PRB.35493

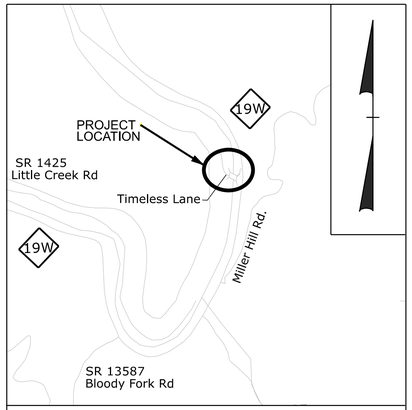
Site # 100-01-00206
89 Timeless Drive, Burnsville
Cane Creek in Yancey County
WBS 51830.2.13.56

Docusign Envelope ID: A5705D07-E926-42FD-A671-21168461C5B9

01/16/24

TIP PROJECT: 100.01.00206

CONTRACT:



VICINITY MAP (NTS)

NORTH CAROLINA DEPARTMENT OF EMERGENCY MANAGEMENT

YANCEY COUNTY

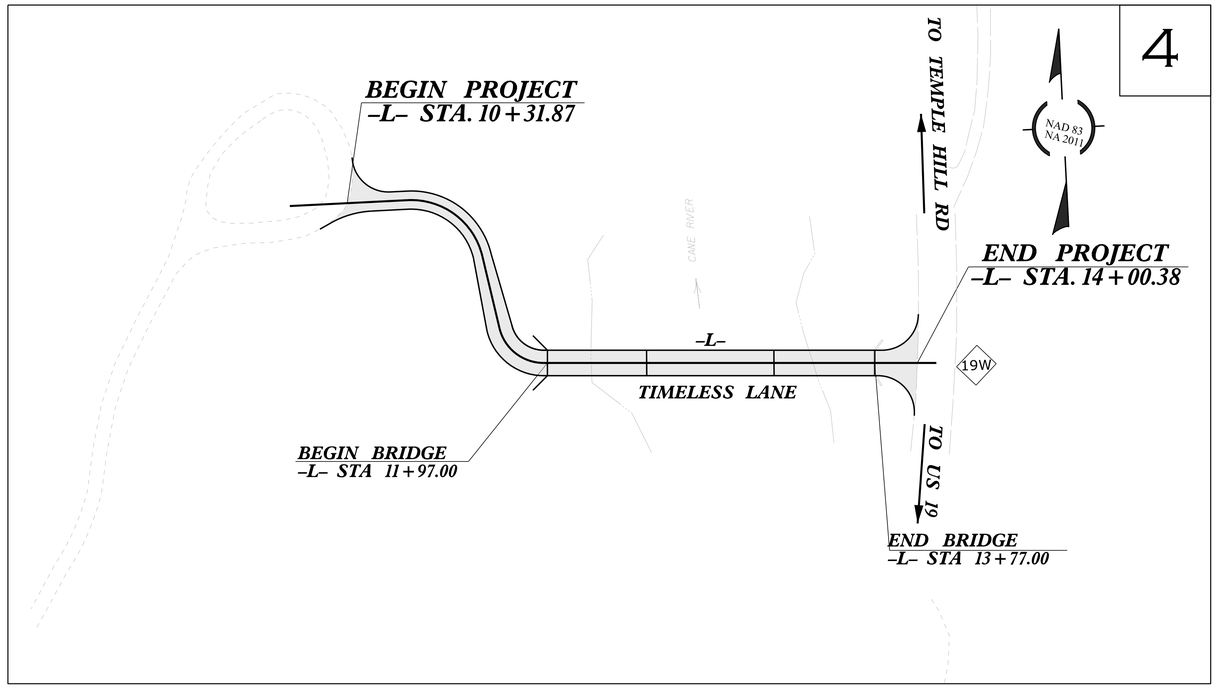
LOCATION: *PRIVATE BRIDGE ON TIMELESS LANE OVER CANE RIVER*

TYPE OF WORK: *GRADING, PAVING & STRUCTURE*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	100.01.00206	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

DIVISION 13

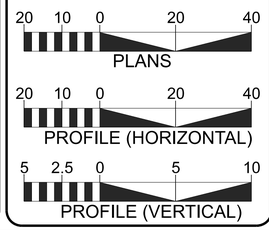


INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
4	TYPICAL SECTIONS, PLAN, PROFILE AND QUANTITIES
X-1 THRU X- 8	CROSS SECTIONS
S-1 THRU S- 13	STRUCTURE PLANS
EC-1 THRU EC- 5	EROSION CONTROL PLANS
N/A	SUBSURFACE BORING LOGS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

MATCH EXISTING CONDITIONS

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT = 0.036 MILES

LENGTH OF STRUCTURE PROJECT = 0.034 MILES

TOTAL LENGTH OF PROJECT = 0.070 MILES

GANNETT FLEMING
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A

LETTING DATE: N/A

ERIC B. NELSON, PE
PROJECT ENGINEER

ANGELA B. PRIDGEN, PE
PROJECT DESIGN ENGINEER

CHRIS WERNER,PE
PRIVATE ROAD AND BRIDGE PROGRAM MANAGER

HYDRAULICS ENGINEER

DocuSigned by: 8/22/2025 *P.E.*
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN, JR.

ROADWAY DESIGN ENGINEER

DocuSigned by: 8/22/2025 *P.E.*
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

EMERGENCY MANAGEMENT NORTH CAROLINA

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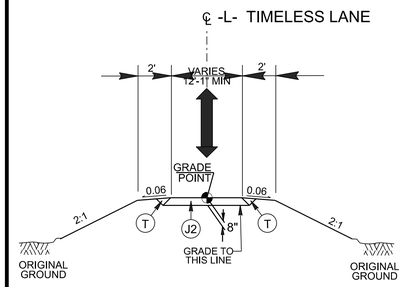
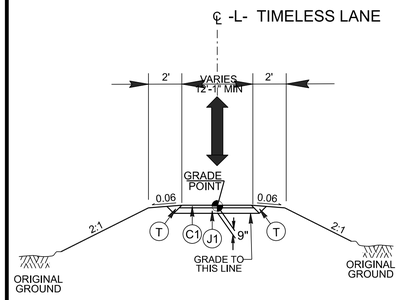
11/14/23



TYPICAL SECTION NO. 1

-L- STA. 10+31.87 TO STA. 11+61.21

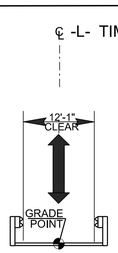


TYPICAL SECTION NO. 2

-L- STA. 11+61.21 TO STA. 11+97.00 (BEGIN BRIDGE)
-L- STA. 13+77.00 (END BRIDGE) TO STA. 14+00.38

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.
J1	PROP.6" AGGREGATE BASE COURSE
J2	PROP.8" AGGREGATE BASE COURSE
T	EARTH MATERIAL

CUR DATA -L-	CUR DATA -L-
Plc 10+98.52	Plc 11+81.23
Δc = 79°27'08.1" (RT)	Δc = 76°35'48.9" (LT)
D = 143°14'21.7"	D = 229°10'59.2"
Lc = 55.47	Lc = 33.42
Tc = 33.24	Tc = 19.74
R = 40	R = 25



TYPICAL SECTION NO. 3

-L- STA. 11+97.00 (BEGIN BRIDGE) TO STA. 13+77.00 (END BRIDGE)
(SEE STRUCTURE PLANS FOR STRUCTURE CONSTRUCTION DETAIL)

DETAIL A

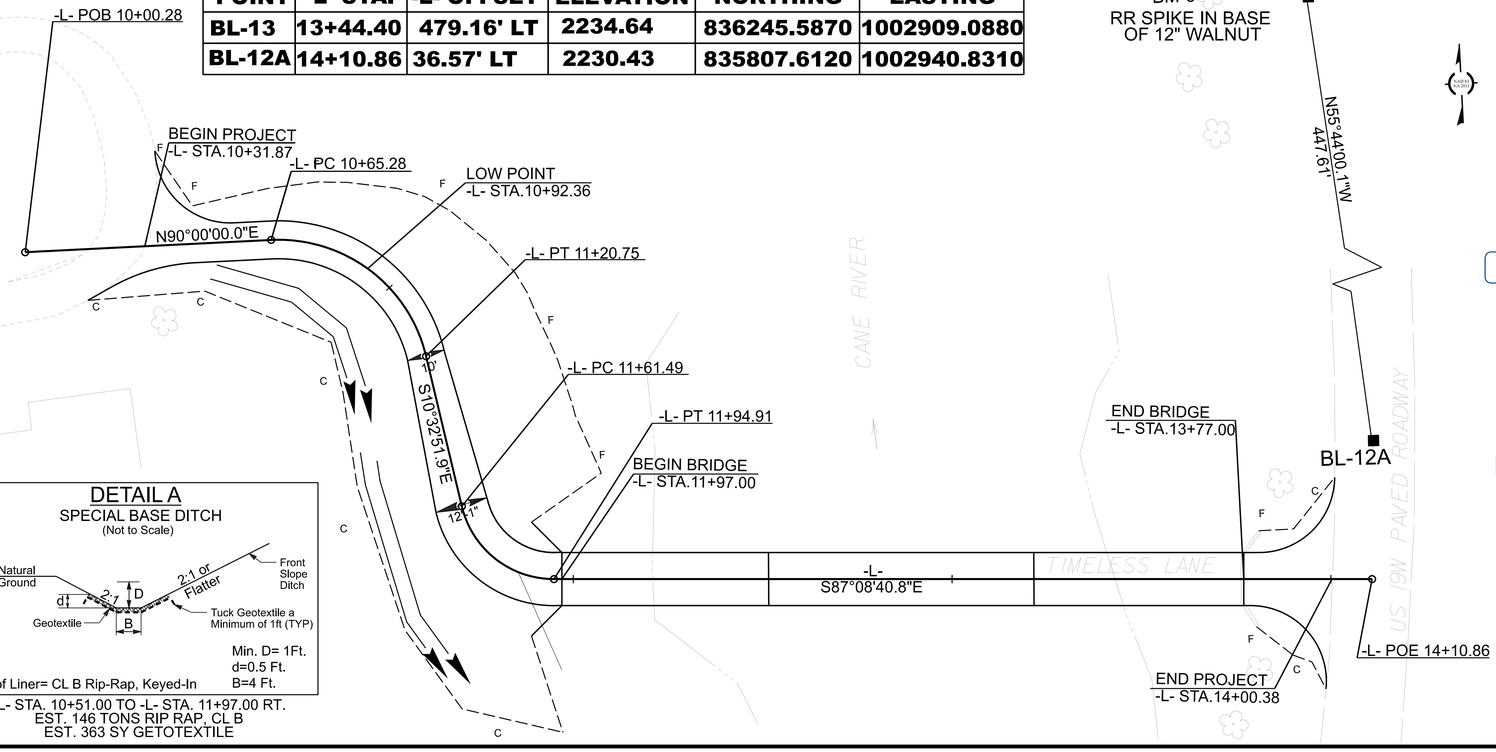
SPECIAL BASE DITCH
(Not to Scale)

Type of Liner= CL B Rip-Rap, Keyed-In

Min. D= 1Ft.
d=0.5 Ft.
B=4 Ft.

-L- STA. 10+51.00 TO -L- STA. 11+97.00 RT.
EST. 146 TONS RIP RAP, CL B
EST. 363 SY GETOTEXTILE

POINT	-L- STA.	-L- OFFSET	ELEVATION	NORTHING	EASTING
BL-13	13+44.40	479.16' LT	2234.64	836245.5870	1002909.0880
BL-12A	14+10.86	36.57' LT	2230.43	835807.6120	1002940.8310



ROADWAY QUANTITIES

DESCRIPTION	QUANTITY	UNIT
UNCLASSIFIED EXCAVATION	10	CY
BORROW EXCAVATION	1,365	CY
ASPHALT TYPE S9.5B	20	Tons
AGGREGATE BASE COURSE	120	Tons
RIP RAP, CLASS B	146	Tons
GETOTEXTILE FOR DRAINAGE	363	SY

I hereby certify that that I have reviewed the existing hydraulic conveyance at this site which was a four (4) span existing bridge with the proposed conveyance provided by the proposed three (3) span bridge.

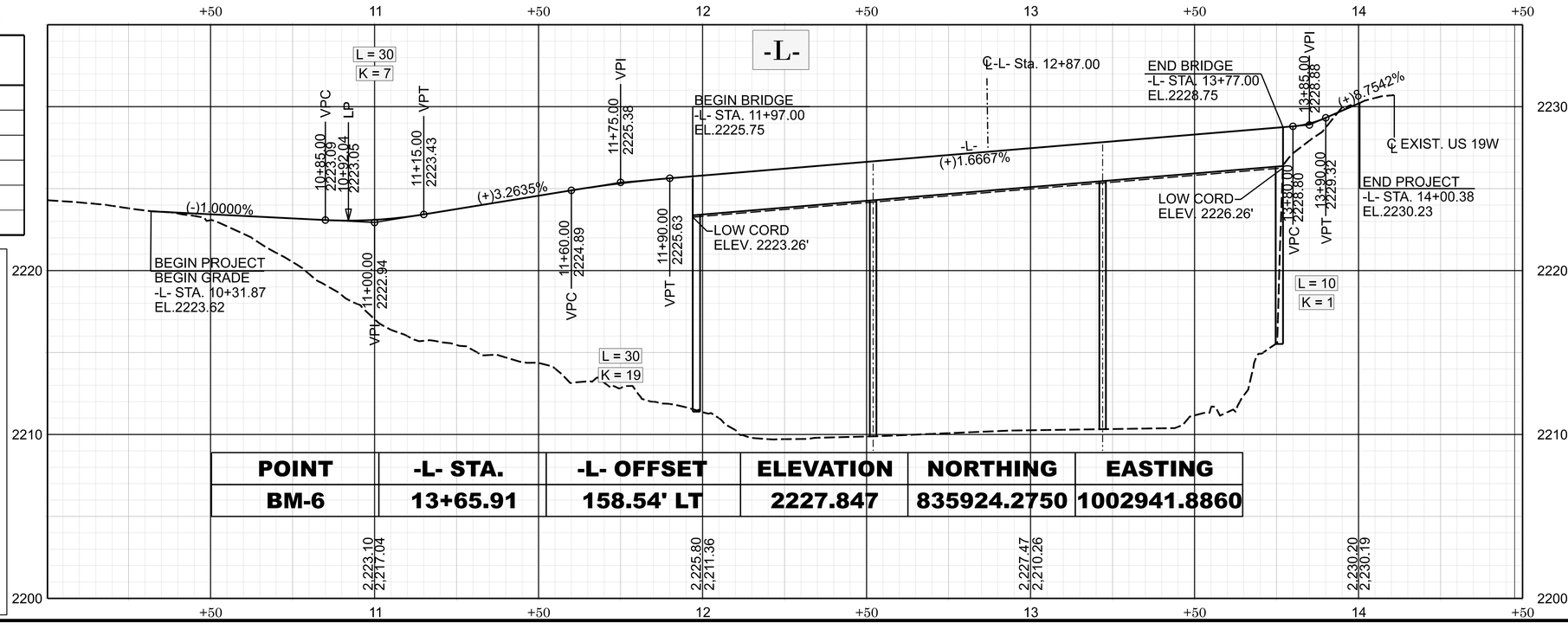
The proposed bridge low chord for the bridge shall be set no lower than the top of the existing bridge low chord as documented in the HEC-RAS model obtained from NCFMP which meets the FEMA Disaster Specific Guidance for the Replacement of Private Roads and Bridges issued on 14 February 2025, “to provide bridge/culvert design plans certified (sealed, signed, and dated) by a Professional Engineer licensed in the State of North Carolina demonstrating that the newly designed and installed private bridge/culvert provides conveyance greater than or equal to the original destroyed crossing”.

This certification demonstrates that the newly designed and installed private bridge/culvert provides conveyance greater than or equal to the original destroyed crossing. This is based on the best available data provided from post storm evaluations. Portions of the existing structures may have been destroyed, removed, modified or shifted from their original location or elevation.

Signed by: william jernigan B995845A2817406...

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN III

9/23/2025



POINT	-L- STA.	-L- OFFSET	ELEVATION	NORTHING	EASTING
BM-6	13+65.91	158.54' LT	2227.847	835924.2750	1002941.8860

100.01.00206

4

NORTH CAROLINA DEPARTMENT OF EMERGENCY MANAGEMENT

YANCEY COUNTY

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032579 ENGINEER ANGELA B. PRIDGEN

Docusigned by: Gyla Pridgen 4A410DD...

9/23/2025

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN III

Signed by: William Jernigan B995845A2817406...

9/23/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

GANNETT FLEMING One Glenwood Avenue Suite 800 Raleigh, NC 27603 919.424.4100 NC Lic. No. P-0339

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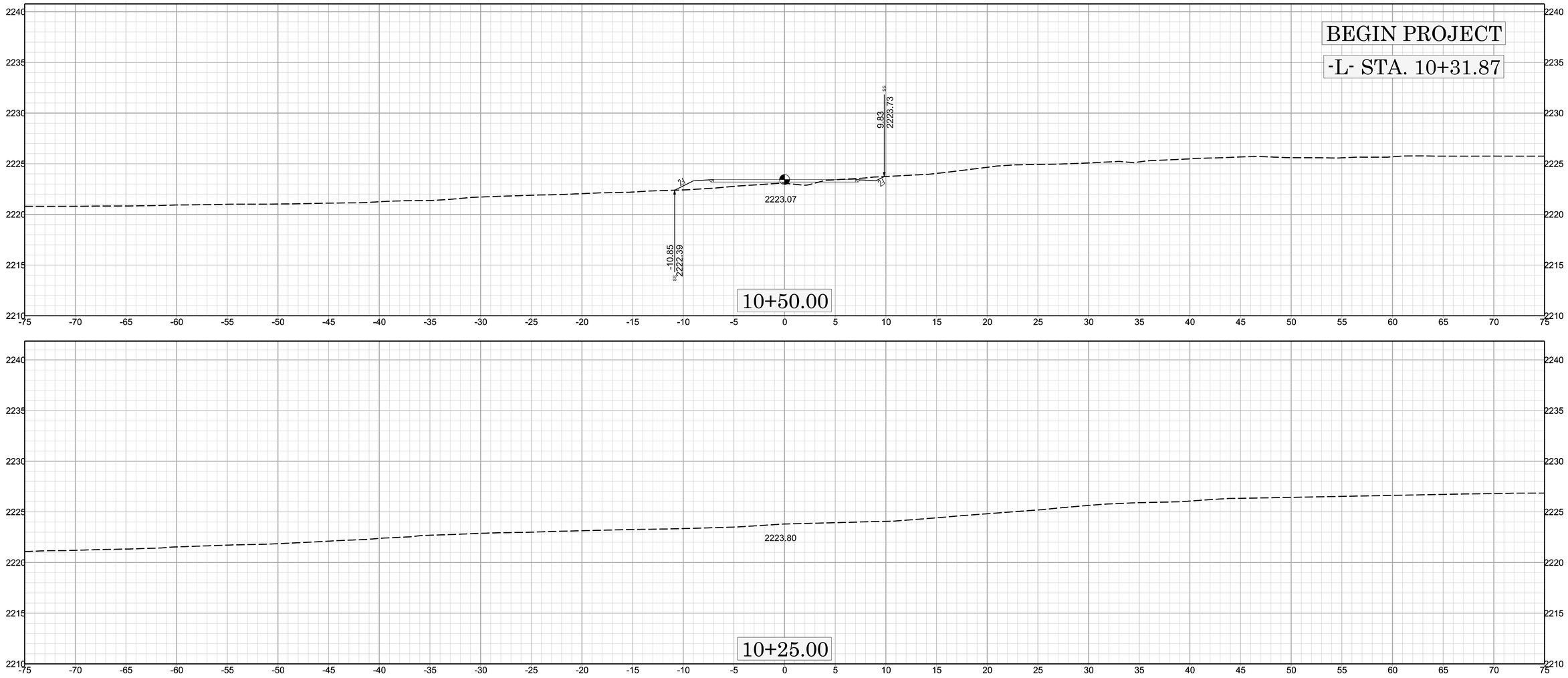

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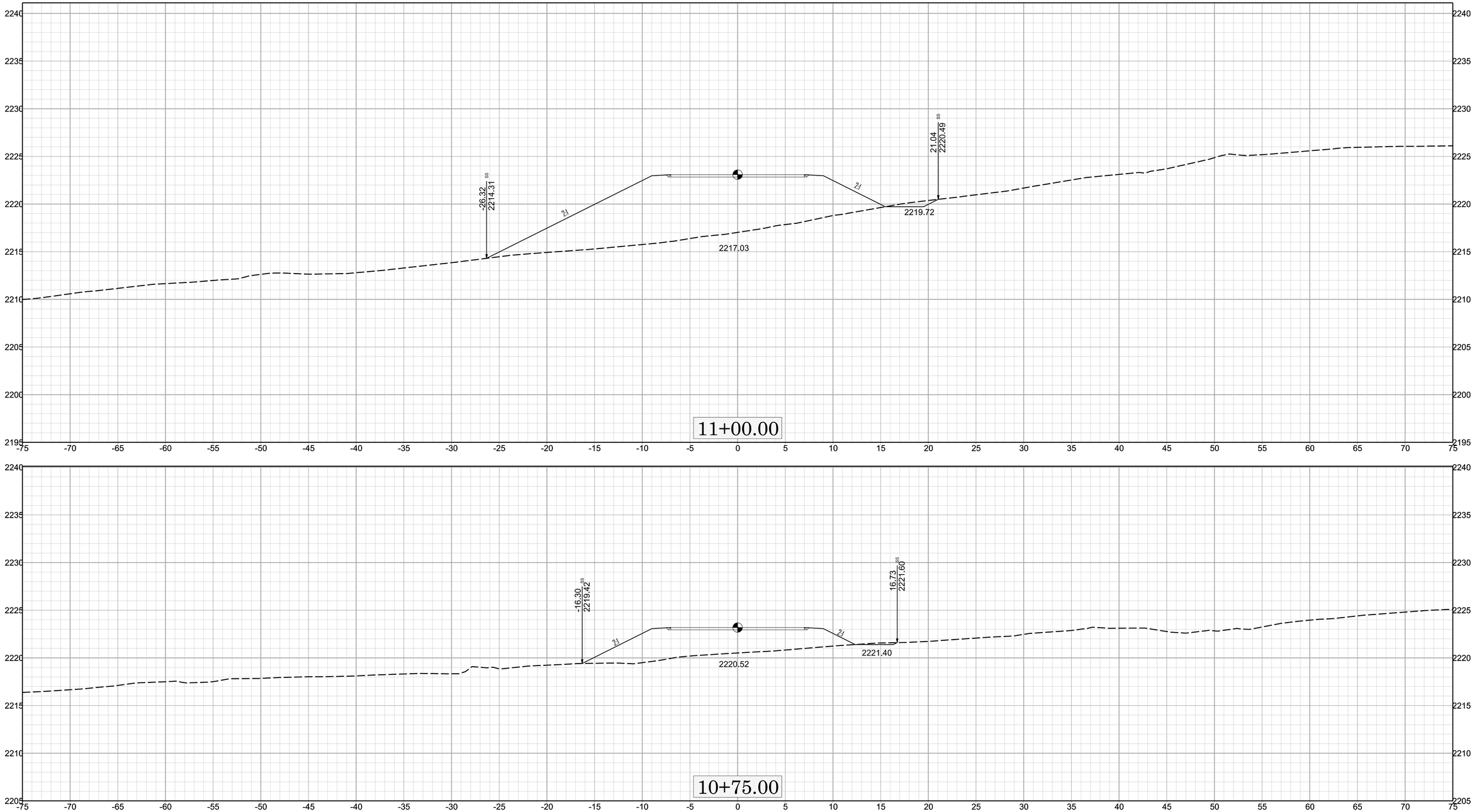

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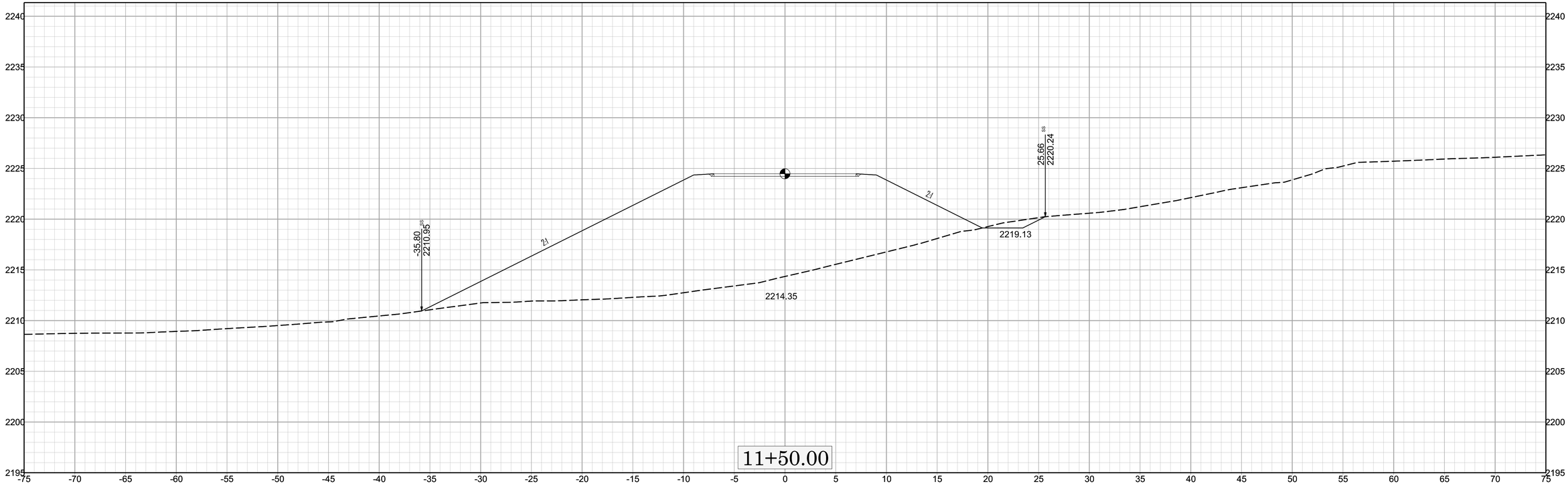

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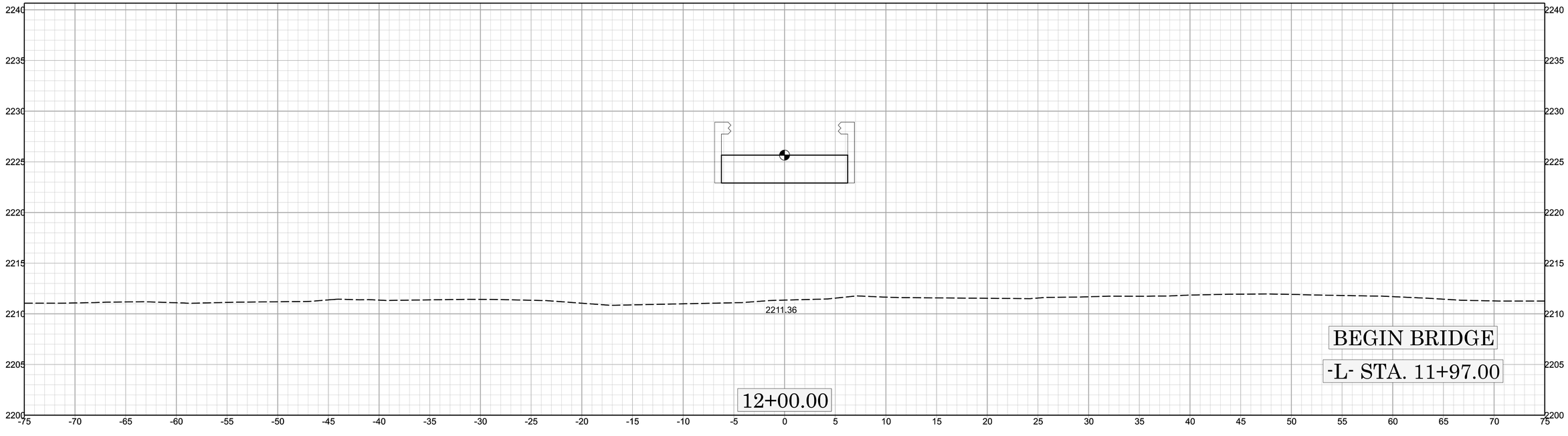

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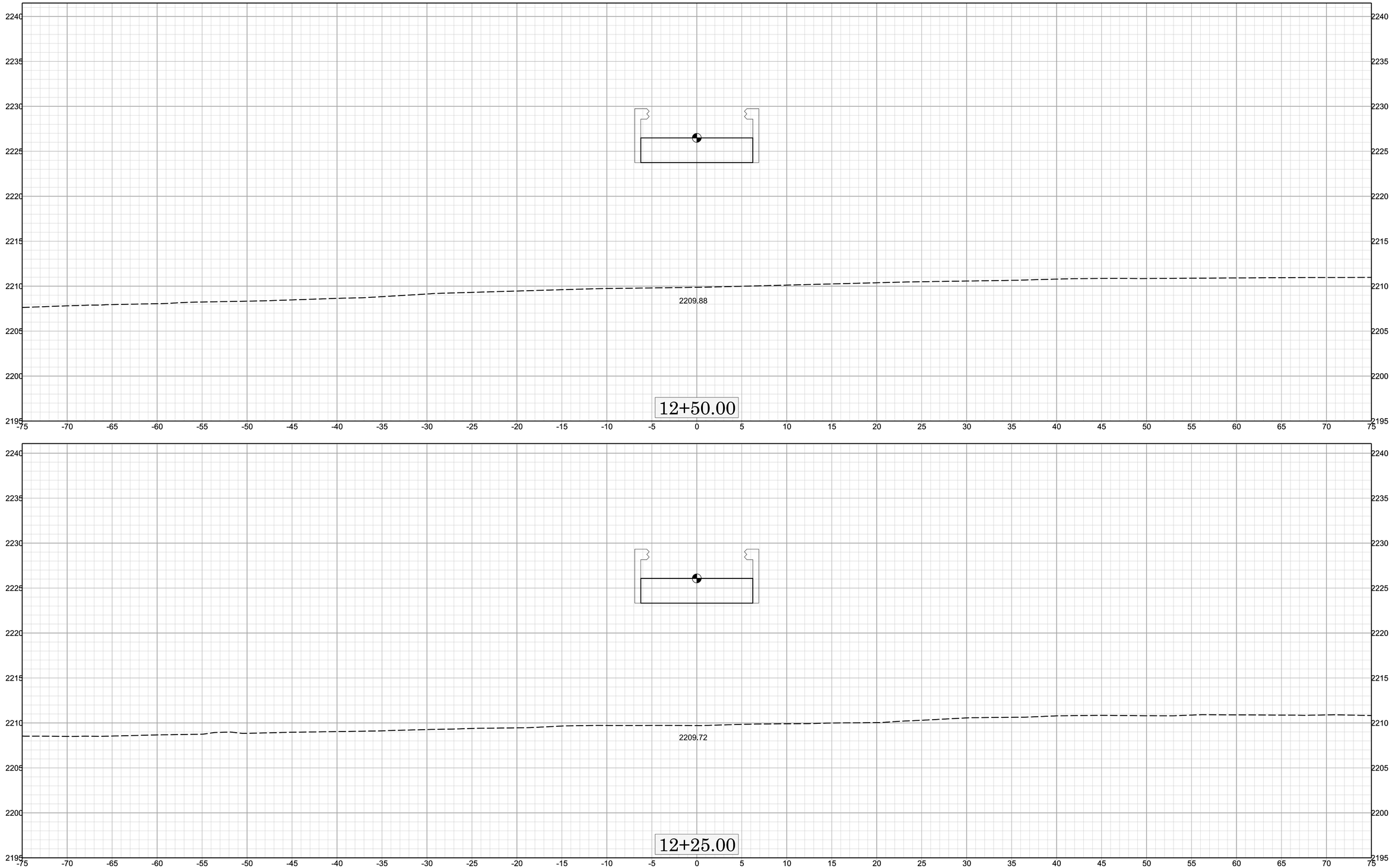

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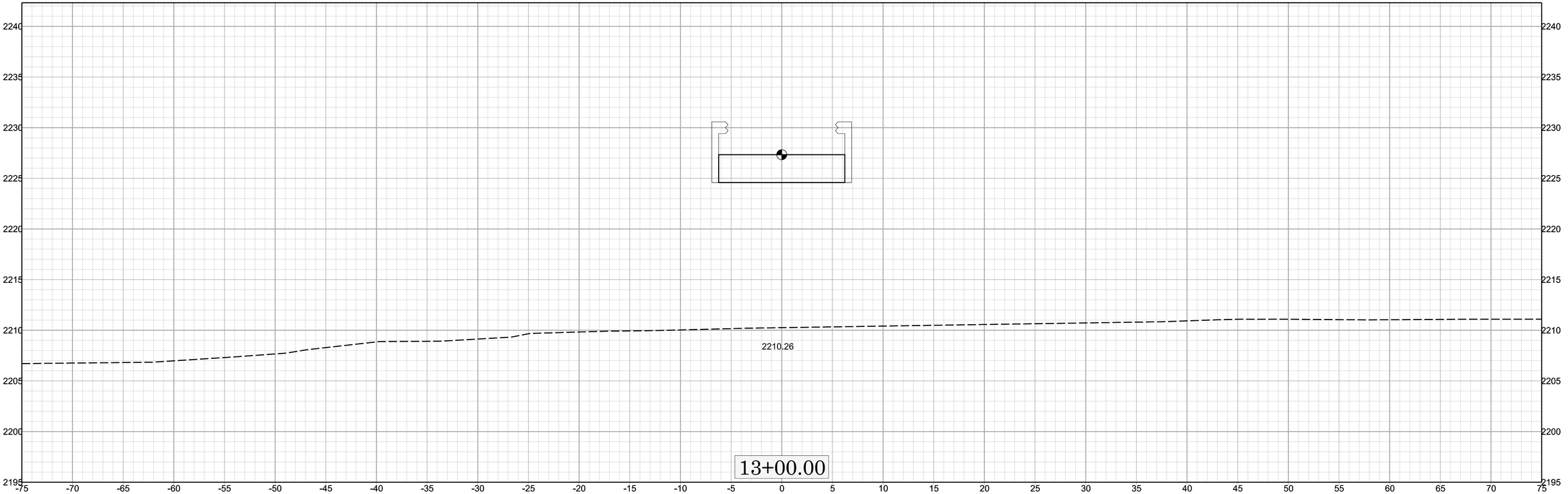

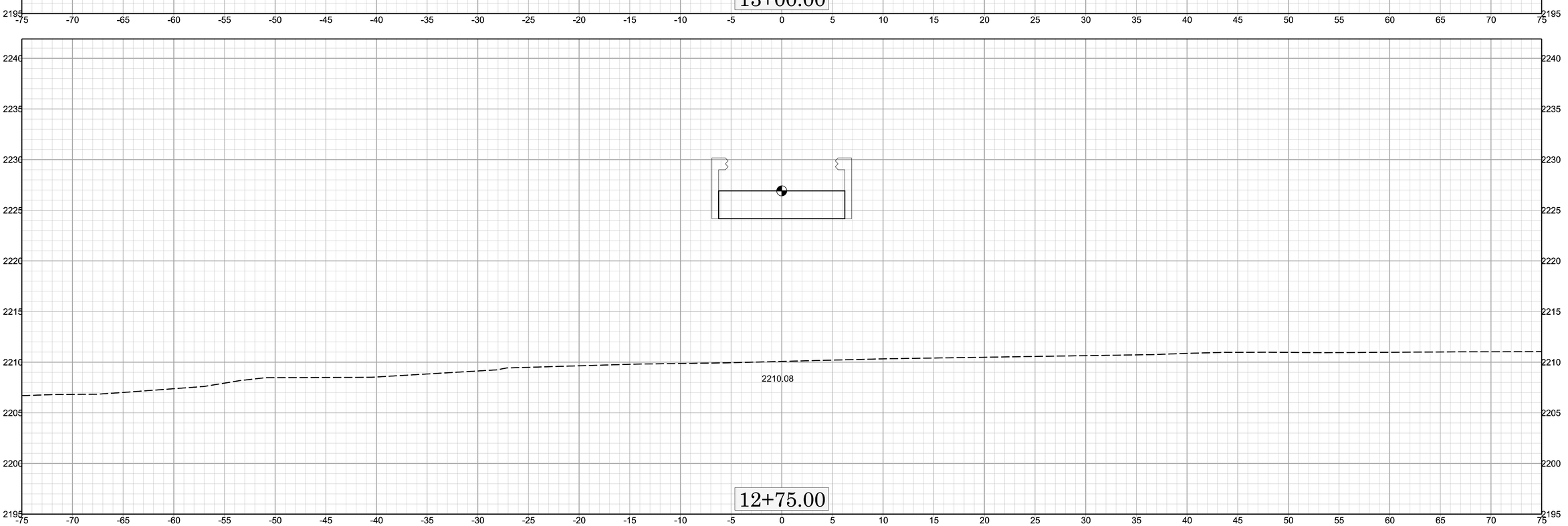

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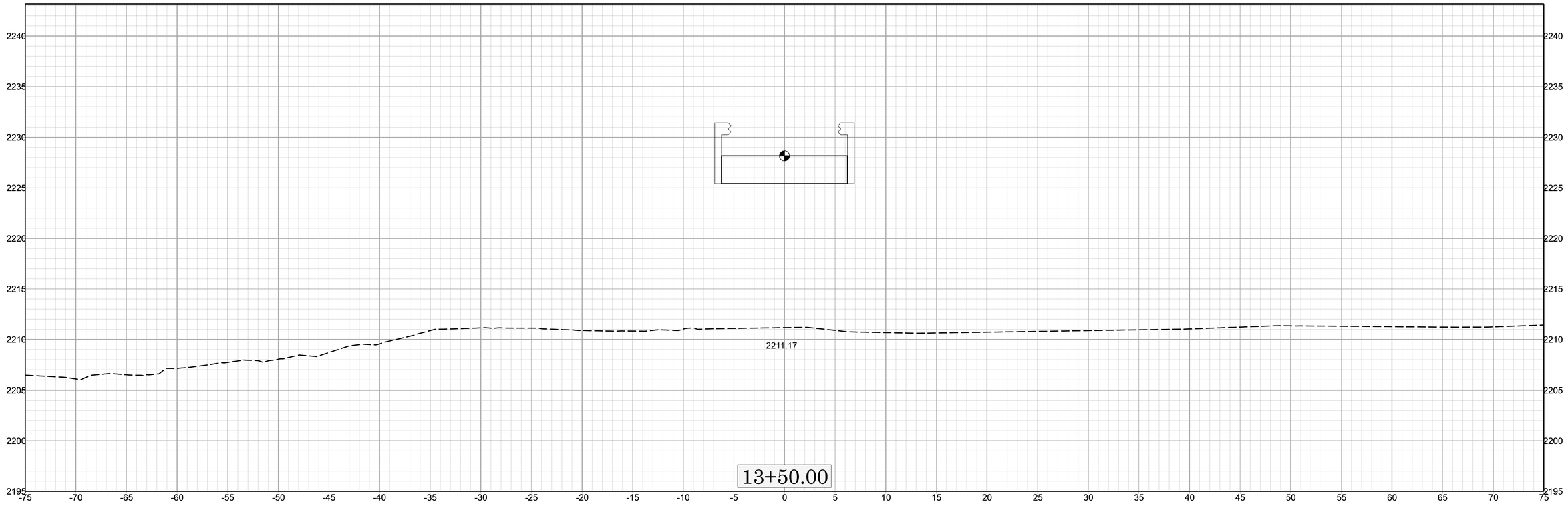

