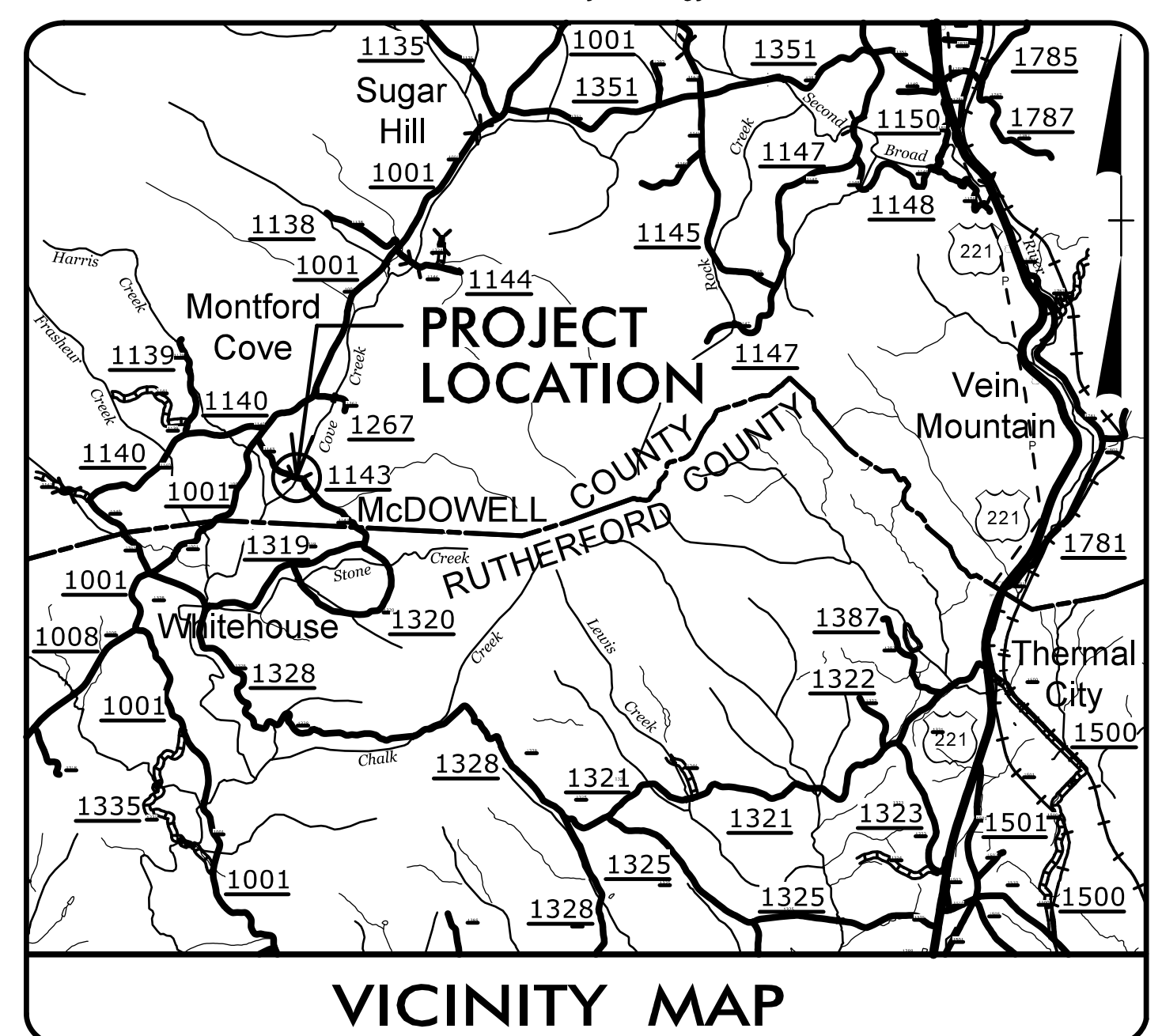


09/08/2019

PROJECT: 17BP.13.R.162

CONTRACT: DM00281

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

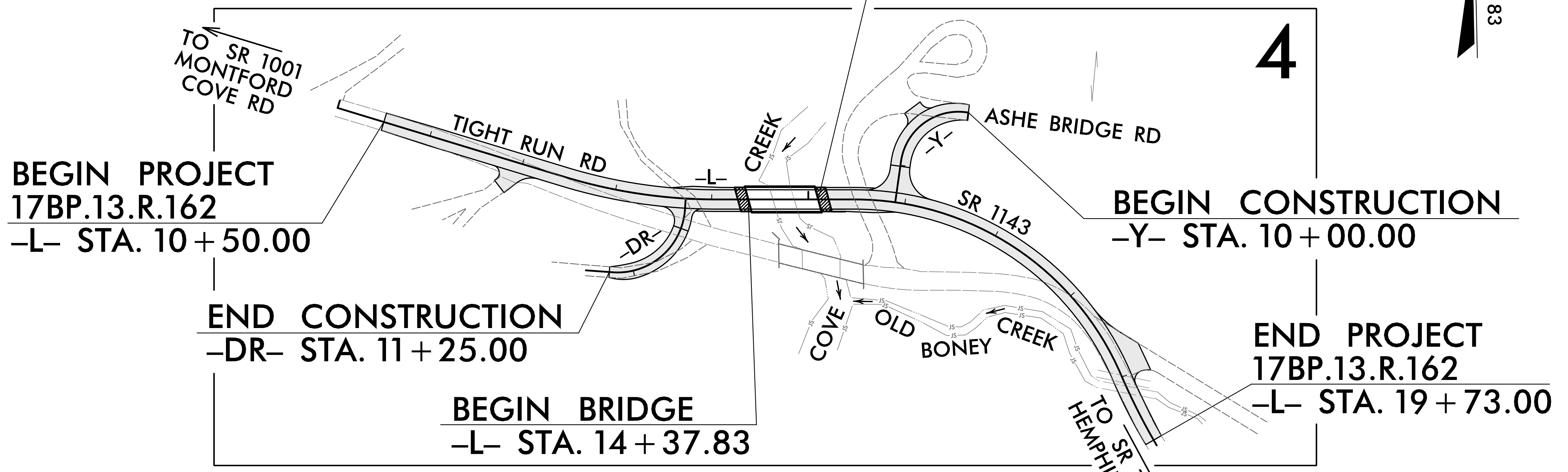
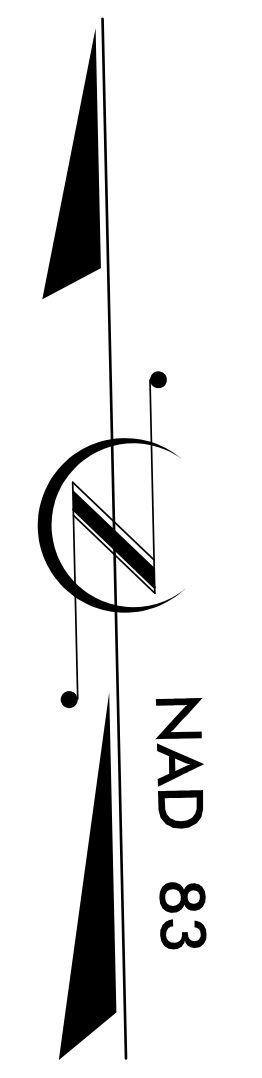


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
McDOWELL COUNTY

**LOCATION: BRIDGE #580019 ON SR 1143 (TIGHT RUN RD)
OVER COVE CREEK**

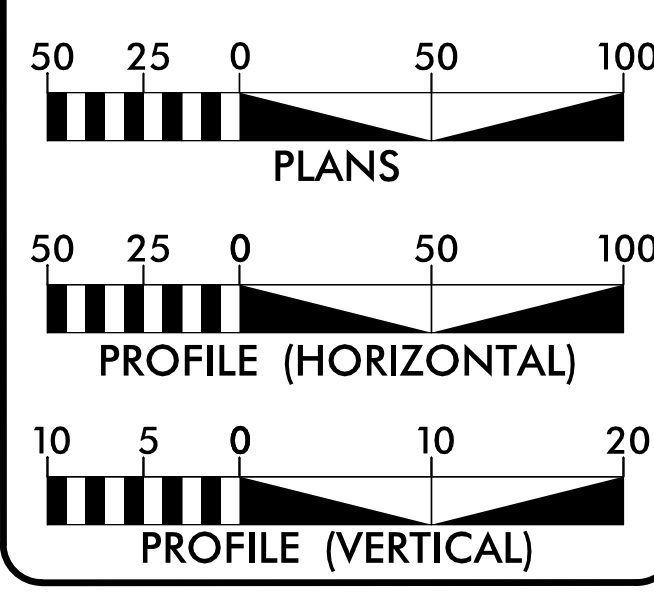
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.162	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.13.R.162	N/A	PE	
17BP.13.R.162	N/A	RW & UTIL	
17BP.13.R.162	N/A	CONST.	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2017 = 300
T = 6 % *
V = 35 MPH
* TTST = 3% DUAL = 3%
FUNC CLASS =
LOCAL - RURAL
SUB-REGIONAL TIER

PROJECT LENGTH

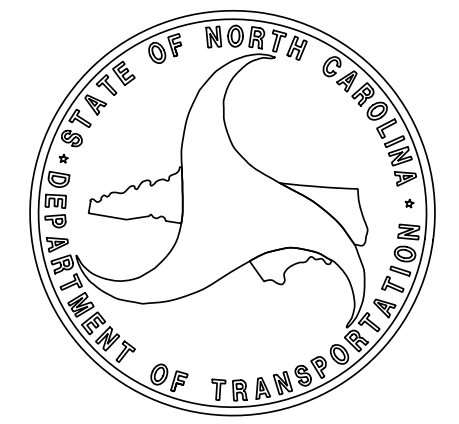
LENGTH ROADWAY PROJECT 17BP.13.R.162 = 0.161 MILES
LENGTH STRUCTURE PROJECT 17BP.13.R.162 = 0.014 MILES
TOTAL LENGTH PROJECT 17BP.13.R.162 = 0.175 MILES

NCDOT CONTACT: CHRISTOPHER MEDLIN, PE

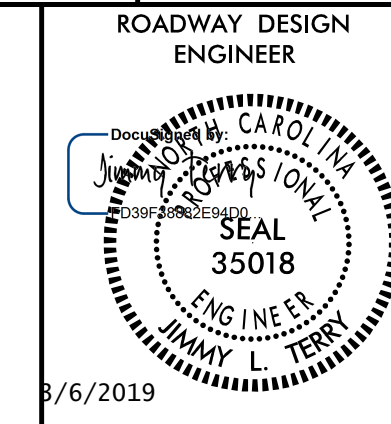
PLANS PREPARED BY:	PLANS PREPARED FOR:
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. C-0275	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION 13 20 Old 74 Asheville, NC 28803
RIGHT OF WAY DATE: NOVEMBER 16, 2018	JIMMY L. TERRY, PE PROJECT ENGINEER
LETTING DATE: MAY 15, 2019	CLINTON PRUETT, EI PROJECT DESIGN ENGINEER
2018 STANDARD SPECIFICATIONS	

HYDRAULICS ENGINEER
3/6/2019

DocuSigned by: David B. Petty 40E5F4M3B8A85 SIGNATURE:	
DocuSigned by: Jimmy Terry 40E5F4M3B8A85 SIGNATURE:	



2/22/2019
X:\NCDOT\Division 13\2017\McDowell\9\Roadway\Proj\McDowell\9_Rdy_tsh.dgn
User:smelvin



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

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
RW-01 THRU RW-04	SURVEY CONTROL, ALIGNMENT CONTROL, RIGHT OF WAY CONTROL AND PROPERTY TIES
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	SPECIAL DETAIL - W BEAM RAIL SECTION
2C-2	SPECIAL DETAIL - TYPE III STRUCTURE ANCHOR UNITS
2C-3	SPECIAL DETAIL - AT-I END UNIT ASSEMBLY
3B-1	ROADWAY SUMMARIES & DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN AND PROFILE SHEET
TMP-1 THRU TMP-4	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-8	CROSS-SECTIONS
STRUCTURE TITLE	STRUCTURE PLANS TITLE SHEET
S-1 THRU S-16	STRUCTURE PLANS

GENERAL NOTES

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

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

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

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

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

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

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

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

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 FRONTIER COMMUNICATIONS AND DUKE ENERGY
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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

STANDARD DRAWINGS

EFF. 01-16-2018
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation (Special Detail for Sheet 6 of 8)
862.03	Structure Anchor Units (Special Detail for Type III Anchor Units Sheets 1 of 7 and 2 of 7)
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

12/2/2016

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	
RR Signal Milepost	
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 Easement 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	
New Right of Way Line with Pin and Cap	
New Right of Way Line with Concrete or Granite R/W Marker	
New Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
New Control of Access	
Existing Easement Line	
New Temporary Construction Easement	
New Temporary Drainage Easement	
New Permanent Drainage Easement	
New Permanent Drainage / Utility Easement	
New Permanent Utility Easement	
New Temporary Utility Easement	
New Aerial Utility Easement	

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	
Single Shrub	

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

Hedge	
Woods Line	
Orchard	
Vineyard	

EXISTING STRUCTURES:

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

UTILITIES:

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

TELEPHONE:

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

WATER:

Water Manhole	
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	

TV:

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

GAS:

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

SANITARY SEWER:

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

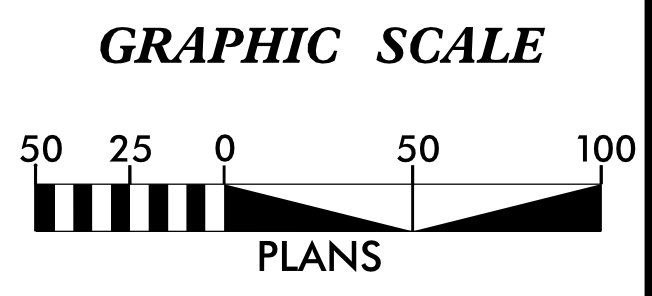
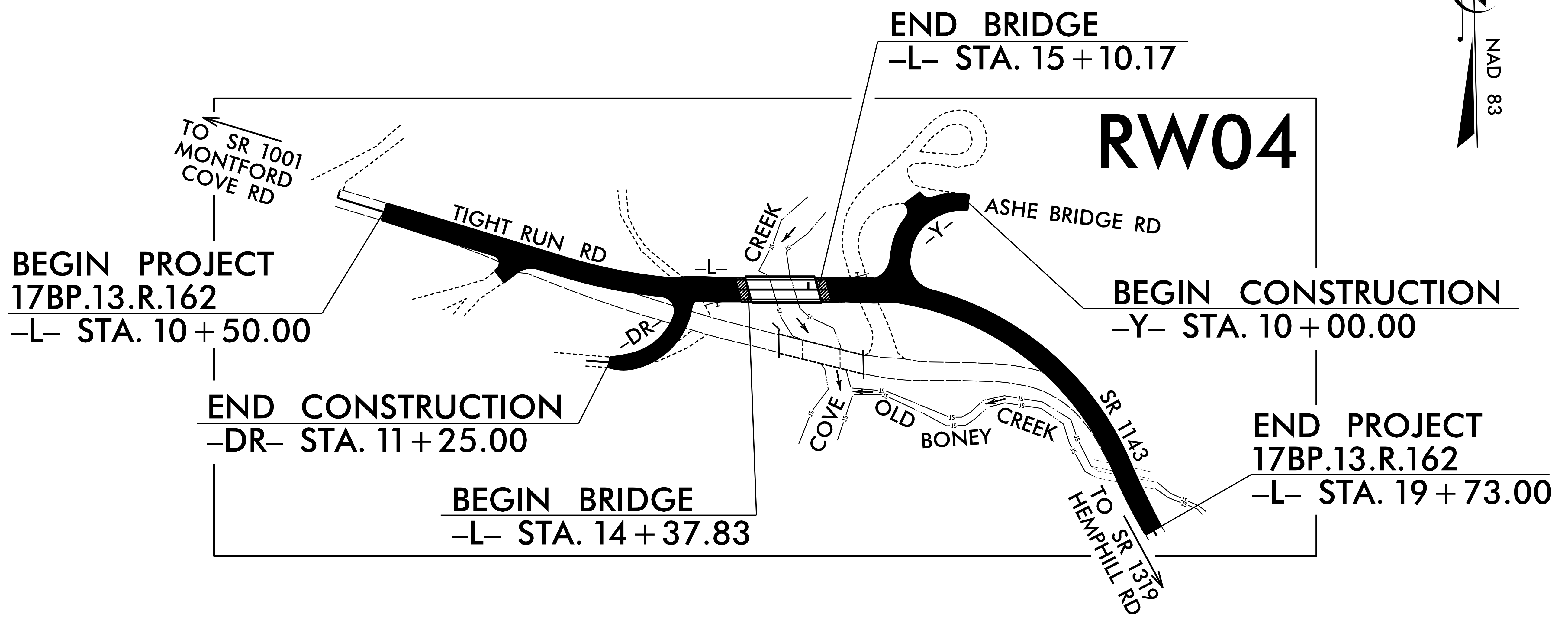
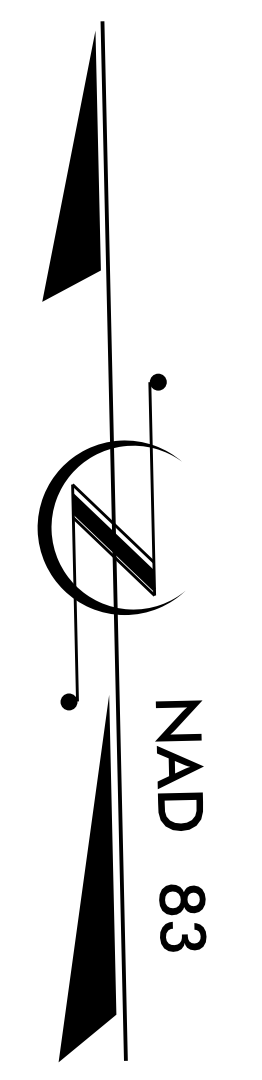
MISCELLANEOUS:

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

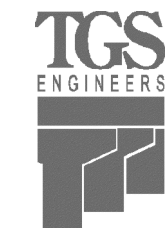
TIP PROJECT: 17BP.13.R.162

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.162	RW01	


STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 SURVEY CONTROL, EXISTING CENTERLINES,
 RIGHT OF WAY, EASEMENTS AND PROPERTY TIES
McDOWELL COUNTY

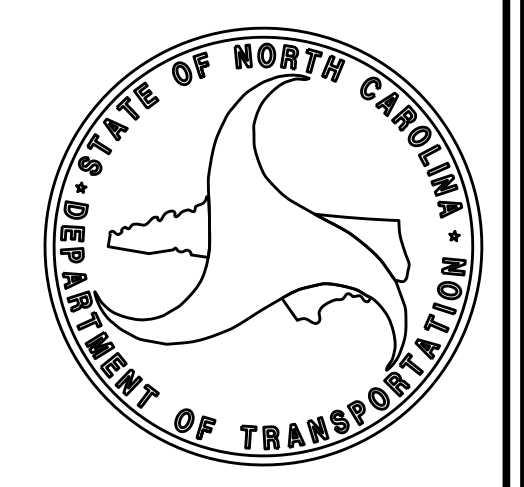


DATUM DESCRIPTION
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "5800192" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 665,096.476(ft) EASTING: 1,086,243.006(ft) ELEVATION: 1,138.81(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99983567
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "5800192" TO -L- STATION 10+00.00 IS N 71°49'19.5" W 463.98(ft)
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:
 TGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

2018 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
 NOVEMBER 16, 2018
LETTING DATE:

PROFESSIONAL LAND SURVEYOR

 Matthew T. Cornwell
Digitally signed by Matthew T. Cornwell, DN: cn=Matthew T. Cornwell, o=TGS ENGINEERS, email=matcornwell@tgsengineers.com, Reason: I am the author of this document. Date: 2018.11.08 15:47:09. Print Platform: PDF Version: 9.2.0
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\$\$\$\$\$ SYSTEM \$\$\$\$\$\$
 \$\$\$ DDN \$\$\$
 \$\$\$ USERNAME \$\$\$

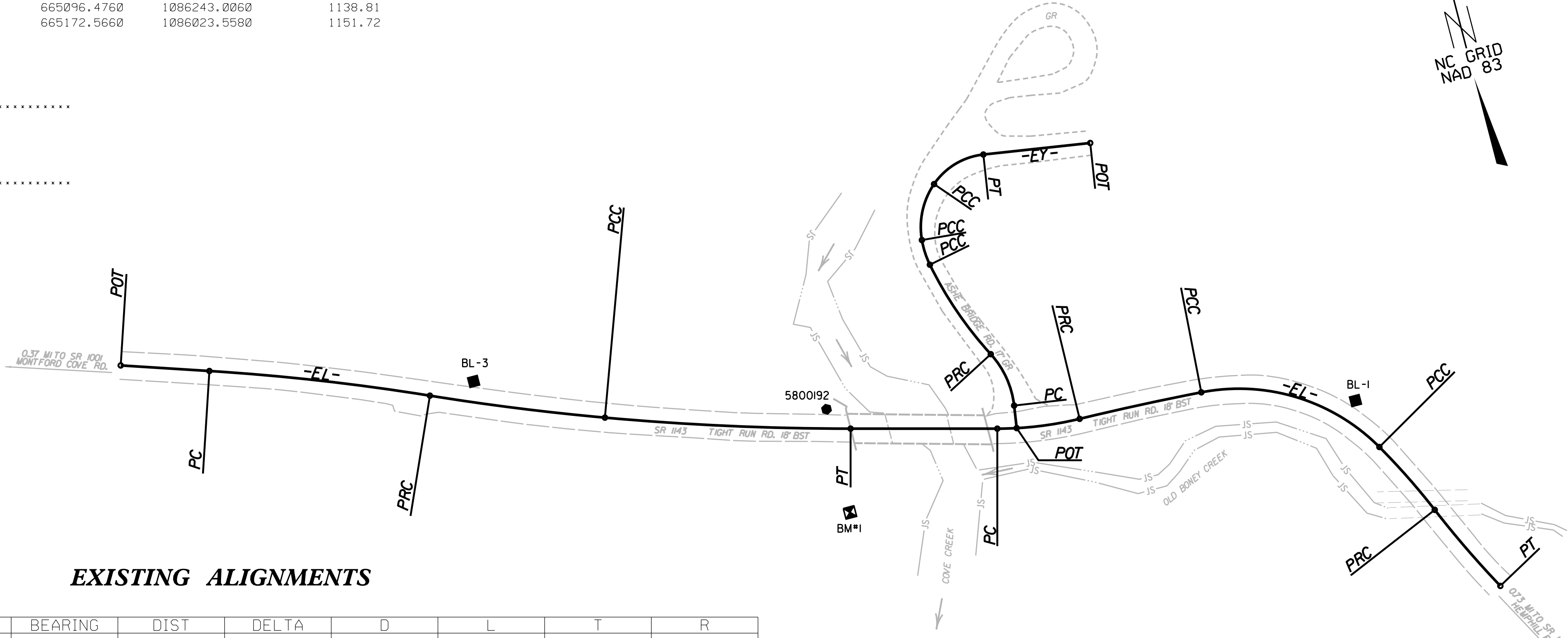
SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BASELINE

BL	POINT	DESC.	NORTH	EAST	ELEVATION
1		BL-1	665014.3200	1086580.2400	1137.05
2		BL-2	665096.4760	1086243.0060	1138.81
3		BL-3	665172.5660	1086023.5580	1151.72

.....
 BM1 ELEVATION = 1136.21
 N 665027 E 1086241
 BL STATION 8+33.00 68 LEFT
 RR SPIKE IN 21" BLACK WALNUT



EXISTING ALIGNMENTS

EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	665241.225	1085802.178							
LINE			S 71°46'44.5" E	58.29					
PC	665222.998	1085857.545							
CURVE			S 68°59'50.8" E	145.59	05°33'47.5"(RT)	03°49'11.0"	145.64	72.88	1500.00
PCC	665170.819	1085993.460							
CURVE			S 68°13'31.9" E	115.73	04°01'09.8"(LT)	03°28'20.9"	115.75	57.90	1650.00
PCC	665127.889	1086100.929							
CURVE			S 72°48'15.3" E	161.36	05°08'17.0"(LT)	03°10'59.2"	161.42	80.76	1800.00
PT	665080.185	1086255.079							
LINE			S 75°22'23.8" E	96.26					
PC	665055.877	1086348.218							
CURVE			S 82°09'54.9" E	54.40	13°35'02.1"(LT)	24°54'40.4"	54.53	27.39	230.00
PCC	665048.461	1086402.112							
CURVE			S 87°39'24.6" E	81.70	02°36'02.6"(RT)	03°10'59.2"	81.70	40.86	1800.00
PCC	665045.121	1086483.741							
CURVE			S 58°18'49.2" E	122.23	56°05'08.2"(RT)	44°04'25.2"	127.25	69.25	130.00
PCC	664980.916	1086587.755							
CURVE			S 26°46'18.0" E	54.93	06°59'54.3"(RT)	12°43'56.6"	54.97	27.52	450.00
PCC	664931.872	1086612.498							
CURVE			S 26°10'35.2" E	65.86	05°48'28.9"(LT)	08°48'53.0"	65.89	32.97	650.00
PT	664931.872	1086612.498							

EY POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	665053.006	1086360.615							
LINE			N 08°08'34.4" E	14.87					
PC	665067.728	1086362.721							
CURVE			N 09°49'26.4" W	37.02	35°56'01.7"(LT)	95°29'34.7"	37.63	19.46	60.00
PCC	665104.201	1086356.405							
CURVE			N 19°37'54.0" W	70.96	16°19'06.4"(RT)	22°55'05.9"	71.20	35.84	250.00
PCC	665171.038	1086332.564							
CURVE			N 03°19'56.8" W	16.99	16°16'48.0"(RT)	95°29'34.7"	17.05	8.58	60.00
PCC	665188.001	1086331.576							
CURVE			N 26°51'59.3" E	37.56	44°07'04.3"(RT)	114°35'29.6"	38.50	20.26	50.00
PCC	665221.503	1086348.548							
CURVE			N 73°41'54.5" E	37.71	49°32'45.9"(RT)	127°19'26.2"	38.91	20.77	45.00
PT	665232.089	1086384.744							
LINE			S 81°31'42.6" E	70.52					
POT	665221.699	1086454.499							

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "5800192" WITH NAD 83 STATE PLANE GRID COORDINATES OF
 NORTHING: 665096.476(ft) EASTING: 1086243.006(ft)
 ELEVATION: 1138.81(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99983567
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "5800192" TO -L- STATION IS
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

- NOTES:
- PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
 - 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.

NOTE: DRAWING NOT TO SCALE

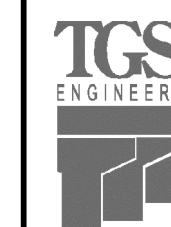
2/23/18
 REVISIONS
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REVISIONS

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. SHEET NO.
17BP.13.R.162 RW02D-1

Location and Surveys



TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

L			
TYPE	STATION	NORTH	EAST
POT	10+00.00	665241.2246	1086002.1780
PC	12+45.19	665164.5591	1086035.0700
PT	14+04.74	665137.6195	1086191.7480
PC	15+47.91	665134.3927	1086334.8812
PRC	18+97.76	664946.3281	1086606.4856
PT	19+79.31	664872.7654	1086641.5518

Y			
TYPE	STATION	NORTH	EAST
POT	10+00.00	665221.6992	1086454.4988
PC	10+02.83	665222.1162	1086451.6983
PT	10+96.18	665172.4976	1086383.6530
POT	11+38.74	665130.5006	1086376.7535

DR			
TYPE	STATION	NORTH	EAST
POT	10+00.00	665139.2670	1086160.0522
PC	10+10.71	665128.5951	1086159.1824
PT	11+21.72	665064.6067	1086082.6734
POT	11+49.35	665067.2671	1086055.1728

NOTES:

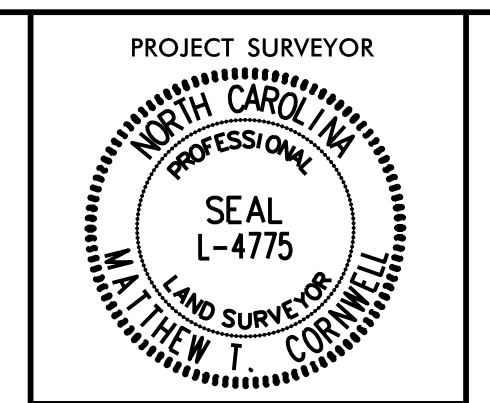
- 1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
- 2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATINO REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

11/8/18

11/8/18

RIGHT OF WAY & PERMANENT EASEMENT CONTROL SHEET

PROJECT REFERENCE NO. 17BP.13.R.162	SHEET NO. RW03E-1
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



REVISIONS

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	10+50.00	25.00	665201.8440	1085841.8538
L	10+50.00	-30.00	665254.0862	1085859.0514
L	10+50.00	-25.00	665249.3369	1085857.4879
L	10+58.29	25.00	665199.2518	1085849.7284
L	12+01.28	31.95	665147.9417	1085983.3778
L	12+45.19	-30.00	665193.0549	1086044.4505
L	13+13.21	43.85	665104.3623	1086092.4753
L	14+04.74	-30.00	665167.6119	1086192.4241
L	14+63.59	80.32	665055.9950	1086248.7659
L	15+47.91	-30.00	665164.3851	1086335.5574
L	15+62.09	102.30	665031.6875	1086341.9055
L	16+52.47	97.20	665023.4656	1086401.6574
L	17+48.88	58.73	665020.1718	1086482.1526
L	18+58.73	26.91	664968.3134	1086566.1634
L	18+97.76	-30.00	664957.5141	1086634.3222
L	19+13.42	25.00	664921.9948	1086589.5318
L	19+30.00	-30.00	664929.2770	1086646.4907
L	19+30.00	-25.00	664927.1850	1086641.9494
L	19+73.00	25.00	664866.3547	1086616.5473
L	19+73.00	-25.00	664890.2314	1086660.4780

POINT NOT SET - FELL IN PIPE

ROW MARKER PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	14+04.74	-60.00	665197.6042	1086193.1003
L	15+80.00	-62.00	665193.4379	1086374.8670
L	16+65.00	-30.00	665136.7452	1086460.5171

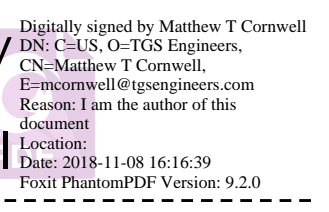
I, Matthew T. Cornwell, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation, R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location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

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

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

Witness my original signature, registration number and seal this 8th day of November, 2018.

Matthew T. Cornwell
Professional Land Surveyor



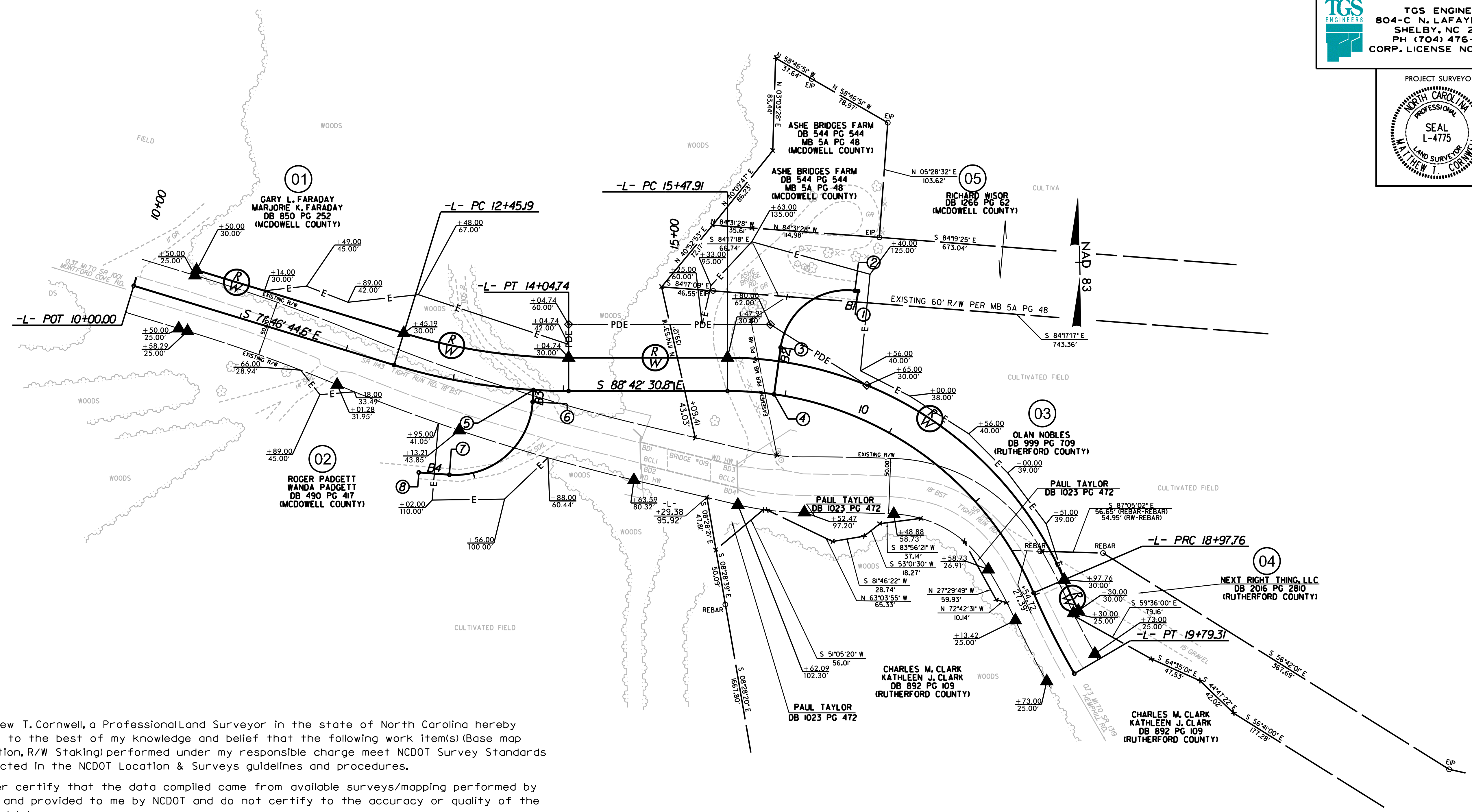
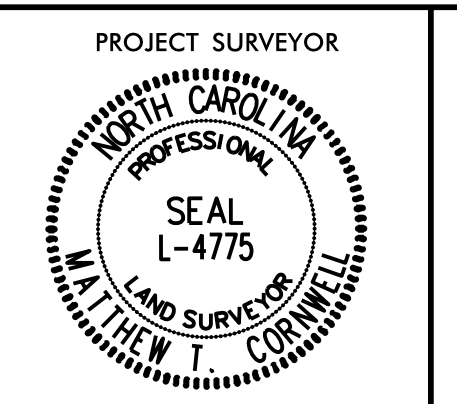
L-4775
PLS #

Seal

NOTES:

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

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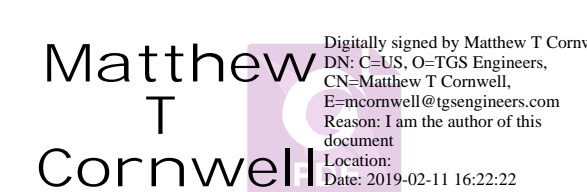


I, Matthew T. Cornwell, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation, R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location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

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

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

Witness my original signature, registration number and seal this 11th day of February, 2019.

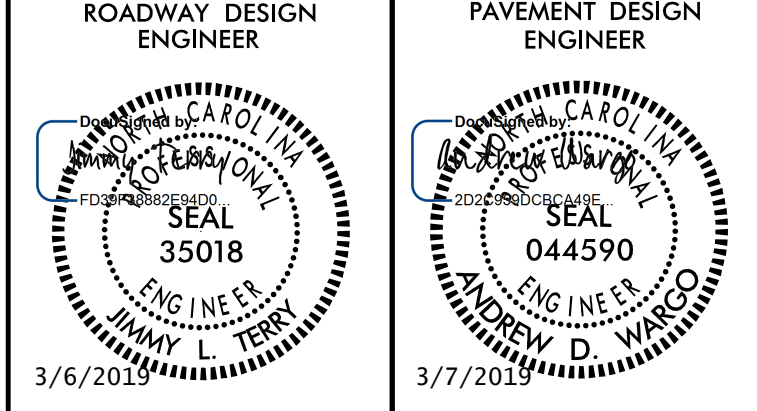

Matthew T. Cornwell
 Professional Land Surveyor
 L-4775
 PLS #
 Seal

NOTES:

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

REVISIONS

11-FEB-2019 16:22 X:\17BP-13.R.162\19\Roadway\Proj\Survey and RW Control Sheets\5802019_1s_rw04.dgn

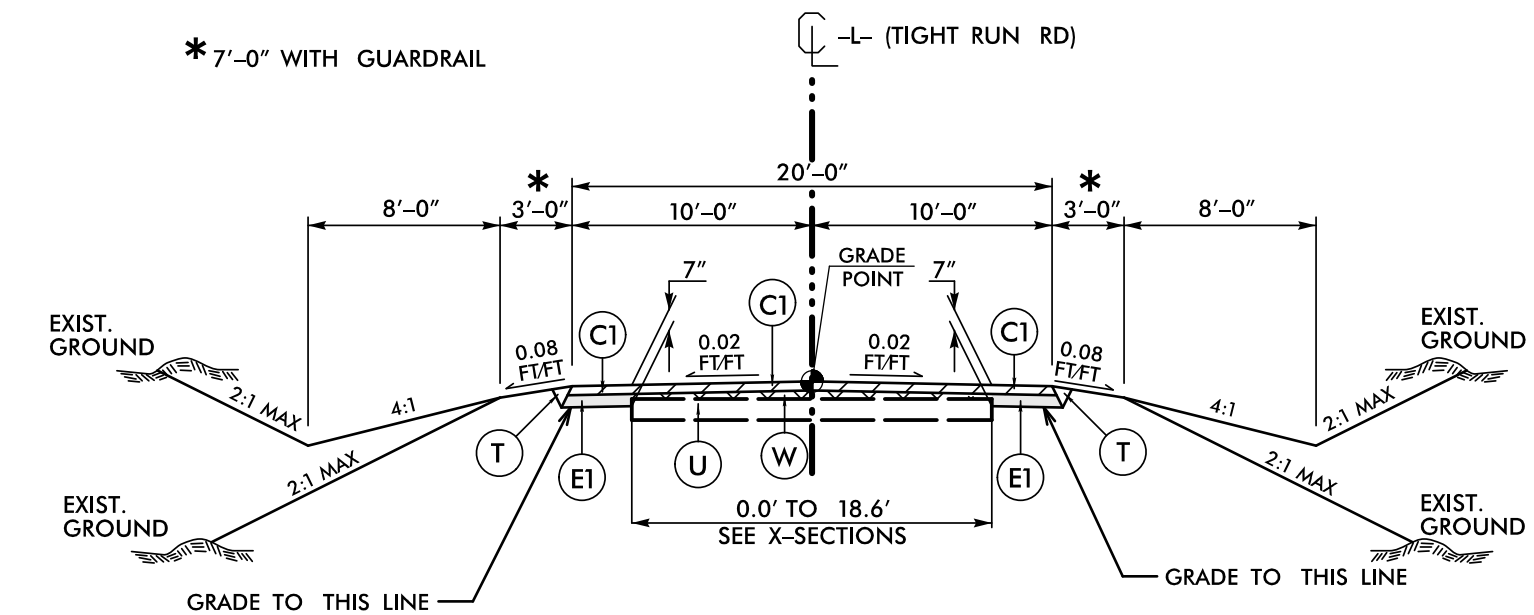


**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
J1	PROP. 8" AGGREGATE BASE COURSE
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING EXISTING PAVEMENT (SEE MILLING DETAILS THIS SHEET)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS THIS SHEET)

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN.



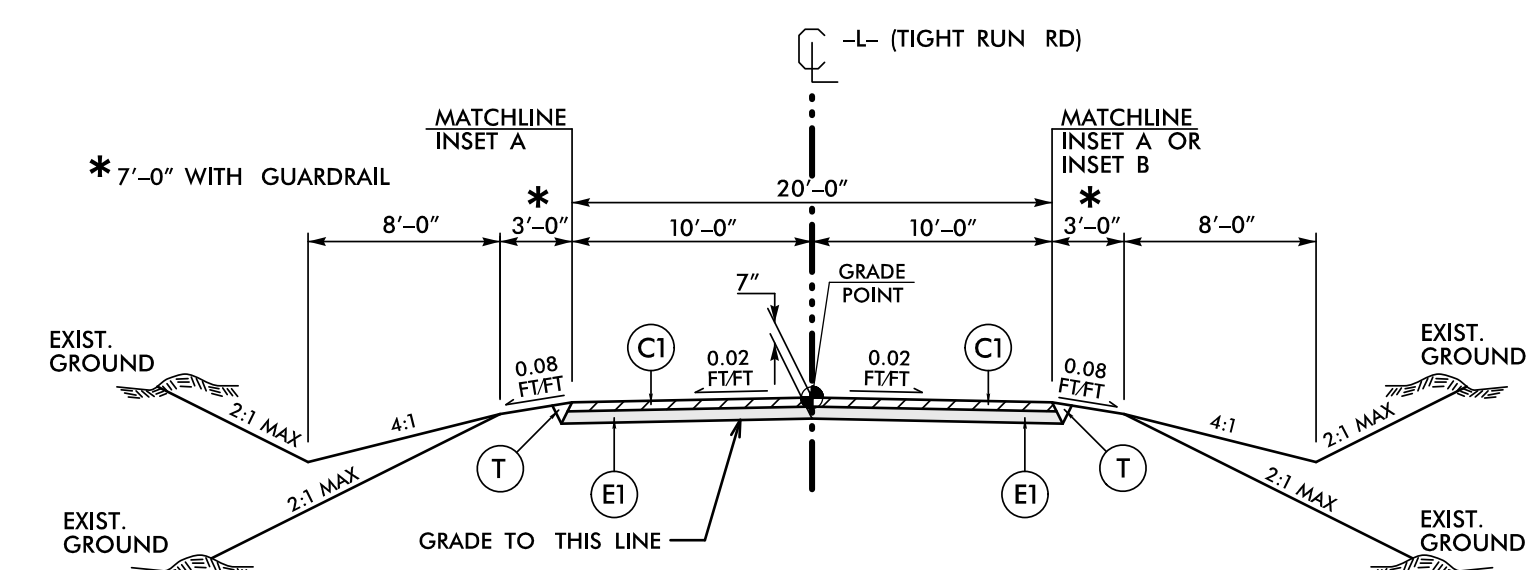
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA. 11+00.00 TO -L- STA. 13+19.64
-L- STA. 17+68.88 TO -L- STA. 19+23.00

NOTE: TRANSITION BETWEEN EXISTING AND TYP. SECT. NO.1 AS FOLLOWS:

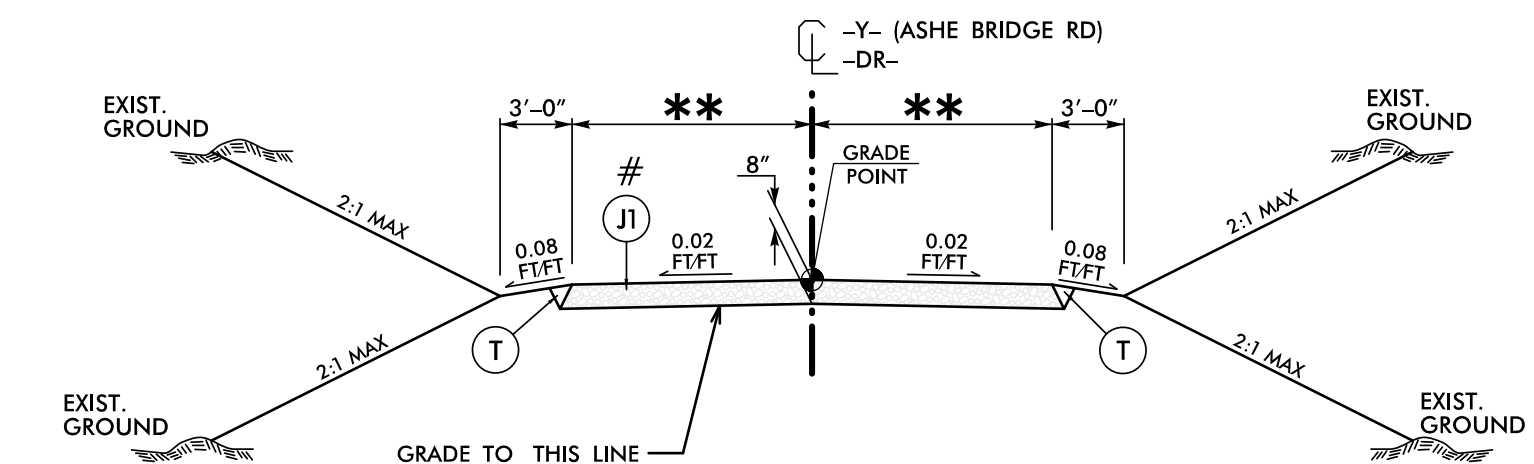
-L- STA. 10+50.00 TO -L- STA. 11+00.00
-L- STA. 19+23.00 TO -L- STA. 19+73.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 13+19.64 TO -L- STA. 14+37.83 (BEGIN BRIDGE)
-L- STA. 15+10.17 (END BRIDGE) TO -L- STA. 17+68.88



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

-Y- STA. 10+50.00 TO -Y- STA. 11+28.74
-DR- STA. 10+10.00 TO -DR- STA. 11+00.00

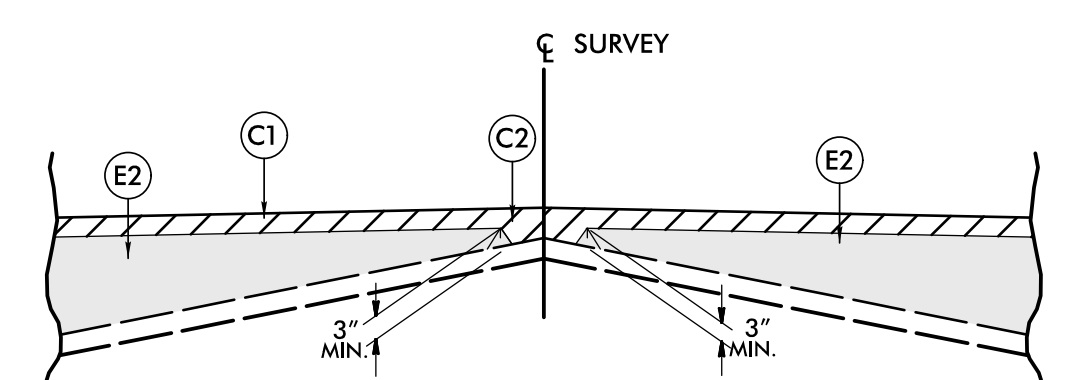
ALIGN.	**
-Y-	10'
-DR-	8'

NOTE: TRANSITION BETWEEN EXISTING AND TYP. SECT. NO. 4 AS FOLLOWS:

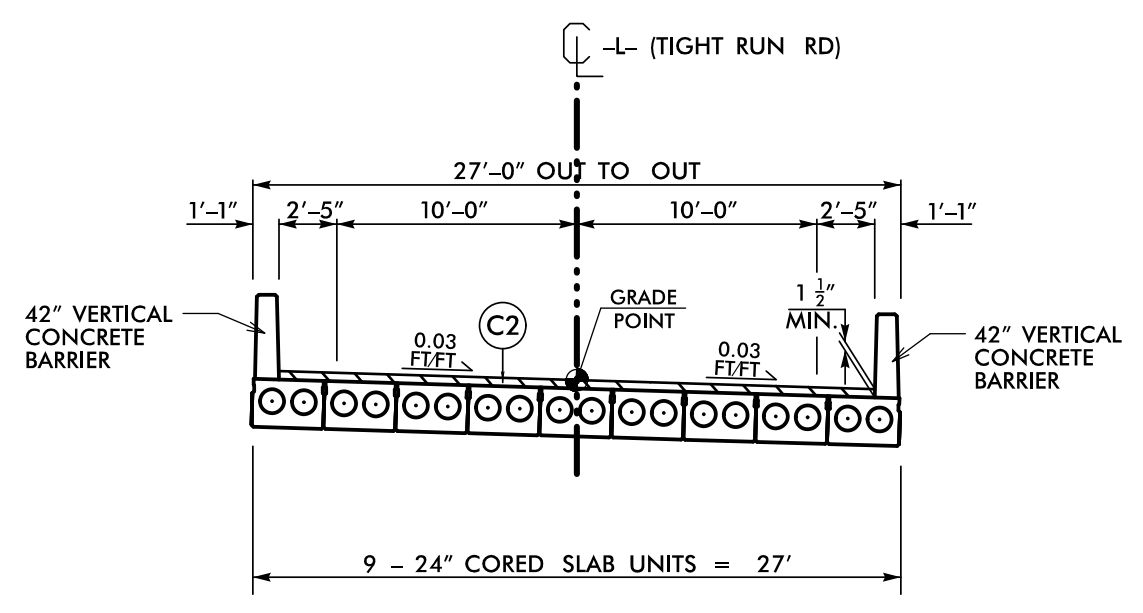
-Y- STA. 10+00.00 TO -Y- STA. 10+50.00
-DR- STA. 11+00.00 TO -DR- STA. 11+25.00

NOTE: PAVE TO THE BACK OF THE RADII FOR -DR- AND -Y- USING PAVEMENT DESIGN AS SHOWN IN TYP. SECT. NO. 2.

NOTE: ALL MINOR DRIVEWAY TIE-INS SHALL BE PERFORMED BY USING PAVEMENT DESIGN AS SHOWN IN TYP. SECT. NO. 2.



