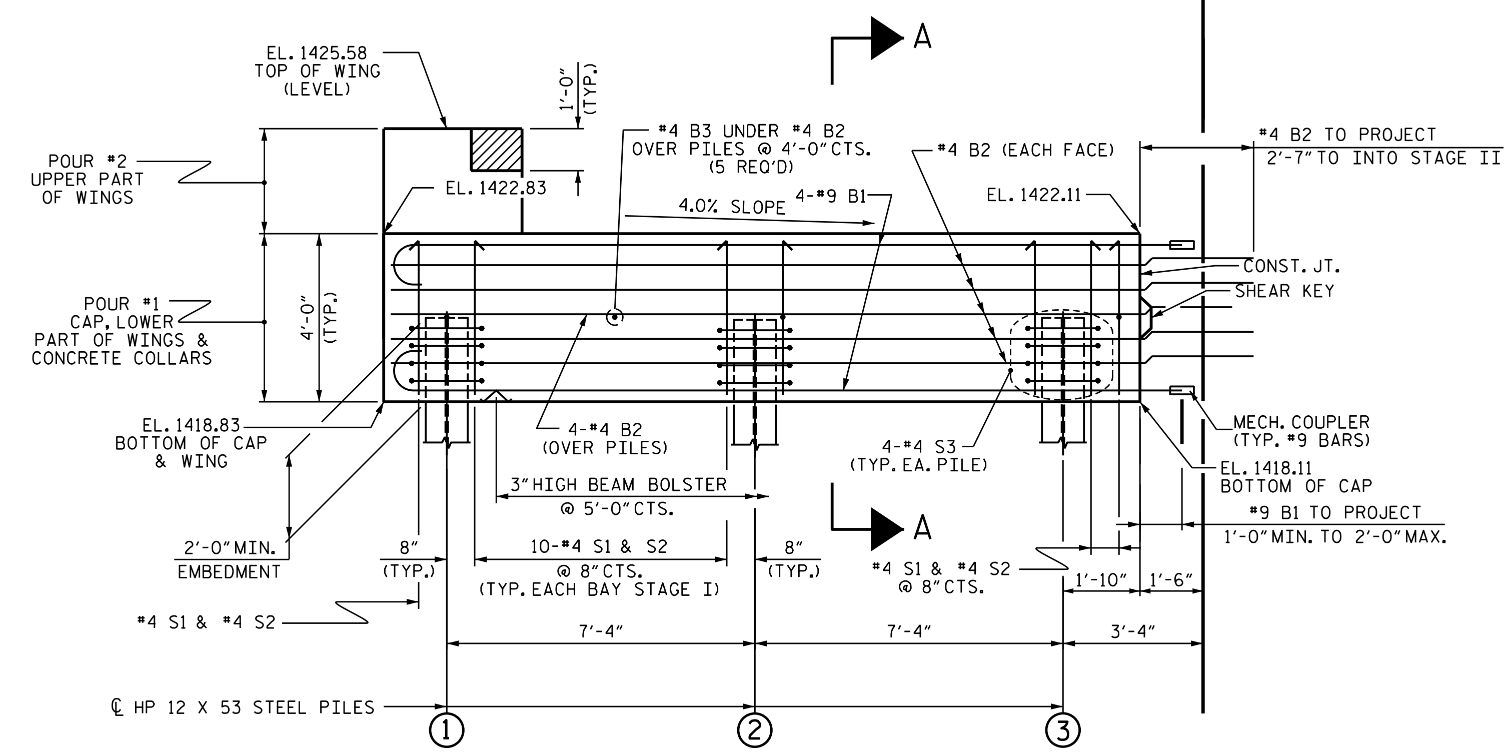


PLAN



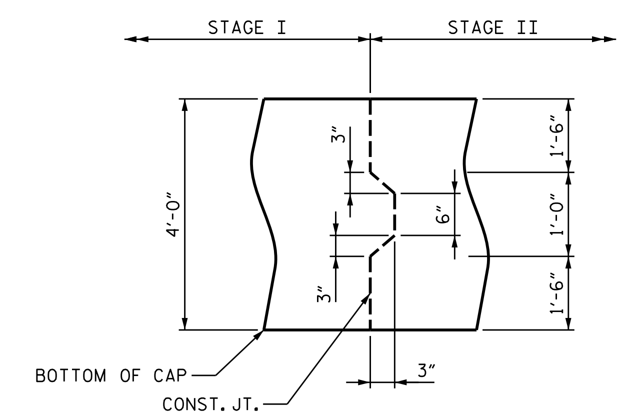
ELEVATION

WING NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 6 OF 6.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 6 OF 6.

NOTES

FOR NOTES, SEE SHEET 1 OF 6.

TOP OF PILE ELEVATIONS	
1	1420.79
2	1420.50
3	1420.20



SECTION THRU SHEAR KEY

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2
STAGE I

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DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

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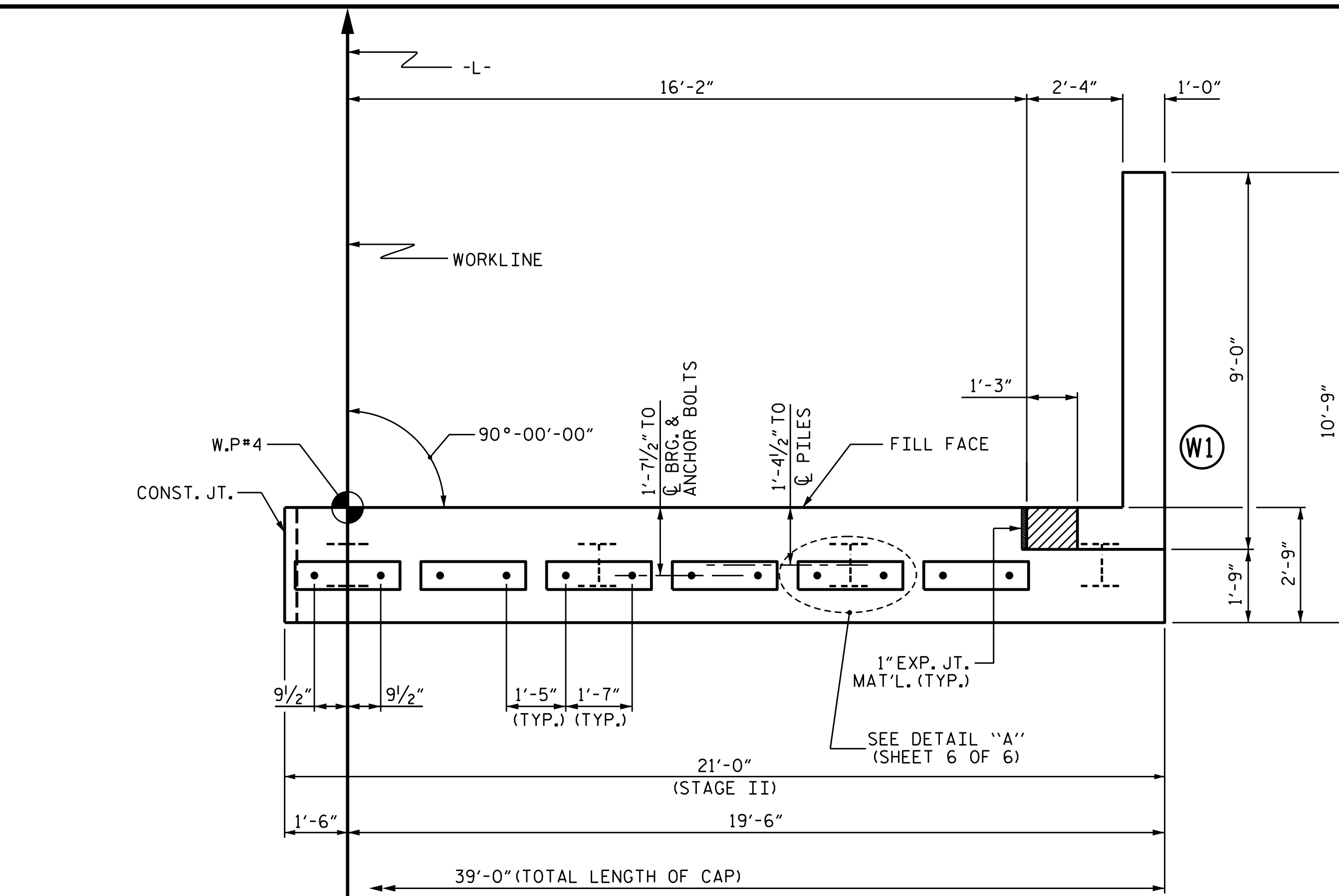
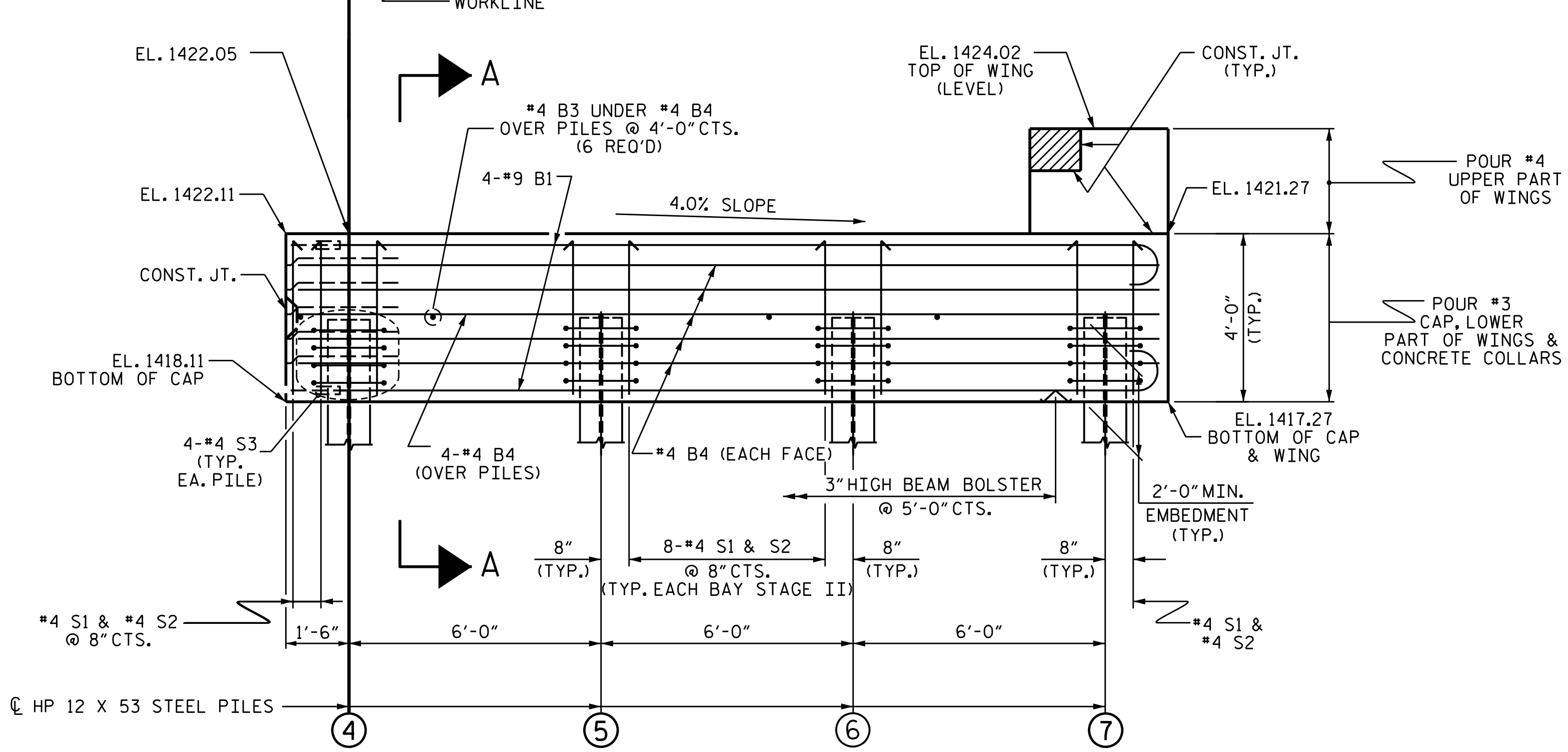
NOTES

FOR NOTES, SEE SHEET 1 OF 6.



PLAN



ELEVATION

WING NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 6 OF 6.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 6 OF 6.

TOP OF PILE ELEVATIONS	
4	1420.07
5	1419.83
6	1419.59
7	1419.35

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2
STAGE II

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NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
F9EBC057AC1A4EF...
1/4/2022

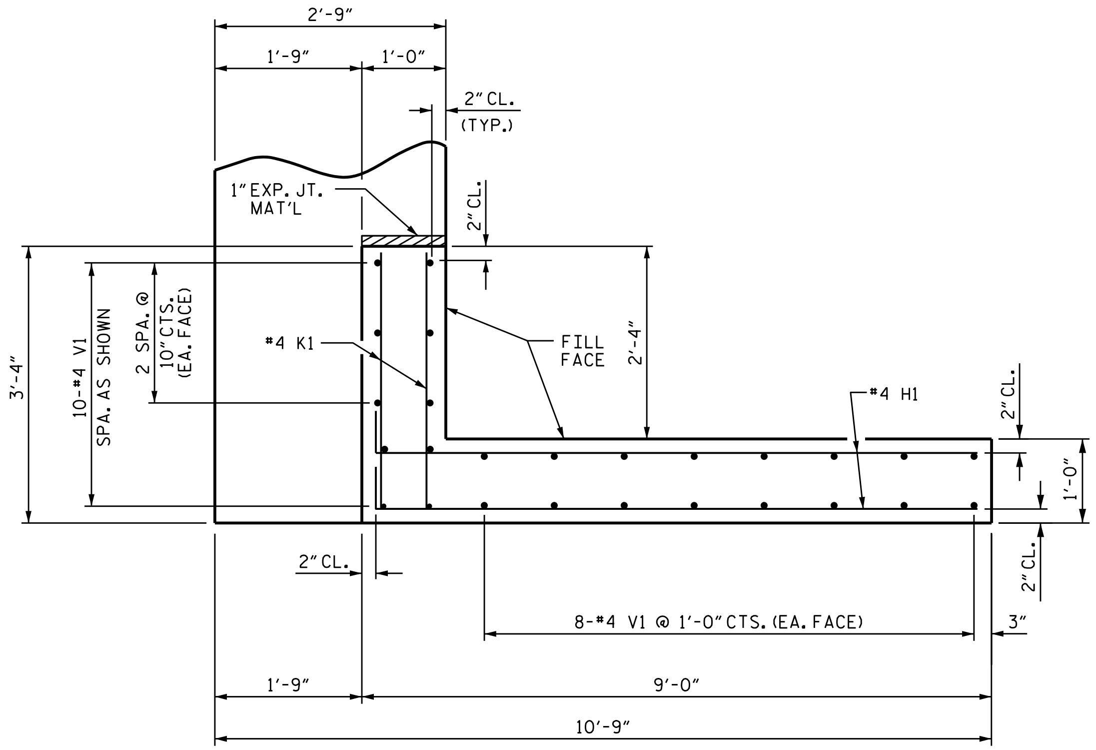
REVISIONS							
NO.	BY:	DATE:		NO.	BY:	DATE:	
1				3			
2				4			