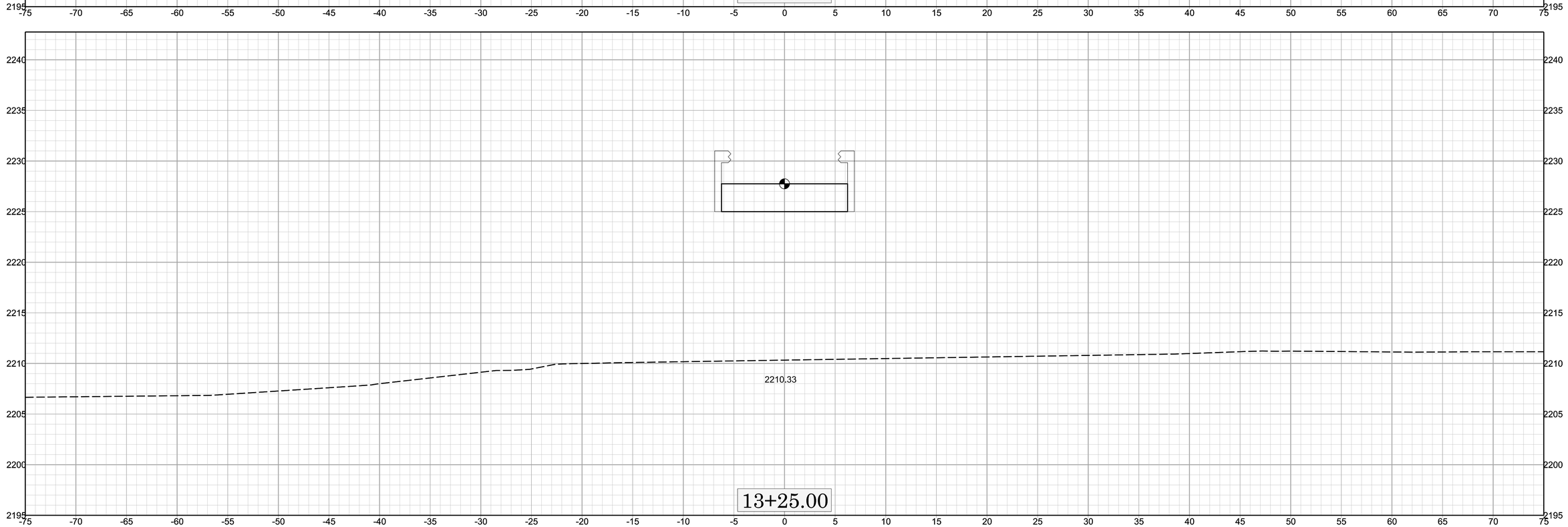

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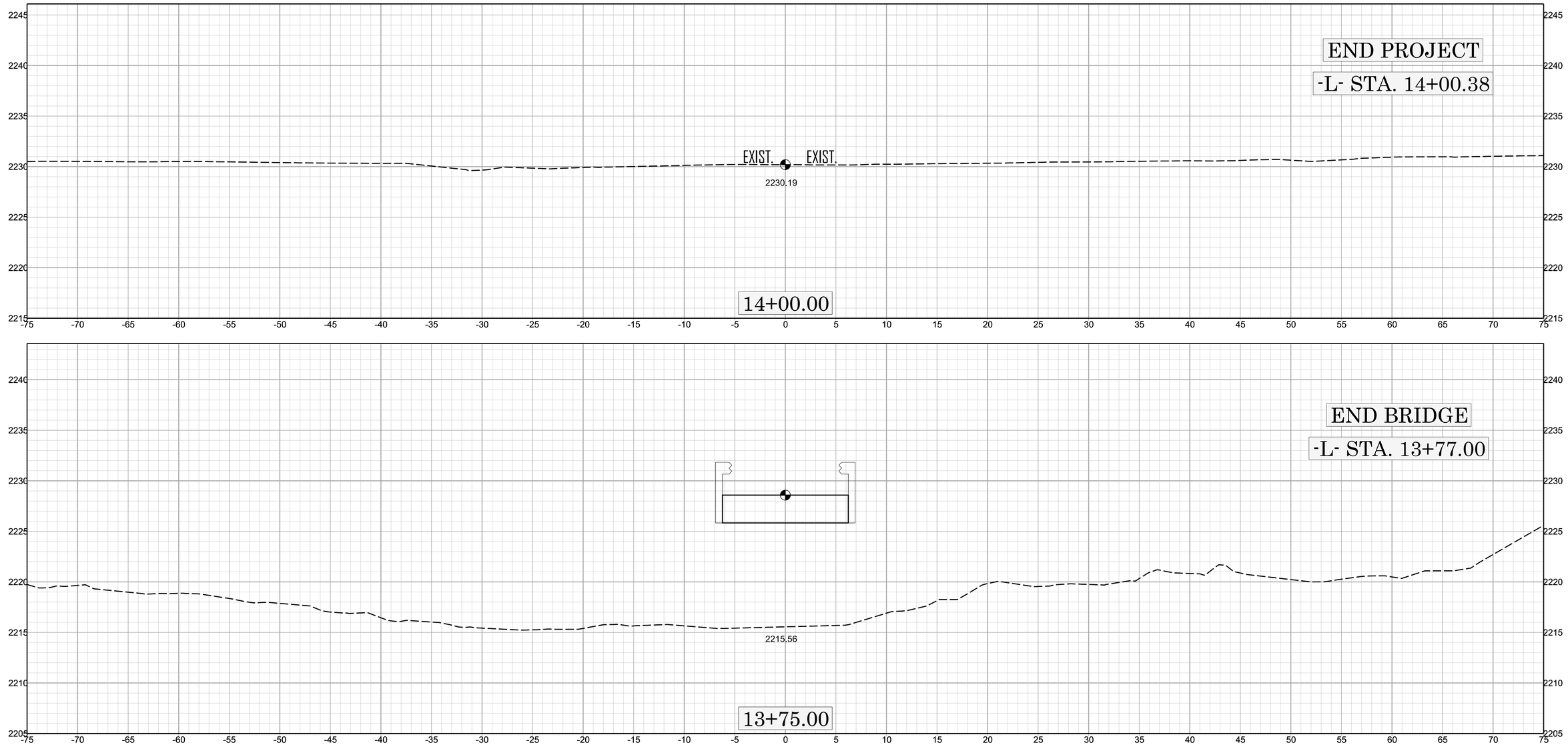
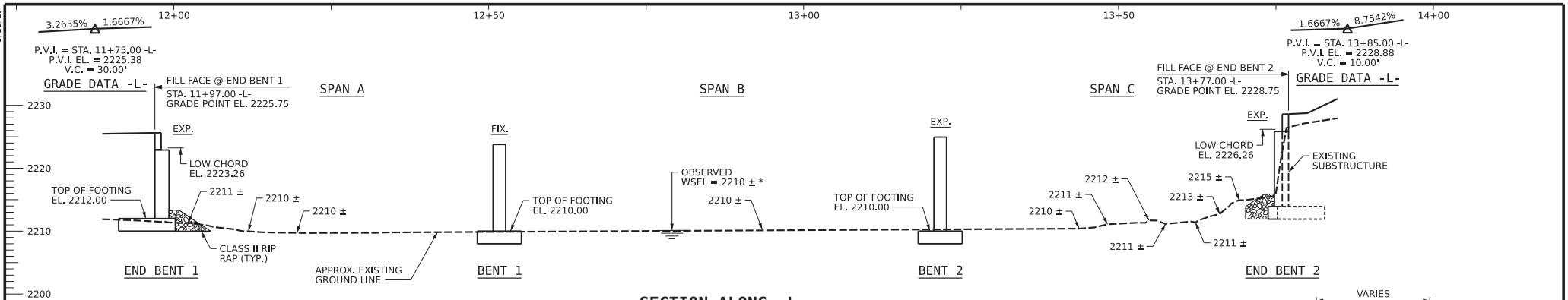
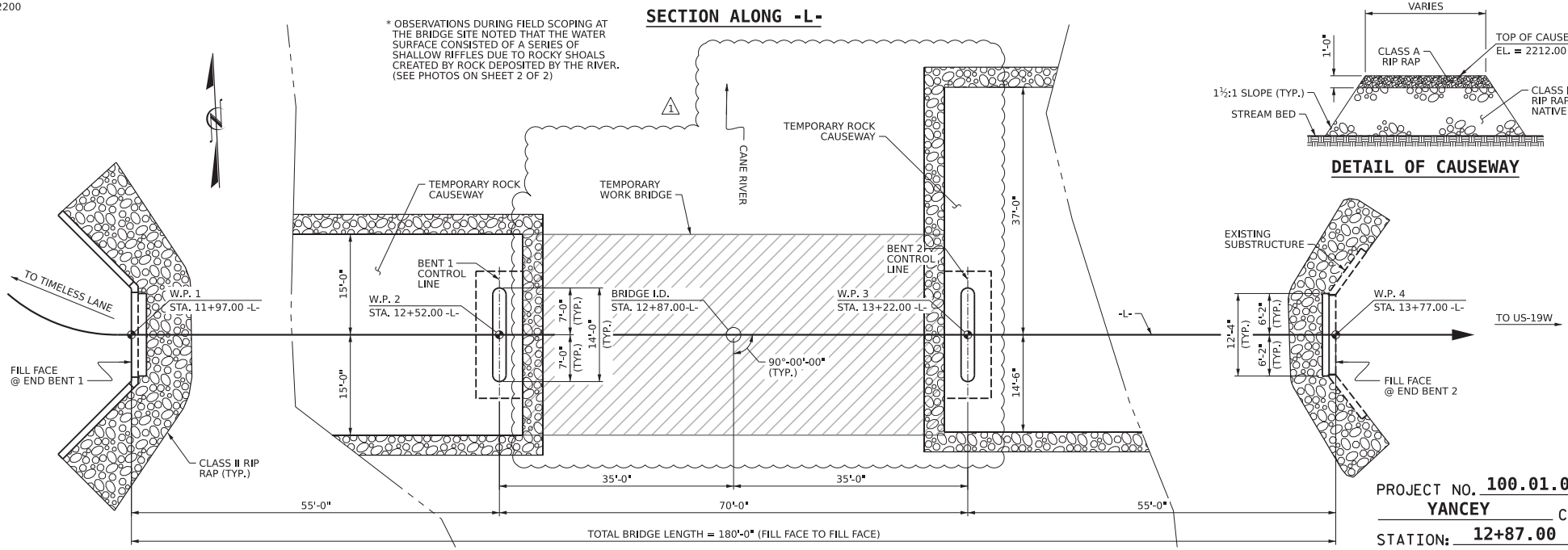


8/26/21

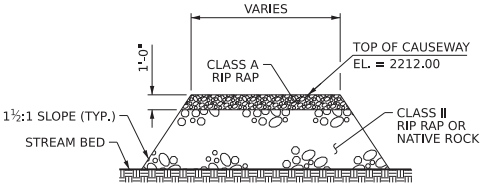


SECTION ALONG -L-

* OBSERVATIONS DURING FIELD SCOPING AT THE BRIDGE SITE NOTED THAT THE WATER SURFACE CONSISTED OF A SERIES OF SHALLOW RIFFLES DUE TO ROCKY SHOALS CREATED BY ROCK DEPOSITED BY THE RIVER. (SEE PHOTOS ON SHEET 2 OF 2)



PLAN



DETAIL OF CAUSEWAY

RECOMMENDED INSPECTION AND MAINTENANCE

BRIDGE INSPECTION PERFORMED BY A CERTIFIED BRIDGE INSPECTOR IS RECOMMENDED ON THE FOLLOWING SCHEDULE:

YEARS 0-10:	INSPECT EVERY 5 YEARS
YEARS 10-20:	INSPECT EVERY 4 YEARS
YEARS 20-30:	INSPECT EVERY 3 YEARS
YEARS 30+:	INSPECT EVERY 2 YEARS

REPAIR ANY PRIORITY MAINTENANCE ITEMS NOTED DURING BRIDGE INSPECTIONS.

IF DETERIORATION IS NOTED IN INSPECTIONS, ACCELERATE SCHEDULE AND INSPECT EVERY 2 YEARS THEREAFTER.

OBSERVE BETWEEN INSPECTIONS FOR CRACKS RUST OR SPALLING IN CONCRETE OR STEEL COMPONENTS, SIGNS OF EROSION OR SCOURING AROUND ABUTMENTS AND PIERS, DECK SURFACE WEAR, DAMAGE OR DETERIORATION OF SAFETY RAIL.

REMOVE DEBRIS AND SEDIMENT FROM THE DECK AND UNDERNEATH THE BRIDGE TO PREVENT PONDING AND EROSION.

STRUCTURAL MAINTENANCE SHOULD INCLUDE TIGHTENING LOOSE BOLTS AND FASTENERS, SEALING CRACKS IN CONCRETE, AND REPAIRING SPALLS WHERE REBAR IS EXPOSED.

PROJECT NO. 100.01.00206
YANCEY COUNTY
STATION: 12+87.00 -L-
SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 12492 ENGINEER JOHN A. YANNACCONE
Signed by: John Yannaccone
5/19/2026

GENERAL DRAWING

FOR BRIDGE ON TIMELESS LANE
OVER CANE RIVER

DRAWN BY : J. PARROTT DATE : 07/2025
CHECKED BY : J. YANNACCONE DATE : 08/2025
DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

GANNETT FLEMING
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic.No. F-0270

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1	JM/ JAY	5/18/26	3			TOTAL SHEETS
2			4			13

8/26/21

LOOKING WEST FROM END BENT 2

EXISTING END BENT 2

LOOKING EAST FROM END BENT 1

LOOKING SOUTHWEST AT END BENT 2

LOOKING DOWNSTREAM

LOOKING NORTH (DOWNSTREAM) AT END BENT 2

LOOKING UPSTREAM TOWARDS END BENT 2

LOOKING UPSTREAM

LOOKING UPSTREAM TOWARDS END BENT 1

PHOTOS OF EXISTING SITE CONDITIONS

GENERAL NOTES

ASSUMED LIVE LOAD = HS-20.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS EXCEPT AS NOTED.

IMPACT ALLOWANCE = 15%

MULTIPLE PRESENCE FACTOR = 1.0

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 “STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES” OF THE N.C. DEPARTMENT OF TRANSPORTATION.

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF THE STRUCTURE WITH THE EXCEPTION THAT CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURE.

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON THE STRUCTURE SHALL BE CHAMFERED ¾".

THE BRIDGE SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS.

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.

THE CONTRACTOR SHALL REMOVE ALLUVIAL MATERIAL AT THE BRIDGE SITE FOR USE IN CONSTRUCTING THE TEMPORARY CAUSEWAYS. THE STREAMBED WHERE MATERIAL HAS BEEN REMOVED SHALL BE CONTOURED IN SUCH A WAY TO APPROXIMATELY MATCH THE STREAM CROSS SECTION IMMEDIATELY UPSTREAM OF THE BRIDGE. AFTER COMPLETION OF BRIDGE CONSTRUCTION, THE ROCK IN THE TEMPORARY CAUSEWAYS SHALL BE PLACED ALONG THE STREAMBANKS ON BOTH SIDES OF THE RIVER.

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” OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING OR METALLIZING.

METAL STANDARDS FOR THE BRIDGE RAIL SHALL BE SET NORMAL TO THE GRADE OF THE DECK, UNLESS OTHERWISE SHOWN ON PLANS.

EXISTING DIMENSIONS OF THE EXISTING END BENT NO. 2 ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITION DIFFER.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS.

WORK ON THE BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW, EXCEPT WHERE THE CONTRACTOR’S PLAN USES PLATFORMS, NETS, SCREENS OR OTHER PROTECTIVE DEVICES TO CATCH THE MATERIAL.

ANY DAMAGE TO EXISTING REINFORCING STEEL DURING THE CONTRACTOR’S OPERATIONS SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

FOR BRIDGE RAIL SYSTEM, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

LRFR RATING SUMMARY

	VEHICLE	RATING FACTOR
INVENTORY	HS-20	1.22
	EV2	1.82
	EV3	1.34
OPERATING	HS-20	1.59
	EV2	2.37
	EV3	1.56

BRIDGE COORDINATES

LATITUDE	LONGITUDE
35°-59'-59.4"	82°-22'-18.1"

TOTAL BILL OF MATERIAL

CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS	REINFORCED CONCRETE DECK SLAB	CLASS A CONCRETE	REINFORCING STEEL	APPROX. 88,000 LBS STRUCTURAL STEEL	CLASS II RIP RAP (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	BRIDGE RAIL SYSTEM
LUMP SUM	SQ. FT.	CU. YDS.	LBS.	LUMP SUM	TONS	SQ. YDS.	LUMP SUM	LIN. FT.
LUMP SUM	2,265	123.3	17,750	LUMP SUM	80	114	LUMP SUM	360

PROJECT NO. 100.01.00206

YANCEY COUNTY

STATION: 12+87.00 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON

DocuSigned by: Eric B. Nelson Jr. ACB80821190740D... 11/4/2025

GENERAL DRAWING

FOR BRIDGE ON TIMELESS LANE OVER CANE RIVER

DRAWN BY : J. PARROTT DATE : 07/2025

CHECKED BY : J. YANNACCONE DATE : 08/2025

DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

GANNETT FLEMING
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic.No. F-0270

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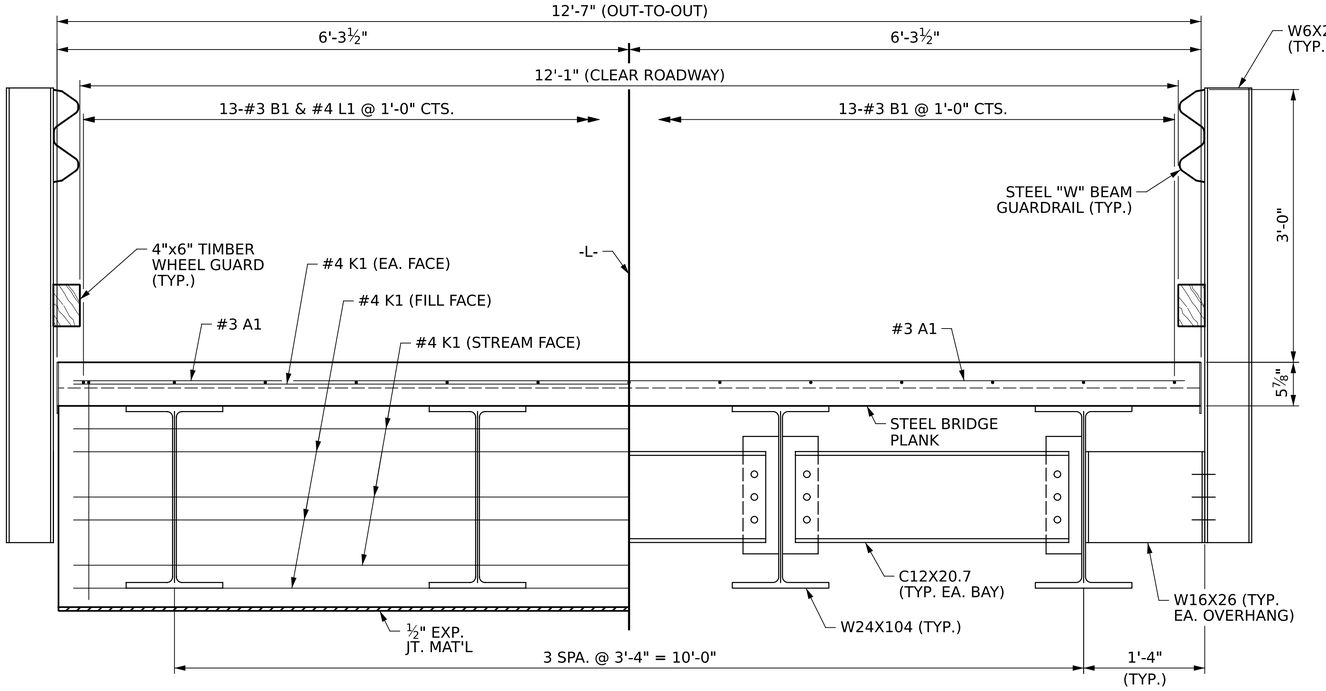
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			13

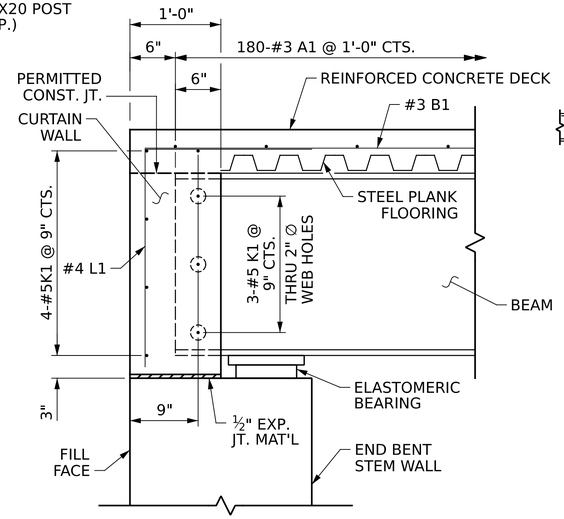
8/26/21



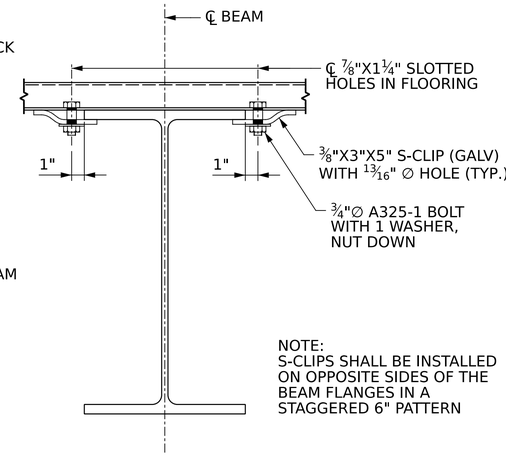
PARTIAL SECTION AT END BENTS
(W16X26 NOT SHOWN FOR CLARITY)

PARTIAL SECTION AT BENT AND INTERMEDIATE DIAPHRAGMS

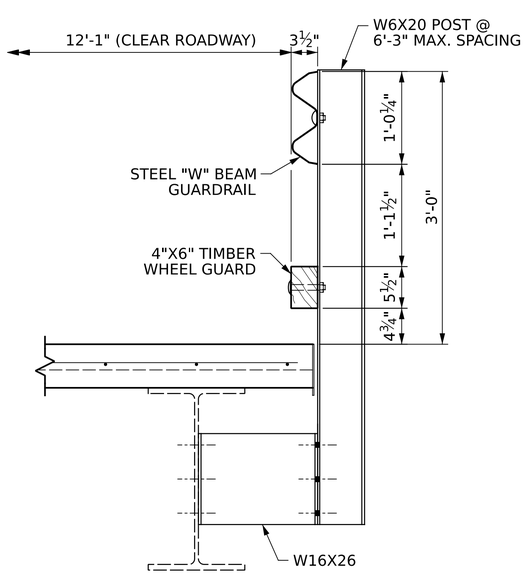
TYPICAL SECTION



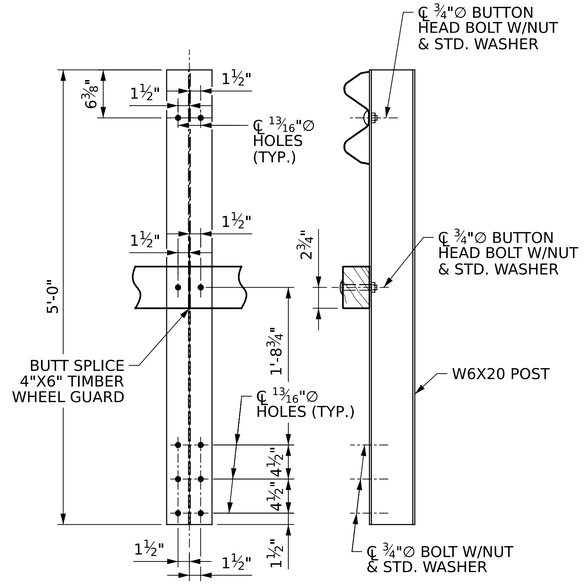
END OF GIRDER DETAIL AT END BENT



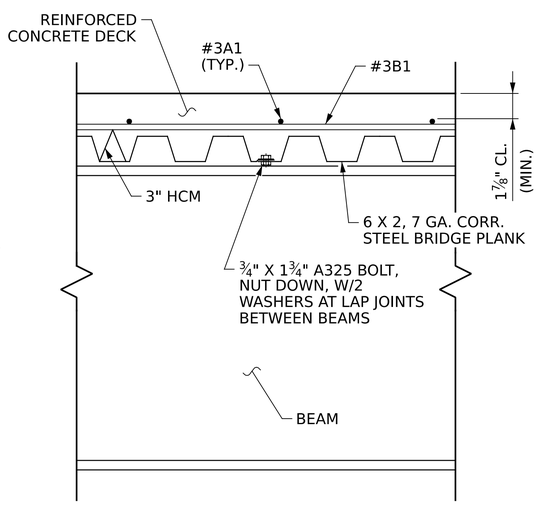
BOLTED ATTACHMENT OF FLOORING



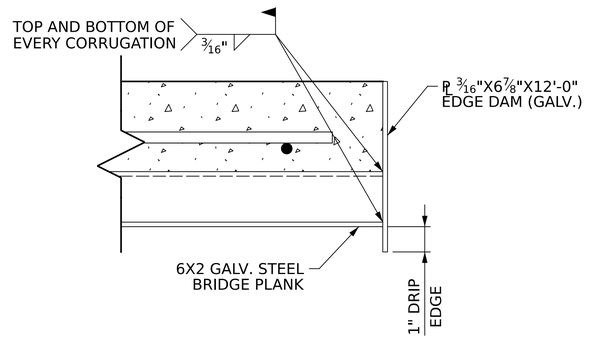
RAIL DETAIL



DETAIL OF RAIL POST



CONCRETE DECK SECTION



WELDED STEEL PLANK EDGE DAMS

PROJECT NO. 100.01.00206
YANCEY COUNTY
STATION: 12+87.00 -L-
SHEET 1 OF 4

SUPERSTRUCTURE DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.
DocuSigned by: Eric Nelson ACB80821190746D...
11/4/2025

DRAWN BY : J. PARROTT DATE : 07/2025
CHECKED BY : J. YANNACCONE DATE : 08/2025
DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

GANNETT FLEMING
One Glenwood Avenue Suite 900 Raleigh,NC 27603 919-420-7660 NC Lic.No. F-0270

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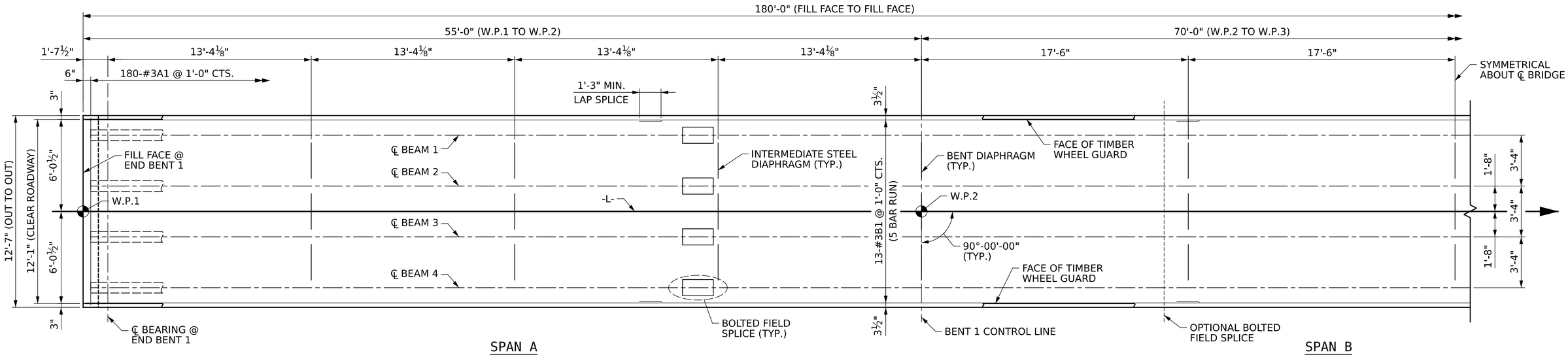
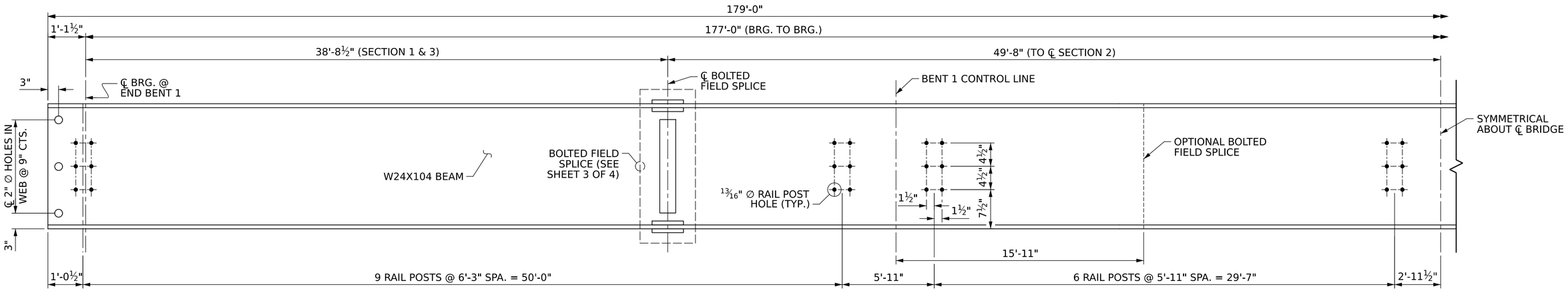
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			13

8/26/21



FRAMING PLAN & PLAN OF SPANS

(STEEL PLANK FLOORING NOT SHOWN FOR CLARITY)



BEAM ELEVATION

(SHOWING TYPICAL SPACING AND DIMENSIONS FOR RAIL POST HOLES FOR BEAMS 1 & 4)
(BEAMS 2 & 3 ARE SIMILAR BUT WITHOUT RAIL POST HOLES)

NOTES:

ALL DIMENSIONS ON THIS SHEET ARE HORIZONTAL OR VERTICAL UNLESS OTHER WISE NOTED.

STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

NO SHOP CAMBER REQUIRED, TURN NATURAL MILL CAMBER UP.

AN OPTIONAL BOLTED FIELD SPLICE IS SHOWN AND MAY BE USED TO FACILITATE BEAM DELIVERY TO THE SITE.

THE CONTRACTOR MAY SPLICE BEAMS ON THE GROUND BEFORE ERECTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A MEANS TO PREVENT TORSIONAL BUCKLING OR EXCESSIVE DEFLECTION OF THE BEAM WHILE IT IS BEING LIFTED INTO PLACE.

DURING BEAM ERECTION, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT, AS REQUIRED, TO ENSURE THE STABILITY AND PLUMBNESS OF THE BEAMS IN THE FINAL CONDITION.

FOR STRUCTURAL STEEL NOTES, SEE SHEET 3 OF 4.

DRAWN BY : J. PARROTT DATE : 07/2025
CHECKED BY : J. YANNACCONE DATE : 08/2025
DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

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One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
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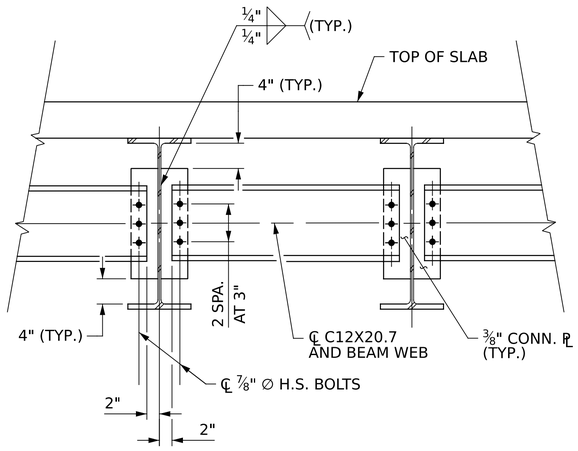
NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.
DocuSigned by: Eric Nelson Jr. 11/4/2025
ACB80821190740D...

PROJECT NO. 100.01.00206
YANCEY COUNTY
STATION: 12+87.00 -L-
SHEET 2 OF 4

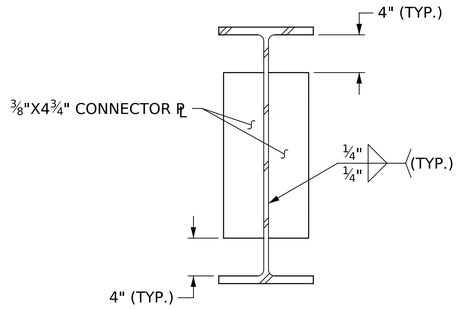
SUPERSTRUCTURE DETAILS

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

8/26/21



TYPICAL BENT AND INTERMEDIATE DIAPHRAGM



BENT AND INTERMEDIATE DIAPHRAGM CONNECTOR PLATE DETAIL

NOTES:

STRUCTURAL STEEL FOR ROLLED I-BEAMS, DIAPHRAGMS, SPLICE PLATES AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 AND PAINTED WITH SYSTEM 1 OR GALVANIZED IN ACCORDANCE WITH THE NCDOT STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE NCDOT STANDARD SPECIFICATIONS.

COATING APPLICATION FOR ALL STRUCTURAL STEEL SHALL NOT BE PERFORMED UNTIL ALL SHOP FABRICATION INCLUDING CUTTING, DRILLING AND WELDING HAS BEEN COMPLETED.

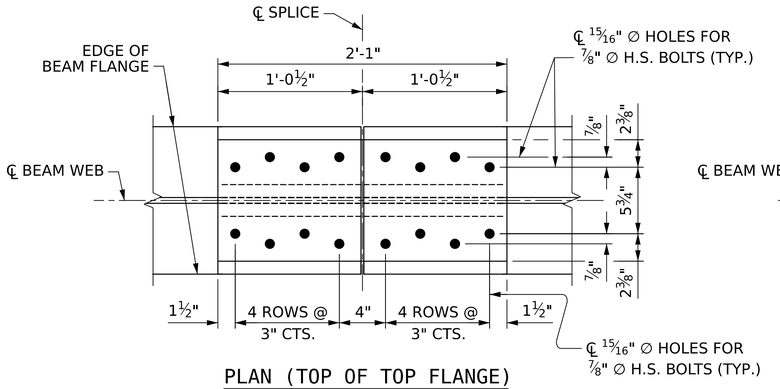
ALL STEEL BRIDGE PLANKS, BOLTS, NUTS, SCREWS AND ASSOCIATED STEEL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATIONS FOR THERMALLY SPRAYED COATINGS, SECTION 1076.

TREATED TIMBER SHALL BE IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATION, SECTION 1082.

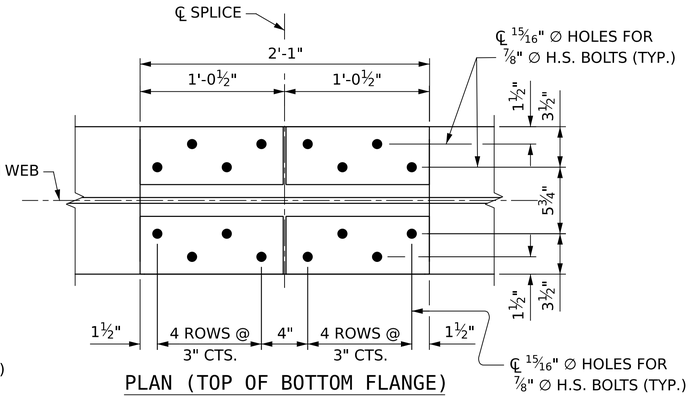
TENSION ON THE ASTM A325 BOLTS THROUGH THE CHANNEL MEMBER ENDS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL CUT AN OPENING IN THE STEEL BRIDGE PLANK TO ACCOMMODATE THE OUTER SPLICE PLATE ON THE TOP FLANGE FOR THE BOLTED FIELD SPLICE. APPROPRIATE MEASURES SHALL BE TAKEN TO ENSURE THAT THE OPENING IS SEALED TO PREVENT LEAKAGE DURING THE PLACEMENT OF THE DECK CONCRETE.

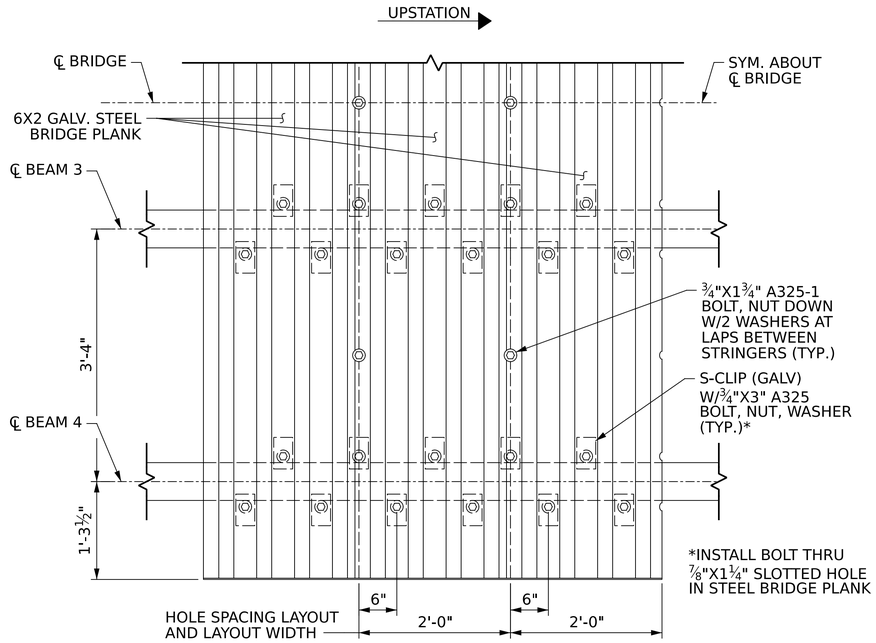
NOTE: IF ADDITIONAL HOLES ARE NEEDED FOR FABRICATION PURPOSES, THE UNUSED HOLES SHALL BE FILLED WITH ¾" BOLTS TO PREVENT CONCRETE LEAKAGE DURING PLACEMENT OF THE DECK.