Detail Showing Method of Wedging



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-L- STA. 14+37.83 TO -L- STA. 15+10.17

NOTE: AT GUARDRAIL LOCATIONS PAVE TO FACE OF GUARDRAIL

** FDPS WIDTH	STA. TO STA.
0'-0" TO 3'-0"	-L- STA. 13+55.92 TO -L- STA. 14+23.66 LT (BEGIN APPROACH SLAB) -L- STA. 15+38.34 (END SBG) TO -L- STA. 15+92.42 RT
0'-0" TO 2'-5"	-L- STA. 13+49.05 TO -L- STA. 14+30.32 RT (BEGIN APPROACH SLAB) -L- STA. 15+17.68 (END APPROACH SLAB) TO -L- STA. 16+25.38 LT

USE INSET A

USE INSET B

-L- STA. 15+24.34 (BEGIN APPROACH SLAB TO -L- STA. 15+38.34 RT

MILLING 0 to 3" DEPTH

PROP. SURFACE COURSE (3")

PROP. WEDGING

EXIST. PAVEMENT

NOTE: MIRROR FOR END OF CONSTRUCTION

USE MILLING DETAIL AS FOLLOWS:

MILLING AND RESURFACING:

-L- STA. 10+50.00 TO -L- STA. 11+00.00
-L- STA. 19+23.00 TO -L- STA. 19+73.00

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

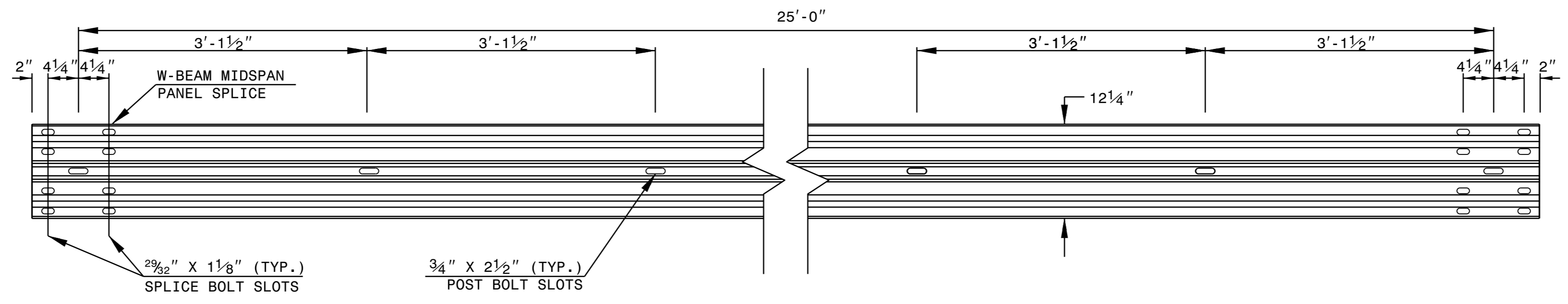
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

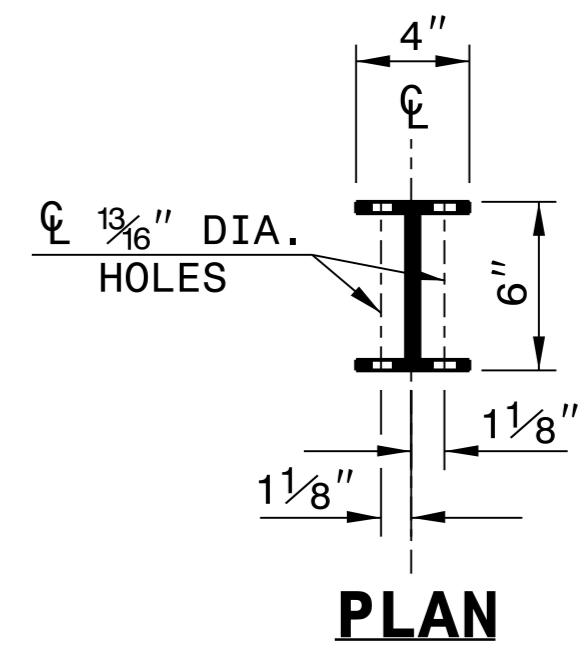
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

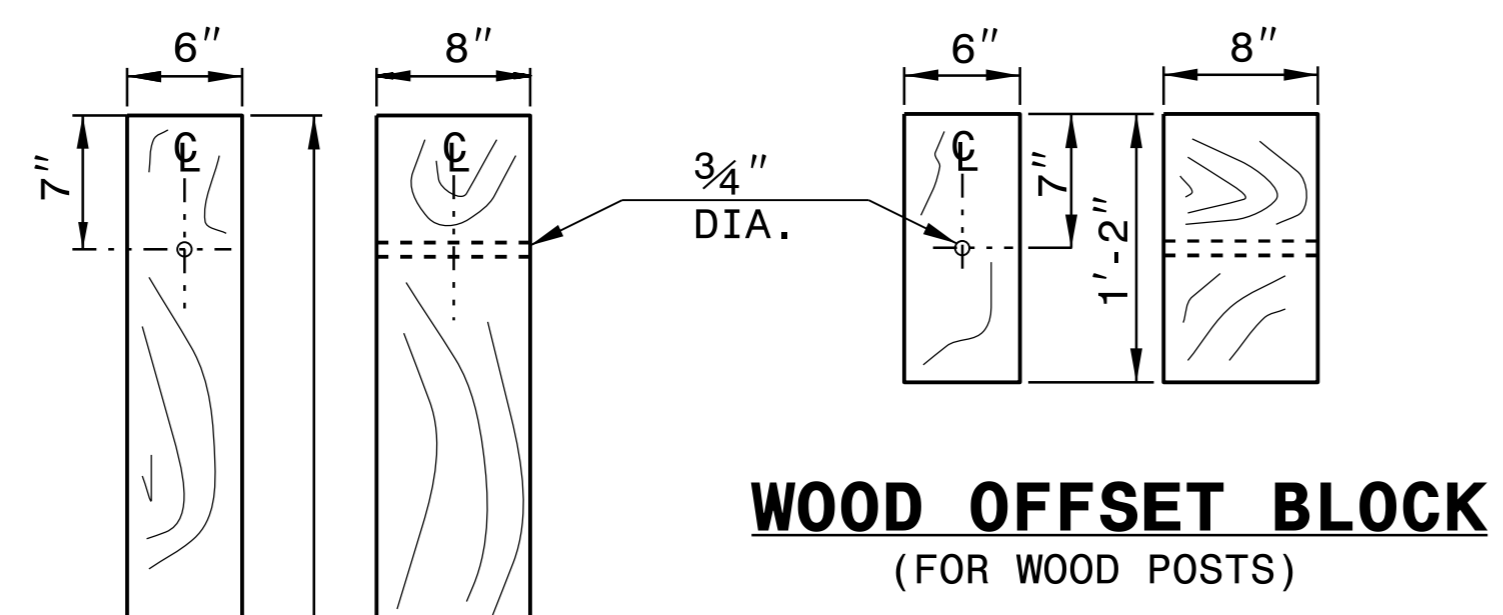
SHEET 6 OF 8
862D02



STANDARD W-BEAM GUARDRAIL



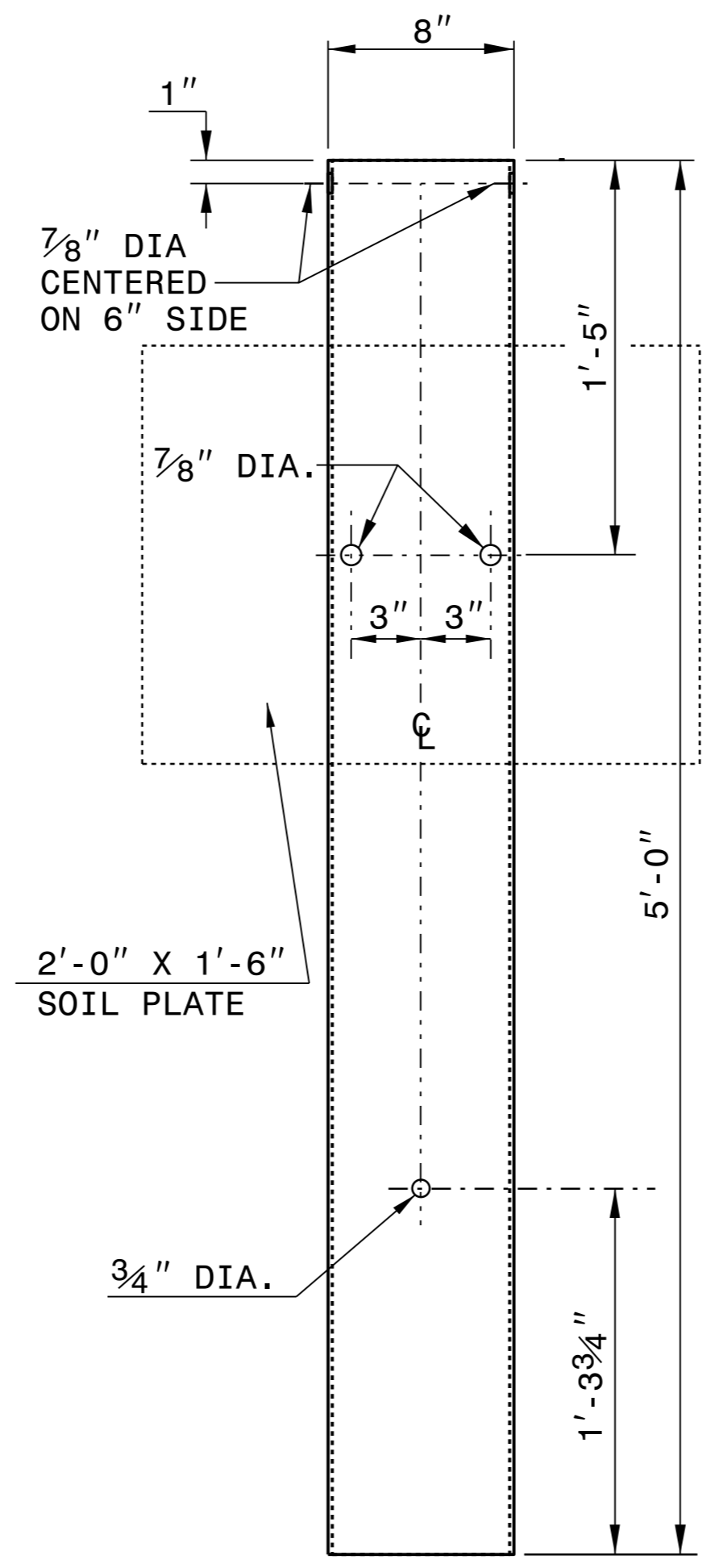
PLAN



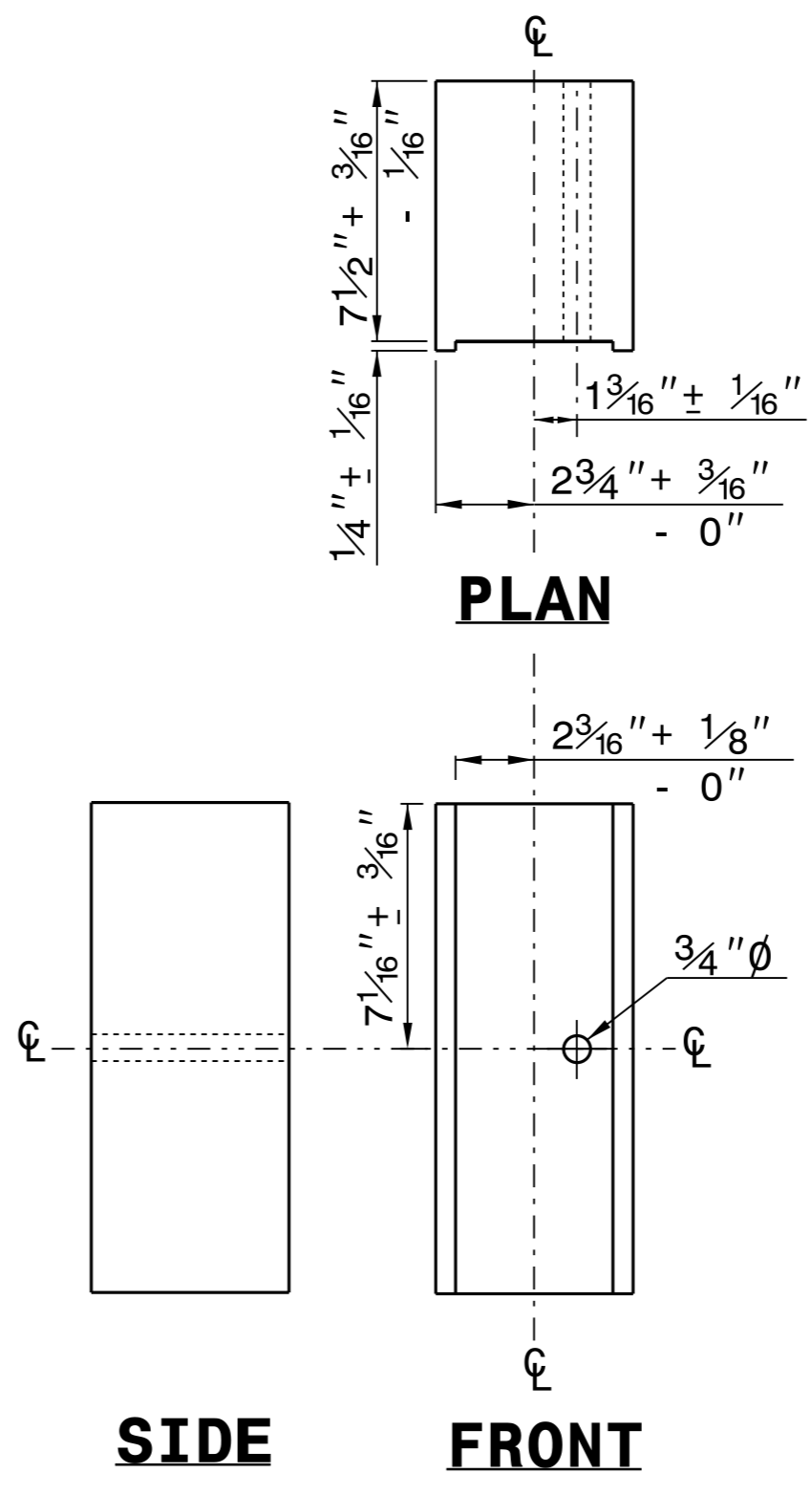
**WOOD OFFSET BLOCK
(FOR WOOD POSTS)**

**STANDARD
LINE POST**

**SHORT WOOD
BREAKAWAY POST**



**STEEL TUBE
TS 6"x8"x0.1875"**

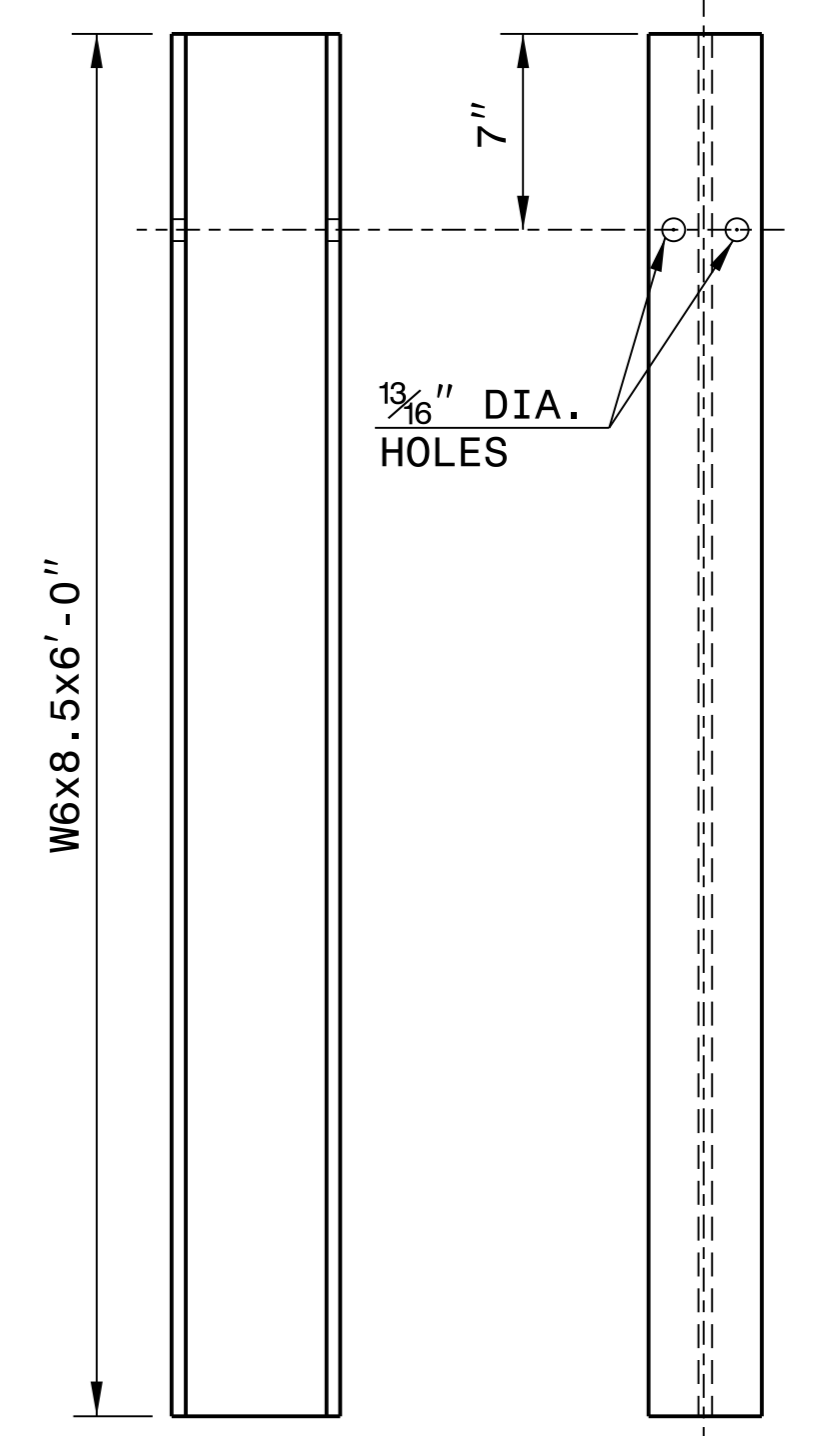


PLAN

SIDE

FRONT

**ROUTED
OFFSET BLOCK**

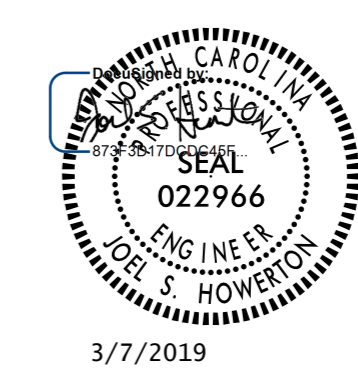


SIDE

FRONT

"W6" STEEL POST

SYSTEM PARTS



3/7/2019

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

SEE TITLE BLOCK

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

I4-DEC-2017 10:36
 S:\Contracts\Special Details\Standard Drawings\Division 8\0862d0301.dgn
 Jhowerton AT: CSU-292595

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
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> </div> <div style="width: 45%;"> <p>NOTE:</p> <ul style="list-style-type: none"> **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER. *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT. -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB. -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER). -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW. -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9. </div> </div>		
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE		

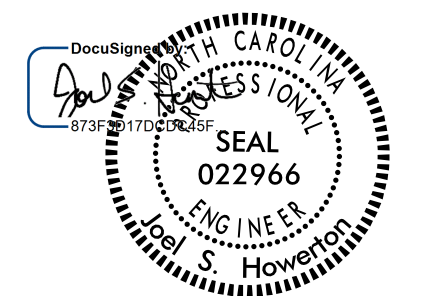
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER	SHEET 2 OF 7 862D03
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> </div> <div style="width: 45%;"> <p>NOTE:</p> <ul style="list-style-type: none"> **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER. *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT. -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB. -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER). -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW. -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9. </div> </div>		
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER		

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.:	



3/7/2019

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

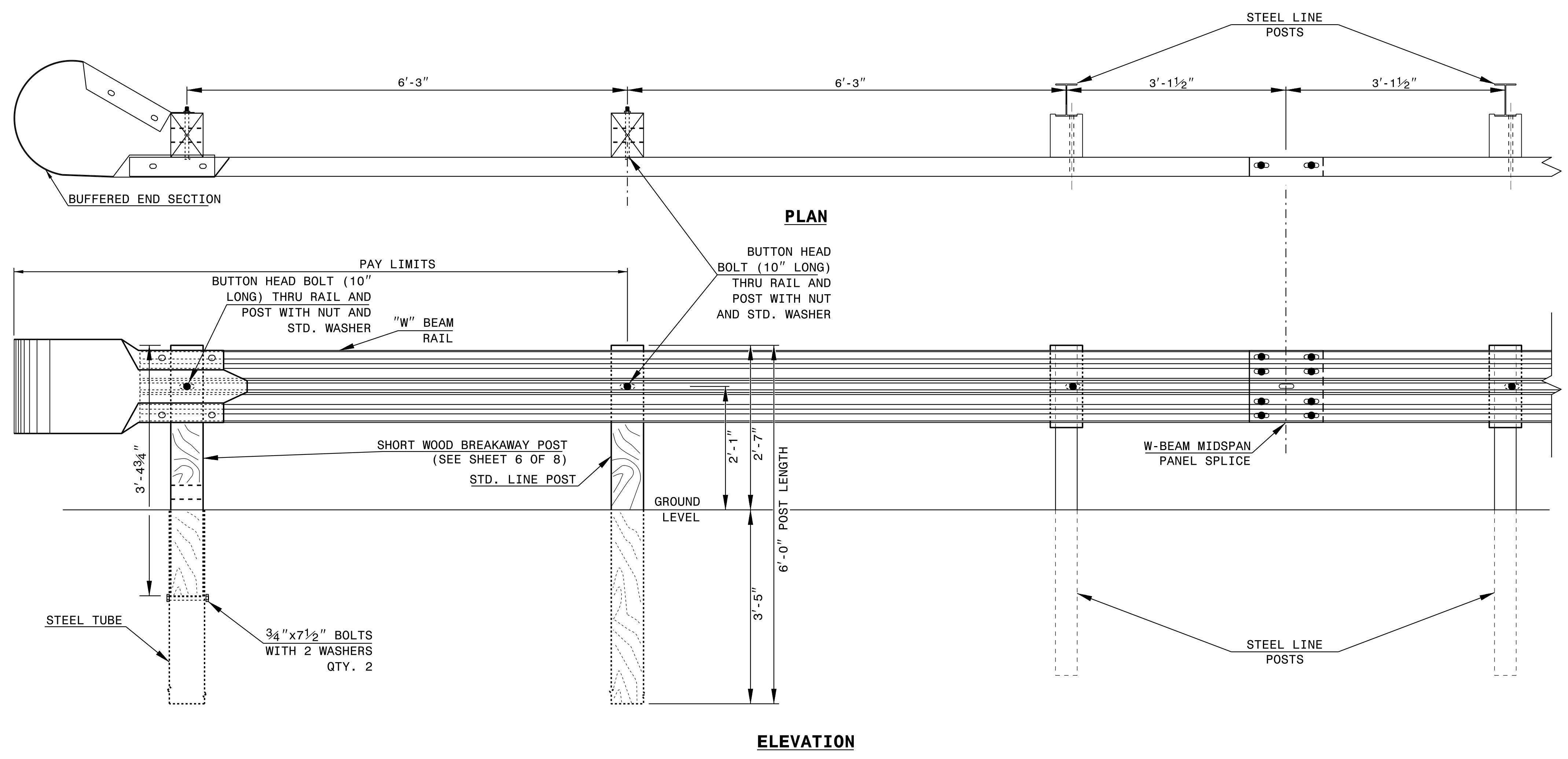
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

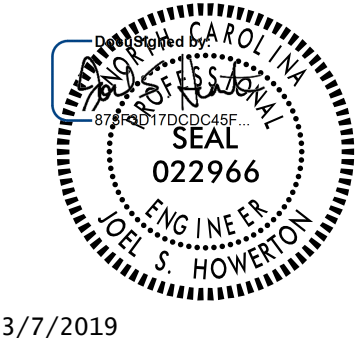
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF



TRAILING END UNIT ASSEMBLY
A.T. - 1 SYSTEM



3/7/2019

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

A.T. - 1 SYSTEM

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

STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

Table with columns: Station, Station, Uncl. Excav., Embank. +%, Borrow, Waste. Includes sub-totals and grand totals for excavated, embanked, and borrowed material.

Note: Approximate quantities only. Unclassified Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for grading.

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

PAVEMENT REMOVAL SUMMARY

Table with columns: SURVEY LINE, Station, Station, LOCATION LT/RT/CL, ASPHALT REMOVAL, ASPHALT BREAKUP, CONCRETE REMOVAL, CONCRETE BREAKUP. Includes a total of 980.00 square yards of asphalt removal and 1,000 square yards of concrete removal.

EST. SHALLOW UNDERCUT = 100 CY
SELECT GRANULAR MATERIAL = 400 CY
GEOTEXTILE FOR SOIL STABILIZATION = 600 SY
CLASS IV SUBGRADE STABILIZATION = 200 TON
PER GEOTECH RECOMMENDATION, ESTIMATED 450 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

N* = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

Large table with columns: LINE, BEG. STA., END STA., LOC., LENGTH (STRAIGHT, SHOP CURVED, DOUBLE FACED), WARRANT POINT (APPR. END, TRAIL. END), N* DIST. FROM E.O.L., TOTAL SHLDR WIDTH, FLAIR LENGTH (APPR. END, TRAIL. END), W (APPR. END, TRAIL. END), ANCHORS (III, GREU TL-2, AT-1, III SC), IMP. ATTEN. TYPE (EA, G, NG), REMOVE EXISTING GUARDRAIL, REMOVE & RESET EXISTING GUARDRAIL, REMARKS. Includes sub-totals and grand totals for length, anchors, and removal.

ADDITIONAL GUARDRAIL POSTS = 5 EA

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

COMPUTED BY: Zachary J. Richard, PE DATE: 6/29/2018
CHECKED BY: David B. Petty, PE DATE: 1/17/2019

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

Table with columns: STATION, LOCATION (LT, RT, OR CL), SIZE, THICKNESS OR GAUGE, FROM, TO, STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, SLOPE CRITICAL, DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC), C.S. PIPE, R.C. PIPE CLASS II, R.C. PIPE CLASS IV, ENDWALLS, QUANTITIES FOR ENDWALLS, STRUCTURES, PER EACH (FT THRU S.F.), LIN. FT., TYPE OF GRATE, FRAME GRATES AND HOOD STANDARD 840.03, CONCRETE TRANSITIONAL SECTION, REMARKS. Includes a summary row at the bottom.

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

COMPUTED BY: JCK 10/8/2018
 CHECKED BY: SCC 10/8/2018

(5-15-18)

PROJECT NO. SHEET NO.
 17BP.13.R.162 3G-1

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

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

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			AST	18	100	200	400		
					TOTAL CY/TONS/SY:	100	200**	400**	0

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

PROJECT REFERENCE NO. 17BP.13.R.162
SHEET NO. 4

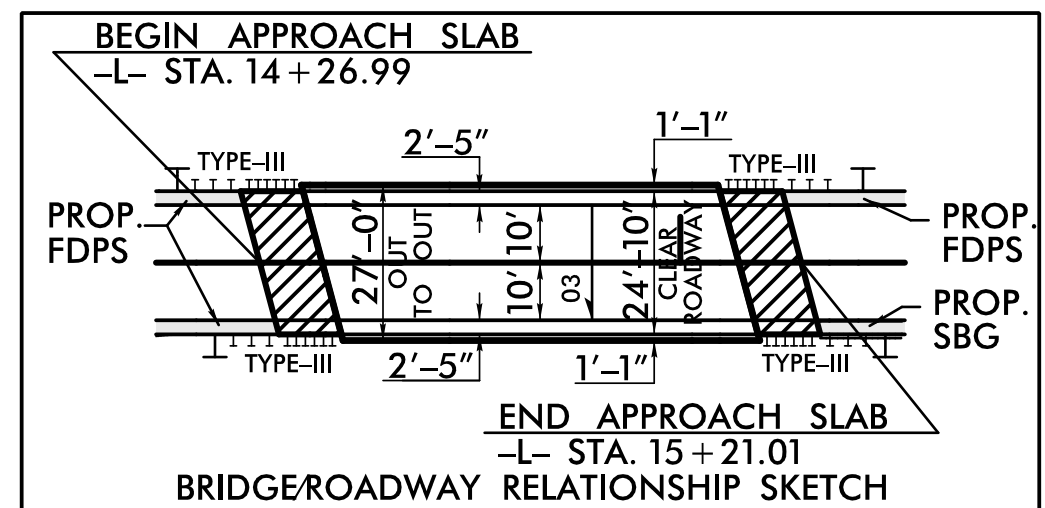
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

PROFESSIONAL SEAL 35018
PROFESSIONAL SEAL 038697

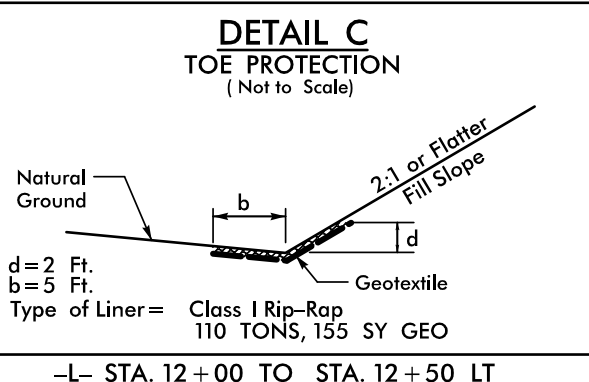
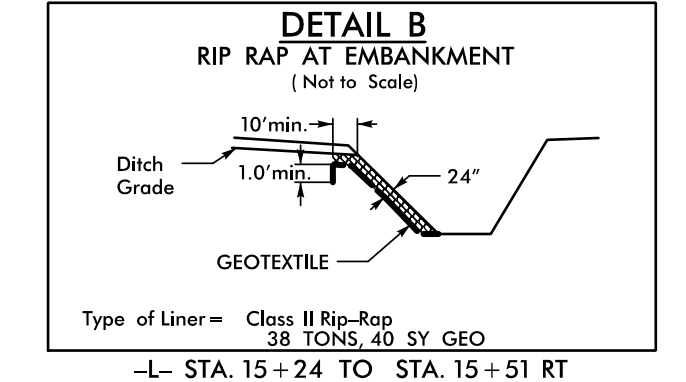
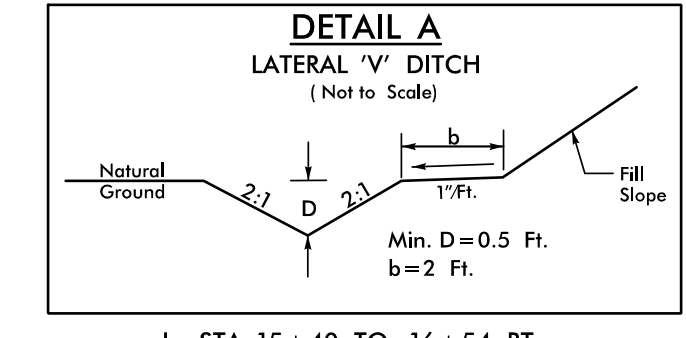
3/6/2019
3/6/2019

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UNLESS ALL SIGNATURES COMPLETED**

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275



BEGIN PROJECT
17BP.13.R.162
-L- STA. 10 + 50.00



-Y- CURVE DATA

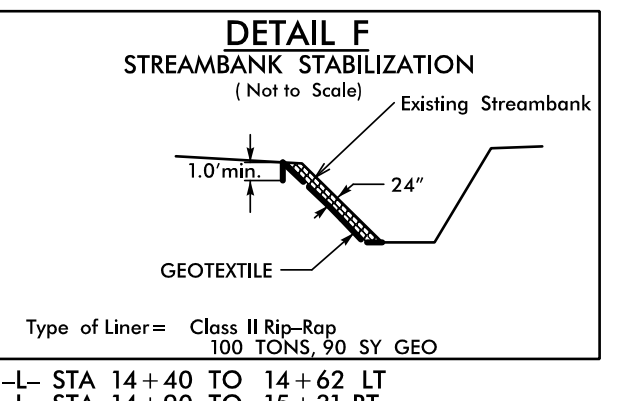
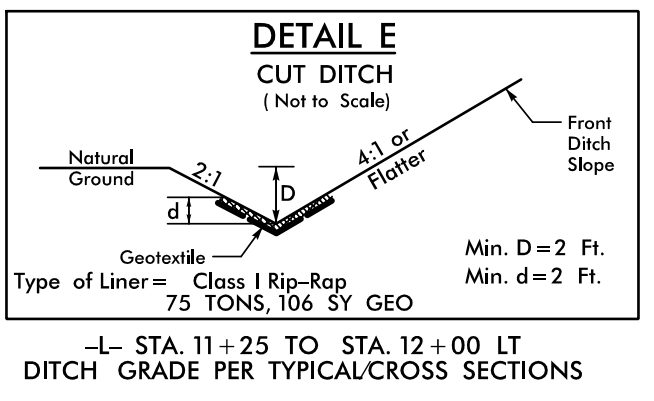
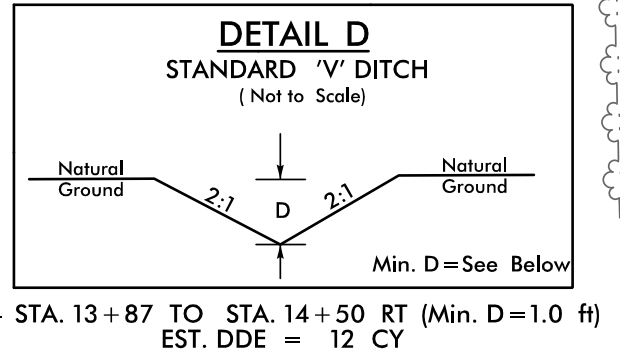
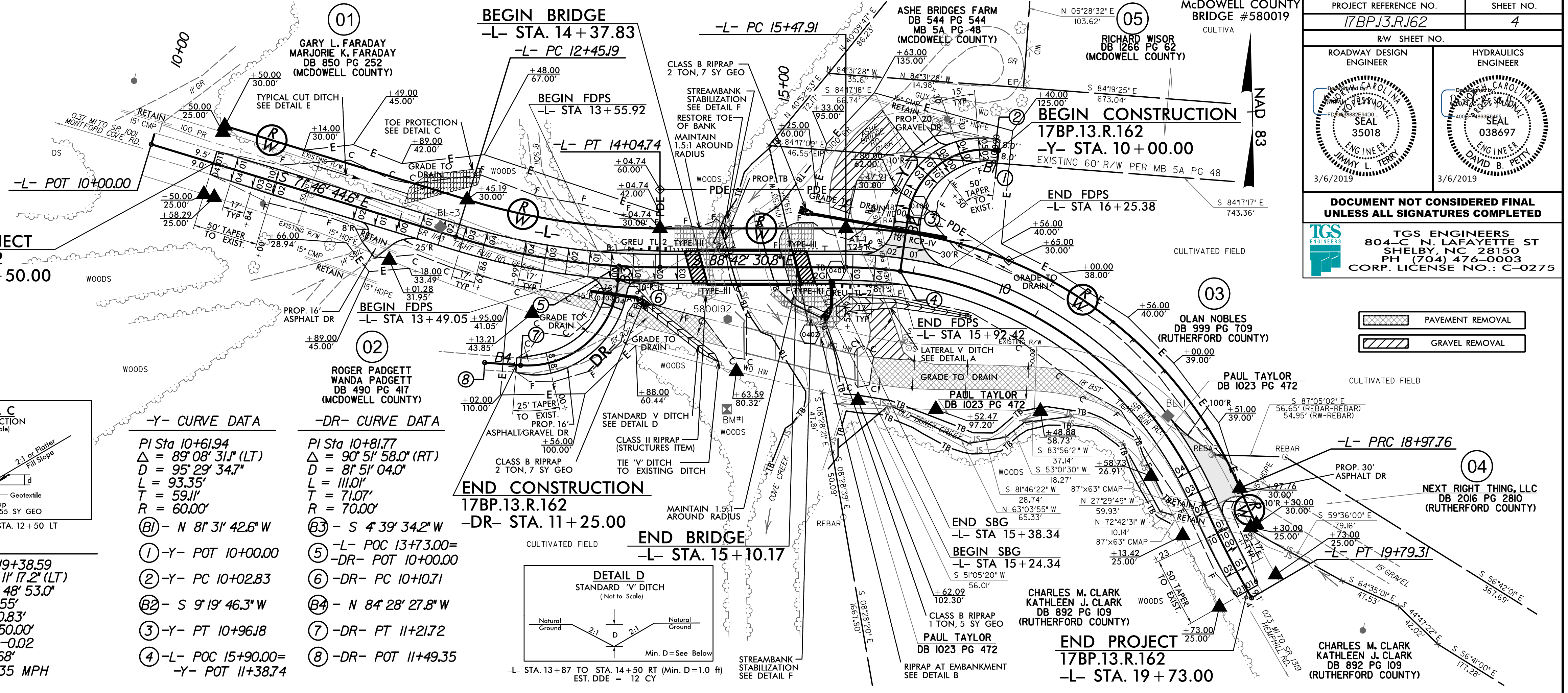
- PI Sta 10+61.94
Δ = 89° 08' 31.1" (LT)
D = 95' 29' 34.7"
L = 93.35'
T = 59.11'
R = 60.00'
- ① -Y- POT 10+00.00
- ② -Y- PC 10+02.83
- ③ -Y- PT 10+96.18
- ④ -L- POC 15+90.00 = -Y- POT 11+38.74

-DR- CURVE DATA

- PI Sta 10+81.77
Δ = 90° 51' 58.0" (RT)
D = 81' 51' 04.0"
L = 111.01'
T = 71.07'
R = 70.00'
- ⑤ -L- POC 13+73.00 = -DR- POT 10+00.00
- ⑥ -DR- PC 10+10.71
- ⑦ -DR- PT 11+21.72
- ⑧ -DR- POT 11+49.35

-L- CURVE DATA

PI Sta 13+25.55 Δ = 16° 55' 46.3" (LT) D = 10' 36' 37.2" L = 159.56' T = 80.36' R = 540.00' SE = -0.01 RO = 68' DS = 35 MPH	PI Sta 17+45.79 Δ = 66° 48' 58.3" (RT) D = 19' 05' 54.9" L = 349.85' T = 197.87' R = 300.00' SE = 0.04 RO = 68' DS = 30 MPH	PI Sta 19+38.59 Δ = 7° 11' 17.2" (LT) D = 8' 48' 53.0" L = 81.55' T = 40.83' R = 650.00' SE = -0.02 RO = 68' DS = 35 MPH
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EX. CULVERT HYDRAULIC DATA
2-87"x63" CMAP @ -L- Sta. 19+08

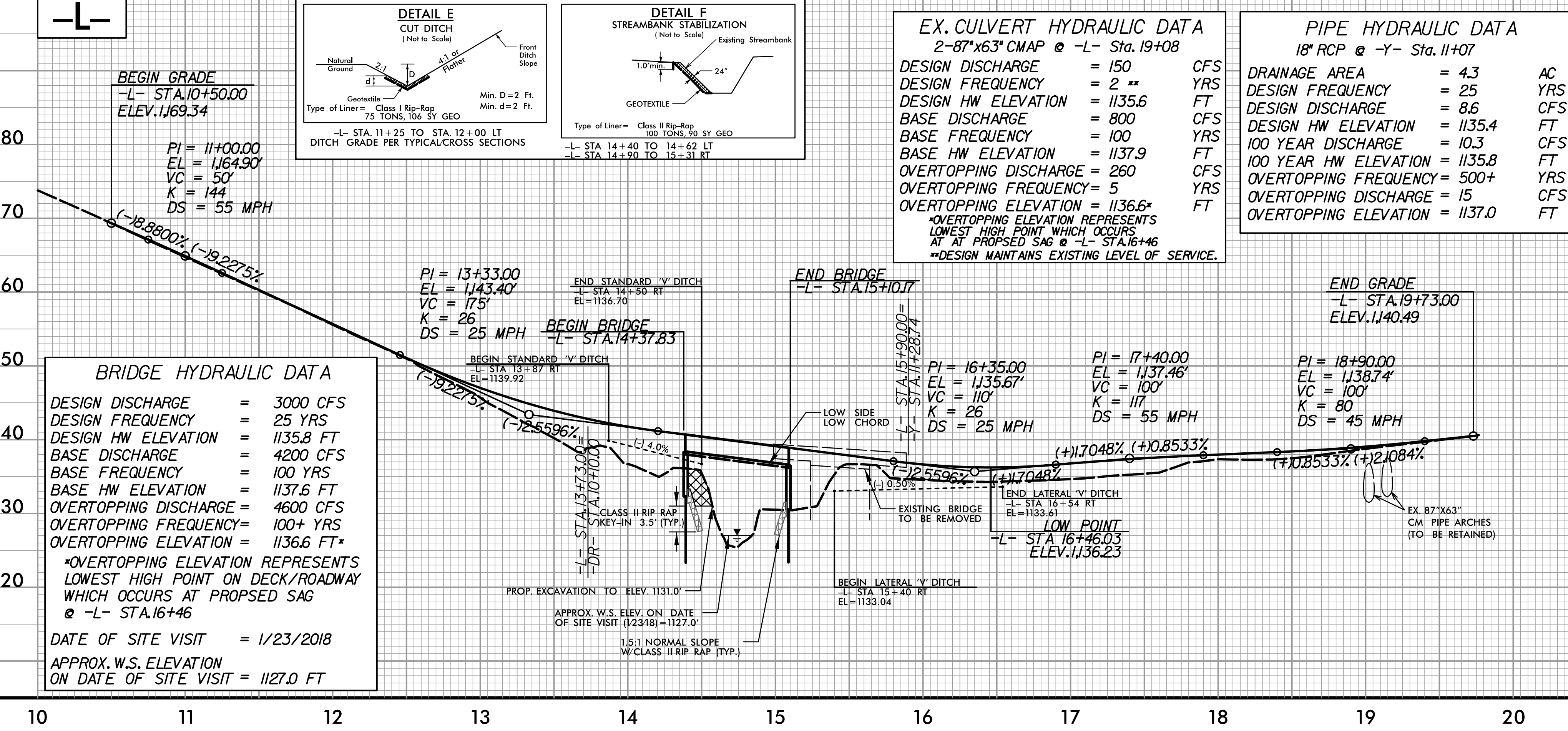
DESIGN DISCHARGE	= 150	CFS
DESIGN FREQUENCY	= 2 **	YRS
DESIGN HW ELEVATION	= 1135.6	FT
BASE DISCHARGE	= 800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1137.9	FT
OVERTOPPING DISCHARGE	= 260	CFS
OVERTOPPING FREQUENCY	= 5	YRS
OVERTOPPING ELEVATION	= 1136.6*	FT

*OVERTOPPING ELEVATION REPRESENTS LOWEST HIGH POINT WHICH OCCURS AT PROPOSED SAG @ -L- STA. 16+46
**DESIGN MAINTAINS EXISTING LEVEL OF SERVICE.

PIPE HYDRAULIC DATA
18" RCP @ -Y- Sta. 11+07

DRAINAGE AREA	= 4.3	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 8.6	CFS
DESIGN HW ELEVATION	= 1135.4	FT
100 YEAR DISCHARGE	= 10.3	CFS
100 YEAR HW ELEVATION	= 1135.8	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 15	CFS
OVERTOPPING ELEVATION	= 1137.0	FT

1,180	-L-	BEGIN GRADE -L- STA. 10+50.00 ELEV. 1169.34	1,150			
		PI = 11+00.00 EL = 1164.90' VC = 50' K = 144 DS = 55 MPH		-Y-	END GRADE -Y- STA. 11+28.74 = -L- STA. 15+90.00, 10' LT ELEV. 1137.24	1,140
		BEGIN GRADE -Y- STA. 10+00.00 ELEV. 1136.85			1,130	
		PROF. 18" RCP				
1,170	-DR-	PI = 10+41.00 EL = 1142.65' VC = 30' K = 7	PI = 10+90.00 EL = 1140.21' VC = 60' K = 8		1,170	
1,160		BEGIN GRADE -DR- STA. 10+10.00 = -L- STA. 13+73.00, 10' RT ELEV. 1142.77	1,160			
1,150		END GRADE -DR- STA. 11+25.00 ELEV. 1141.4		1,150		
1,140		004 (-10.3871%, -14.9796%, +12.6571%)	1,140			
1,130		1,130				



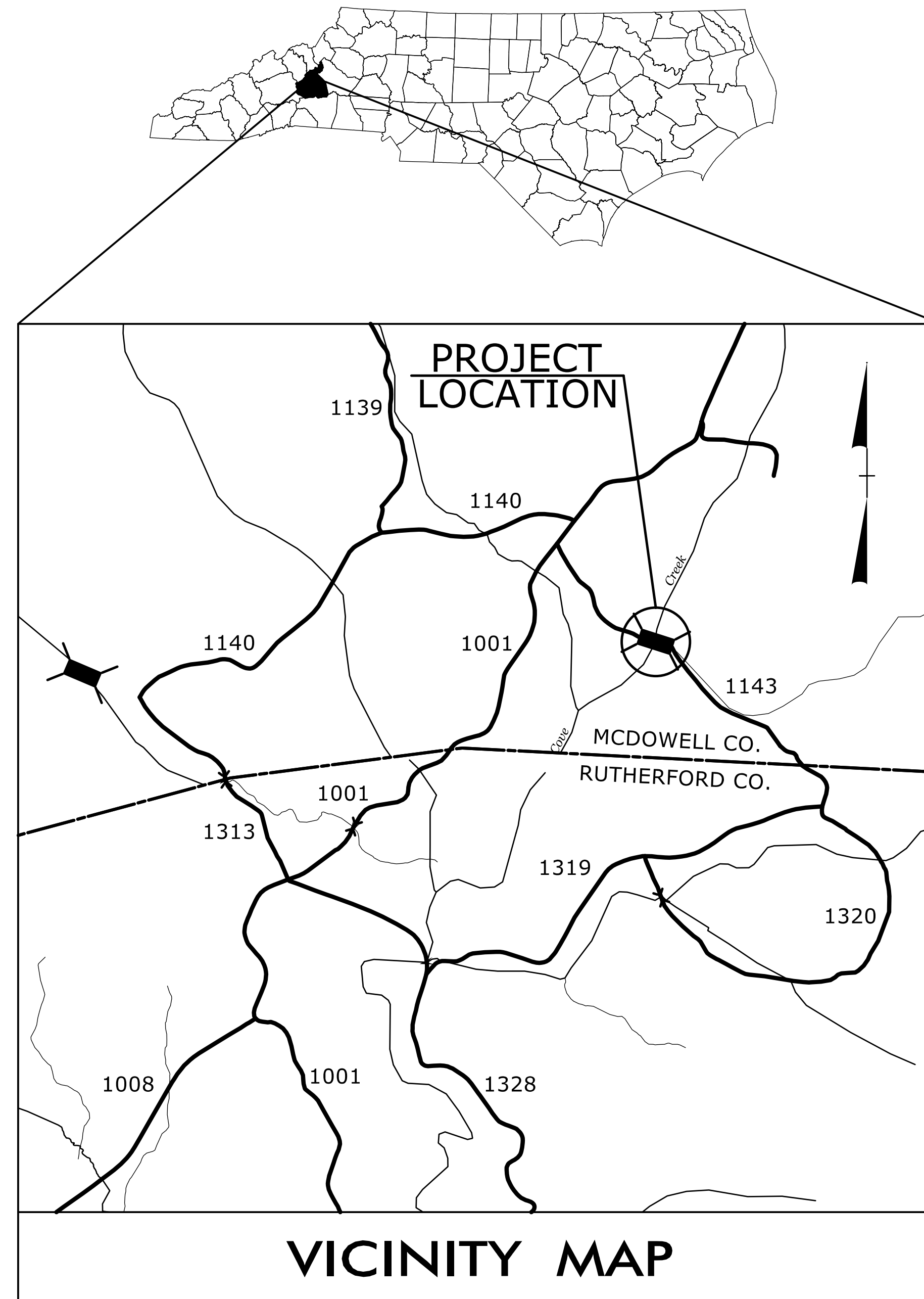
REVISIONS

2/22/2019
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McDowell119

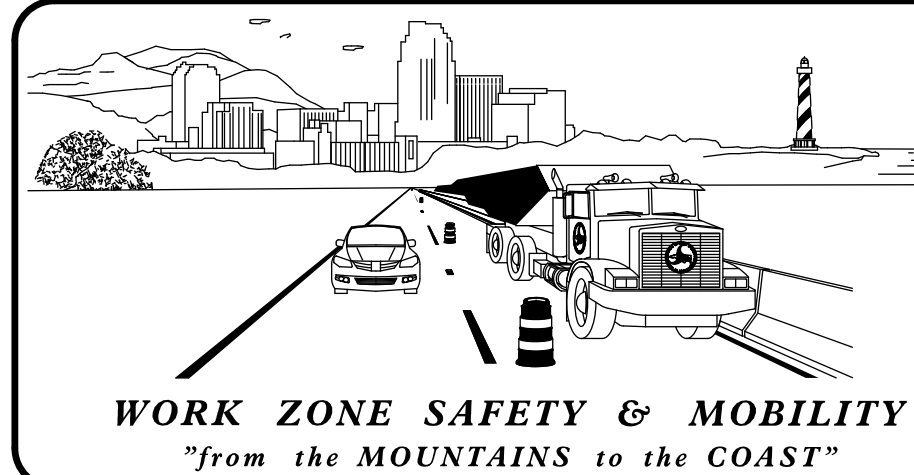
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

MCDOWELL COUNTY



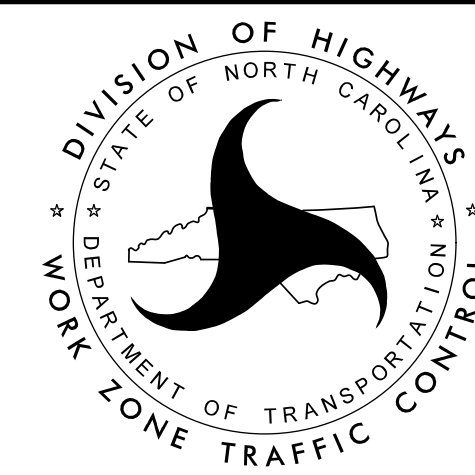
NCDOT CONTACT INFORMATION:
Phone: 828 298 1128 Fax: 828 299 0654
CHRIS MEDLIN, PE
Division Bridge Program Manager



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

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

JIMMY TERRY, PE PROJECT ENGINEER
SANDRA MELVIN DESIGN ENGINEER



INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING SCHEDULE
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES AND LOCAL NOTES)
TMP-2	PHASING NOTES
TMP-3	PHASE I DETAILS
TMP-4	PHASE II DETAILS

SHEET NO.

TMP-1

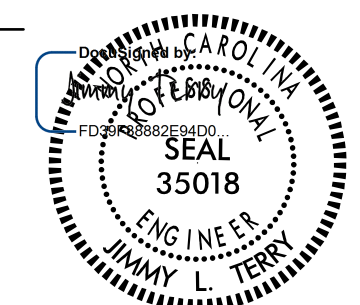
PROJECT: 17BP.13.R.162

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APPROVED: _____

DATE: _____

3/6/2019



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ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

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

- WORK AREA
- PAVEMENT REMOVAL

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- PROPOSED LINES

TRAFFIC CONTROL DEVICES

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

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION
PAINT (4")	
PI	YELLOW DOUBLE CENTER

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APPROVED: _____ DATE: _____ 3/6/2019			ROADWAY STANDARD DRAWINGS, LEGEND, & TEMPORARY PAVEMENT MARKING SCHEDULE
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GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

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

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

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

 BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.
- G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

- H) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

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

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
TIGHT RUN RD	PAINT	NONE
- O) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE.
- P) 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.
- Q) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- R) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS BY THE END OF EACH DAY'S OPERATION.

LOCAL NOTES

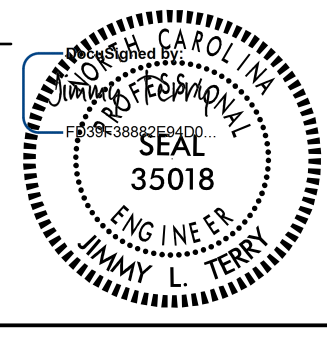
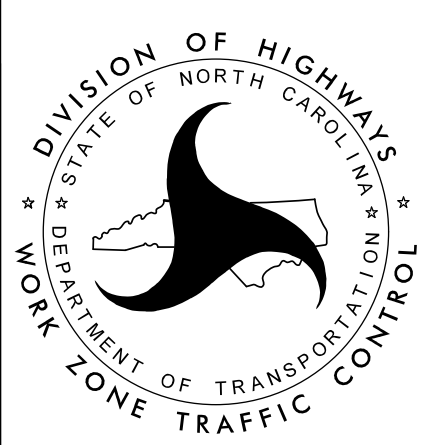
UNLESS OTHERWISE NOTED MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES.