SHEET NO. S-18
TOTAL SHEETS 29

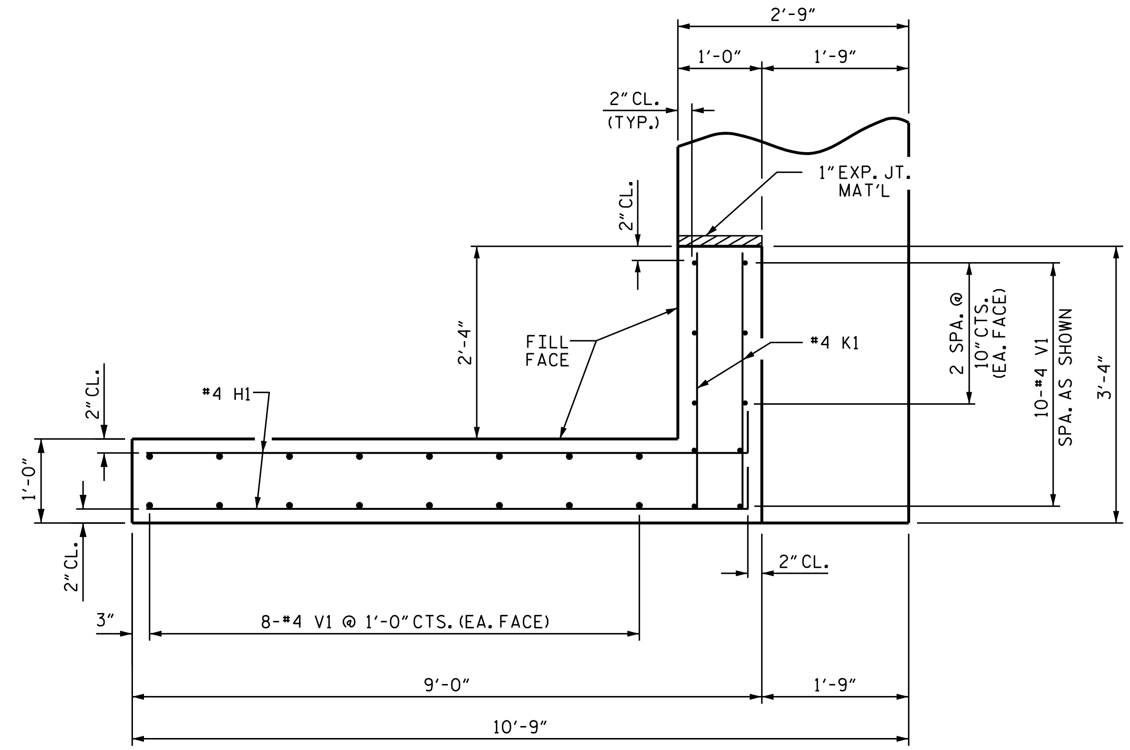
WSP
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

DESIGNED BY:	J. WHEATLEY	DATE :	DEC 2021
DRAWN BY:	J. WHEATLEY	DATE :	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

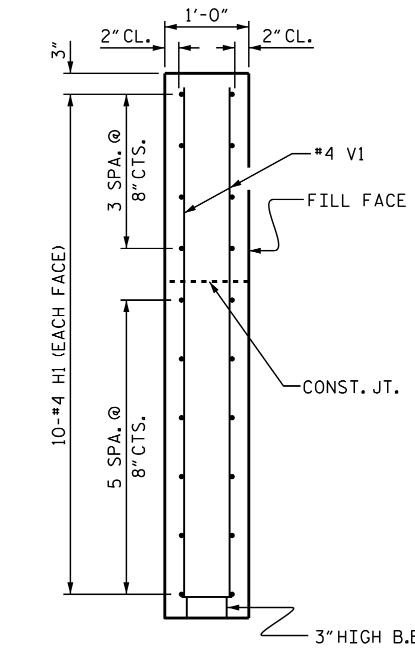
12/13/2021
J:\188360C - 2015 W Divisions Planning & Design On-Call\I188360 Division 13 Bridges\17BP.13.R.155 McDowell 267\Structures\Drafting\DGNs\401_035_17BP.13.R.155_SMU_EB04.dgn



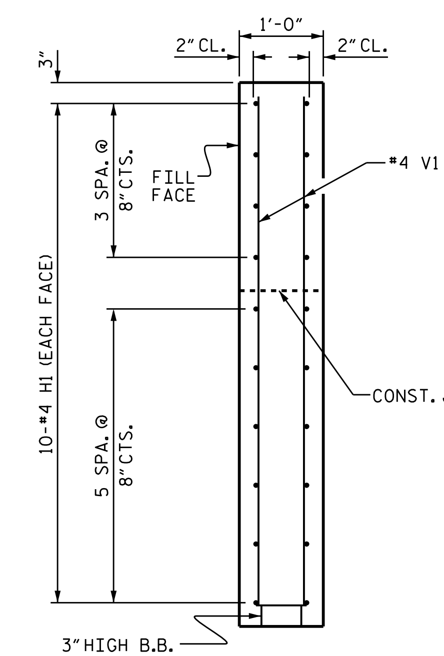
PLAN OF WING (W1)



PLAN OF WING (W2)



SECTION X-X



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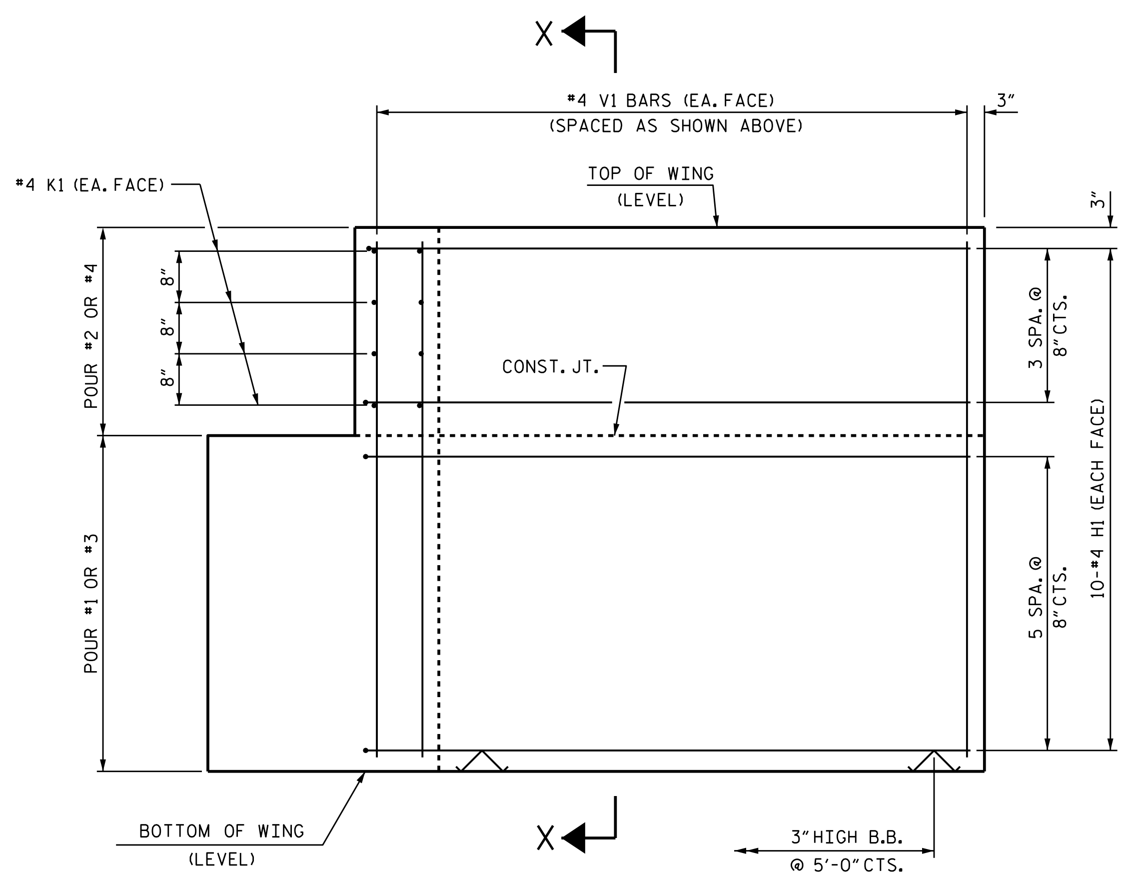
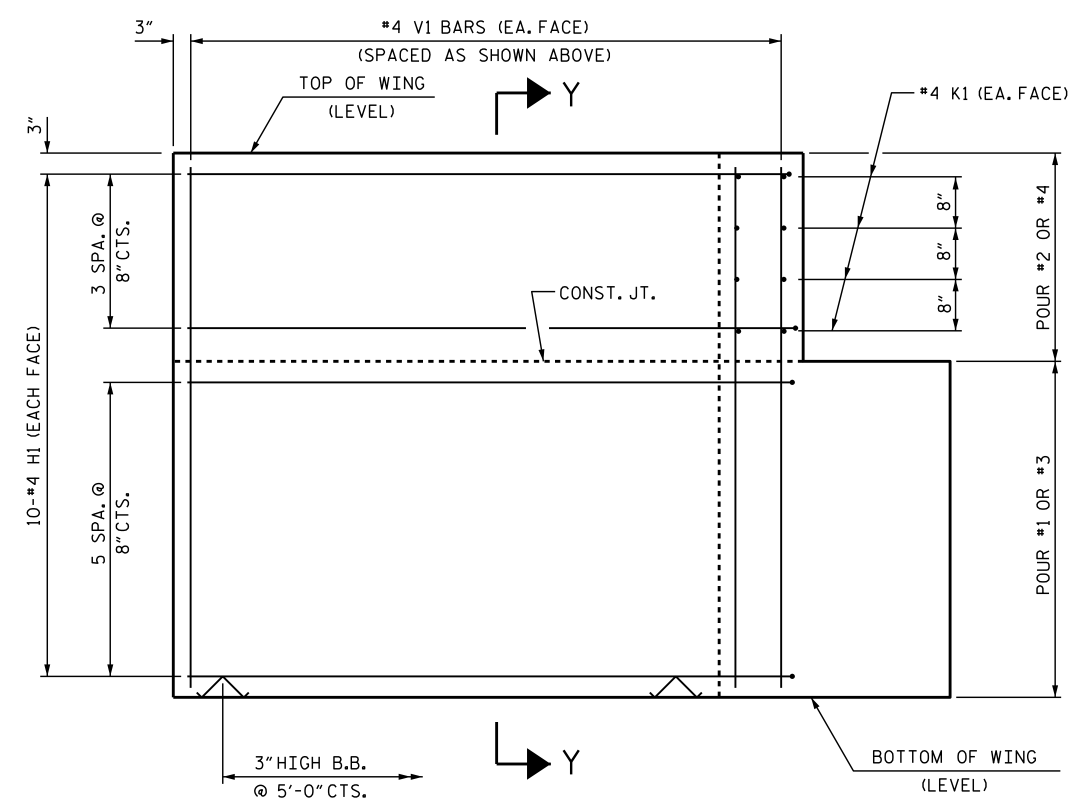


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
END BENT
WING DETAILS

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NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS

F9EBC057AC1A4EF...
1/4/2022

WSP USA Inc.
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RALEIGH, NC 27601
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LICENSE NO. F-0165

ASSEMBLED BY:	J. WHEATLEY	DATE:	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE:	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	DEC 2021

DRAWN BY:	WJH	12/11
CHECKED BY:	AAC	12/11

REV. 4/15 MAA/TMG

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2			4			29

STD. NO. EB_33_90S4

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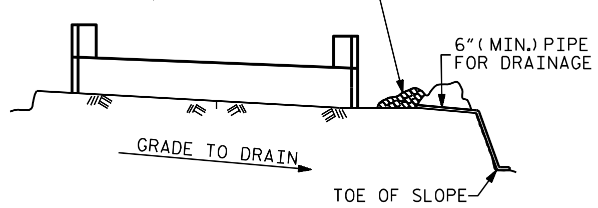
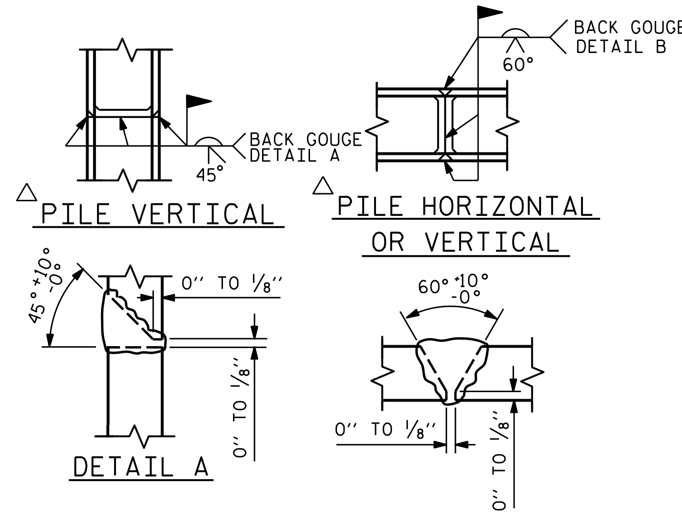


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

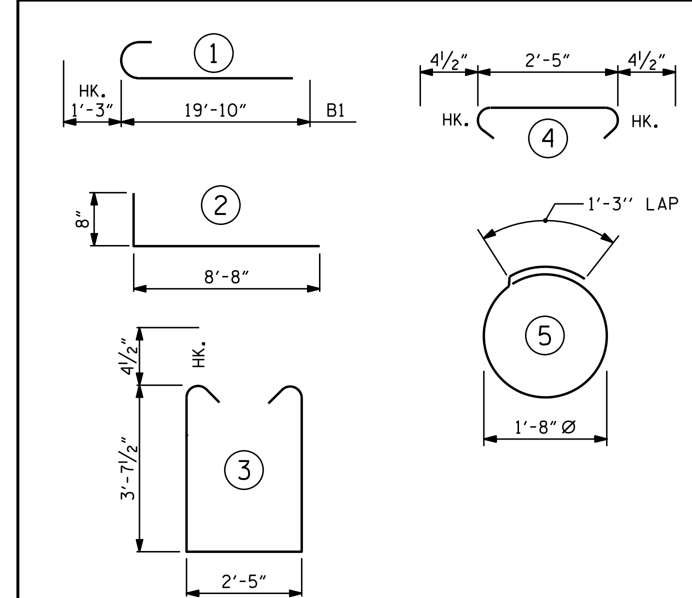
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT 1 - STAGE I	END BENT 2 - STAGE I
HP 12 X 53 STEEL PILES NO: 3 LIN. FT.= 120	HP 12 X 53 STEEL PILES NO: 3 LIN. FT.= 150
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 3	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 3
END BENT 1 - STAGE II	END BENT 2 - STAGE II
HP 12 X 53 STEEL PILES NO: 4 LIN. FT.= 145	HP 12 X 53 STEEL PILES NO: 4 LIN. FT.= 170
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 4	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 4

BILL OF MATERIAL FOR ONE END BENT-STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	21'-1"	573
B2	14	#4	STR	20'-5"	191
B3	5	#4	STR	2'-5"	8
H1	20	#4	2	9'-4"	125
K1	8	#4	STR	2'-11"	16
S1	23	#4	3	10'-5"	160
S2	23	#4	4	3'-2"	49
S3	12	#4	5	6'-6"	52
V1	26	#4	STR	6'-5"	111

REINFORCING STEEL (FOR ONE END BENT-STAGE I) 1285 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT - STAGE I)

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	9.2 C.Y.
POUR #2	UPPER PART OF WINGS	1.2 C.Y.
TOTAL CLASS A CONCRETE		10.4 C.Y.