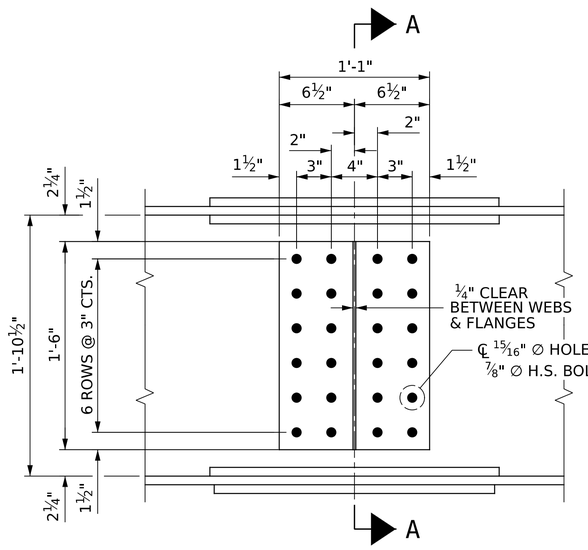
PLAN (TOP OF TOP FLANGE)



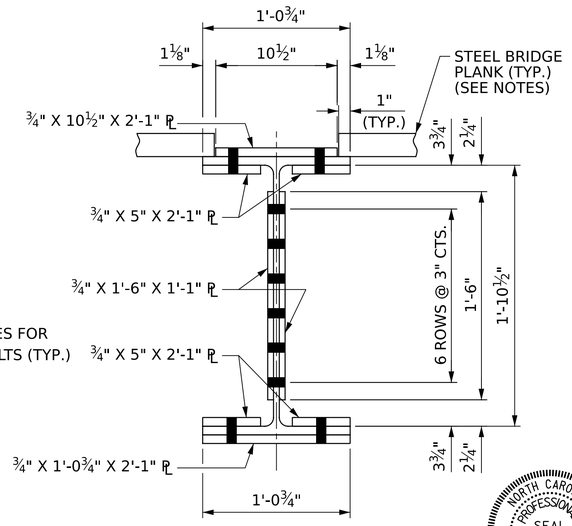
PLAN (TOP OF BOTTOM FLANGE)



TYPICAL BOLTED STEEL FLOORING LAYOUT



ELEVATION



SECTION A-A

BOLTED FIELD SPLICE DETAILS

PROJECT NO. 100.01.00206

YANCEY COUNTY

STATION: 12+87.00 -L-

SHEET 3 OF 4

SUPERSTRUCTURE DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric Nelson Jr. ACB80821190740D... 11/4/2025

DRAWN BY : J. PARROTT DATE : 08/2025
CHECKED BY : J. YANNACCONE DATE : 08/2025
DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

GANNETT FLEMING

One Glenwood Avenue Suite 900 Raleigh, NC 27603 919-420-7660 NC Lic.No. F-0270

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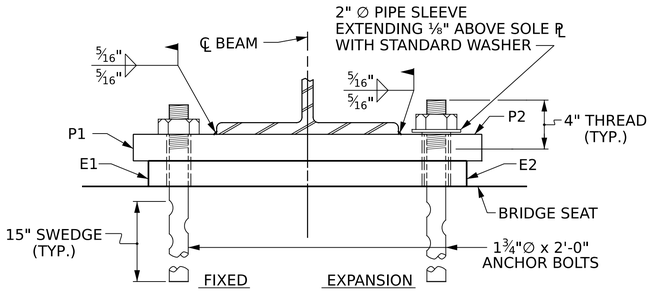
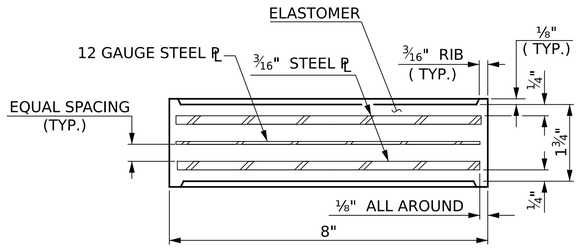
SHEET NO. S-5

TOTAL SHEETS 13

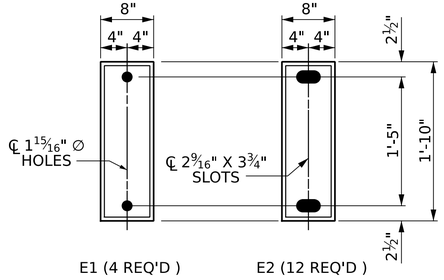
8/26/21



END VIEW

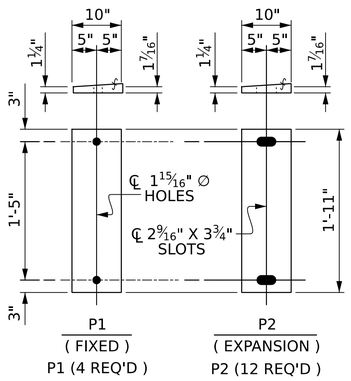


TYPICAL SECTION OF ELASTOMERIC BEARINGS



PLAN VIEW OF ELASTOMERIC BEARING

TYPE I



SOLE PLATE DETAILS ("P")

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF ½" TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2'' ∅ PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

FOR PAINTED STRUCTURAL STEEL, SOLE PLATES, ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE NCDOT STANDARD SPECIFICATIONS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS.

WHEN FIELD WELDING THE SOLE PLATE TO THE GIRDER FLANGE, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

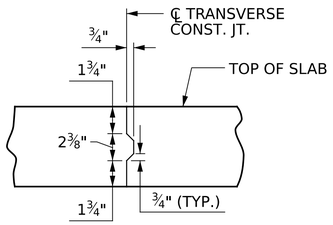
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

THE CONTRACTOR MAY PROPOSE ALTERNATE METHODS, PROVIDED DETAILS ARE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

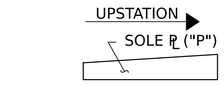
←(#)— = INDICATES POUR NUMBER AND DIRECTION OF POUR

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE I	140 k



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

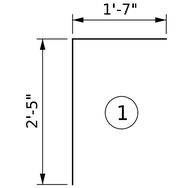


SOLE PL PLACEMENT DETAIL

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	180	#3	STR.	12'-3"	829
B1	65	#3	STR.	37'-0"	904
K1	16	#5	STR.	12'-3"	204
L1	26	#4	1	4'-0"	70
REINFORCING STEEL				LBS.	2007

BAR TYPES

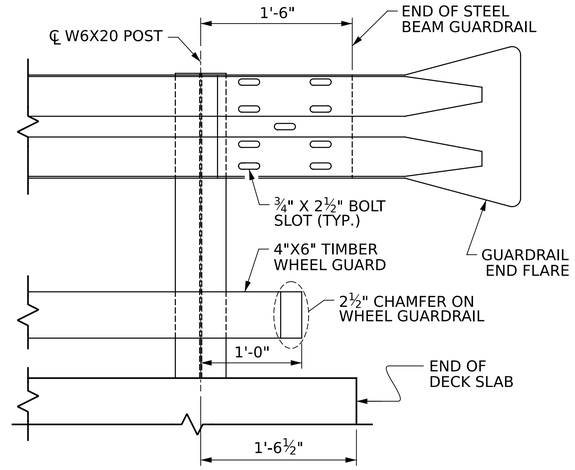


ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

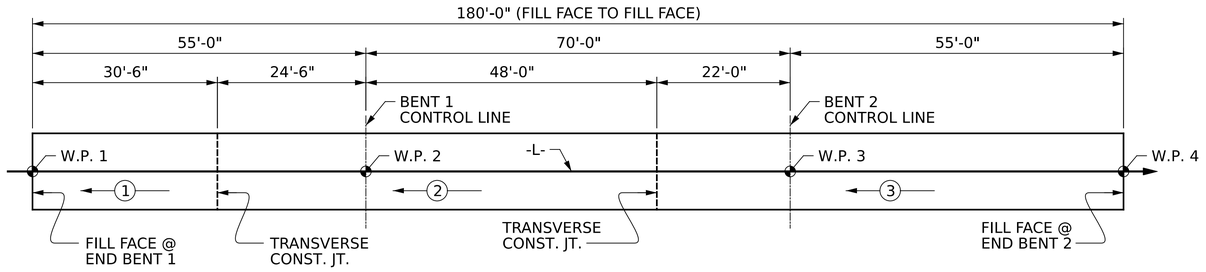
	CLASS AA CONCRETE*
	(CU.YDS.)
POUR 1	8.0
POUR 2	16.6
POUR 3	18.6
TOTAL	43.2

* USE NO. 78M STONE FOR CLASS AA CONCRETE.

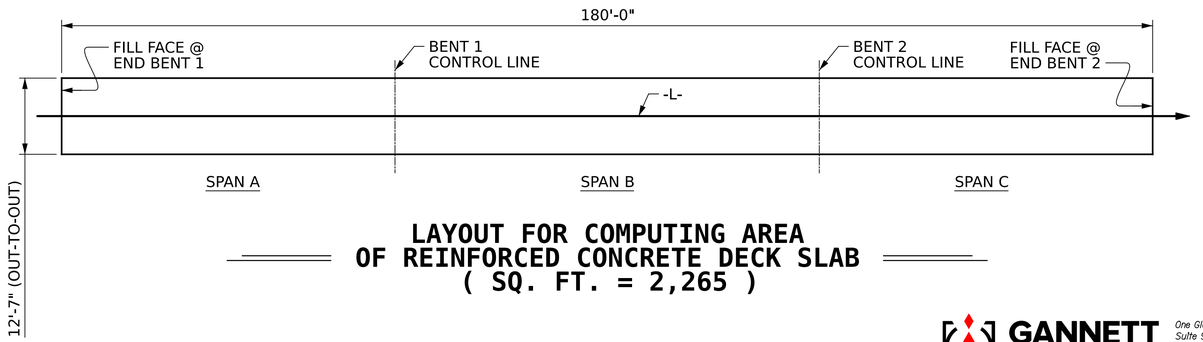


GUARDRAIL END TREATMENT

INSTALL GUARDRAIL END FLARES AT ALL FOUR CORNERS OF THE BRIDGE. NO SEPARATE PAYMENT WILL BE MADE FOR THE GUARDRAIL END FLARES AS THE COST OF SUCH SHALL BE INCLUDED IN THE PRICE PER LINEAR FOOT FOR "BRIDGE RAIL SYSTEM".



POURING SEQUENCE



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 2,265)

PROJECT NO. 100.01.00206

YANCEY COUNTY

STATION: 12+87.00 -L-

SHEET 4 OF 4

SUPERSTRUCTURE DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B. Nelson Jr. ACB8082110D74CD... 11/4/2025

DRAWN BY : J. PARROTT DATE : 07/2025

CHECKED BY : J. YANNACCONE DATE : 08/2025

DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

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919-420-7660
NC Lic. No. F-0270

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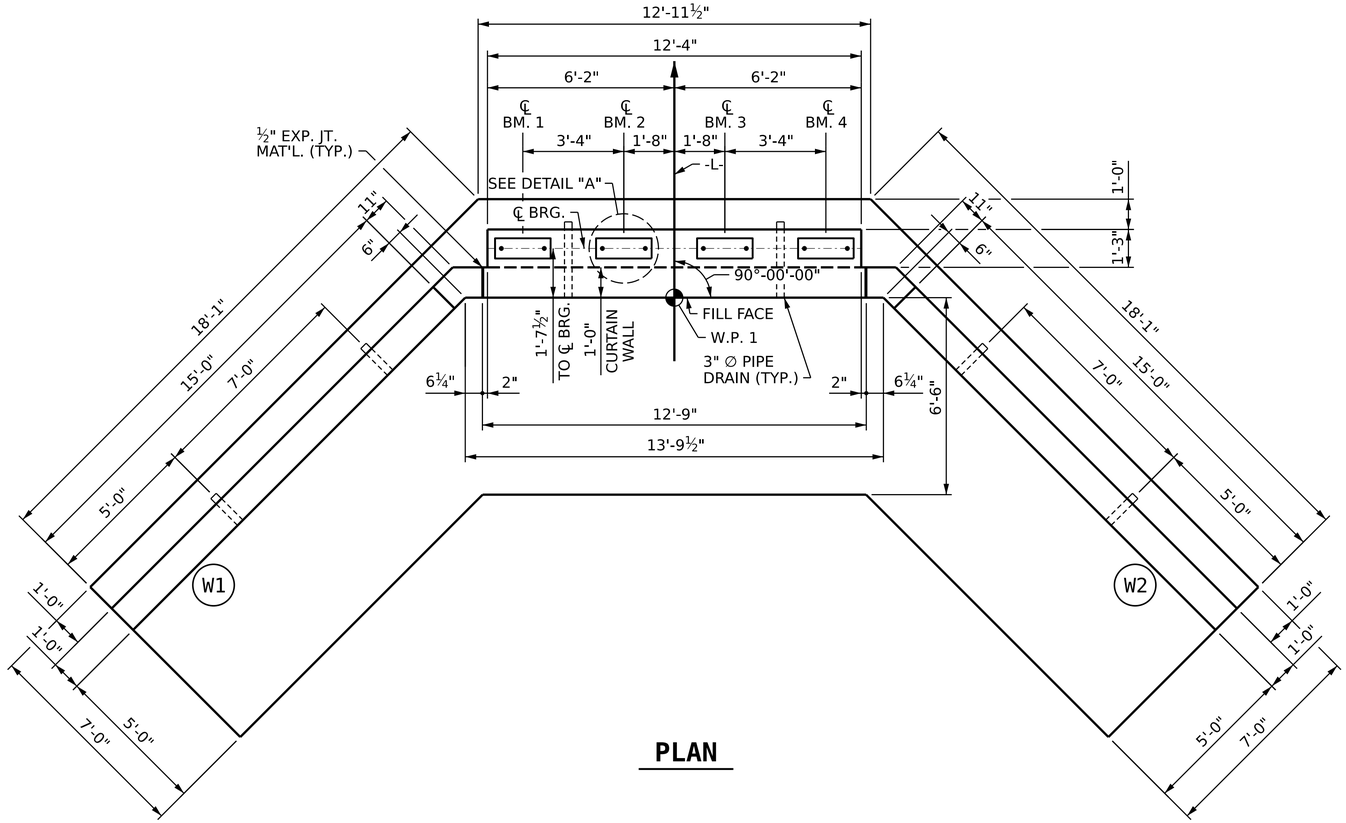
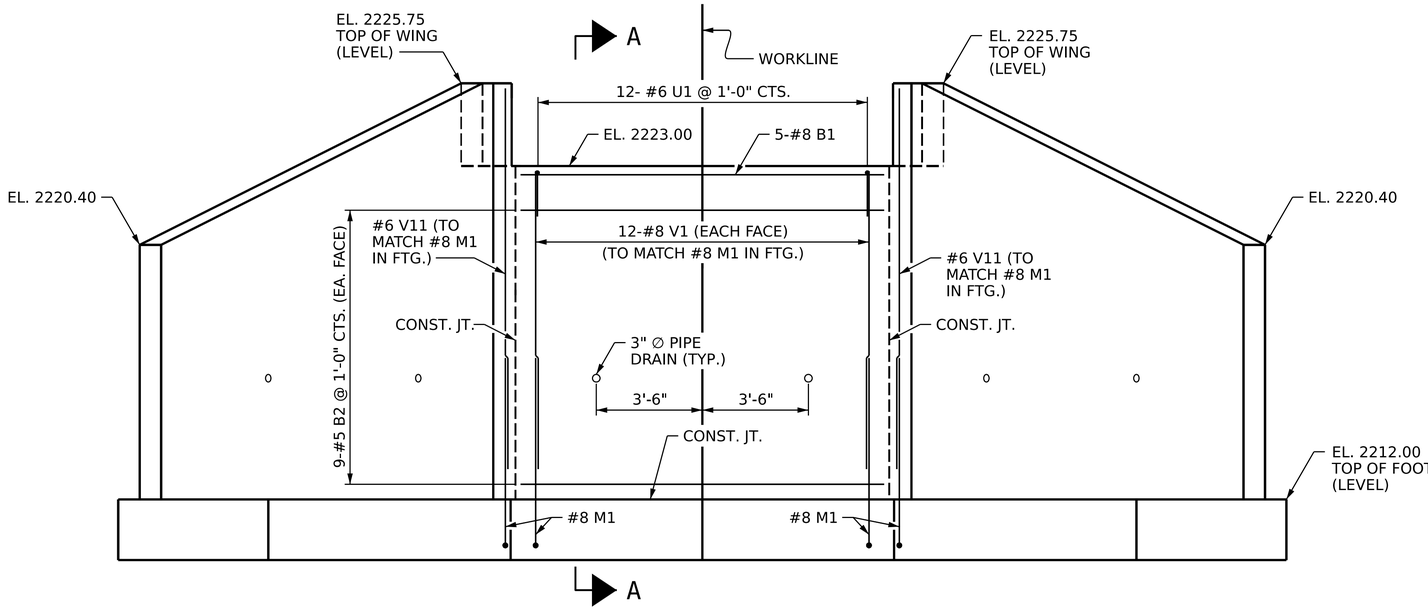
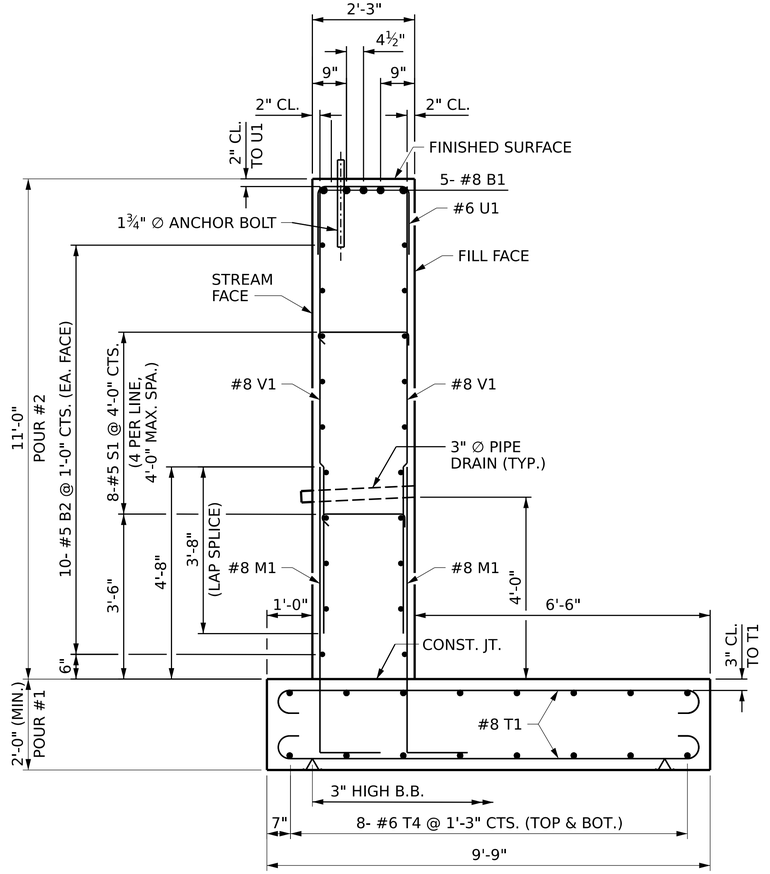


PLAN

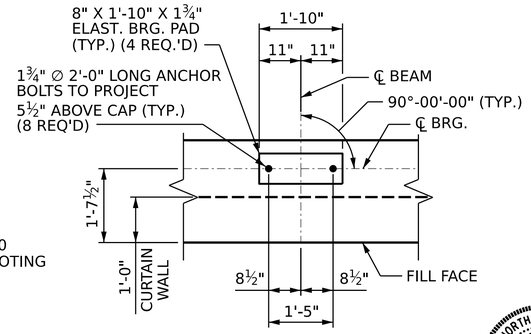


ELEVATION

(FOR FOOTING REINFORCING, SEE SHEET 3 OF 3)
(FOR WING REINFORCING, SEE SHEET 2 OF 3)



SECTION A-A



DETAIL "A"

PROJECT NO. 100.01.00206
YANCEY COUNTY
STATION: 12+87.00 -L-
SHEET 1 OF 3

SUBSTRUCTURE
END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B. Nelson Jr. 11/4/2025
ACB8082119D74CD...

DRAWN BY : J. HARRIS DATE : 08/2025
CHECKED BY : R. NELSON DATE : 08/2025
DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

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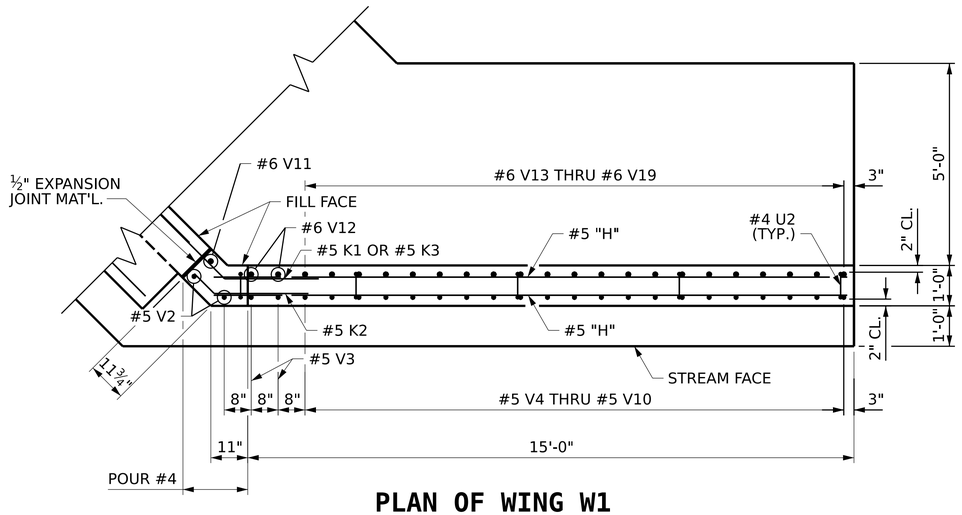
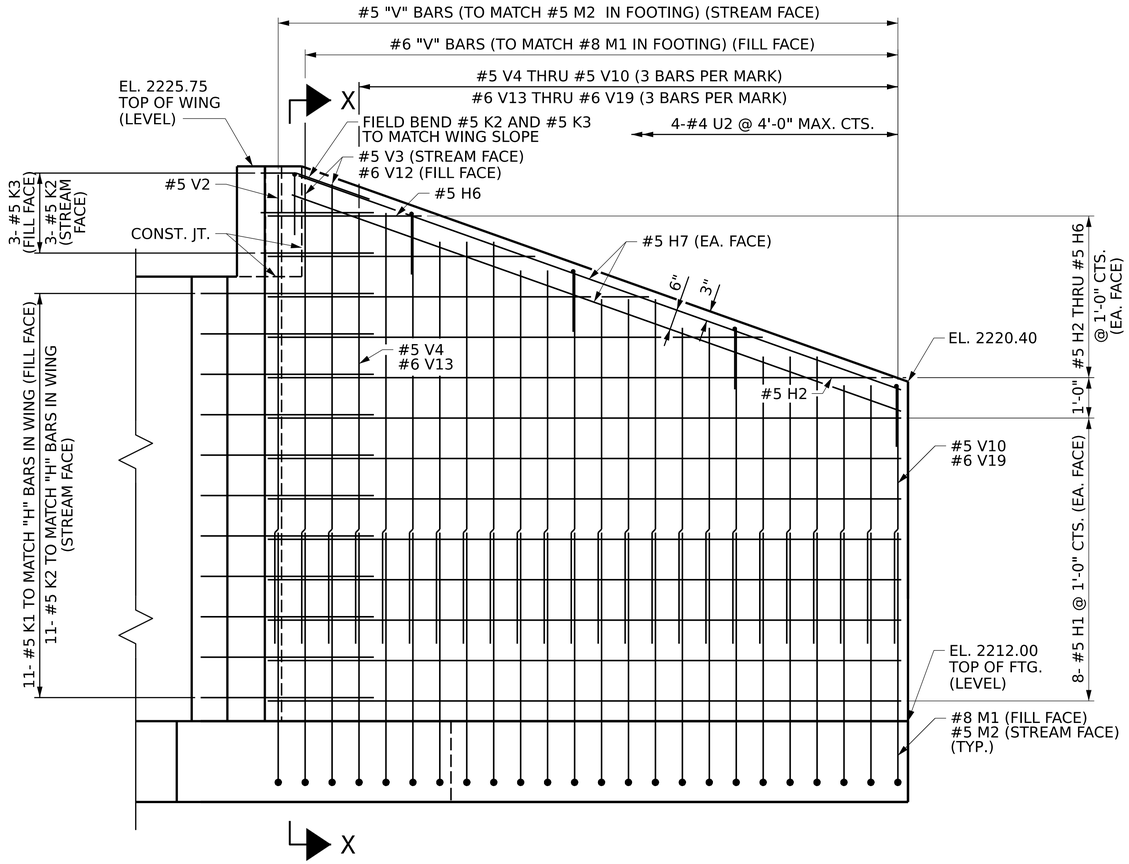


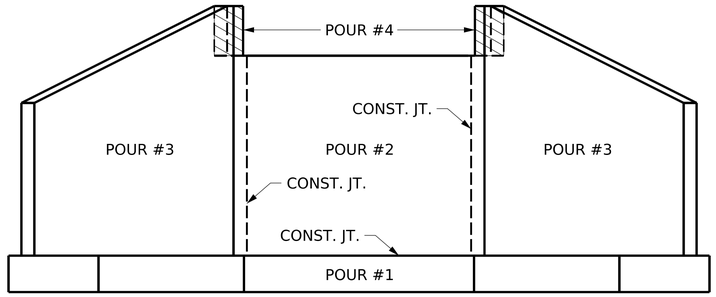
PLAN OF WING W1

(WING W1 SHOWN, WING W2 SIMILAR)



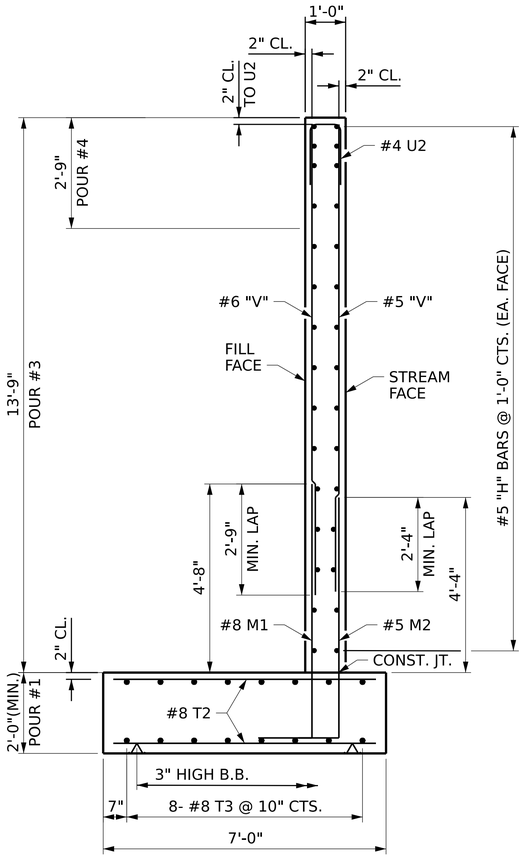
ELEVATION OF WING W1

(WING W1 SHOWN. WING W2 SIMILAR.
FOR REINFORCING STEEL IN FOOTING,
SEE "FOOTING PLAN" SHEET 3 OF 3.)



POUR SEQUENCE

(LOOKING UPSTATION)



SECTION X-X

PROJECT NO. 100.01.00206

YANCEY COUNTY

STATION: 12+87.00 -L-

SHEET 2 OF 3

SUBSTRUCTURE

END BENT 1

WING DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: 11/4/2025 ACB80821190T4CD...

DRAWN BY : J. HARRIS DATE : 08/2025
CHECKED BY : R. NELSON DATE : 08/2025
DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

GANNETT FLEMING

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic.No. F-0270

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			13

8/26/21

NOTES:

#4 U1 STIRRUPS IN THE END BENT WALL MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOOTINGS:

EXCAVATE TO SOUND CRYSTALLINE ROCK THROUGHLY CLEAN THE SURFACE OF ANY LOOSE OR UNSOUND MATERIALS.

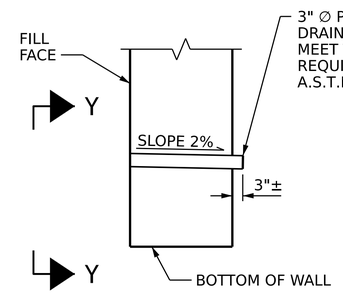
REMOVE STANDING WATER AND ENSURE A SATURATED CONDITION FOR THE ROCK SURFACE PRIOR TO PLACEMENT OF FOOTING CONCRETE.

PROVIDE VARIABLE HEIGHT REBAR SUPPORTS AS REQUIRED TO MAINTAIN THE LOCATION OF THE REINFORCEMENT AS SHOWN ON THE PLANS.

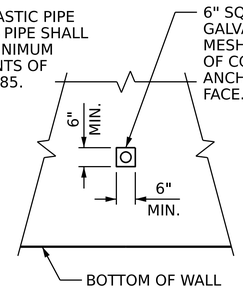
PROVIDE THE MINIMUM FOOTING THICKNESS AS SHOWN ON THE PLANS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE VERTICAL LEG OF THE M1 AND M2 BARS IN THE FOOTING ARE DETAILED WITH 1 FOOT EXTRA LENGTH.

THE SPREAD FOOTING AT END BENT 1 IS DESIGNED FOR A FACTORED RESISTANCE OF 8.7 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 8 TSF IMMEDIATELY PRIOR TO PLACING CONCRETE.



SECTION THRU END BENT WALL

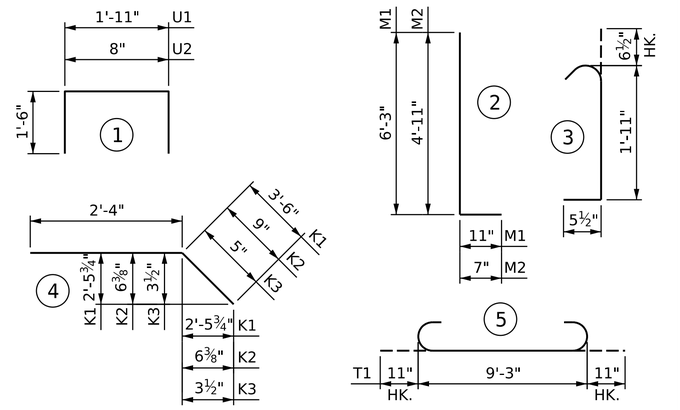


VIEW Y-Y

NOTE:
NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC PLASTIC PIPE DRAINS, HARDWARE CLOTH AND FASTENERS. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

PIPE DRAIN DETAILS

BAR TYPES

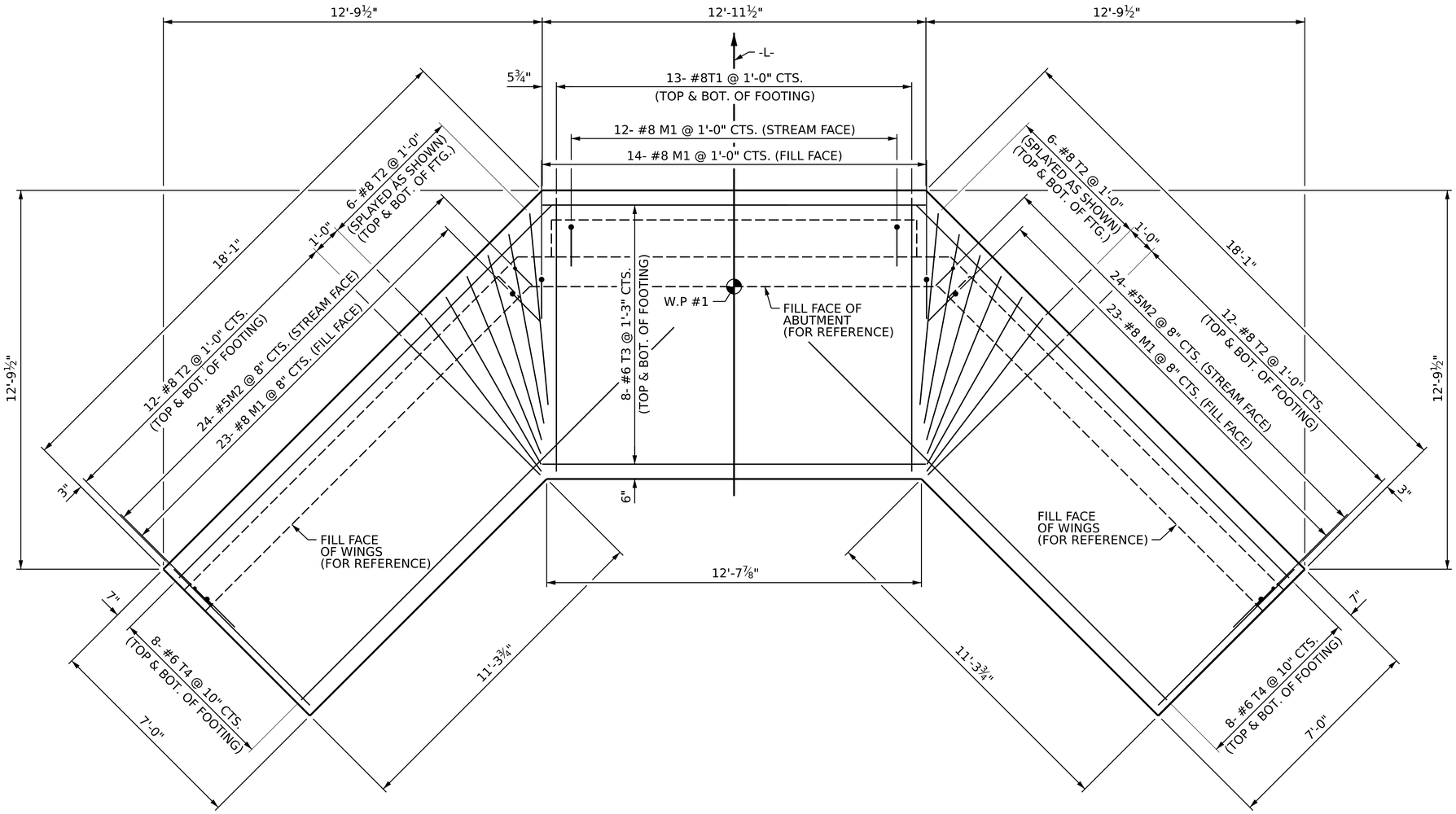


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#8	STR.	12'-0"	160
B2	20	#5	STR.	12'-0"	250
H1	32	#5	STR.	15'-8"	523
H2	4	#5	STR.	15'-1"	63
H3	4	#5	STR.	12'-3"	51
H4	4	#5	STR.	9'-5"	39
H5	4	#5	STR.	6'-8"	28
H6	4	#5	STR.	3'-10"	16
H7	8	#5	STR.	15'-8"	131
K1	22	#5	4	5'-10"	134
K2	26	#5	4	3'-1"	84
K3	4	#5	4	2'-9"	11
M1	72	#8	2	7'-2"	1378
M2	48	#5	2	5'-6"	275
S1	8	#5	3	2'-11"	24
T1	26	#8	5	11'-1"	769
T2	72	#8	STR.	6'-8"	1282
T3	16	#6	STR.	13'-0"	312
T4	32	#6	STR.	17'-10"	857
U1	12	#6	1	4'-11"	89
U2	10	#4	1	3'-8"	24
V1	26	#8	STR.	9'-10"	683
V2	2	#5	STR.	12'-8"	26
V3	4	#5	STR.	12'-5"	52
V4	6	#5	STR.	11'-9"	74
V5	6	#5	STR.	11'-0"	69
V6	6	#5	STR.	10'-3"	64
V7	6	#5	STR.	9'-7"	60
V8	6	#5	STR.	8'-10"	55
V9	6	#5	STR.	8'-2"	51
V10	6	#5	STR.	7'-5"	46
V11	2	#6	STR.	12'-8"	38
V12	4	#6	STR.	12'-5"	75
V13	6	#6	STR.	11'-9"	106
V14	6	#6	STR.	11'-0"	99
V15	6	#6	STR.	10'-3"	92
V16	6	#6	STR.	9'-7"	86
V17	6	#6	STR.	8'-10"	80
V18	6	#6	STR.	8'-2"	74
V19	6	#6	STR.	7'-5"	67
REINFORCING STEEL			LBS.		8397
CLASS A CONCRETE BREAKDOWN ✳					
POUR 1			C.Y.		24.5
POUR 2			C.Y.		11.3
POUR 3			C.Y.		13.8
POUR 4			C.Y.		0.30
TOTAL			C.Y.		49.9

✳ FOR POUR SEQUENCE, SEE SHEET 2 OF 3.



FOOTING PLAN

PROJECT NO. 100.01.00206
YANCEY COUNTY
STATION: 12+87.00 -L-

SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric Nelson Jr. 11/4/2025
ACB80821190740D...