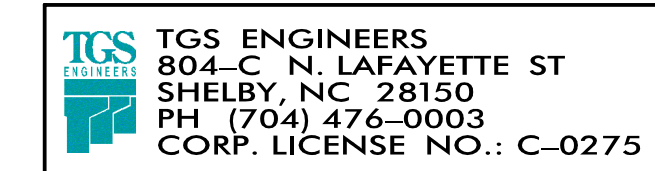
PROVIDE ONE MONTH NOTICE TO THE ENGINEER, MCDOWELL COUNTY AND RUTHERFORD EMERGENCY SERVICES, AND MCDOWELL AND RUTHERFORD COUNTY SCHOOL OFFICIALS PRIOR TO CONSTRUCTION.

MANAGEMENT STRATEGIES

THE PROPOSED TIGHT RUN RD (SR 1143) WILL BE CONSTRUCTED USING A COMBINATION OF TEMPORARY LANE CLOSURES AND FLAGGERS AS NEEDED.

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APPROVED: _____ DATE: _____ 3/6/2019			<h3 style="margin: 0;">TRANSPORTATION OPERATIONS PLAN</h3>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



PHASING

UNLESS OTHERWISE NOTED PROVIDE ACCESS TO ALL DRIVES AT ALL TIMES.

UNLESS OTHERWISE NOTED TWO WAY THROUGH TRAFFIC SHALL BE MAINTAINED ON TWO 10 FT (MIN.) LANES AT ALL TIMES WHILE FLAGGERS ARE NOT AT WORK.

Phase I

STEP 1:

INSTALL ALL ADVANCE WORK ZONE WARNING SIGNS ON -L- IN ACCORDANCE WITH NCDOT STD DRAWING 1101.01, SHEET 3 OF 3.

STEP 2:

WITH THE EXISTING TRAFFIC IN ITS ORIGINAL PATTERN CONSTRUCT THE FOLLOWING UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AS SHOWN ON PLAN (TMP-3):

- L- STA. 10+50 TO -L- STA. 14+37.83 (BEGIN BRIDGE)
- L- STA. 15+10.17 (END BRIDGE) TO -L- STA. 15+42
- L- STA. 15+72 TO -L- STA 19+73

CONSTRUCT THE DRIVE RT OF -L- STA 13+73 AS FOLLOWS (TMP-3):
PLACE ASPHALT PAVEMENT FROM -DR-STA 10+10 TO -DR- STA. 10+21 UP TO BUT NOT INCLUDING THE FINAL L AYER OF SURFACE.

CONSTRUCT THE NEW BRIDGE OVER COVE CREEK FROM -L- STA. 14+37.83 TO -L- STA. 15+10.17.

PLACE THE GUARDRAIL AS SHOWN ON PLANS. (SEE TMP-3)

CONSTRUCT THE DRIVE LT OF -L- STA 18+82 (SEE TMP-3)

WITH EXISTING TRAFFIC IN ITS ORIGINAL PATTERN CONSTRUCT THE REALIGNED ASHE BRIDGE ROAD (-Y-) AS FOLLOWS (SEE TMP-3):
PLACE GRAVEL FROM -Y- STA. 10+35 TO -Y- STA 11+01.
PLACE ASPHALT PAVEMENT FROM -Y- STA 11+01 TO -Y- STA 11+28.74 UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE

STEP 3:

WITH THE ASHE BRIDGE RD TRAFFIC PLACED ONTO THE NEW ALIGNMENT CONSTRUCT THE FOLLOWING UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE:

- L- STA 15+42 TO -L- STA 15+72

PLACE THE GUARDRAIL AS SHOWN ON PLANS. (SEE TMP-3)

STEP 4:

USING TEMPORARY LANE CLOSURES AND FLAGGERS WHEN NEEDED PLACE TEMPORARY PAVEMENT MARKINGS AS SHOWN ON PLAN TMP-3 AND OPEN THE NEW ALIGNMENT TO THRU TRAFFIC.
SEE NCDOT RDY STD DRAWING 1101.02 SHT 1 OF 14

Phase II

STEP 1:

WITH TRAFFIC ON THE NEW ALIGNMENT CLOSE EXISTING TIGHT RUN RD TO THRU TRAFFIC AND USING TEMPOARY LANE CLOSURES AND FLAGGERS WHEN NEEDED CONSTRUCT THE FOLLOWING UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE AS SHOWN ON PLAN (TMP-4):

- L- STA. 10+50 TO -L- STA 13+20
- L- STA 17+69 TO -L- STA 19+73

USING GRAVEL CONSTRUCT THE TIE BETWEEN EXISTING AND REALIGNED ASHE BRIDGE RD AS FOLLOWS (SEE TMP-4): -Y- STA 10+00 TO -Y- STSA 10+35

CONSTRUCT THE DRIVE RT OF -L- STA 13+73 AS FOLLOWS (SEE TMP-4):
PLACE ASPHALT PAVEMENT FROM -DR-STA 10+21 TO -DR- STA. 10+31 UP TO BUT NOT INCLUDING THE FINAL L AYER OF SURFACE COURSE.
PLACE GRAVEL FROM -DR- STA. 10+31 TO -DR- STA 11+25.

CONSTRUCT THE DRIVE RT OF -L- STA. 12+00 (SEE TMP-4)

STEP 2:

REMOVE THE EXISTING BRIDGE OVER COVE CREEK (SEE TMP-4)
REMOVE EXISTING ASPHALT PAVEMENT (SEE TMP-4)
REMOVE EXISTING GRAVEL RD AS SHOWN ON PLANS. (SEE TMP-4)

STEP 3:

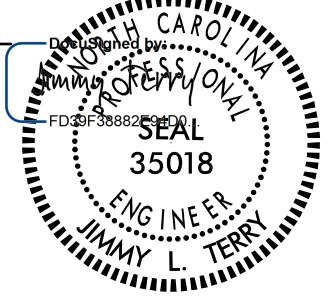

USING FLAGGERS AND TEMPORARY LANE CLOSURES PLACE THE FINAL LAYER OF SURFACE COURSE AS FOLLOWS (SEE TMP-4):

- L- STA 10+50 TO -L- STA 14+37.83 (BEGIN BRIDGE)
 - L- STA 15+10.17 (END BRIDGE) TO -L- STA 19+73
 - Y- STA 11+01 TO -Y- STA 11+28.74
 - DR- STA. 10+10 TO -DR- STA 10+31
- SEE NCDOT STD DRAWING 1101.02, SHT 1 OF 14

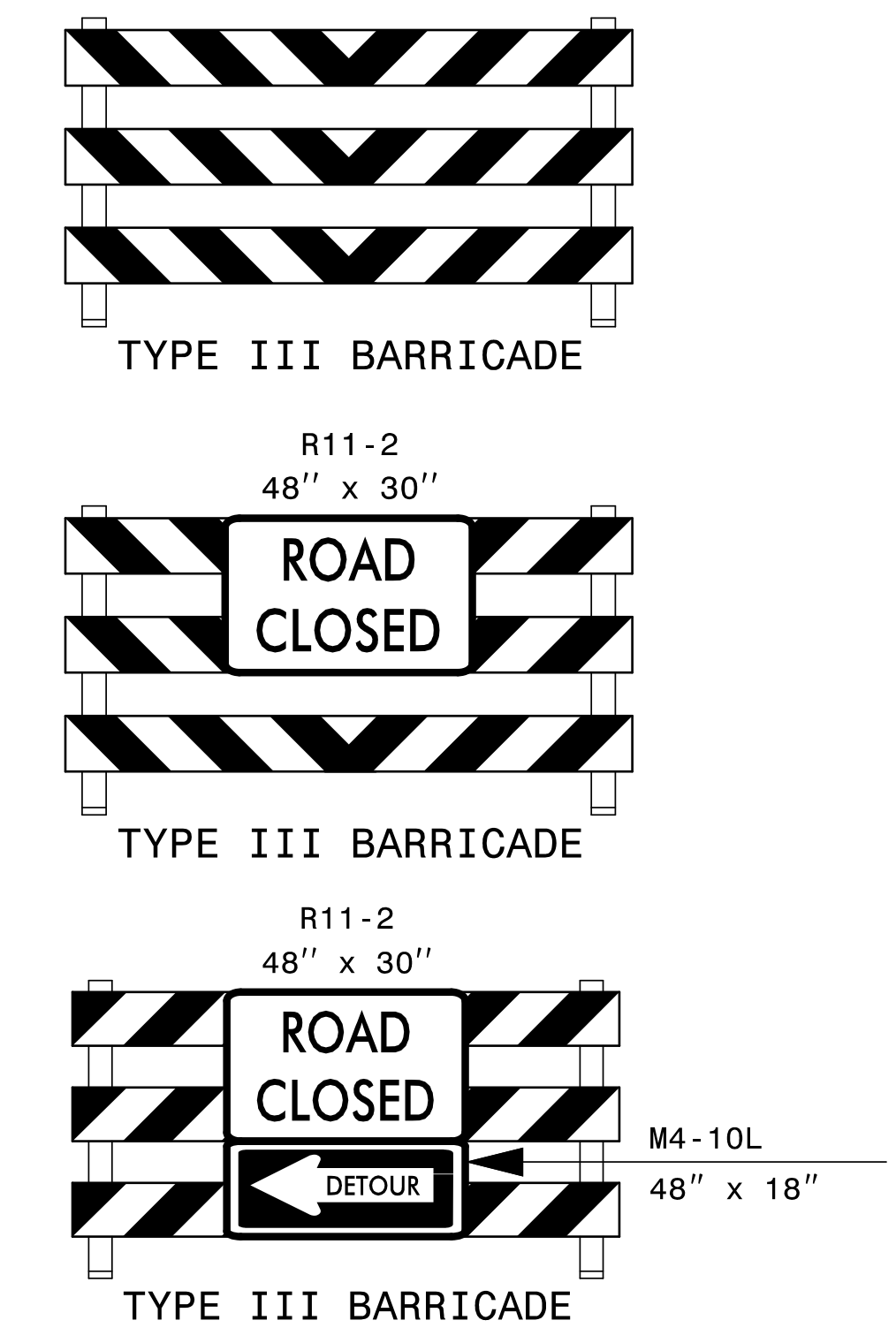
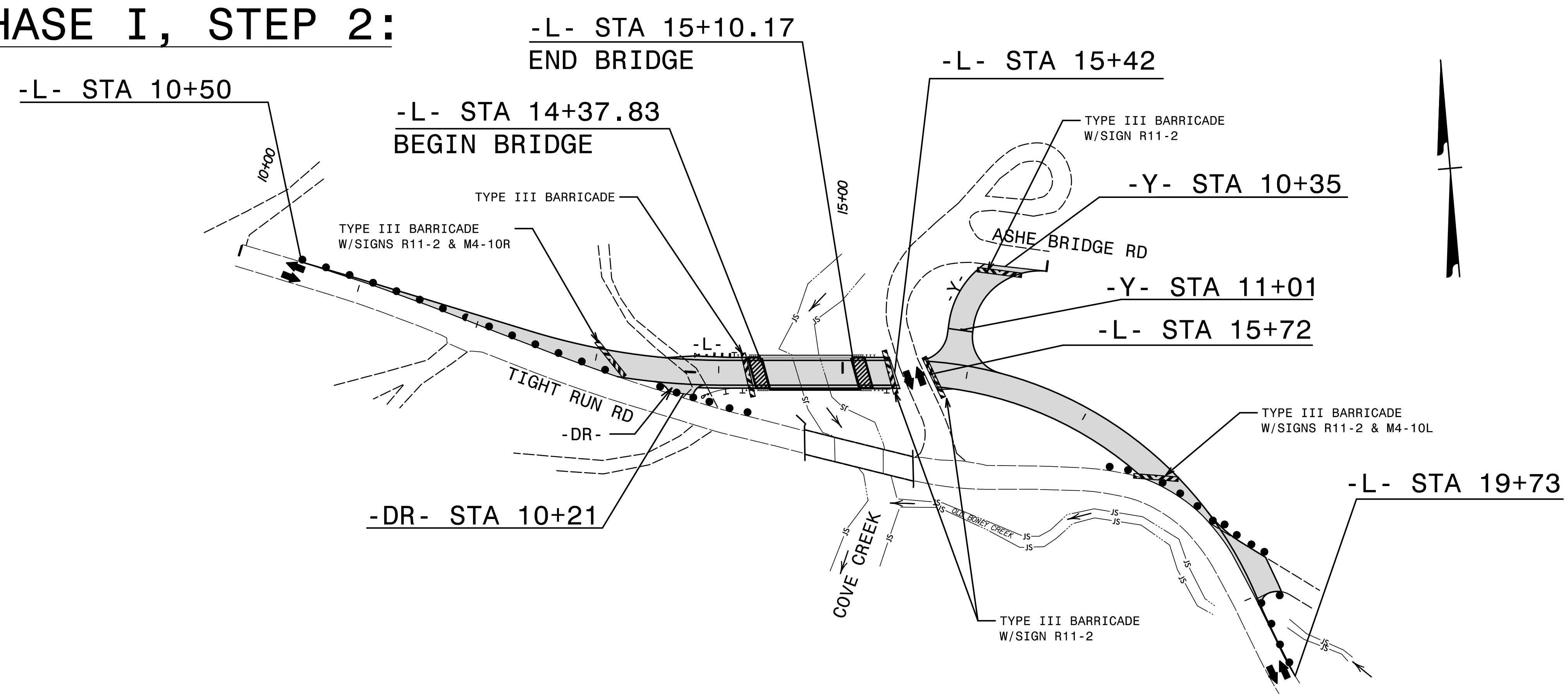
USING FLAGGERS AND TEMPORARY LANE CLOSURES PLACE THE FINAL PAVEMENT MARKING AS SHOWN IN PAVEMENT MARKING PLANS.
SEE NCDOT STD DRAWING 1101.02, SHT 1 OF 14

REMOVE ALL TRAFFIC CONTROL DEVICES AND OPEN ALL ROADS TO TRAFFIC.

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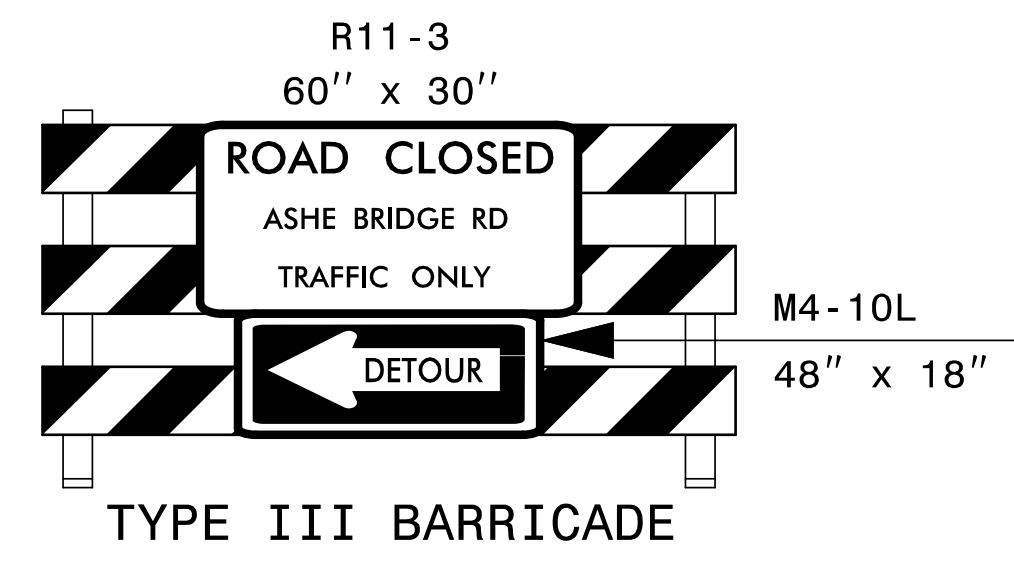
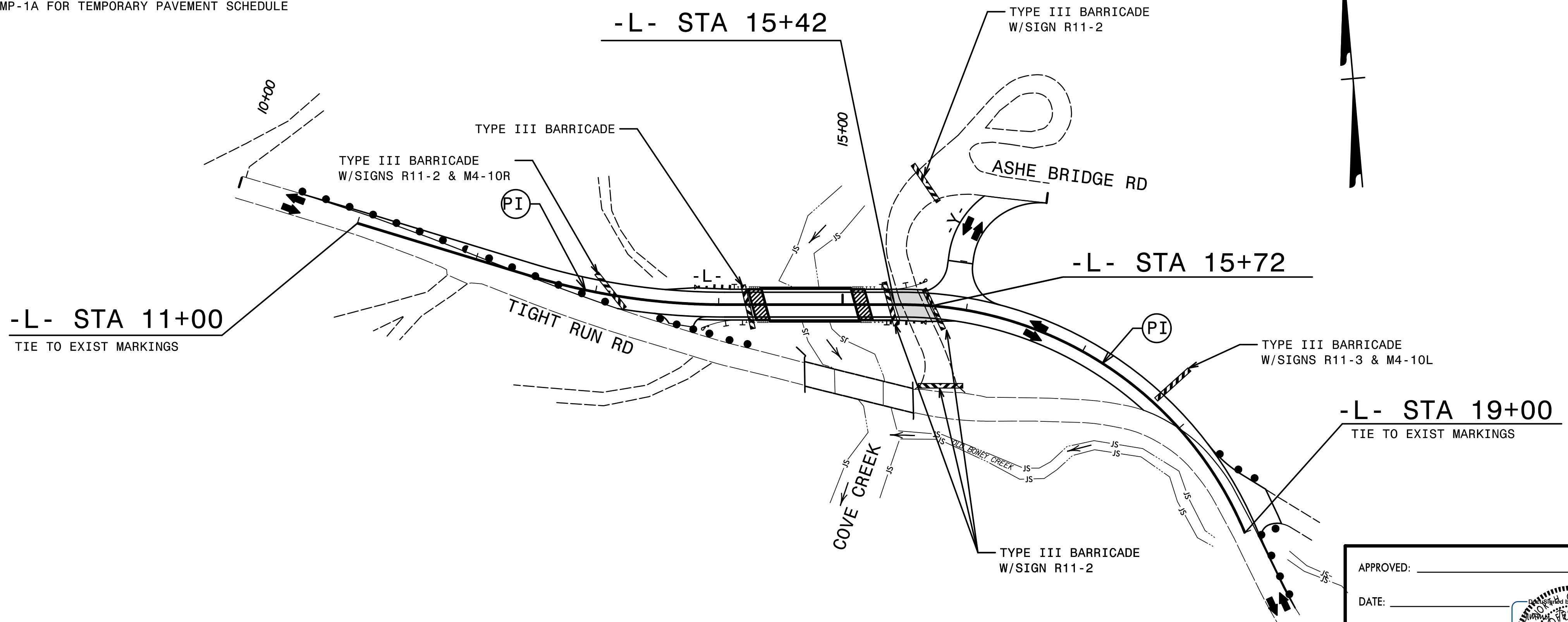
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PHASE I, STEP 2:

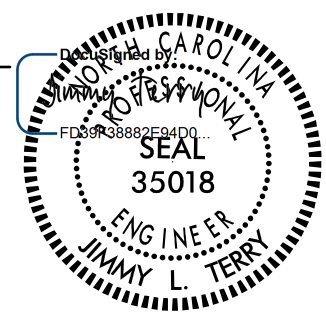


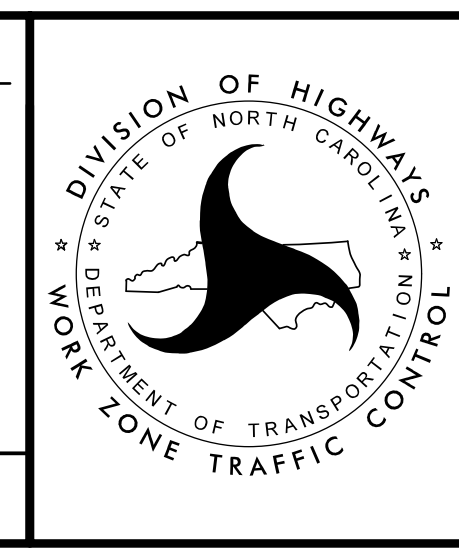
PHASE I, STEP 3:

SEE TMP-1A FOR TEMPORARY PAVEMENT SCHEDULE



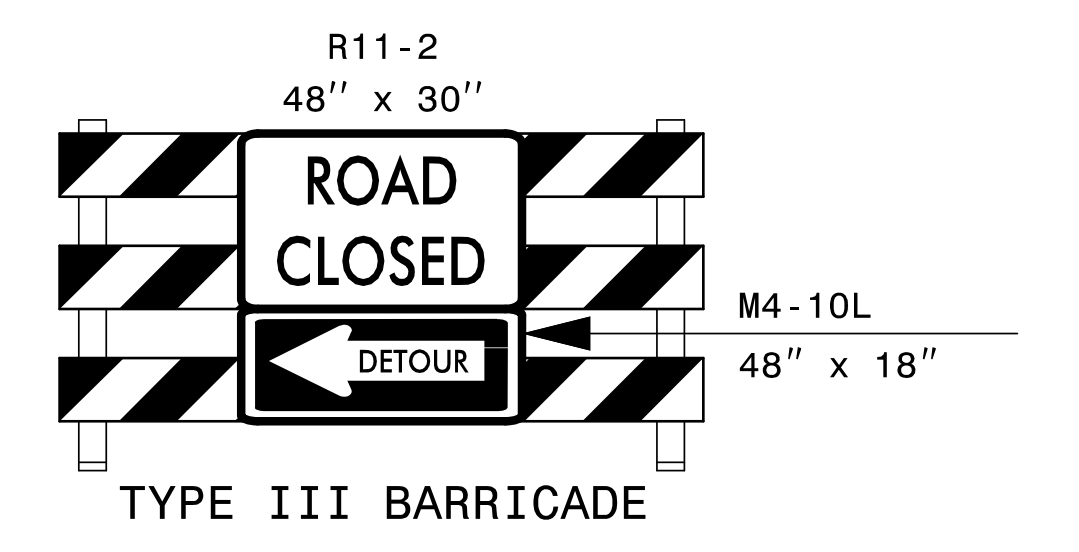
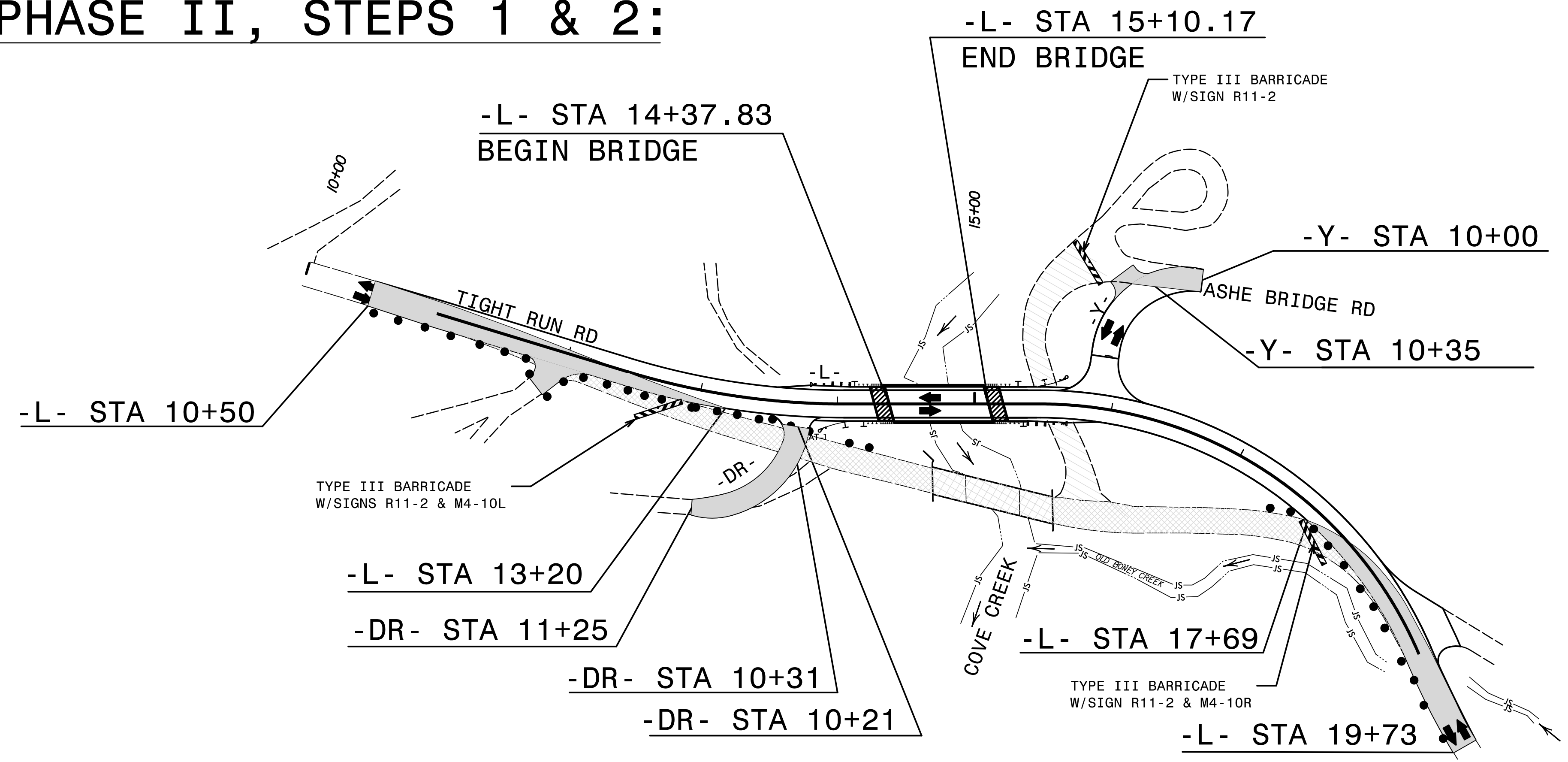
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APPROVED: _____
 DATE: 3/6/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



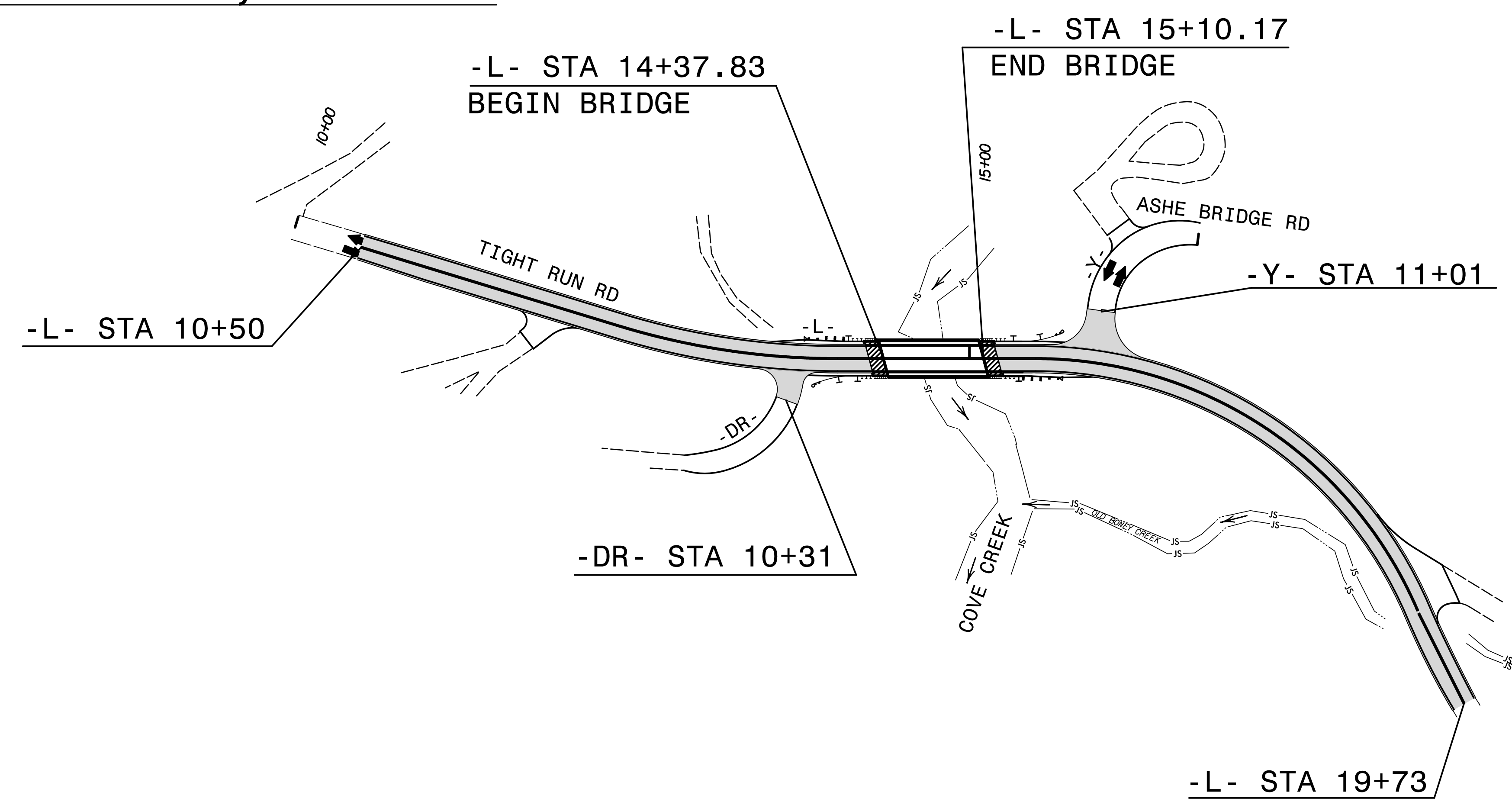
PHASE I

PHASE II, STEPS 1 & 2:



- DENOTES PAVEMENT REMOVAL (ASPHALT)
- DENOTES BRIDGE REMOVAL
- DENOTES GRAVEL REMOVAL

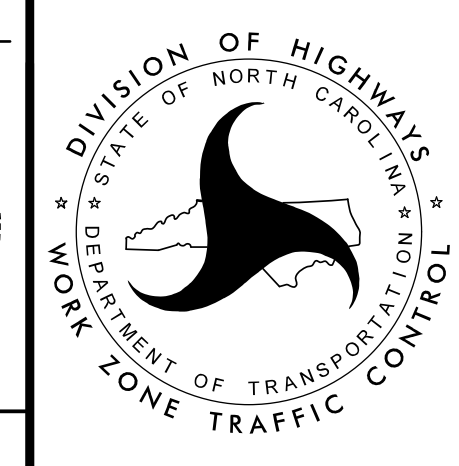
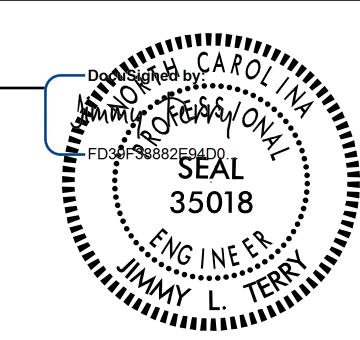
PHASE II, STEP 3:



APPROVED: _____

DATE: 3/6/2019

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PHASE II

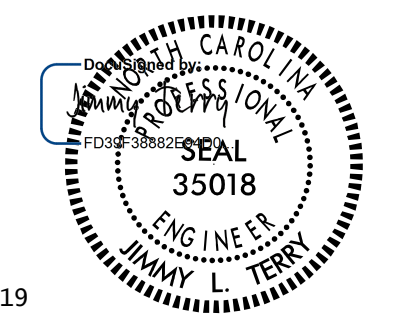
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 User: jsmelvin

T.I.P.: 17BP.13.R.162

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
MCDOWELL COUNTY**

**LOCATION: BRIDGE #580019 ON SR 1143
(TIGHT RUN ROAD) OVER COVE CREEK**

TIP NO. 17BP.13.R.162	SHEET NO. PMP-1
APPROVED: _____	
DATE: _____	
 SEAL 35018 ENGINEER JIMMY L. TERRY 3/6/2019	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ROADWAY STANDARD DRAWING

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

<u>STD. NO.</u>	<u>TITLE</u>
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
PAVEMENT MARKINGS	
PAINT (4")	
PA	WHITE EDGELINE
PI	YELLOW DOUBLE CENTER

GENERAL NOTES

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

- A) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS FOLLOWS:
- | ROAD NAME | MARKING | MARKER |
|----------------------|---------|--------|
| SR 1143 TIGHT RUN RD | PAINT | NONE |
- B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.
- C) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- D) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS.

INDEX

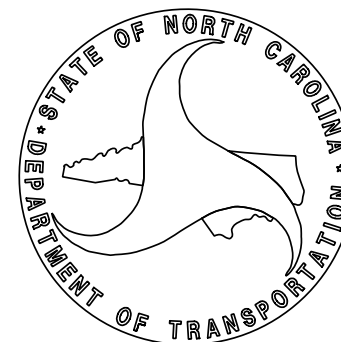
<u>SHEET NO.</u>	<u>DESCRIPTION</u>
PMP-1	PAVEMENT MARKING PLAN TITLE, INDEX OF SHEETS, LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, GENERAL NOTES AND FINAL PAVEMENT MARKING SCHEDULE
PMP-2	PAVEMENT MARKING DETAIL

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



TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

JIMMY TERRY, PE PROJECT ENGINEER
SANDRA MELVIN DESIGN TECHNICIAN

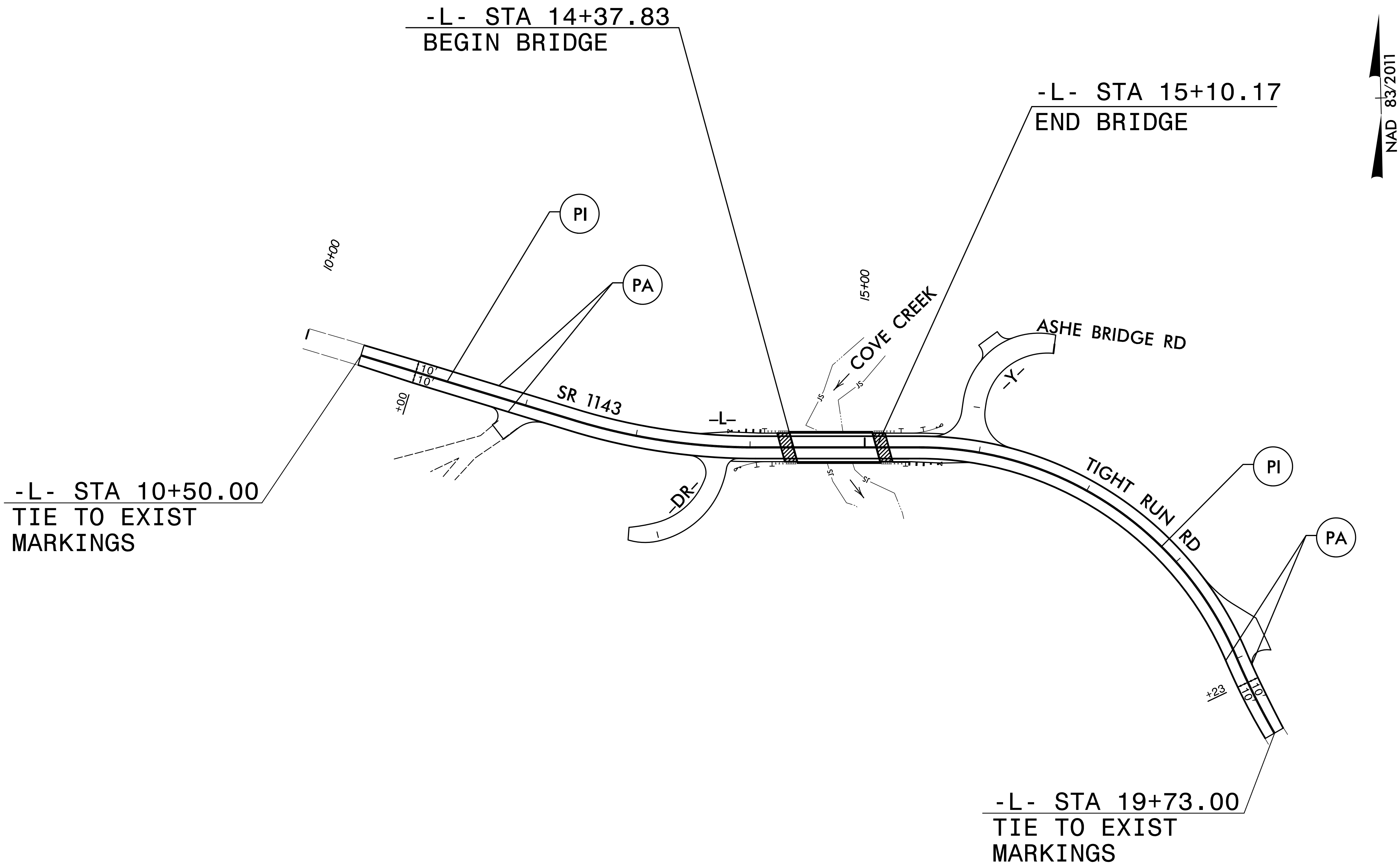


SEE SHEET PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

McDowell County
Bridge #580019

PROJ. REFERENCE NO. 17BP.13.R.162	SHEET NO. PMP-2
--------------------------------------	--------------------

TGS ENGINEERS
804-C. N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

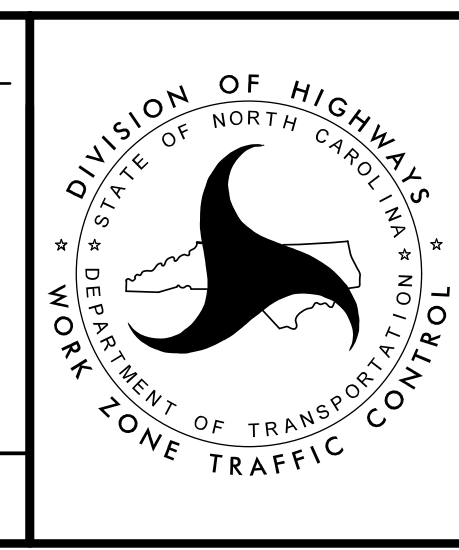


2/29/2019 13:20:17 McDowell\19-Traffic\Signing\Pavement Marking\McDowell\19_TC_PMP_02.dgn User:ismelvin

APPROVED: _____
DATE: _____

3/6/2019

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

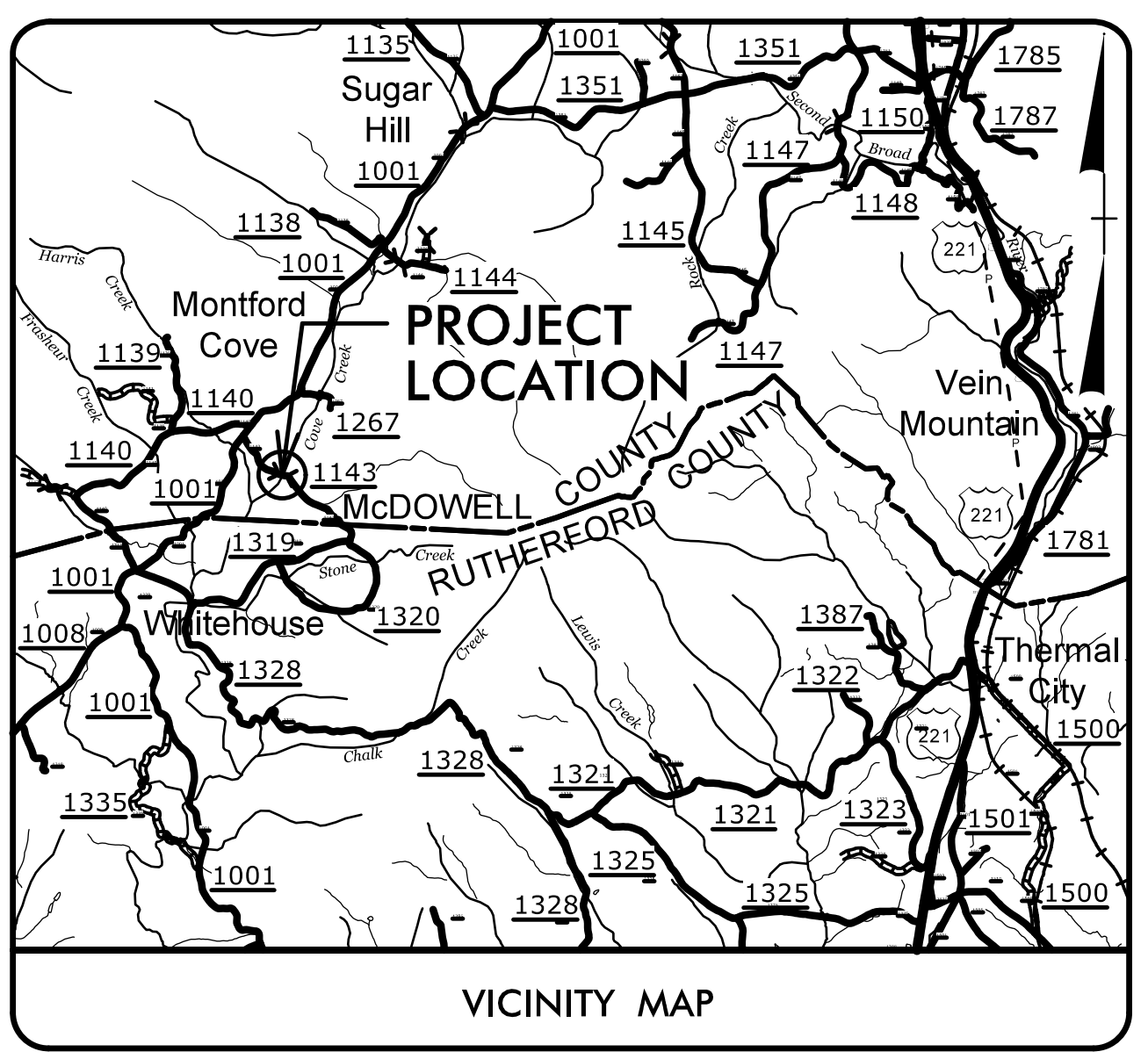


DIVISION OF HIGHWAYS
DEPARTMENT OF TRANSPORTATION
OK ZONE TRAFFIC CONTROL

**PAVEMENT
MARKING
DETAIL**

PROJECT: 17BP.13.R.162

CONTRACT: DM00279

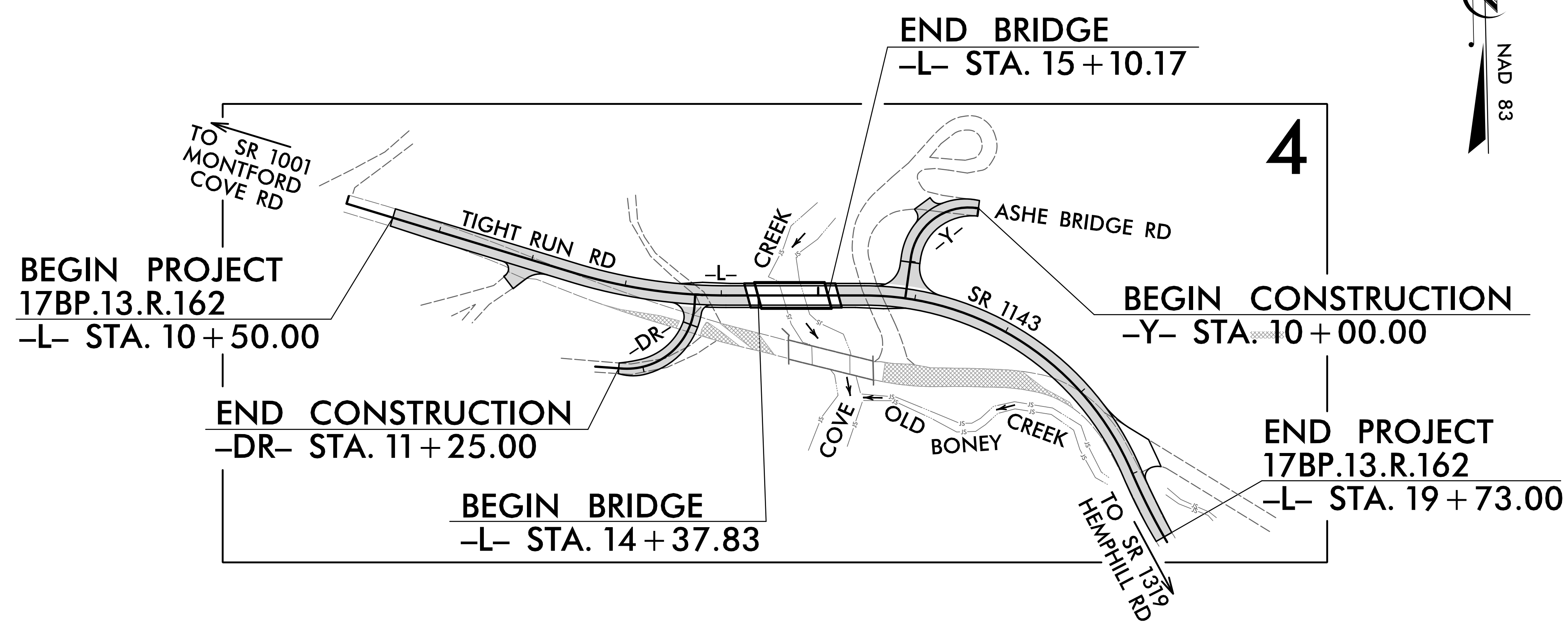


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

MCDOWELL COUNTY

**LOCATION: BRIDGE NO. 580019 OVER COVE CREEK
ON SR 1143 (TIGHT RUN ROAD)**

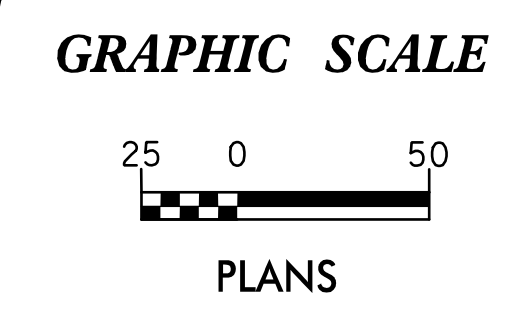
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE



EROSION AND SEDIMENT CONTROL MEASURES

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

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



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY.

Prepared In the Office of:
TGS ENGINEERS
804-C N. LAFAYETTE ST.
SHELBY, NC 28150

2018 STANDARD SPECIFICATIONS

Designed by:
Andrew H. Cochran, PE **3015**
NAME LEVEL III CERTIFICATION NO.

Reviewed In the Office of:
NCDOT DIV. 13 - BRIDGE MAINTENANCE
20 OLD 74
ASHEVILLE, NC 28803

2018 STANDARD SPECIFICATIONS

Reviewed by:

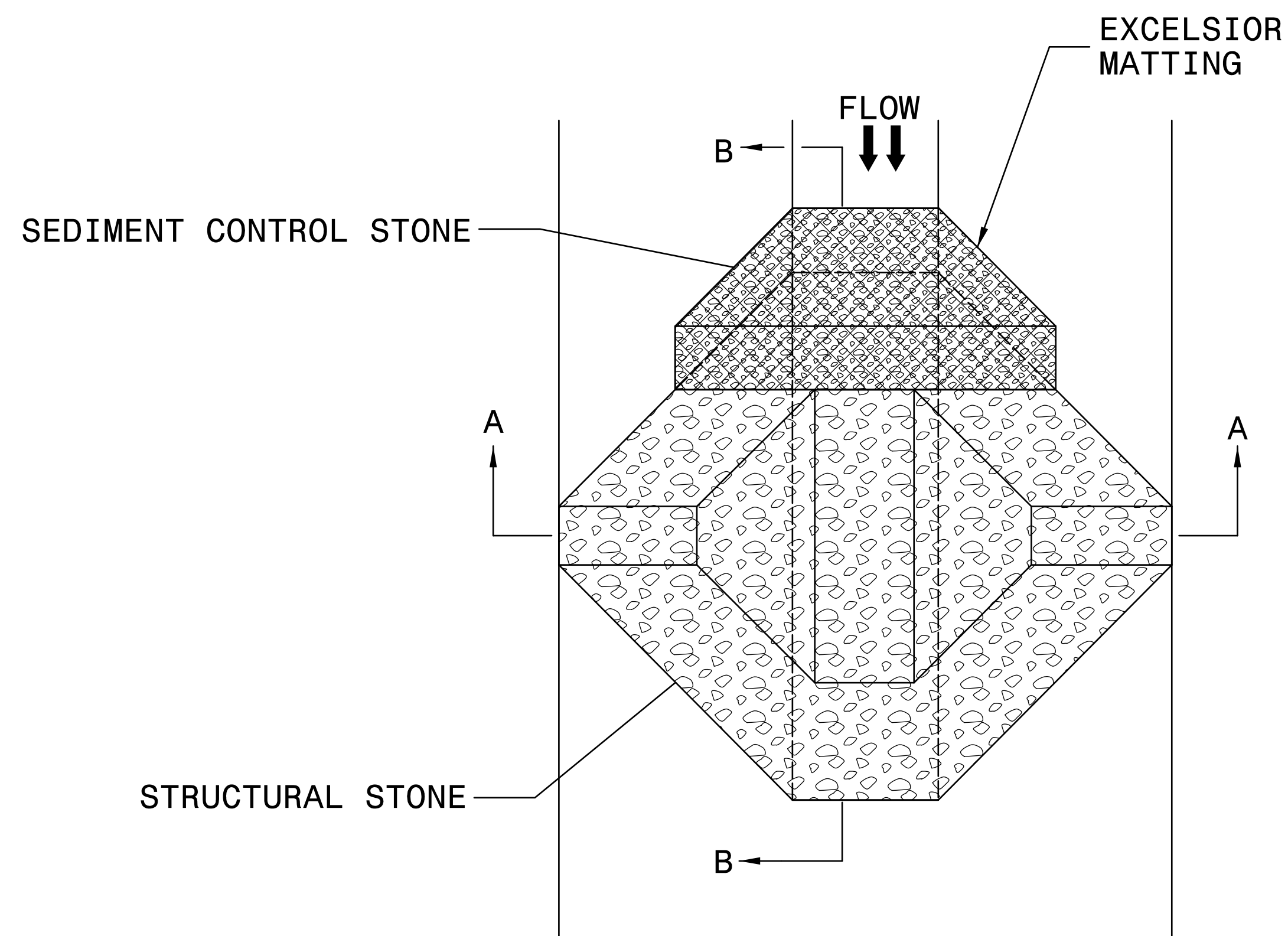
Roadway Standard Drawings

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

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

PROJECT REFERENCE NO. 17BPJ3RJ62	SHEET NO. EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



PLAN

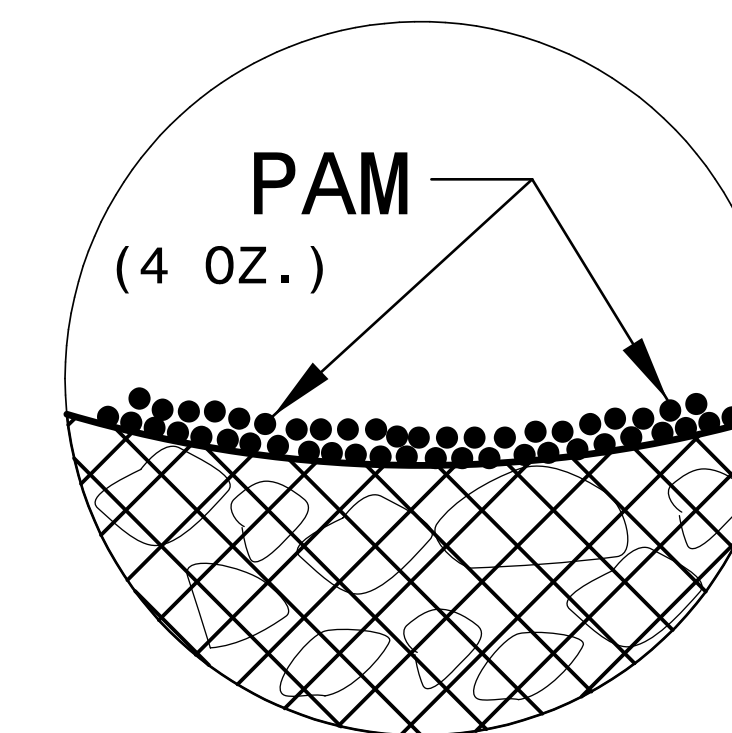
NOTES:

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

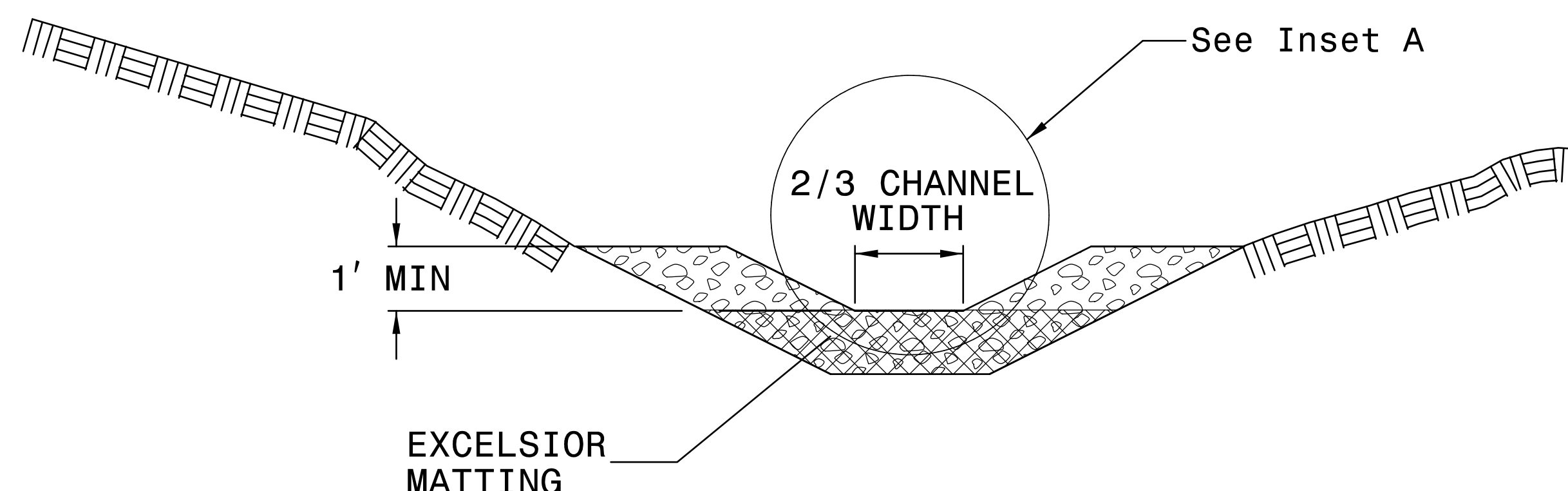
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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.