BILL OF MATERIAL FOR ONE END BENT-STAGE II

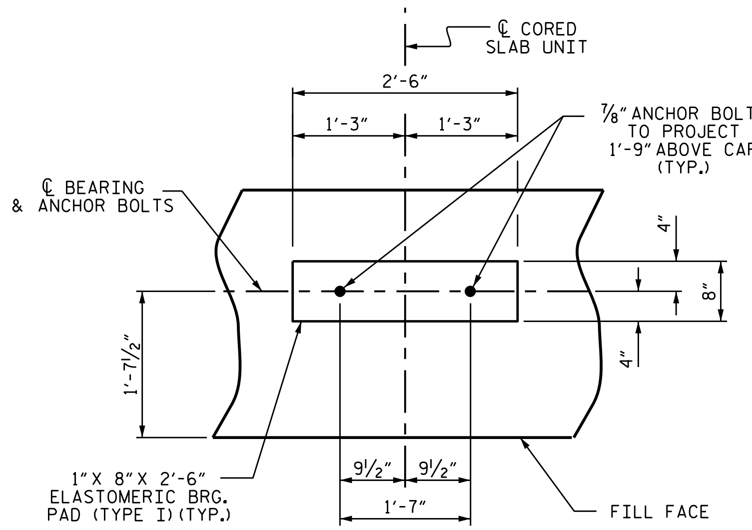
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	21'-1"	573
B3	6	#4	STR	2'-5"	10
B4	14	#4	STR	20'-8"	193
H1	20	#4	2	9'-4"	125
K1	8	#4	STR	2'-11"	16
S1	27	#4	3	10'-5"	188
S2	27	#4	4	3'-2"	57
S3	16	#4	5	6'-6"	69
V1	26	#4	STR	6'-5"	111

REINFORCING STEEL (FOR ONE END BENT-STAGE II) 1343 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT - STAGE II)

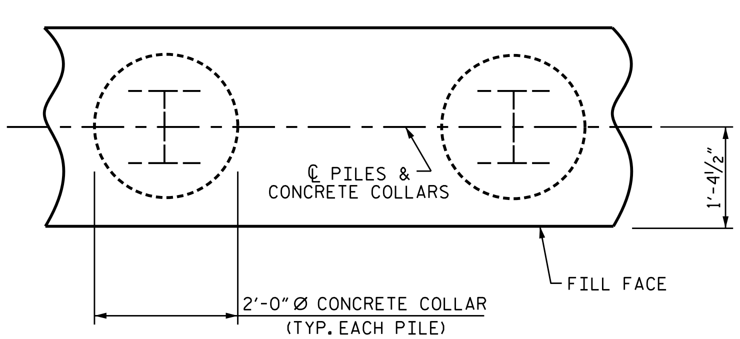
POUR #3	CAP, LOWER PART OF WINGS & COLLARS	10.6 C.Y.
POUR #4	UPPER PART OF WINGS	1.2 C.Y.
TOTAL CLASS A CONCRETE		11.8 C.Y.

REBAR LENGTHS CAN BE ADJUSTED BASED ON SELECTED COUPLER TYPE

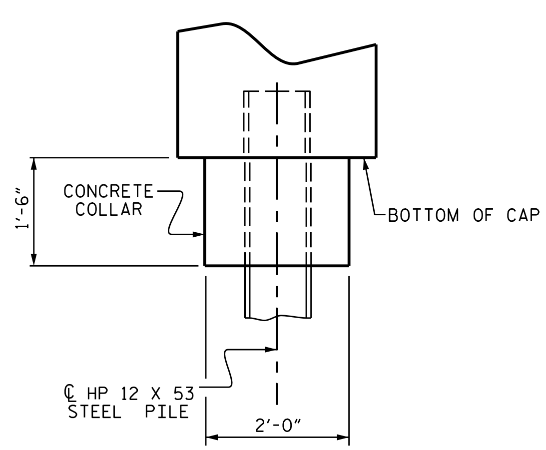


DETAIL "A"

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



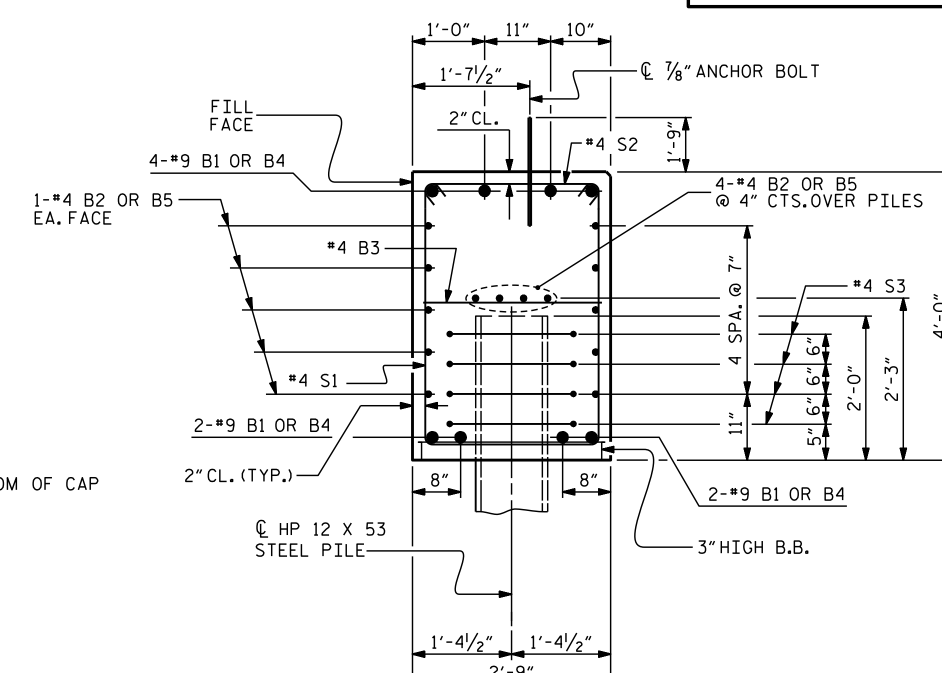
PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

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



SECTION A-A

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

PROJECT NO. 17BP.13.R.155

McDOWELL COUNTY

STATION: 15+78.00 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

END BENT No. 1 & 2 DETAILS

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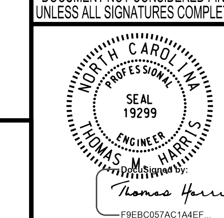

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SHEET NO. S-20
TOTAL SHEETS 29

ASSEMBLED BY:	J. WHEATLEY	DATE:	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE:	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	DEC 2021

DRAWN BY: WJH 12/11
CHECKED BY: AAC 12/11
REV. 4/15 MAA/TMG

12/13/2021
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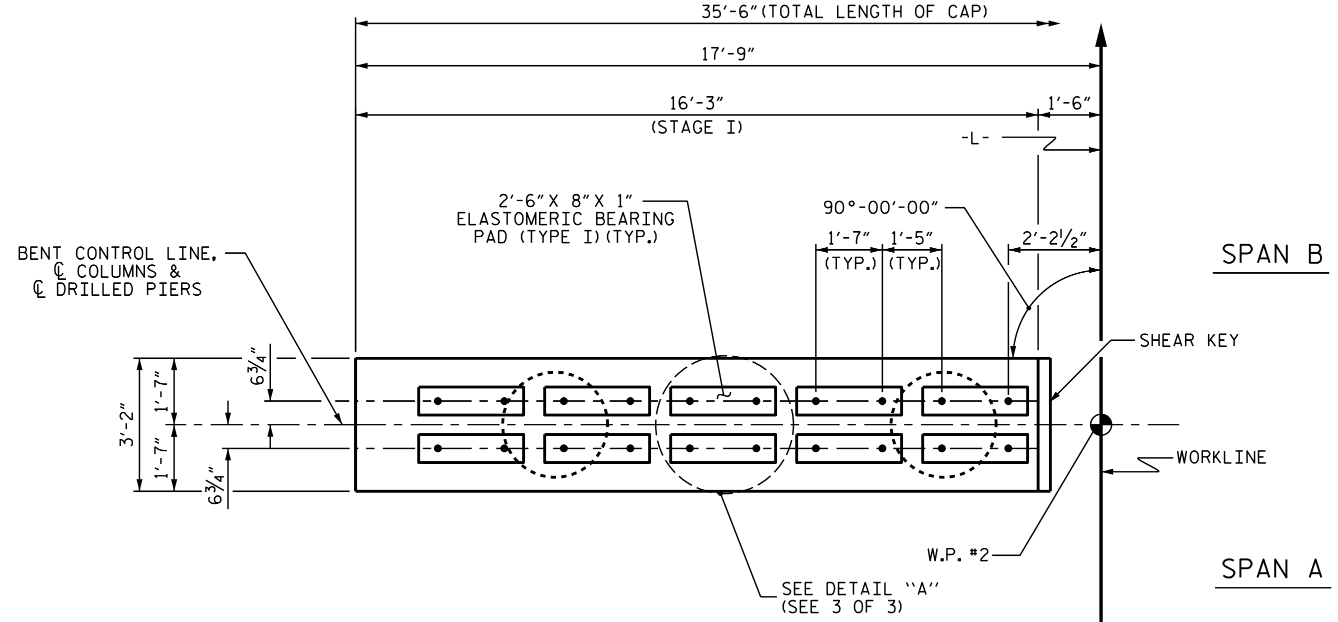
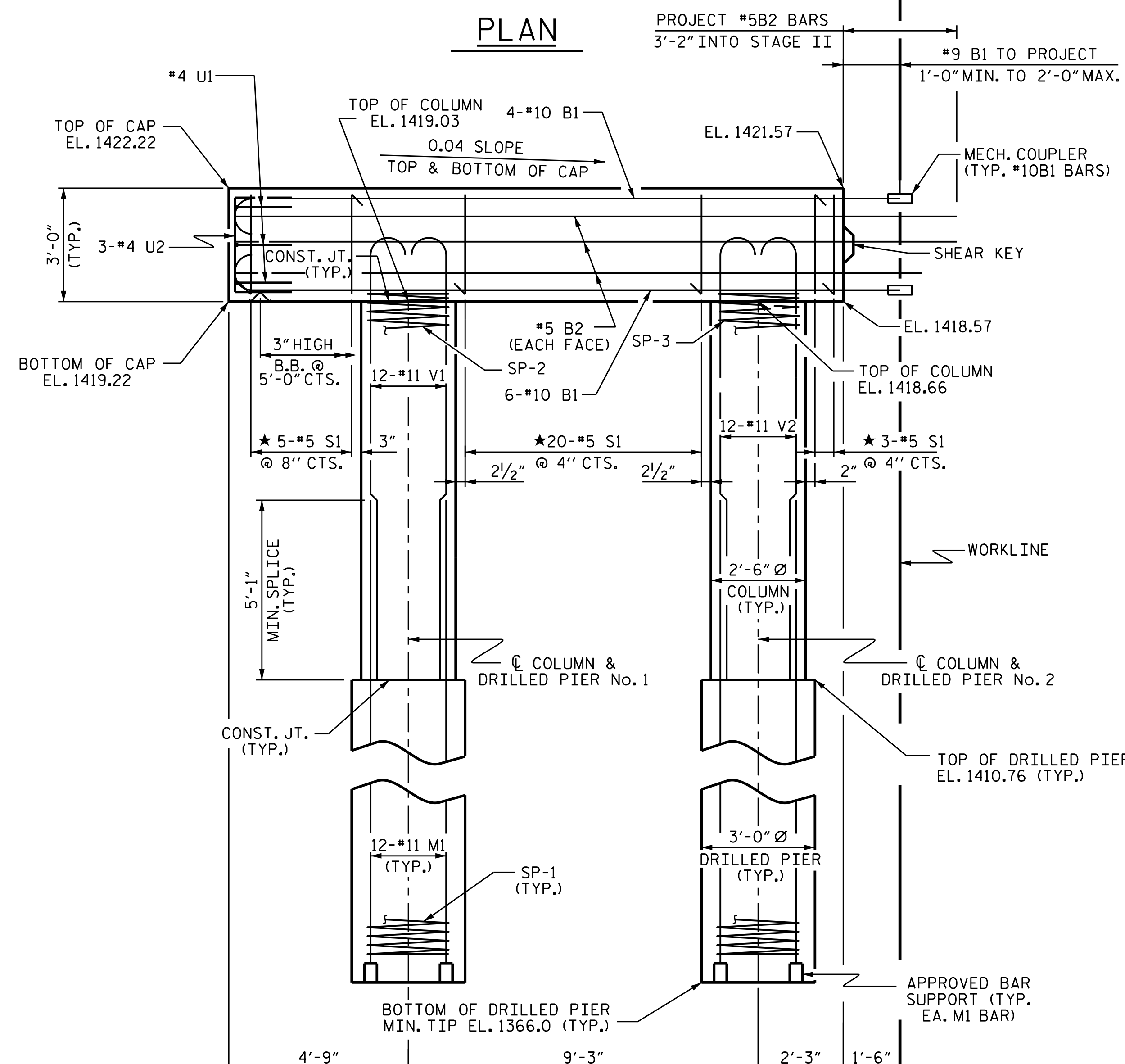
STD. NO. EB_33_90S4



PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

NOTES

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

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

EVERY OTHER HOOK ON "V" BARS MAY BE CUTOFF AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

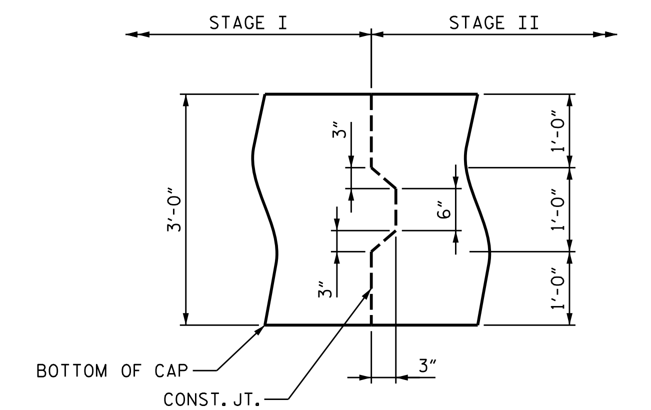
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

MECHANICAL COUPLERS SHALL BE USED TO JOIN #10 "B" BARS IN STAGE I WITH #10 "B" BARS IN STAGE II. THE LOCATION OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1 FOOT AND THE BARS SHALL BE CUT ACCORDINGLY TO ALLOW A MINIMUM OF 1'-0" EXTENSION INTO STAGE II CONSTRUCTION.