SUBSTRUCTURE
END BENT 1
FOOTING DETAILS

DRAWN BY : J. HARRIS DATE : 08/2025
CHECKED BY : R. NELSON DATE : 08/2025
DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

GANNETT FLEMING
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NC Lic. No. F-0270

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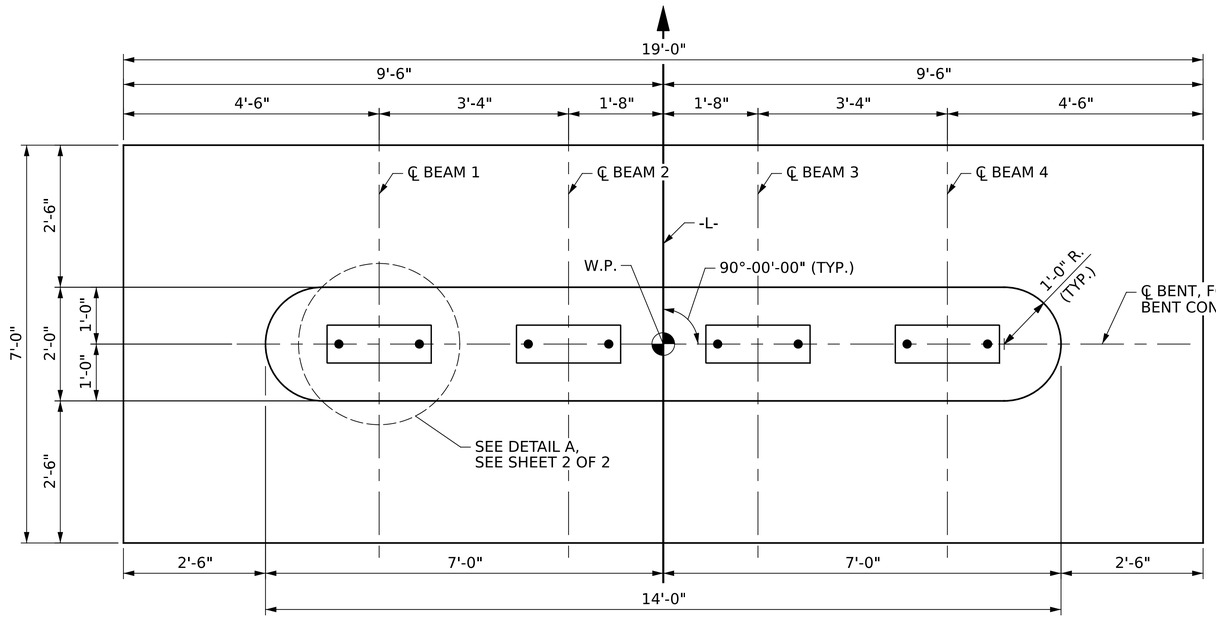
2			4		

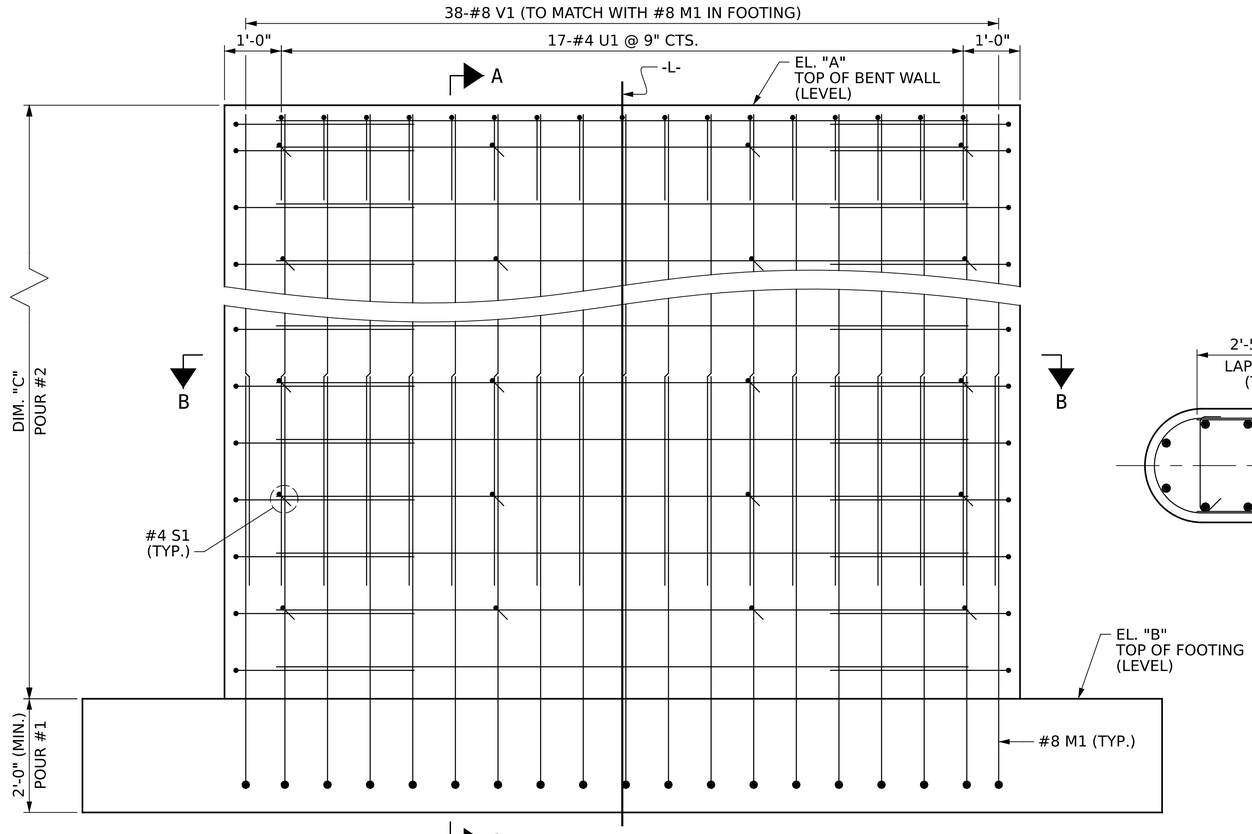
SHEET NO. S-9
TOTAL SHEETS 13

8/26/21



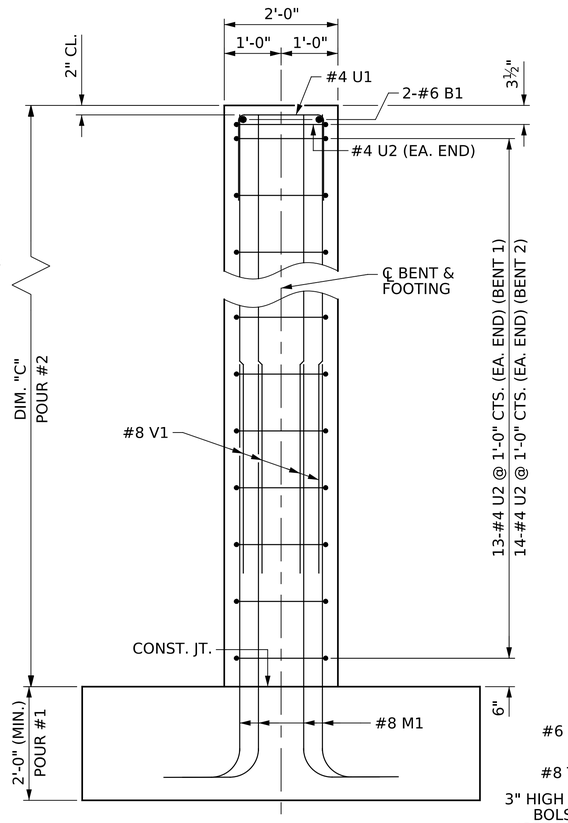
PLAN

(SEE BENT INFORMATION TABLE FOR W.P.)



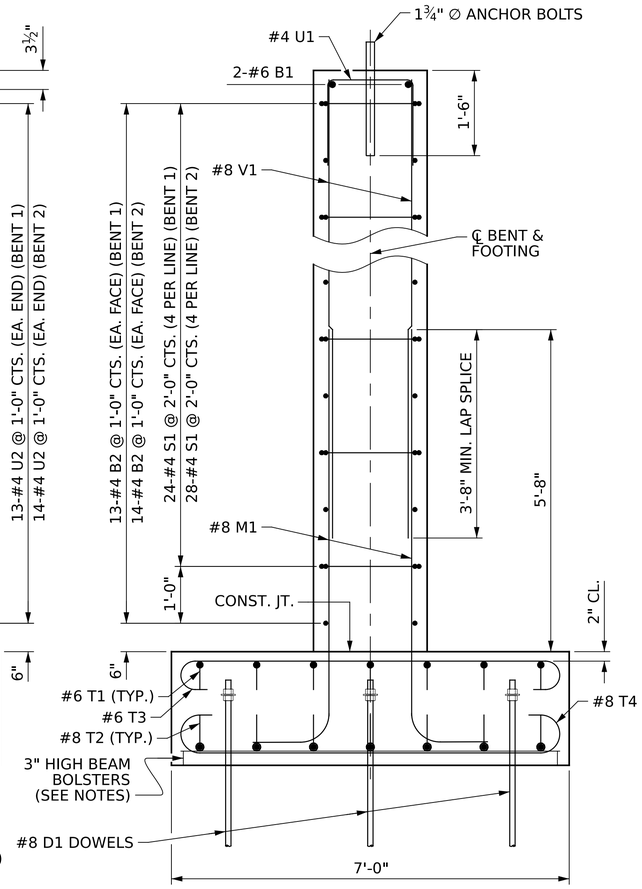
ELEVATION

(FOR FOOTING REINFORCEMENT, SEE SHEET 2 OF 2)
(SEE BENT INFORMATION TABLE FOR "A", "B" & "C")

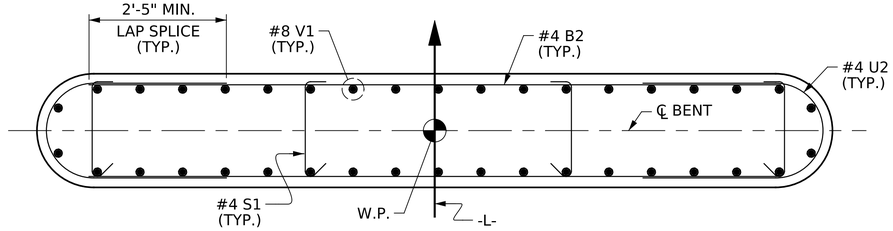


END ELEVATION

(FOR FOOTING REINFORCEMENT, SEE FOOTING PLAN)
(S1 BARS NOT SHOWN FOR CLARITY)



SECTION A-A



SECTION B-B

BENT INFORMATION TABLE				
BENT	W.P.	"A"	"B"	"C"
1	2	2223.92	2210.00	13'-11"
2	3	2225.08	2210.00	15'-1"

PROJECT NO. 100.01.00206
YANCEY COUNTY
STATION: 12+87.00 -L-
SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.
DocuSigned by: Eric B Nelson Jr. ACB8082119D74CD...
11/4/2025

SUBSTRUCTURE

BENTS 1 & 2 PLAN & ELEVATION

DRAWN BY : J. PARROTT DATE : 08/2025
CHECKED BY : J. YANNACCONE DATE : 08/2025
DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

GANNETT FLEMING
One Glenwood Avenue Suite 900 Raleigh,NC 27603 919-420-7660 NC Lic.No. F-0270

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			13

8/26/21

NOTES:

#4 U1 STIRRUPS IN THE BENT WALL MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

ROCK ANCHORS:

PROVIDE DOWELS WITH A MINIMUM YIELD STRENGTH OF 60 KSI. FOR #8 REBAR DOWELS, THE TOP 6" SHALL BE THREADED FOR THE ATTACHMENT OF NUTS AND PLATE WASHERS. THE MINIMUM PLATE WASHER SIZE IS 6" X 6" X ½".

ALL ELEVATIONS ARE BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR'S ATTENTION IS CALLED TO THE POTENTIAL FOR SLOPING ROCK CONDITIONS. PROVIDE DOWELS OF SUFFICIENT LENGTH TO ACHIEVE A 6' MINIMUM EMBEDMENT DEPTH BELOW THE EXISTING ROCK SURFACE AND THE PROJECTION INTO THE FOOTING AS SHOWN ON THE PLANS.

PRIOR TO DOWEL GROUTING, PROVIDE MEASURES TO RESTRICT SURFACE WATER FROM ENTERING THE DOWEL HOLE. CHECK THE DOWEL HOLE FOR SUBTERRANEAN INFLOWS OF WATER. IF PRESENT, MEASURE THE CHANGE IN WATER ELEVATION. IF THE WATER ELEVATION INCREASES BY MORE THAN 2" IN 15 MINUTES PROVIDE A TEMPORARY SLEEVE INSIDE THE HOLE PRIOR TO PLACEMENT OF GROUT. PROVIDE A MINIMUM OF 2' OF GROUT HEAD ABOVE THE SLEEVE BOTTOM DURING REMOVAL OF THE TEMPORARY SLEEVE.

IF NO SUBTERRANEAN INFLOWS OF WATER ARE PRESENT, REMOVE ANY DELETERIOUS MATERIAL AND STANDING WATER FROM DOWEL HOLES PRIOR TO PLACEMENT OF DOWEL AND GROUT MATERIAL.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOOTINGS:

EXCAVATE TO SOUND CRYSTALLINE ROCK AND THOROUGHLY CLEAN THE SURFACE OF ANY LOOSE OR UNSOUND MATERIALS.

REMOVE STANDING WATER AND ENSURE A SATURATED CONDITION FOR THE ROCK SURFACE PRIOR TO PLACEMENT OF FOOTING CONCRETE.

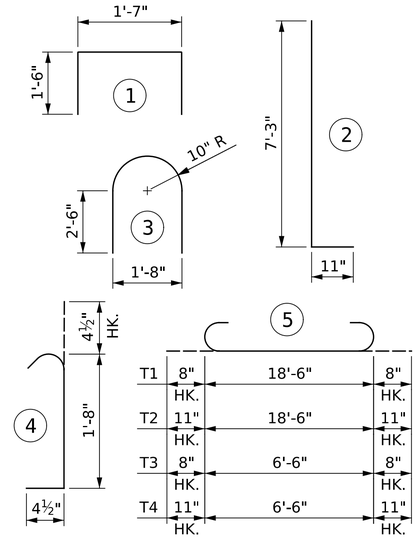
PROVIDE VARIABLE HEIGHT REBAR SUPPORTS AS REQUIRED TO MAINTAIN THE LOCATION OF THE REINFORCEMENT AS SHOWN ON THE PLANS.

PROVIDE THE MINIMUM FOOTING THICKNESS AS SHOWN ON THE PLANS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE VERTICAL LEG OF THE #8 M1 BARS AND THE #8 D1 DOWEL BARS IN THE FOOTING ARE DETAILED WITH 2 FEET OF EXTRA LENGTH.

THE SPREAD FOOTINGS AT BENT 1 AND BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 3 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 8 TSF IMMEDIATELY PRIOR TO PLACING CONCRETE.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#6	STR.	12'-0"	36
B2	26	#4	STR.	12'-0"	208
D1	10	#8	STR.	9'-0"	240
M1	38	#8	2	8'-2"	829
S1	24	#4	4	2'-5"	39
T1	7	#6	5	19'-10"	208
T2	7	#8	5	20'-4"	380
T3	19	#6	5	7'-10"	224
T4	19	#8	5	8'-4"	423
U1	17	#4	1	4'-7"	54
U2	28	#4	3	7'-1"	143
V1	38	#8	STR.	13'-8"	1387

REINFORCING STEEL LBS. 4171

CLASS A CONCRETE BREAKDOWN

POUR 1 (BENT FOOTING)	C.Y.	9.9
POUR 2 (BENT WALL)	C.Y.	18.8
TOTAL	C.Y.	28.7

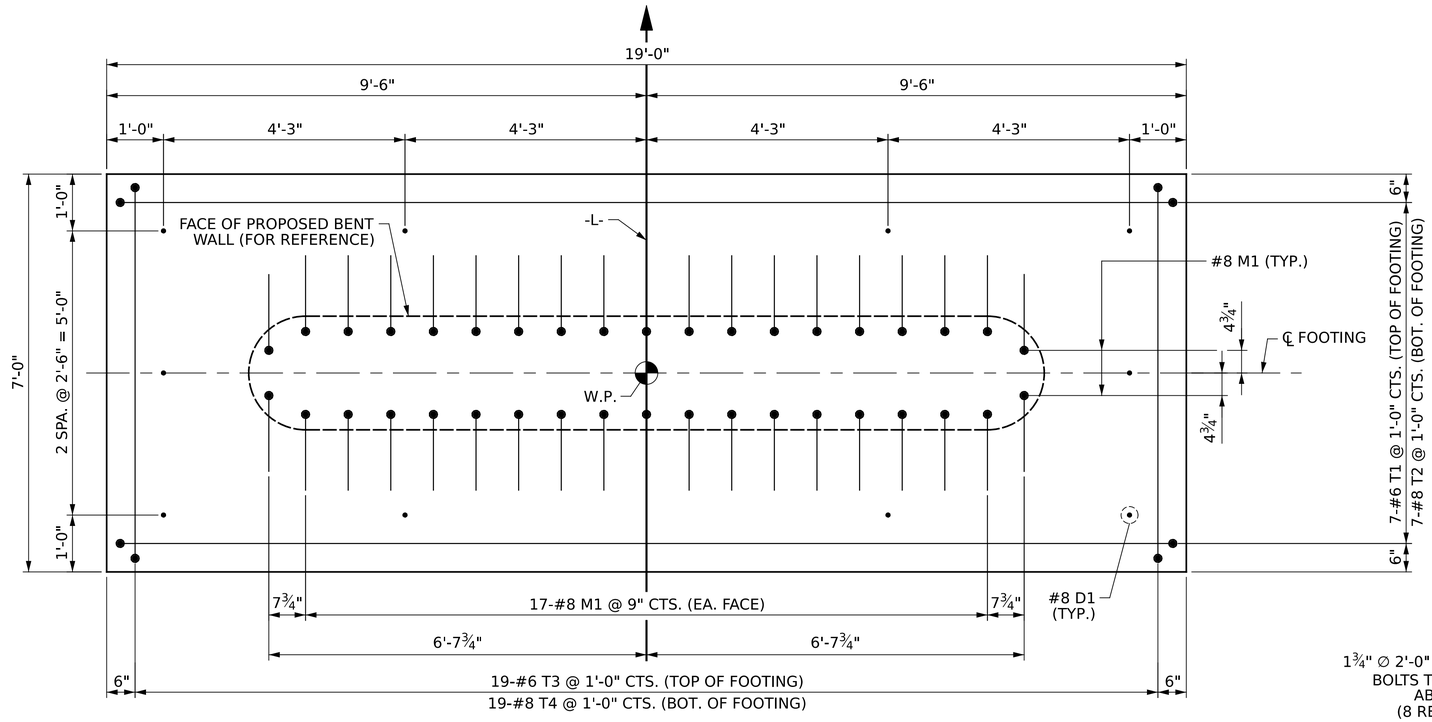
BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#6	STR.	12'-0"	36
B2	28	#4	STR.	12'-0"	224
D1	10	#8	STR.	9'-0"	240
M1	38	#8	2	8'-2"	829
S1	28	#4	4	2'-5"	45
T1	7	#6	5	19'-10"	208
T2	7	#8	5	20'-4"	380
T3	19	#6	5	7'-10"	224
T4	19	#8	5	8'-4"	423
U1	17	#4	1	4'-7"	54
U2	30	#4	3	7'-1"	154
V1	38	#8	STR.	14'-10"	1505

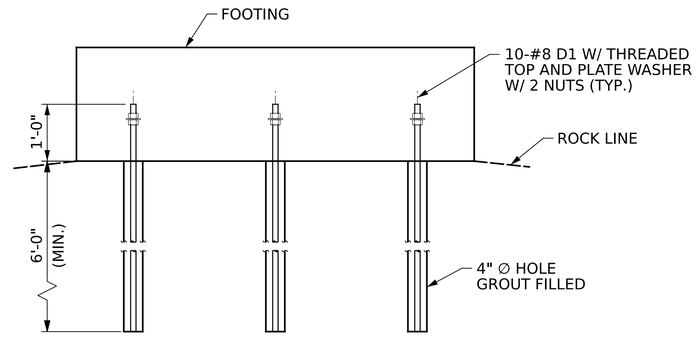
REINFORCING STEEL LBS. 4322

CLASS A CONCRETE BREAKDOWN

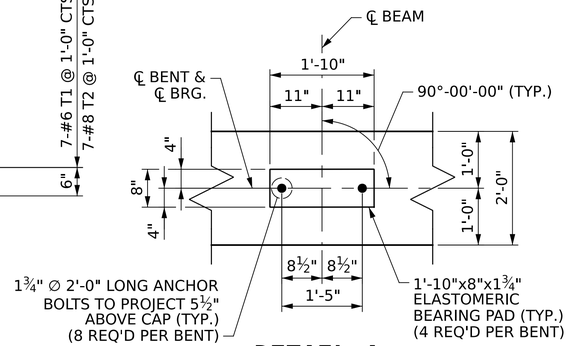
POUR 1 (BENT FOOTING)	C.Y.	9.9
POUR 2 (BENT WALL)	C.Y.	20.4
TOTAL	C.Y.	30.3



FOOTING PLAN



DOWEL GROUTING DETAIL



DETAIL A

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric Nelson 11/4/2025 ACB8082119D74CD...

PROJECT NO. 100.01.00206

YANCEY COUNTY

STATION: 12+87.00 -L-

SHEET 2 OF 2

SUBSTRUCTURE

BENTS 1 & 2 DETAILS & BILL OF MATERIAL

DRAWN BY : J. PARROTT DATE : 08/2025

CHECKED BY : J. YANNACCONE DATE : 08/2025

DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

GANNETT FLEMING

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

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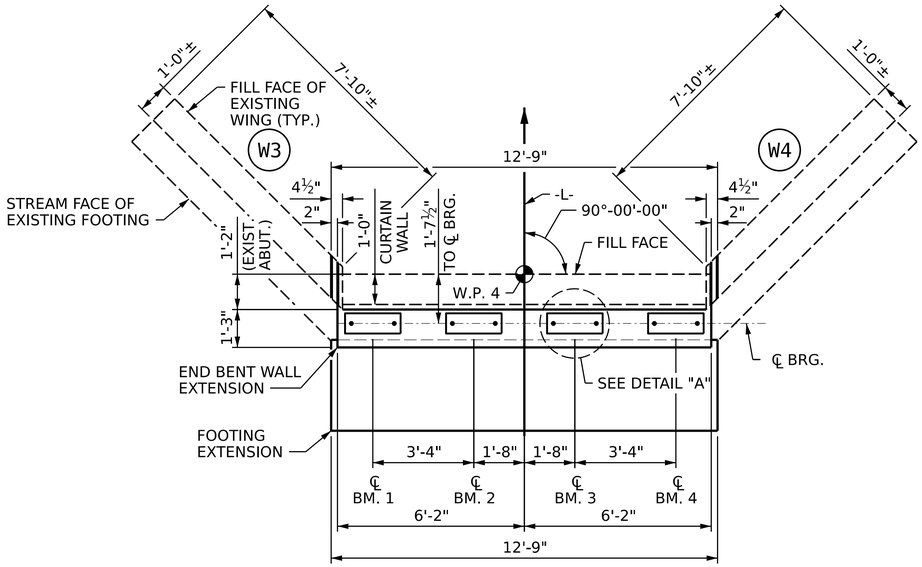
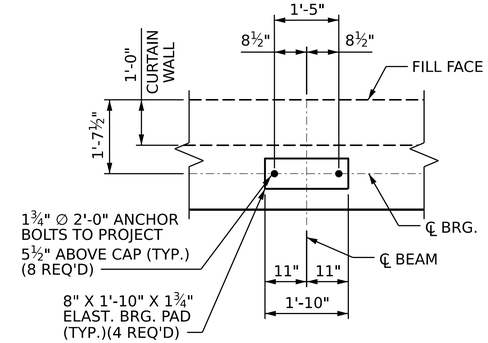
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			13

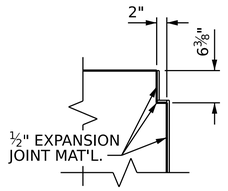
8/26/21



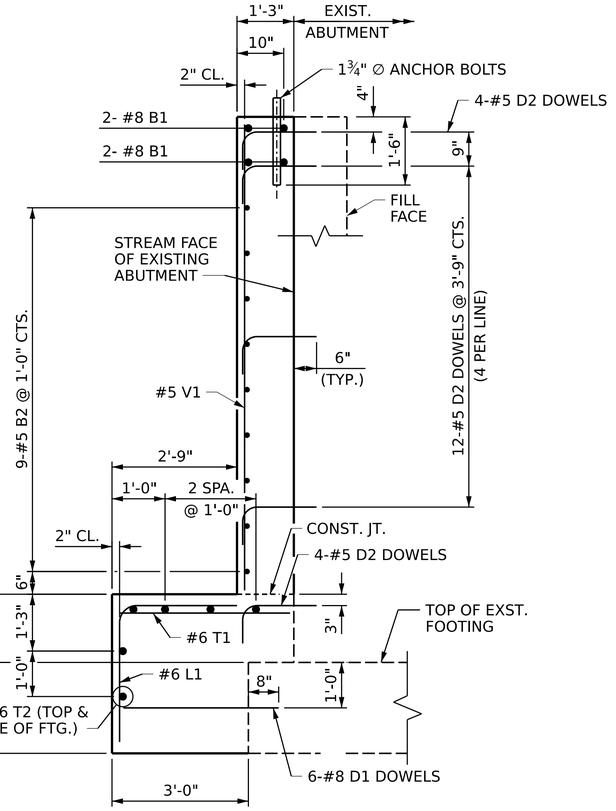
PLAN



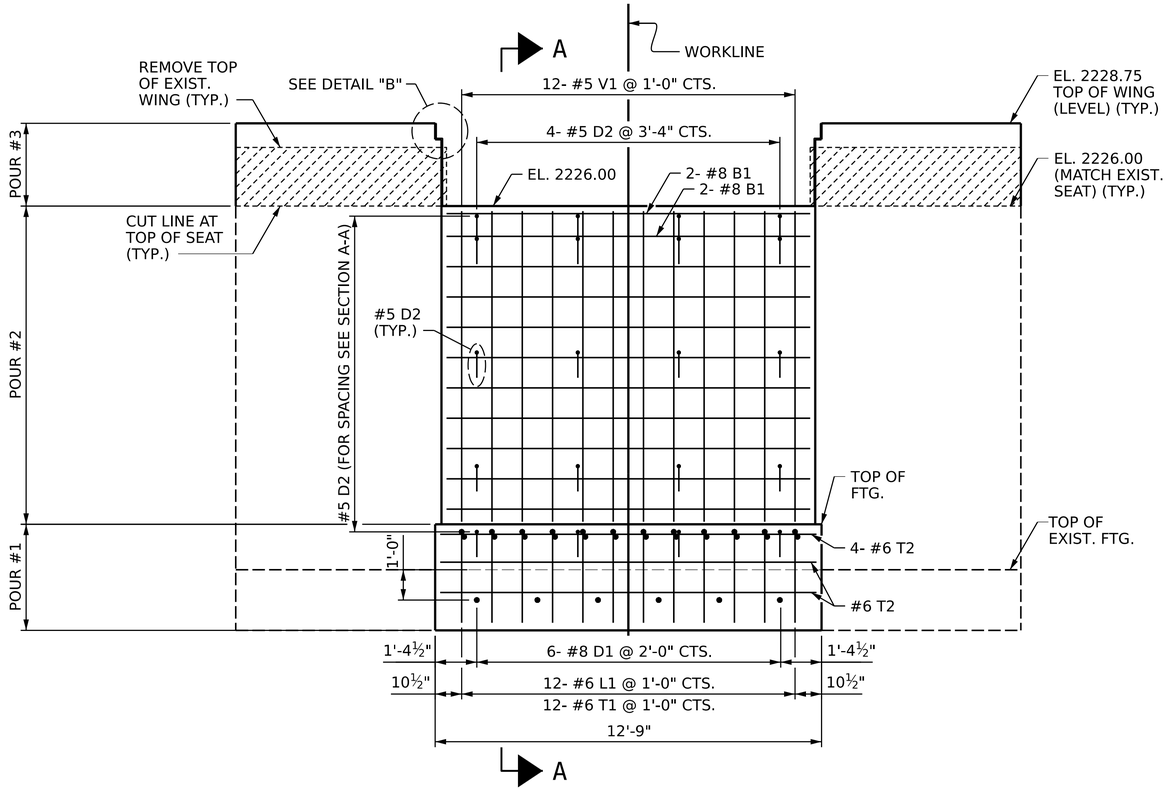
DETAIL "A"



DETAIL "B"



SECTION A-A



ELEVATION

(FOR WING REINFORCING, SEE SHEET 2 OF 2)

PROJECT NO. 100.01.00206

YANCEY COUNTY

STATION: 12+87.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B Nelson Jr 11/4/2025 ACB8082119D74CD...

SUBSTRUCTURE

END BENT 2

DRAWN BY : J. HARRIS DATE : 08/2025

CHECKED BY : R. NELSON DATE : 08/2025

DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

GANNETT FLEMING

One Glenwood Avenue Suite 900 Raleigh, NC 27603 919-420-7660 NC Lic.No. F-0270

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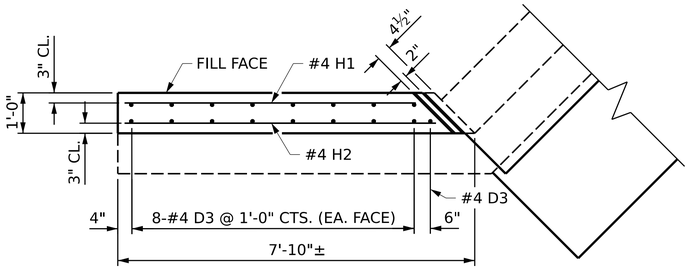
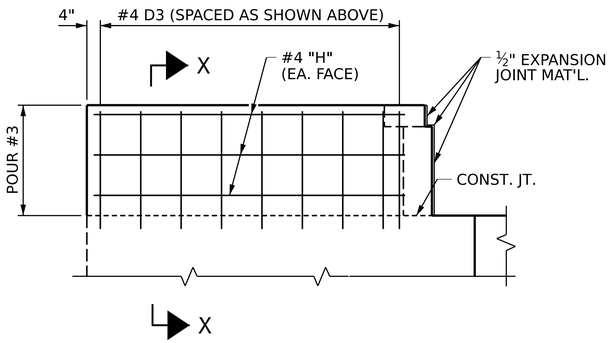
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			13

8/26/21



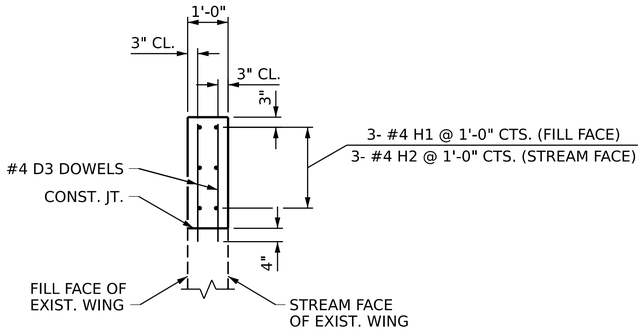
PLAN OF WING W3

(WING W3 SHOWN. WING W4 SIMILAR.)



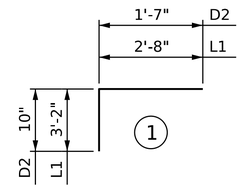
ELEVATION OF WING W3

(WING W3 SHOWN. WING W4 SIMILAR.)



SECTION X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#8	STR.	12'-0"	128
B2	9	#5	STR.	12'-0"	113
D1	6	#8	STR.	3'-6"	56
D2	20	#5	1	2'-5"	50
D3	17	#4	STR.	2'-11"	33
H1	6	#4	STR.	7'-2"	29
H2	6	#4	STR.	7'-8"	31
L1	12	#6	1	5'-10"	105
T1	12	#6	STR.	4'-0"	72
T2	6	#6	STR.	12'-5"	112
V1	12	#5	STR.	10'-6"	131

REINFORCING STEEL	LBS.	860
CLASS A CONCRETE BREAKDOWN		
POUR 1	C.Y.	5.8
POUR 2	C.Y.	6.9
POUR 3	C.Y.	1.7
TOTAL	C.Y.	14.4

NOTES:

EXISTING DIMENSIONS OF THE EXISTING END BENT NO. 2 ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIF THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.

FIELD CUT REBAR WHEN NECESSARY TO MAINTAIN 2" MINIMUM CONCRETE COVER.

FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE ARTICLE 420-13 OF THE NCDOT STANDARD SPECIFICATIONS. NO FIELD TESTING IS REQUIRED.

PROJECT NO. 100.01.00206

YANCEY COUNTY

STATION: 12+87.00 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 020208 ENGINEER ERIC B. NELSON JR.

DocuSigned by: Eric B Nelson Jr 11/4/2025 ACB8082119D74CD...

SUBSTRUCTURE

END BENT 2

WING DETAILS

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

DRAWN BY : J. HARRIS DATE : 08/2025

CHECKED BY : R. NELSON DATE : 08/2025

DESIGN ENGINEER OF RECORD : J. YANNACCONE DATE : 08/2025

GANNETT FLEMING

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic.No. F-0270

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" ∅ SHEAR STUDS FOR THE ¾" ∅ STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" ∅ STUDS FOR 4 - ¾" ∅ STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" ∅ STUDS ALONG THE BEAM AS SHOWN FOR ¾" ∅ STUDS BASED ON THE RATIO OF 3 - ⅞"∅ STUDS FOR 4 - ¾" ∅ 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" OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

SHEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 100.01.00206	**TIP** Timeless Ln	**COUNTY** YANCEY	**GEOLOGIST** B. Worley, PG
SITE DESCRIPTION GROW NC/NCEM Support for Private Roads and Private Bridges - Timeless Lane over Cane River			**GROUND WTR (ft)**
BORING NO. B1	**STATION** 13+90	**OFFSET** 2 ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 2,228.9 ft	**TOTAL DEPTH** 15.6 ft	**NORTHING** 1,002,932	**EASTING** 835,765	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&R3763 CME-550X 89% 12/20/2024		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER W. Shenberger	**START DATE** 07/22/25	**COMP. DATE** 07/22/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2230										ELEV. (ft) DEPTH (ft)
										2,228.9 GROUND SURFACE 0.0
										ROADWAY EMBANKMENT Brown, med. dense to dense, Silty SAND (A-2-4) w/ cobbles *interpreted as recent (post-Helene) rdwy embankment fill
2225	2,225.9	3.0	3	13	19	32		D		2,223.9 5.0
										Dark red-brown, med. stiff Sandy SILT (A-4)
2220	2,220.9	8.0	3	2	3	5		M		*some grinding on older embankment fill cobbles and/or boulders
										2,216.9 12.0
2215	2,215.9	13.0	20	24	25	49		D		Gray and brown, dense, Silty SAND (A-2-4) w/ gravel and cobbles
	2,213.3	15.6	60/0.0			60/0.0				2,213.3 15.6
										CRYSTALLINE ROCK (biotite gneiss) Boring Terminated with Standard Penetration Test Refusal at Elevation 2,213.3 ft on Crystalline Rock (biotite gneiss) *Drilled 15 ft. towards US19W from existing end bend / wing wall

SHEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 100.01.00206	**TIP** Timeless Ln	**COUNTY** YANCEY	**GEOLOGIST** B. Worley, PG
SITE DESCRIPTION GROW NC/NCEM Support for Private Roads and Private Bridges - Timeless Lane over Cane River			**GROUND WTR (ft)**
BORING NO. B2-A	**STATION** 12+50	**OFFSET** 5 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2,209.8 ft	**TOTAL DEPTH** 1.7 ft	**NORTHING** 1,002,791	**EASTING** 835,772	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&R3763 CME-550X 89% 12/20/2024		**DRILL METHOD** Solid Augers	**HAMMER TYPE** Automatic
DRILLER W. Shenberger	**START DATE** 07/21/25	**COMP. DATE** 07/21/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2210										ELEV. (ft) DEPTH (ft)
										2,209.8 GROUND SURFACE 0.0
										2,208.1 **ALLUVIAL** Cobbles, boulders, and Silty SAND (A-2-4) *Post-Helene re-worked alluvial 1.7
										CRYSTALLINE ROCK (biotite gneiss) Boring Terminated by Auger Refusal at Elevation 2,208.1 ft on Crystalline Rock (biotite gneiss)

SHEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 100.01.00206	**TIP** Timeless Ln	**COUNTY** YANCEY	**GEOLOGIST** B. Worley, PG
SITE DESCRIPTION GROW NC/NCEM Support for Private Roads and Private Bridges - Timeless Lane over Cane River			**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 12+50	**OFFSET** 4 ft RT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 2,209.9 ft	**TOTAL DEPTH** 2.6 ft	**NORTHING** 1,002,792	**EASTING** 835,772 — **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&R3763 CME-550X 89% 12/20/2024	**DRILL METHOD** Solid Augers	**HAMMER TYPE** Automatic	
DRILLER W. Shenberger	**START DATE** 07/21/25	**COMP. DATE** 07/21/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2210										ELEV. (ft) DEPTH (ft)
										2,209.9 GROUND SURFACE 0.0
										ALLUVIAL Cobbles, boulders, and Silty SAND (A-2-4) *Post-Helene re-worked alluvial
										2,207.3 2.6
										CRYSTALLINE ROCK (biotite gneiss) Boring Terminated by Auger Refusal at Elevation 2,207.3 ft on Crystalline Rock (biotite gneiss)

NCDOT BORE SINGLE YANCEY 100.01.00206_GEO_GINT.GPJ NC_DOT.GDT 7/28/25

SHEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 100.01.00206	**TIP** Timeless Ln	**COUNTY** YANCEY	**GEOLOGIST** B. Worley, PG
SITE DESCRIPTION GROW NC/NCEM Support for Private Roads and Private Bridges - Timeless Lane over Cane River			**GROUND WTR (ft)**
BORING NO. B3-A	**STATION** 11+81	**OFFSET** 7 ft RT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 2,212.7 ft	**TOTAL DEPTH** 3.1 ft	**NORTHING** 1,002,724	**EASTING** 8,357,779 — **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&R3763 CME-550X 89% 12/20/2024	**DRILL METHOD** Solid Augers	**HAMMER TYPE** Automatic	
DRILLER W. Shenberger	**START DATE** 07/22/25	**COMP. DATE** 07/22/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2215										ELEV. (ft) DEPTH (ft)
										2,212.7 GROUND SURFACE 0.0
2210										**ALLUVIAL** Cobbles, boulders, and Silty SAND (A-2-4)
										2,209.6 *Post-Helene re-worked alluvial 3.1
										CRYSTALLINE ROCK (biotite gneiss) Boring Terminated by Auger Refusal at Elevation 2,209.6 ft on Crystalline Rock (biotite gneiss)

NCDOT BORE SINGLE YANCEY 100.01.00206_GEO_GINT.GPJ NC_DOT.GDT 7/28/25

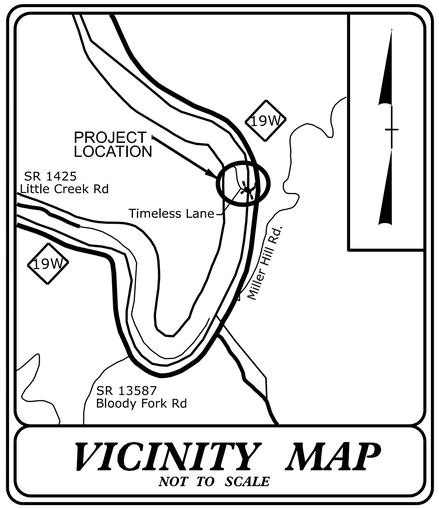
SHEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 100.01.00206	**TIP** Timeless Ln	**COUNTY** YANCEY	**GEOLOGIST** B. Worley, PG
SITE DESCRIPTION GROW NC/NCEM Support for Private Roads and Private Bridges - Timeless Lane over Cane River			**GROUND WTR (ft)**
BORING NO. B3-B	**STATION** 11+78	**OFFSET** 1 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 2,213.0 ft	**TOTAL DEPTH** 3.7 ft	**NORTHING** 1,002,721	**EASTING** 835,781	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&R3763 CME-550X 89% 12/20/2024		**DRILL METHOD** Solid Augers	**HAMMER TYPE** Automatic
DRILLER W. Shenberger	**START DATE** 07/22/25	**COMP. DATE** 07/22/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2215										ELEV. (ft) DEPTH (ft)
										2,213.0 GROUND SURFACE 0.0
2210										**ALLUVIAL** Cobbles, boulders, and Silty SAND (A-2-4) *Post-Helene re-worked alluvial 2,209.3 3.7
										CRYSTALLINE ROCK (biotite gneiss) Boring Terminated by Auger Refusal at Elevation 2,209.3 ft on Crystalline Rock (biotite gneiss)

PROJECT: 100.01.00206



VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
EMERGENCY MANAGEMENT

PLAN FOR PROPOSED
EROSION CONTROL

YANCEY COUNTY

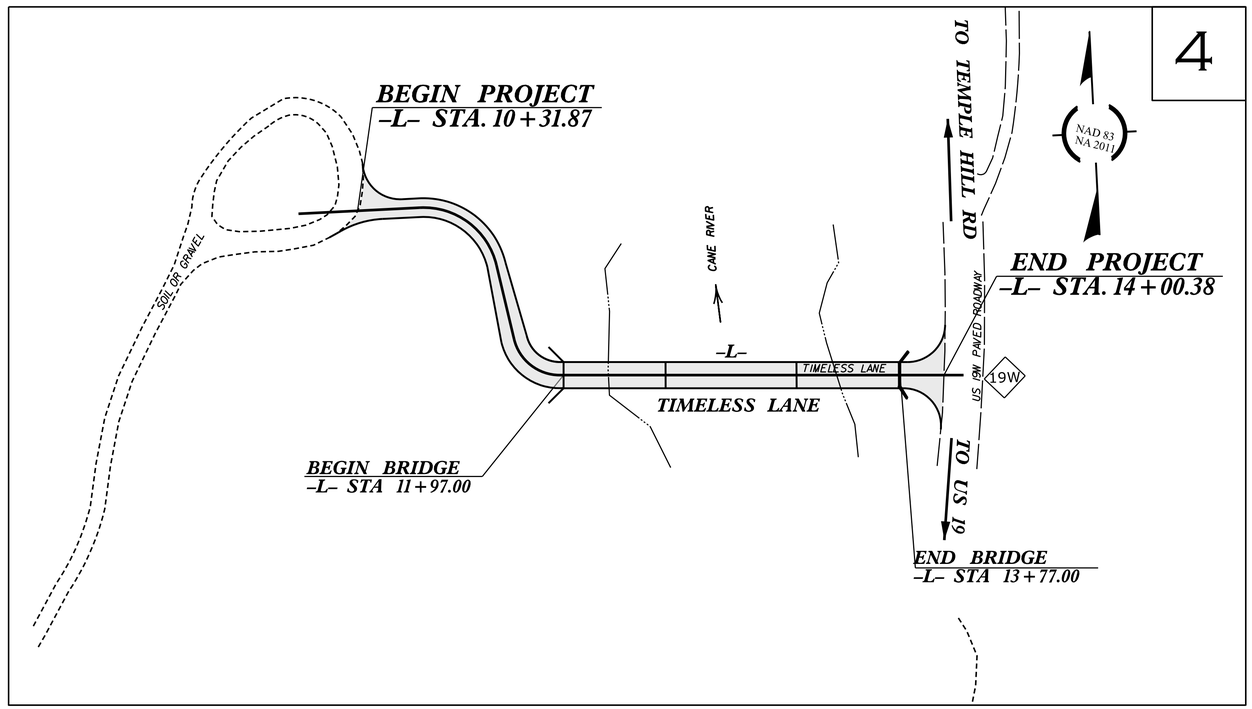
LOCATION: *PRIVATE BRIDGE ON TIMELESS LANE OVER CANE RIVER*

TYPE OF WORK: *GRADING,PAVING & STRUCTURE*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	100.01.00206	EC-1	4

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

DIVISION 13



HIGH QUALITY WATER(S) EXIST ON THIS PROJECT

High Quality Water Zone(s) Exist
From Sta. BEGIN
to Sta. END
Refer To E. C. Special Provisions for Special Considerations.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

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

GRAPHIC SCALE

40 20 0 20 40
PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL STORMWATER CONSTRUCTION PERMIT ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES.