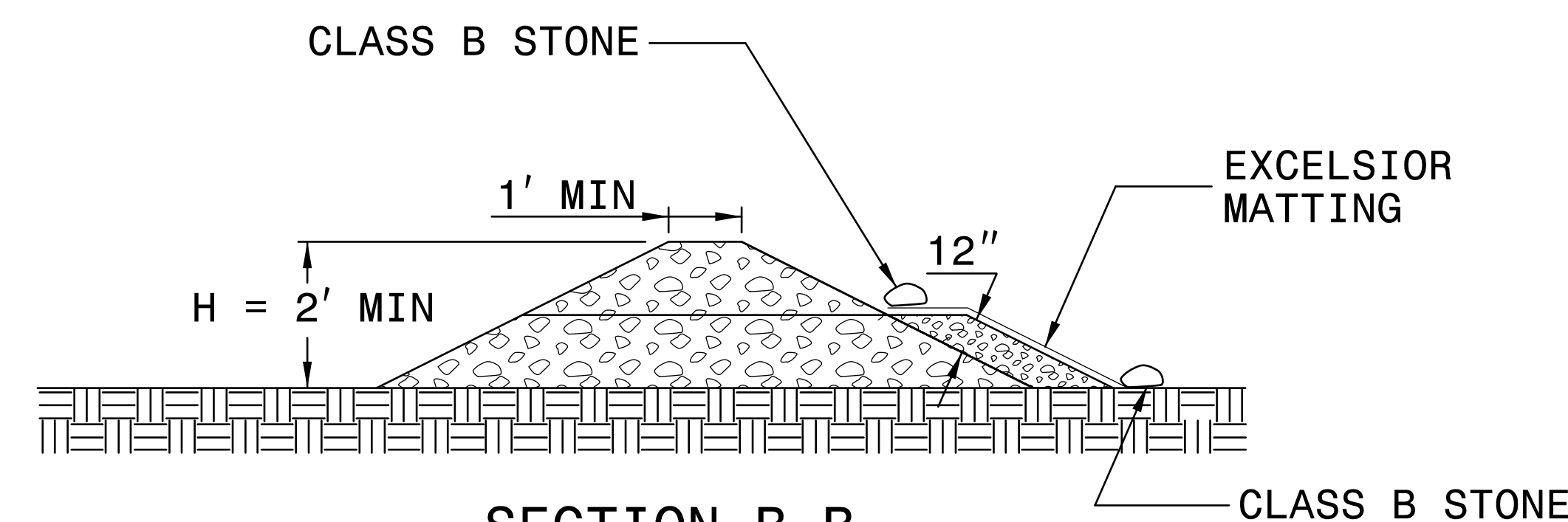
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

NOT TO SCALE


DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

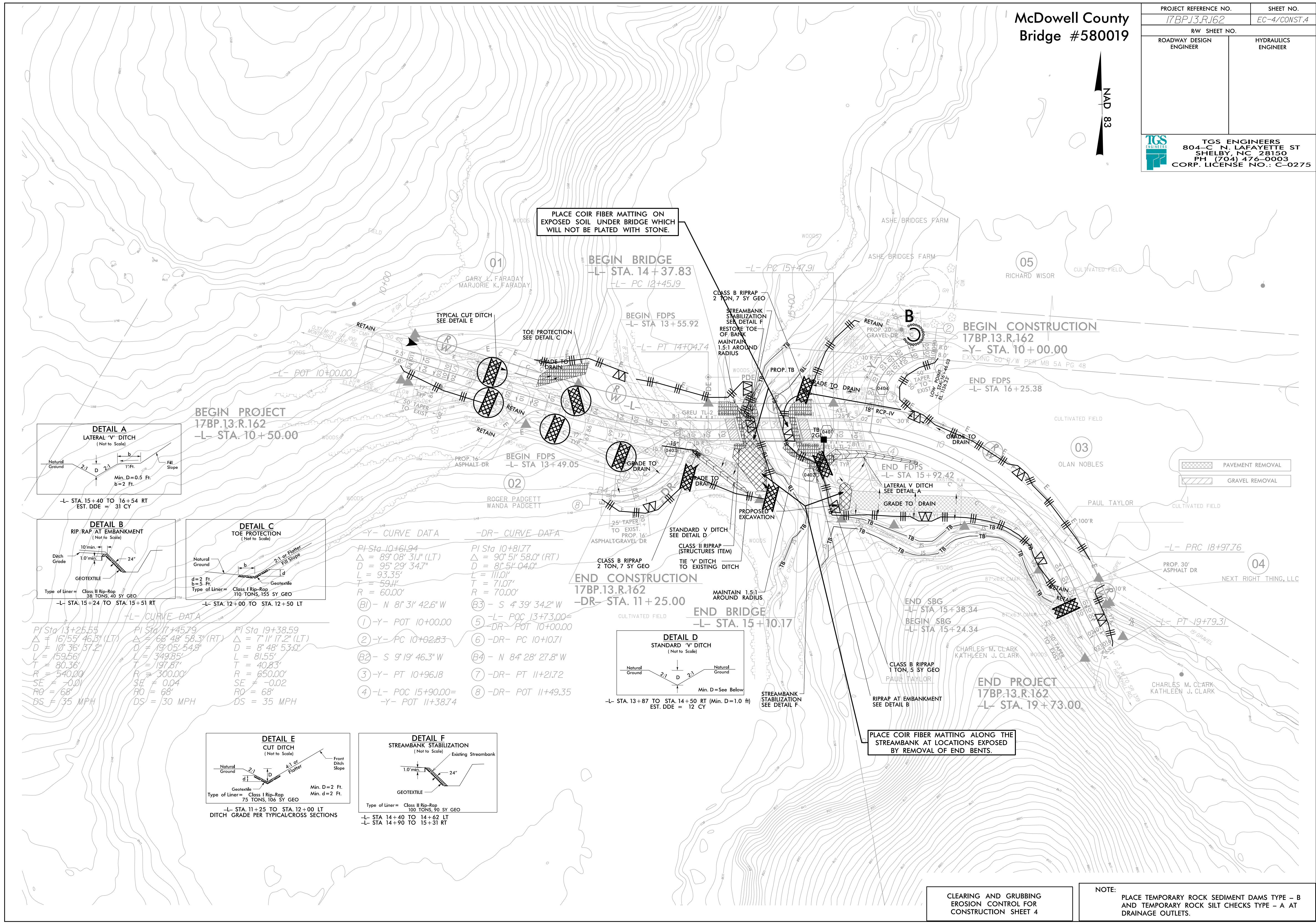
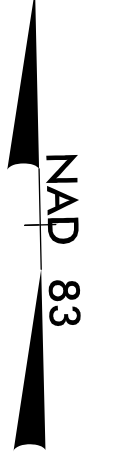
PROJECT REFERENCE NO. <i>17BP13RJ62</i>	SHEET NO. <i>EC-3</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
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.

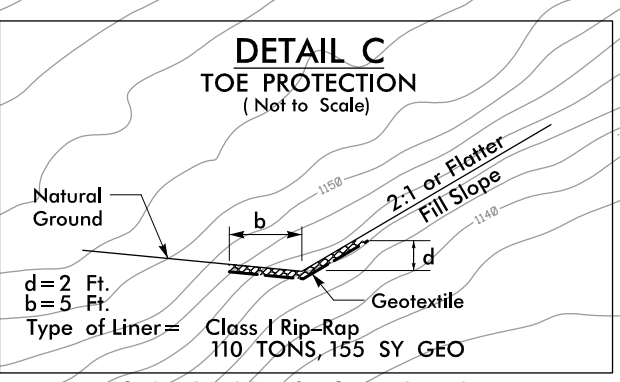
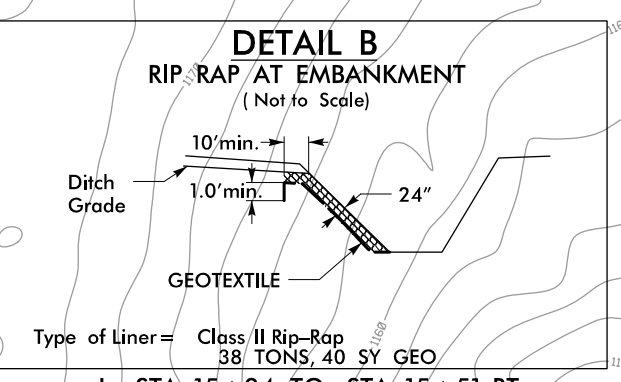
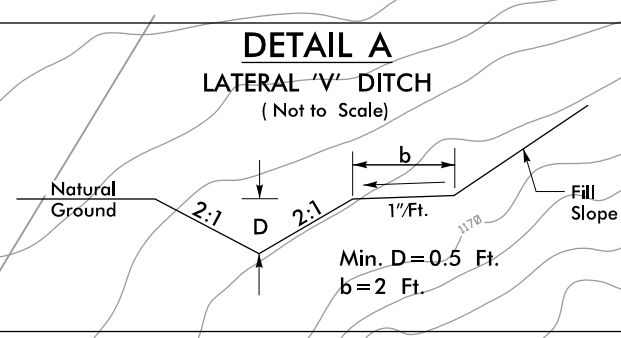
McDowell County Bridge #580019

PROJECT REFERENCE NO. 17BP.13.R.162	SHEET NO. EC-4/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



PLACE COIR FIBER MATTING ON EXPOSED SOIL UNDER BRIDGE WHICH WILL NOT BE PLATED WITH STONE.

PLACE COIR FIBER MATTING ALONG THE STREAMBANK AT LOCATIONS EXPOSED BY REMOVAL OF END BENTS.



-Y- CURVE DATA

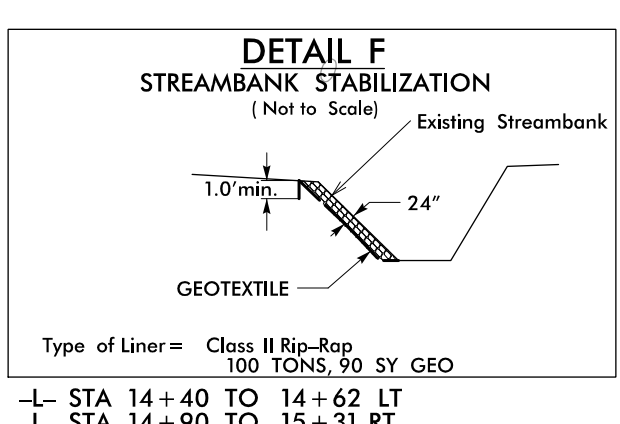
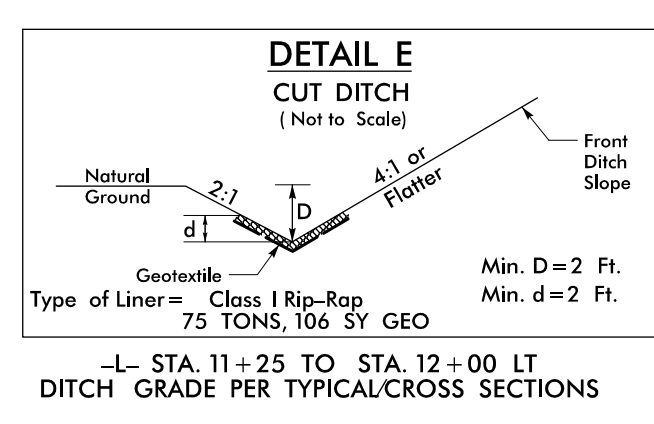
PI Sta 10+61.94	$\Delta = 89^{\circ} 08' 31.1''$ (LT)	D = 95.29' 34.7"	L = 93.35'	T = 59.4'	R = 60.00'
(B1) - N 81° 31' 42.6" W	(1) -Y- POT 10+00.00	(2) -Y- PC 10+02.83	(B2) - S 9° 19' 46.3" W	(3) -Y- PT 10+96.18	(4) -L- POC 15+90.00 = -Y- POT 11+38.74

-DR- CURVE DATA

PI Sta 10+81.77	$\Delta = 90^{\circ} 51' 58.0''$ (RT)	D = 81.51' 04.0"	L = 111.01'	T = 71.07'	R = 70.00'
(B3) - S 4° 39' 34.2" W	(5) -L- POC 13+73.00 = -DR- POT 10+00.00	(6) -DR- PC 10+10.71	(B4) - N 84° 28' 27.8" W	(7) -DR- PT 11+21.72	(8) -DR- POT 11+49.35

-L- CURVE DATA

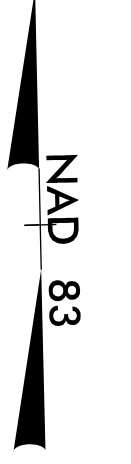
PI Sta 13+25.55	$\Delta = 16^{\circ} 55' 46.5''$ (LT)	D = 10' 36' 37.2"	L = 159.56'	T = 80.36'	R = 540.00'	SE = -0.01	RO = 68'	DS = 35 MPH
PI Sta 17+45.79	$\Delta = 68^{\circ} 48' 58.3''$ (RT)	D = 19' 05' 54.9"	L = 349.85'	T = 197.87'	R = 300.00'	SE = 0.04	RO = 68'	DS = 30 MPH
PI Sta 19+38.59	$\Delta = 7^{\circ} 11' 17.2''$ (LT)	D = 8' 48' 53.0"	L = 81.55'	T = 40.83'	R = 650.00'	SE = -0.02	RO = 68'	DS = 35 MPH




CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

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

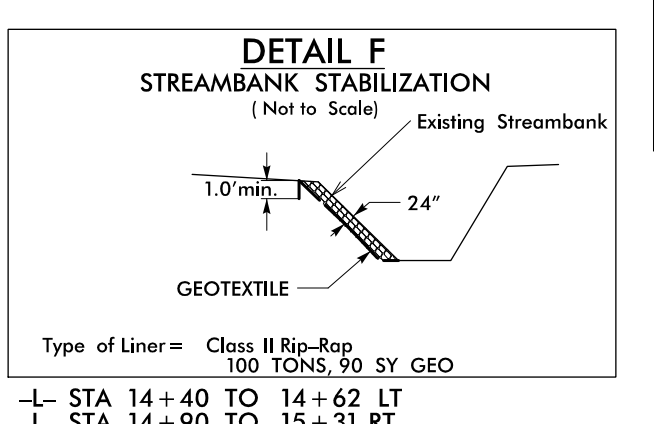
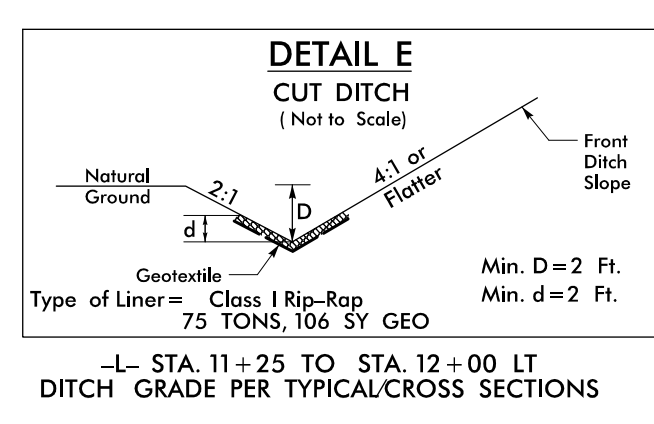
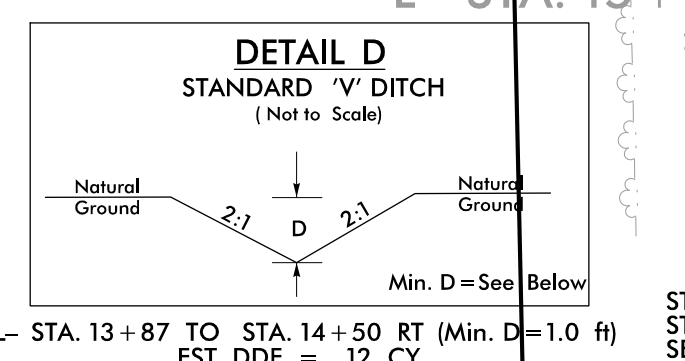
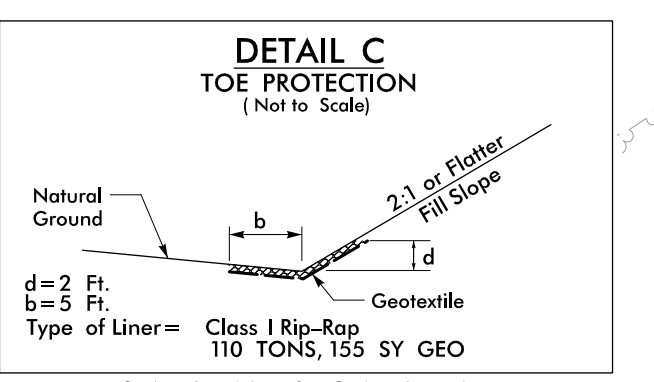
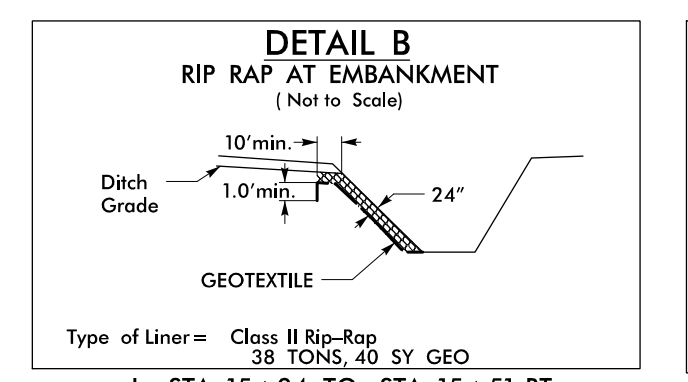
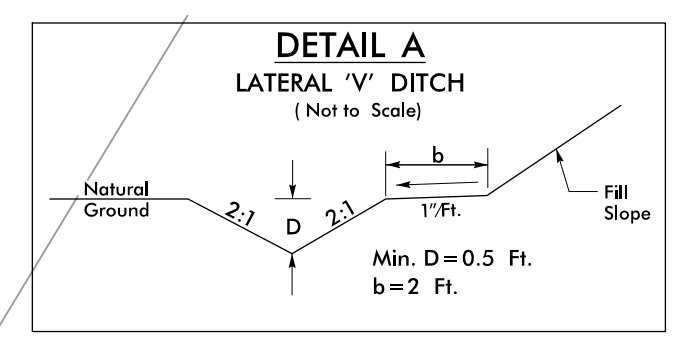
McDowell County Bridge #580019



PROJECT REFERENCE NO. 17BP.13.R.162	SHEET NO. EC-5/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

Place Matting for Erosion Control
on Slope as Work Allows.
-L- Sta. 12+50 to 14+38 LT

PLACE COIR FIBER MATTING ON
EXPOSED SOIL UNDER BRIDGE WHICH
WILL NOT BE PLATED WITH STONE.



-L- CURVE DATA

PI Sta 13+25.55 Δ = 16° 55' 46.3" (LT) D = 10' 36' 37.2" L = 159.56' T = 80.36' R = 540.00' SE = -0.01 RO = 68' DS = 35 MPH	PI Sta 17+45.79 Δ = 66° 48' 58.3" (RT) D = 19' 05' 54.9" L = 349.85' T = 197.87' R = 300.00' SE = 0.04 RO = 68' DS = 30 MPH	PI Sta 19+38.59 Δ = 7° 11' 17.2" (LT) D = 8' 48' 53.0" L = 81.55' T = 40.83' R = 650.00' SE = -0.02 RO = 68' DS = 35 MPH
---	---	--

-Y- CURVE DATA

PI Sta 10+61.94 Δ = 89° 08' 31.1" (LT) D = 95° 29' 34.7" L = 93.35' T = 59.11' R = 60.00'	PI Sta 10+81.77 Δ = 90° 51' 58.0" (RT) D = 81° 51' 04.0" L = 111.01' T = 71.07' R = 70.00'
--	---

-DR- CURVE DATA

(B1) - N 81° 31' 42.6" W	(B3) - S 4° 39' 34.2" W
(1) -Y- POT 10+00.00	(5) -L- POC 13+73.00=
(2) -Y- PC 10+02.83	(6) -DR- PC 10+10.71
(B2) - S 9° 19' 46.3" W	(B4) - N 84° 28' 27.8" W
(3) -Y- PT 10+96.18	(7) -DR- PT 11+21.72
(4) -L- POC 15+90.00=	(8) -DR- POT 11+49.35
-Y- POT 11+38.74	

INSTALL PSRM IN THE
PROPOSED DITCH LINE
-L- STA 12+50 TO 13+40 RT
EST. 130 SY

INSTALL PSRM IN THE
PROPOSED DITCH LINE
-L- STA 13+87 TO 14+50 RT
EST. 40 SY

PLACE COIR FIBER MATTING ALONG THE
STREAMBANK AT LOCATIONS EXPOSED
BY REMOVAL OF END BENTS.

INSTALL MATTING IN THE
PROPOSED DITCH LINE
-L- STA 16+54 TO 17+69 RT
EST. 165 SY

BEGIN PROJECT
17BP.13.R.162
-L- STA. 10+50.00

BEGIN BRIDGE
-L- STA. 14+37.83
-L- PC 12+45.19

BEGIN CONSTRUCTION
17BP.13.R.162
-Y- STA. 10+00.00
EXISTING 60' R/W PER MB 5A PG 48

END CONSTRUCTION
17BP.13.R.162
-DR- STA. 11+25.00

END BRIDGE
-L- STA. 15+10.17

END PROJECT
17BP.13.R.162
-L- STA. 19+73.00

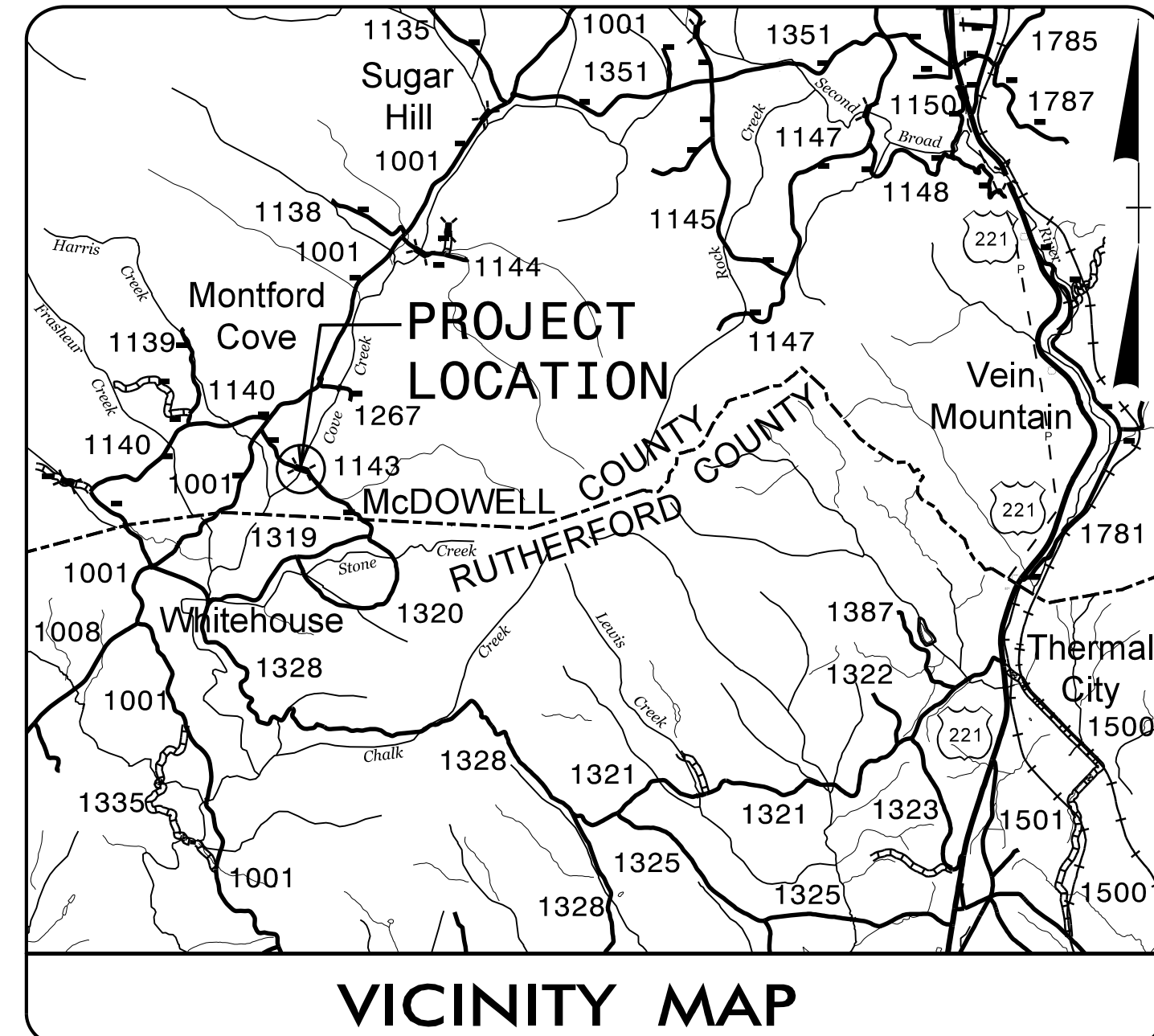


09_02B/99

TIP PROJECT: 17BP.13.R.162

T.I.P. NO.	SHEET NO.
17BP.13.R.162	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.



STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

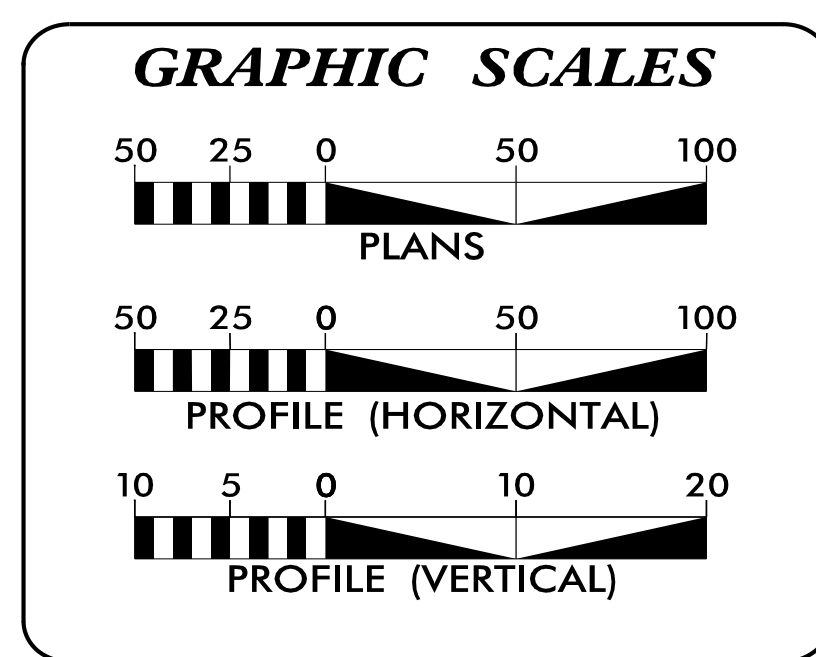
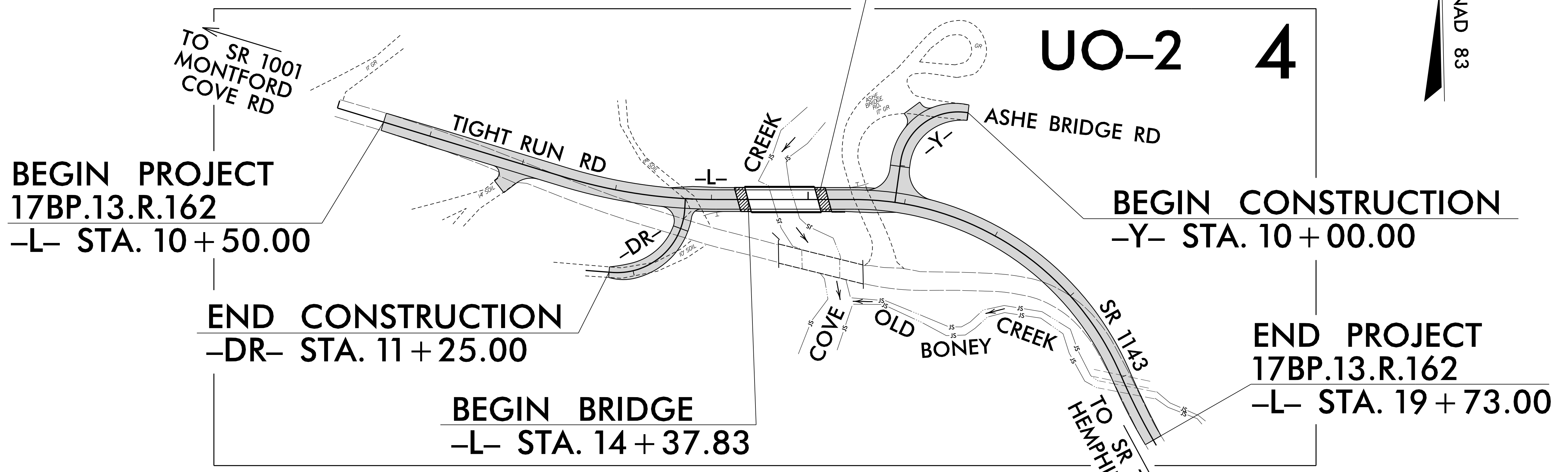
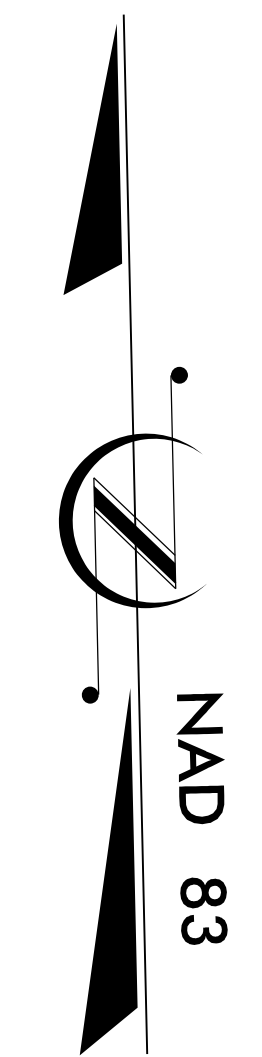
UTILITIES BY OTHERS PLANS McDOWELL COUNTY

**LOCATION: BRIDGE #580019 ON SR 1143 (TIGHT RUN RD)
 OVER COVE CREEK**

TYPE OF WORK: TELEPHONE RELOCATION

**END BRIDGE
 -L- STA. 15 + 10.17**

UO-2 4



INDEX OF SHEETS

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

UTILITY OWNERS WITH CONFLICTS

(A) COMMUNICATIONS - FRONTIER COMMUNICATIONS
--

PREPARED IN THE OFFICE OF:

TELICS

849 SOUTH LAUREL ST
 LINCOLNTON, NC 28092
 PHONE (704) 732-3241

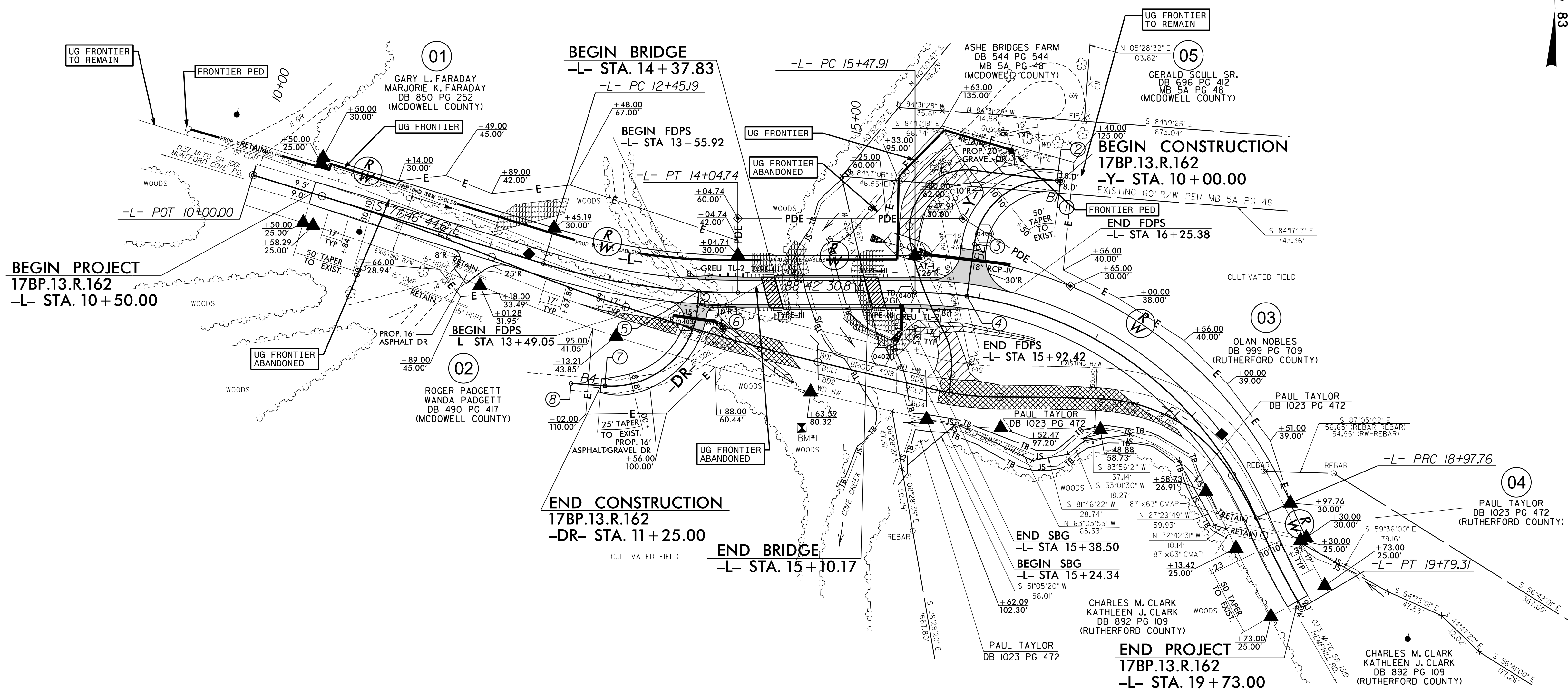
STEVE MODE	UTILITY PROJECT MANAGER
JAMES MELTON	PROJECT UTILITY COORDINATOR

	DIVISION OF HIGHWAYS UTILITIES UNIT
	1555 MAIL SERVICES CENTER RALEIGH, NC 27699-1555 PHONE (919) 707-6690 FAX (919) 250-4151
	JAY SWAIN UTILITIES REGIONAL ENGINEER
	VACANT UTILITIES ENGINEER
VACANT UTILITIES AREA COORDINATOR	
KEITH RADCLIFF UTILITIES COORDINATOR	

18-FEB-2019 08:49 C:\Users\NCDOTUser\1\Desktop\17BP.13.R.162\Utilities\Engineering\UBO\Proj\290_001\17BP.13.R.162_ut_tsh_U001_psh.dgn \$\$\$USERNAME\$\$\$

UTILITIES BY OTHERS

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



5/14/99

18 FEB 2019 08:51
 P:\13.R.162\17BP.13.R.162\ut_rdy4_U002_psh.dgn
 17BP.13.R.162\17BP.13.R.162\ut_rdy4_U002_psh.dgn

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.162	X-1A

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDES BACKFILL FOR UNDERCUT

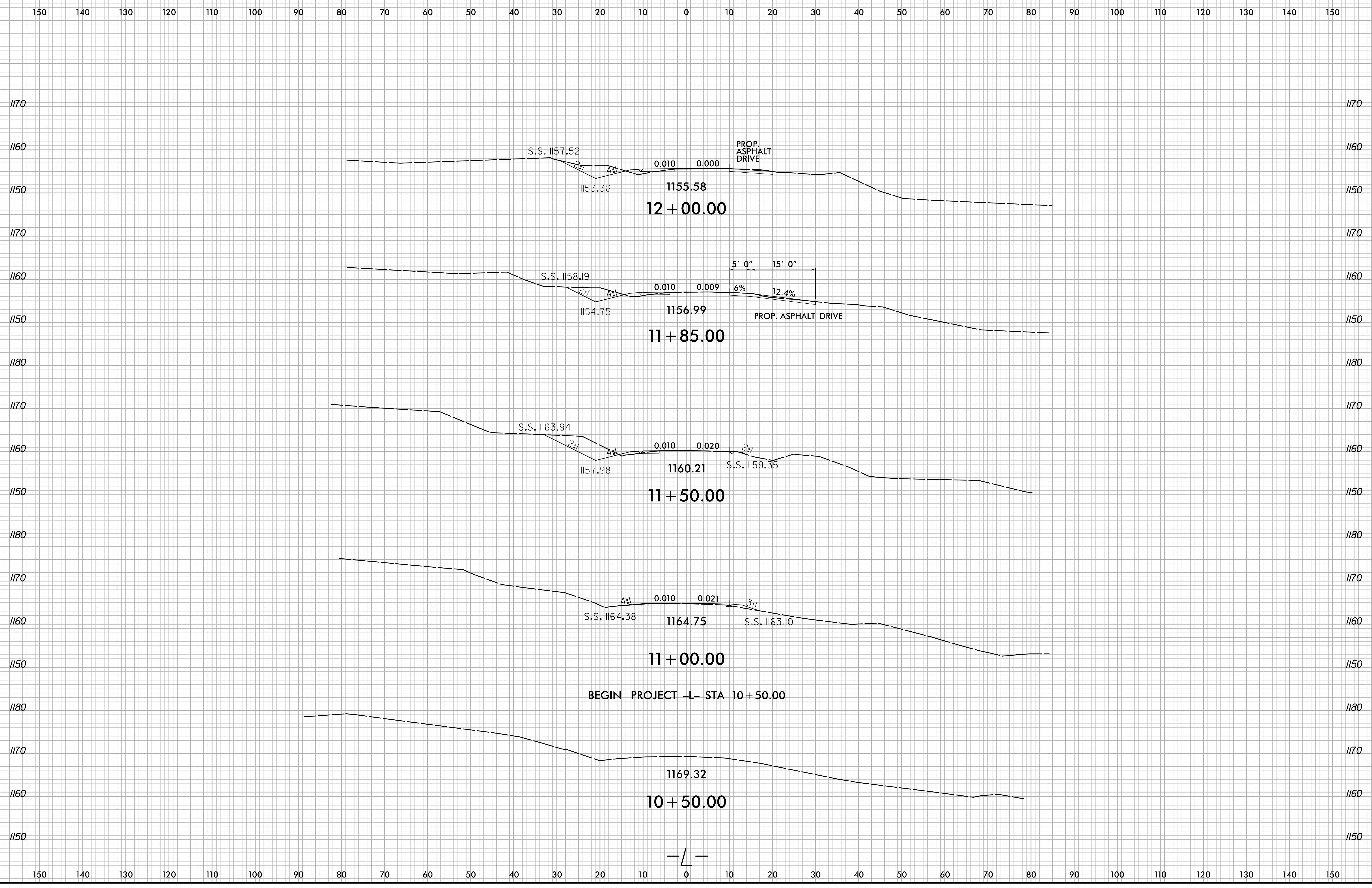
CROSS-SECTION SUMMARY

Station	Uncl. Exc.	Embt																		
L	(cu. yd.)	(cu. yd.)																		
10+50.00	0	0																		
11+00.00	1	2																		
11+50.00	41	5																		
11+85.00	51	3																		
12+00.00	19	2																		
12+50.00	42	48																		
13+00.00	25	175																		
13+40.00	17	242																		
13+80.00	8	257																		
14+00.00	0	130																		
14+37.83	0	264																		
Station	Uncl. Exc.	Embt																		
L	(cu. yd.)	(cu. yd.)																		
15+10.17	0	0																		
15+00.00	0	44																		
15+90.00	0	53																		
16+50.00	0	104																		
17+00.00	1	102																		
17+50.00	14	101																		
17+69.00	9	31																		
18+00.00	7	40																		
18+50.00	0	47																		
18+85.00	4	14																		
19+00.00	2	1																		
19+50.00	1	4																		
19+73.00	0	1																		
Station	Uncl. Exc.	Embt																		
Y	(cu. yd.)	(cu. yd.)																		
10+00.00	0	0																		
10+25.00	6	0																		
10+50.00	12	2																		
10+75.00	5	13																		
11+00.00	0	42																		
11+25.00	0	85																		
11+28.74	0	16																		
Station	Uncl. Exc.	Embt																		
Dr	(cu. yd.)	(cu. yd.)																		
10+10.00	0	0																		
10+25.00	1	2																		
10+32.00	1	1																		
10+50.00	2	8																		
10+75.00	1	15																		
11+00.00	12	5																		
11+15.00	9	2																		
11+25.00	1	1																		

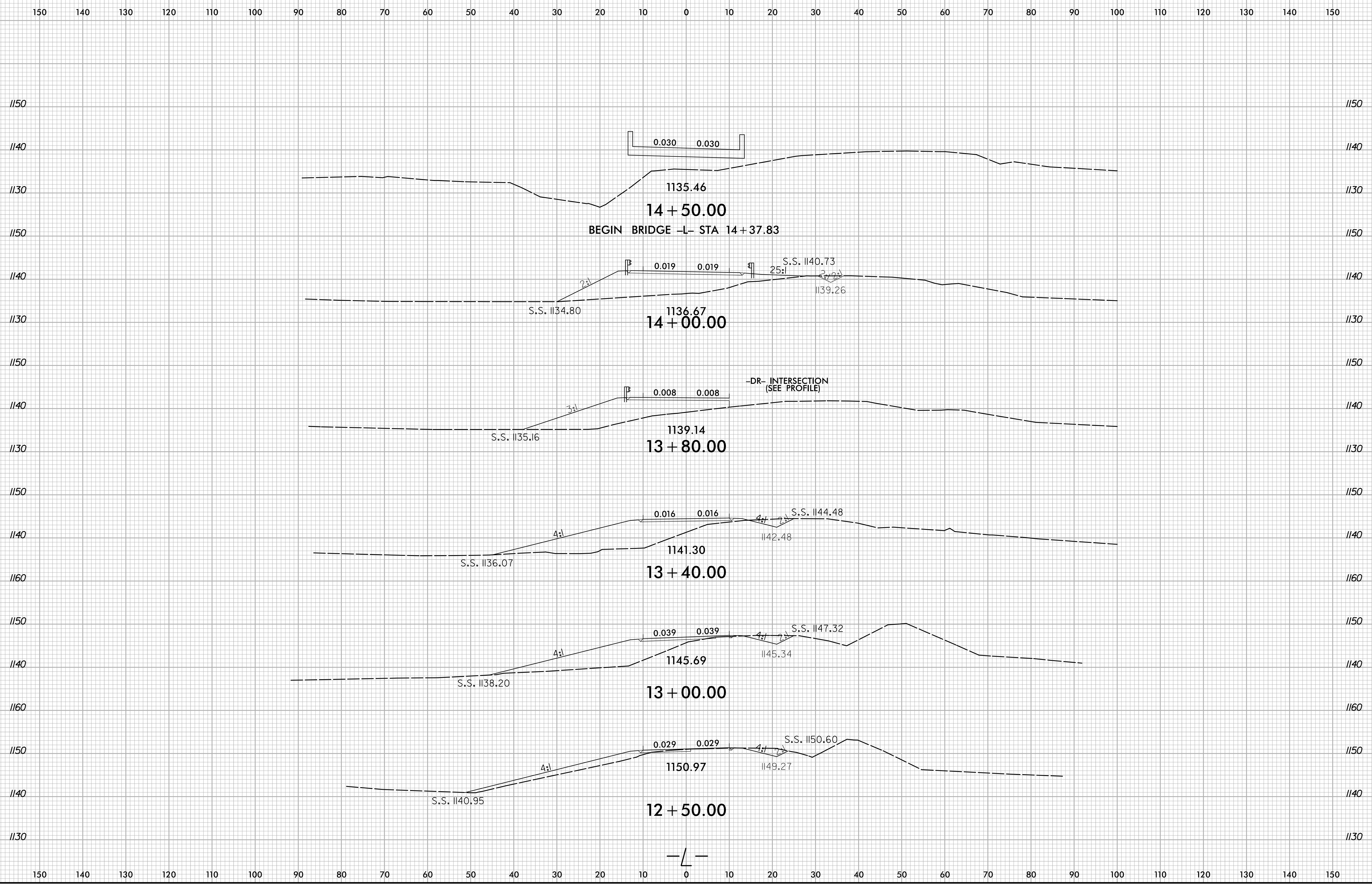
Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the lump sum price for "Grading".