SECTION THRU SHEAR KEY

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1
STAGE I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			29

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19299 THOMAS M. HARRIS
DocuSigned by: Thomas Harris
F9EBC057AC1A4EF...
1/4/2022

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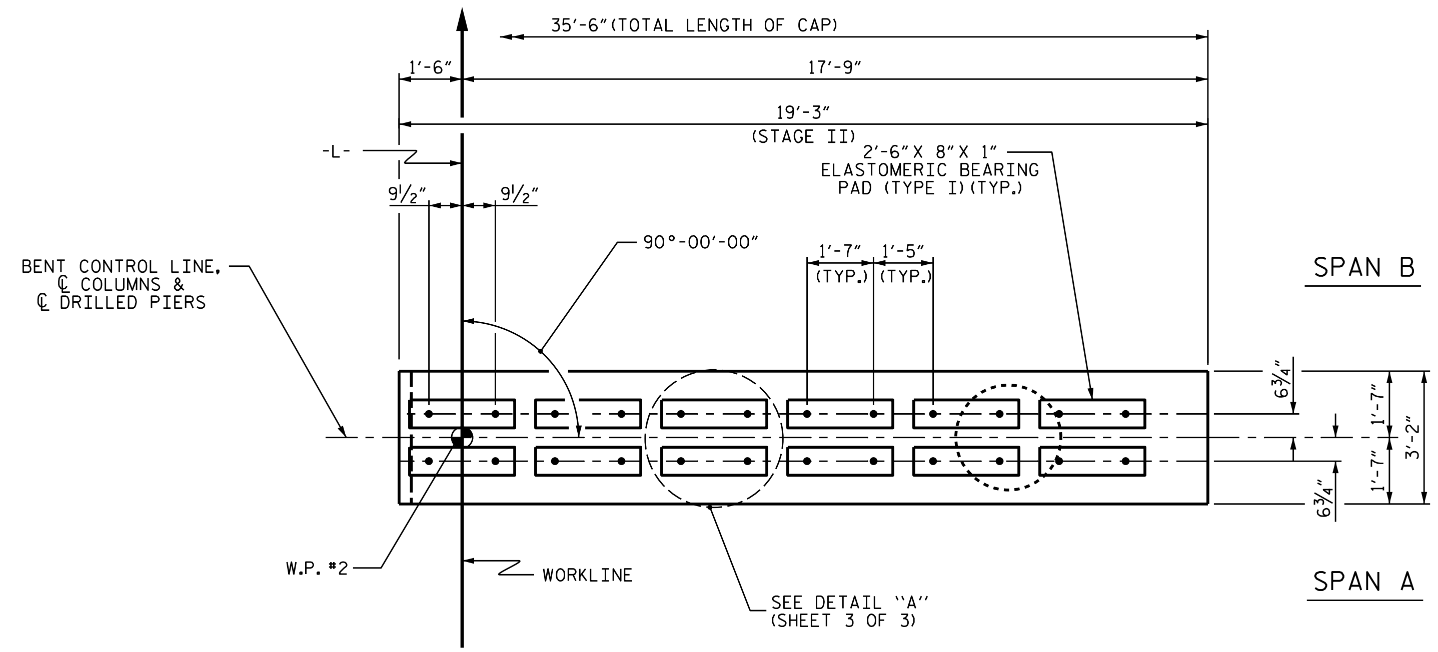
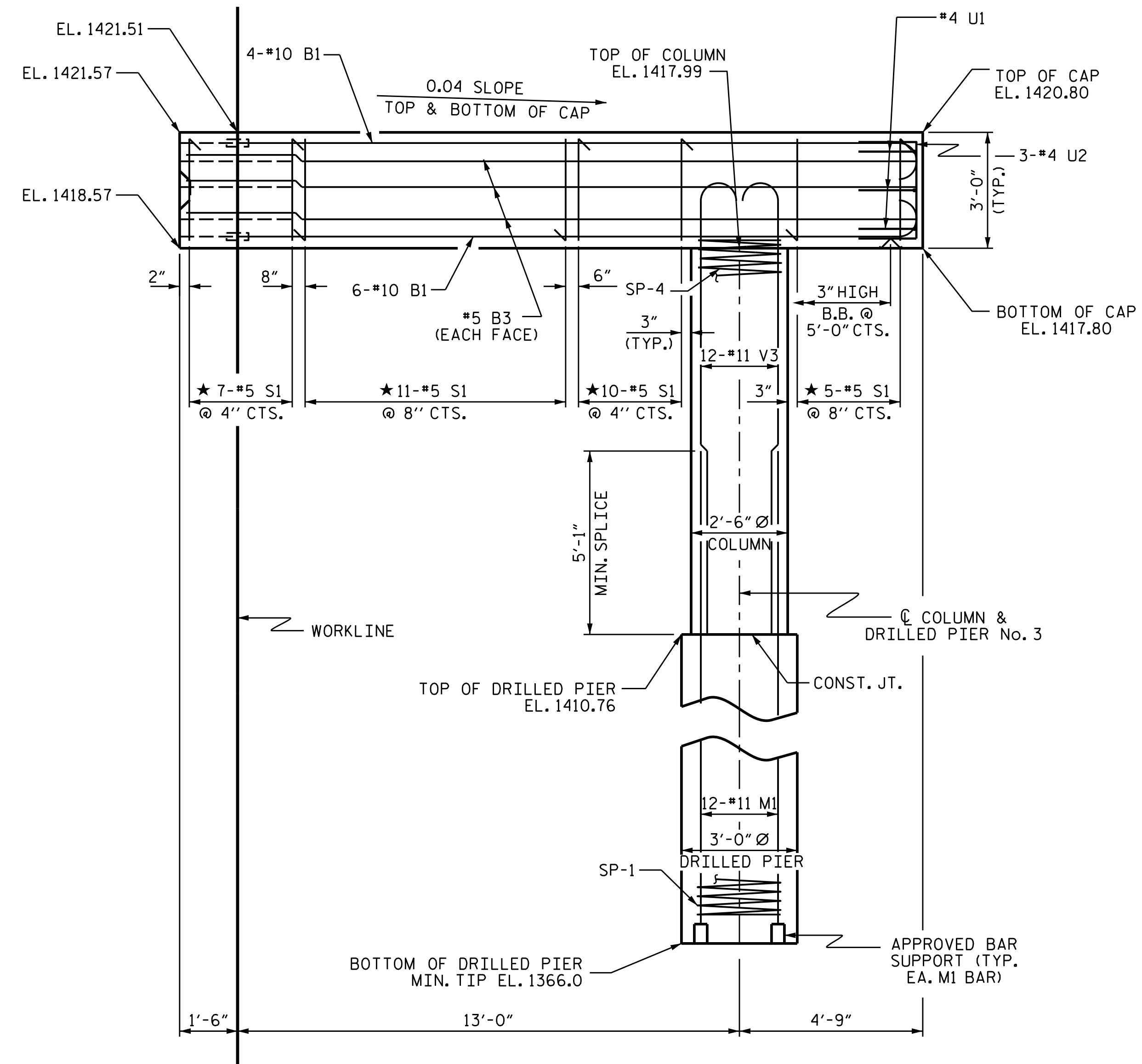
CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

NOTES

FOR NOTES, SEE SHEET 1 OF 3.



PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL
FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1
STAGE II

DESIGNED BY:	J. WHEATLEY	DATE :	DEC 2021
DRAWN BY:	J. WHEATLEY	DATE :	DEC 2021
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DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

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NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS

Thomas Harris
F9EBC057AC1A4EF...
1/4/2022

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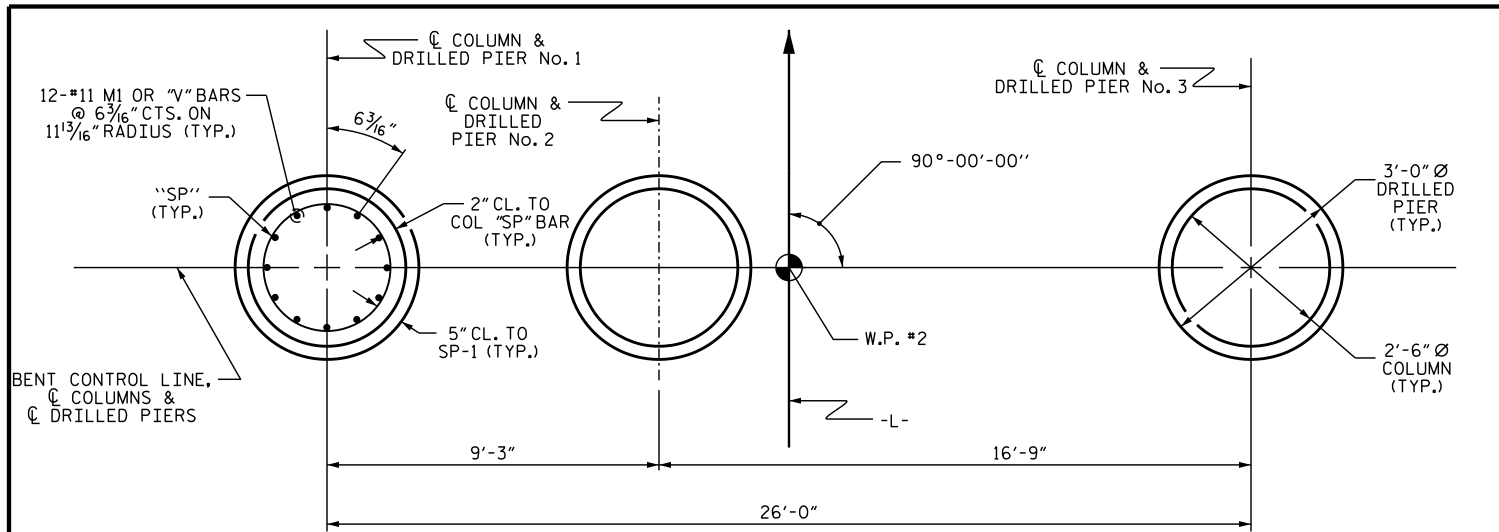
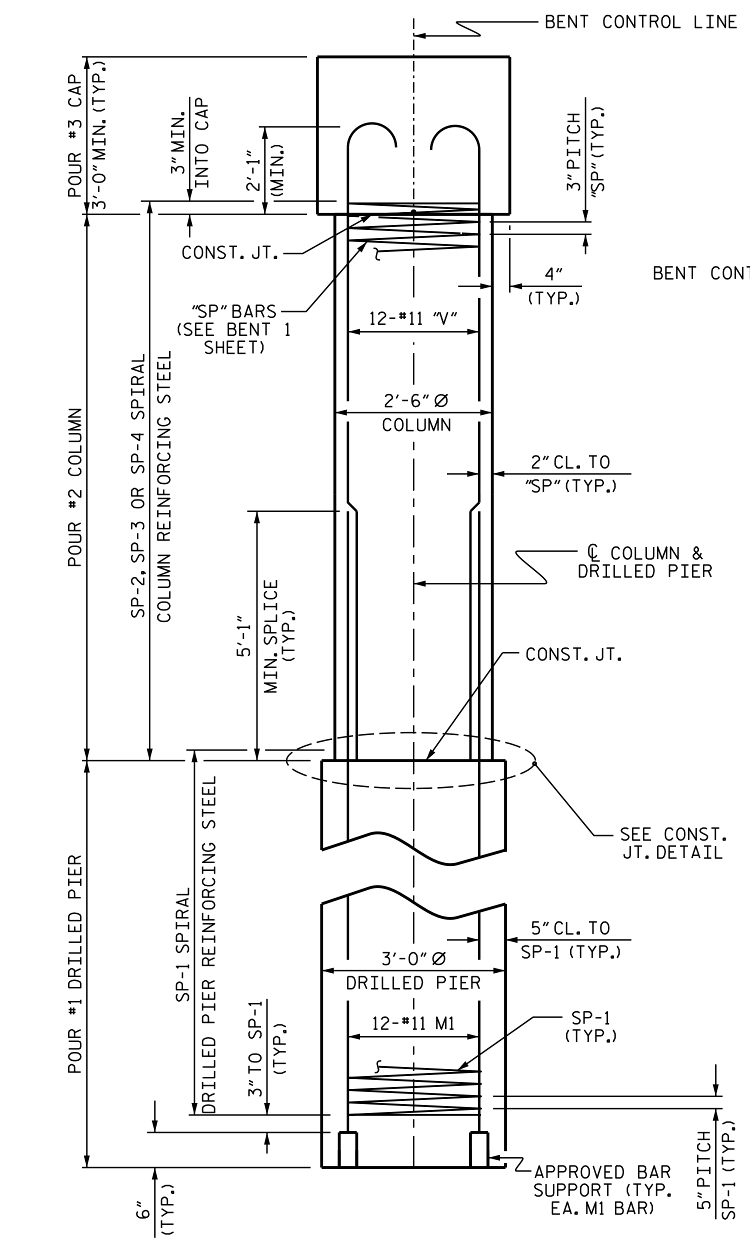
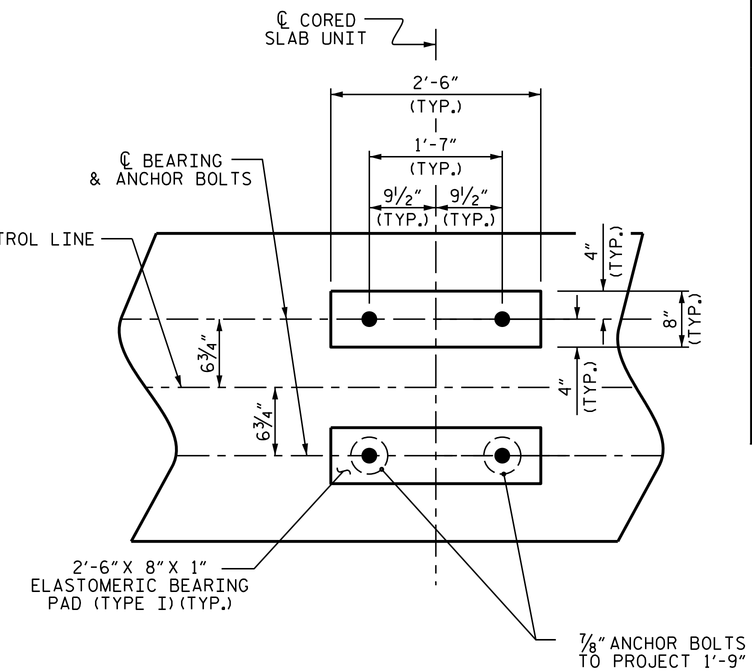