GANNETT FLEMING
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Suite 900
Raleigh, NC 27603
919-420-7660
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NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN JR.

Prepared In the Office of:
Gannett Fleming
One Glenwood Ave.
Suite 900
Raleigh, NC 27603

Designed by:

William Jernigan — *3395*
NAME — *LEVEL III CERTIFICATION NO.*

EMERGENCY MANAGEMENT NORTH CAROLINA

SYSTIMEXSYSNAMEXSYSDESIGNXSYSDRAWNXSYSCHECKEDXSYSDESCRIPTIONXSYSDATEXSYSREVISIONS

PROJECT REFERENCE NO.	SHEET NO.
100.01.00206	EC-02

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

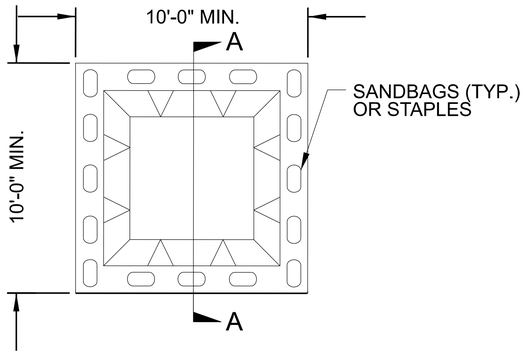
EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	TSD
1630.04	Stilling Basin	
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1630.07	Skimmer Basin	
1630.08	Tiered Skimmer Basin	
1630.09	Earthen Dam with Skimmer	
	Infiltration Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

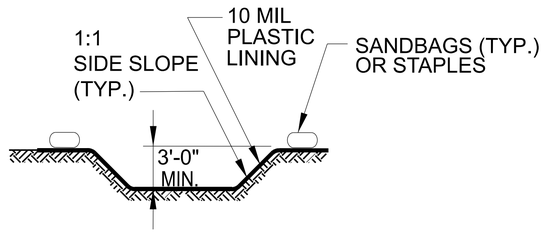
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet Sediment Trap Type A	A
1635.02	Rock Pipe Inlet Sediment Trap Type B	B
1636.01	Excelsior Wattle Check	
1636.01	Excelsior Wattle Check with Flocculant	
1636.01	Coir Fiber Wattle Check	
1636.01	Coir Fiber Wattle Check with Flocculant	
1636.02	Silt Fence Excelsior Wattle Break	EW
	Silt Fence Coir Fiber Wattle Break	CFW
1636.03	Excelsior Wattle Barrier	EW EW EW
1636.03	Coir Fiber Wattle Barrier	CFW CFW CFW

5/26/20

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A

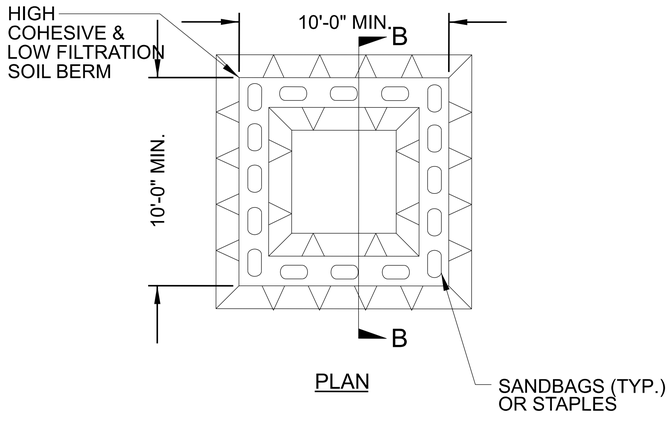
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

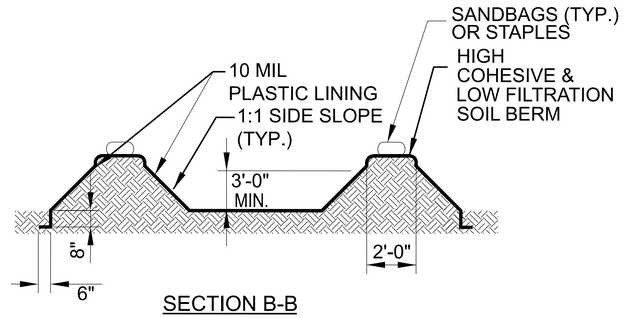
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE



PLAN



SECTION B-B

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

100.01.00206
EC-3

NORTH CAROLINA DEPARTMENT OF EMERGENCY MANAGEMENT
YANCEY COUNTY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

GANNETT FLEMING

PROJECT REFERENCE NO.	SHEET NO.
100.01.00206	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040302 ENGINEER WILLIAM K. JERNIGAN

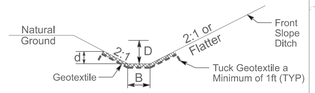
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

11/14/23

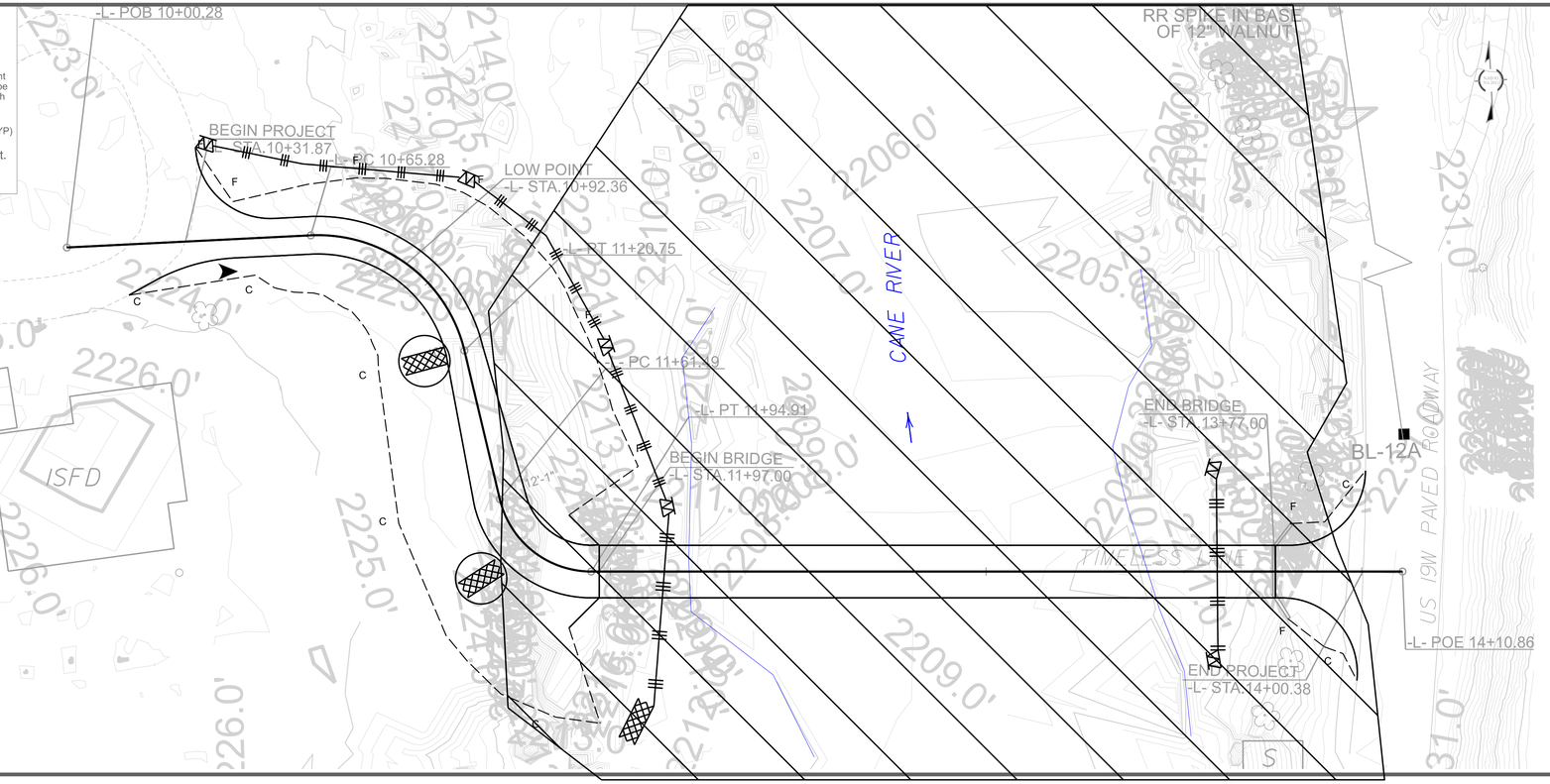
DETAIL A
SPECIAL BASE DITCH
(Not to Scale)



Min. D= 1Ft.
d=0.5 Ft.
B=4 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In

FROM -L- STA. 10+51 TO -L- STA. 11+97 RT.



GRAPHIC SCALE

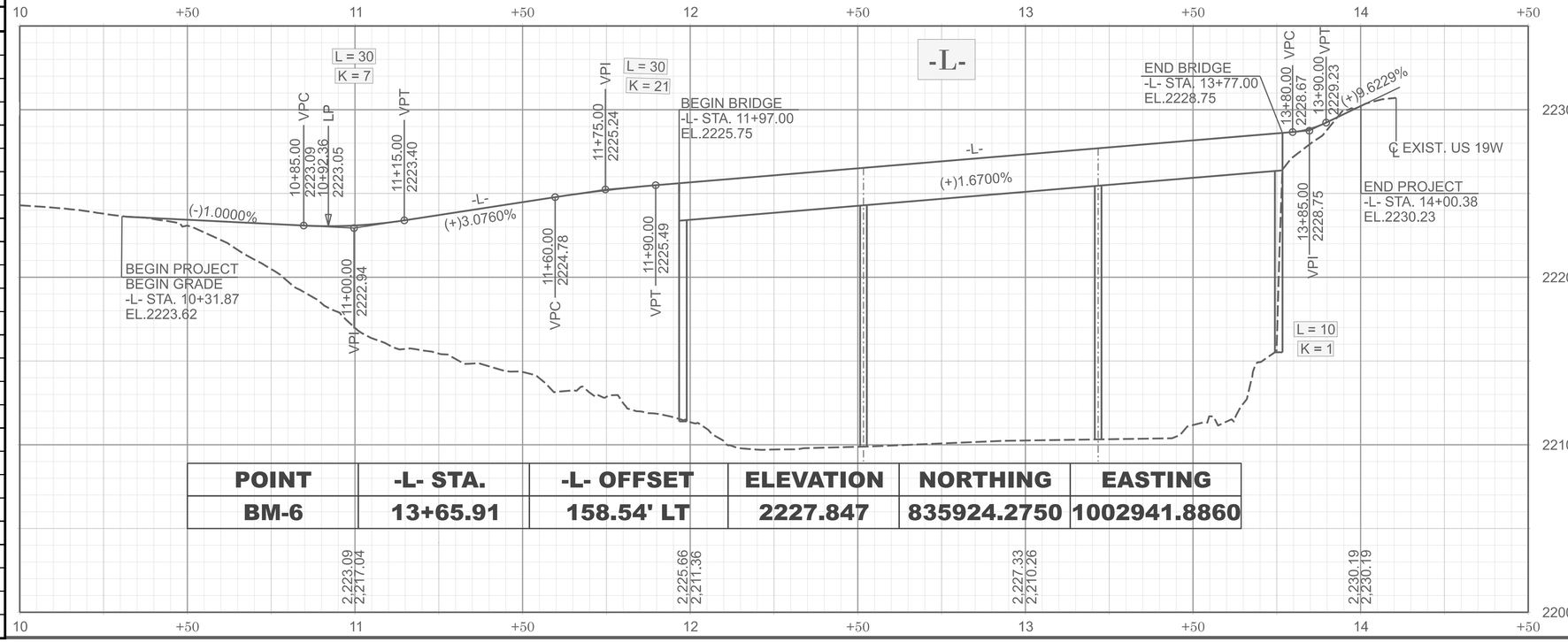
40 20 0 20 40

PLANS

TROUT STREAM BUFFER ZONE

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

Erosion Control Quantities		
DESCRIPTION	**QUANTITY**	**UNIT**
GEOTEXTILE FOR DRAINAGE	250	SY
TEMPORARY SILT FENCE	445	LF
EROSION CONTROL STONE, CLASS A	40	TON
EROSION CONTROL STONE, CLASS B	50	TON
SEDIMENT CONTROL STONE	85	TON
TEMPORARY MULCHING	0.5	ACR
SEED FOR TEMPORARY SEEDING	100	LB
FERTILIZER FOR TEMPORARY SEEDING	0.5	TON
TEMPORARY SLOPE DRAINS	200	LF
SAFETY FENCE	260	LF
SILT EXCAVATION	70	CY
MATTING FOR EROSION CONTROL	7515	SY
COIR FIBER MAT	100	SY
1/4" HARDWARE CLOTH	140	LF
SPECIAL STILLING BASINS	2	EA
FLOCCULANT	10	LB
SEEDING AND MULCHING	0.5	ACR
MOWING	0.5	ACR
SEED FOR REPAIR SEEDING	50	LB
FERTILIZER FOR REPAIR SEEDING	0.25	TON
SEED FOR SUPPLEMENTAL SEEDING	50	LB
FERTILIZER TOPDRESSING	0.25	TON
SPECIALIZED HAND MOWING	10	MHR
RESPONSE FOR EROSION CONTROL	25	EA
REFORESTATION	0.1	ACR
CONCRETE WASHOUT STRUCTURE	1	EA



POINT	-L- STA.	-L- OFFSET	ELEVATION	NORTHING	EASTING
BM-6	13+65.91	158.54' LT	2227.847	835924.2750	1002941.8860

100.01.00206
EC-4

NORTH CAROLINA DEPARTMENT OF EMERGENCY MANAGEMENT
YANCEY COUNTY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

GANNETT FLEMING

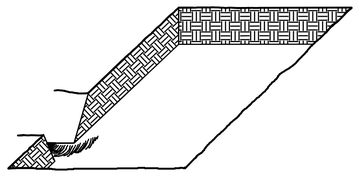
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	100.01.00206	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

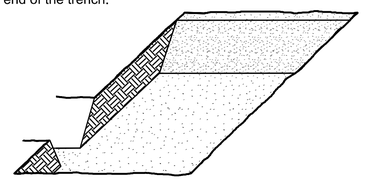
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

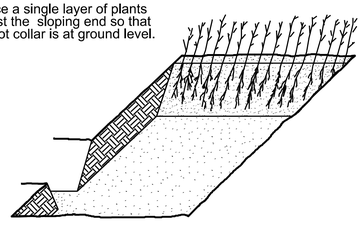
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



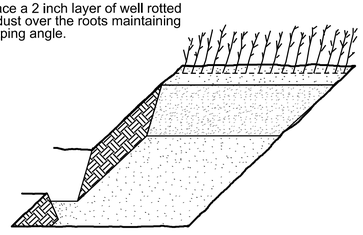
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

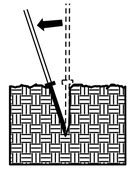


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

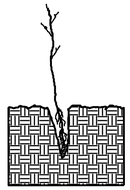


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

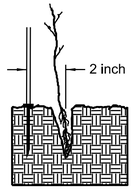
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



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

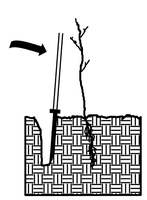


2. Remove planting bar and place seedling at correct depth.

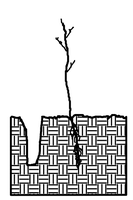


3. Insert planting bar 2 inches toward planter from seedling.

4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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

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

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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040302 WILLIAM K. JERNIGAN, JR.

REFORESTATION

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

REFORESTATION

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

34% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
33% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
33% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

REFORESTATION DETAIL SHEET

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

PRB.35493

Site # 059-01-5d1d5
Private Drive near 1505 Davistown Church Road (SR 1131)
Lytle Branch in McDowell County
WBS 51830.2.13.44

Docusign Envelope ID: 1251DA13-A6B0-44D2-A399-617F89187726

8/17/99

ROADWAY QUANTITIES

DESCRIPTION	QUANTITY	UNIT
CLEARING & GRUBBING	0.3	ACRE
UNCLASSIFIED EXCAVATION	20	CY
BORROW EXCAVATION	10	SY
FINE GRADING	500	SY
AGGREGATE BASE COURSE	73	TON
ASPHALT TYPE S9.5B	20	TON
ASPHALT BINDER	5	TON
GEOTEXTILE FOR DRAINAGE	190	SY

HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St.
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
059-01-5DID5	1
R/W SHEET NO.	

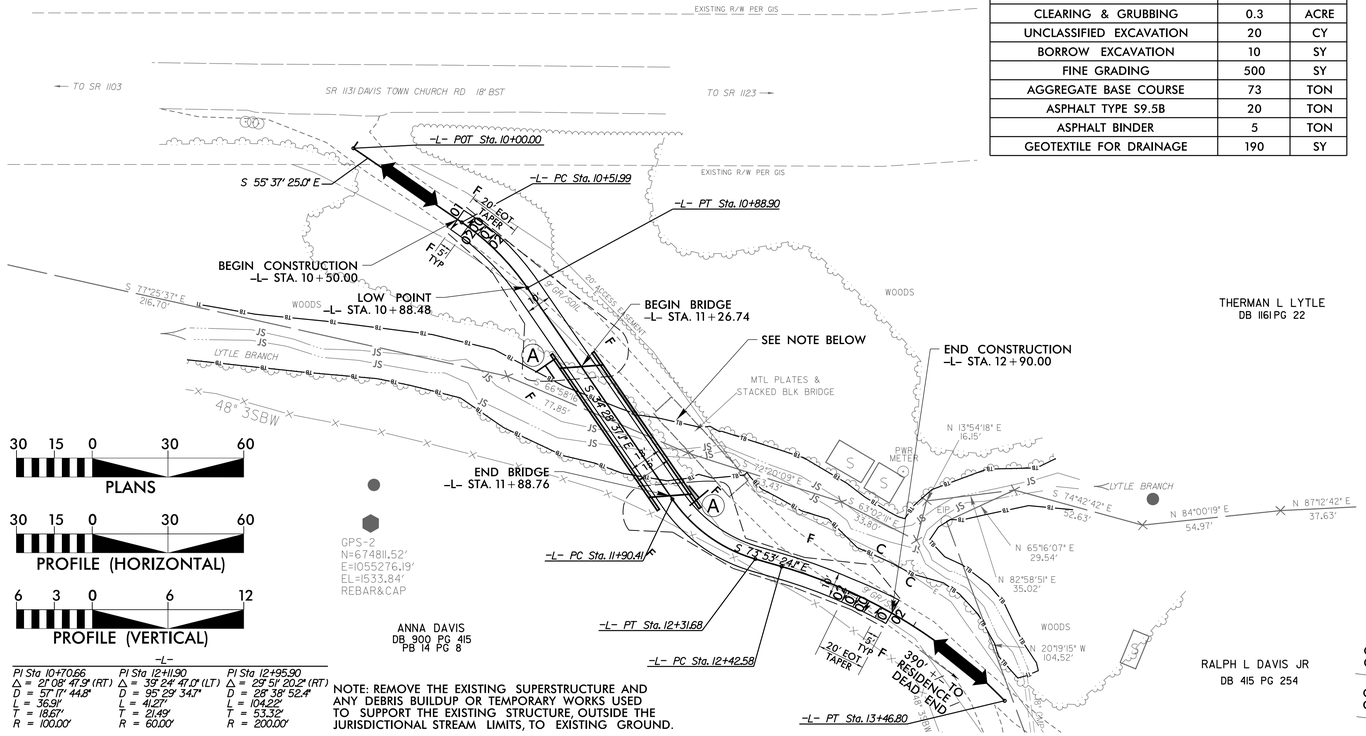
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 37950 ENGINEER — Signed by Nicholas Rae Mitchell — 1/16/2026

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 40801 ENGINEER — Signed by Caleb Lawrence Cameron — 1/20/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

POINT	–L– STA.	–L– OFFSET	ELEVATION	NORTHING	EASTING
GPS–2	11+30.70	103.94' RT	1,533.84'	674811.52'	1055276.19'

NAD 83/NA 2011



30 15 0 30 60
PLANS

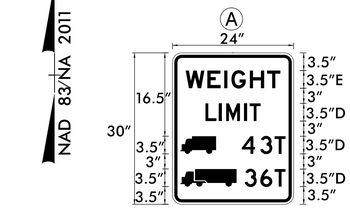
30 15 0 30 60
PROFILE (HORIZONTAL)

6 3 0 6 12
PROFILE (VERTICAL)

–L–

PI Sta 10+70.66	PI Sta 12+11.90	PI Sta 12+95.90
Δ = 21°08' 47.9" (RT)	Δ = 39° 24' 47.1" (LT)	Δ = 29° 51' 20.2" (RT)
D = 57° 17' 44.8"	D = 95° 29' 34.7"	D = 28° 38' 52.4"
L = 36.91'	L = 41.27'	L = 104.22'
T = 18.67'	T = 21.49'	T = 53.32'
R = 100.00'	R = 60.00'	R = 200.00'

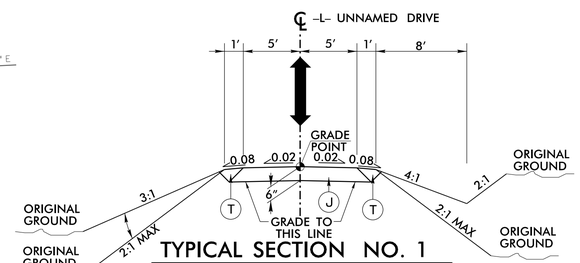
NOTE: REMOVE THE EXISTING SUPERSTRUCTURE AND ANY DEBRIS BUILDUP OR TEMPORARY WORKS USED TO SUPPORT THE EXISTING STRUCTURE, OUTSIDE THE JURISDICTIONAL STREAM LIMITS, TO EXISTING GROUND.



FINAL PAVEMENT SCHEDULE

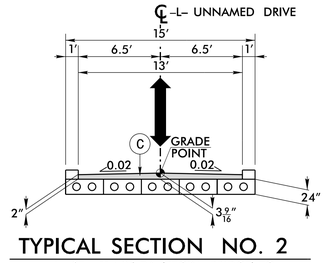
(NCDEM FINAL PAVEMENT DESIGN - JULY 31, 2025)

C	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE,TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD, PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½" IN DEPTH.
J	PROP. 6" AGGREGATE BASE COURSE
T	EARTH MATERIAL



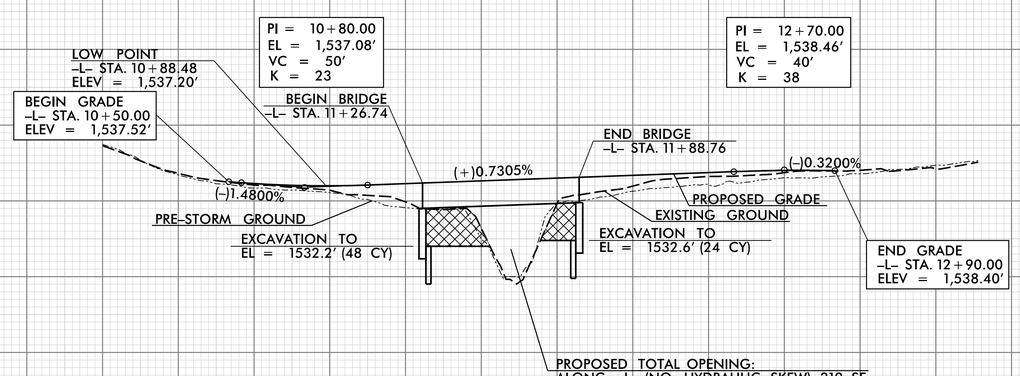
TYPICAL SECTION NO. 1

–L– STA. 10+50.00 TO –L– STA. 11+26.74 (BEGIN BRIDGE)
–L– STA. 11+88.76 (END BRIDGE) TO –L– STA. 12+90.00



TYPICAL SECTION NO. 2

–L– STA. 11+26.74 (BEGIN BRIDGE) TO
–L– STA. 11+88.76 (END BRIDGE)



I HEREBY CERTIFY THAT I HAVE REVIEWED THE EXISTING HYDRAULIC CONVEYANCE AT THIS SITE WHICH WAS A SINGLE SPAN EXISTING BRIDGE WITH THE PROPOSED CONVEYANCE PROVIDED BY THE PROPOSED SINGLE SPAN BRIDGE.

THE PROPOSED BRIDGE LOW CORD FOR THE BRIDGE SHALL BE SET NO LOWER THAN THE TOP OF THE EXISTING BRIDGE LOW CHORD AS DOCUMENTED IN THE HEC-RAS MODEL OBTAINED FROM NCFMP WHICH MEETS THE FEMA DISASTER SPECIFIC GUIDANCE FOR THE REPLACEMENT OF PRIVATE ROADS AND BRIDGES ISSUED ON 14 FEBRUARY 2025, "TO PROVIDE BRIDGE/CULVERT DESIGN PLANS CERTIFIED (SEALED, SIGNED, AND DATED) BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA DEMONSTRATING THAT THE NEWLY DESIGNED AND INSTALLED PRIVATE BRIDGE/CULVERT PROVIDES CONVEYANCE GREATER THAN OR EQUAL TO THE ORIGINAL DESTROYED CROSSING".

THIS CERTIFICATION DEMONSTRATES THAT THE NEWLY DESIGNED AND INSTALLED PRIVATE BRIDGE/CULVERT PROVIDES CONVEYANCE GREATER THAN OR EQUAL TO THE ORIGINAL DESTROYED CROSSING. THIS IS BASED ON THE BEST AVAILABLE DATA PROVIDED FROM POST STORM EVALUATIONS. PORTIONS OF THE EXISTING STRUCTURES MAY HAVE BEEN DESTROYED, REMOVED, MODIFIED OR SHIFTED FROM THEIR ORIGINAL LOCATION OR ELEVATION.

NORTH CAROLINA PROFESSIONAL SEAL 40801 ENGINEER — Caleb Lawrence Cameron

1/20/2026

16-JAN-2026 13:03
\Roadway\Proj\PSH.dgn
HNTB

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	059-01-5D1D5	X-1

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

1545 1540 1535 1530 1525

53:1 0.02 0.02 2:1

1536.50

11+00.00

1545 1540 1535 1530 1525

0.02 0.02 2:1

1537.08

10+75.00

1555 1550 1545 1540 1535 1530 1525

2:1 0.01 0.01 2:1

1537.48

10+50.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

08-JAN-2026 10:40
\\Roadway\CorridorModeling\XPL.dgn
MNTB

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	059-01-5D1D5	X-2

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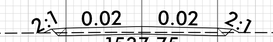
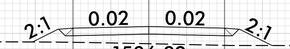
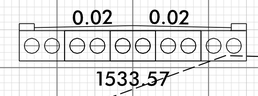


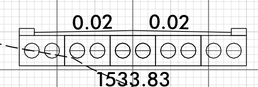
12+25.00



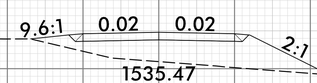
12+00.00



11+75.00



11+50.00



11+25.00

08-JAN-2026 10:40
\Roadway\Corridor Modeling\XPL.dgn
VNB

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	059-01-5D1D5	X-3

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1545
1540
1535
1530

0.02 0.02
1538.37

12+90.00

0.02 0.02 2:1
1538.35

12+75.00

2:1 0.02 0.02 2:1
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12+50.00

08-JAN-2026 10:40
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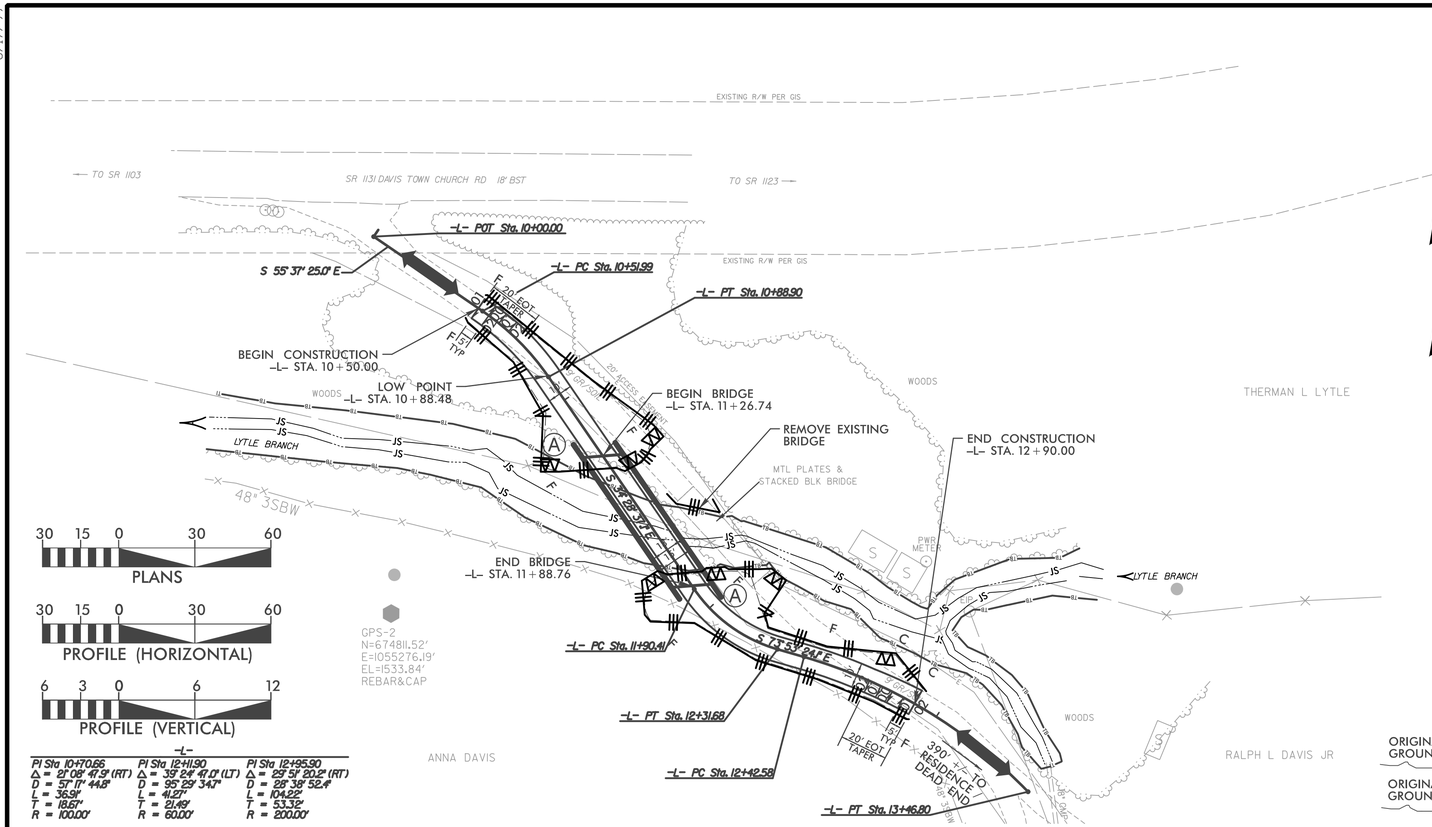
NNB

8/17/99



30 15 0 30 60
PLANS

30 15 0 30 60
PROFILE (HORIZONTAL)

6 3 0 6 12
PROFILE (VERTICAL)

-L-		
PI Sta 10+70.66	PI Sta 12+11.90	PI Sta 12+95.90
Δ = 21° 08' 47.9" (RT)	Δ = 39° 24' 47.0" (LT)	Δ = 29° 51' 20.2" (RT)
D = 57° 17' 44.8"	D = 95° 29' 34.7"	D = 28° 38' 52.4"
L = 36.94'	L = 41.27'	L = 104.22'
T = 18.67'	T = 21.49'	T = 53.32'
R = 100.00'	R = 60.00'	R = 200.00'

HNTB HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St.
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
059-01-5DID5	EC-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of:

HNTB HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St.
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

Designed by:

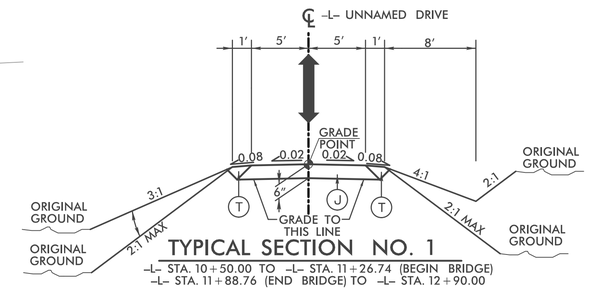
NATALIE CHAN, P.E. *3444*
NAME *LEVEL III CERTIFICATION NO.*

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

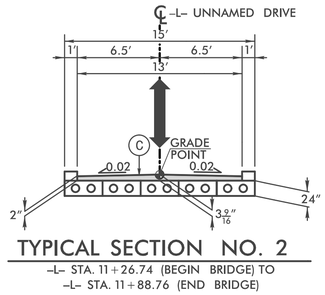
DISTURBED AREA
0.09 AC

LEGEND

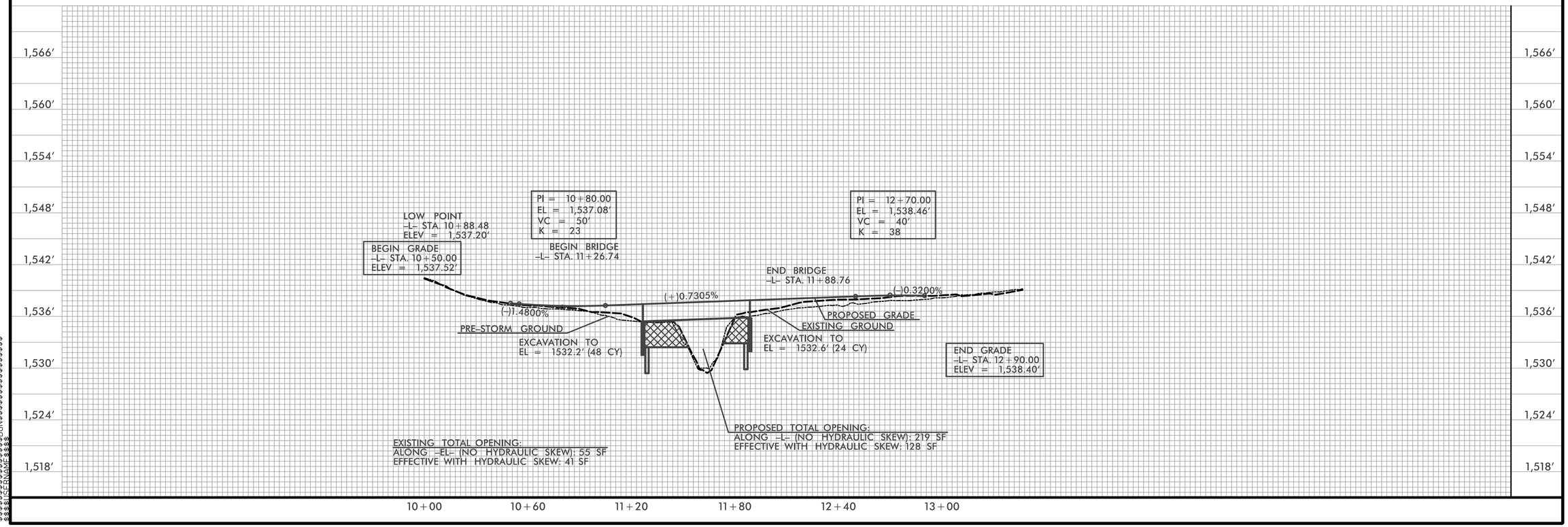
Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	