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.162	X-1

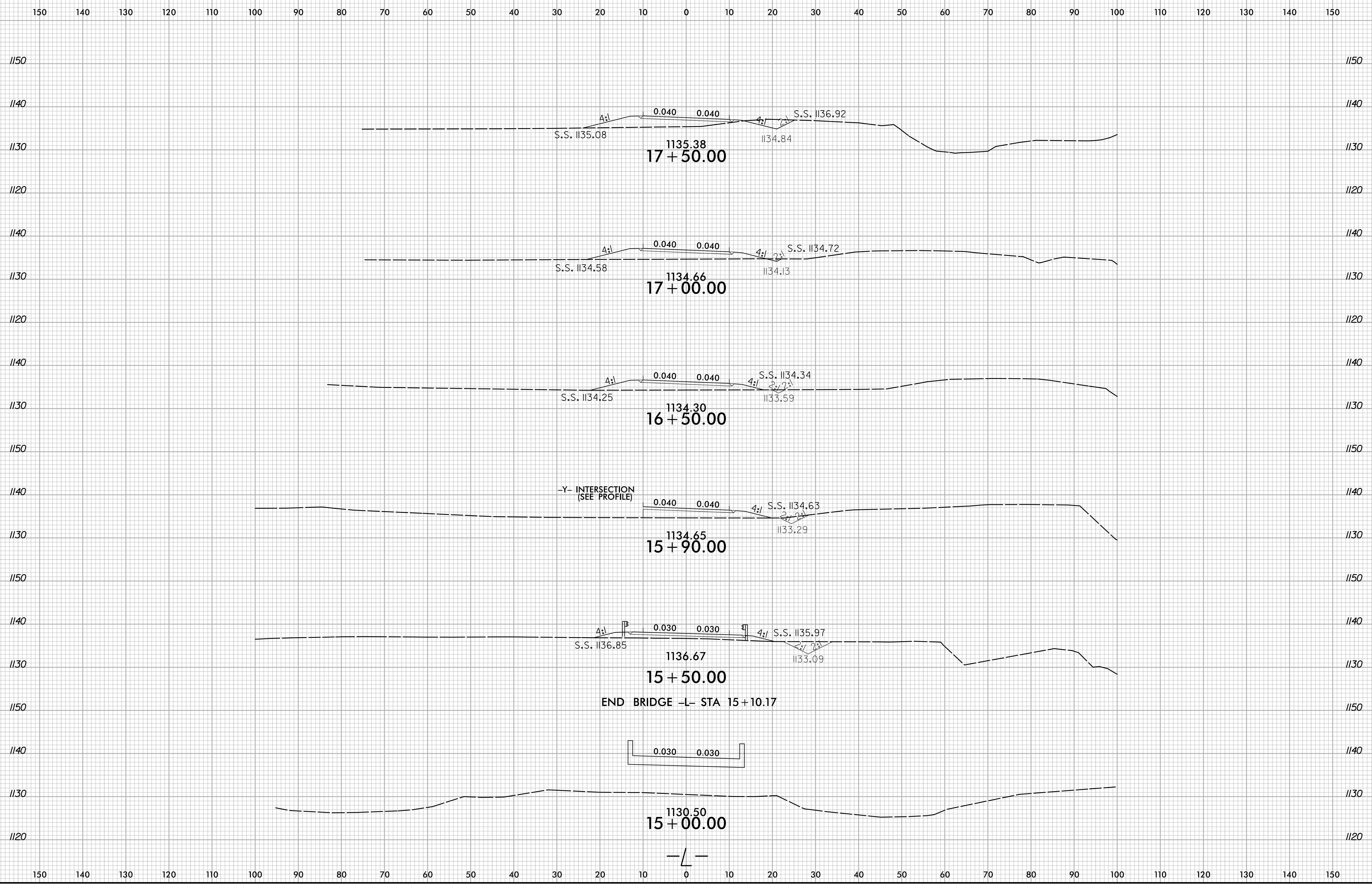


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6/23/16

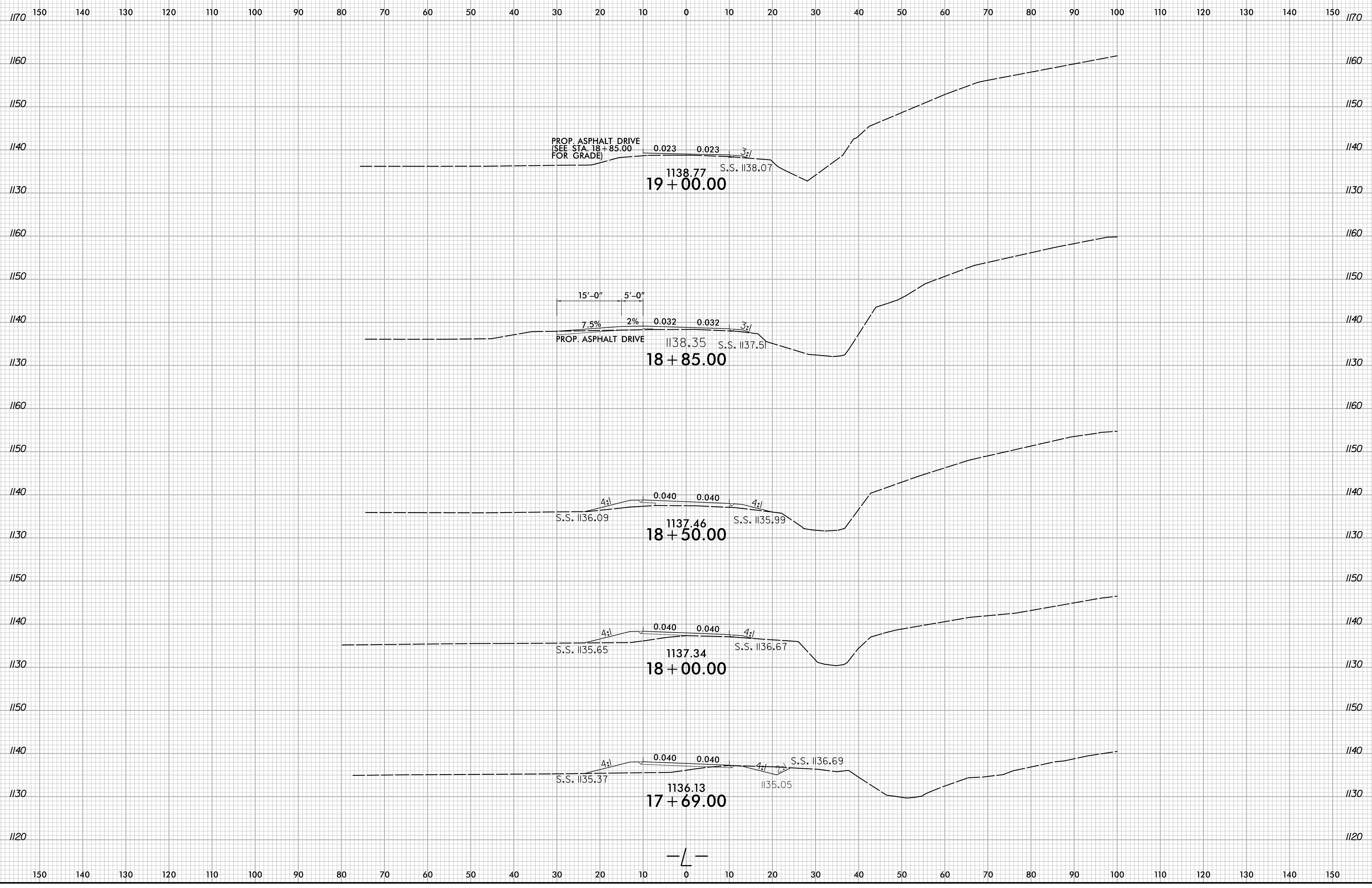
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	17BP.13.R.162	X-3



2/22/2018
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User:zsmelvin

6/23/16

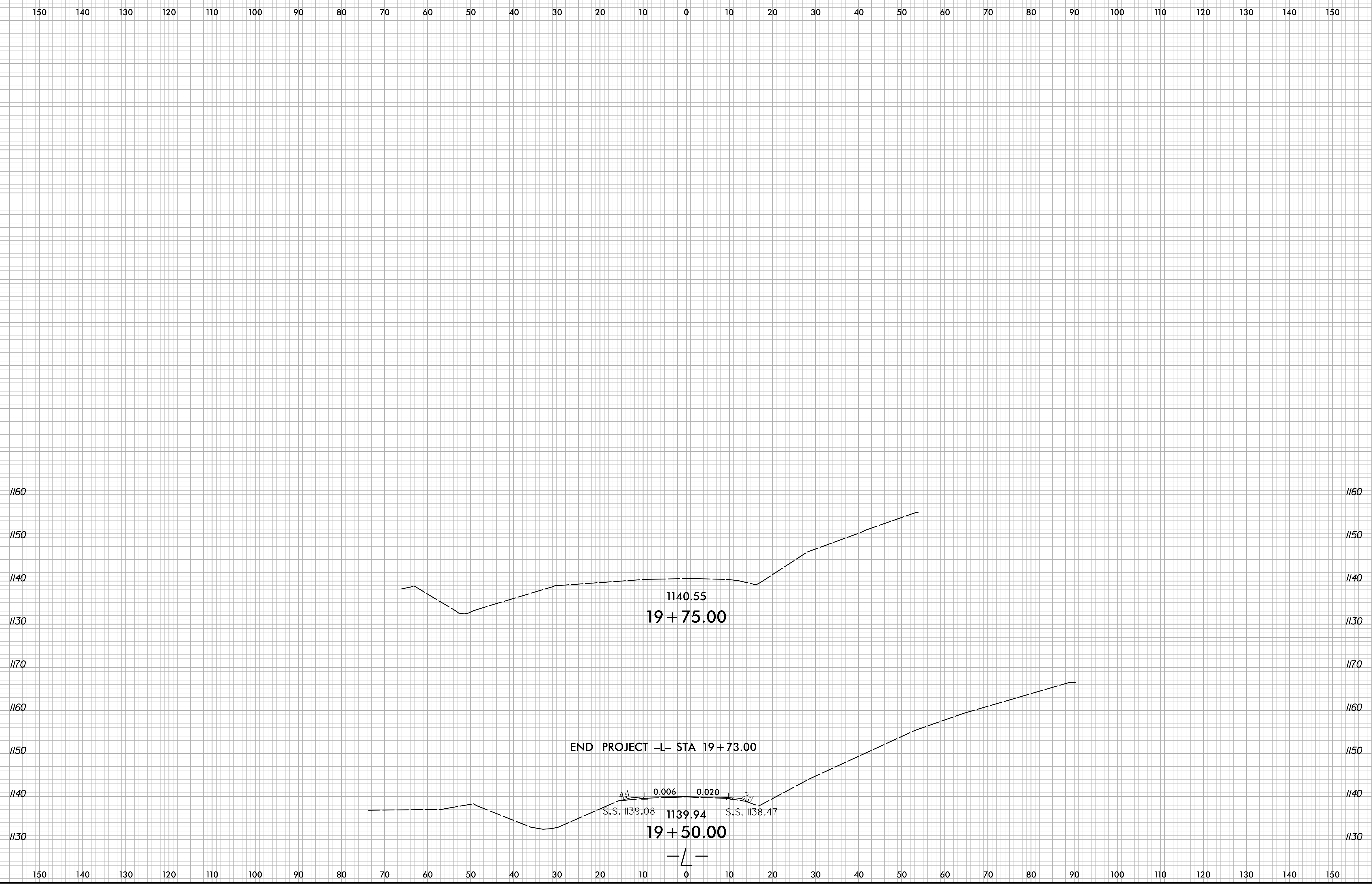
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	17BP.13.R.162	X-4



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6/23/16

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	17BP.13.R.162	X-5



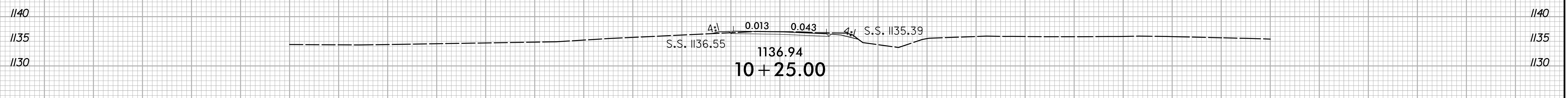
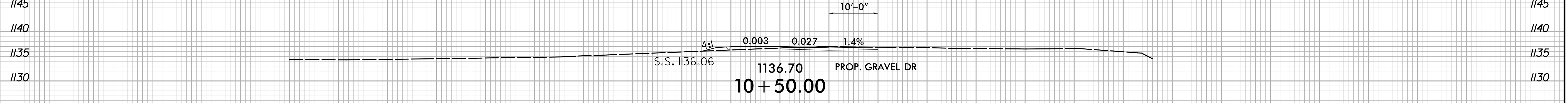
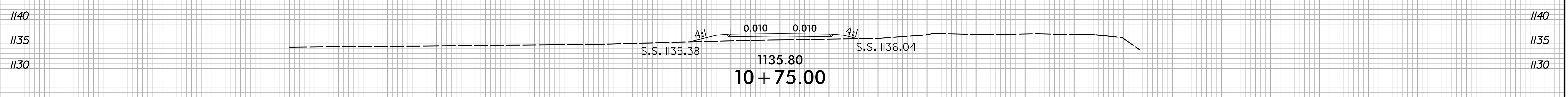
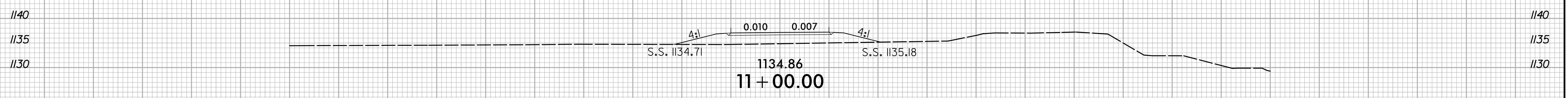
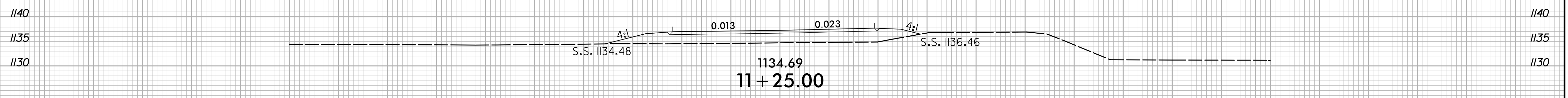
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6/23/16

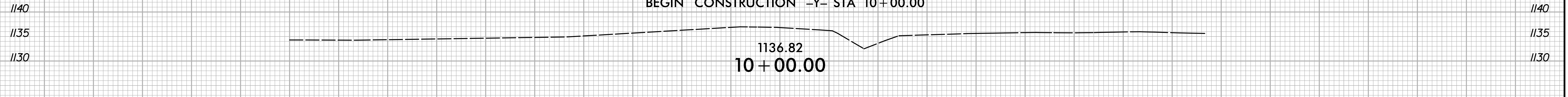
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	17BP.13.R.162	X-6

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END CONSTRUCTION -Y- STA 11+28.74



BEGIN CONSTRUCTION -Y- STA 10+00.00



-Y-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

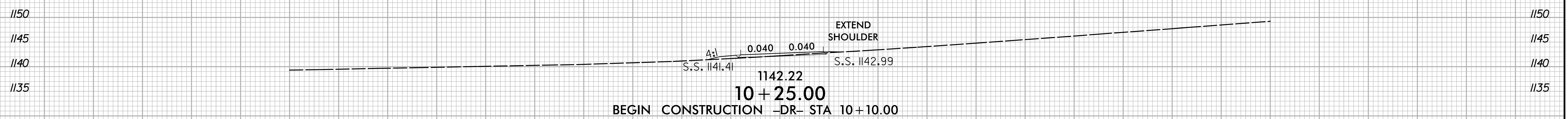
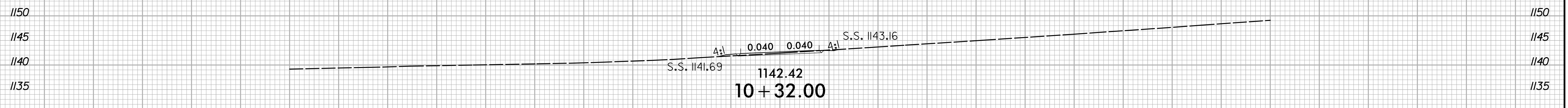
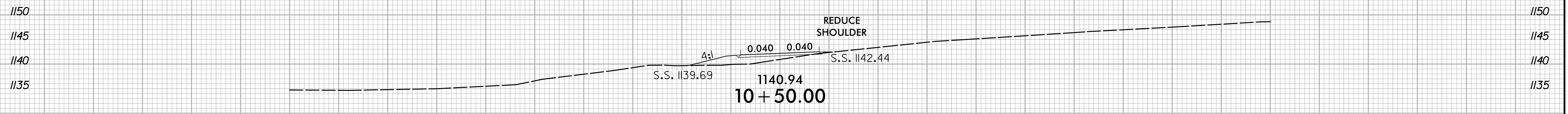
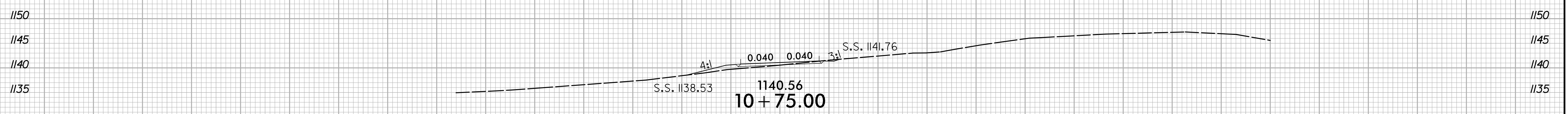
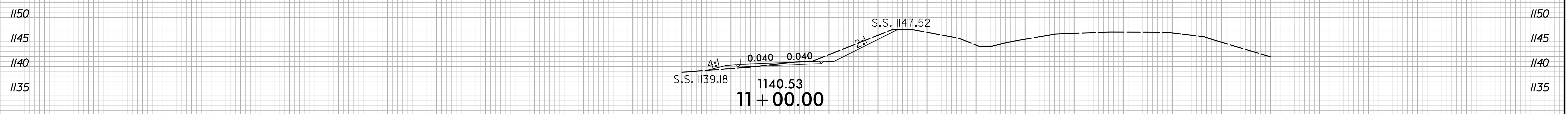
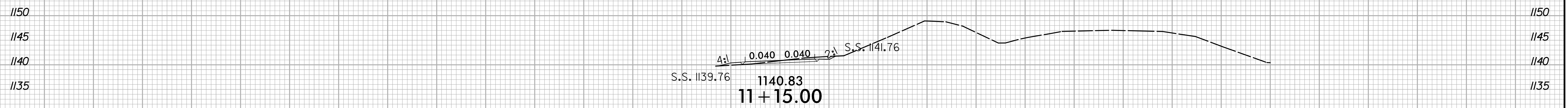
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6/23/16

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	17BP.13.R.162	X-7

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END CONSTRUCTION -DR- STA 11+25.00



BEGIN CONSTRUCTION -DR- STA 10+10.00

-DR-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2/22/2018 13:00:00 Division 13 2017\McDowell\19\Roadway\XSC\McDowell19_Rdy_xpl_DR.dgn User:sm1.vrn

6/23/16

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	17BP.13.R.162	X-8

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1141.12
11+25.00

-DR-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2/22/2018 13:00:00 Division 13 2017\McDowell\19\Roadway\XSC\McDowell19_Rdy_xpl_DR.dgn
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09.08/19

PROJECT: 17BP.13.R.162

CONTRACT:

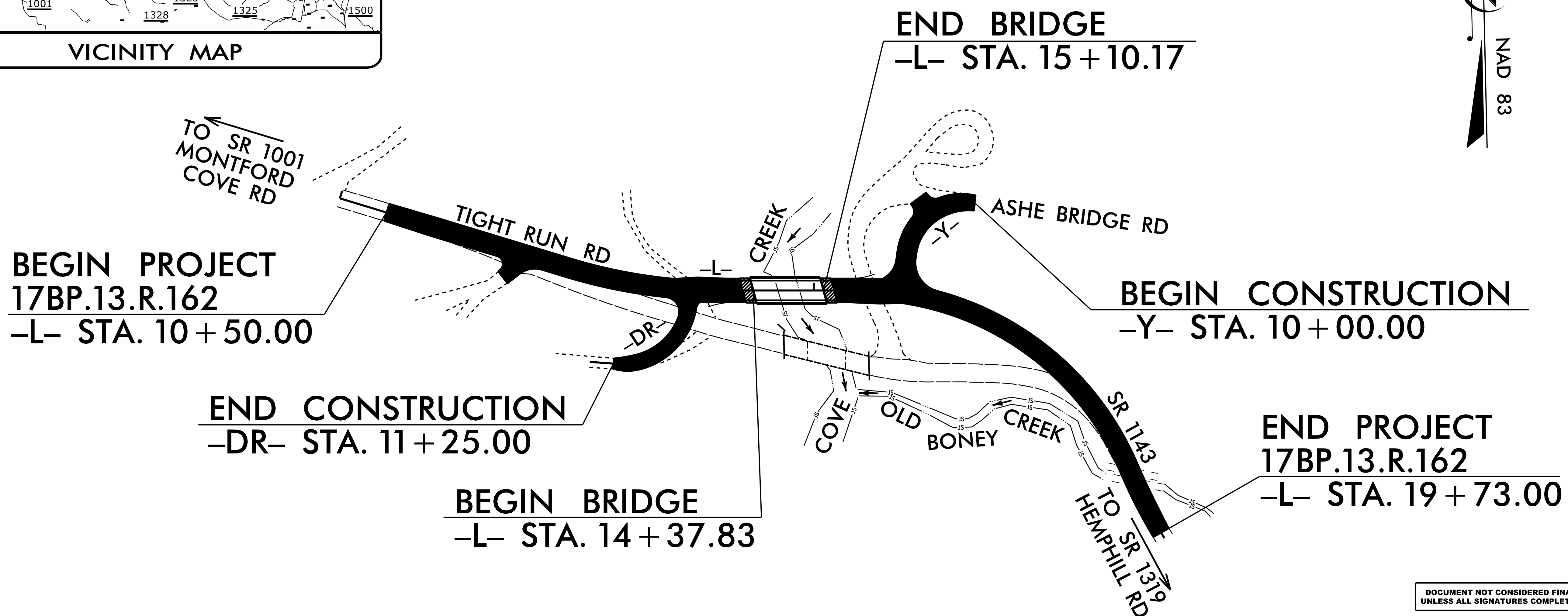
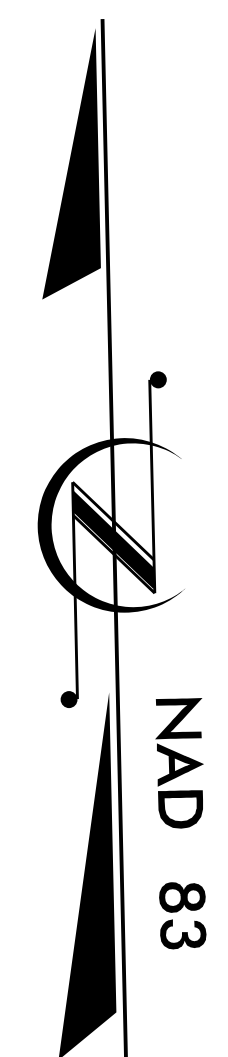
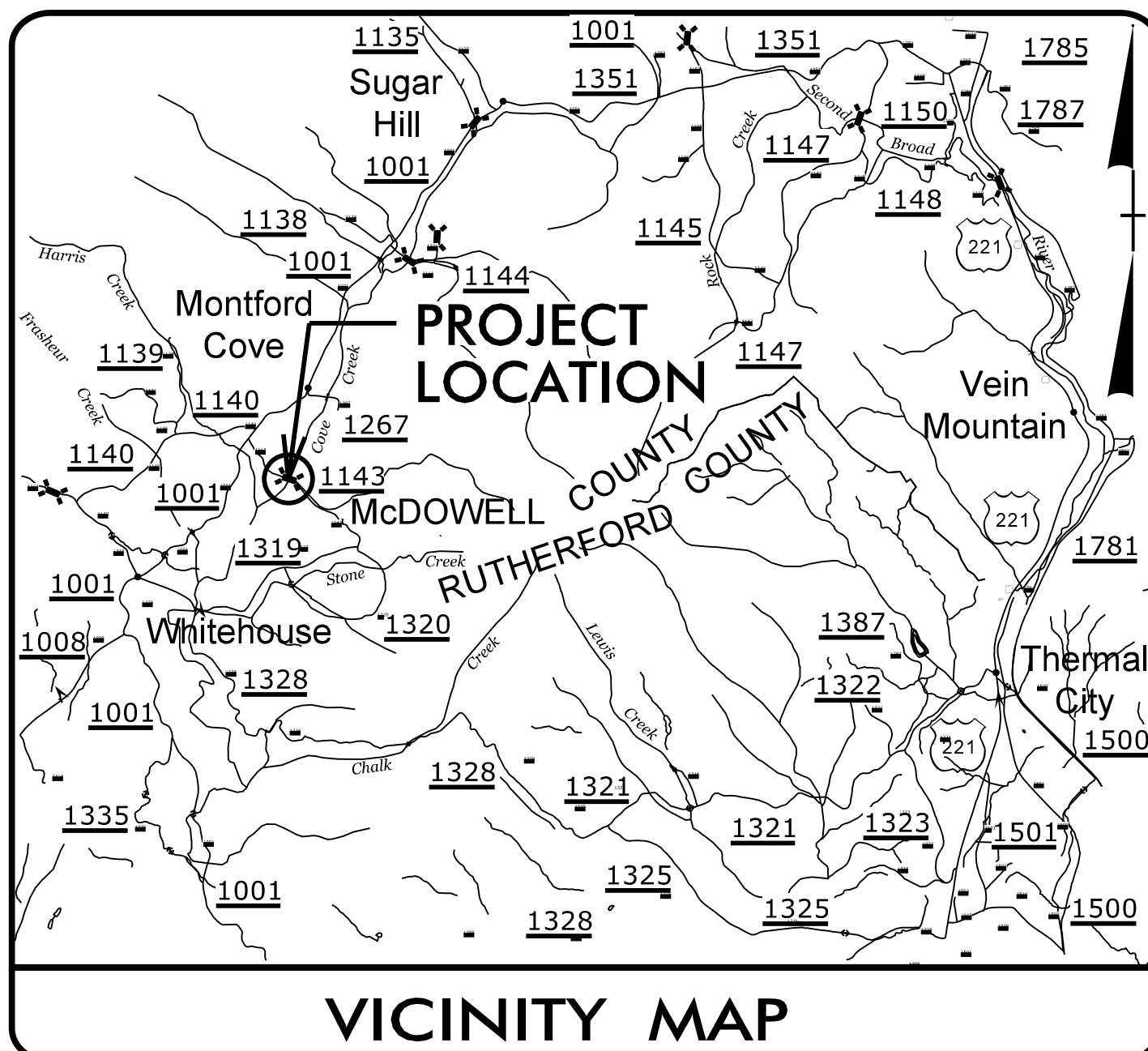
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

McDOWELL COUNTY

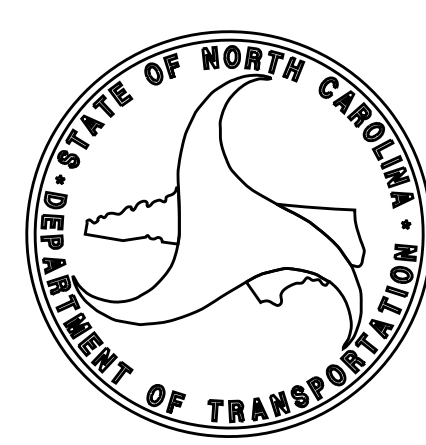
**LOCATION: BRIDGE #580019 ON SR 1143 (TIGHT RUN RD)
OVER COVE CREEK**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.162		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.13.R.162	N/A	PE	
17BP.13.R.162	N/A	R/W & UTIL	
17BP.13.R.162	N/A	CONST.	



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



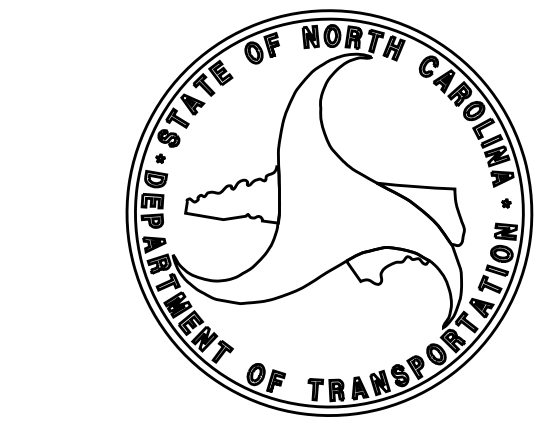
DESIGN DATA
 ADT 2017 = 300
 T = 6 % *
 V = 35 MPH
 * TTST = 3% DUAL = 3%
 FUNC CLASS =
 LOCAL - RURAL
 SUB-REGIONAL TIER

PROJECT LENGTH
 LENGTH ROADWAY PROJECT 17BP.13.R.162 = 0.161 MILES
 LENGTH STRUCTURE PROJECT 17BP.13.R.162 = 0.014 MILES
 TOTAL LENGTH PROJECT 17BP.13.R.162 = 0.175 MILES

NCDOT CONTACT: CHRISTOPHER MEDLIN, PE
PLANS PREPARED BY:
 TGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO. C-0275
PLANS PREPARED FOR:
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION 13
 20 Old 74
 Asheville, NC 28803

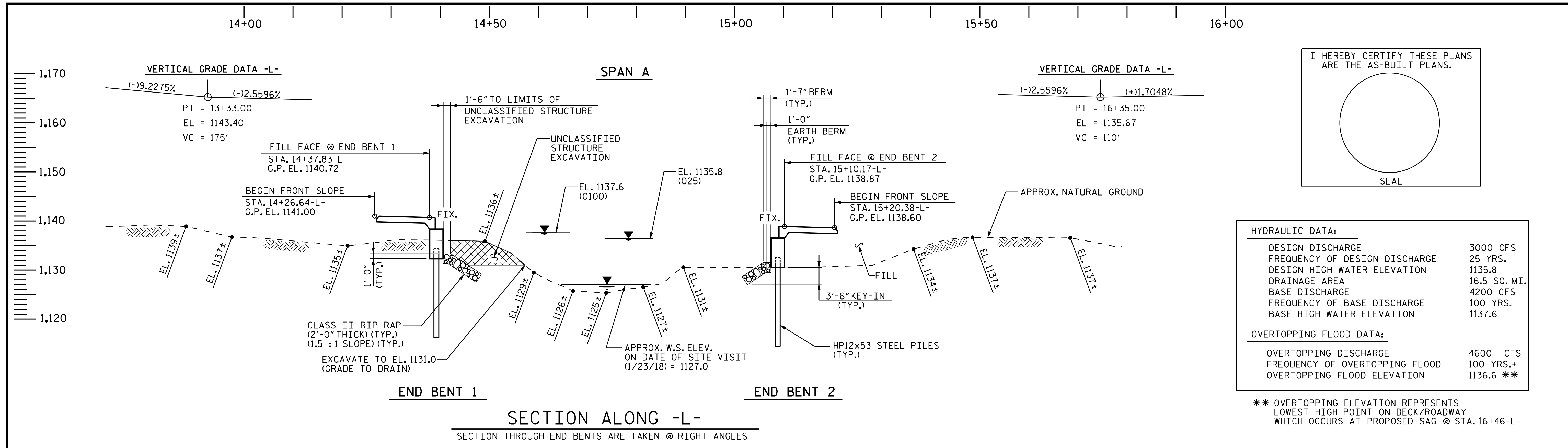
STRUCTURES ENGINEER

 MARSHALL G. CHEN
 3/7/2019



LETTING DATE:
 2018 STANDARD SPECIFICATIONS

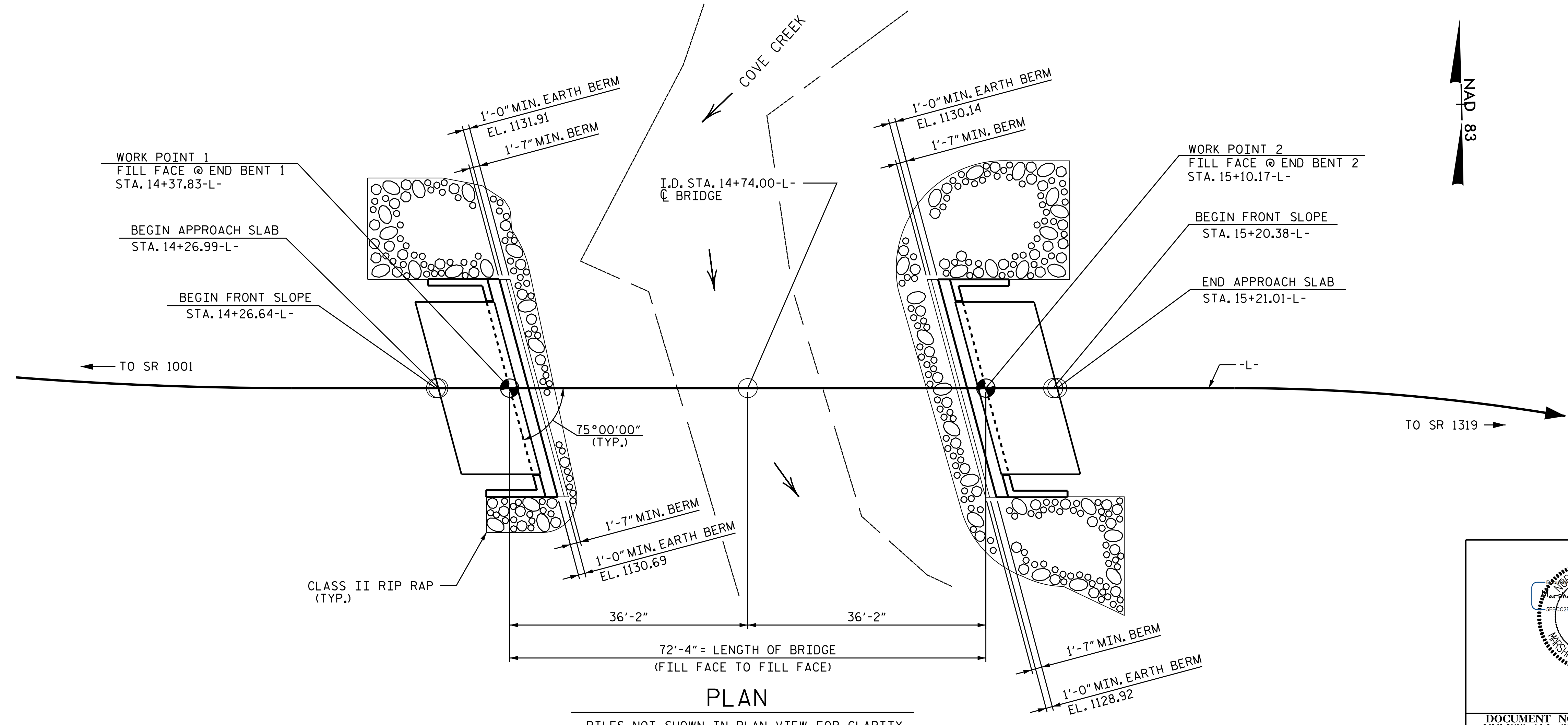
\$\$\$\$\$ SYSTEM \$\$\$\$\$\$
 \$\$\$ DN \$\$\$\$\$\$
 \$\$\$ USERNAME \$\$\$\$\$\$



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

SEAL

LOW CHORD ELEVATION	
EB1	1137.89
EB2	1136.12



PROJECT NO. 17BP.13.R.162
 McDOWELL COUNTY
 STATION: 14+74.00-L-
 SHEET 1 OF 4 REPLACES BR. NO. 0019

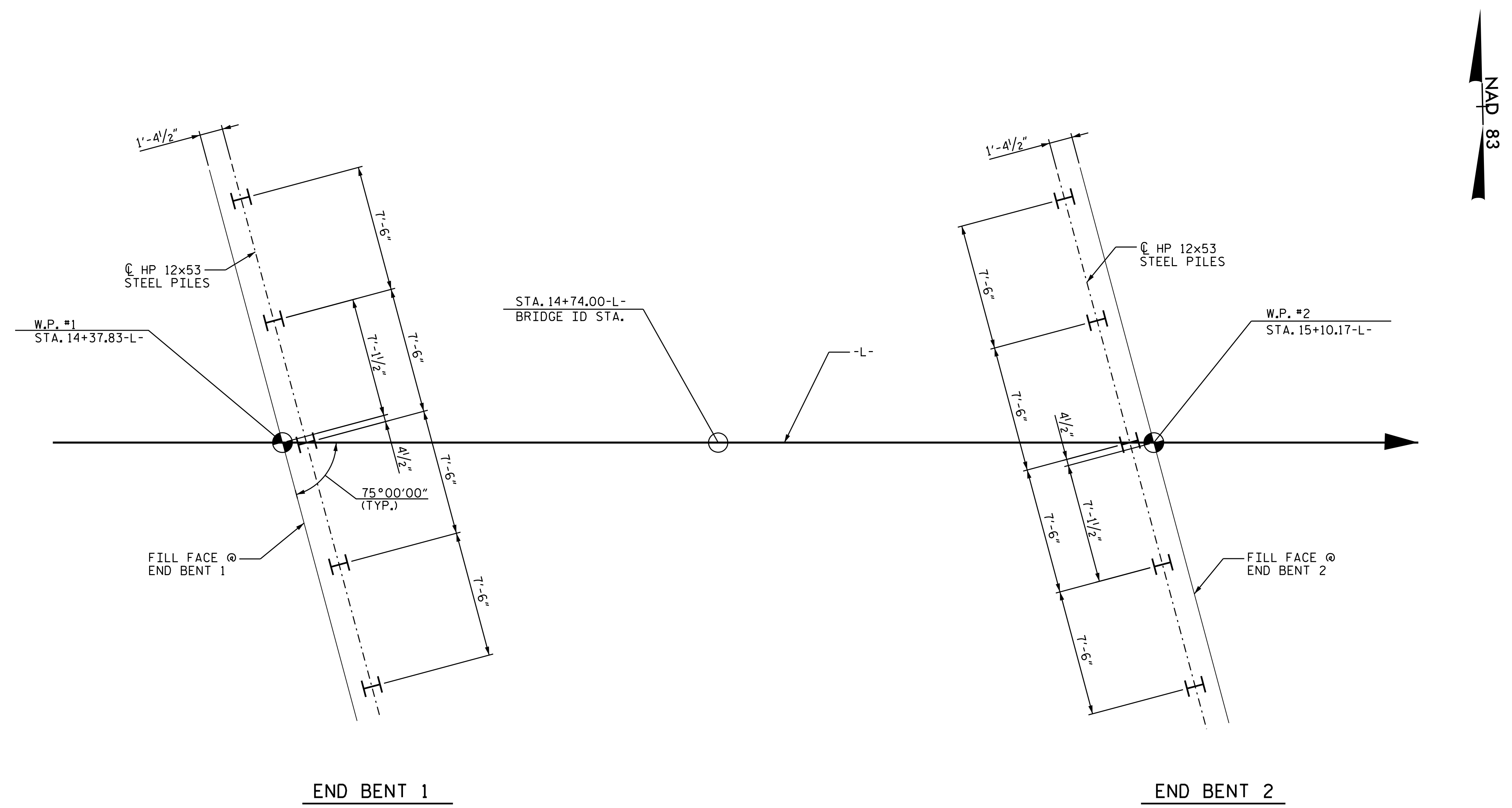
STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 MARSHALL G. CHECK, JR.
 LICENSE NO. 20125
 3/7/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

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

DRAWN BY : NMW DATE : 8/18
 CHECKED BY : MGC DATE : 9/18
 DESIGN ENGINEER OF RECORD : MGC DATE : 9/18



FOUNDATION LAYOUT PLAN

ALL END BENT PILES ARE HP12x53 STEEL PILES. DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES. ORIENT PILES AS SHOWN.

FOUNDATION RECOMMENDATION NOTES

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 93 TONS PER PILE.
- DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE.
- PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 93 TONS PER PILE.
- DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE.
- STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENTS 1 AND 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 16,000 FT-LBS TO 32,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENTS 1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(d)(2) OF THE STANDARD SPECIFICATIONS.

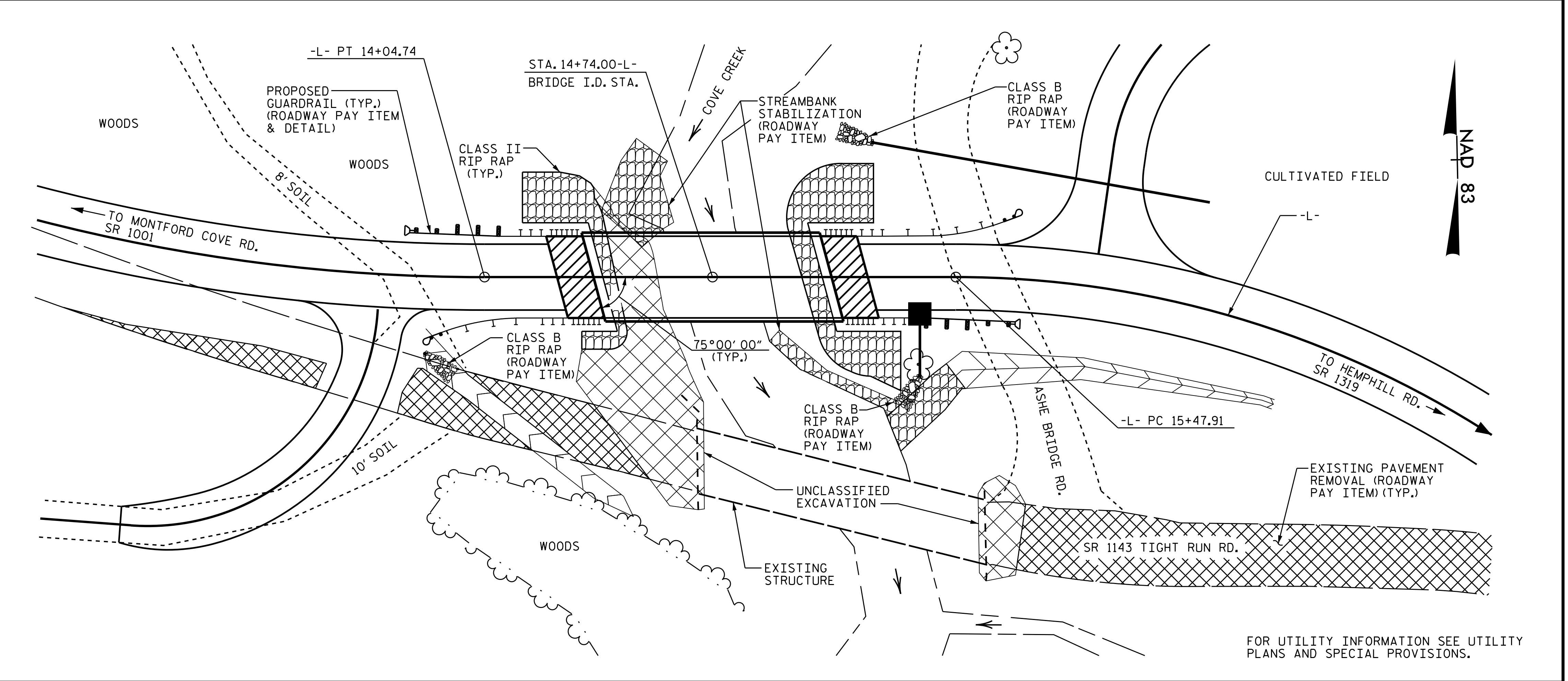
PROJECT NO. 17BP.13.R.162
McDOWELL COUNTY
 STATION: 14+74.00-L-

SHEET 2 OF 4

		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH GENERAL DRAWING FOR BRIDGE OVER COVE CREEK ON SR 1143 BETWEEN SR 1001 AND SR 1319			
				DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275		REVISIONS		SHEET NO. S-2 TOTAL SHEETS 16	
NO. 1	BY: MGC	DATE: 9/18	NO. 3		BY: MGC
NO. 2	BY: MGC	DATE: 9/18	NO. 4	BY: MGC	DATE: 9/18

DRAWN BY : NMW DATE : 8/18
 CHECKED BY : MGC DATE : 9/18
 DESIGN ENGINEER OF RECORD : MGC DATE : 9/18

BENCH MARK #1: RAILROAD SPIKE IN BASE OF 21" BLACK WALNUT TREE 109.0' RT. OF STA. 14+56-L- ELEV. = 1136.21'



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN (S-16).
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 25'-3", 1 @ 40'-0" 1 @ 25'-3") TIMBER DECK ON I-BEAMS, END BENTS & INTERIOR BENTS. TIMBER CAPS ON TIMBER PILES SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR THE DISTANCE OF 30 FT. (LT.) AND 70' (RT.) OF CENTERLINE ROADWAY AT END BENT 1 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.
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES".

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES".
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR ASBESTOS ASSESMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
 INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 14+74.00-L-".
 AT THE CONTRACTOR'S OPTION, PRESTRESSED CONCRETE END BENT CAPS MAY BE SUBSTITUTED IN PLACE OF THE CAST-IN-PLACE CAPS. THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER TO RECEIVE REVISED PLANS AND DETAILS FROM THE STRUCTURES MANAGEMENT UNIT. THE REDESIGN AND ANY ADDITIONAL MATERIALS NEEDED WILL BE AT NO ADDITIONAL COST TO THE CONTRACTOR.

PROJECT NO. 17BP.13.R.162
McDOWELL COUNTY
 STATION: 14+74.00-L-
 SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER COVE CREEK
 ON SR 1143 BETWEEN
 SR 1001 AND SR 1319

3/7/2019

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

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

DRAWN BY : NMW DATE : 8/18
 CHECKED BY : MGC DATE : 9/18
 DESIGN ENGINEER OF RECORD : MGC DATE : 9/18

TOTAL BILL OF MATERIAL

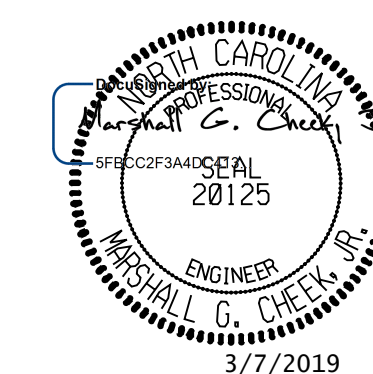
ITEM	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS "A" CONCRETE (BRIDGE)	BRIDGE APPROACH SLABS	REINFORCING STEEL (BRIDGE)	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES		STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP, CLASS II (2'-0" THK.)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 2'-0" PRESTRESSED CONCRETE CORED SLABS		
	LUMP SUM	LUMP SUM	LUMP SUM	C.Y.	LUMP SUM	LBS.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	TONS	S.Y.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE											140.00			LUMP SUM	9	630.00
END BENT 1				27.4		3,006	5	5	75	5		165	185			
END BENT 2				27.4		3,006	5	5	75	5		155	175			
TOTALS	LUMP SUM	LUMP SUM	LUMP SUM	54.8	LUMP SUM	6,012	10	10	150	10	140.00	320	360	LUMP SUM	9	630.00

PROJECT NO. 17BP.13.R.162

McDOWELL COUNTY

STATION: 14+74.00-L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER COVE CREEK
ON SR 1143 BETWEEN
SR 1001 AND SR 1319

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

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

DRAWN BY : NMW DATE : 8/18
CHECKED BY : MGC DATE : 9/18
DESIGN ENGINEER OF RECORD : MGC DATE : 9/18

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(InV)	N/A	1	1.014	--	1.75	0.269	1.04	70'	EL	34.482	0.608	1.1	70'	EL	3.448	0.80	0.269	1.01	70'	EL	34.482		
	HL-93(OPr)	N/A	--	1.355	--	1.35	0.269	1.35	70'	EL	34.482	0.608	1.43	70'	EL	3.448	N/A	--	--	--	--	--		
	HS-20(InV)	36.000	2	1.315	47.356	1.75	0.269	1.36	70'	EL	34.482	0.608	1.38	70'	EL	3.448	0.80	0.269	1.32	70'	EL	34.482		
	HS-20(OPr)	36.000	--	1.757	63.236	1.35	0.269	1.76	70'	EL	34.482	0.608	1.79	70'	EL	3.448	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13,500	--	2.938	39.656	1.4	0.269	3.78	70'	EL	34.482	0.608	4.12	70'	EL	3.448	0.80	0.269	2.94	70'	EL	34.482	
		SNGARBS2	20,000	--	2.203	44.052	1.4	0.269	2.84	70'	EL	34.482	0.608	2.93	70'	EL	3.448	0.80	0.269	2.20	70'	EL	34.482	
		SNAGRIS2	22,000	--	2.092	46.016	1.4	0.269	2.69	70'	EL	34.482	0.608	2.72	70'	EL	3.448	0.80	0.269	2.09	70'	EL	34.482	
		SNCOTTS3	27,250	--	1.462	39.844	1.4	0.269	1.88	70'	EL	34.482	0.608	2.06	70'	EL	3.448	0.80	0.269	1.46	70'	EL	34.482	
		SNAGGRS4	34,925	--	1.227	42.856	1.4	0.269	1.58	70'	EL	34.482	0.608	1.71	70'	EL	3.448	0.80	0.269	1.23	70'	EL	34.482	
		SNS5A	35,550	--	1.2	42.646	1.4	0.269	1.54	70'	EL	34.482	0.608	1.73	70'	EL	3.448	0.80	0.269	1.20	70'	EL	34.482	
		SNS6A	39,950	--	1.103	44.058	1.4	0.269	1.42	70'	EL	34.482	0.608	1.58	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
	SNS7B	42,000	--	1.05	44.113	1.4	0.269	1.35	70'	EL	34.482	0.608	1.55	70'	EL	3.448	0.80	0.269	1.05	70'	EL	34.482		
	TTST	TNAGRIT3	33,000	--	1.345	44.401	1.4	0.269	1.73	70'	EL	34.482	0.608	1.88	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT4A	33,075	--	1.352	44.717	1.4	0.269	1.74	70'	EL	34.482	0.608	1.83	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT6A	41,600	--	1.108	46.073	1.4	0.269	1.43	70'	EL	34.482	0.608	1.65	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7A	42,000	--	1.114	46.794	1.4	0.269	1.43	70'	EL	34.482	0.608	1.62	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7B	42,000	--	1.155	48.526	1.4	0.269	1.49	70'	EL	34.482	0.608	1.51	70'	EL	3.448	0.80	0.269	1.16	70'	EL	34.482	
		TNAGRIT4	43,000	--	1.097	47.174	1.4	0.269	1.41	70'	EL	34.482	0.608	1.46	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
TNAGT5A		45,000	--	1.033	46.505	1.4	0.269	1.33	70'	EL	34.482	0.608	1.45	70'	EL	3.448	0.80	0.269	1.03	70'	EL	34.482		
TNAGT5B	45,000	3	1.02	45.905	1.4	0.269	1.31	70'	EL	34.482	0.608	1.39	70'	EL	3.448	0.80	0.269	1.02	70'	EL	34.482			

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

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

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

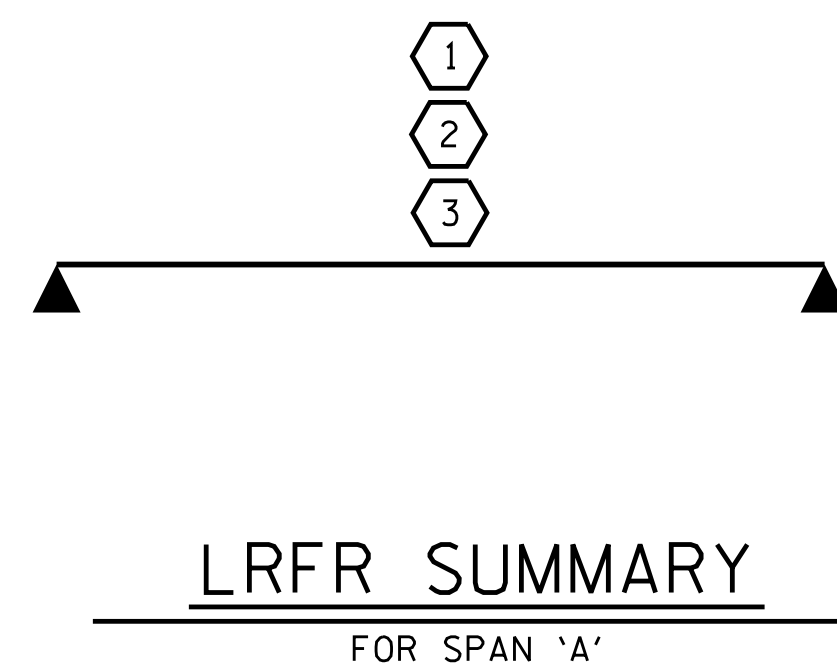
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. 17BP.13.R.162
McDOWELL COUNTY
 STATION: 14+74.00-L-