PLAN OF DRILLED PIERS & COLUMNS

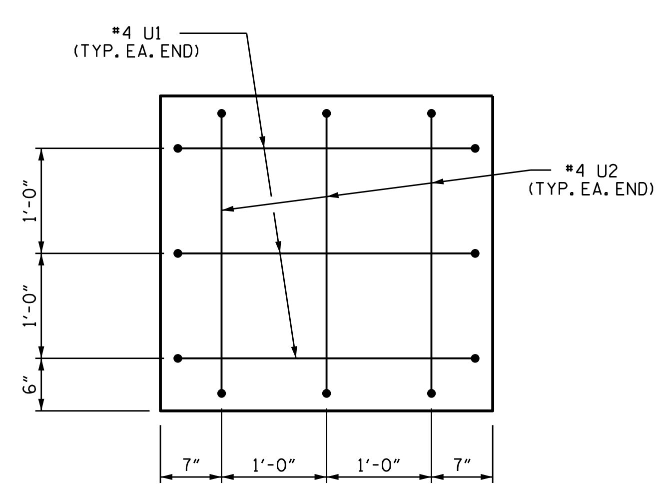


END ELEVATION



DETAIL "A"

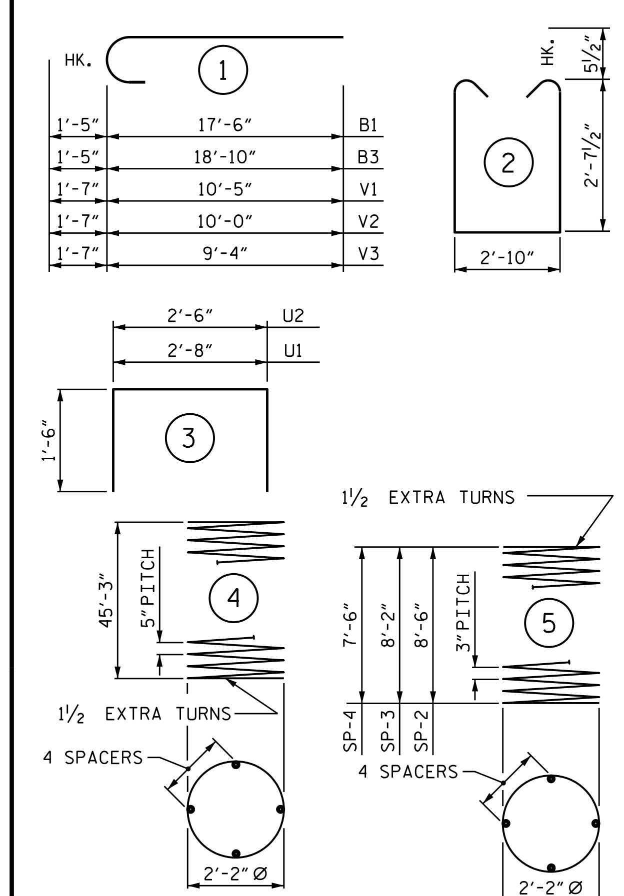
(DIMENSIONS ARE TYPICAL EACH BEARING)



END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BENT 1 FOUNDATION RECOMMENDATION TOTALS			
3'-0" Ø DRILLED PIER NOT IN SOIL	30 LIN. FT.	SID TESTING	3 EA.
3'-0" Ø DRILLED PIER IN SOIL	104.3 LIN. FT.	SPT TESTING	6 EA.

BILL OF MATERIAL
BENT 1 - STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#10	1	19'-6"	839
B2	6	#5	STR	19'-3"	120
M1	24	#11	STR	52'-5"	6684
S1	28	#5	2	9'-0"	263
U1	3	#4	3	5'-8"	11
U2	3	#4	3	5'-6"	11
V1	12	#11	1	12'-0"	765
V2	12	#11	1	11'-7"	739
REINFORCING STEEL (BENT 1 - STAGE I)					9432 LBS.
SP-1	2	*	4	736'-7"	1537
SP-2	1	**	5	245'-3"	164
SP-3	1	**	5	238'-5"	159
SPIRAL COLUMN REINFORCING STEEL (BENT 1 - STAGE I)					1860 LBS.

*THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

**THE SP-2 AND SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (BENT 1 - STAGE I)	
POUR #2 (COLUMNS)	2.9 C.Y.
POUR #3 (CAP)	5.7 C.Y.
TOTAL CLASS A CONCRETE	8.6 C.Y.

DRILLED PIERS: (BENT 1 - STAGE I)	
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	23.4 C.Y.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	23.5 LIN. FT.
CSL TUBES	369.1 LIN. FT.

BILL OF MATERIAL
BENT 1 - STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#10	1	19'-6"	839
B3	6	#5	STR	18'-11"	118
M1	12	#11	STR	52'-5"	3342
S1	33	#5	2	9'-0"	310
U1	3	#4	3	5'-8"	11
U2	3	#4	3	5'-6"	11
V3	12	#11	1	10'-11"	696
REINFORCING STEEL (BENT 1 - STAGE II)					5327 LBS.
SP-1	1	*	4	736'-7"	768
SP-4	1	**	5	218'-0"	146
SPIRAL COLUMN REINFORCING STEEL (BENT 1 - STAGE II)					914 LBS.

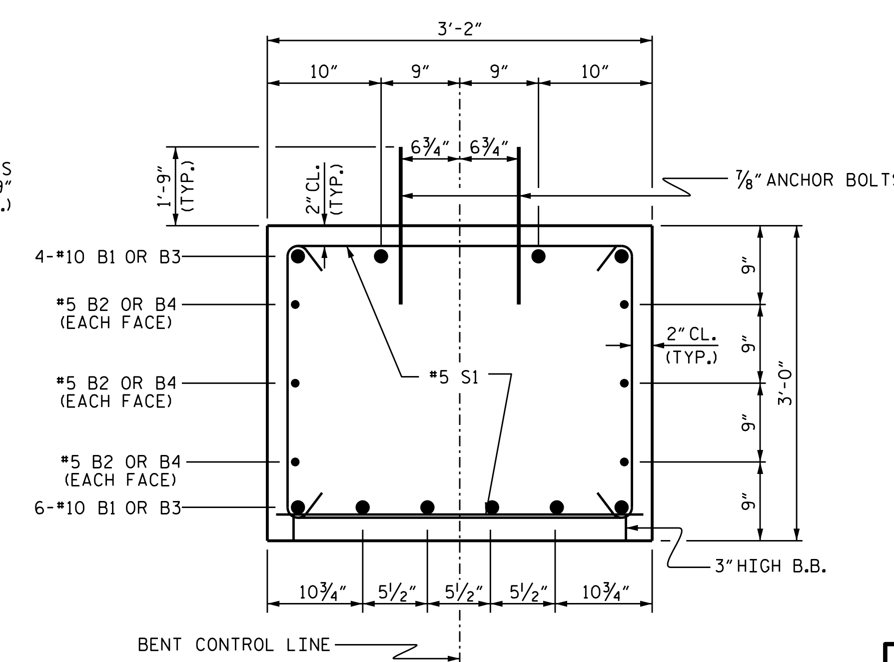
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** THE SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

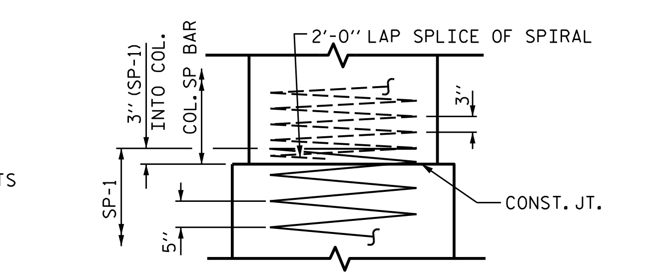
CLASS A CONCRETE BREAKDOWN (BENT 1 - STAGE II)	
POUR #2 (COLUMNS)	1.3 C.Y.
POUR #3 (CAP)	6.8 C.Y.
TOTAL CLASS A CONCRETE	8.1 C.Y.

DRILLED PIERS: (BENT 1 - STAGE II)	
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	11.7 C.Y.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	11.8 LIN. FT.
CSL TUBES	184.5 LIN. FT.

REINFORCEMENT MAY BE ADJUSTED FOR COUPLER TYPE SELECTED.



SECTION THRU CAP



CONSTRUCTION JOINT DETAIL

PROJECT NO. 17BP.13.R.155

McDOWELL COUNTY

STATION: 15+78.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT No. 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS

DocuSigned by: 1/12/2022

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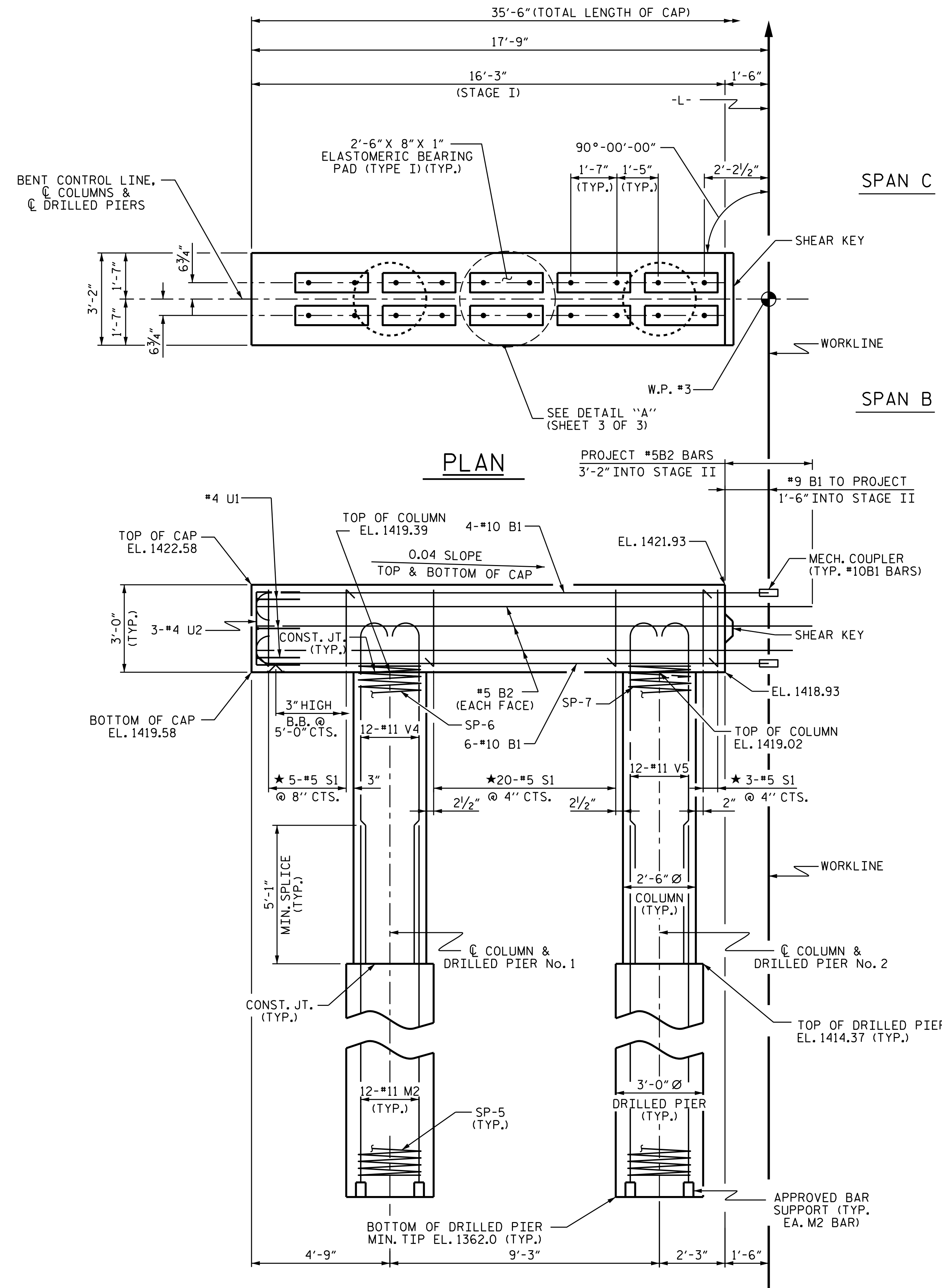
1			3				
2			4				

SHEET NO. S-23

TOTAL SHEETS 29

DESIGNED BY:	J. WHEATLEY	DATE :	DEC 2021
DRAWN BY:	J. WHEATLEY	DATE :	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

NOTES

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

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

EVERY OTHER HOOK ON "V" BARS MAY BE CUTOFF AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

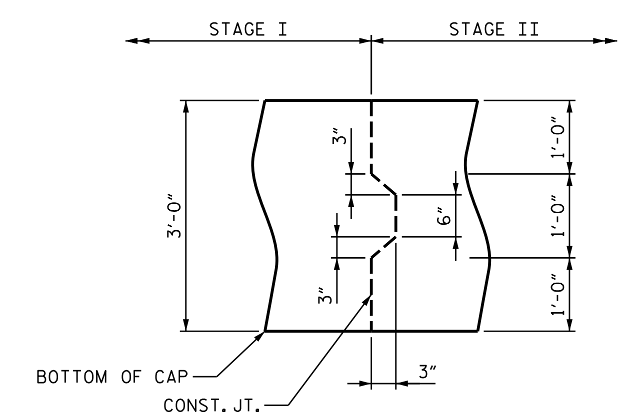
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

MECHANICAL COUPLERS SHALL BE USED TO JOIN #10 "B" BARS IN STAGE I WITH #10 "B" BARS IN STAGE II. THE LOCATION OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1 FOOT AND THE BARS SHALL BE CUT ACCORDINGLY TO ALLOW A MINIMUM OF 1'-0" EXTENSION INTO STAGE II CONSTRUCTION.