TYPICAL SECTION NO. 1
-L- STA. 10+50.00 TO -L- STA. 11+26.74 (BEGIN BRIDGE)
-L- STA. 11+88.76 (END BRIDGE) TO -L- STA. 12+90.00



TYPICAL SECTION NO. 2
-L- STA. 11+26.74 (BEGIN BRIDGE) TO
-L- STA. 11+88.76 (END BRIDGE)



$$$$SYSTIME$$$$
$$$$FILENAME$$$$
$$$$DGN$$$$

PROJECT REFERENCE NO.	SHEET NO.
059-01-5DID5	EC-2
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

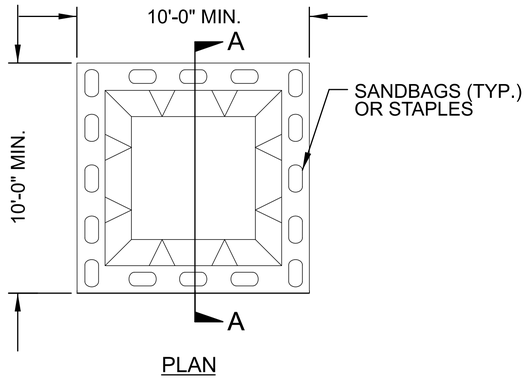
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

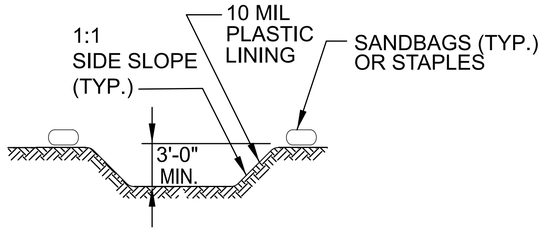
SITE DESCRIPTION	*STABILIZATION TIME*	*TIMEFRAME EXCEPTIONS*
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 TO 4:1	14 DAYS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

PROJECT REFERENCE NO.	SHEET NO.
059-01-5DID5	EC-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

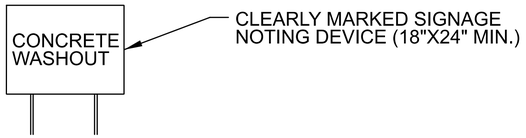
ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



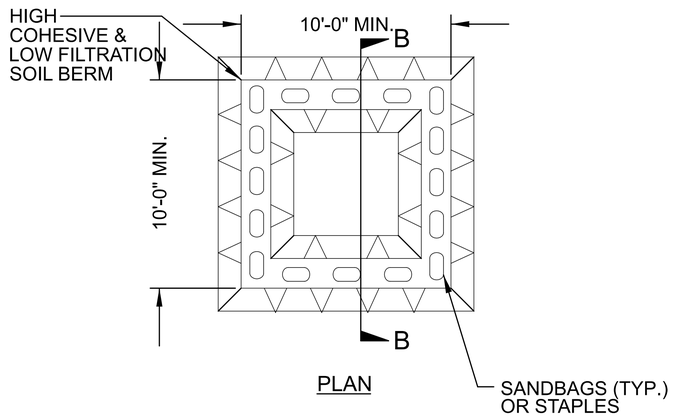
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

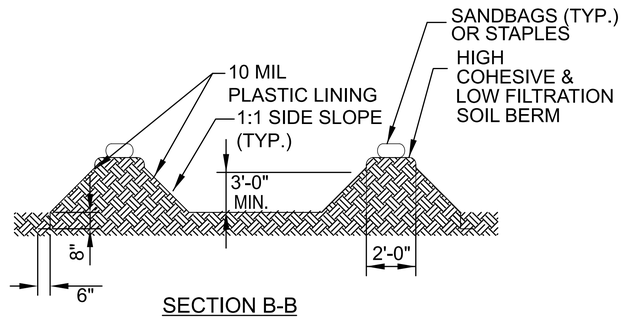
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

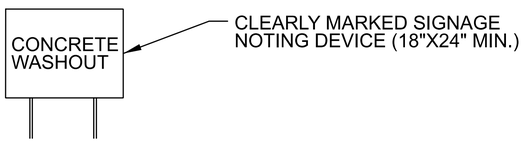
NOT TO SCALE



PLAN



SECTION B-B



NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

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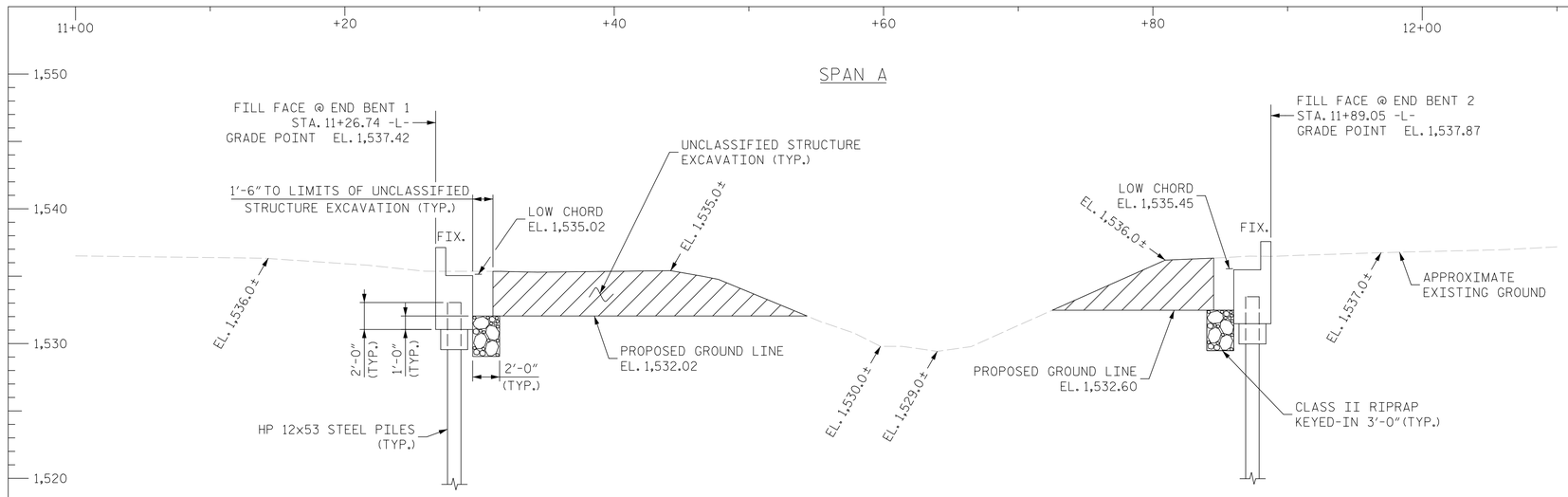
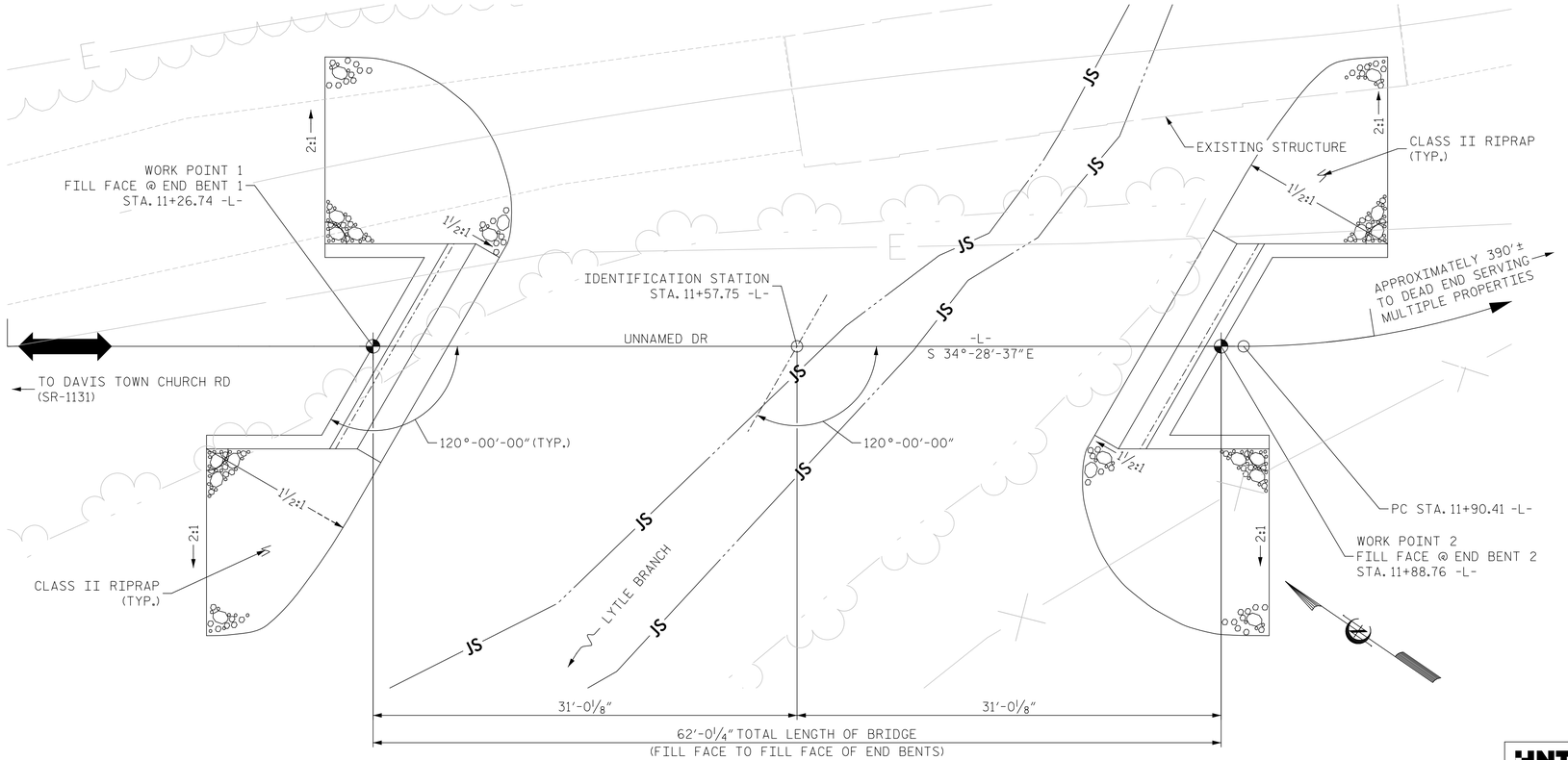


SECTION ALONG -L-

SECTIONS @ END BENTS ARE @ RIGHT ANGLES



PLAN

PILES NOT SHOWN FOR CLARITY.

BRIDGE HYDRAULIC DATA

EXISTING HYDRAULIC OPENING:
EFFECTIVE = 41 SF
ALONG EXIST. = 55 SF

PROPOSED HYDRAULIC OPENING:
EFFECTIVE = 128 SF
ALONG -L- = 219 SF

PI STA. = 10+80.00
EL. = 1,537.08
VC = 50'

PI STA. = 12+70.00
EL. = 1,538.46
VC = 40'

GRADE DATA -L-

CURVE DATA -L-

PI STA. = 12+11.90
Δ = 39°-34'-47.0"(LT)
D = 95°-29'-34.7"
L = 41.27'
T = 21.49'
R = 60.00'

PROJECT NO. 059-01-5D1D5

McDOWELL COUNTY

STATION: 11+57.75 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

GENERAL DRAWING FOR BRIDGE OVER LYTLE BRANCH ON UNNAMED DRIVE

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
1/20/2026

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY D. HORTON DATE 12/25
CHECKED BY D. HAWKINS DATE 12/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 12/25
DWG. NO. 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-1
1			3			TOTAL SHEETS
2			4			12

1/20/2026
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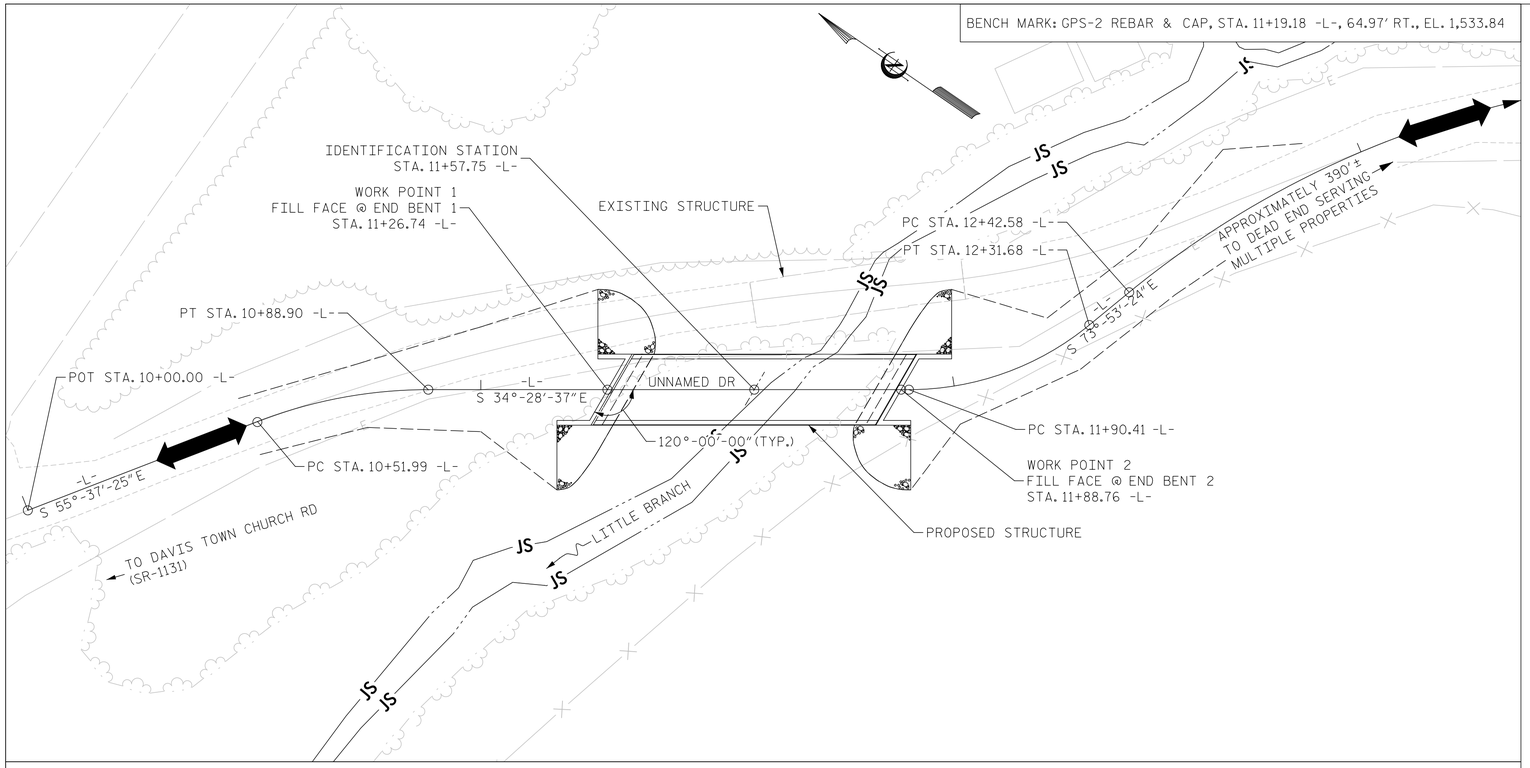

LOCATION SKETCH

NOTE: FOR UTILITIES, SEE NOTES.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STATION 11+57.75 -L-	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 11+57.75 -L-	CLASS A CONCRETE	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES	
	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LBS.	EACH	NO.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM	———	———	———	———	———	———	———
END BENT 1	———	———	LUMP SUM	12.1	1,896	3	3	90
END BENT 2	———	———	LUMP SUM	12.1	1,896	3	3	90
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	24.2	3,792	6	6	180

TOTAL BILL OF MATERIAL

	STEEL PILE POINTS	1'-3"x11" CONCRETE PARAPET	RIP RAP CLASS II	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0"x2'-0" PRESTRESSED CORED SLABS	
	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	———	120	———	———	LUMP SUM	5	300
END BENT 1	3	———	58	65	———	———	———
END BENT 2	3	———	58	65	———	———	———
TOTAL	6	120	116	130	LUMP SUM	5	300

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE NCDOT 2024 STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

A TYPICAL D19-32 HAMMER SHOULD BE SUFFICIENT TO DRIVE THE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO THE REQUIRED DRIVING RESISTANCE. THIS DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE NCDOT 2024 STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

PILE INSTALLATION SHOULD BE CONTINUOUSLY MONITORED BY A GEOTECHNICAL ENGINEER OR QUALIFIED INSPECTOR WORKING UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER.

GENERAL NOTES:

ASSUMED LIVE LOAD = HS-20.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 7'-6" EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

REMOVE THE EXISTING SUPERSTRUCTURE AND ANY DEBRIS BUILDUP, OR TEMPORARY WORKS USED TO SUPPORT THE EXISTING STRUCTURE, LOCATED OUTSIDE THE JURISDICTIONAL STREAM LIMITS. ANCHOR BOLTS, OR ANY PROJECTING REBAR, FOR THE SUBSTRUCTURE SHALL BE REMOVED TO BE FLUSH WITH THE FACE OF SUBSTRUCTURE CONCRETE.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

BRIDGE PARAPET RAIL CONFORMS TO THE DESIGN GUIDELINES FOR NCDEM PRIVATE ROADS AND BRIDGES PROGRAM AND THE FHWA GUIDE FOR BRIDGE CURB/RAIL AND APPROACH TREATMENT FOR EXTREMELY LOW VOLUME ROADS DATED FEBRUARY 9, 2023.

CONTRACTOR SHALL LOCATE UTILITIES AND COORDINATE WITH UTILITY OWNERS PRIOR TO BEGINNING CONSTRUCTION.

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

RECOMMENDED INSPECTION AND MAINTENANCE:

BRIDGE INSPECTION PERFORMED BY A CERTIFIED BRIDGE INSPECTOR IS RECOMMENDED ON THE FOLLOWING SCHEDULE:

YEARS 0-10: INSPECT EVERY 5 YEARS
YEARS 10-20: INSPECT EVERY 4 YEARS
YEARS 20-30: INSPECT EVERY 3 YEARS
YEARS 30+: INSPECT EVERY 2 YEARS

REPAIR ANY PRIORITY MAINTENANCE ITEMS NOTED DURING BRIDGE INSPECTIONS.

IF DETERIORATION IS NOTED IN INSPECTIONS, ACCELERATE SCHEDULE AND INSPECT EVERY 2 YEARS THEREAFTER.

OBSERVE BETWEEN INSPECTIONS FOR CRACKS, RUST OR SPALLING IN CONCRETE OR STEEL COMPONENTS, SIGNS OF EROSION OR SCOURING AROUND ABUTMENTS, DECK SURFACE WEAR, DAMAGE OR DETERIORATION OF SAFETY RAIL.

REMOVE DEBRIS AND SEDIMENT FROM THE DECK AND UNDERNEATH THE BRIDGE TO PREVENT PONDING AND EROSION.

STRUCTURAL MAINTENANCE SHOULD INCLUDE SEALING CRACKS IN CONCRETE, REPAIRING SPALLS WHERE REBAR IS EXPOSED, MILLING AND REPLACING ASPHALT ON BRIDGE DECK TAKING CARE NOT TO DAMAGE THE CORED SLAB UNITS.

MAINTAIN ASPHALT WEARING SURFACE IN GOOD CONDITION ENSURING ANY MILLING ASSOCIATED WITH REPAVING DOES NOT DAMAGE CORED SLAB UNITS.

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins 7B6D7D524B855487...
1/20/2026

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HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY	D. HORTON	DATE 12/25
CHECKED BY	D. HAWKINS	DATE 12/25
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE 12/25

DWG. NO. 2

PROJECT NO. 059-01-5D1D5
McDOWELL COUNTY
STATION: 11+57.75 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

GENERAL DRAWING
LOCATION SKETCH,
GENERAL NOTES, FOUNDATION NOTES, & TOTAL
BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-2
1			3			TOTAL SHEETS
2			4			12

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SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-3	3	145	See Substructure Plans	30			245							
End Bent 2, Piles 1-3	3	145	See Substructure Plans	30			245							
TOTAL QUANTITY:														

$$^{*}RDR = \frac{Factored\ Resistance + Factored\ Drag\ Load + Factored\ Dead\ Load}{Dynamic\ Resistance\ Factor} + Nominal\ Drag\ Load\ Resistance + Nominal\ Resistance\ from\ Scourable\ Material$$

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-3	145			0.60		
End Bent 2, Piles 1-3	145			0.60		

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 1-3				3
End Bent 2, Piles 1-3				3
TOTAL QUANTITY:				6

PROJECT NO. 059-01-5D1D5

McDOWELL COUNTY

STATION: 11+57.75 -L-

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Daniel H. Kubinski, #046042) on 01-12-2026.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DANIEL W. HAWKINS 1/20/2026

Signed by: Daniel W. Hawkins

SIGNATURE DATE

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STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

PILE FOUNDATION TABLES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-3
1			3			TOTAL SHEETS
2			4			12

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

LOAD TYPE	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					
						LIVE-LOAD FACTORS (γ LL)	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)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HS-20 (INVENTORY)	36.000	1	1.73	62	1.75	0.25	2.00	60'	EL	29.5	0.38	1.73	60'	EL	47.5	0.80	0.25	2.52	60'	EL	47.5	
	HS-20 (OPERATING)	36.000		1.95	70	1.35	0.25	2.60	60'	EL	29.5	0.38	1.95	60'	EL	47.5	N/A	--	--	--	--	--	
EMERGENCY VEHICLE (EV)	EV2	28.750		2.06	59	1.30	0.25	3.16	60'	EL	29.5	0.38	2.06	60'	EL	29.5	0.80	0.25	2.64	60'	EL	47.5	
	EV3	43.000	2	1.76	75	1.30	0.25	2.05	60'	EL	29.5	0.38	1.76	60'	EL	35.5	0.80	0.25	2.31	60'	EL	47.5	

LRFR SUMMARY

FOR SPAN "A"

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.

THE SHEAR RATING WAS CONTROLLED BY THE LONGITUDINAL STEEL REQUIREMENT IN THE MANUAL FOR BRIDGE EVALUATION (3RD ED. WITH ERRATA AND INTERIM REVISIONS THOUGH 2022) SECTION 6A.5.8.

(#) CONTROLLING LOAD RATING
1 DESIGN LOAD RATING (HS-20)
2 EMERGENCY VEHICLE LOAD RATING **
** SEE CHART FOR VEHICLE TYPE
GIRDER LOCATION
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER- EXTERIOR RIGHT GIRDER

PROJECT NO. 059-01-5D1D5

McDOWELL COUNTY

STATION: 11+57.75 -L-

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS

Signed by: David W. Hawkins

1/20/2026

STATE OF NORTH CAROLINA

DEPARTMENT OF PUBLIC SAFETY

LRFR SUMMARY FOR 60' CORED SLAB UNIT 120° SKEW

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY D. HORTON DATE 12/25
CHECKED BY D. HAWKINS DATE 12/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 12/25

DWG. NO. 4

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-4
1			3			TOTAL SHEETS
2			4			12

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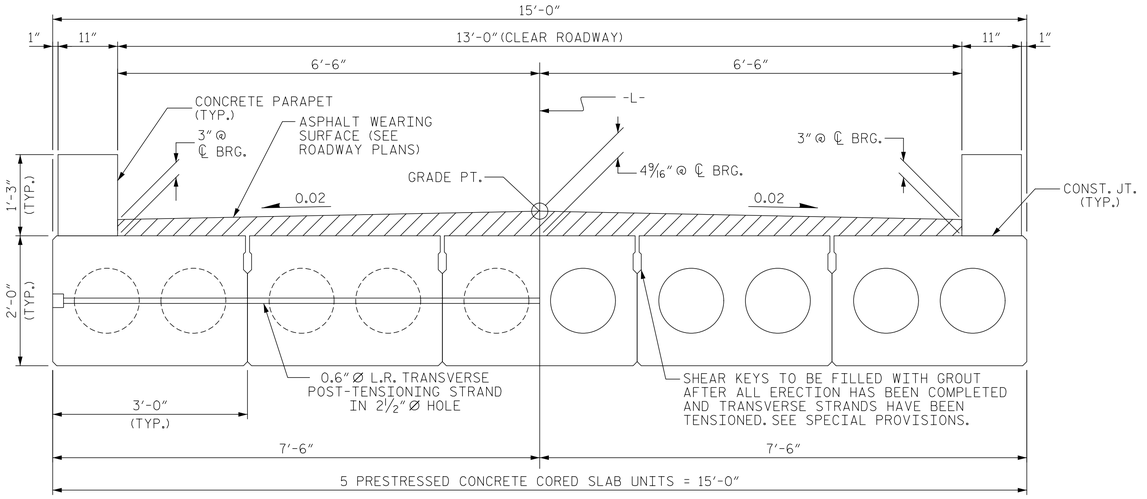
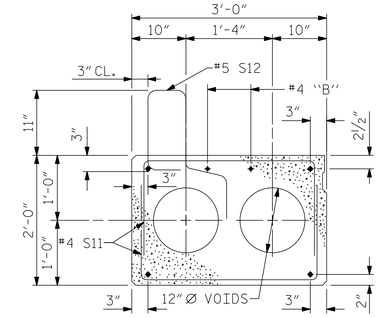


HALF SECTION AT INTERMEDIATE DIAPHRAGMS

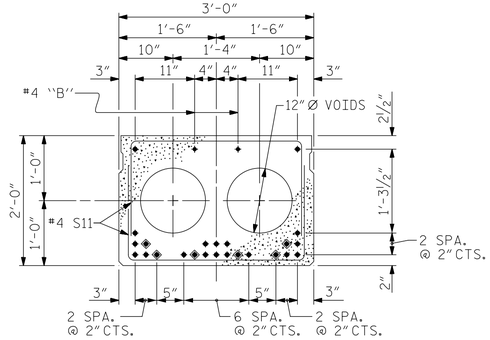
HALF SECTION THROUGH VOIDS

TYPICAL SECTION



EXTERIOR SLAB SECTION

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



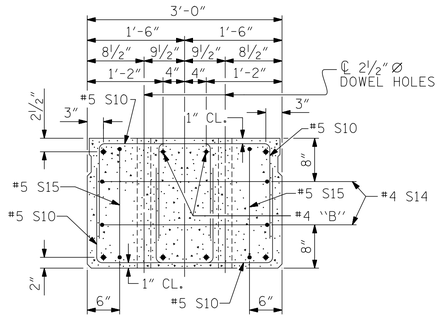
INTERIOR SLAB SECTION

(24 STRANDS REQUIRED)

0.6″ Ø LOW RELAXATION STRAND LAYOUT

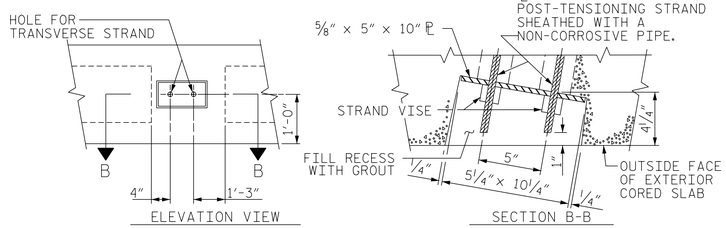
◈ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12′-0″ FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

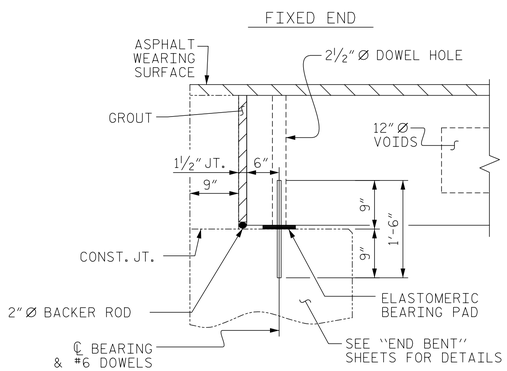


END ELEVATION

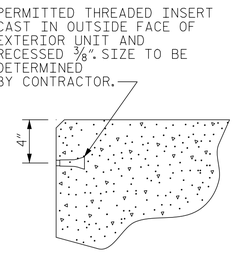
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



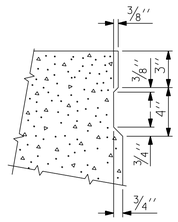
GROUTED RECESS AT END OF POST-TENSIONED STRAND ◦ CORED SLABS



SECTION AT END BENT



THREADED INSERT DETAIL



SHEAR KEY DETAIL

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

PROJECT NO. 059-01-5D1D5

McDOWELL COUNTY

STATION: 11+57.75 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA

DEPARTMENT OF PUBLIC SAFETY

3′-0″ X 2′-0″ PRESTRESSED CONCRETE CORED SLAB UNIT

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS

Signed by: David W. Hawkins 8E2D75B0B55487

1/20/2026

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NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY D. HORTON DATE 12/25
CHECKED BY D. HAWKINS DATE 12/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 12/25

DWG. NO. 5

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-5
1			3			TOTAL SHEETS
2			4			12

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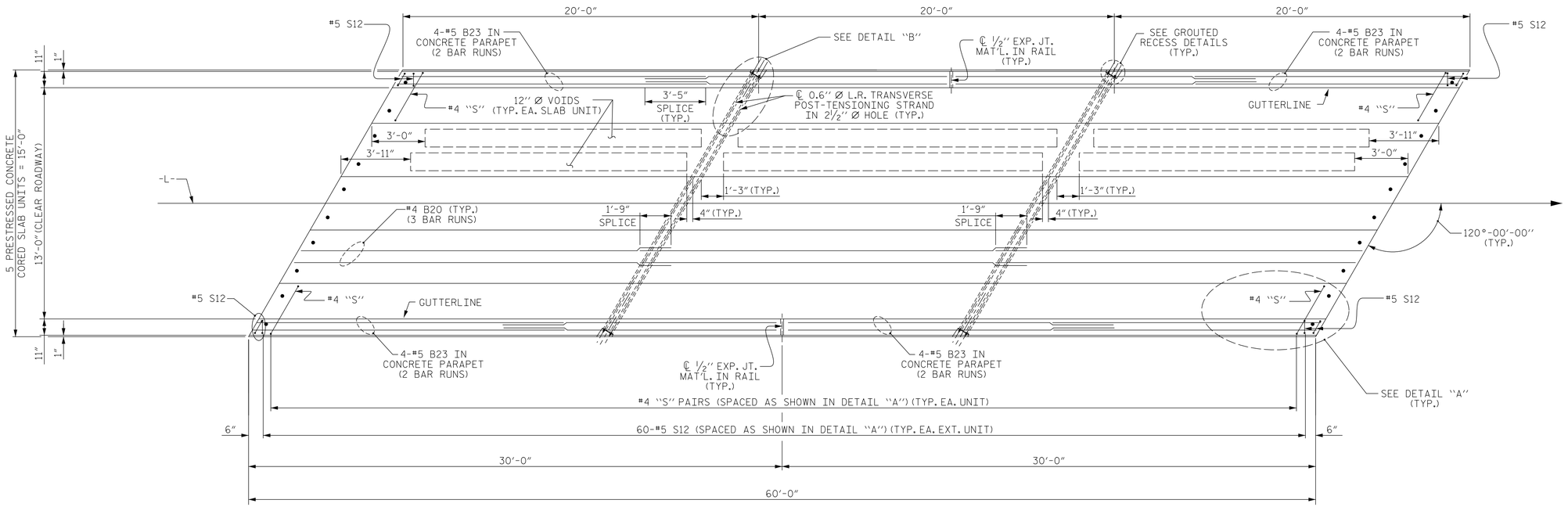
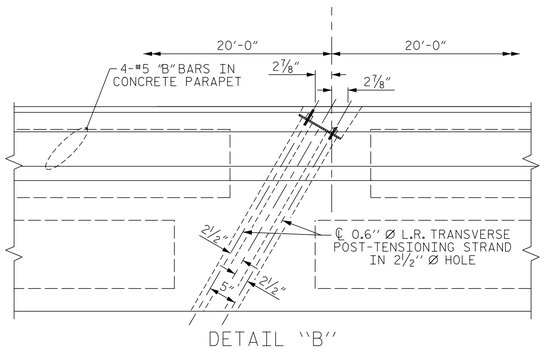
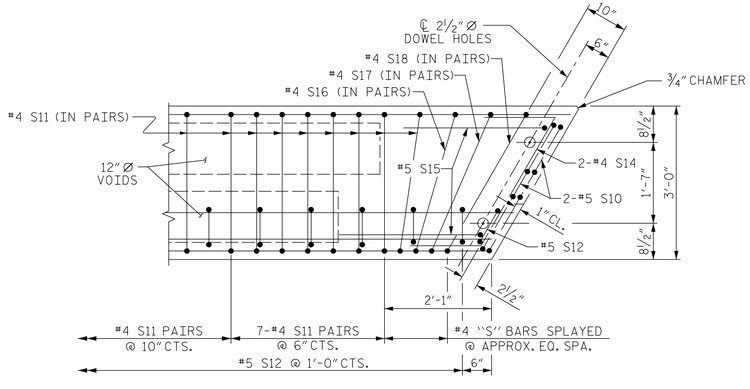


PLAN OF UNIT



DETAIL "B"

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



DETAIL "A"

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

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
1/20/2026

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4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

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CHECKED BY	D. HAWKINS	DATE 12/25
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE 12/25

DWG. NO. 6

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-6
1			3			TOTAL SHEETS
2			4			12

PROJECT NO. 059-01-5D1D5

McDOWELL **COUNTY**

STATION: 11+57.75 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

PLAN OF 60' UNIT 13'-0" CLEAR ROADWAY 120° SKEW

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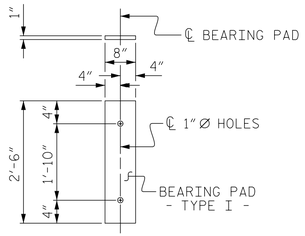
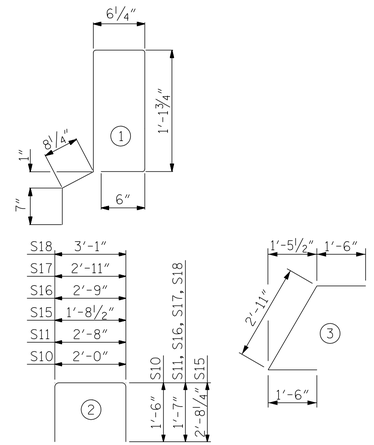


FIXED END
(TYPE I - 10 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

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

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

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

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

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

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

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

ALL REINFORCING STEEL IN 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, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CONCRETE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CONCRETE PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF CONCRETE PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

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

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.

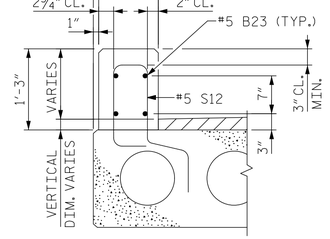
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

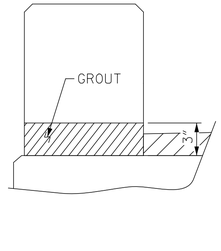
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

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

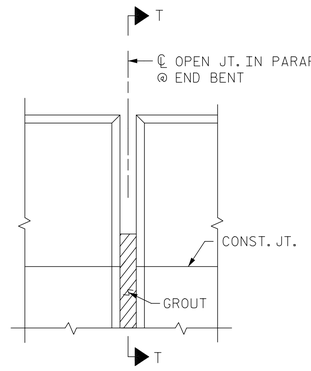
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



SECTION THRU CONCRETE PARAPET



SECTION T-T
AT OPEN JOINT AT END BENT



ELEVATION AT PARAPET JT.