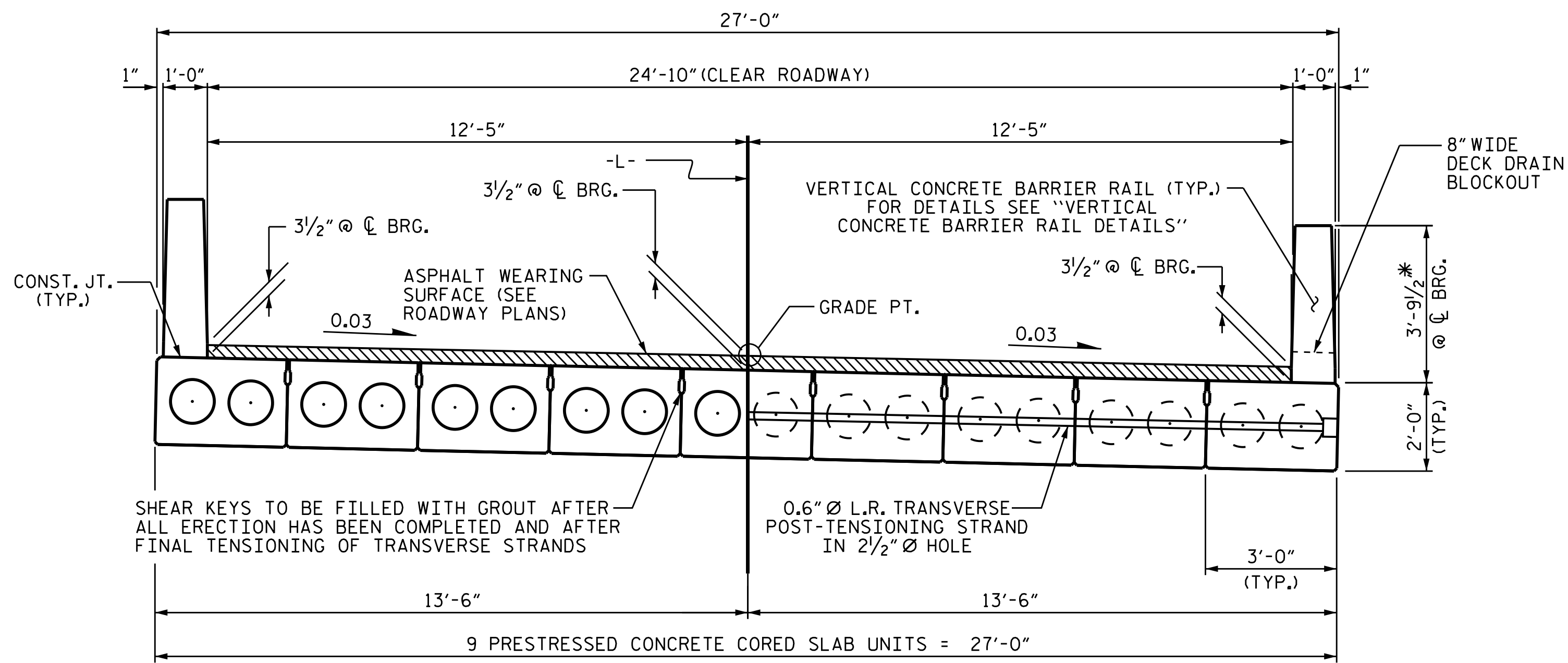
ASSEMBLED BY : NMW	DATE : 8/18
CHECKED BY : MGC	DATE : 9/18
DRAWN BY : CVC 6/10	
CHECKED BY : DNS 6/10	

DOCUMENT NOT CONSIDERED FINAL
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SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

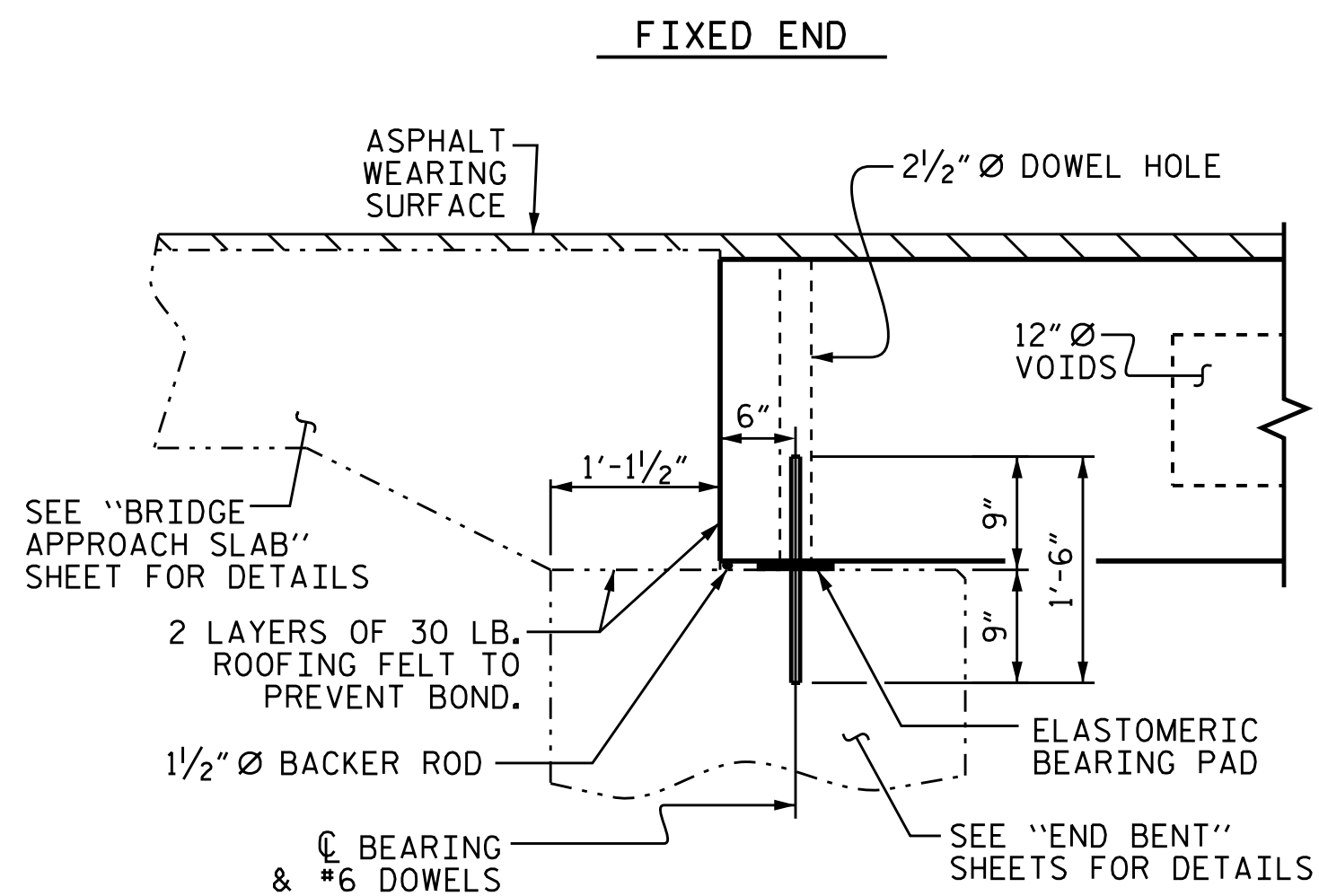
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
**LRFR SUMMARY FOR
 70' CORED SLAB UNIT
 75° SKEW**
 (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-5
2			4			TOTAL SHEETS 16

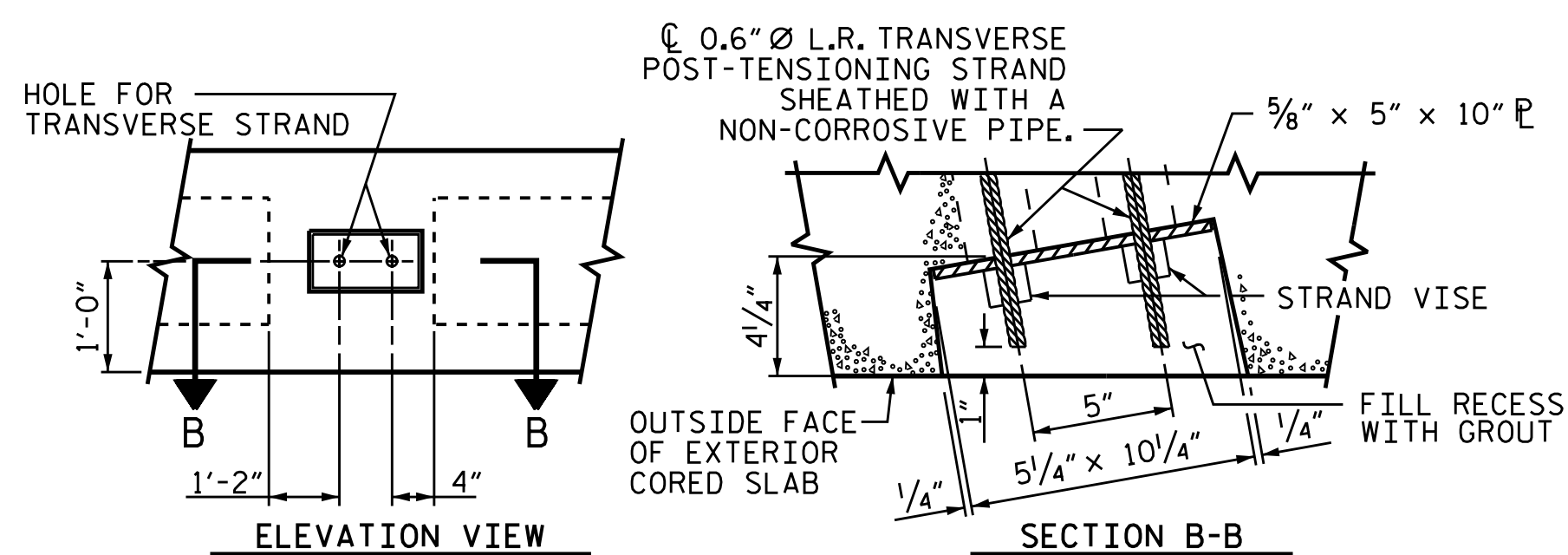


HALF SECTION THROUGH VOIDS **TYPICAL SECTION** HALF SECTION AT INTERMEDIATE DIAPHRAGMS

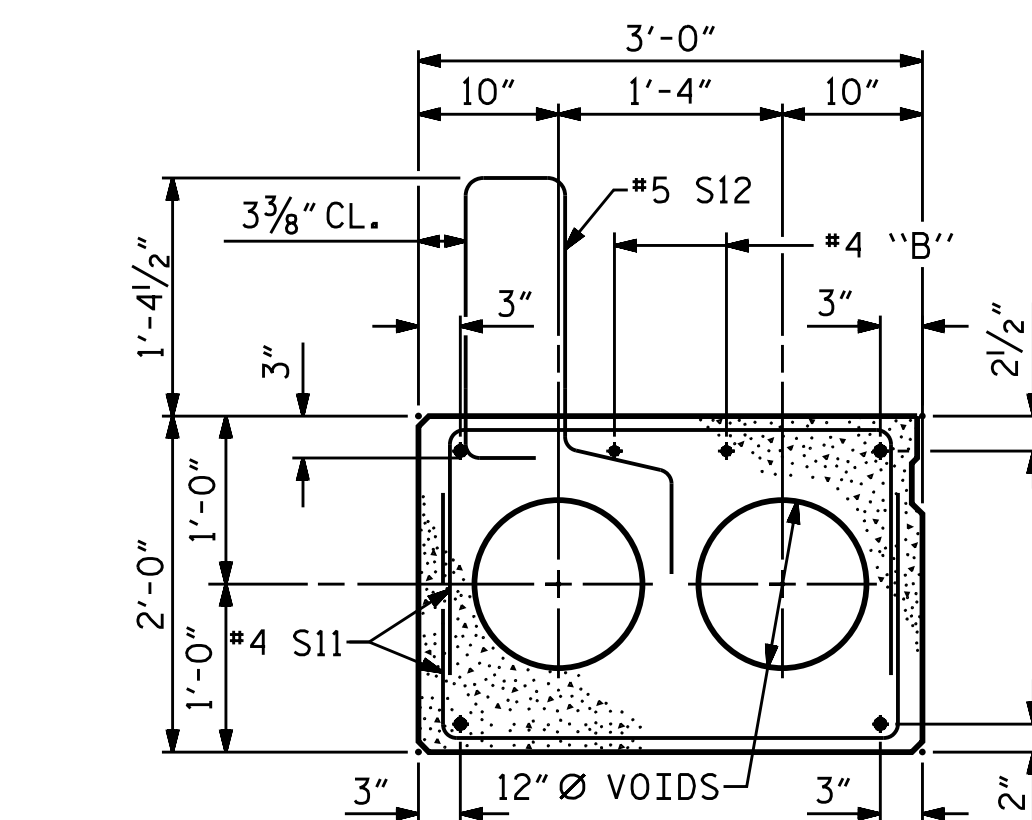
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



SECTION AT END BENT

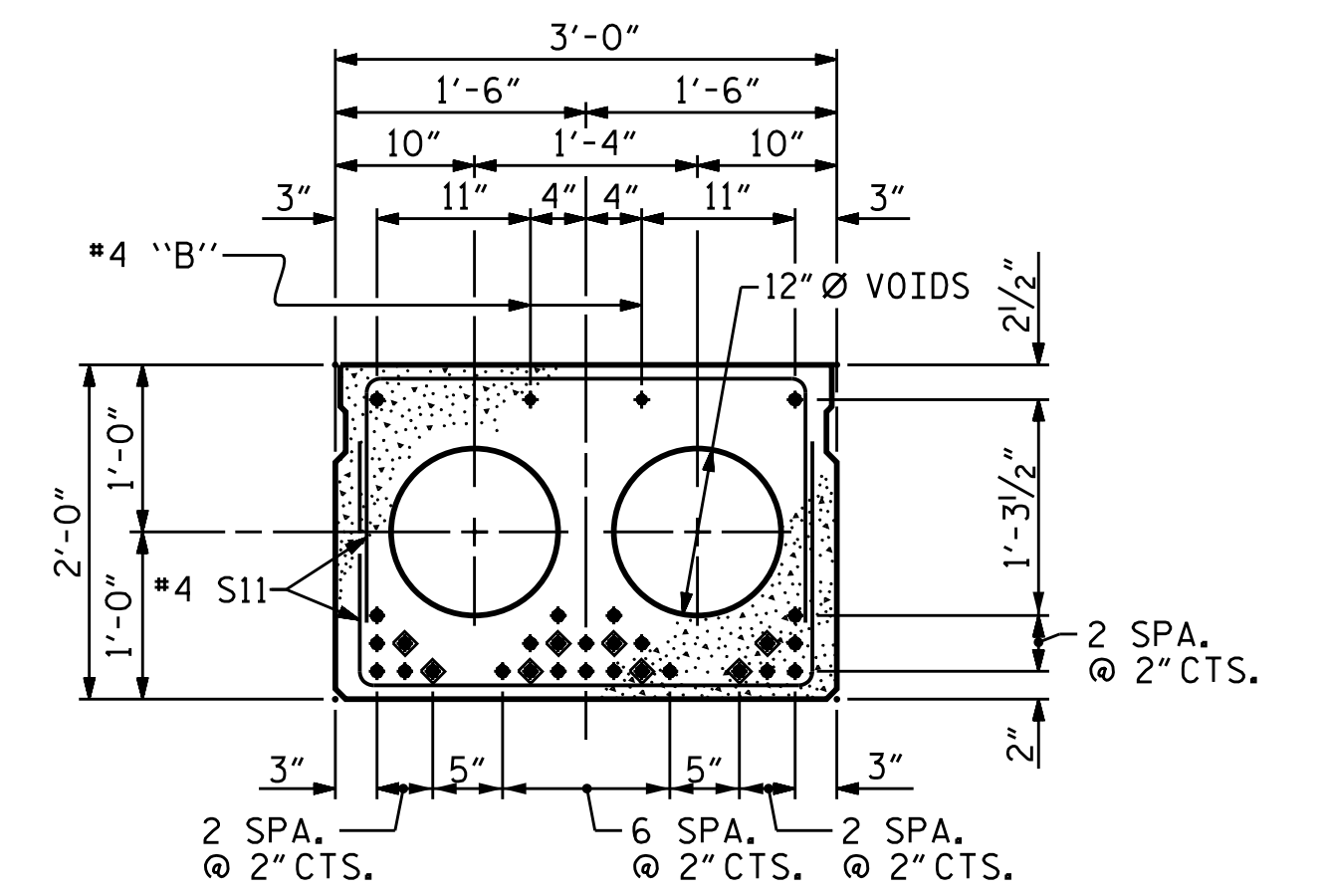


GROUTED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS



EXTERIOR SLAB SECTION

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

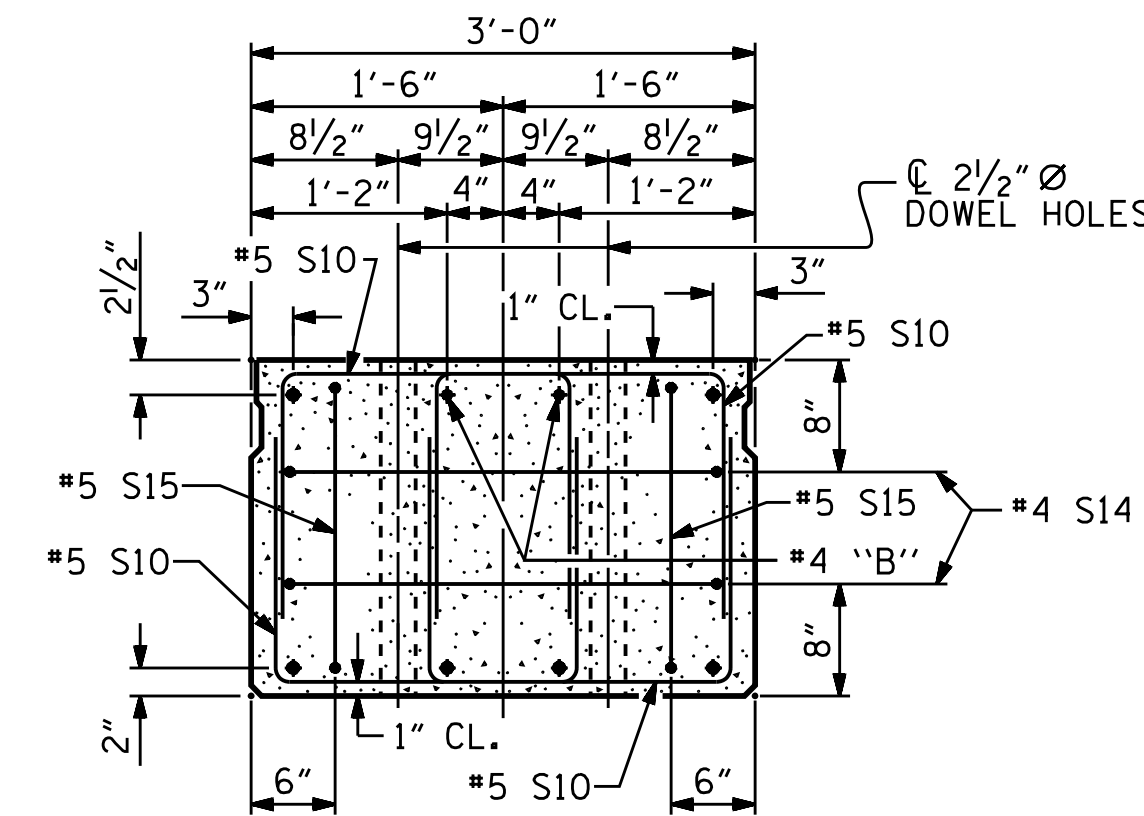


INTERIOR SLAB SECTION (70' UNIT)
 (28 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

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

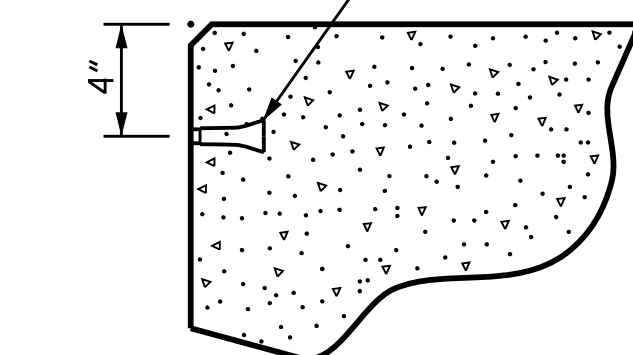
DEBONDING LEGEND



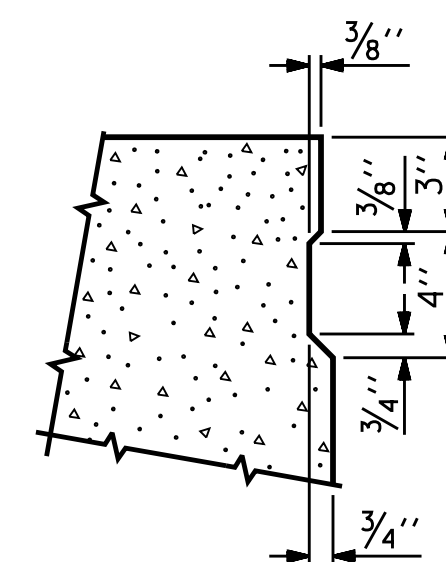
END ELEVATION

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

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



THREADED INSERT DETAIL



SHEAR KEY DETAIL

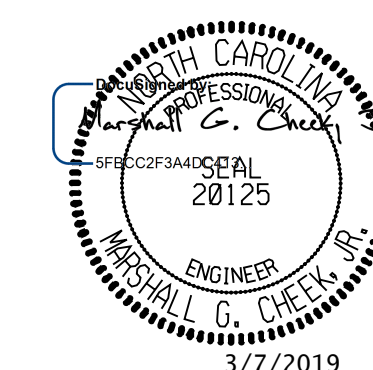
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. 17BP.13.R.162

McDOWELL COUNTY

STATION: 14+74.00-L-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD

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

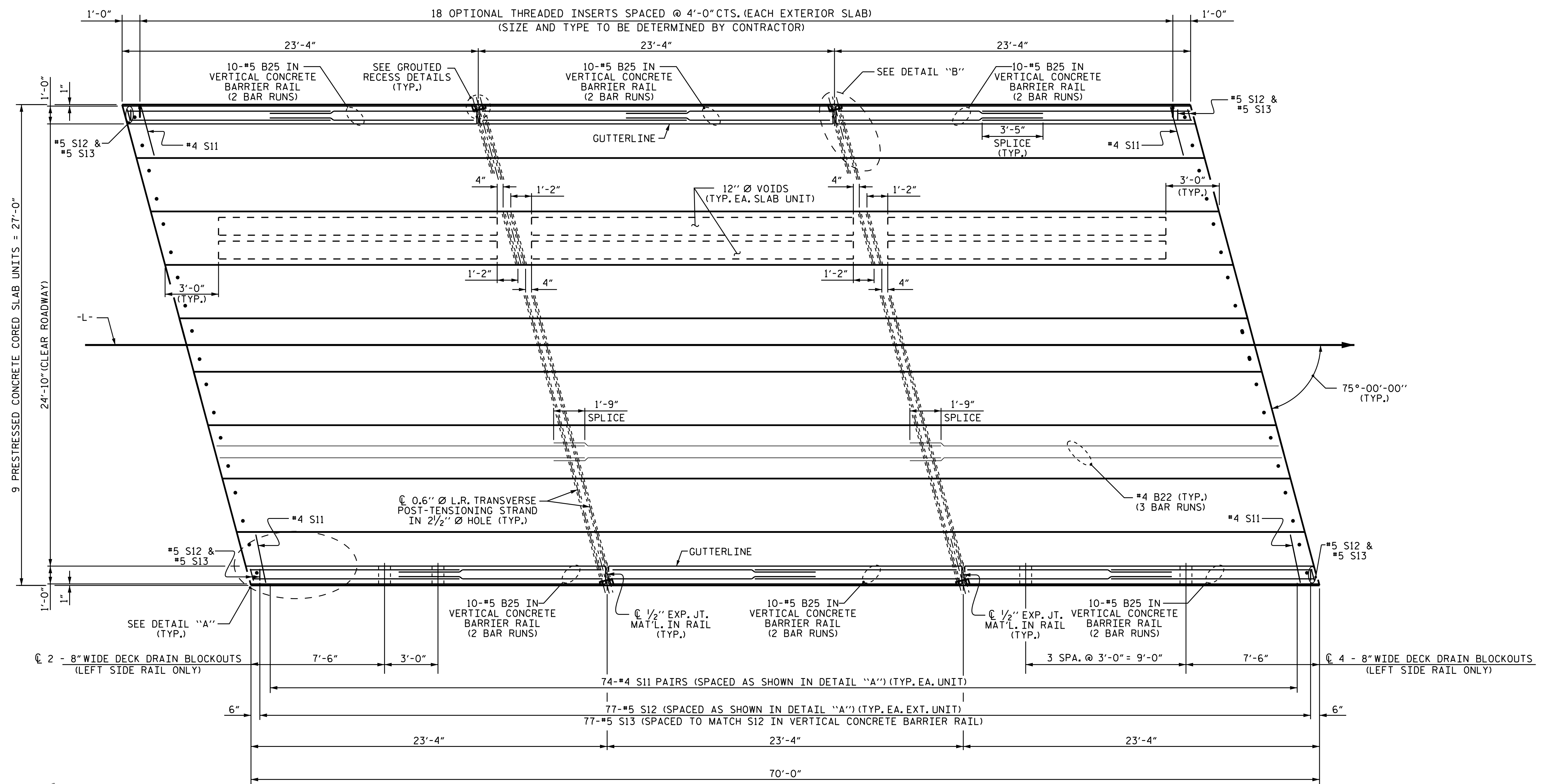
ASSEMBLED BY :	NMW	DATE :	8/18
CHECKED BY :	MGC	DATE :	9/18
DRAWN BY :	MAA	6/10	
CHECKED BY :	MKT	7/10	
REV.	8/14	MAA/TMG	

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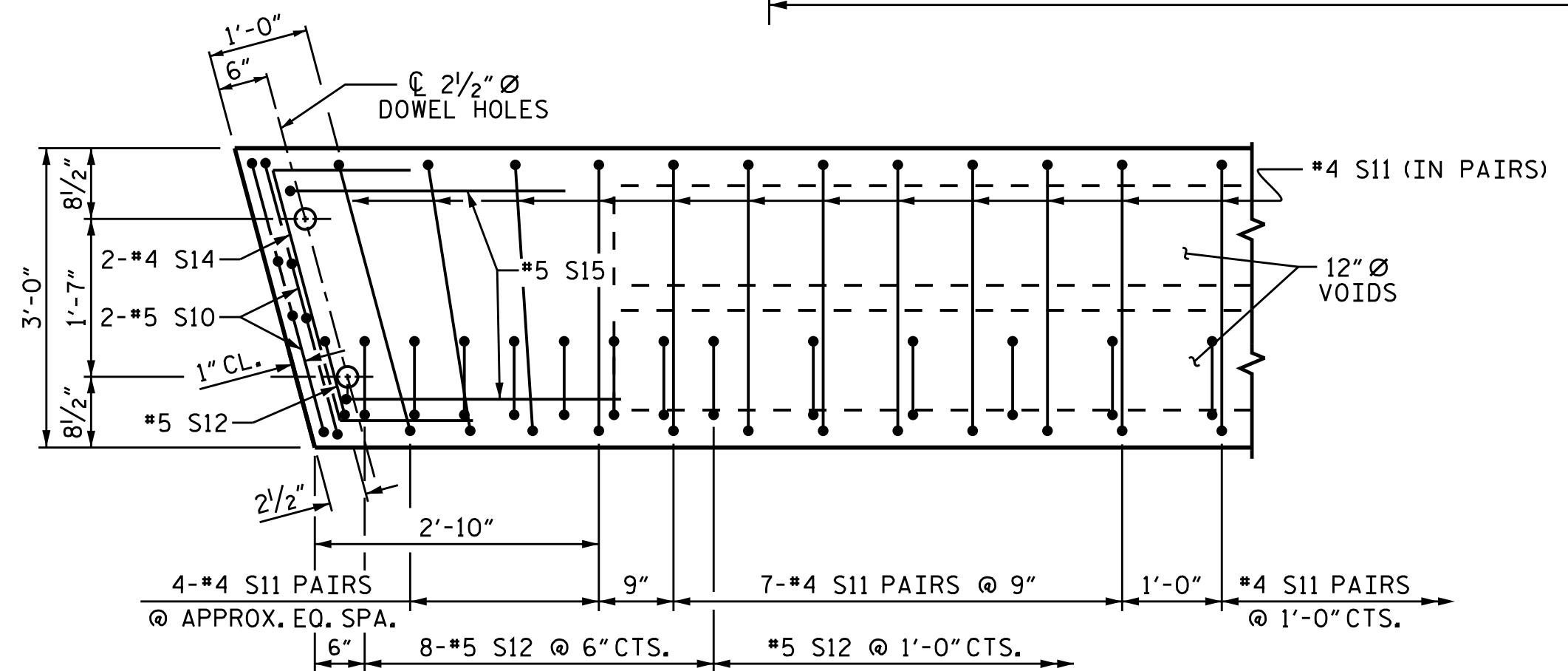
TGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			16

STD. NO. 24PCS4.27.75S

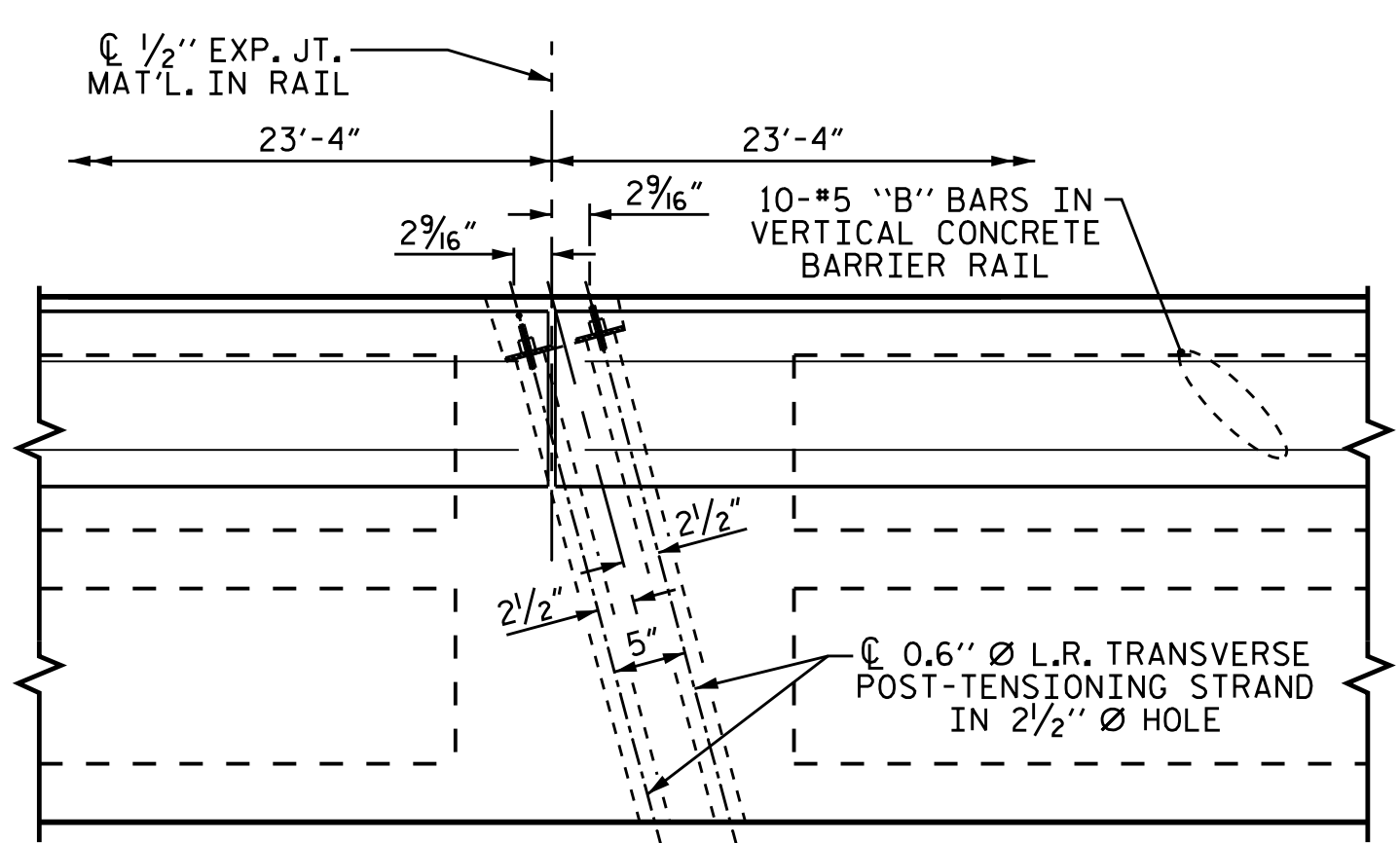


PLAN OF UNIT



DETAIL "A"

(SIMILAR 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 GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PROJECT NO. 17BP.13.R.162
McDOWELL COUNTY
STATION: 14+74.00-L-
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 70' UNIT
24'-10" CLEAR ROADWAY
75° SKEW

3/7/2019

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SHELBY, NC 28150
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CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			16

ASSEMBLED BY :	NMW	DATE :	8/18
CHECKED BY :	MGC	DATE :	9/18
DRAWN BY :	MAA	6/10	REV. 12/5/11
CHECKED BY :	MKT	7/10	REV. 8/14
			MAA/AAC
			MAA/TMG

NOTES

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

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

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

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

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

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDWAYS. 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 BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

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

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 8" X 6". THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE CORED SLAB UNIT TO THE TOP OF THE DRAIN OPENING.

APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF THE EXTERIOR CORED SLAB UNITS THAT REQUIRE DRAINS IN THE BARRIER RAIL.

PROJECT NO. 17BP.13.R.162

McDOWELL COUNTY

STATION: 14+74.00-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

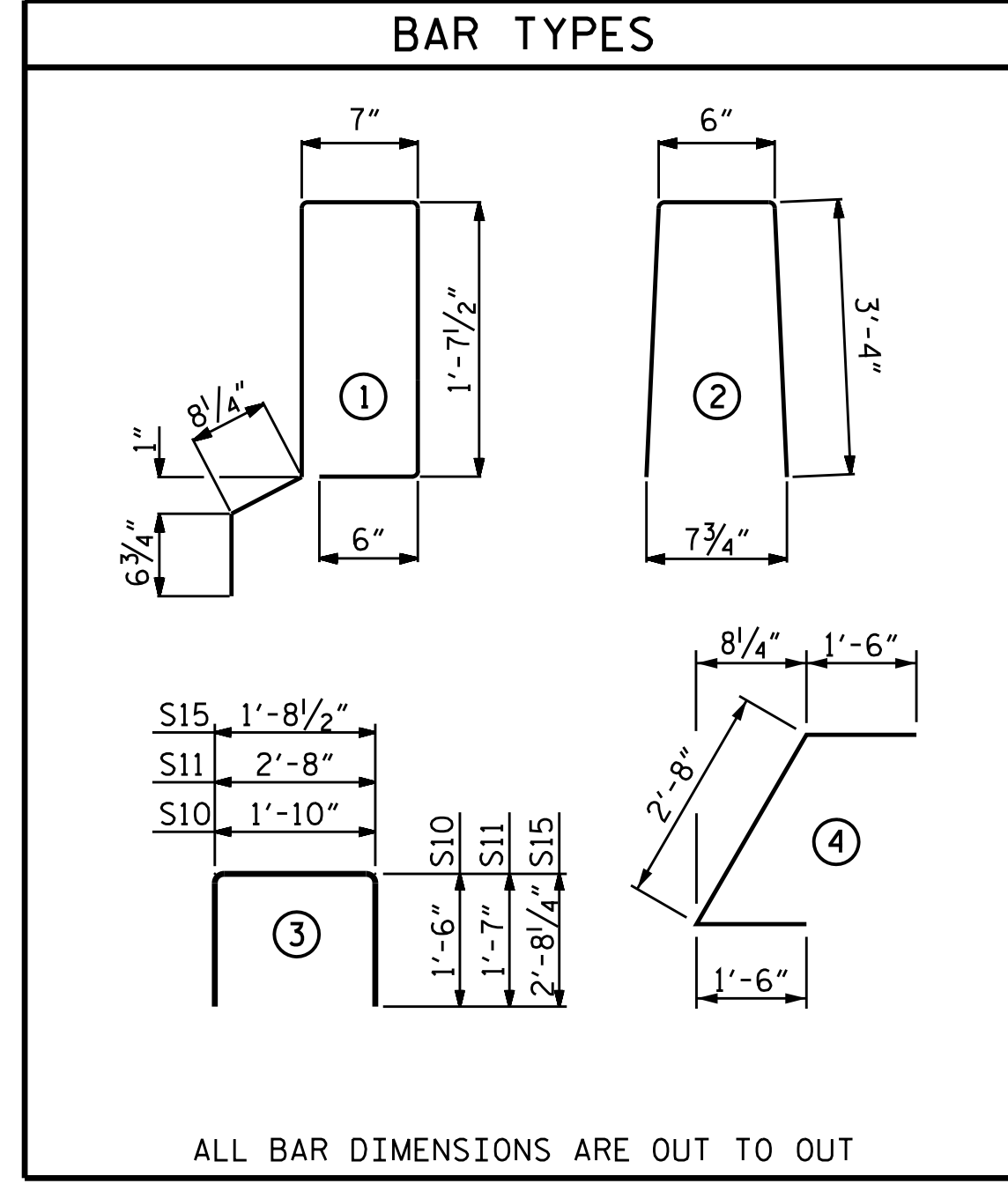
ENGINEER
MARTIN L. G. CHECK, JR.
3/7/2019

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TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

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

SHEET NO.
S-8
TOTAL SHEETS
16



BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS 70' UNIT	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
*B25	120	120	#5	STR	13'-8"	1711
*S13	158	158	#5	2	7'-2"	1181
* EPOXY COATED REINFORCING STEEL						LBS. 2892
CLASS AA CONCRETE						CU.YDS. 18.1
TOTAL VERTICAL CONCRETE BARRIER RAIL						LN. FT. 140.00

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
70' UNITS	2"	3'-8"

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 2'-0"
70' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2/4" ↓
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	3/4" ↓
FINAL CAMBER	1 1/2" ↑

** INCLUDES FUTURE WEARING SURFACE

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
70' UNIT			
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	7	70'-0"	490'-0"
TOTAL	9		630'-0"

CONCRETE RELEASE STRENGTH

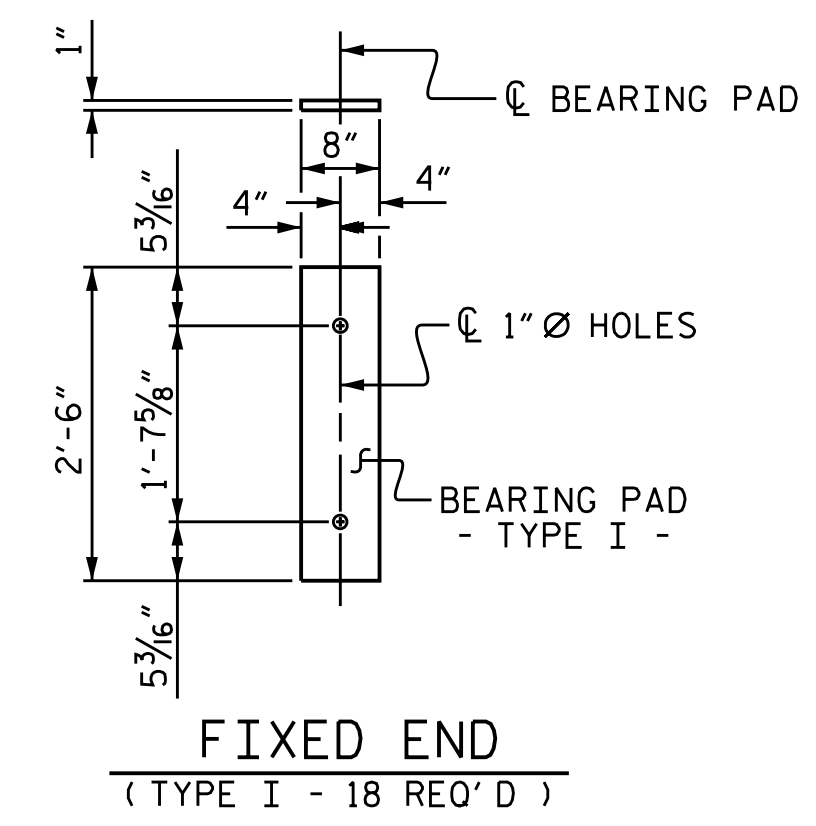
UNIT	PSI
70' UNITS	5500

GRADE 270 STRANDS

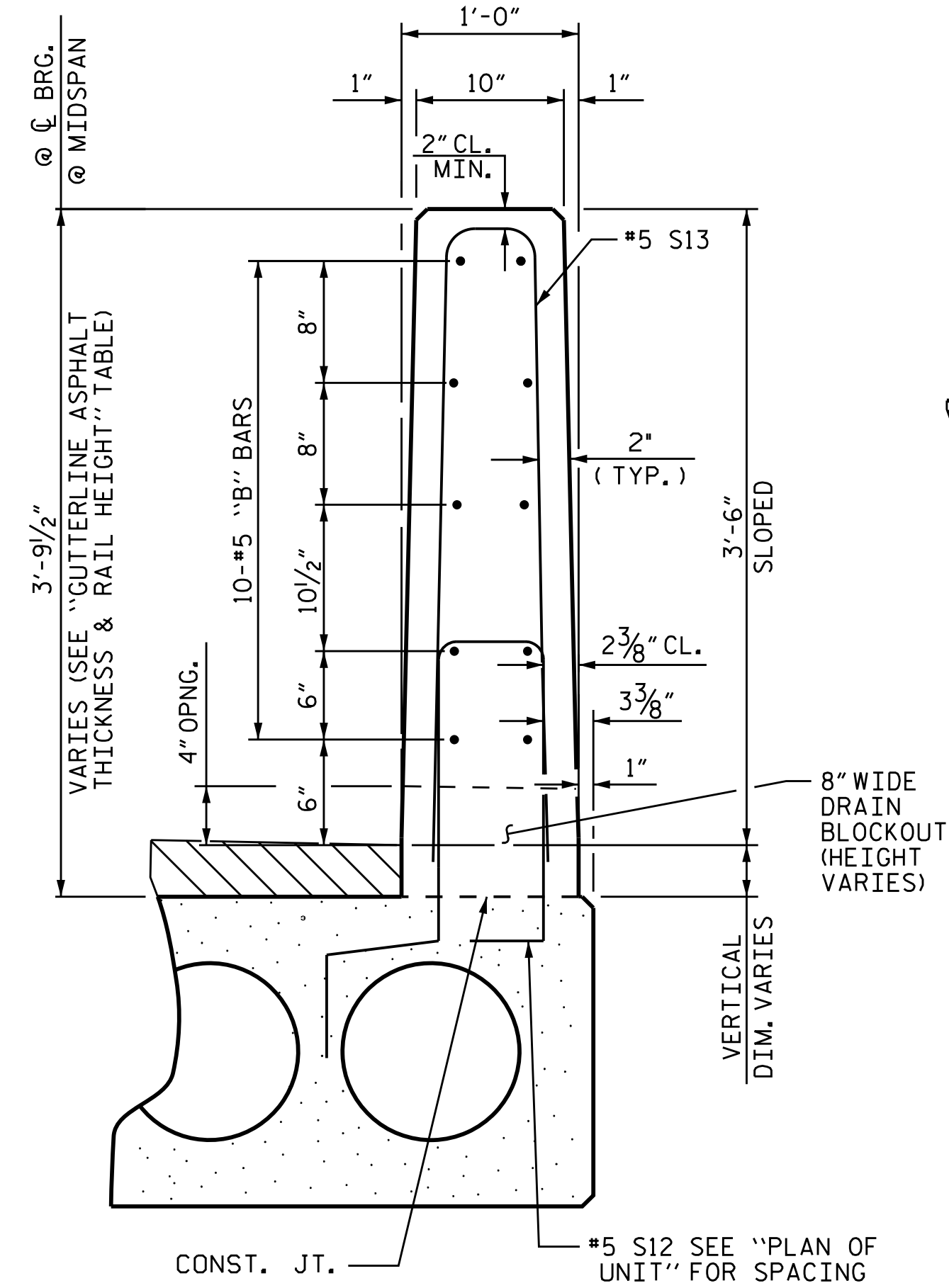
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT

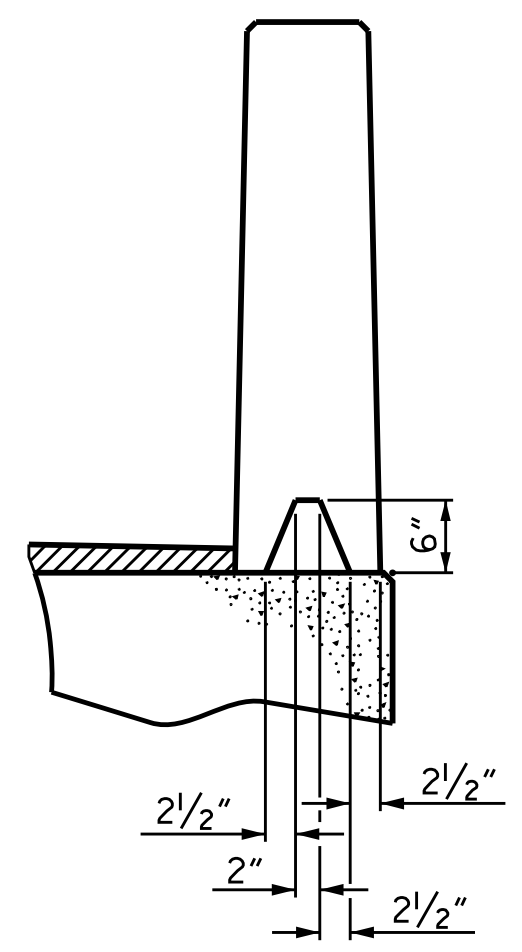
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	3	4'-10"	40	4'-10"	40
S11	148	#4	3	5'-10"	577	5'-10"	577
*S12	79	#5	1	5'-7"	460		
S14	4	#4	4	5'-8"	15	5'-8"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL				LBS.	760	LBS.	760
* EPOXY COATED REINFORCING STEEL				LBS.	460		
7000 P.S.I. CONCRETE				CU. YDS.	12.0	CU. YDS.	12.0
0.6" Ø L.R. STRANDS				No.	28	No.	28



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

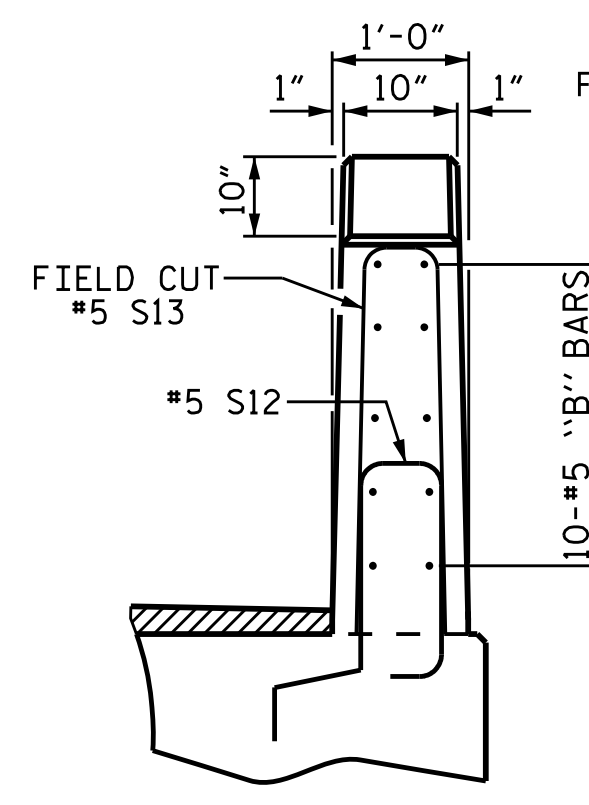


SECTION THRU RAIL

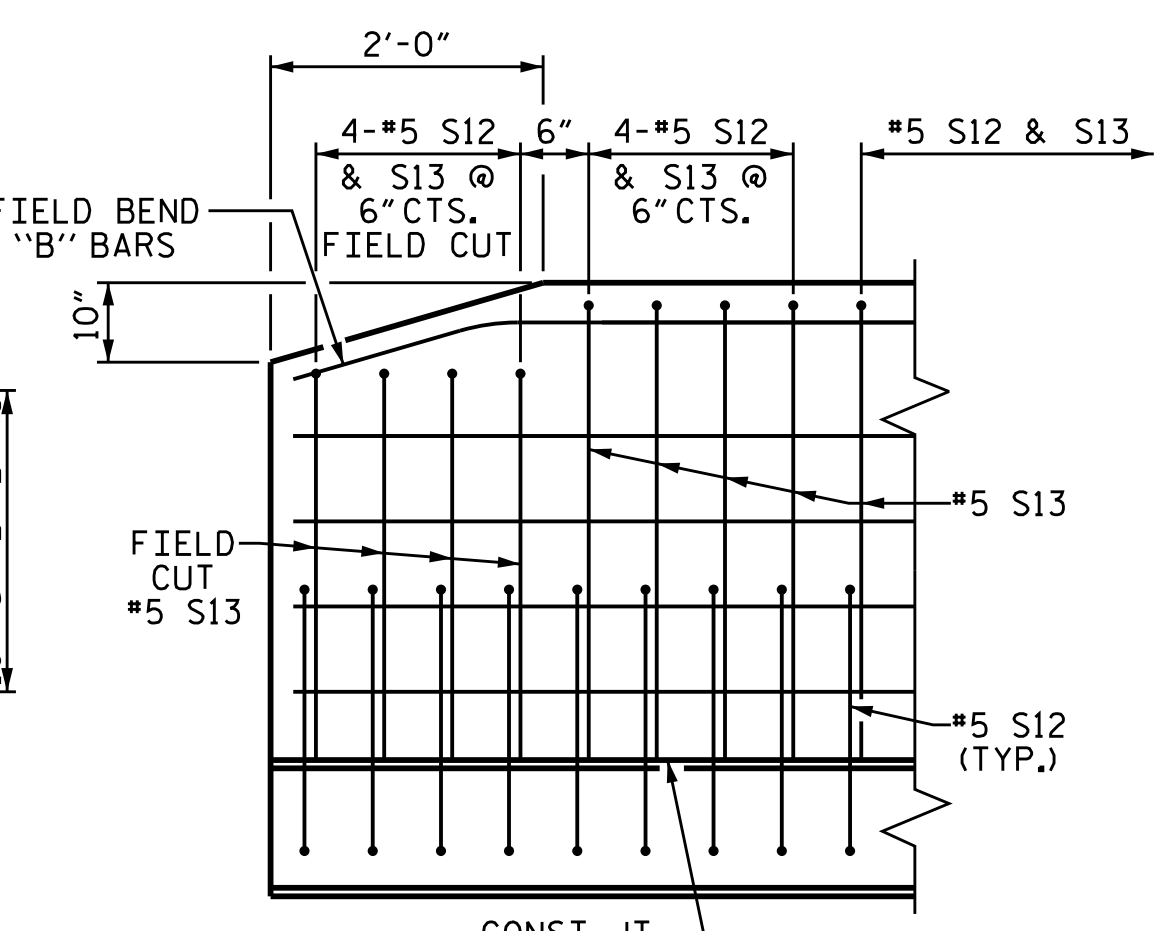


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L WHEN SLIP FORM IS USED)