SECTION THRU SHEAR KEY

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2
STAGE I

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
Thomas Harris
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1/4/2022

WSP
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LICENSE NO. F-0165

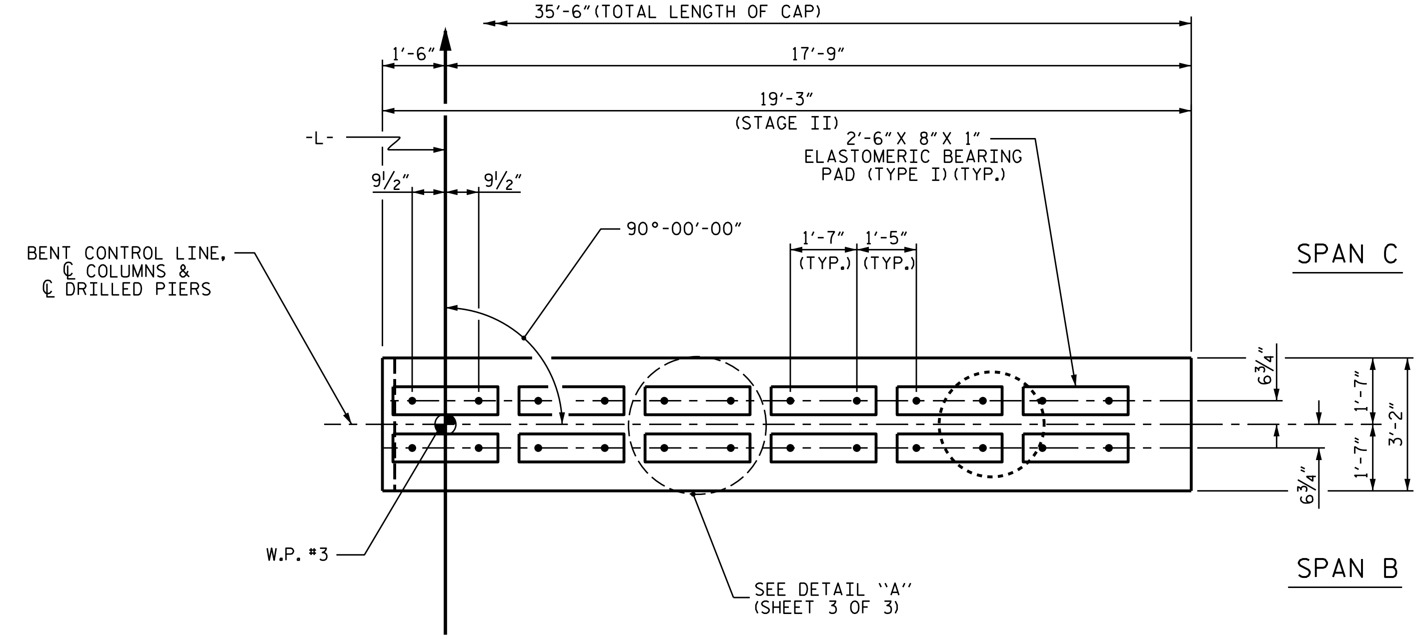
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-24
TOTAL SHEETS 29

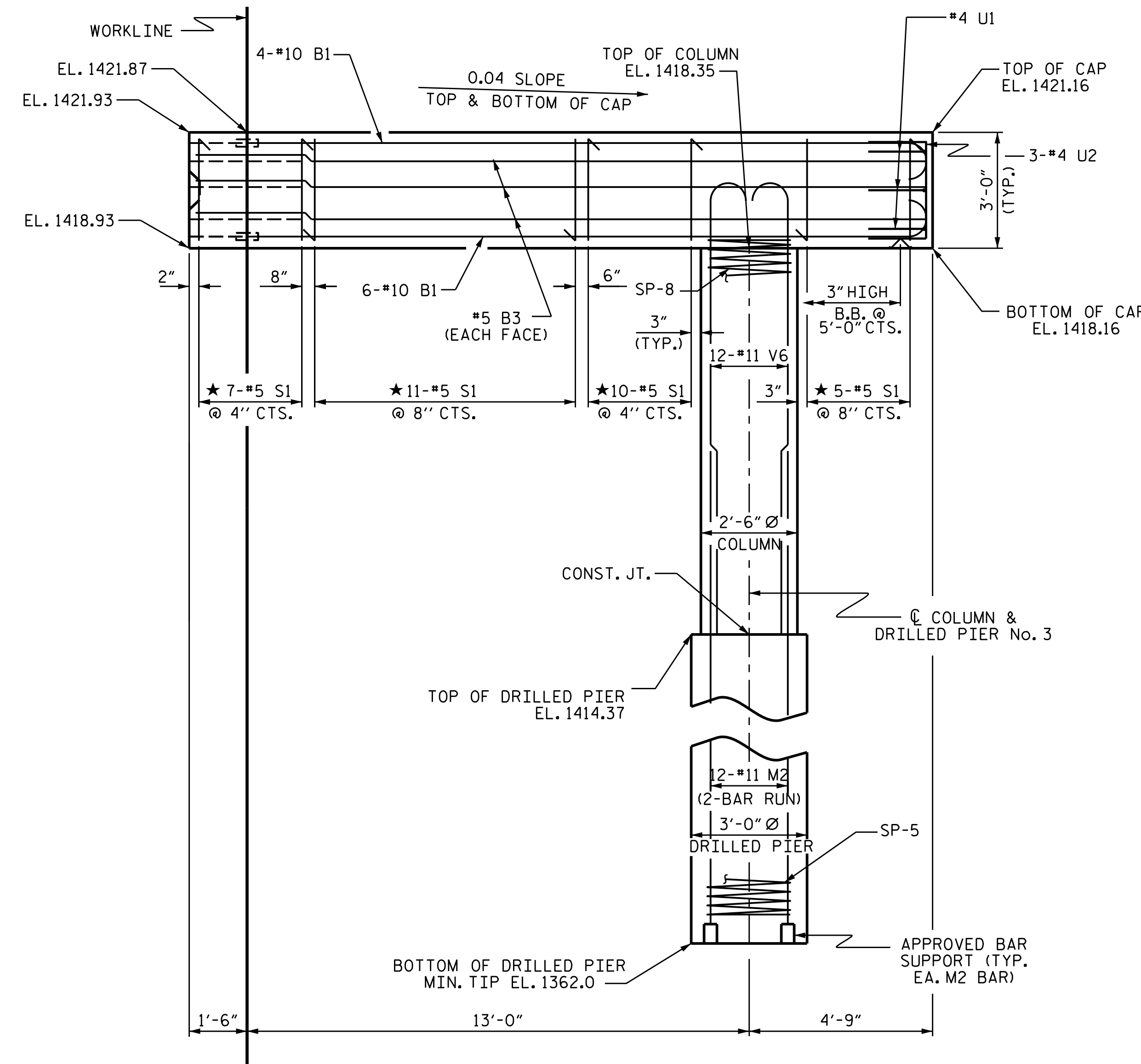
DESIGNED BY:	J. WHEATLEY	DATE :	DEC 2021
DRAWN BY:	J. WHEATLEY	DATE :	DEC 2021
CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

NOTES

FOR NOTES, SEE SHEET 1 OF 3.



PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL
FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2
STAGE II

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			29

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NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS

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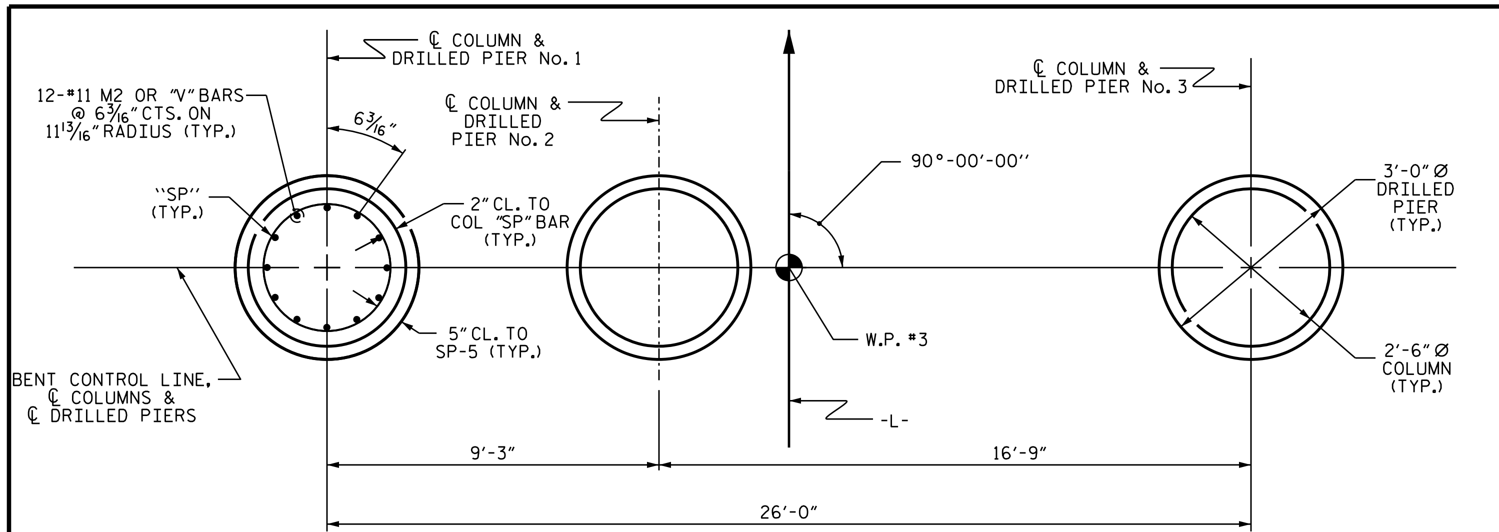
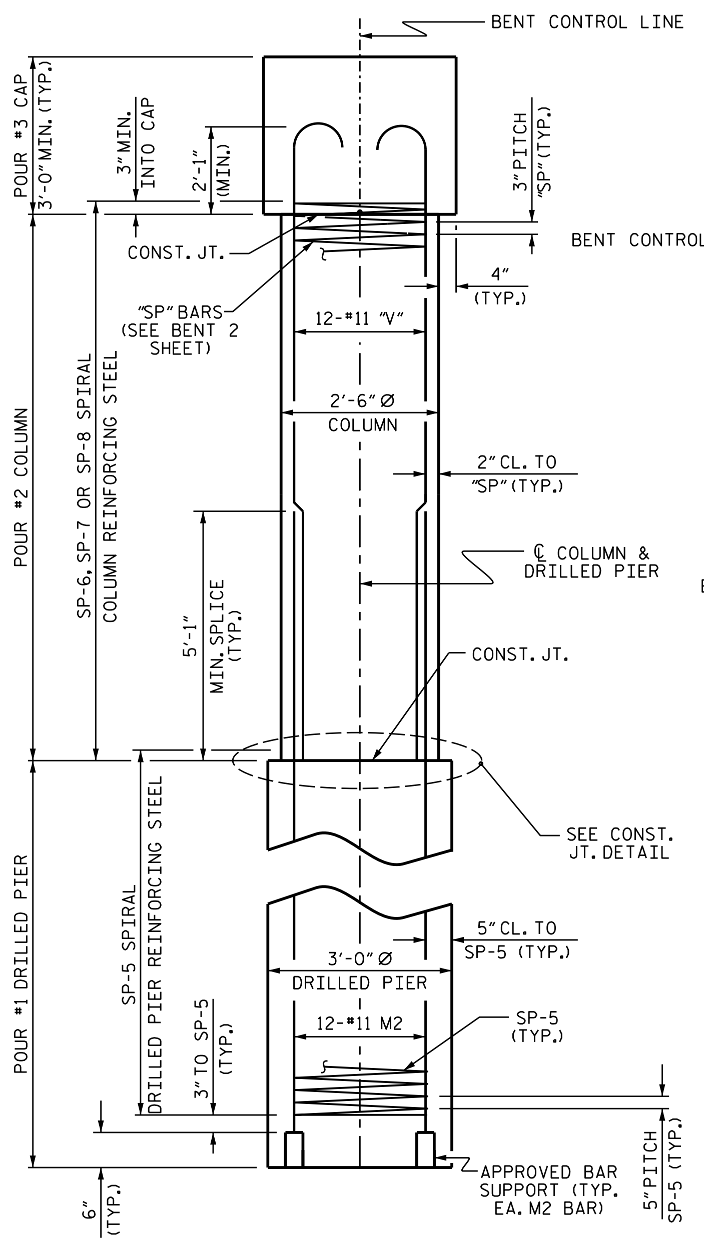
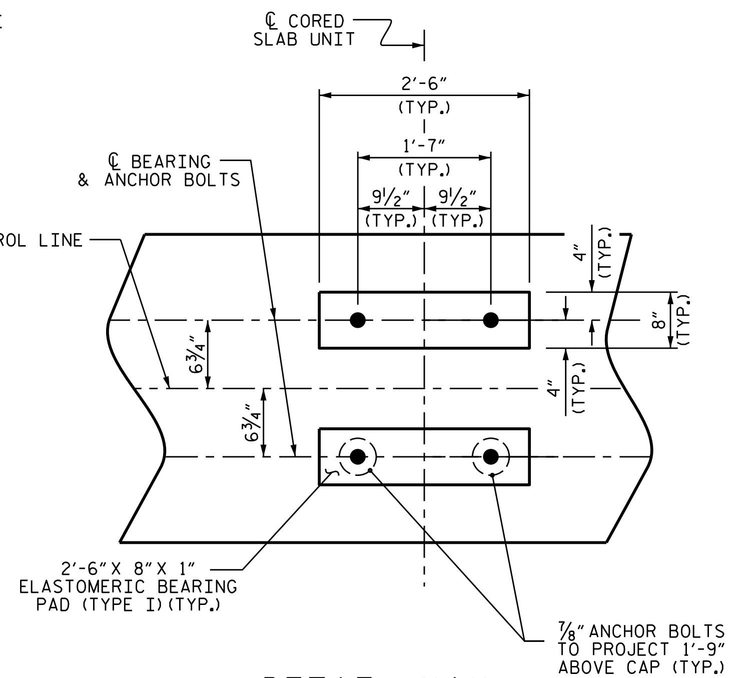
J:\188360C - 2015 W Divisions Planning & Design On-Call\I188360 Division 13 Bridges\17BP.13.R.155 McDowell 267\Structures\Drafting\DGNs\401_049_17BP.13.R.155_SMU_IB202.dgn



PLAN OF DRILLED PIERS & COLUMNS

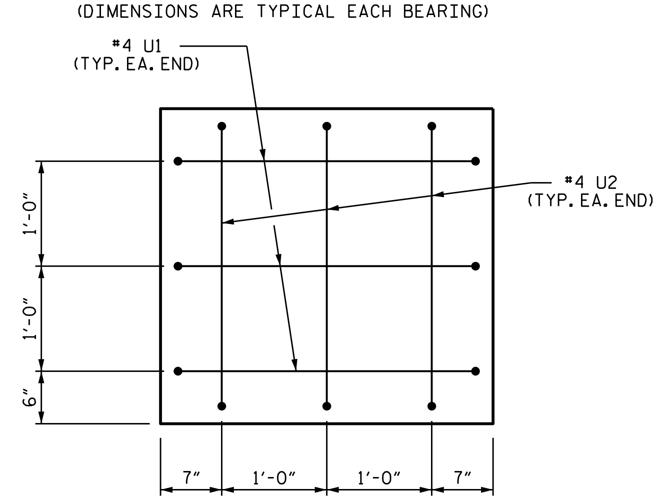


END ELEVATION



DETAIL "A"

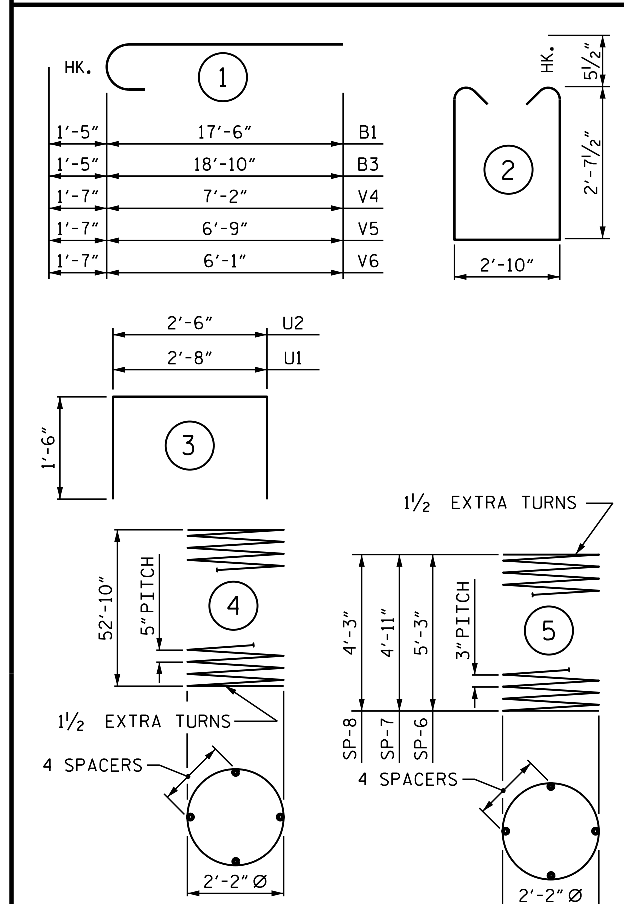
(DIMENSIONS ARE TYPICAL EACH BEARING)



END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BENT 2 FOUNDATION RECOMMENDATION TOTALS	
3'-0" Ø DRILLED PIER NOT IN SOIL 28 LIN. FT.	SID INSPECTIONS 3 EA.
3'-0" Ø DRILLED PIER IN SOIL 129.1 LIN. FT.	SPT TESTING 6 EA.