BILL OF MATERIAL FOR ONE 60' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B20	6	#4	STR	21'-2"	85	21'-2"	85
S10	8	#5	2	5'-0"	42	5'-0"	42
S11	146	#4	2	5'-10"	569	5'-10"	569
✳S12	62	#5	1	4'-7"	296		
S14	4	#4	3	5'-11"	16	5'-11"	16
S15	4	#5	2	7'-1"	30	7'-1"	30
S16	4	#4	2	5'-11"	16	5'-11"	16
S17	4	#4	2	6'-1"	16	6'-1"	16
S18	4	#4	2	6'-3"	17	6'-3"	17
REINFORCING STEEL LBS.					791		791
✳EPOXY COATED REINFORCING STEEL LBS.					296		
6000 P.S.I. CONCRETE CU. YDS.					10.4		10.4
0.6"Ø L.R. STRANDS No.					24		24

CONCRETE RELEASE STRENGTH

UNIT	PSI
60' UNITS	4800

CONCRETE PARAPET DETAILS

BILL OF MATERIAL FOR CONCRETE PARAPET

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
✳B23	32	#5	STR	16'-11"	565
✳EPOXY COATED REINFORCING STEEL LBS.					565
CLASS AA CONCRETE CU.YDS.					5.1
TOTAL CONCRETE PARAPET LN. FT.					120.0

CORED SLABS REQUIRED

60' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	60'-0"	120'-0"
INTERIOR C.S.	3	60'-0"	180'-0"
TOTAL	5		300'-0"

GUTTERLINE ASPHALT THICKNESS

	ASPHALT OVERLAY THICKNESS @ MID-SPAN
60' UNITS	1⅝"

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 2'-0"
60' CORED SLAB UNIT	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1⅞" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	½" ↓
FINAL CAMBER	1⅜" ↑

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. 059-01-5D1D5

McDOWELL COUNTY

STATION: 11+57.75 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

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

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
1/20/2026

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY D. HORTON DATE 12/25
CHECKED BY D. HAWKINS DATE 12/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 12/25

DWG. NO. 7

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-7
1			3			TOTAL SHEETS
2			4			12

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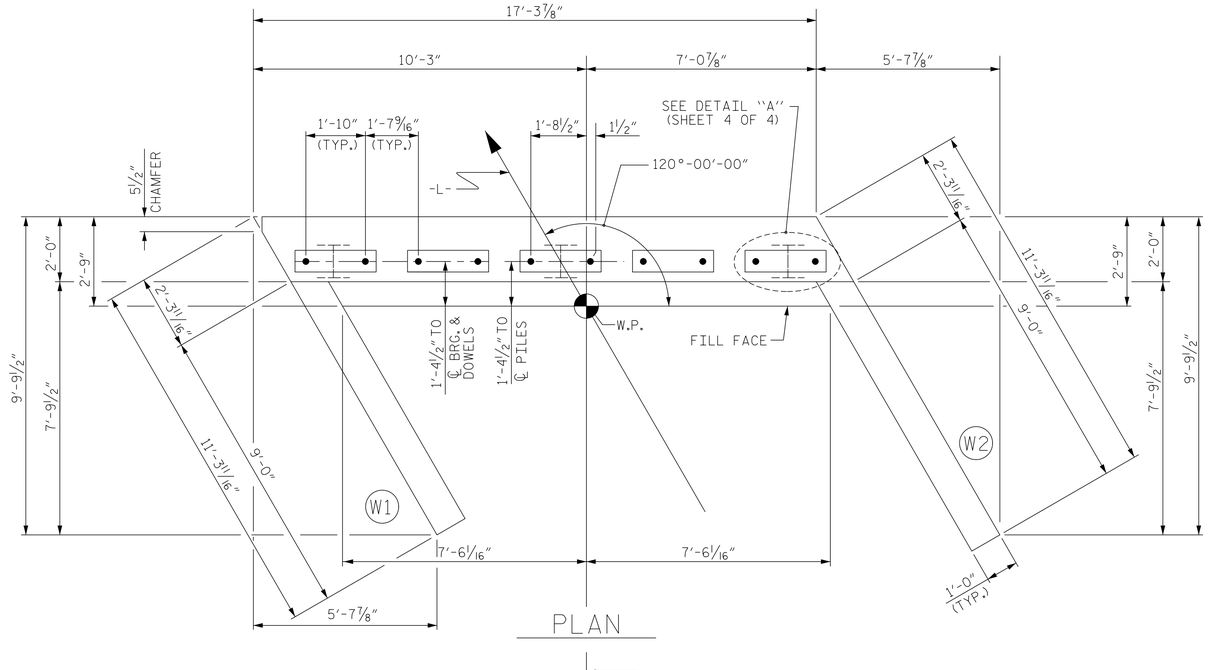
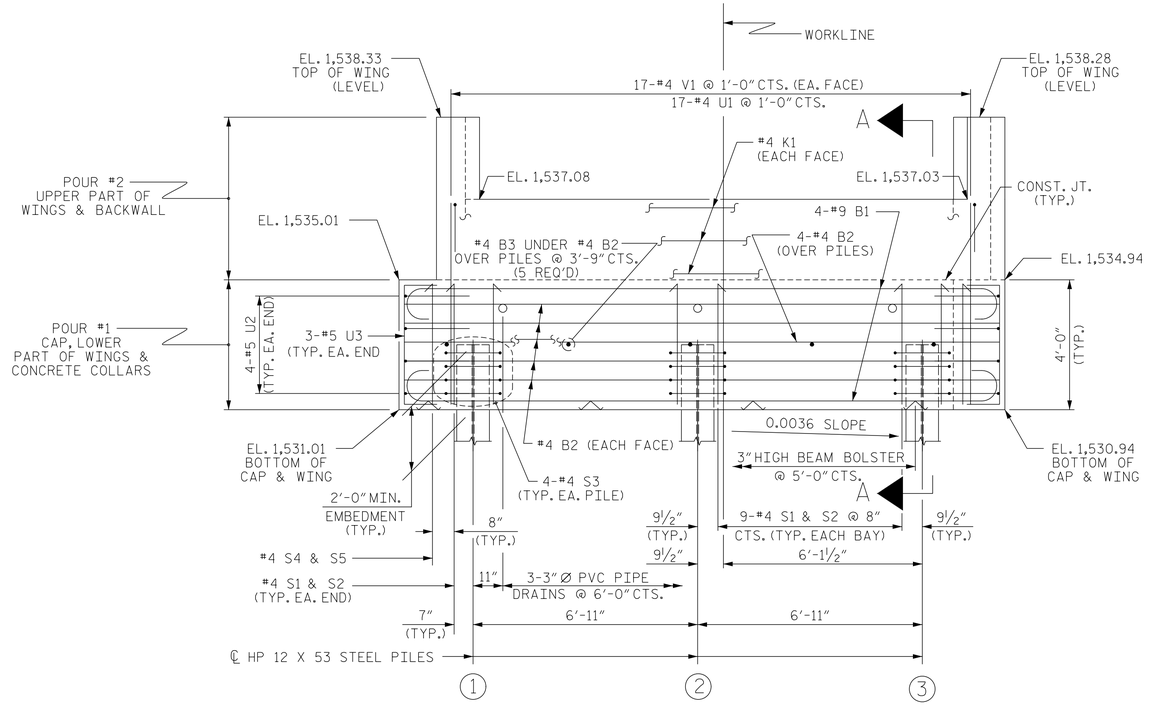


PLAN



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.

NOTES

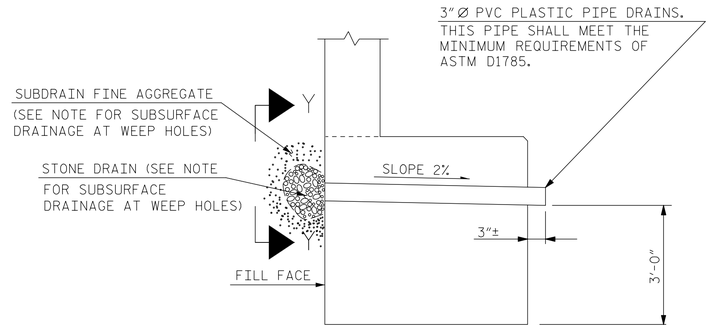
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND DOWELS.

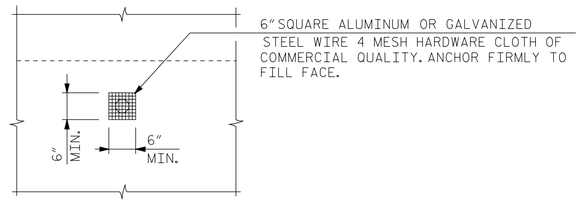
FOR SUBSURFACE DRAINAGE AT WEEP HOLES, SEE ARTICLE 414-8 OF THE STANDARD SPECIFICATIONS.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



SECTION THRU CAP



VIEW Y-Y

TOP OF PILE ELEVATIONS	
1	1,532.99
2	1,532.97
3	1,532.94

NOTE:

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC PLASTIC PIPE DRAINS, HARDWARE CLOTH AND FASTENERS. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

PIPE DRAIN DETAILS

PROJECT NO. 059-01-5D1D5

McDOWELL **COUNTY**

STATION: 11+57.75 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

SUBSTRUCTURE

END BENT No. 1

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
1/20/2026

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CHECKED BY D. HAWKINS DATE 12/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 12/25
DWG. NO. 8

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-8
1			3			TOTAL SHEETS
2			4			12

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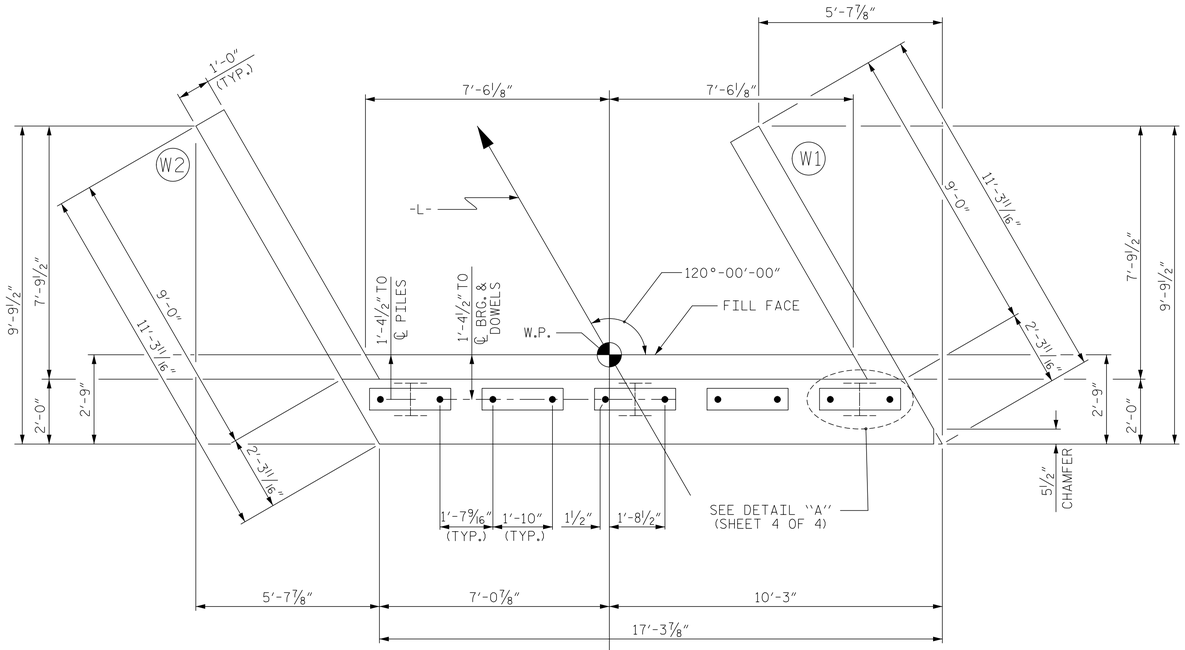
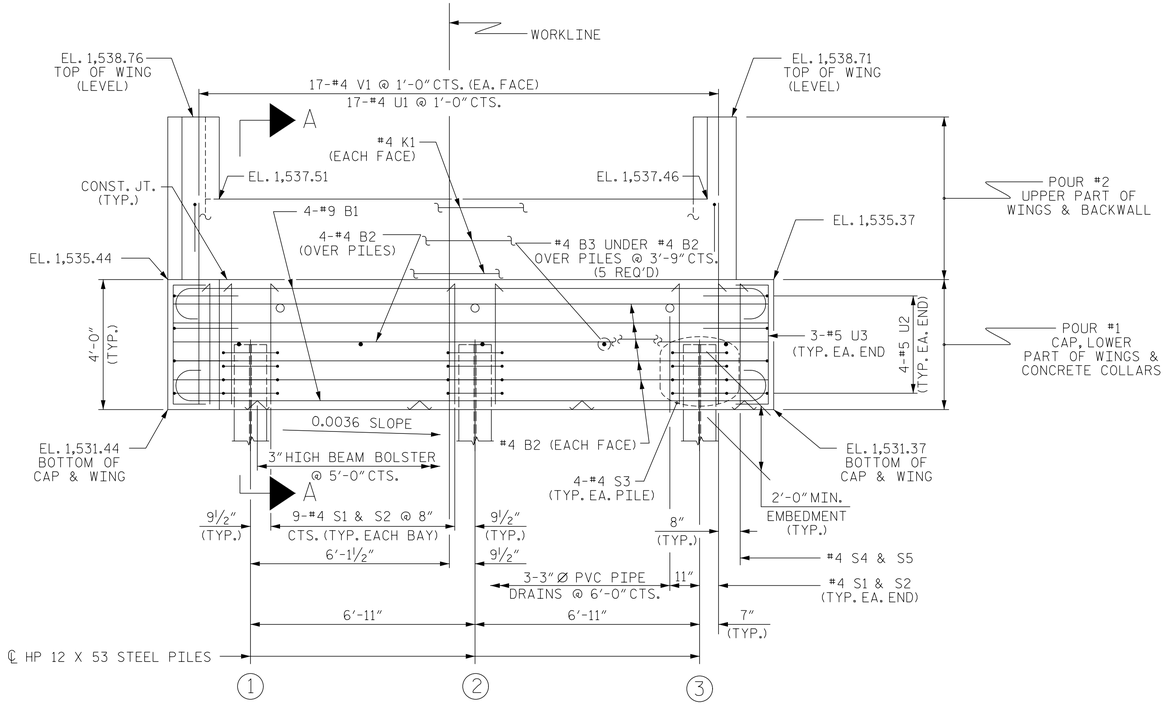


PLAN



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.

NOTES

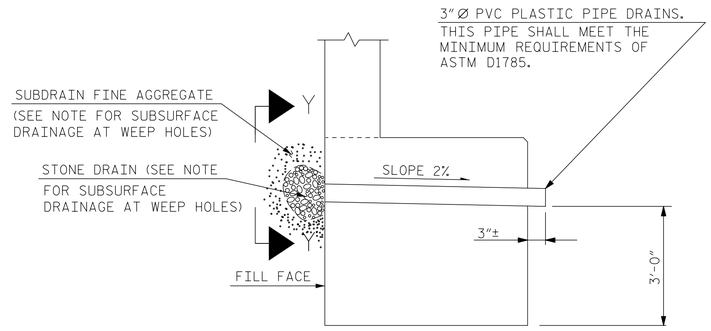
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND DOWELS.

FOR SUBSURFACE DRAINAGE AT WEEP HOLES, SEE ARTICLE 414-8 OF THE STANDARD SPECIFICATIONS.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



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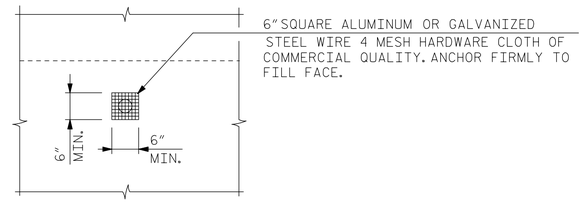

VIEW Y-Y

NOTE:

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC PLASTIC PIPE DRAINS, HARDWARE CLOTH AND FASTENERS. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

PIPE DRAIN DETAILS

TOP OF PILE ELEVATIONS	
①	1.533.44
②	1.533.41
③	1,533.38

PROJECT NO. 059-01-5D1D5

McDOWELL COUNTY

STATION: 11+57.75 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

SUBSTRUCTURE

END BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
1/20/2026

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NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY D. HORTON DATE 12/25
CHECKED BY D. HAWKINS DATE 12/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 12/25
DWG. NO. 9

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-9
1			3			TOTAL SHEETS
2			4			12

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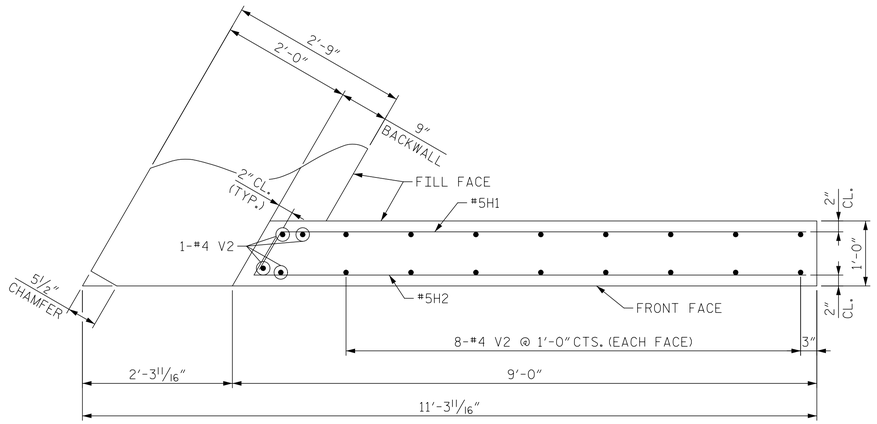
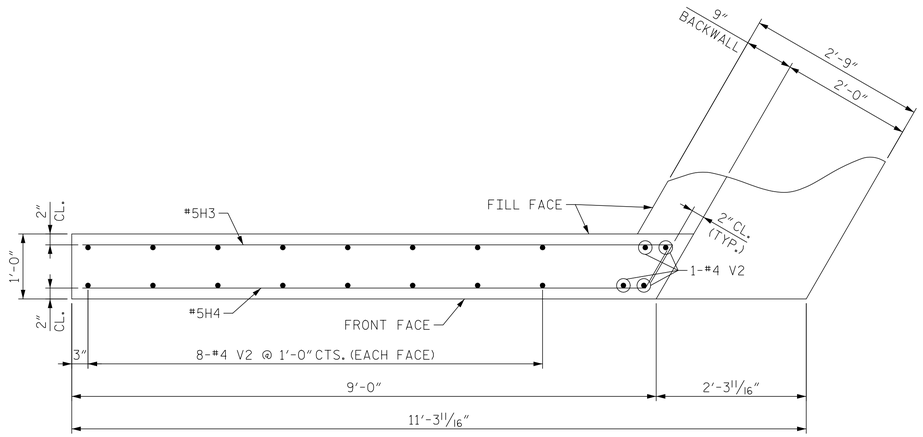
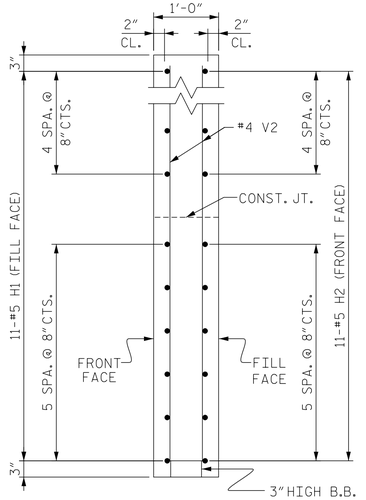


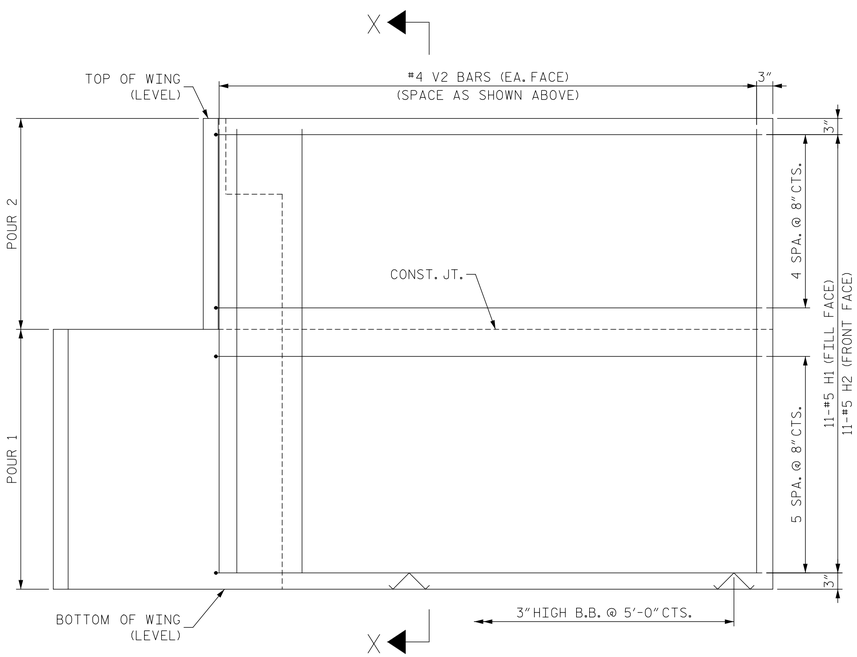
PLAN OF WING (W1)



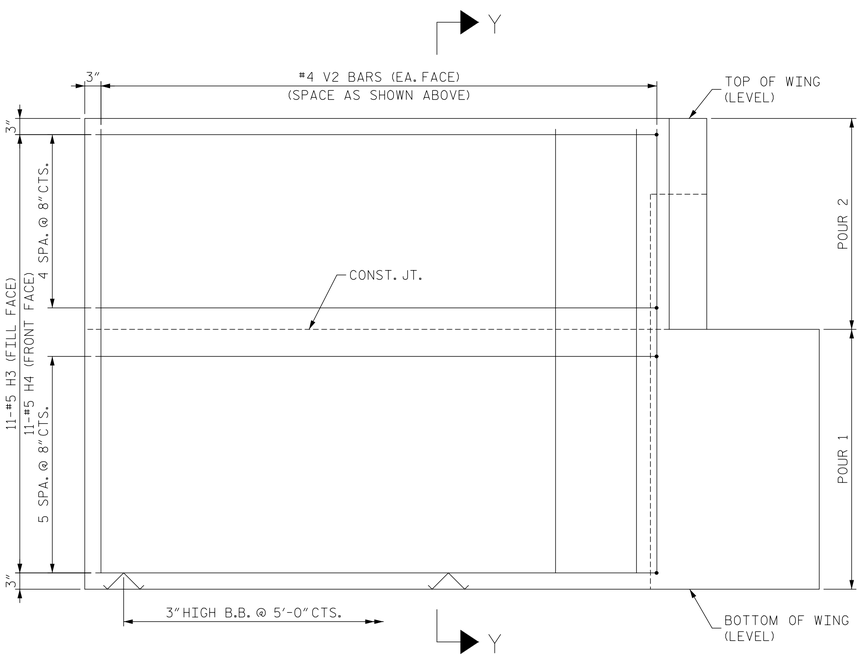
PLAN OF WING (W2)



SECTION X-X



ELEVATION OF WING (W1)



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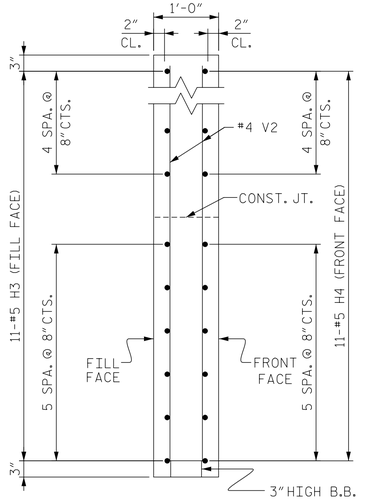

SECTION Y-Y

WING DETAILS

PROJECT NO. 059-01-5D1D5

McDOWELL COUNTY

STATION: 11+57.75 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

SUBSTRUCTURE
END BENT
WING DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
1/20/2026

HNTB HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY D. HORTON DATE 12/25
CHECKED BY D. HAWKINS DATE 12/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 12/25

DWG. NO. 10

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-10
1			3			TOTAL SHEETS
2			4			12

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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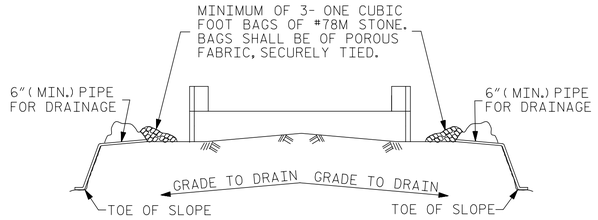
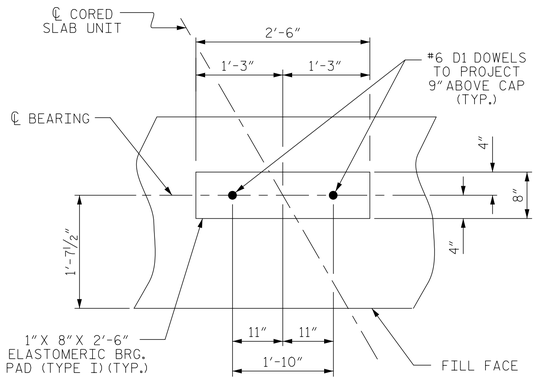


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

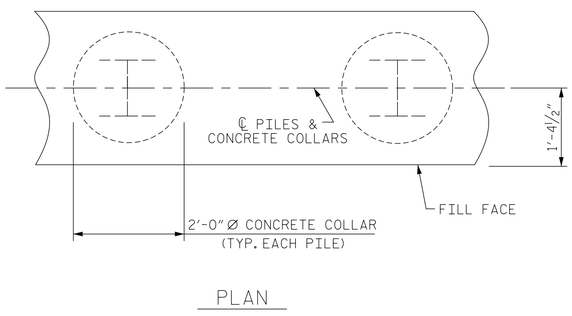
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

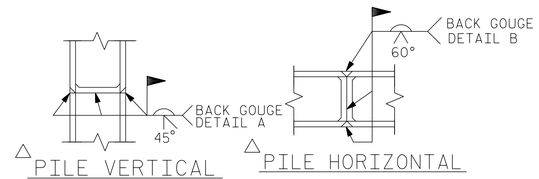
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



PLAN ELEVATION

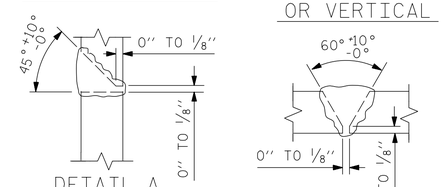
CORROSION PROTECTION FOR STEEL PILES DETAIL

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



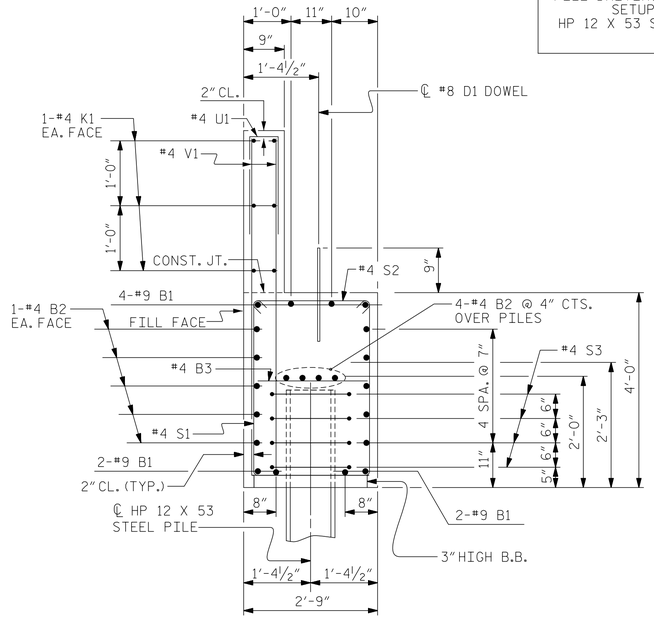
△ PILE VERTICAL

△ PILE HORIZONTAL OR VERTICAL



△ POSITION OF PILE DURING WELDING.

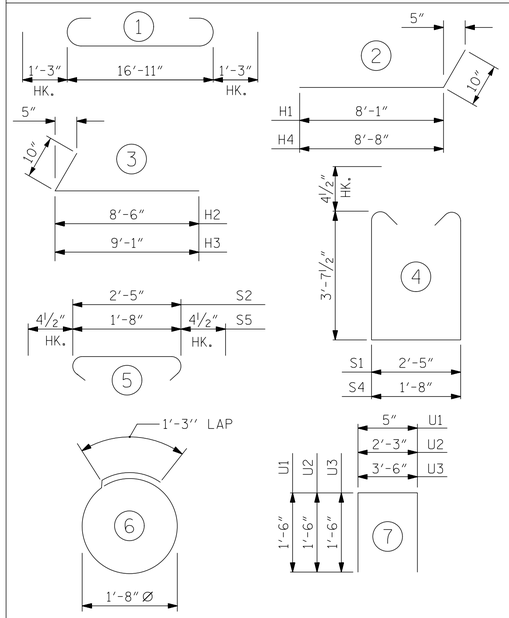
PILE SPLICE DETAILS



SECTION A-A

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES NO: 3 LIN. FT.= 90.0	HP 12 X 53 STEEL PILES NO: 3 LIN. FT.= 90.0
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 3	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 3

BILL OF MATERIAL FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	19'-5"	528
B2	14	#4	STR	16'-11"	158
B3	5	#4	STR	2'-5"	8
D1	10	#6	STR	1'-6"	23
H1	11	#5	2	8'-11"	102
H2	11	#5	3	9'-4"	107
H3	11	#5	3	9'-11"	114
H4	11	#5	2	9'-6"	109
K1	6	#4	STR	16'-11"	68
S1	20	#4	4	10'-5"	139
S2	20	#4	5	3'-2"	42
S3	12	#4	6	6'-6"	52
S4	1	#4	4	9'-8"	6
S5	1	#4	5	2'-5"	2
U1	17	#4	7	3'-5"	39
U2	8	#5	7	5'-3"	44
U3	6	#5	7	6'-6"	41
V1	34	#4	STR	5'-8"	129
V2	40	#4	STR	6'-11"	185

REINFORCING STEEL (FOR ONE END BENT) 1,896

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 9.5 C.Y.

POUR #2 BACKWALL & UPPER PART OF WINGS 2.6 C.Y.

TOTAL CLASS A CONCRETE 12.1 C.Y.

PROJECT NO. 059-01-5D1D5

McDOWELL COUNTY

STATION: 11+57.75 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
1/20/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY D. HORTON DATE 12/25
CHECKED BY D. HAWKINS DATE 12/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 12/25
DWG. NO. 11

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-11
1			3			TOTAL SHEETS
2			4			12

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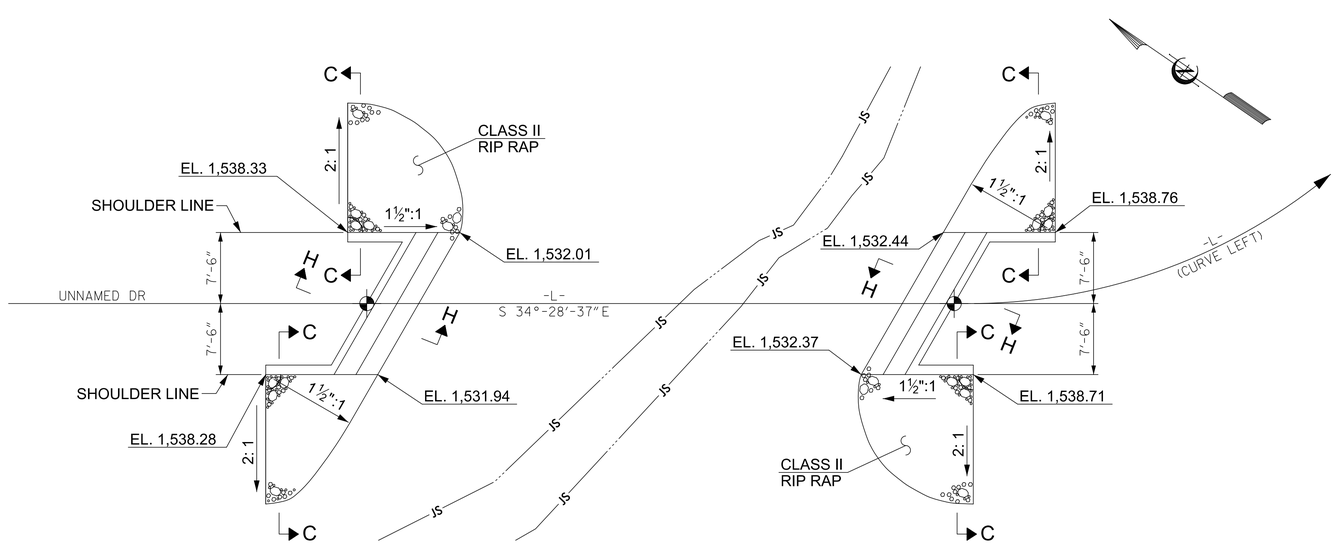
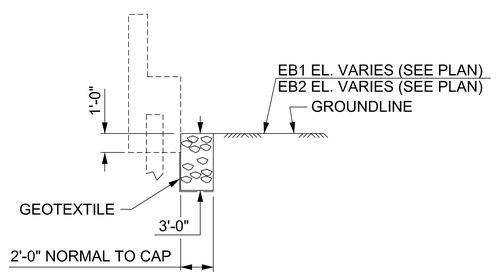


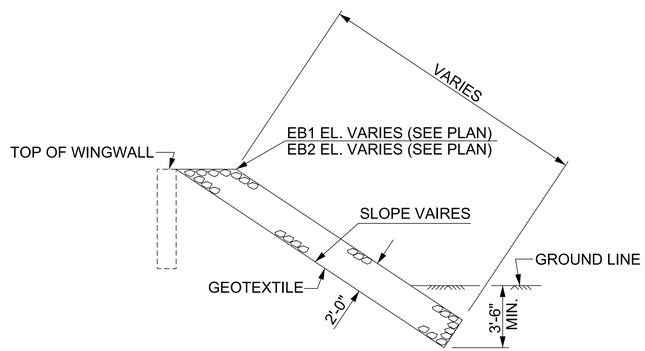
END BENT 1 PLAN

END BENT 2 PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 11+57.75 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	58	65
END BENT 2	58	65



SECTION H-H



SECTION C-C

PROJECT NO. 059-01-5D1D5

McDOWELL COUNTY

STATION: 11+57.75 -L-

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS

Signed by: David W. Hawkins 7A6ED7E248855487...

1/20/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

RIP RAP DETAILS

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY D. HORTON DATE 12/25
CHECKED BY DATE
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 12/25

DWG. NO. 12

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-12
1			3			TOTAL SHEETS
2			4			12

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾" 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 $\frac{5}{16}$" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

PRB.35493

Site # 061-01-f64aa
332 Hefner Rd, Spruce Pine
Rose Creek in Mitchell County
WBS 51830.2.13.50

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8/17/99

20 10 0 20 40
PLANS

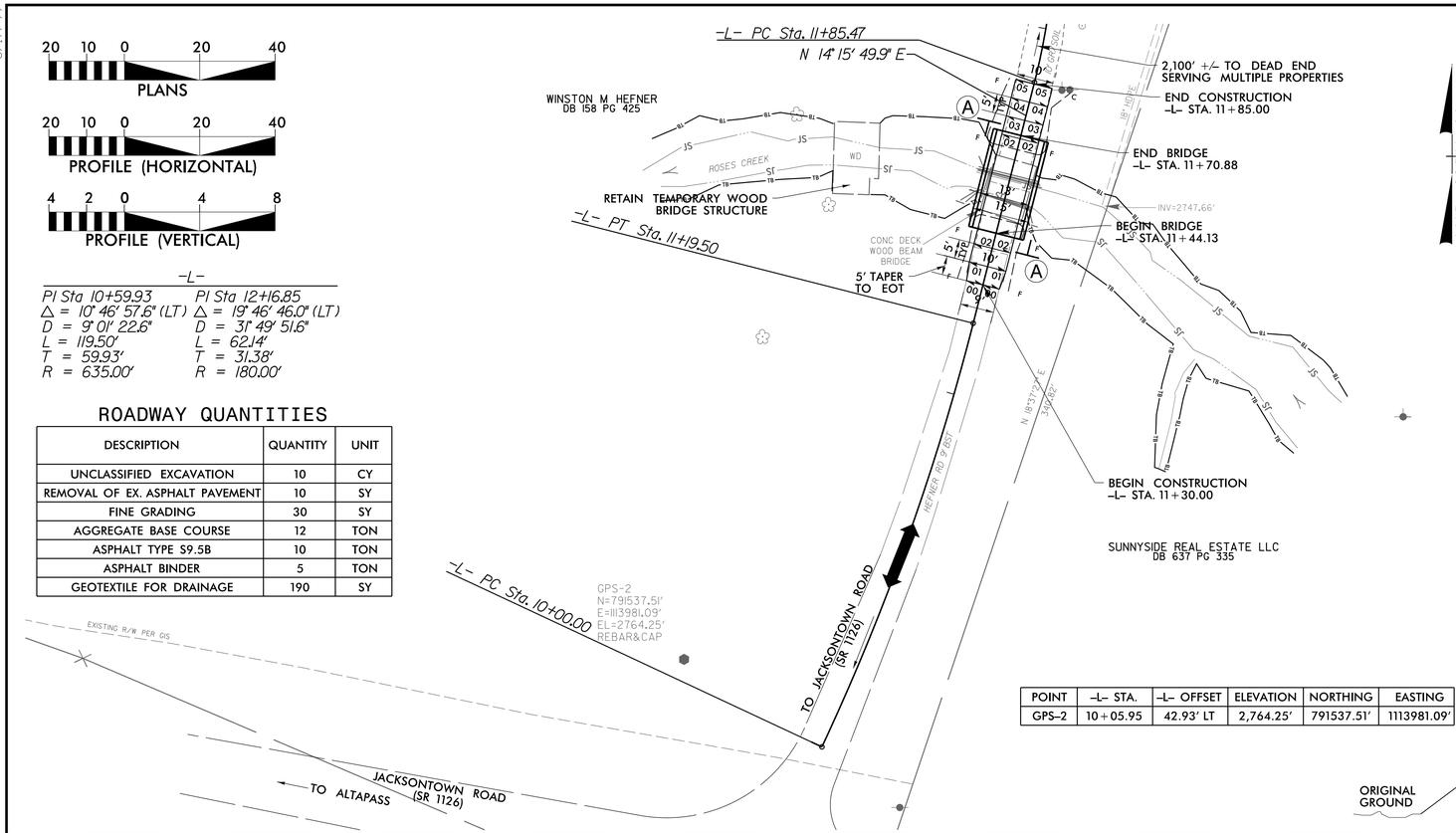
20 10 0 20 40
PROFILE (HORIZONTAL)

4 2 0 4 8
PROFILE (VERTICAL)

–L–	
PI Sta 10+59.93	PI Sta 12+16.85
△ = 10° 46′ 57.6″ (LT)	△ = 19° 46′ 46.0″ (LT)
D = 9° 01′ 22.6″	D = 31° 49′ 51.6″
L = 119.50′	L = 62.14′
T = 59.93′	T = 31.38′
R = 635.00′	R = 180.00′

ROADWAY QUANTITIES

DESCRIPTION	QUANTITY	UNIT
UNCLASSIFIED EXCAVATION	10	CY
REMOVAL OF EX. ASPHALT PAVEMENT	10	SY
FINE GRADING	30	SY
AGGREGATE BASE COURSE	12	TON
ASPHALT TYPE S9.5B	10	TON
ASPHALT BINDER	5	TON
GEOTEXTILE FOR DRAINAGE	190	SY



POINT	–L– STA.	–L– OFFSET	ELEVATION	NORTHING	EASTING
GPS–2	10+05.95	42.93′ LT	2,764.25′	791537.51′	1113981.09′

NAD 83/NA 2011

HNTB
HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St.
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
061-01-f64aa	1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37950 ENGINEER JASON M. PICKENS
Signed by: Jason M. Pickens
12/9/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 40801 ENGINEER PAUL H. CAMERON
Signed by: Paul Cameron
12/9/2025

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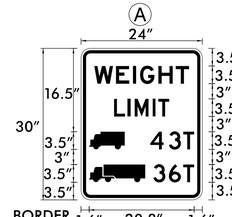
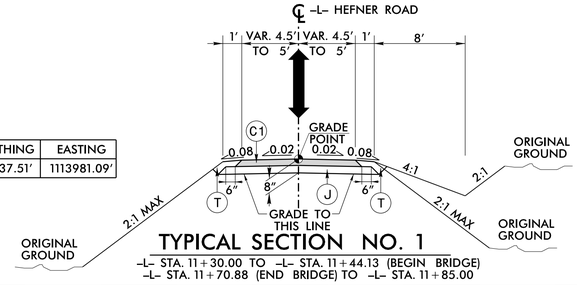
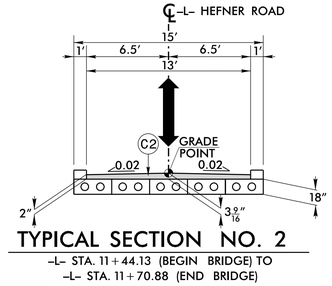


FINAL PAVEMENT SCHEDULE
(NCDEM FINAL PAVEMENT DESIGN - JULY 31, 2025)

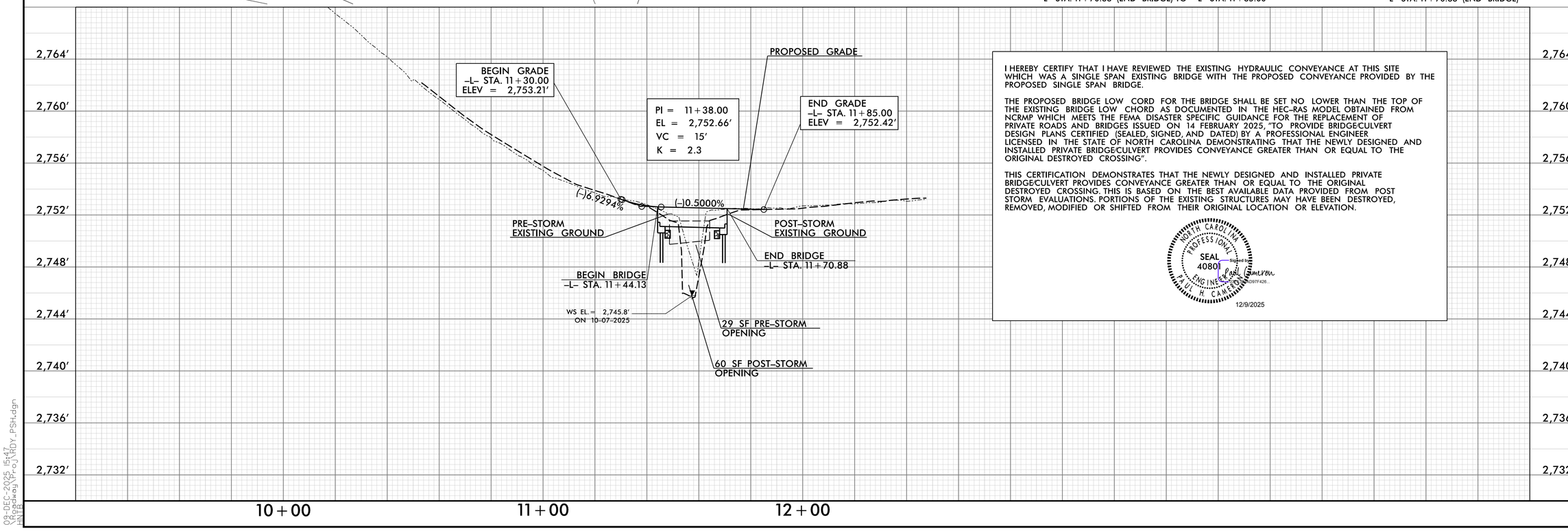
C1	PROP. APPROX. 2″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PLACED IN TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD, PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1″ IN DEPTH OR GREATER THAN 1½″ IN DEPTH.
J	PROP. 6″ AGGREGATE BASE COURSE
T	EARTH MATERIAL



TYPICAL SECTION NO. 1
–L– STA. 11+30.00 TO –L– STA. 11+44.13 (BEGIN BRIDGE)
–L– STA. 11+70.88 (END BRIDGE) TO –L– STA. 11+85.00



TYPICAL SECTION NO. 2
–L– STA. 11+44.13 (BEGIN BRIDGE) TO
–L– STA. 11+70.88 (END BRIDGE)



I HEREBY CERTIFY THAT I HAVE REVIEWED THE EXISTING HYDRAULIC CONVEYANCE AT THIS SITE WHICH WAS A SINGLE SPAN EXISTING BRIDGE WITH THE PROPOSED CONVEYANCE PROVIDED BY THE PROPOSED SINGLE SPAN BRIDGE.