ELEVATION AT EXPANSION JOINTS



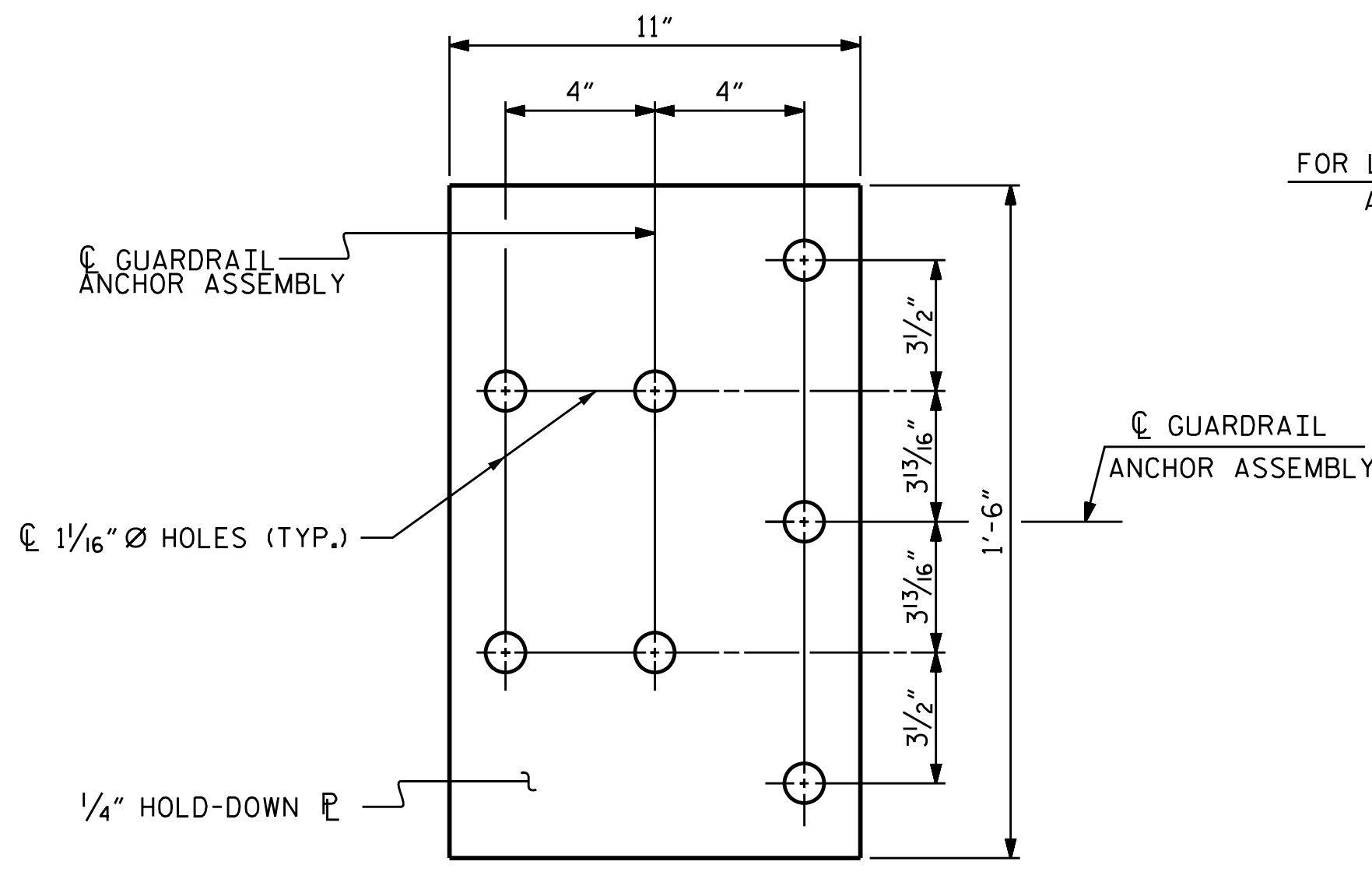
END VIEW



SIDE VIEW

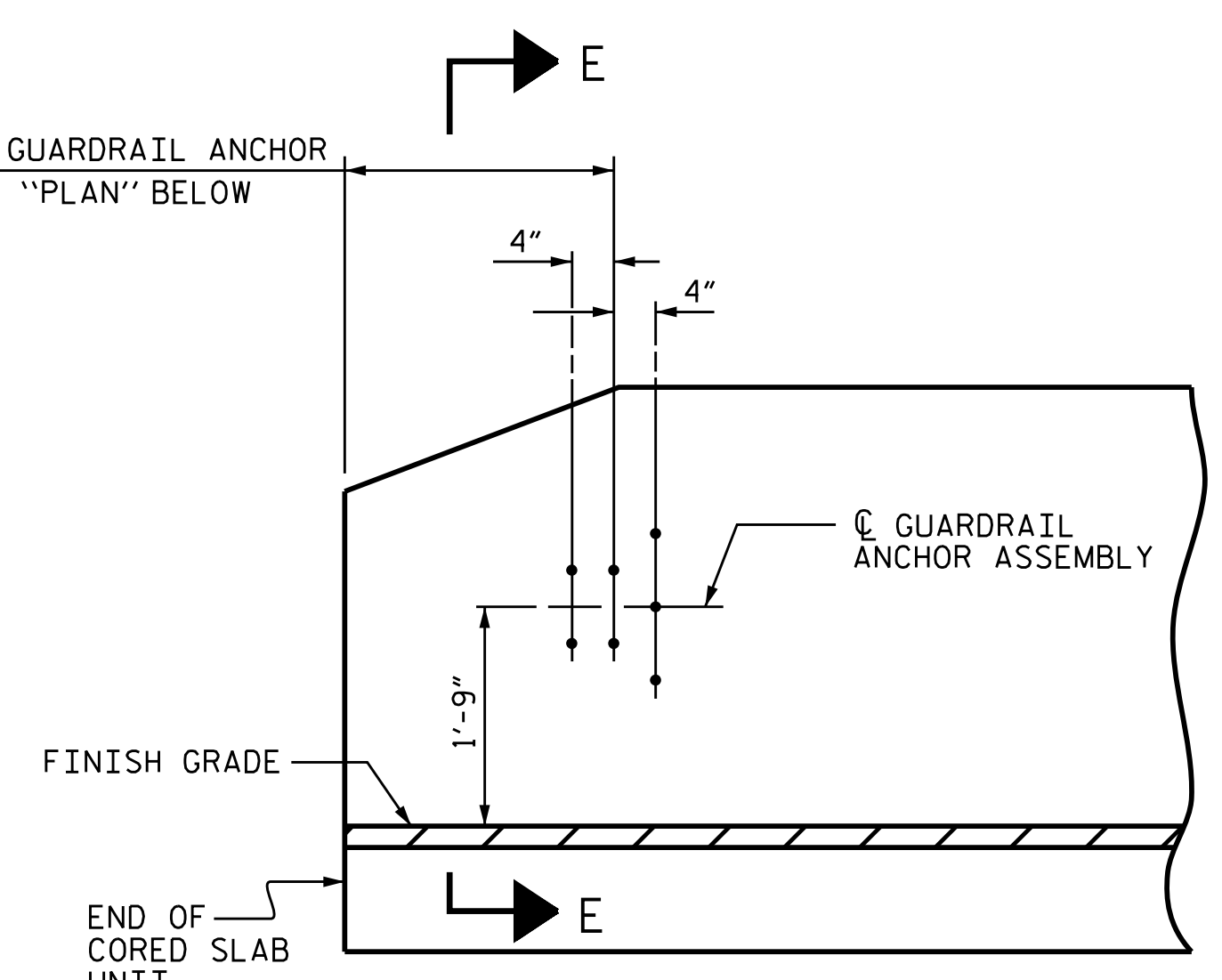
VERTICAL CONCRETE BARRIER RAIL DETAILS
END OF RAIL DETAILS

ASSEMBLED BY :	NMW	DATE :	8/18
CHECKED BY :	MGC	DATE :	9/18
DRAWN BY :	MAA 6/10	REV. 5/18	MAA/THC
CHECKED BY :	MKT 7/10		

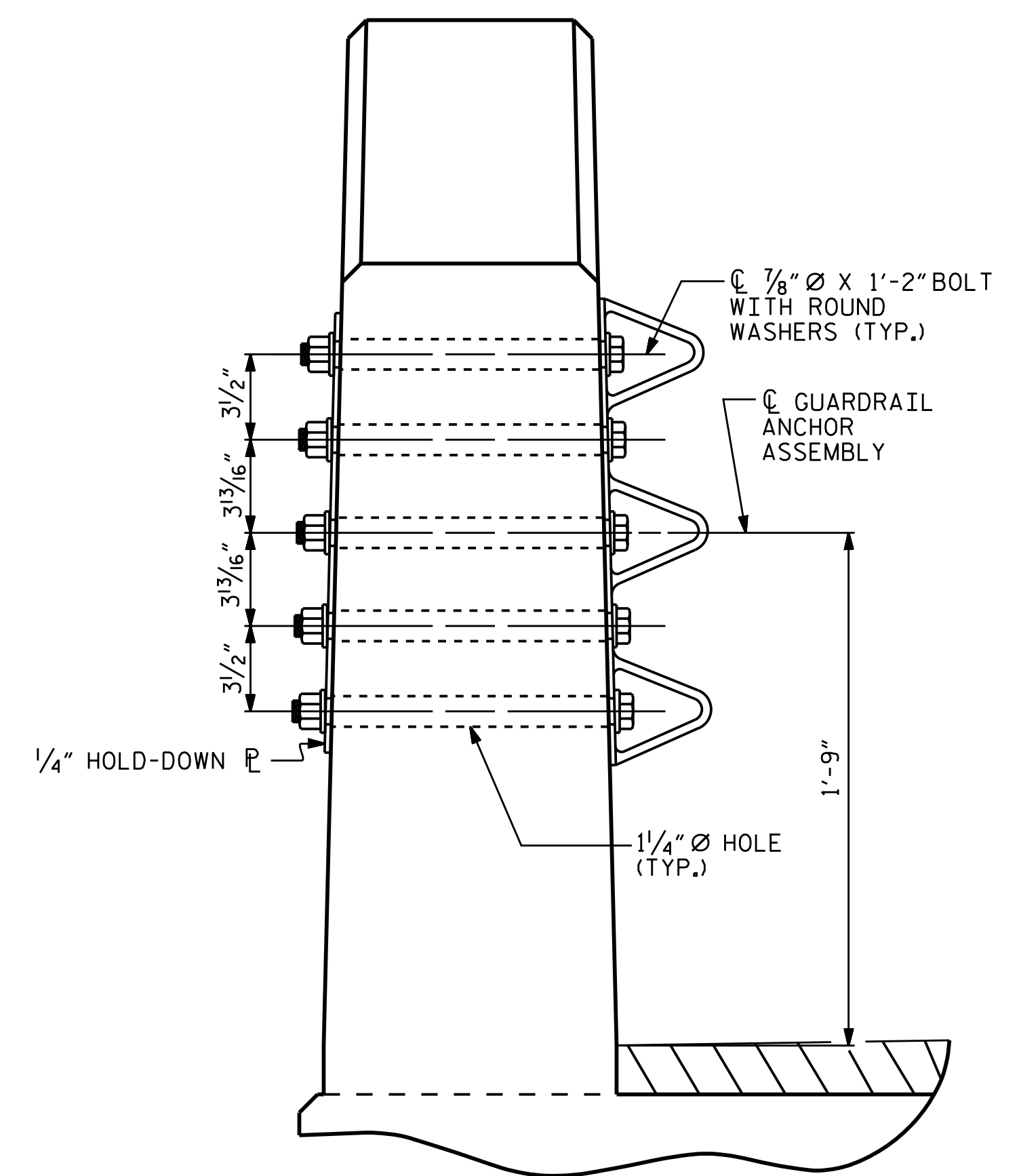


PLAN

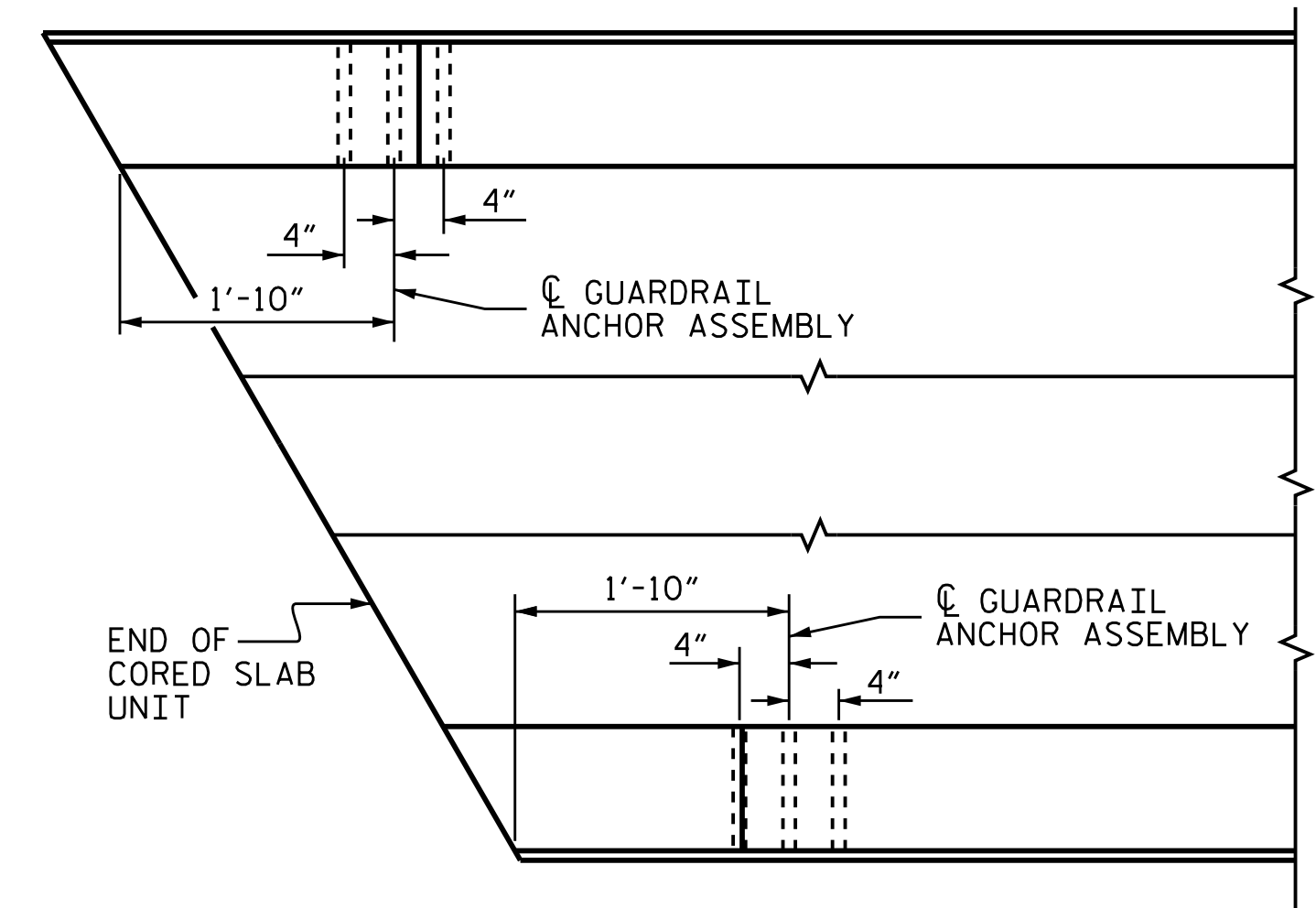
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



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

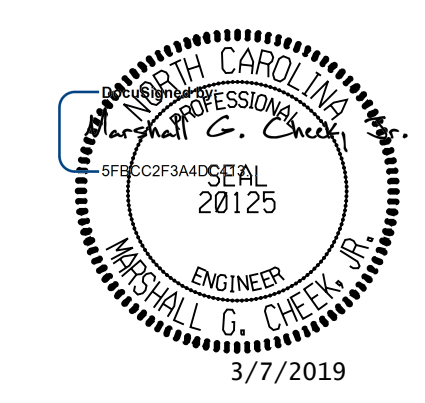


SKETCH SHOWING POINTS OF ATTACHMENT
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 1/8" Ø BOLTS WITH NUTS AND WASHERS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.
- THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.
- THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.
- THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

PROJECT NO. 17BP.13.R.162
McDOWELL COUNTY
STATION: 14+74.00-L-



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

ASSEMBLED BY : NMW	DATE : 8/18
CHECKED BY : MGC	DATE : 9/18
DRAWN BY : MAA 5/10	REV. 1/15 MAA/TMG
CHECKED BY : GM 5/10	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

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UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			16

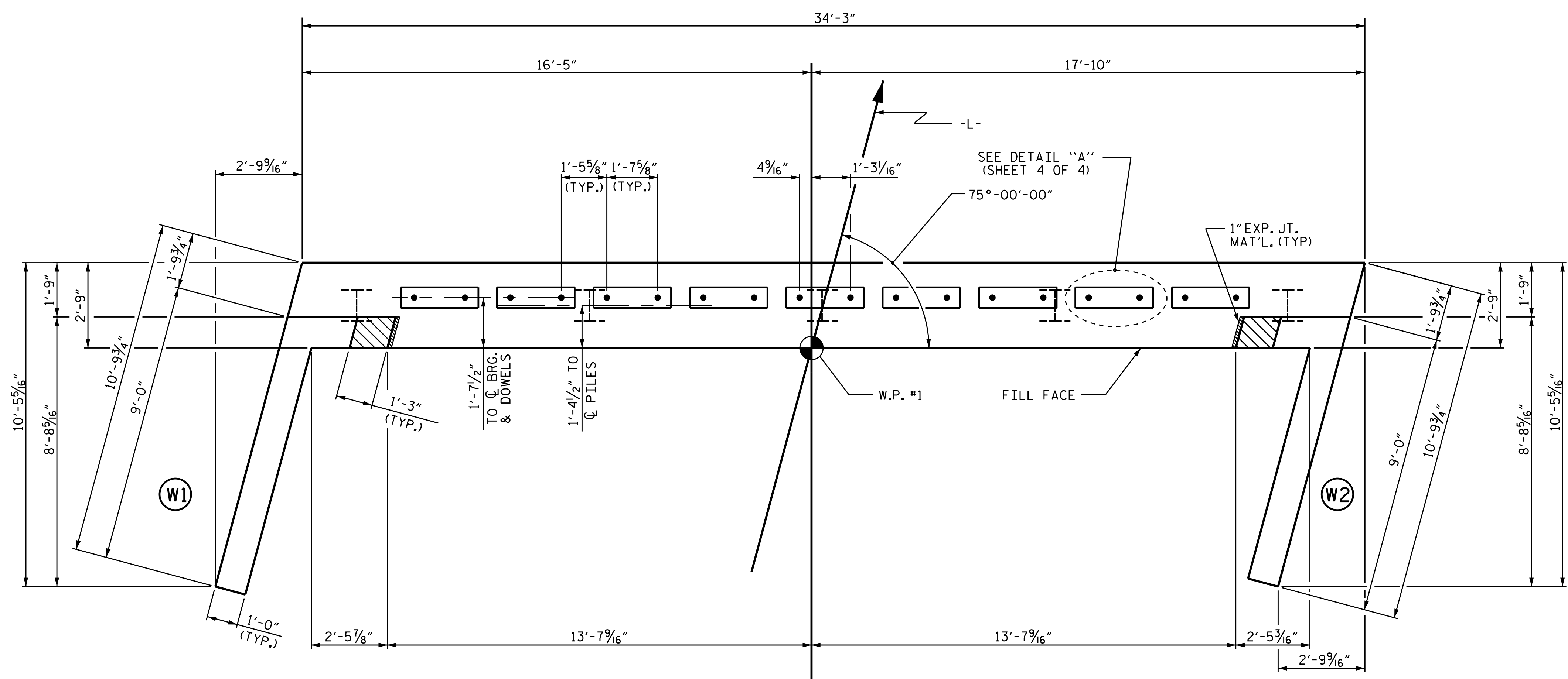
NOTES

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

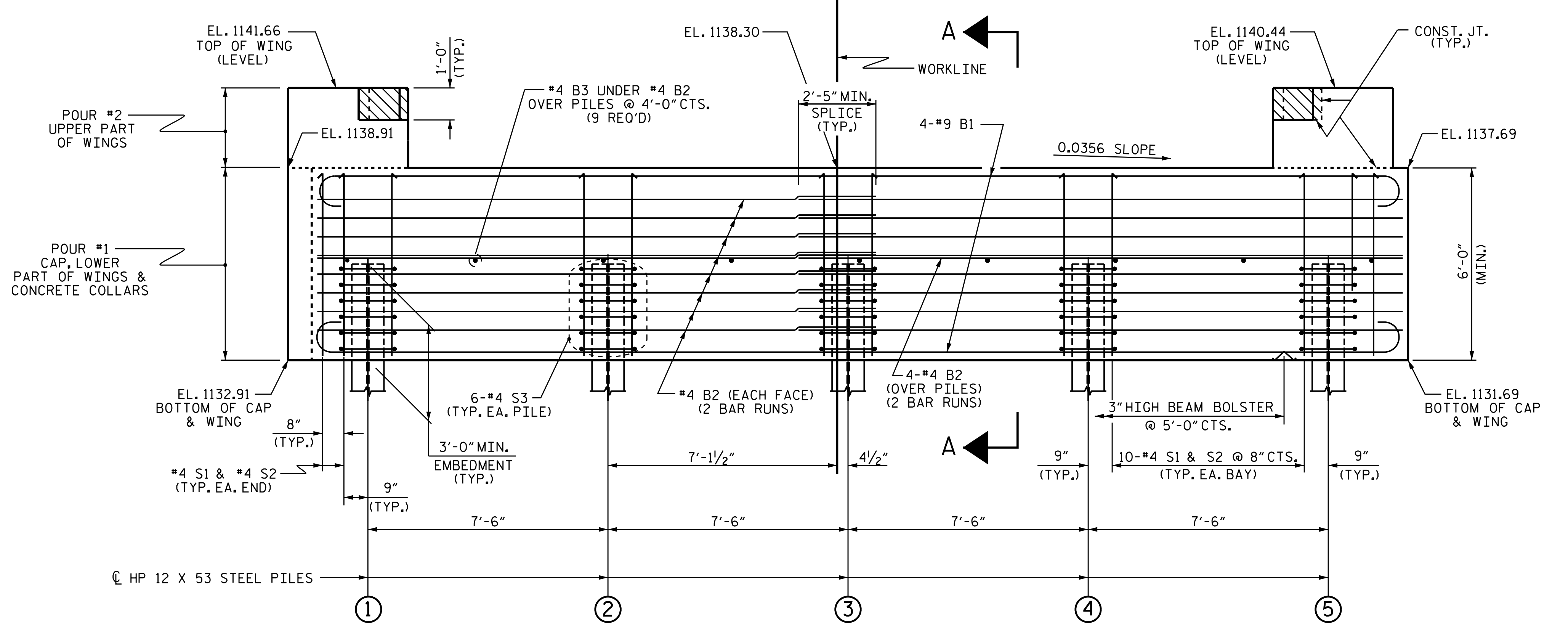
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

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

TOP OF PILE ELEVATIONS	
①	1135.86
②	1135.60
③	1135.33
④	1135.06
⑤	1134.80

PROJECT NO. 17BP.13.R.162
 McDOWELL COUNTY
 STATION: 14+74.00-L-
 SHEET 1 OF 4

STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 MICHAEL G. CHECK, JR.
 3/7/2019

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TGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-10
1			3			TOTAL SHEETS
2			4			16

DRAWN BY : NMW	DATE : 8/18
CHECKED BY : MGC	DATE : 9/18
DESIGN ENGINEER OF RECORD : MGC	DATE : 9/18
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG

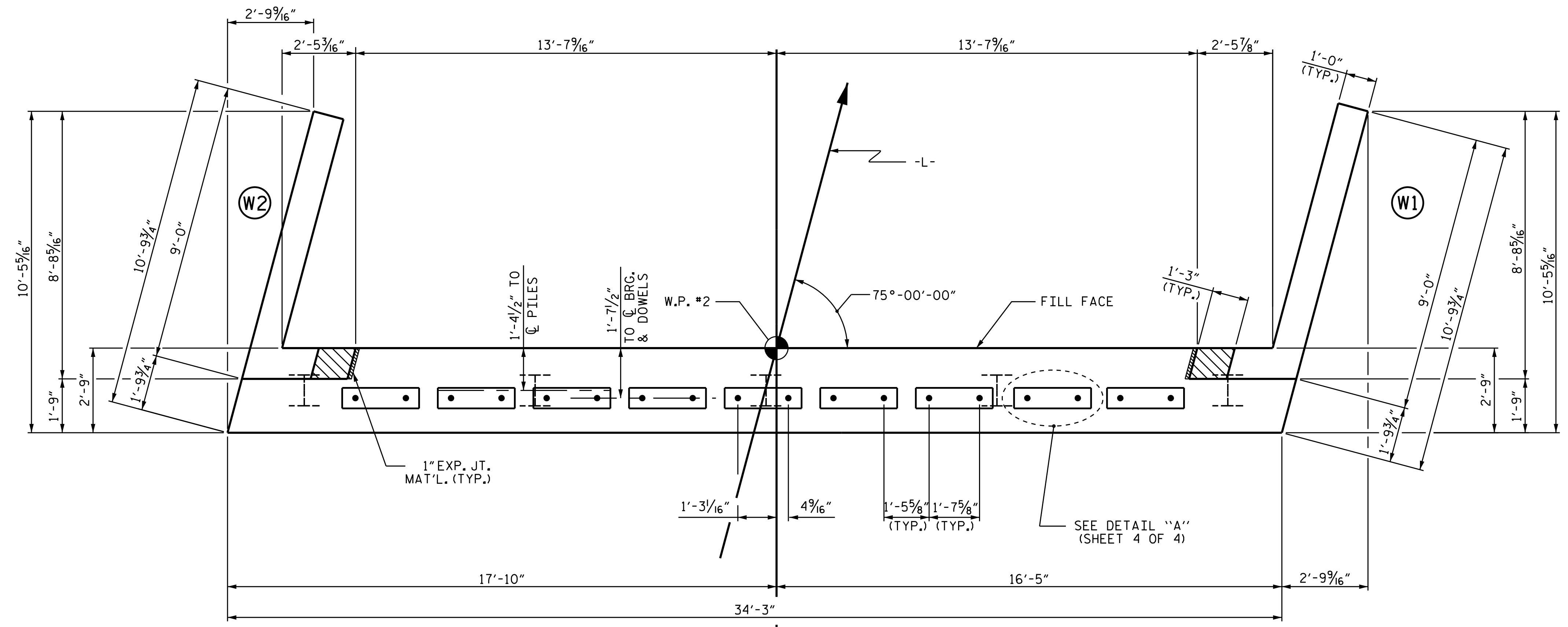
NOTES

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

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

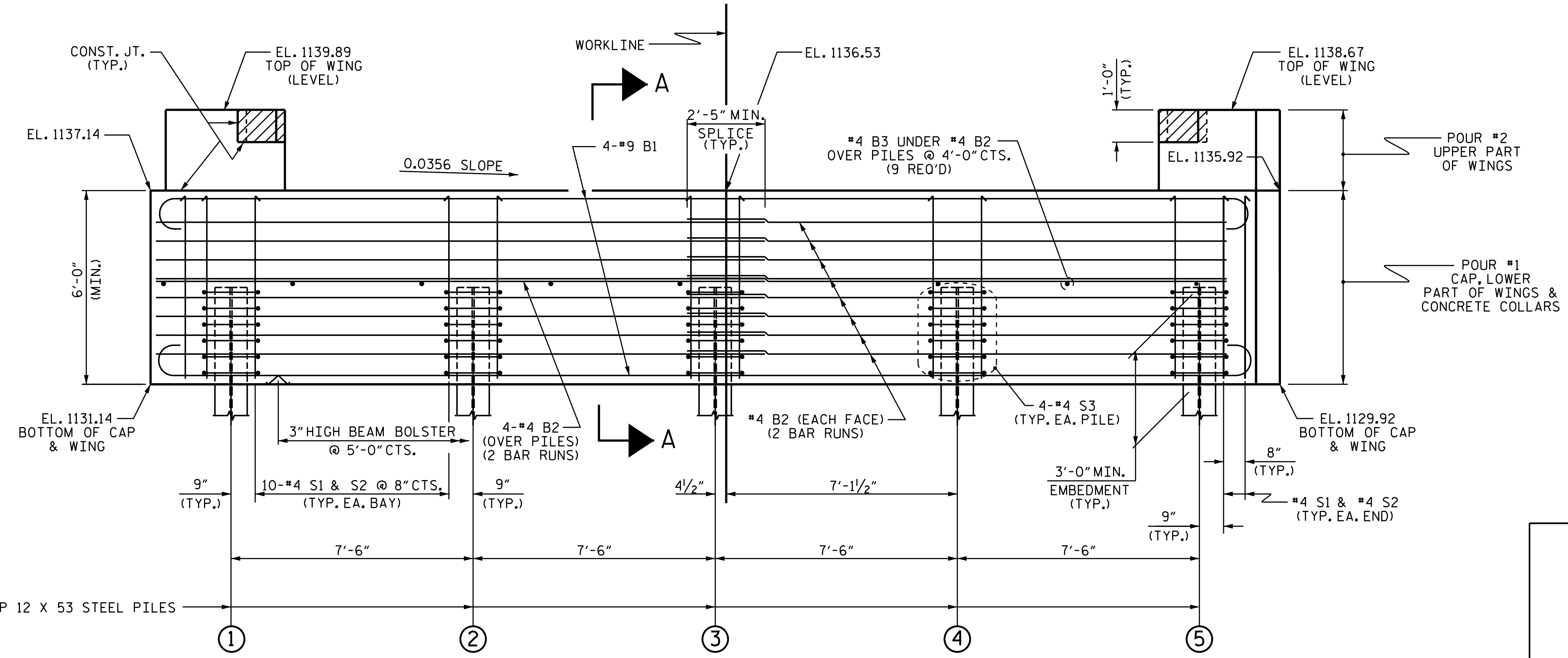
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

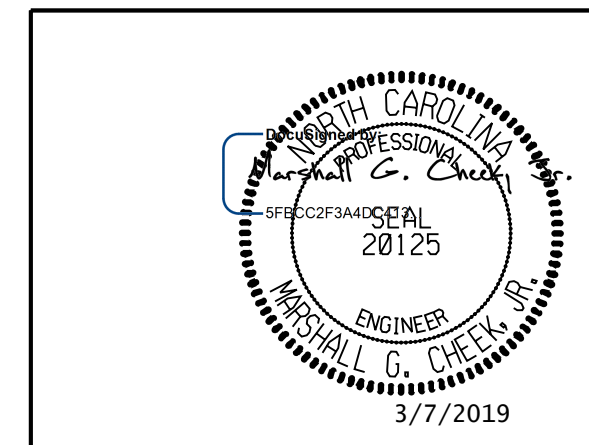
TOP OF PILE ELEVATIONS	
①	1134.10
②	1133.83
③	1133.56
④	1133.29
⑤	1133.03



ELEVATION

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

PROJECT NO. 17BP.13.R.162
McDOWELL COUNTY
 STATION: 14+74.00-L-
 SHEET 2 OF 4



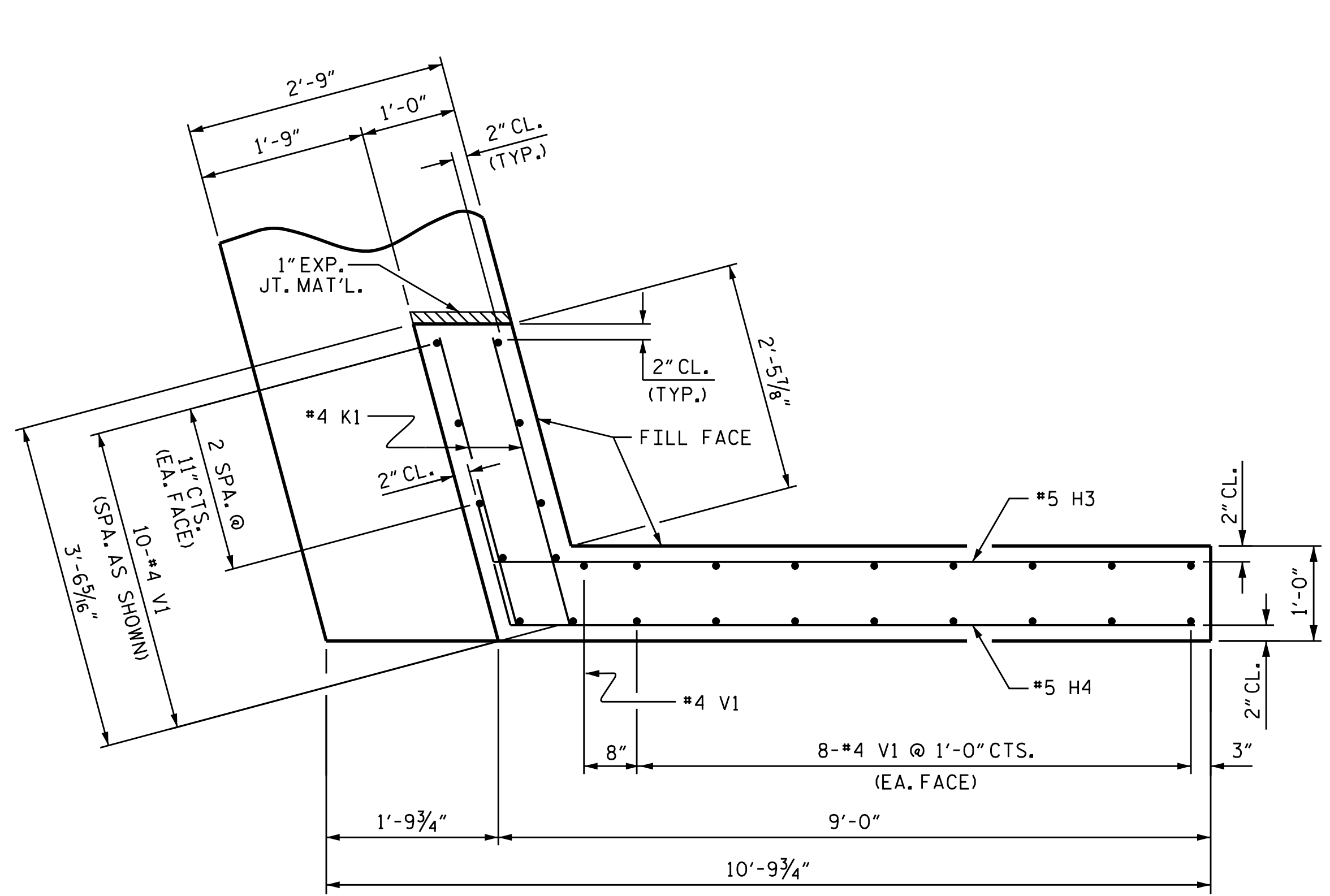
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2

DRAWN BY : NMW	DATE : 8/18
CHECKED BY : MGC	DATE : 9/18
DESIGN ENGINEER OF RECORD : MGC	DATE : 9/18
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG

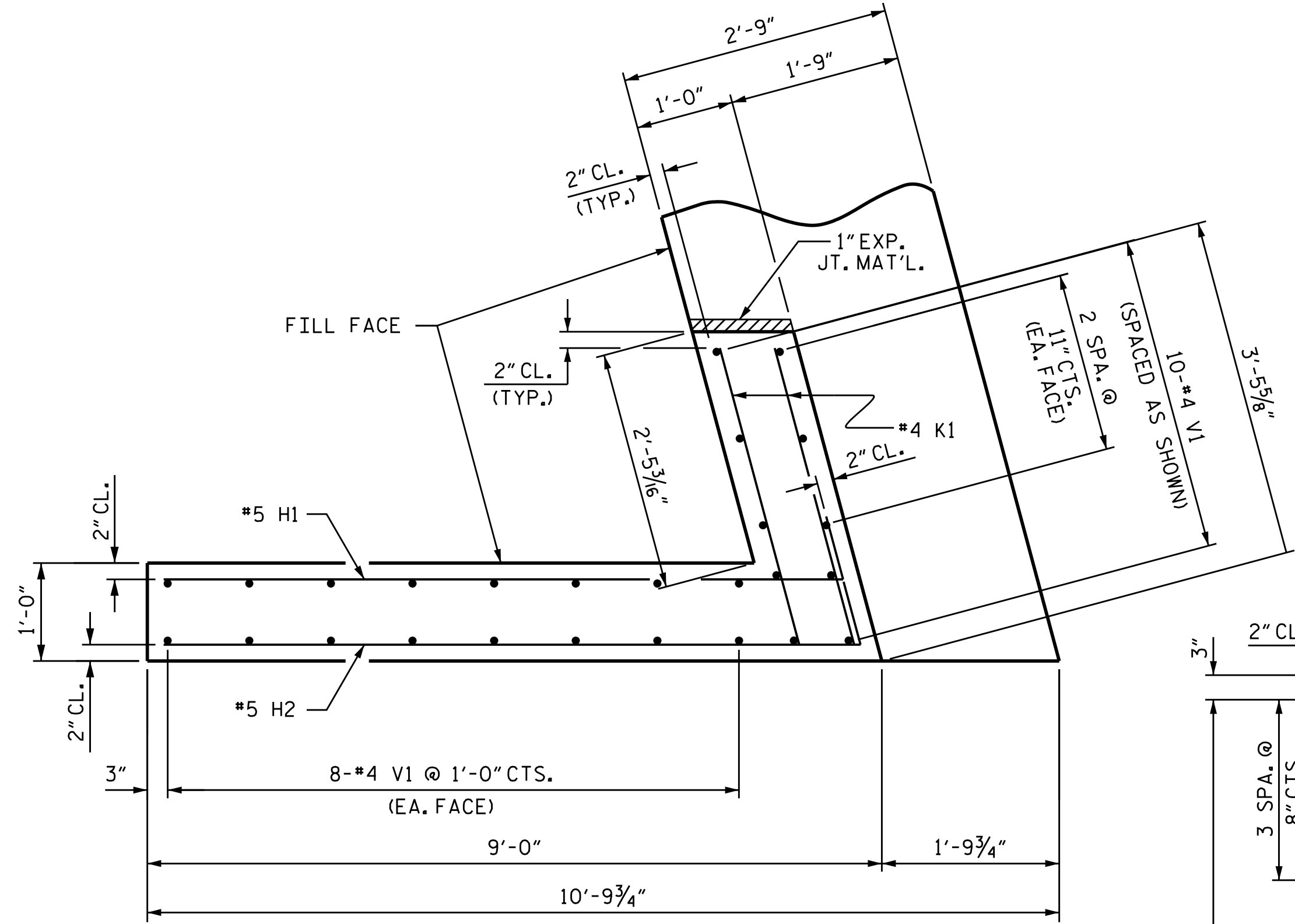
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-11
2			4			16

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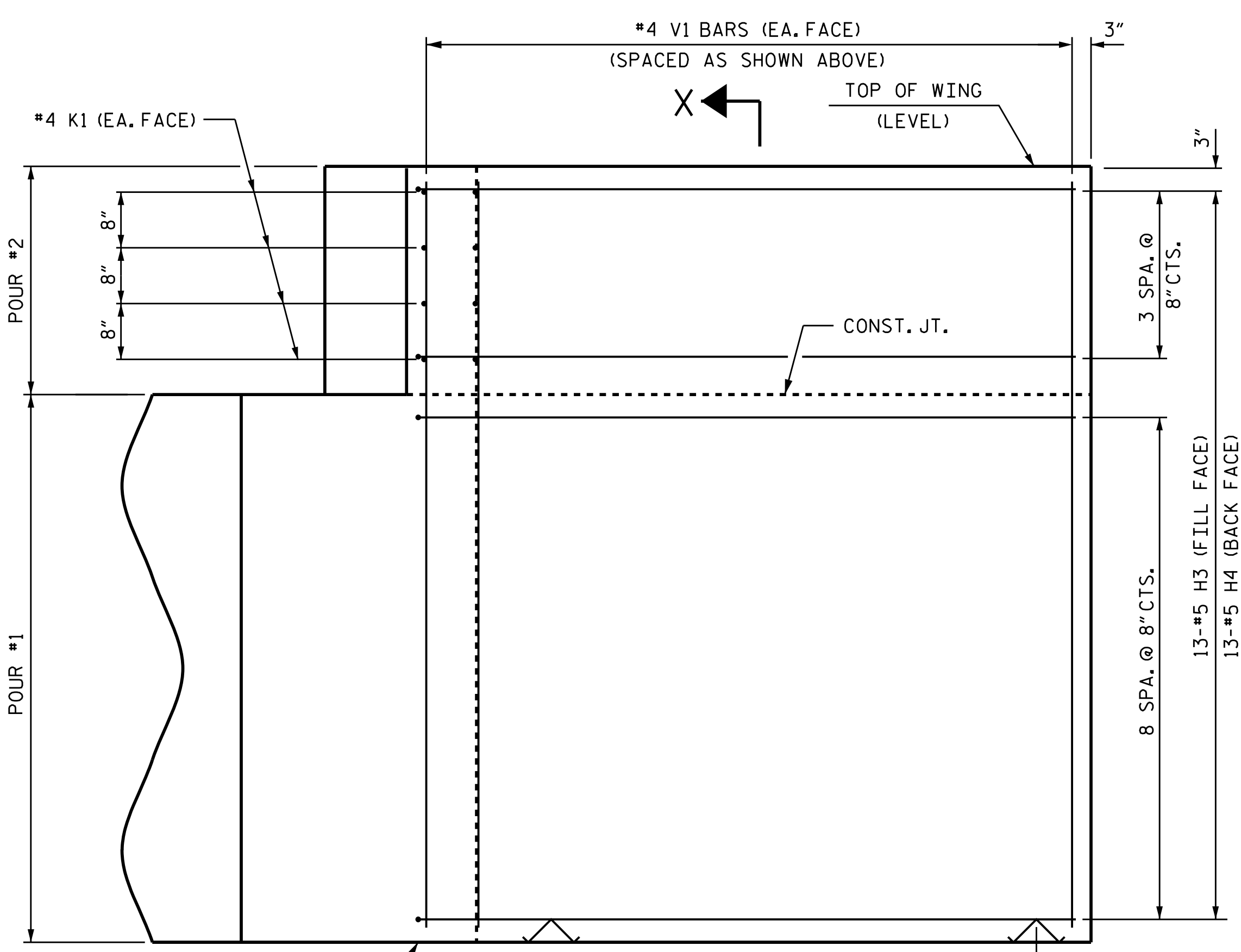
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 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275



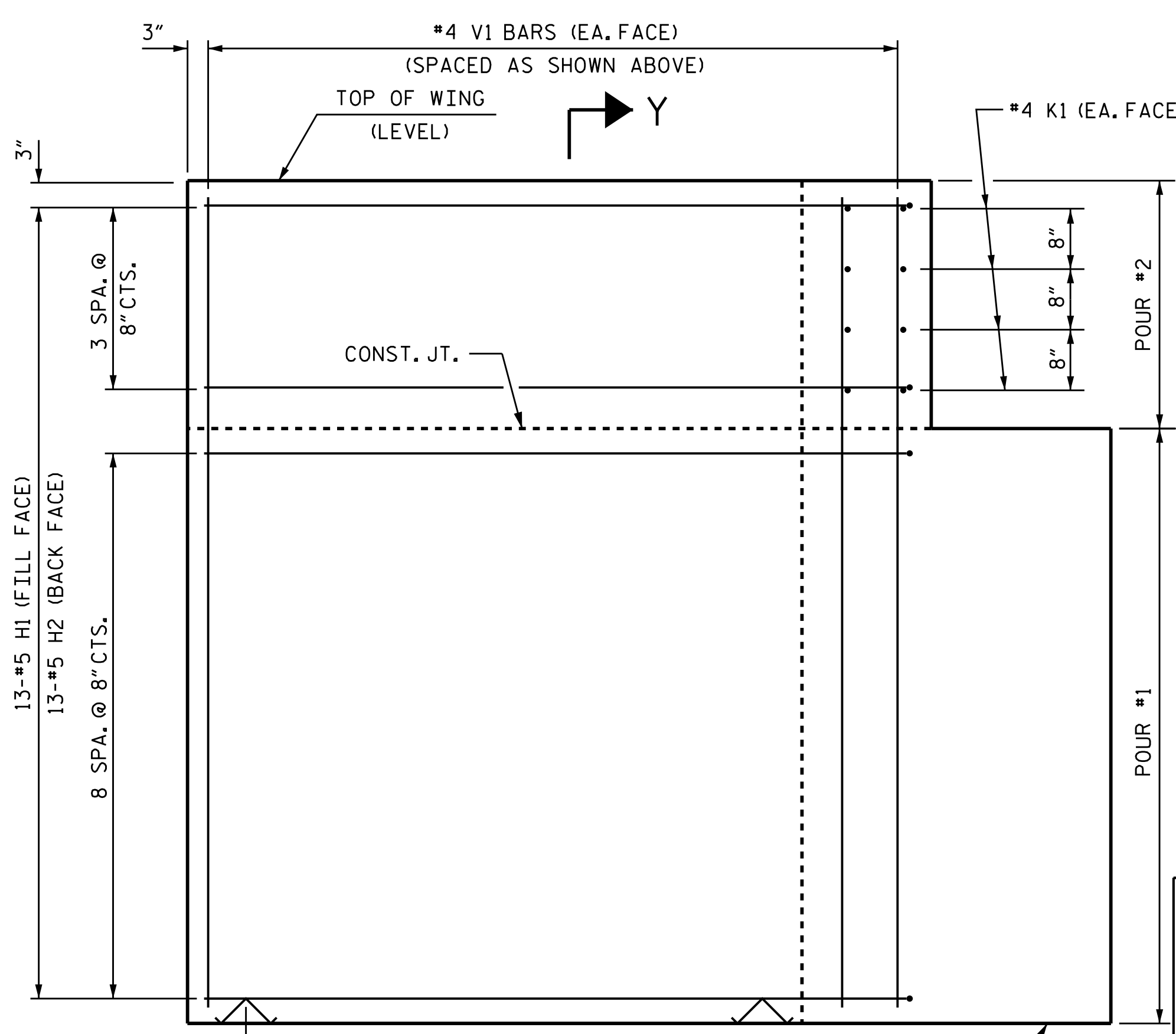
PLAN OF WING (W1)



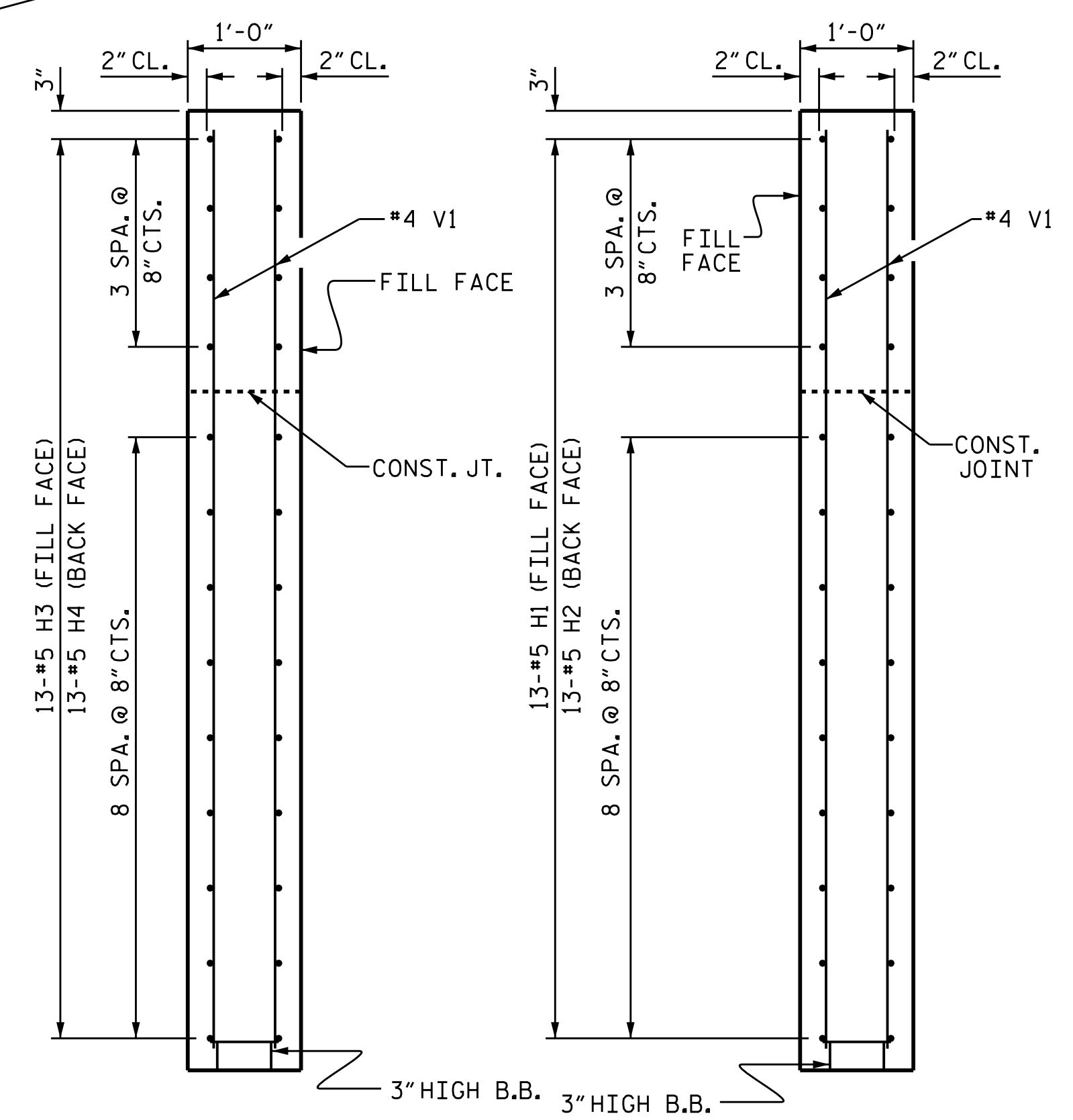
PLAN OF WING (W2)



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X

SECTION Y-Y

DRAWN BY : NMW	DATE : 8/18
CHECKED BY : MGC	DATE : 9/18
DESIGN ENGINEER OF RECORD : MGC	DATE : 9/18
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG

WING DETAILS

STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 MICHAEL G. CHECK
 20125
 3/7/2019

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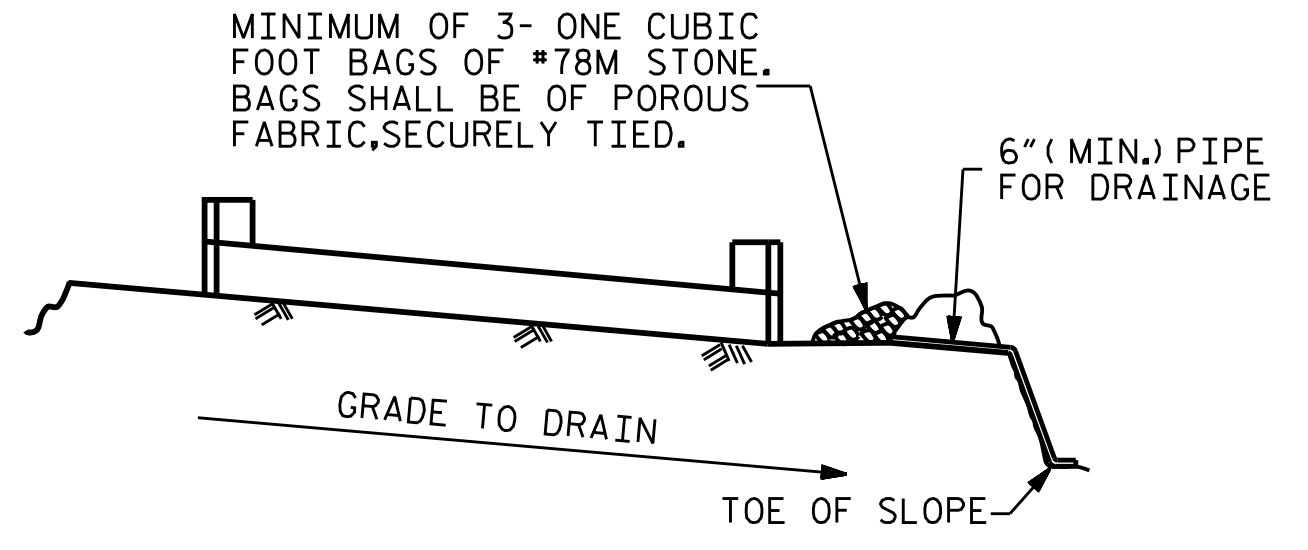
TGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
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PROJECT NO. 17BP.13.R.162
 McDOWELL COUNTY
 STATION: 14+74.00-L-
 SHEET 3 OF 4