BILL OF MATERIAL

BENT 2 - STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#10	1	19'-6"	839
B2	6	#5	STR	19'-3"	120
M2	24	#11	STR	60'-0"	7651
S1	28	#5	2	9'-0"	263
U1	3	#4	3	5'-8"	11
U2	3	#4	3	5'-6"	11
V4	12	#11	1	8'-9"	558
V5	12	#11	1	8'-4"	531
REINFORCING STEEL (BENT 2 - STAGE I)					9984 LBS.
SP-5	2	*	4	859'-4"	1793
SP-6	1	**	5	156'-8"	105
SP-7	1	**	5	149'-11"	100
SPIRAL COLUMN REINFORCING STEEL (BENT 2 - STAGE I)					1998 LBS.

* THE SP-5 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** THE SP-6 AND SP-7 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (BENT 2 - STAGE I)	
POUR #2 (COLUMNS)	1.8 C.Y.
POUR #3 (CAP)	5.7 C.Y.
TOTAL CLASS A CONCRETE	7.5 C.Y.

DRILLED PIERS: (BENT 2 - STAGE I)	
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	27.4 C.Y.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	30.7 LIN. FT.
CSL TUBES	431.0 LIN. FT.

BILL OF MATERIAL

BENT 2 - STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#10	1	19'-6"	839
B3	6	#5	STR	18'-11"	118
M2	12	#11	STR	60'-0"	3825
S1	33	#5	2	9'-0"	310
U1	3	#4	3	5'-8"	11
U2	3	#4	3	5'-6"	11
V6	12	#11	1	7'-8"	489
REINFORCING STEEL (BENT 2 - STAGE II)					5603 LBS.
SP-5	1	*	4	859'-4"	896
SP-8	1	**	5	129'-5"	86
SPIRAL COLUMN REINFORCING STEEL (BENT 2 - STAGE II)					982 LBS.

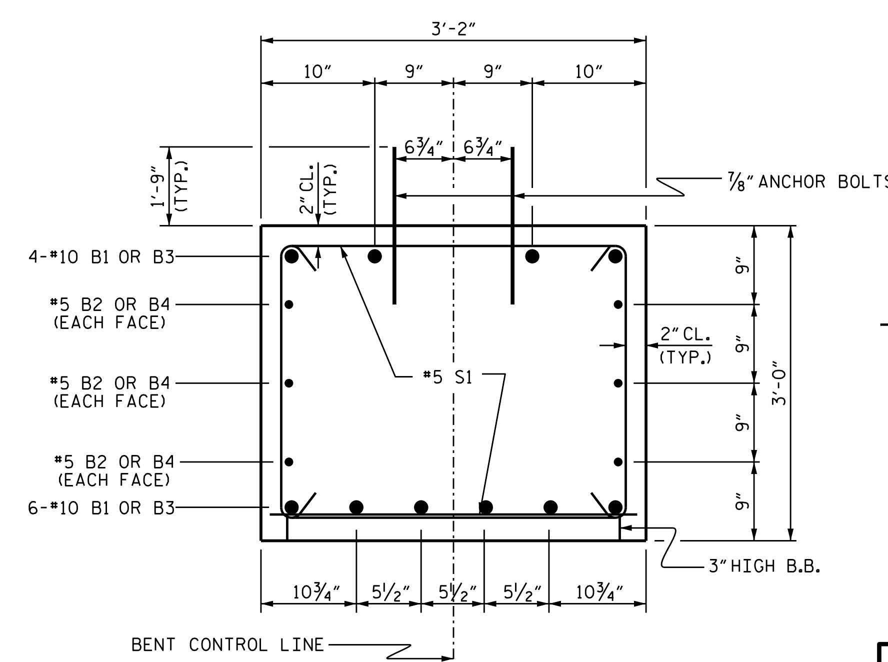
* THE SP-5 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** THE SP-8 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

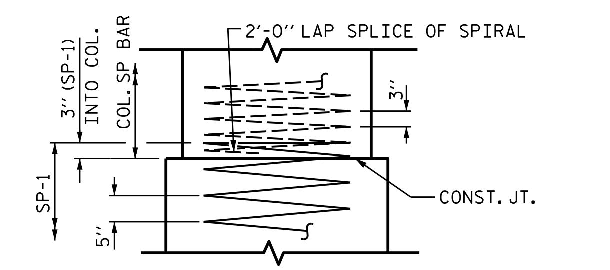
CLASS A CONCRETE BREAKDOWN (BENT 2 - STAGE II)	
POUR #2 (COLUMNS)	0.7 C.Y.
POUR #3 (CAP)	6.8 C.Y.
TOTAL CLASS A CONCRETE	7.5 C.Y.

DRILLED PIERS: (BENT 2 - STAGE II)	
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	13.7 C.Y.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	15.4 LIN. FT.
CSL TUBES	215.5 LIN. FT.

REINFORCEMENT MAY BE ADJUSTED FOR COUPLER TYPE SELECTED.



SECTION THRU CAP



CONSTRUCTION JOINT DETAIL

PROJECT NO. 17BP.13.R.155

McDOWELL COUNTY

STATION: 15+78.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BENT No. 2

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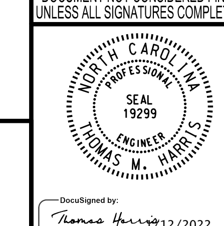

WSP USA Inc.
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LICENSE NO. F-0165

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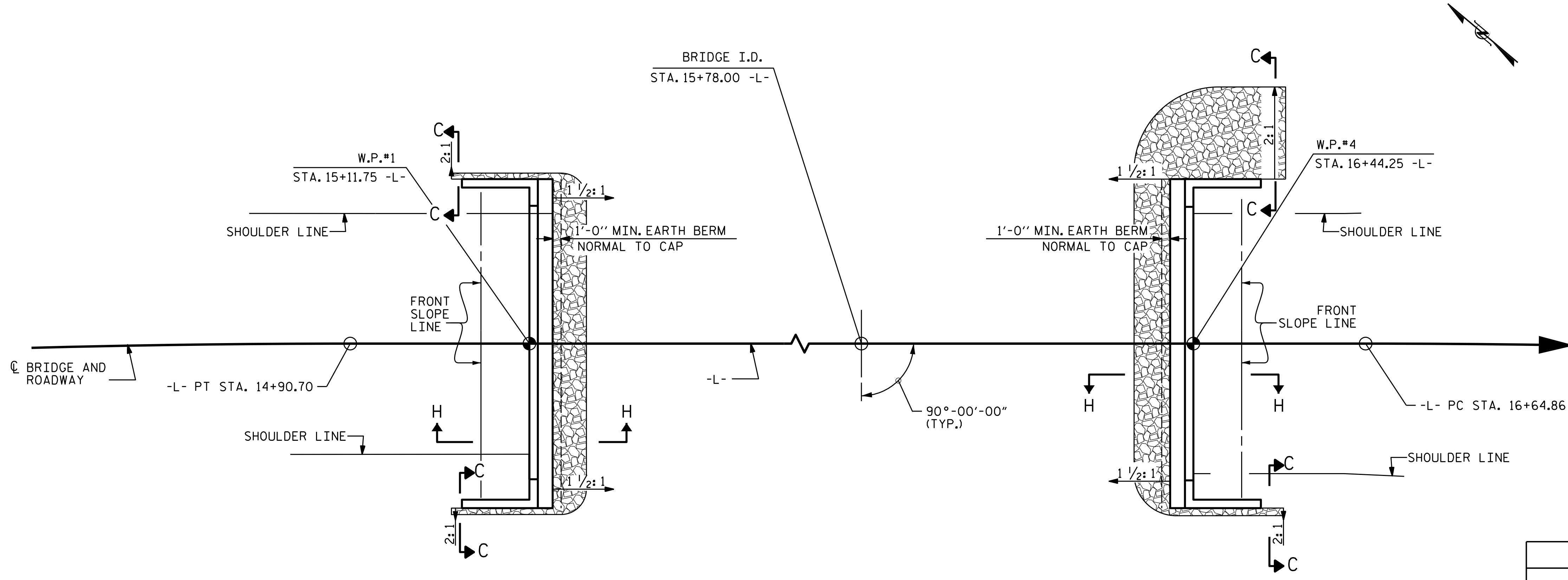
CHECKED BY:	T. KIRSCHBAUM	DATE :	DEC 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	DEC 2021

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

SHEET NO. S-26

TOTAL SHEETS 29

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



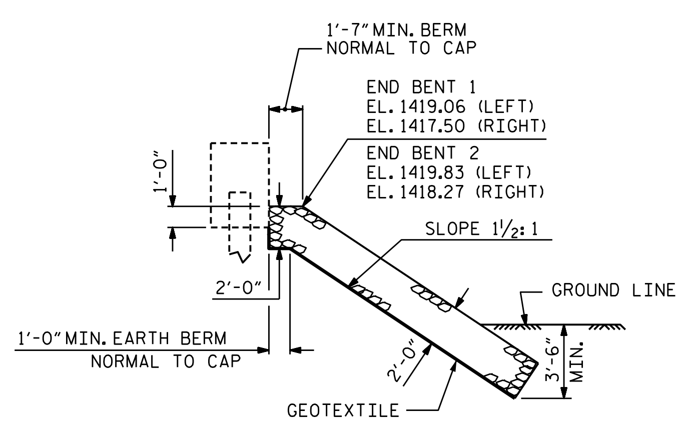
END BENT 1

PLAN

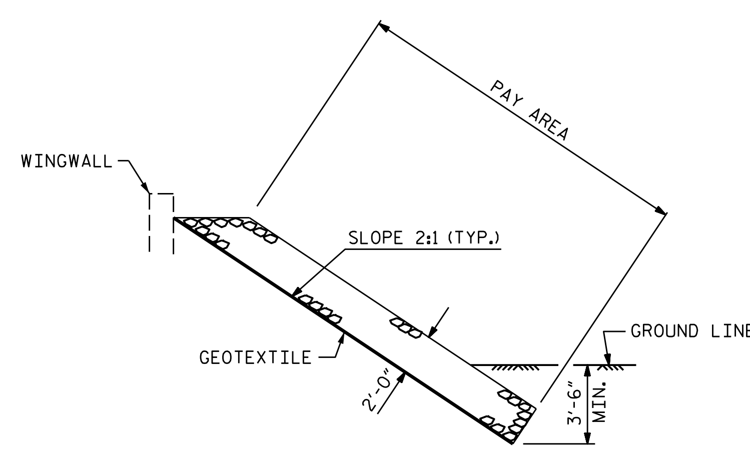
END BENT 2

BRIDGE @ STA. 15+78.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	74	82
END BENT 2	81	90

ESTIMATED QUANTITIES



SECTION H-H



SECTION C-C

PROJECT NO. 17BP.13.R.155
McDOWELL COUNTY
STATION: 15+78.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

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NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS
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NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.	S-27
1			3			TOTAL SHEETS	29
2			4				

ASSEMBLED BY: J. WHEATLEY DATE : DEC 2021
CHECKED BY: T. KIRSCHBAUM DATE : DEC 2021
DESIGN ENGINEER OF RECORD: T. HARRIS DATE : DEC 2021

DRAWN BY : REK 1/84
CHECKED BY : RDU 1/84

REV. 10/1/11 MAA/GM
REV. 12/21/11 MAA/GM
REV. 12/17 MAA/THC

STD. NO. RR1 (Sht 2)

12/13/2021
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NOTES

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

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

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

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

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

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

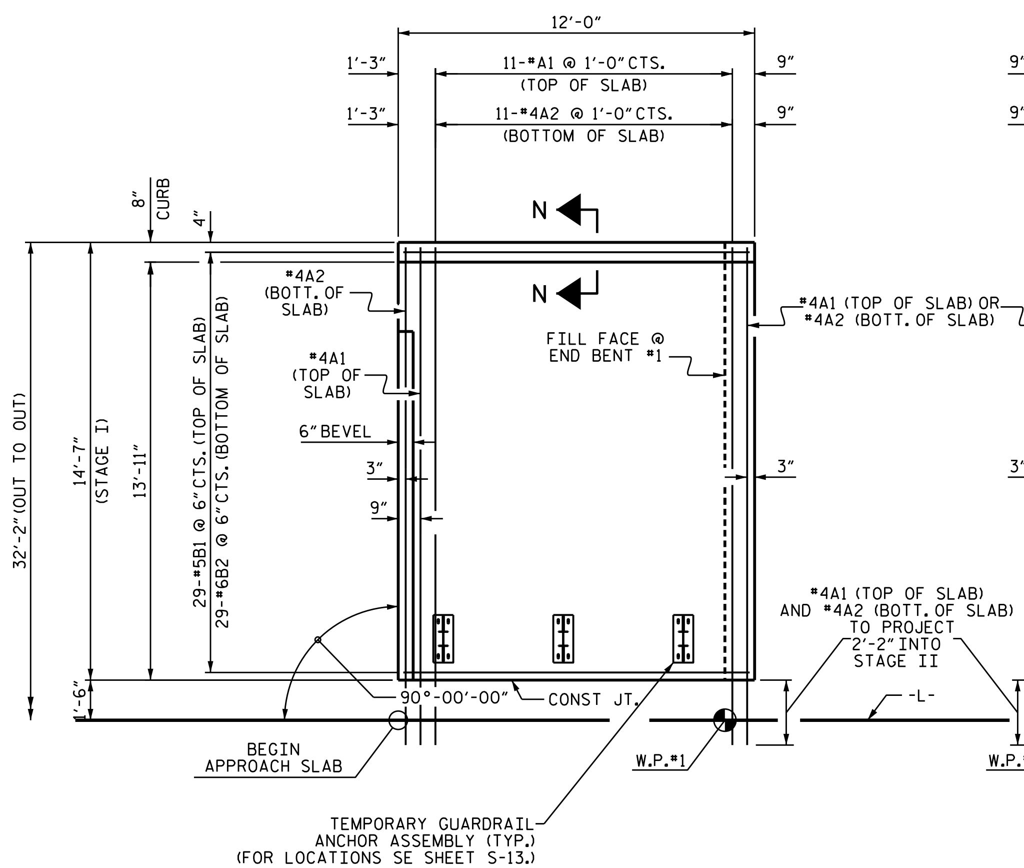
APPLY TYPE 4 OR 5 GEOTEXTILE ONE FOOT BELOW THE APPROACH SLAB FOR THE FULL WIDTH OF THE APPROACH FILL.