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			16

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT
 WING DETAILS

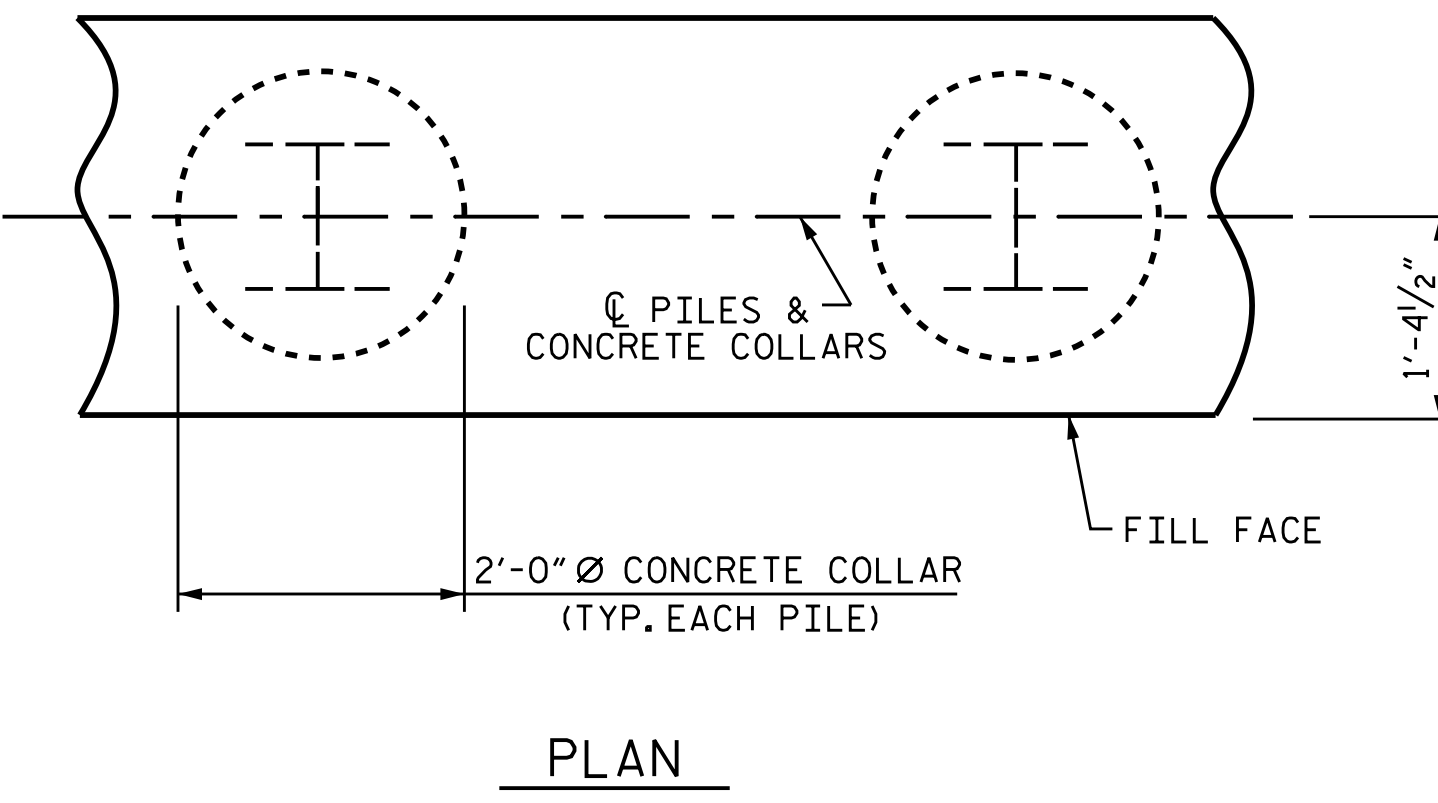
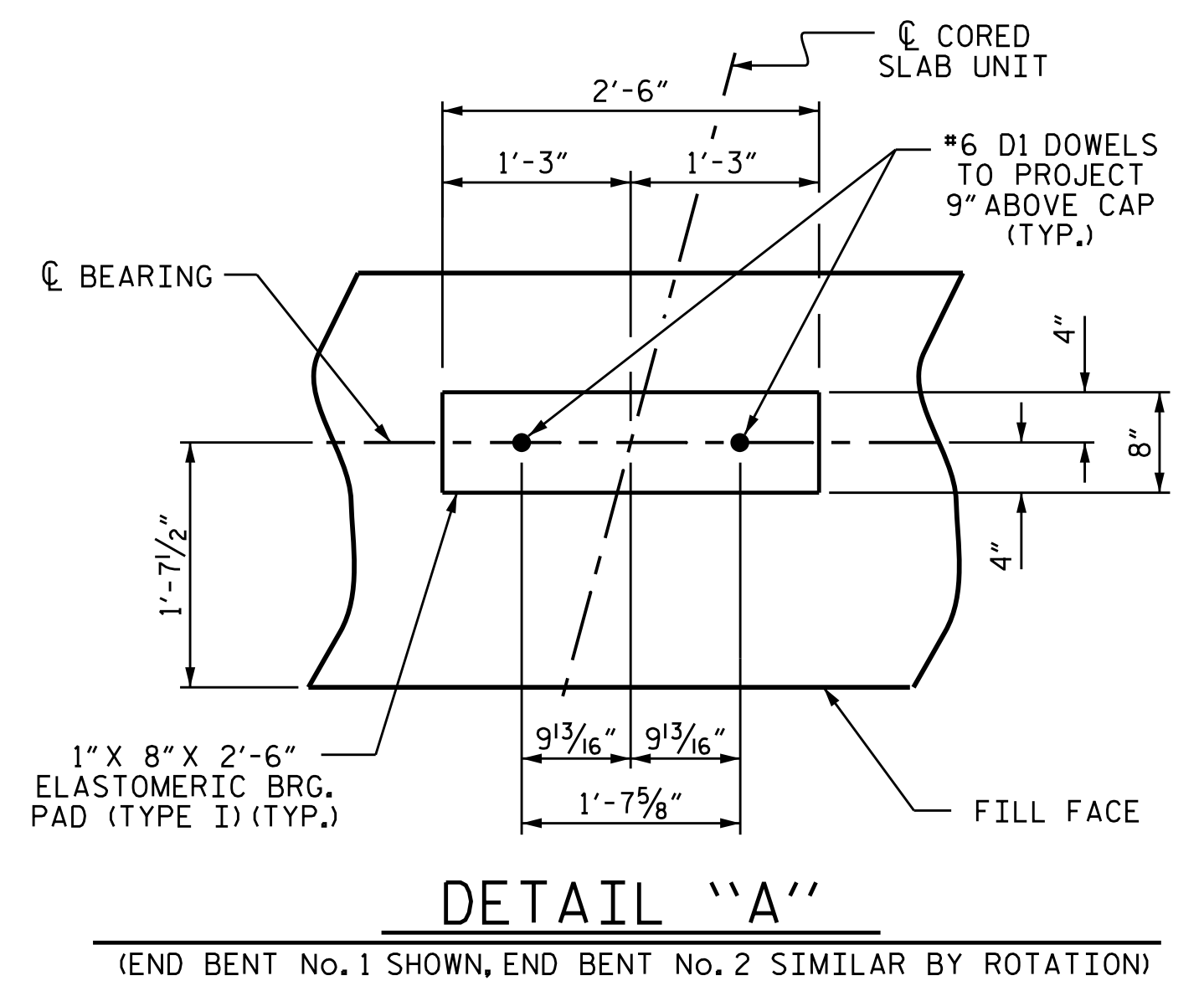


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

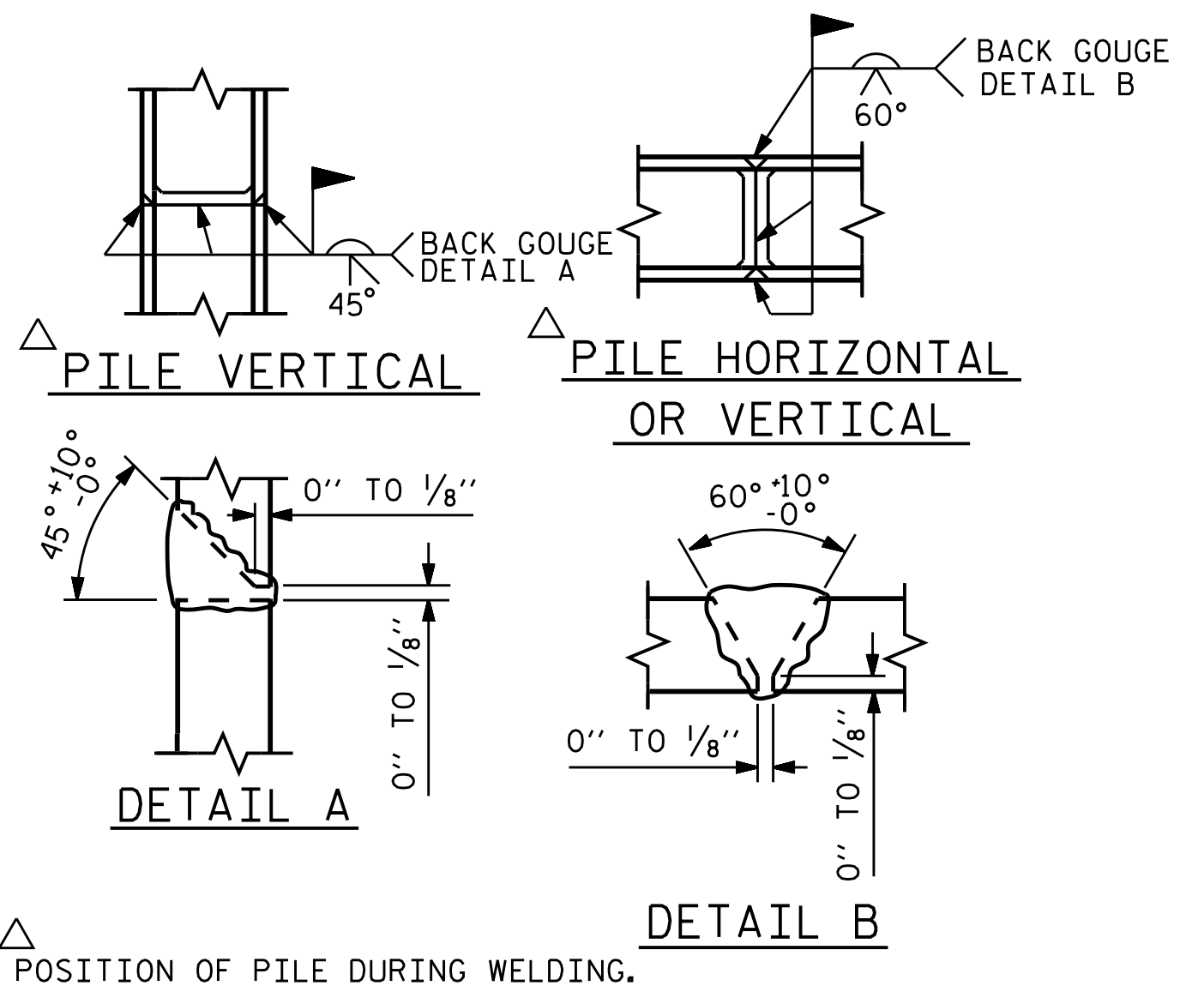
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



CORROSION PROTECTION FOR STEEL PILES DETAIL

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



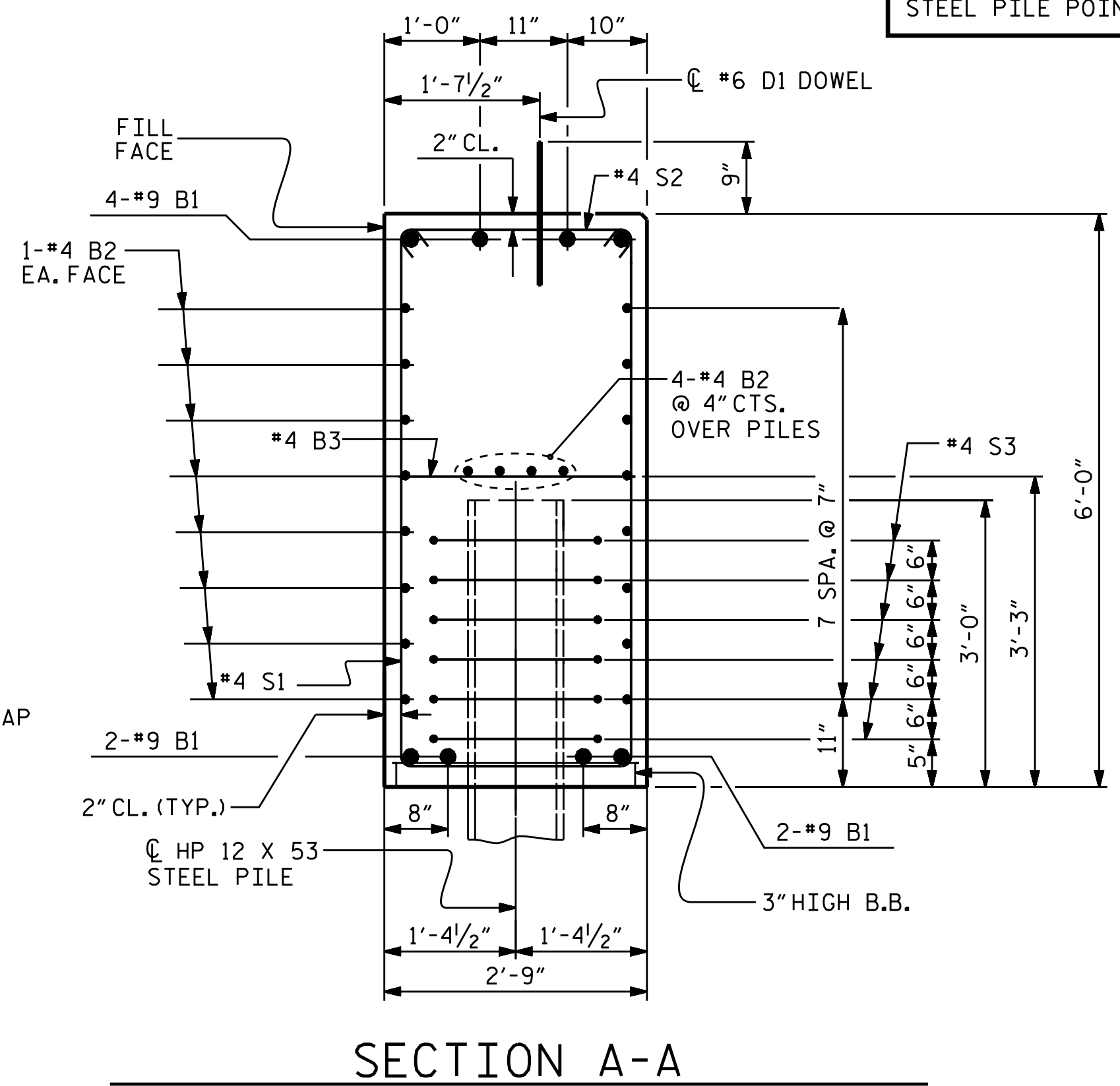
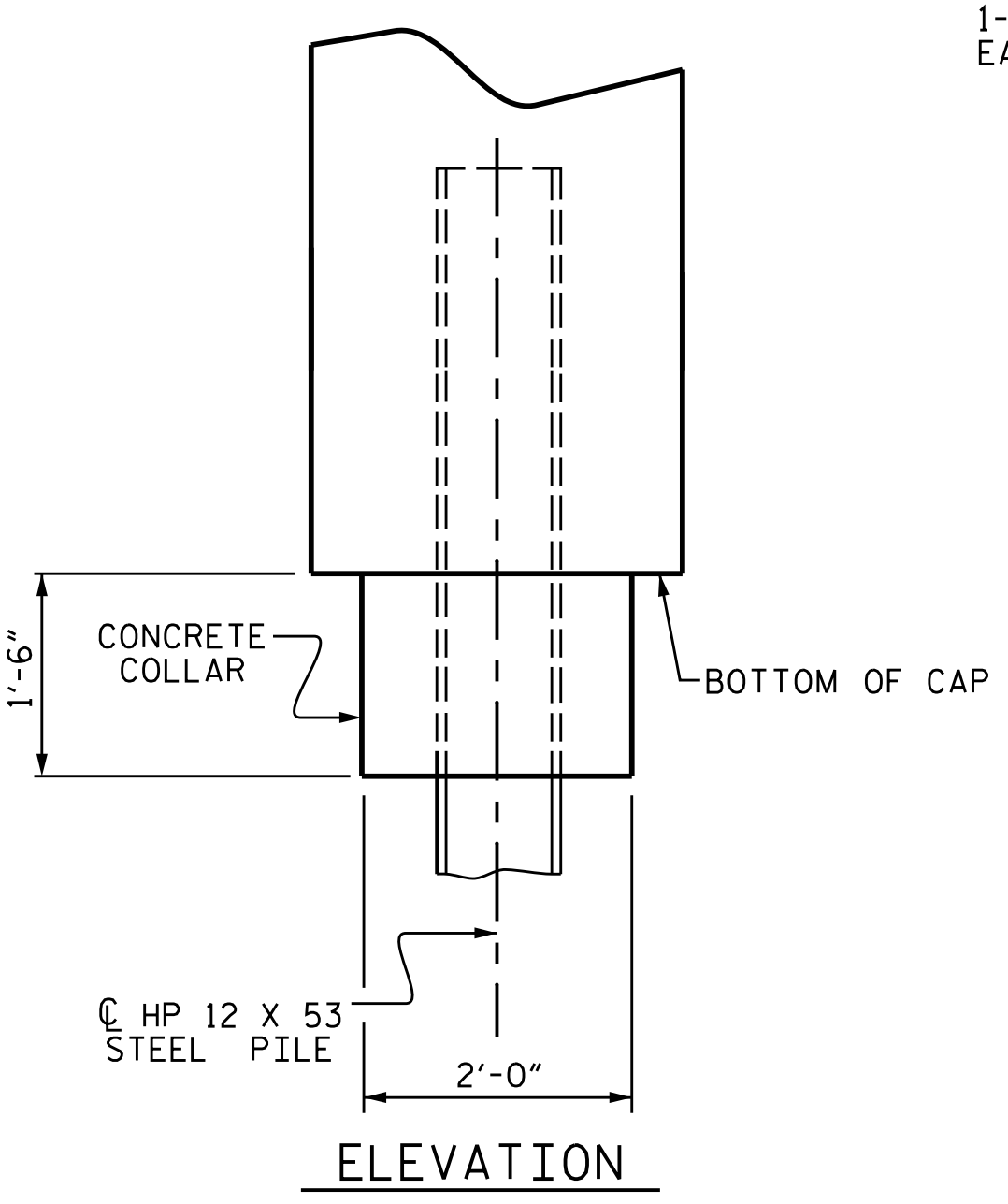
PILE SPLICE DETAILS

BAR TYPES	
①	②
③	④
⑤	⑥

BILL OF MATERIAL FOR ONE END BENT				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#9	1	36'-3"	986
B2	#4	STR	18'-2"	485
B3	#4	STR	2'-5"	15
D1	#6	STR	1'-6"	41
H1	#5	2	9'-1"	123
H2	#5	2	9'-3"	125
H3	#5	3	9'-6"	129
H4	#5	3	9'-4"	127
K1	#4	STR	3'-1"	33
S1	#4	4	14'-5"	424
S2	#4	5	3'-2"	93
S3	#4	6	6'-6"	130
V1	#4	STR	8'-4"	295
REINFORCING STEEL (FOR ONE END BENT)				3006 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)				
POUR #1 CAP, LOWER PART OF WINGS & COLLARS			25.3 C.Y.	
POUR #2 UPPER PART OF WINGS			2.1 C.Y.	
TOTAL CLASS A CONCRETE				27.4 C.Y.

END BENT No. 1		END BENT No. 2	
HP 12 X 53 STEEL PILES	NO: 5	HP 12 X 53 STEEL PILES	NO: 5
LIN. FT. = 75		LIN. FT. = 75	
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	NO: 5	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	NO: 5
STEEL PILE POINTS	NO: 5	STEEL PILE POINTS	NO: 5

ALL BAR DIMENSIONS ARE OUT TO OUT.



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

PROJECT NO. 17BP.13.R.162
 McDOWELL COUNTY
 STATION: 14+74.00-L-
 SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

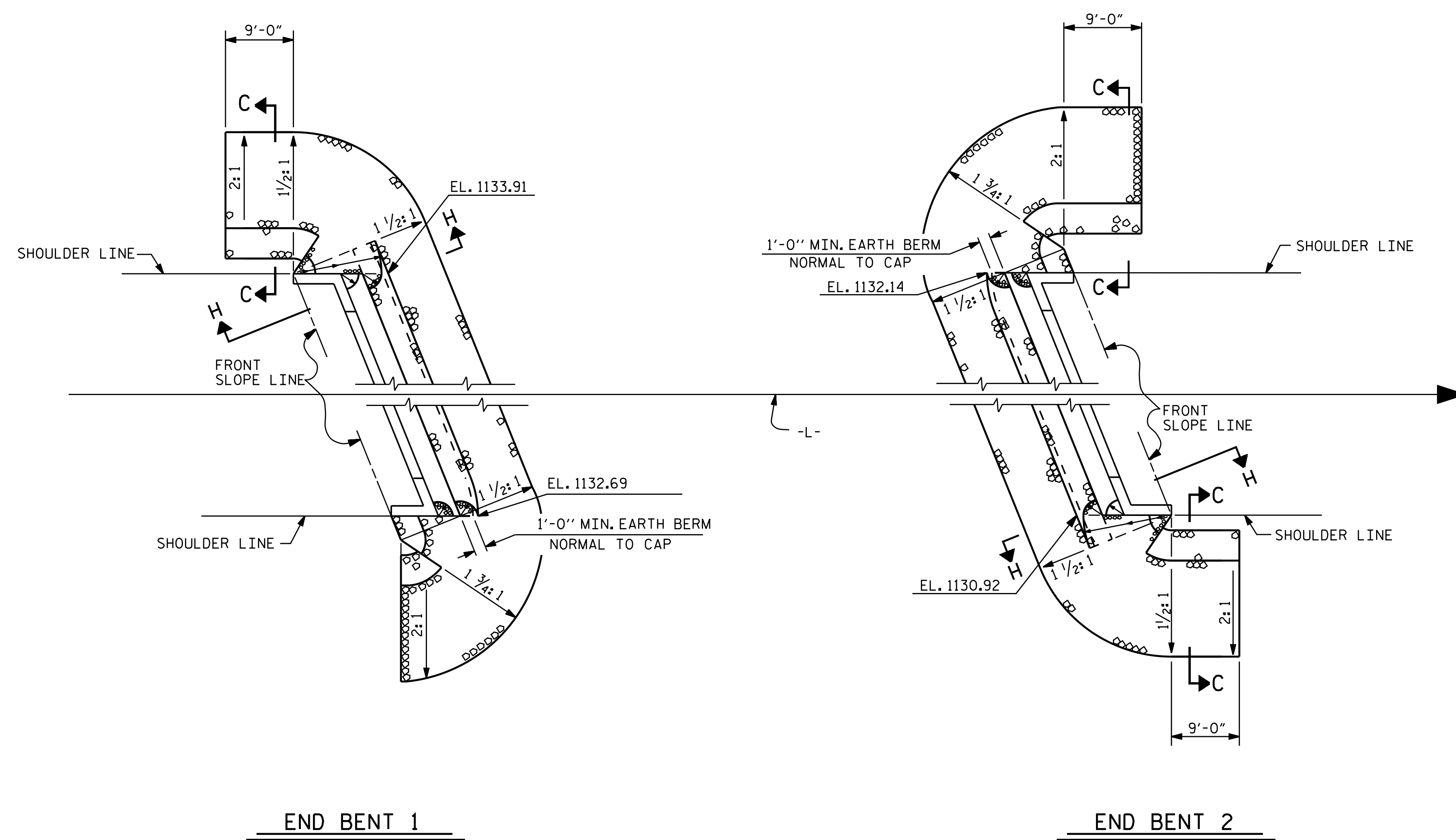
ENGINEER
 MICHAEL G. CHECK
 3/7/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-13
2			4			16

DRAWN BY : NMW	DATE : 8/18
CHECKED BY : MGC	DATE : 9/18
DESIGN ENGINEER OF RECORD : MGC	DATE : 9/18
DRAWN BY : WJH 12/11	REV. 4/17
CHECKED BY : AAC 12/11	MAA/THC

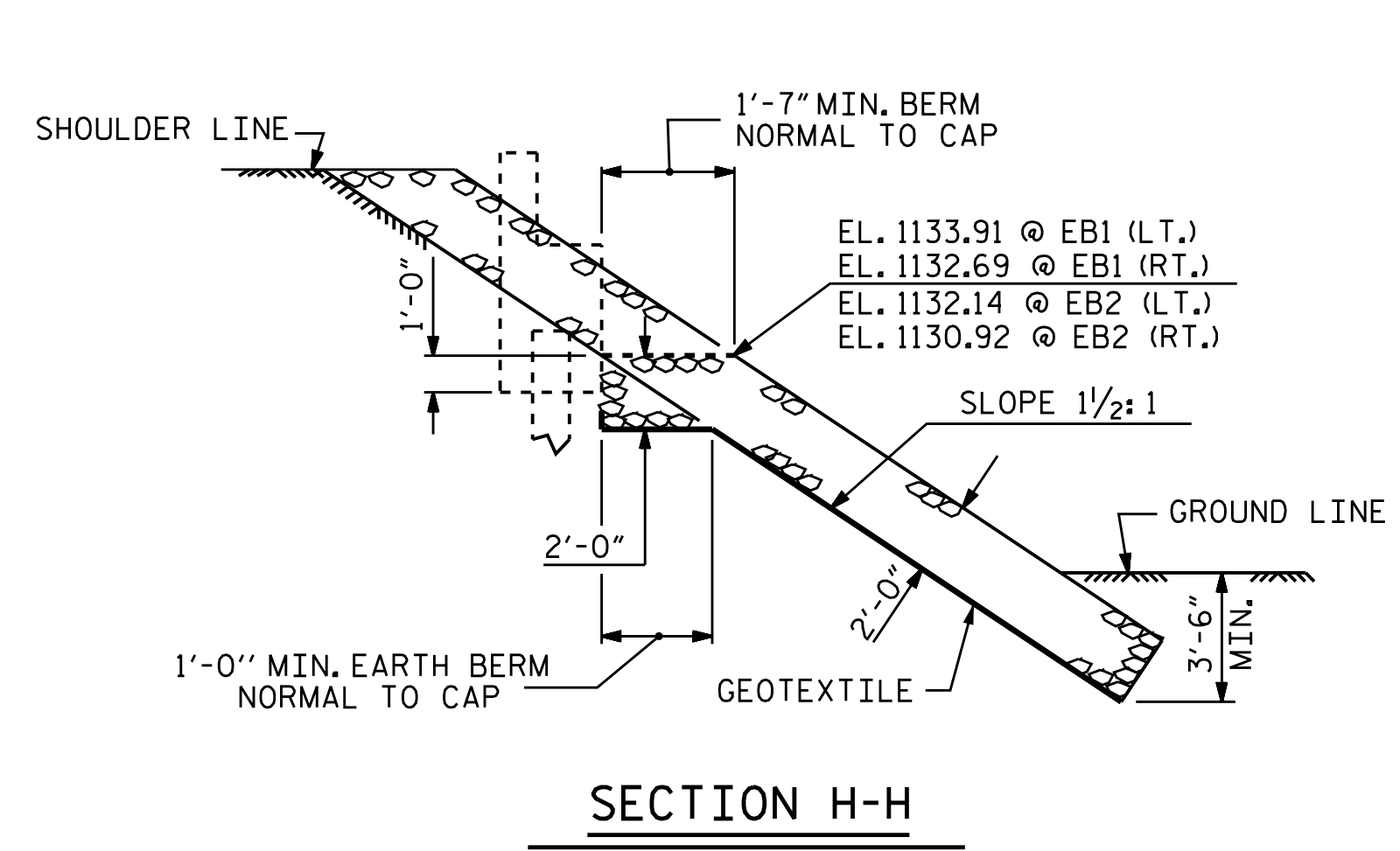


END BENT 1

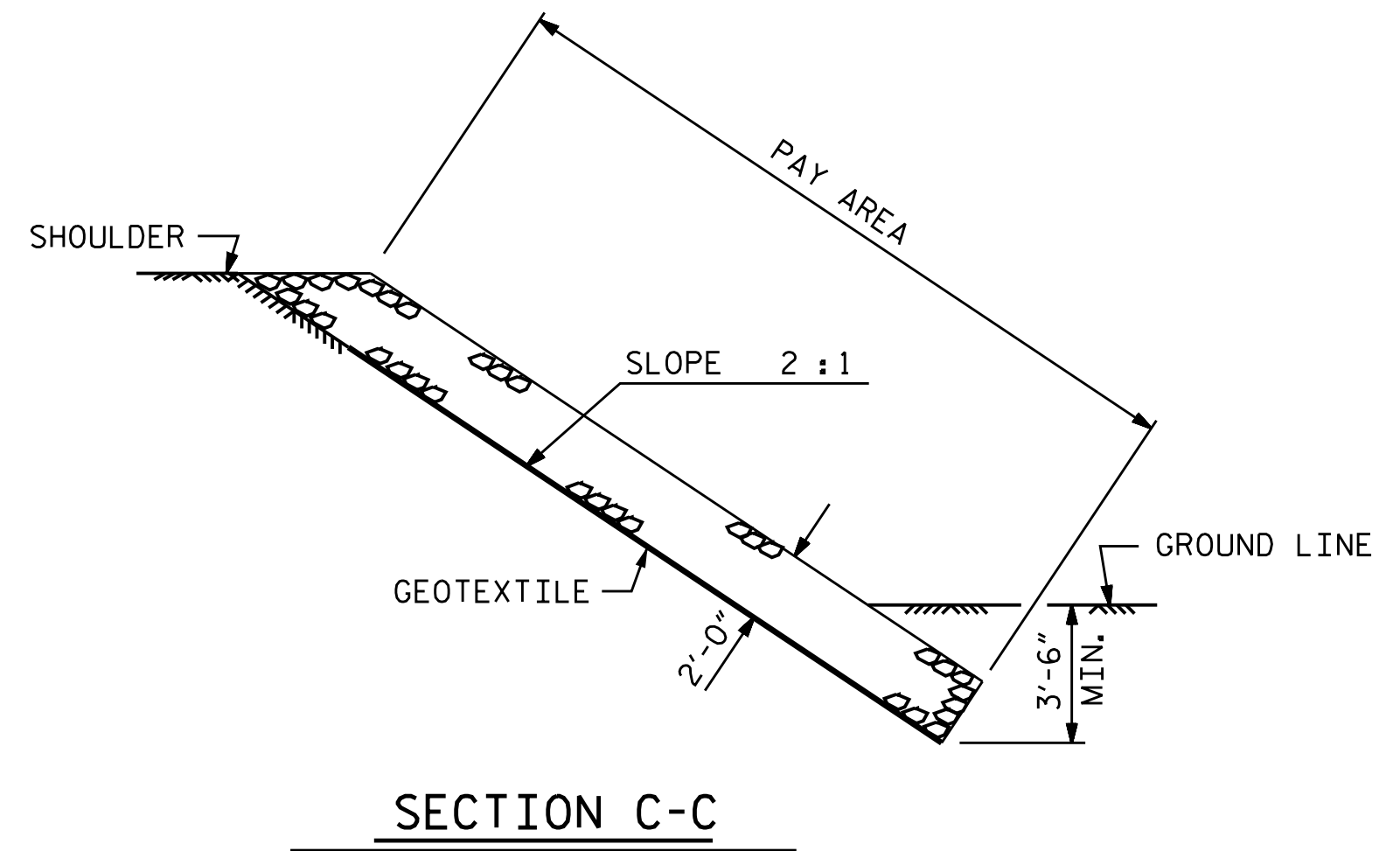
END BENT 2

SHOULDER RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 14+74.00-L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	165	185
END BENT 2	155	175



SECTION H-H



SECTION C-C

PROJECT NO. 17BP.13.R.162
McDOWELL COUNTY
 STATION: 14+74.00-L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
—RIP RAP DETAILS—

3/7/2019

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 804-C N. LAFAYETTE ST
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			16

ASSEMBLED BY : NMW	DATE : 8/18
CHECKED BY : MGC	DATE : 9/18
DRAWN BY : REK 1/84	REV. 5/1/06R TLA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11 MAA/GM
	REV. 12/2/11 MAA/GM

NOTES

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

GEOTEXTILE SHALL BE TYPE I 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.

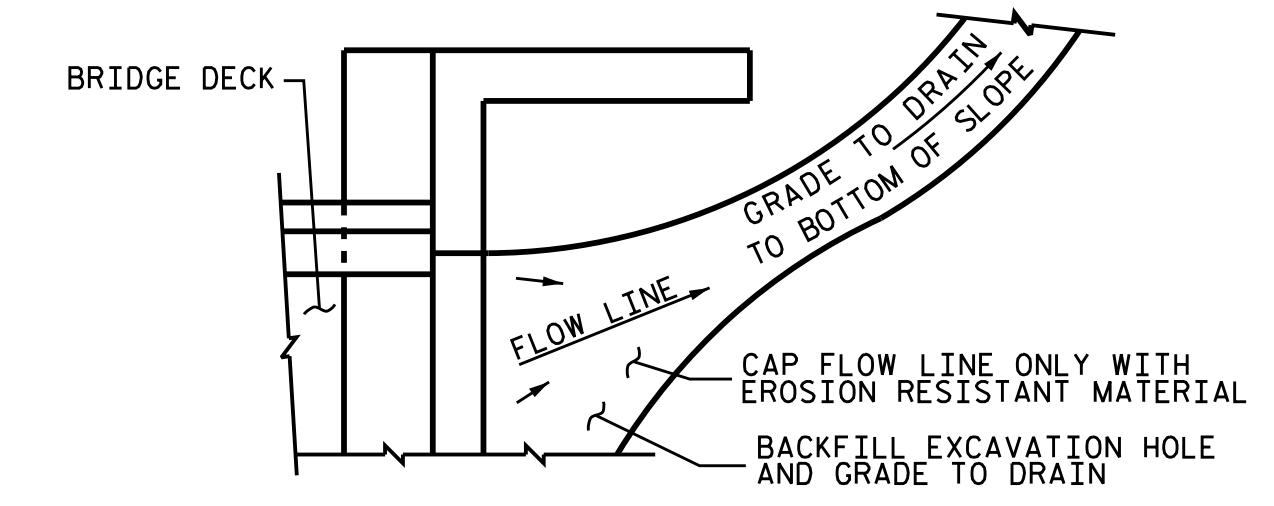
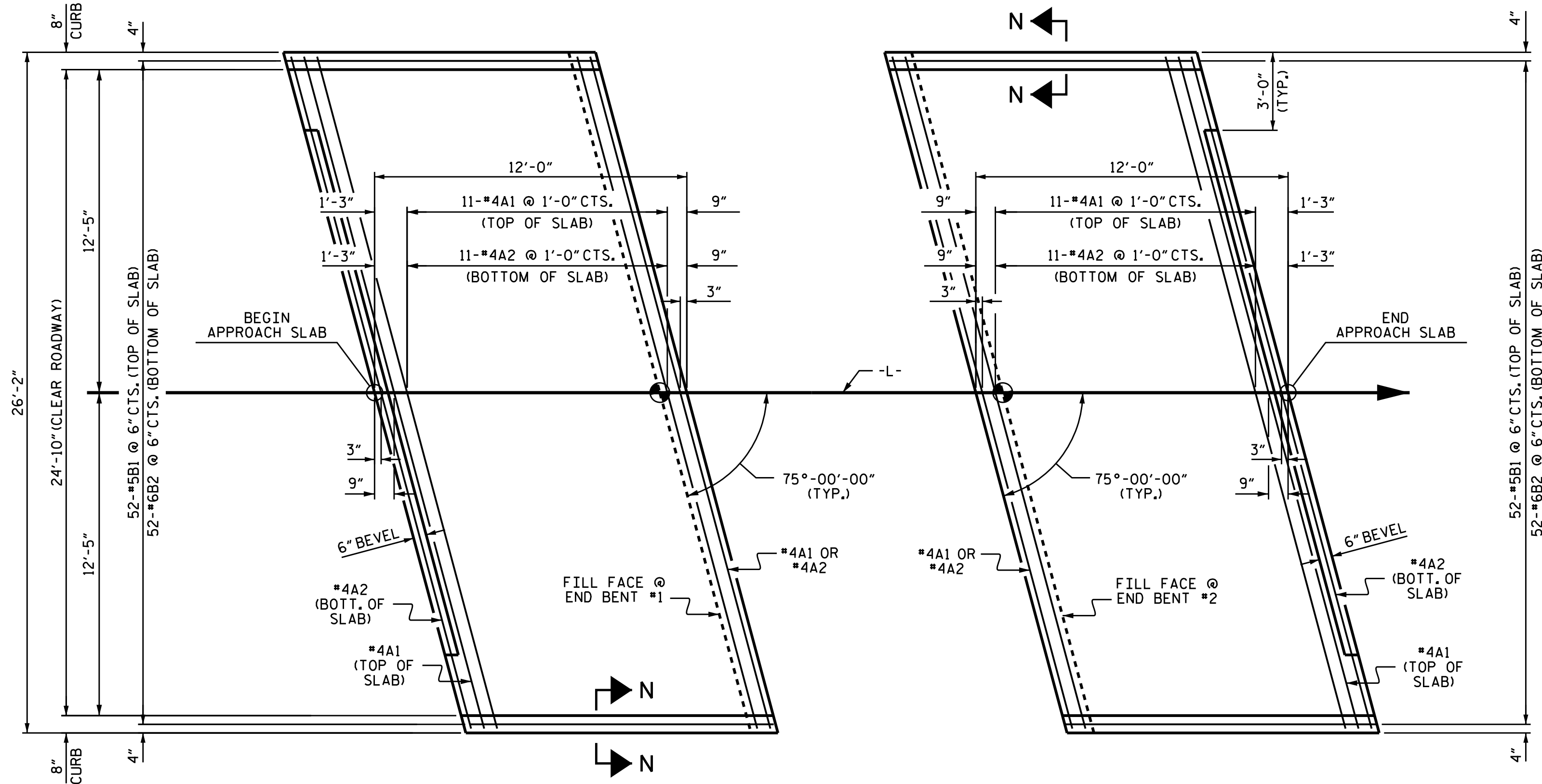
SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

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.

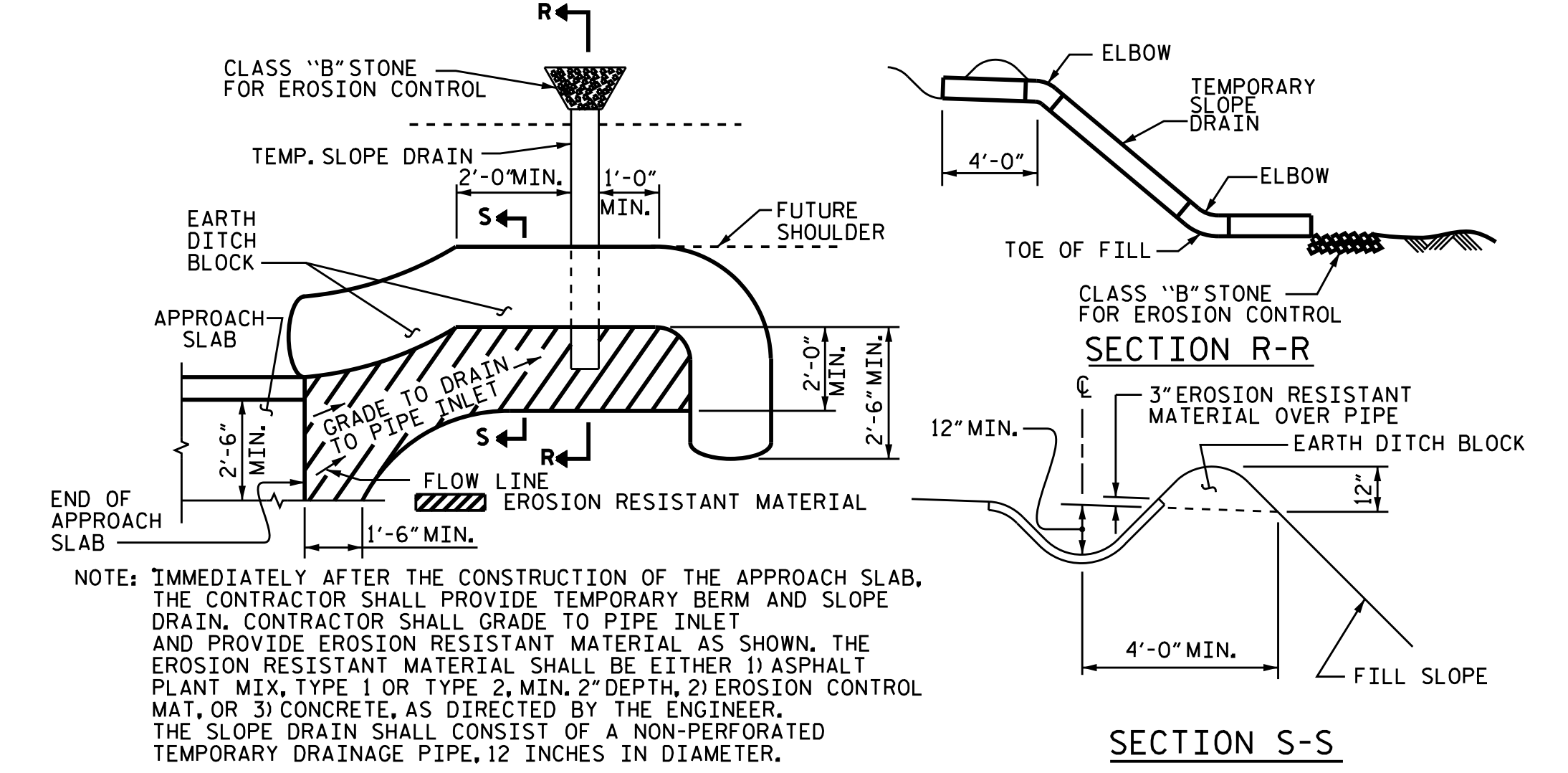
APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL						
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	26'-8"	232	
A2	13	#4	STR	26'-8"	232	
*B1	52	#5	STR	11'-1"	601	
B2	52	#6	STR	11'-7"	905	
REINFORCING STEEL					LBS.	1137
* EPOXY COATED REINFORCING STEEL					LBS.	833
CLASS AA CONCRETE					C. Y.	15.9
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	26'-8"	232	
A2	13	#4	STR	26'-8"	232	
*B1	52	#5	STR	11'-1"	601	
B2	52	#6	STR	11'-7"	905	
REINFORCING STEEL					LBS.	1137
* EPOXY COATED REINFORCING STEEL					LBS.	833
CLASS AA CONCRETE					C. Y.	15.9



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

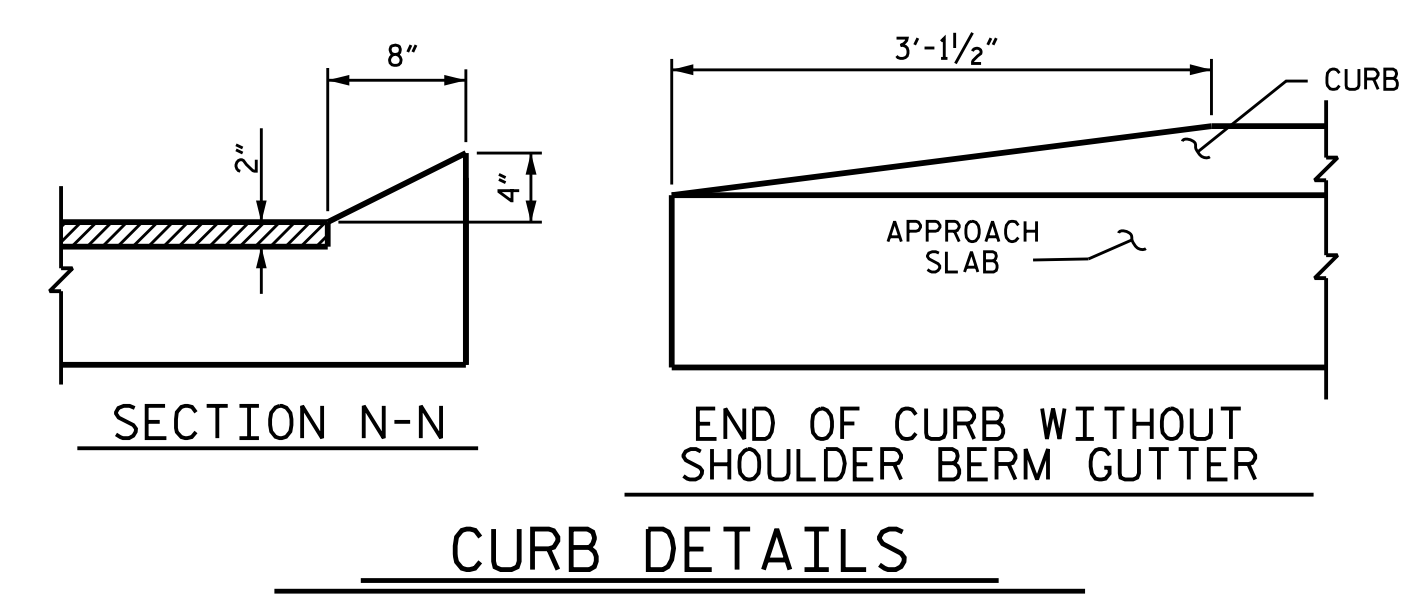
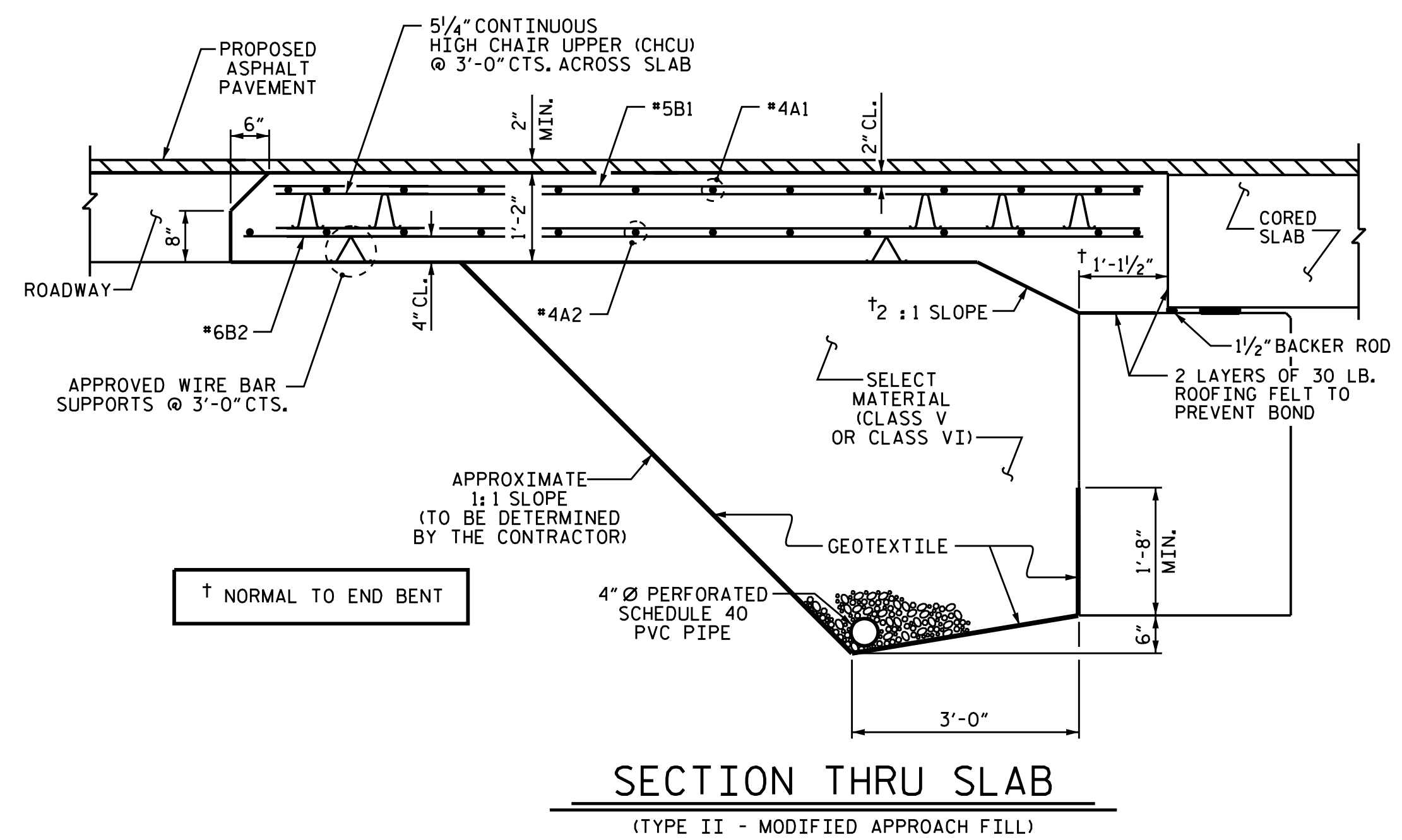
TEMPORARY DRAINAGE DETAIL



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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

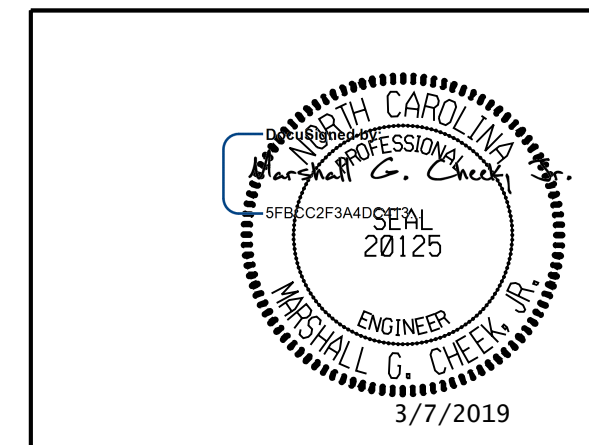
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



PROJECT NO. 17BP.13.R.162

McDOWELL COUNTY

STATION: 14+74.00-L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
75° SKEW

ASSEMBLED BY :	NMW	DATE :	8/18
CHECKED BY :	MGC	DATE :	9/18
DRAWN BY :	SHS/MAA 5-09	REV. 12-17	MAA/THC
CHECKED BY :	BCH 5-09		

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TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-15
2			4			16

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER. DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS. WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0". EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS, COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED. WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB. METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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

PROJECT NO. 17BP.13.R.162
McDOWELL COUNTY
 STATION: 14+74.00-L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD NOTES					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 16
					S-16

TGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275