BILL OF MATERIAL

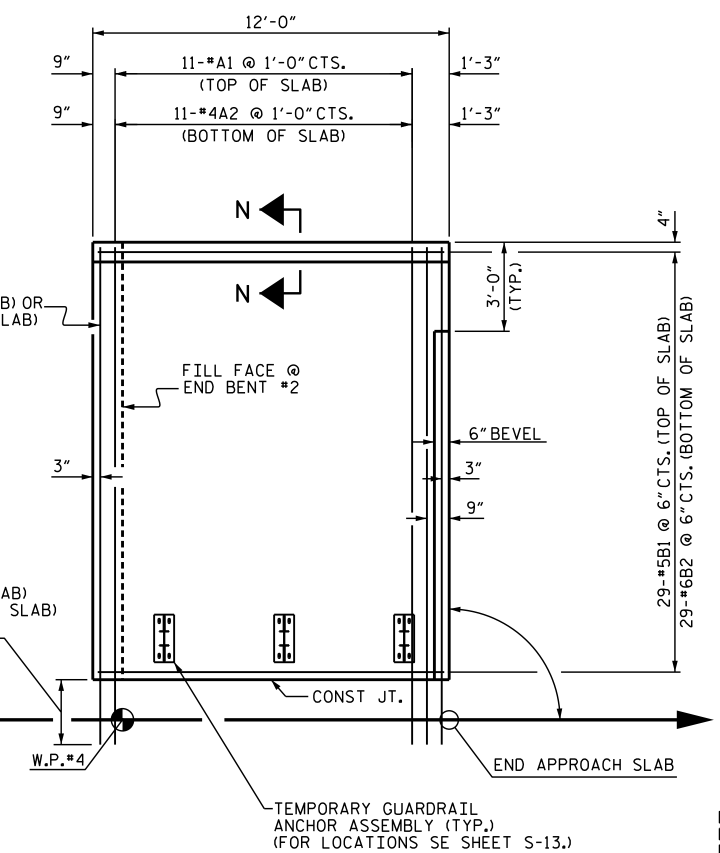
APPROACH SLAB AT ONE END BENT - STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
∗ A1	13	#4	STR	16'-7"	144
A2	13	#4	STR	16'-7"	144
∗ B1	29	#5	STR	11'-2"	338
B2	29	#6	STR	11'-8"	508

REINFORCING STEEL	LBS.	652
∗ EPOXY COATED REINFORCING STEEL	LBS.	482
CLASS AA CONCRETE	C. Y.	8.9

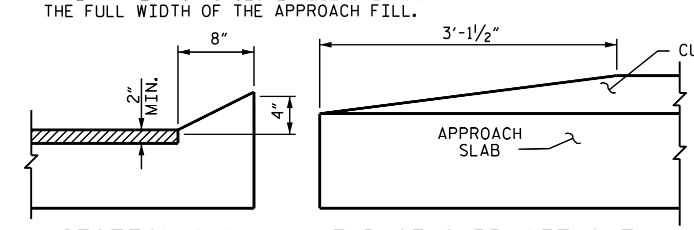


PLAN @ END BENT #1 - STAGE I



PLAN @ END BENT #2 - STAGE I

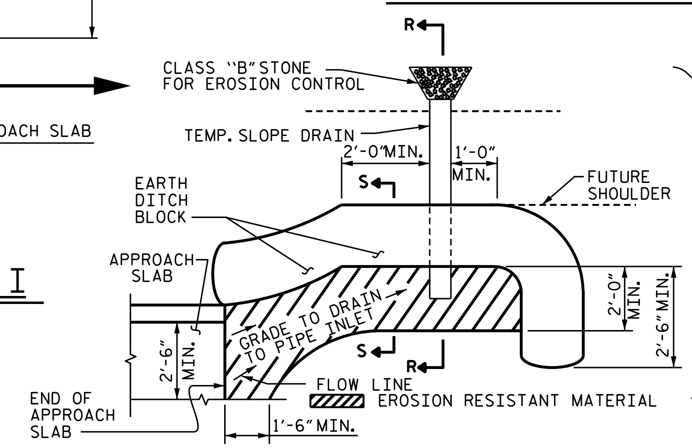
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION N-N

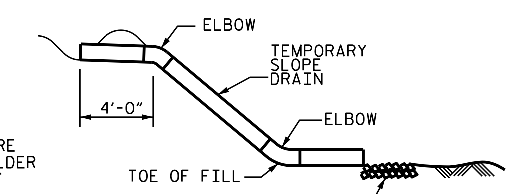
END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

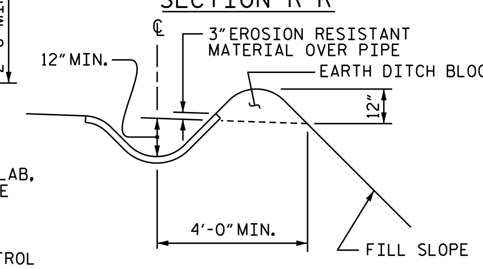


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



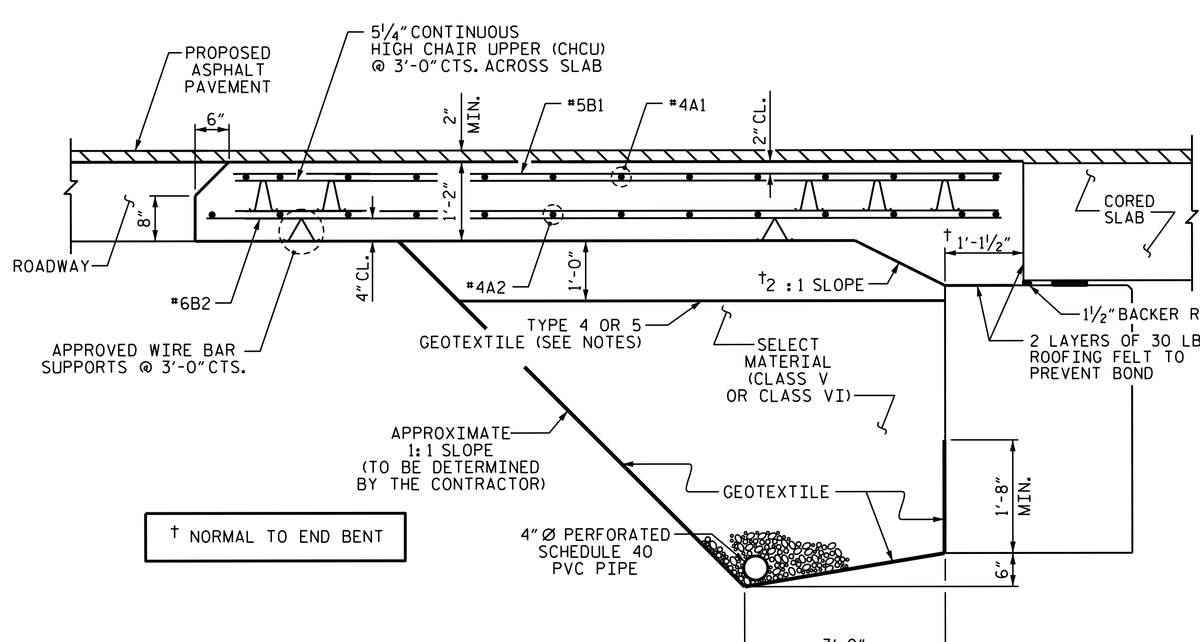
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

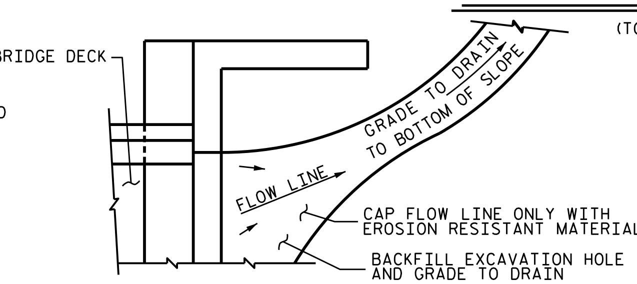
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



† NORMAL TO END BENT

SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH FILL)



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

TEMPORARY DRAINAGE DETAIL

SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

PROJECT NO. 17BP.13.R.155

McDOWELL COUNTY

STATION: 15+78.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS

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1/4/2022

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SHEET NO. S-28
TOTAL SHEETS 29

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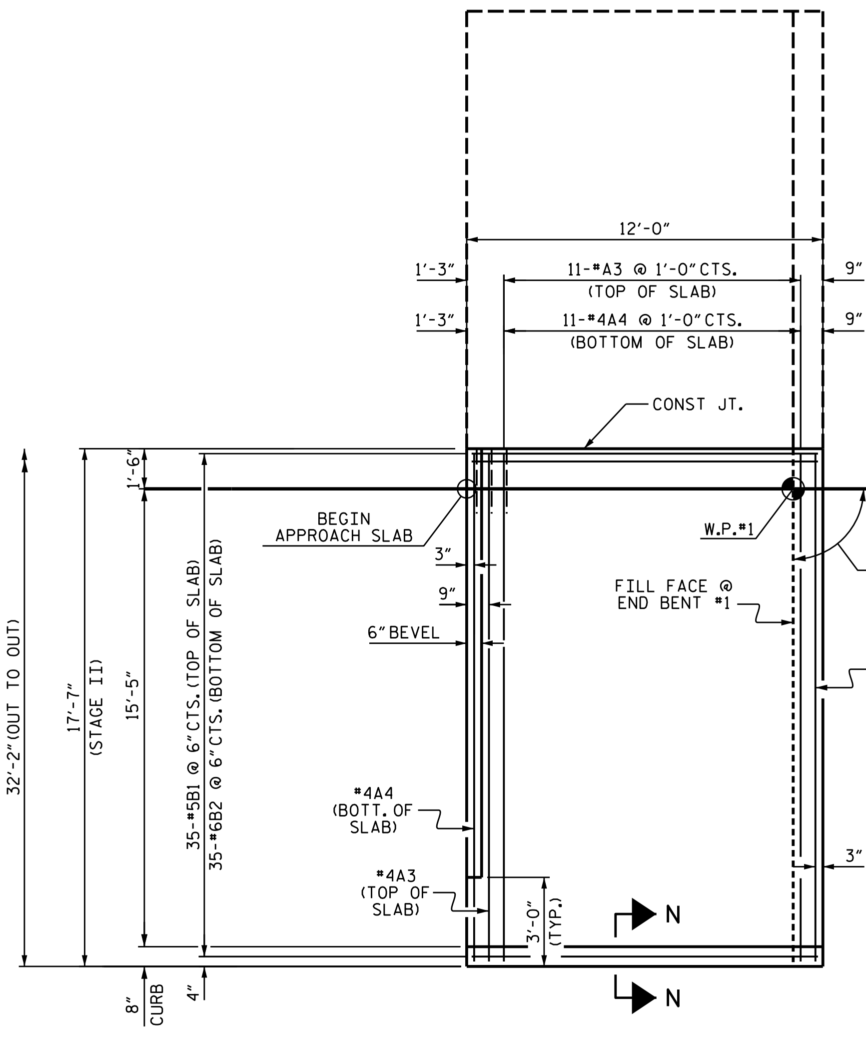
NOTES

FOR NOTES AND DETAILS, SEE SHEET 1 OF 2.

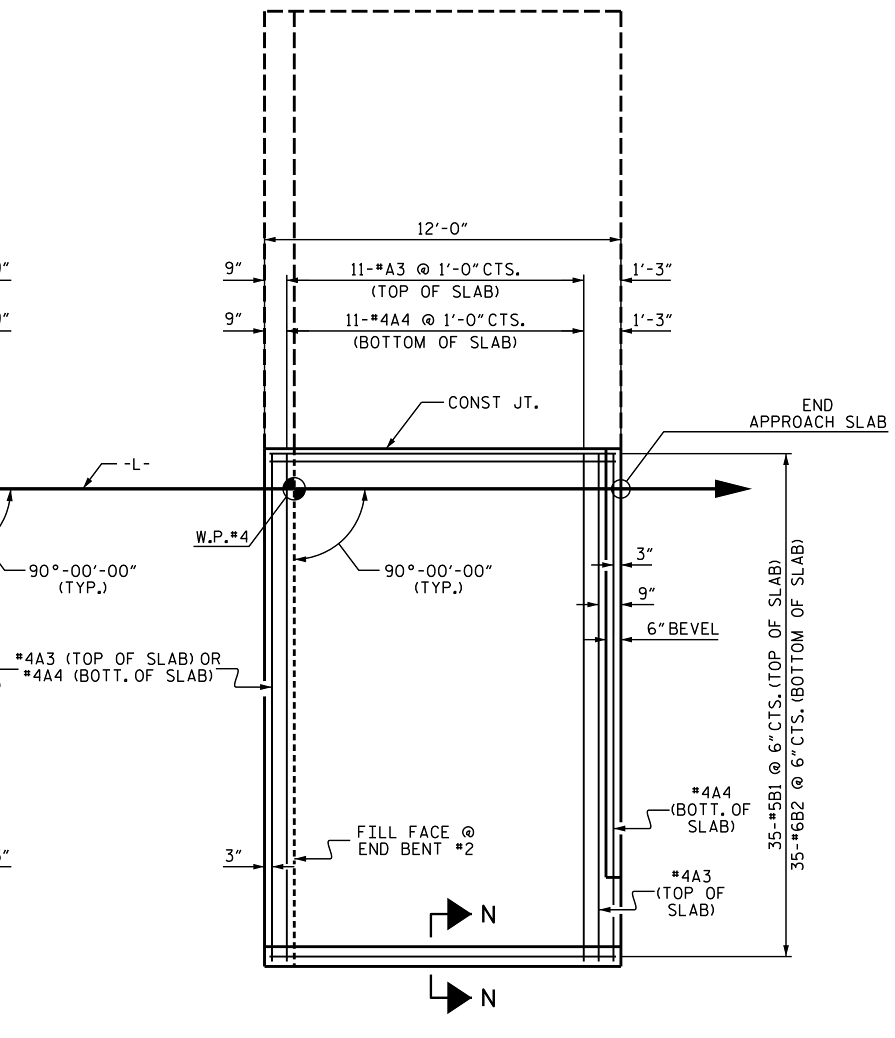
BILL OF MATERIAL

APPROACH SLAB AT ONE END BENT - STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A3	13	#4	STR	17'-3"	150
A4	13	#4	STR	17'-3"	150
* B1	35	#5	STR	11'-2"	408
B2	35	#6	STR	11'-8"	613
REINFORCING STEEL				LBS.	763
* EPOXY COATED REINFORCING STEEL				LBS.	557
CLASS AA CONCRETE				C. Y.	10.6



PLAN @ END BENT #1 - STAGE II



PLAN @ END BENT #2 - STAGE II

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

PROJECT NO. 17BP.13.R.155

McDOWELL COUNTY

STATION: 15+78.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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2			4			29

DESIGNED BY:	J. WHEATLEY	DATE :	DEC 2021
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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990