THE PROPOSED BRIDGE LOW CORD FOR THE BRIDGE SHALL BE SET NO LOWER THAN THE TOP OF THE EXISTING BRIDGE LOW CHORD AS DOCUMENTED IN THE HEC–RAS MODEL OBTAINED FROM NCRMP WHICH MEETS THE FEMA DISASTER SPECIFIC GUIDANCE FOR THE REPLACEMENT OF PRIVATE ROADS AND BRIDGES ISSUED ON 14 FEBRUARY 2025, "TO PROVIDE BRIDGE/CULVERT DESIGN PLANS CERTIFIED (SEALED, SIGNED, AND DATED) BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA DEMONSTRATING THAT THE NEWLY DESIGNED AND INSTALLED PRIVATE BRIDGE/CULVERT PROVIDES CONVEYANCE GREATER THAN OR EQUAL TO THE ORIGINAL DESTROYED CROSSING".

THIS CERTIFICATION DEMONSTRATES THAT THE NEWLY DESIGNED AND INSTALLED PRIVATE BRIDGE/CULVERT PROVIDES CONVEYANCE GREATER THAN OR EQUAL TO THE ORIGINAL DESTROYED CROSSING. THIS IS BASED ON THE BEST AVAILABLE DATA PROVIDED FROM POST STORM EVALUATIONS. PORTIONS OF THE EXISTING STRUCTURES MAY HAVE BEEN DESTROYED, REMOVED, MODIFIED OR SHIFTED FROM THEIR ORIGINAL LOCATION OR ELEVATION.

NORTH CAROLINA PROFESSIONAL SEAL 40801 ENGINEER PAUL H. CAMERON
Signed by: Paul Cameron
12/9/2025

09-DEC-2025 15:47
\\gpdway\Proj\RDY_PSH.dgn
HNTB

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	061-01-f64aa	X-1

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0.020 0.020

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11+30.00

09-DEC-2025 15:51
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MNTB

6/23/16

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11+80.00

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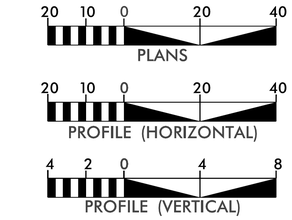
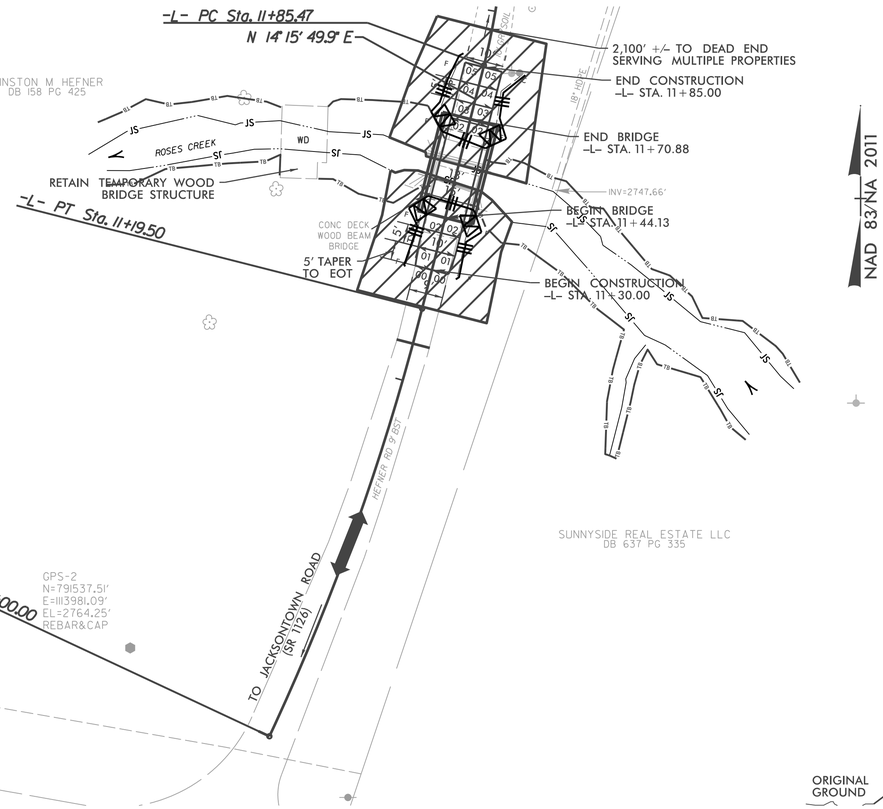
MNB

8/17/99





LEGEND

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	

HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St.
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
061-01-f64aa	EC-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of:

HNTB NORTH CAROLINA, P.C.
4000 Center at North Hills St.
Suite 500
Raleigh, North Carolina 27609
NC License No: C-1554

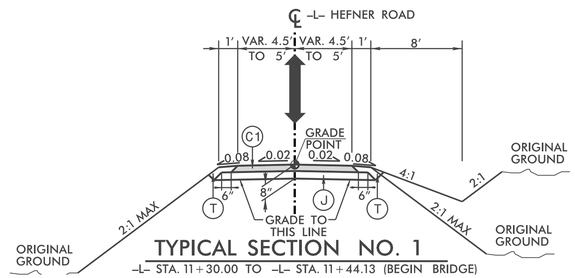
Designed by:

NATALIE CHAN, P.E. *3444*
NAME *LEVEL III CERTIFICATION NO.*

DISTURBED AREA
0.006 Ac

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS



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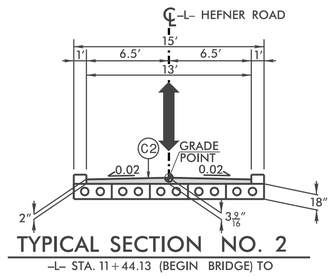

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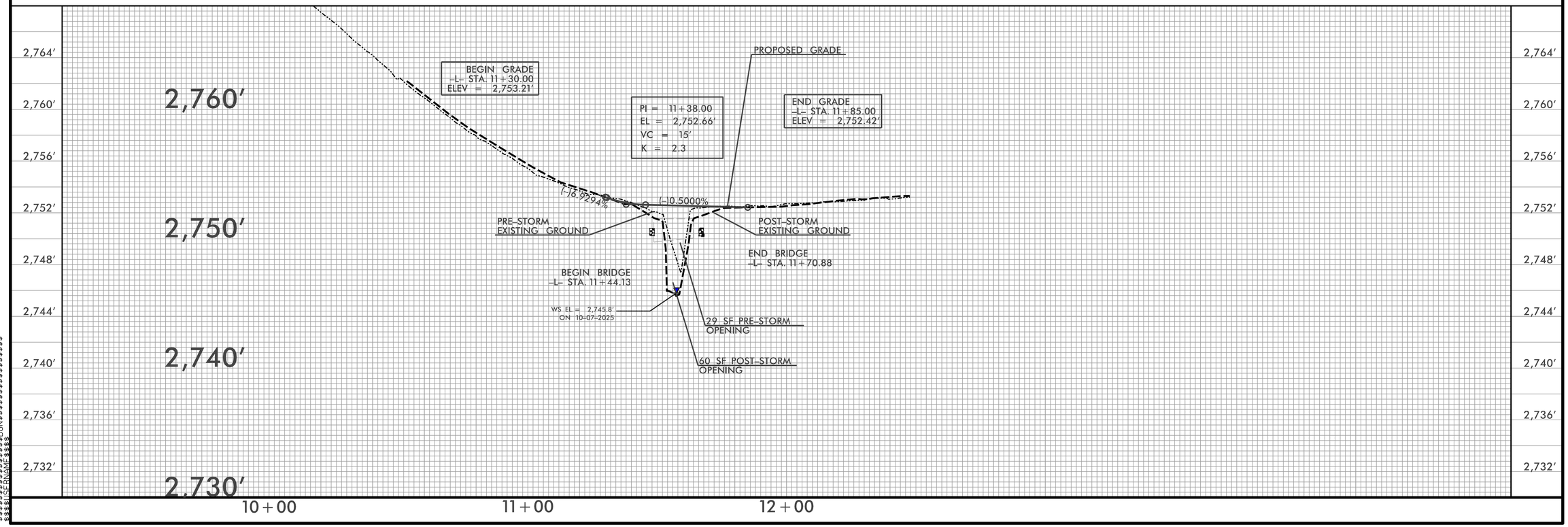


$$$$$$$SYSTIME$$$$$$
$$$$$$$USERNAME$$$$$
$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
061-01-f64aa	EC-2
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

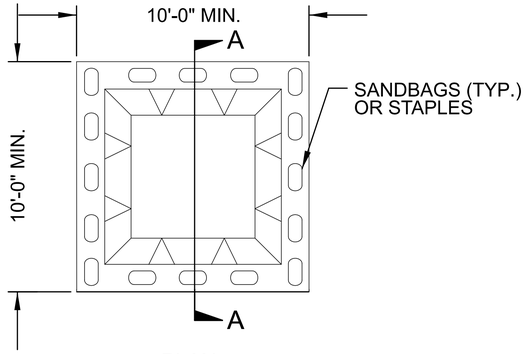
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

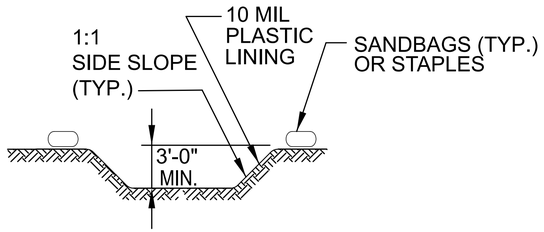
SITE DESCRIPTION	*STABILIZATION TIME*	*TIMEFRAME EXCEPTIONS*
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 TO 4:1	14 DAYS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

PROJECT REFERENCE NO.	SHEET NO.
061-01-f64aa	EC-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

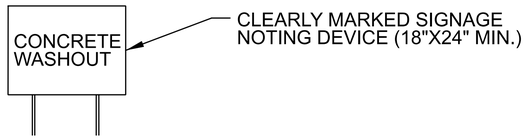
ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A



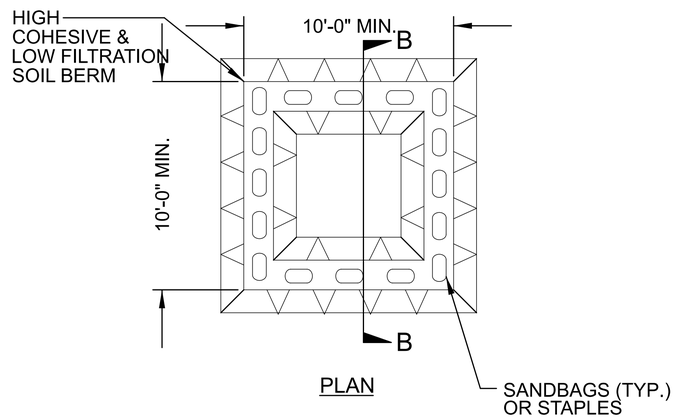
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

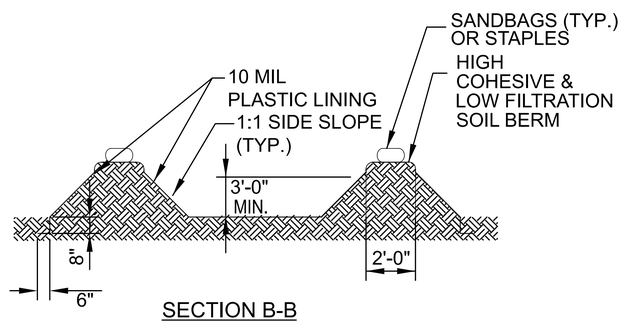
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

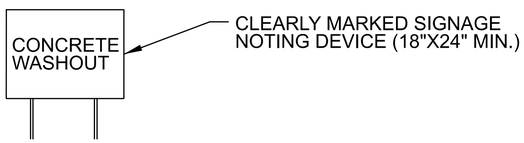
NOT TO SCALE



PLAN



SECTION B-B



NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

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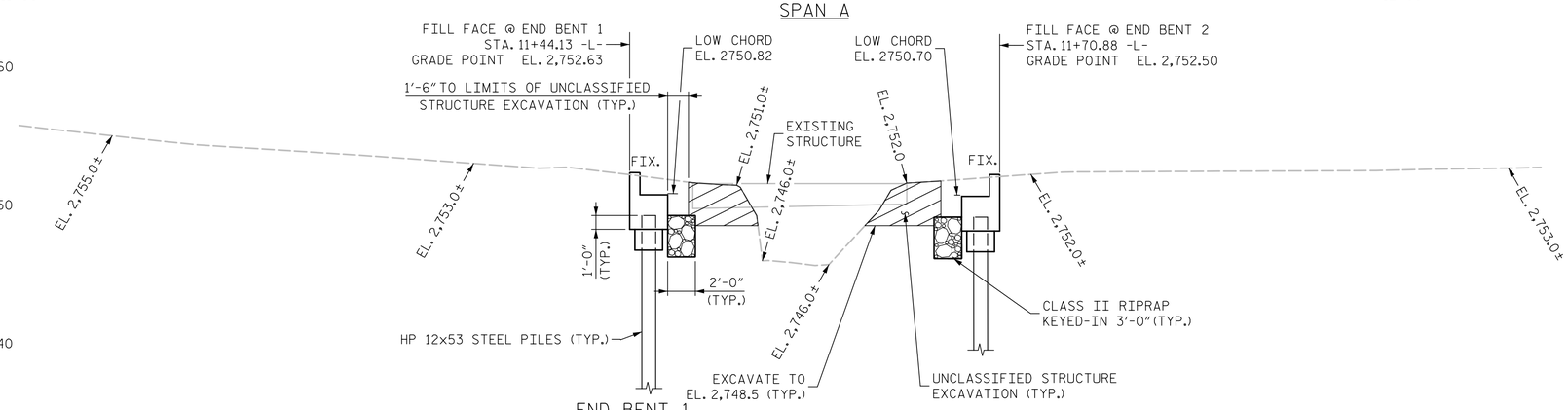
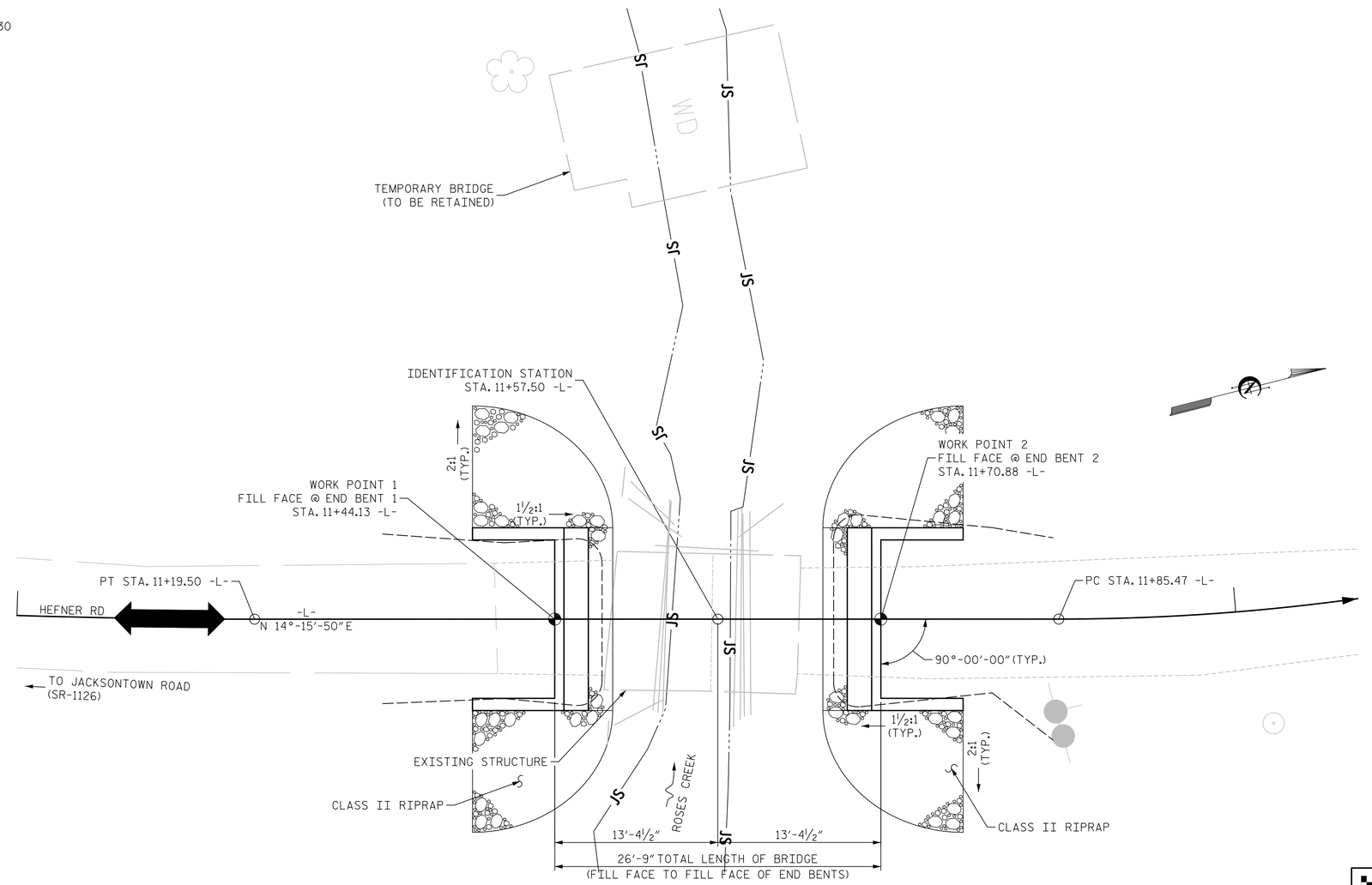
11+00 +20 +40 +60 +80 12+00

SPAN A



SECTION ALONG -L-



PLAN

PILES NOT SHOWN FOR CLARITY.

BRIDGE HYDRAULIC DATA

EXISTING HYDRAULIC OPENING: 29 SF
PROPOSED HYDRAULIC OPENING: 60 SF

PI STA. = 11+38.00
EL. = 2,752.66
VC = 15.00'

GRADE DATA -L-

PROJECT NO. 061-01-f64aa

MITCHELL COUNTY

STATION: 11+57.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

GENERAL DRAWING FOR BRIDGE OVER ROSES CREEK ON HEFNER ROAD

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
DocuSigned by: 248855487...
12/9/2025

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY D. HORTON DATE 11/25
CHECKED BY D. HAWKINS DATE 11/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 11/25

DWG. NO. 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-1
1			3			TOTAL SHEETS
2			4			12

12/9/2025
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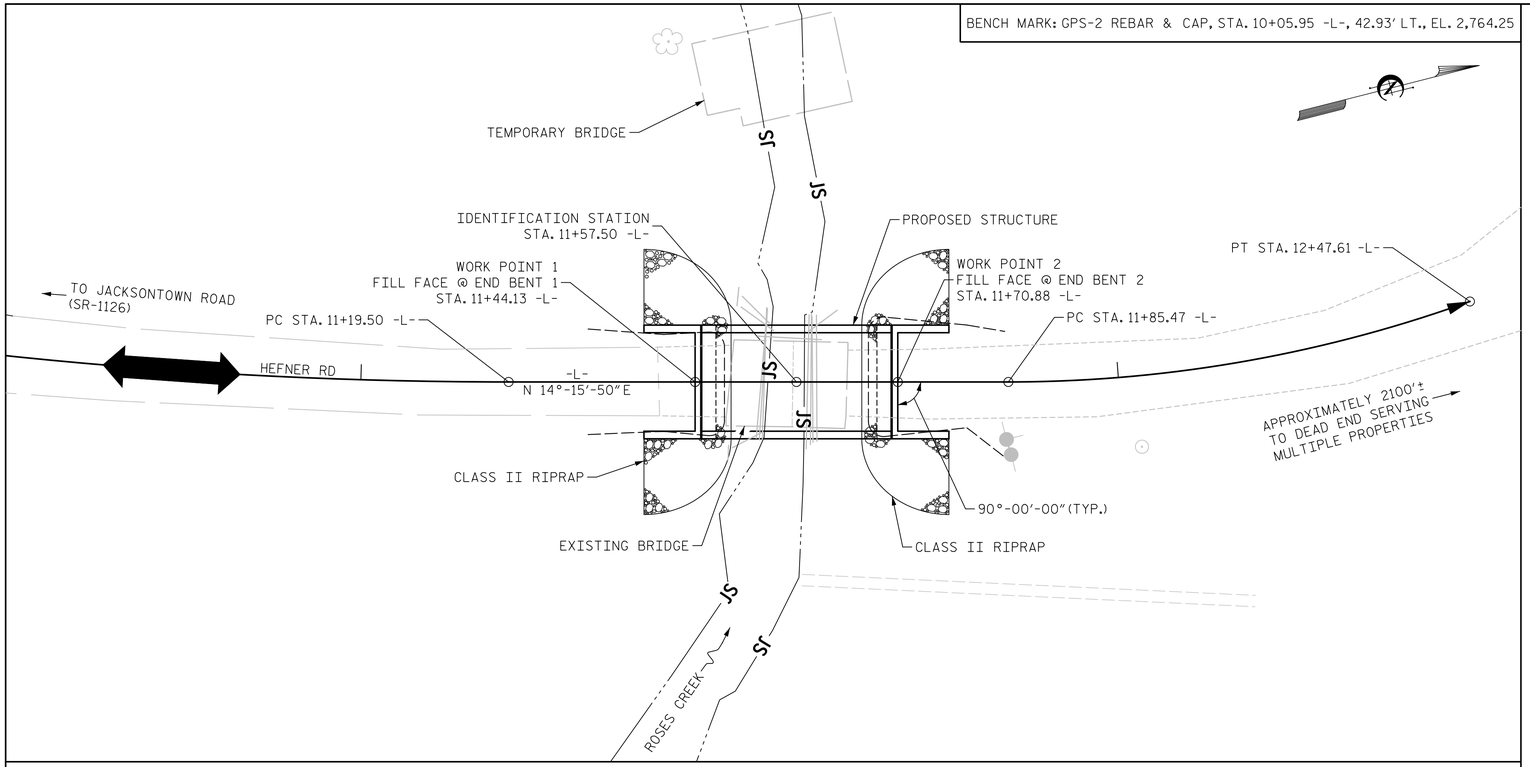
BENCH MARK: GPS-2 REBAR & CAP, STA. 10+05.95 -L-, 42.93' LT., EL. 2,764.25



LOCATION SKETCH

NOTE: FOR UTILITIES, SEE NOTES.

GENERAL NOTES:

ASSUMED LIVE LOAD = HS-20.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 7'-6" EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

BRIDGE PARAPET RAIL CONFORMS TO THE DESIGN GUIDELINES FOR NCDEM PRIVATE ROADS AND BRIDGES PROGRAM AND THE FHWA GUIDE FOR BRIDGE CURB/RAIL AND APPROACH TREATMENT FOR EXTREMELY LOW VOLUME ROADS DATED FEBRUARY 9, 2023.

CONTRACTOR SHALL LOCATE UTILITIES AND COORDINATE WITH UTILITY OWNERS PRIOR TO BEGINNING CONSTRUCTION.

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

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STATION 11+57.50 -L-	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 11+57.50 -L-	CLASS A CONCRETE	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	CU. YDS.	LBS.	EACH
SUPERSTRUCTURE	LUMP SUM	———	———	———	———	———	———	———
END BENT 1	———	———	25.2	17.4	LUMP SUM	7.7	1,421	3
END BENT 2	———	———	21.3	9.0	LUMP SUM	7.7	1,421	3
TOTAL	LUMP SUM	LUMP SUM	46.5	26.4	LUMP SUM	15.4	2,842	6

TOTAL BILL OF MATERIAL

	HP 12x53 STEEL PILES		STEEL PILE POINTS	1'-2"x11" CONCRETE PARAPET	RIP RAP CLASS II	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0"x1'-6" PRESTRESSED CONCRETE CORED SLABS	
	NO.	LIN. FT.	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	—	———	———	50.00	———	———	LUMP SUM	5	125
END BENT 1	3	75	3	———	36	45	———	—	———
END BENT 2	3	45	3	———	36	45	———	—	———
TOTAL	6	120	6	50.00	72	90	LUMP SUM	5	125

RECOMMENDED INSPECTION AND MAINTENANCE:

BRIDGE INSPECTION PERFORMED BY A CERTIFIED BRIDGE INSPECTOR IS RECOMMENDED ON THE FOLLOWING SCHEDULE:

YEARS 0-10: INSPECT EVERY 5 YEARS
YEARS 10-20: INSPECT EVERY 4 YEARS
YEARS 20-30: INSPECT EVERY 3 YEARS
YEARS 30+: INSPECT EVERY 2 YEARS

REPAIR ANY PRIORITY MAINTENANCE ITEMS NOTED DURING BRIDGE INSPECTIONS.

IF DETERIORATION IS NOTED IN INSPECTIONS, ACCELERATE SCHEDULE AND INSPECT EVERY 2 YEARS THEREAFTER.

OBSERVE BETWEEN INSPECTIONS FOR CRACKS, RUST OR SPALLING IN CONCRETE OR STEEL COMPONENTS, SIGNS OF EROSION OR SCOURING AROUND ABUTMENTS, DECK SURFACE WEAR, DAMAGE OR DETERIORATION OF CONCRETE CURB.

REMOVE DEBRIS AND SEDIMENT FROM THE DECK AND UNDERNEATH THE BRIDGE TO PREVENT PONDING AND EROSION.

STRUCTURAL MAINTENANCE SHOULD INCLUDE SEALING CRACKS IN CONCRETE, REPAIRING SPALLS WHERE REBAR IS EXPOSED, MILLING AND REPLACING ASPHALT ON BRIDGE DECK TAKING CARE NOT TO DAMAGE THE CORED SLAB UNITS.

MAINTAIN ASPHALT WEARING SURFACE IN GOOD CONDITION ENSURING ANY MILLING ASSOCIATED WITH REPAVING DOES NOT DAMAGE CORED SLAB UNITS.

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE NCDOT 2024 STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 10,500 TO 22,600 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE NCDOT 2024 STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

BEFORE FILLING HOLES FOR PILE EXCAVATION AT END BENT NO. 1 AND END BENT NO. 2, DRIVE PILES TO THE REQUIRED DRIVING RESISTANCE.

FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1 AND END BENT NO. 2 WITH CONCRETE OR GROUT.

PILE INSTALLATION SHOULD BE CONTINUOUSLY MONITORED BY A GEOTECHNICAL ENGINEER OR QUALIFIED INSPECTOR WORKING UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER.

PROJECT NO. 061-01-f64aa

MITCHELL COUNTY

STATION: 11+57.50 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 DAVID W. HAWKINS

Signed by: David W. Hawkins

12/9/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

GENERAL DRAWING
LOCATION SKETCH,
GENERAL NOTES, FOUNDATION
NOTES, & TOTAL
BILL OF MATERIAL

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 11/25
CHECKED BY D. HAWKINS DATE 11/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 11/25

DWG. NO. 2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-2
1			3			TOTAL SHEETS
2			4			12

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-3	3	90	See Substructure Plans	25			150					2734.00	5.8	8.4
End Bent 2, Piles 1-3	3	90	See Substructure Plans	15			150					2738.00	3.0	7.1
TOTAL QUANTITY:													26.4	46.5

$$^{*}RDR = \frac{Factored\ Resistance + Factored\ Drag\ Load + Factored\ Dead\ Load}{Dynamic\ Resistance\ Factor} + Nominal\ Drag\ Load\ Resistance + Nominal\ Resistance\ from\ Scourable\ Material$$

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-3	90			0.60		
End Bent 2, Piles 1-3	90			0.60		

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

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 1-3				3
End Bent 2, Piles 1-3				3
TOTAL QUANTITY:				6

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Daniel H. Kubinski, #046042) on 12-08-2025.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

PROJECT NO. 061-01-f64aa

MITCHELL COUNTY

STATION: 11+57.50 -L-

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS

Signed by: David W. Hawkins

12/9/2025

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

PILE FOUNDATION TABLES

REVISIONS							SHEET NO.
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1			3				TOTAL SHEETS
2			4				12

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

LOAD TYPE	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					
						LIVE-LOAD FACTORS (γ LL)	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)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD	HS-20 (INVENTORY)	36.000	⟨1⟩	1.72	62	1.75	0.409	2.40	25'	EL	12	0.451	1.72	25'	EL	1.3	0.80	0.409	2.92	25'	EL	12	
	HS-20 (OPERATING)	36.000		2.96	107	1.35	0.409	3.12	25'	EL	12	0.451	2.96	25'	EL	1.3	N/A	--	--	--	--	--	
EMERGENCY VEHICLE (EV)	EV2	28.750		2.79	80	1.30	0.409	3.09	25'	EL	12	0.451	3.67	25'	EL	1.3	0.80	0.409	2.79	25'	EL	12	
	EV3	43.000	⟨2⟩	1.67	72	1.30	0.409	2.00	25'	EL	12	0.451	1.67	25'	EL	1.3	0.80	0.409	1.81	25'	EL	12	

⟨1⟩
⟨2⟩

LRFR SUMMARY
FOR SPAN "A"

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	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 (HS-20)
⟨2⟩ EMERGENCY VEHICLE LOAD RATING **
** SEE CHART FOR VEHICLE TYPE
GIRDER LOCATION
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER

PROJECT NO. 061-01-f64aa

MITCHELL COUNTY

STATION: 11+57.50 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 DAVID W. HAWKINS

Signed by: David W. Hawkins
[illegible]

12/9/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

LRFR SUMMARY FOR 25' CORED SLAB UNIT 90° SKEW

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 11/25
CHECKED BY D. HAWKINS DATE 11/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 11/25

DWG. NO. 4

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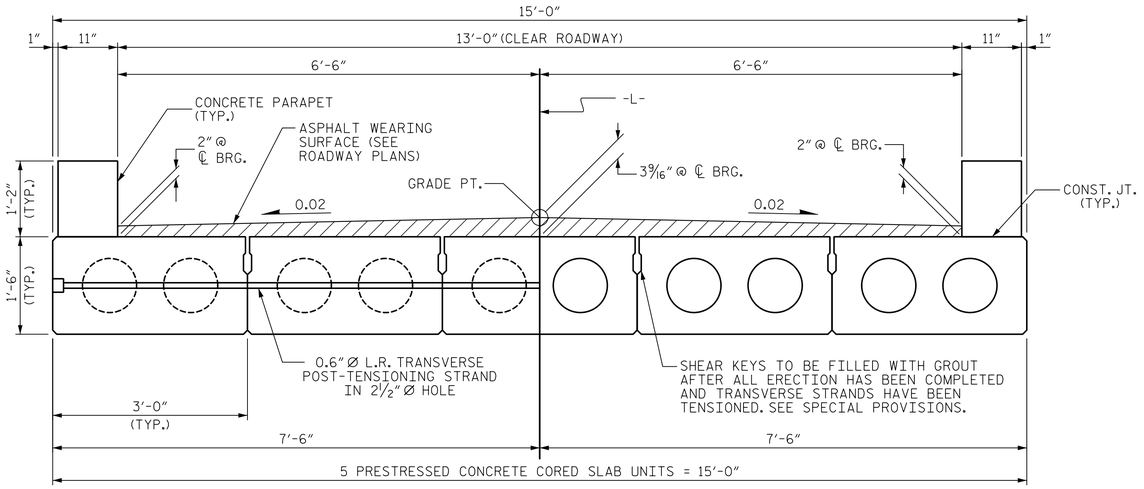
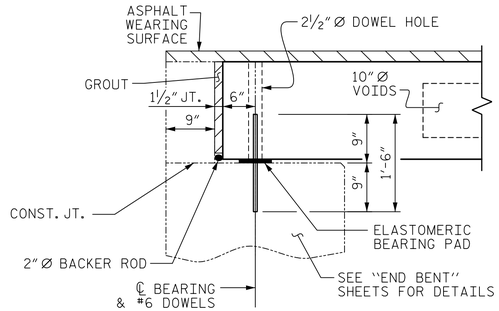


HALF SECTION AT INTERMEDIATE DIAPHRAGMS

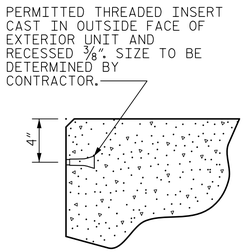
HALF SECTION THROUGH VOIDS

TYPICAL SECTION

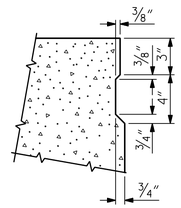
FIXED END



SECTION AT END BENT

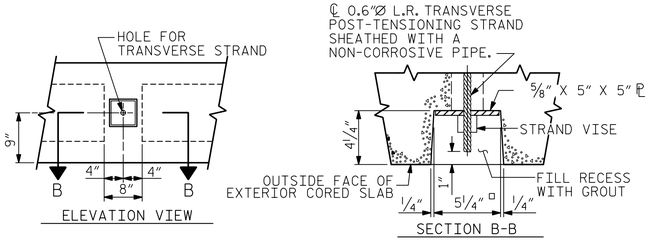


THREADED INSERT DETAIL

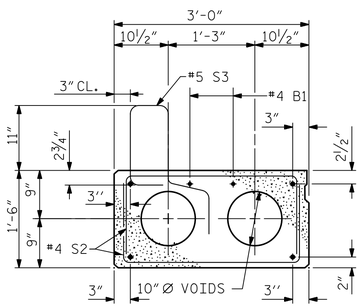


SHEAR KEY DETAIL

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

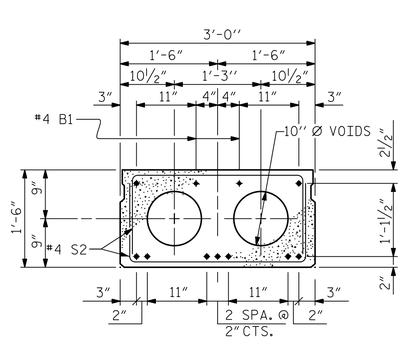


GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



EXTERIOR SLAB SECTION

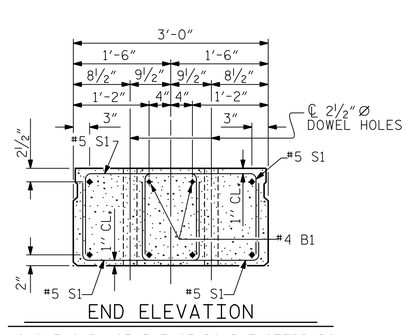
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION)



INTERIOR SLAB SECTION

(9 STRANDS REQUIRED)

0.6″ Ø LOW RELAXATION STRAND LAYOUT



END ELEVATION

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

PROJECT NO. 061-01-f64aa

MITCHELL COUNTY

STATION: 11+57.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

3′-0″ X 1′-6″ PRESTRESSED CONCRETE CORED SLAB UNIT

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 DAVID W. HAWKINS — David W. Hawkins — 12/9/2025

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 11/25
CHECKED BY D. HAWKINS DATE 11/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 11/25

DWG. NO. 5

REVISIONS						SHEET NO.
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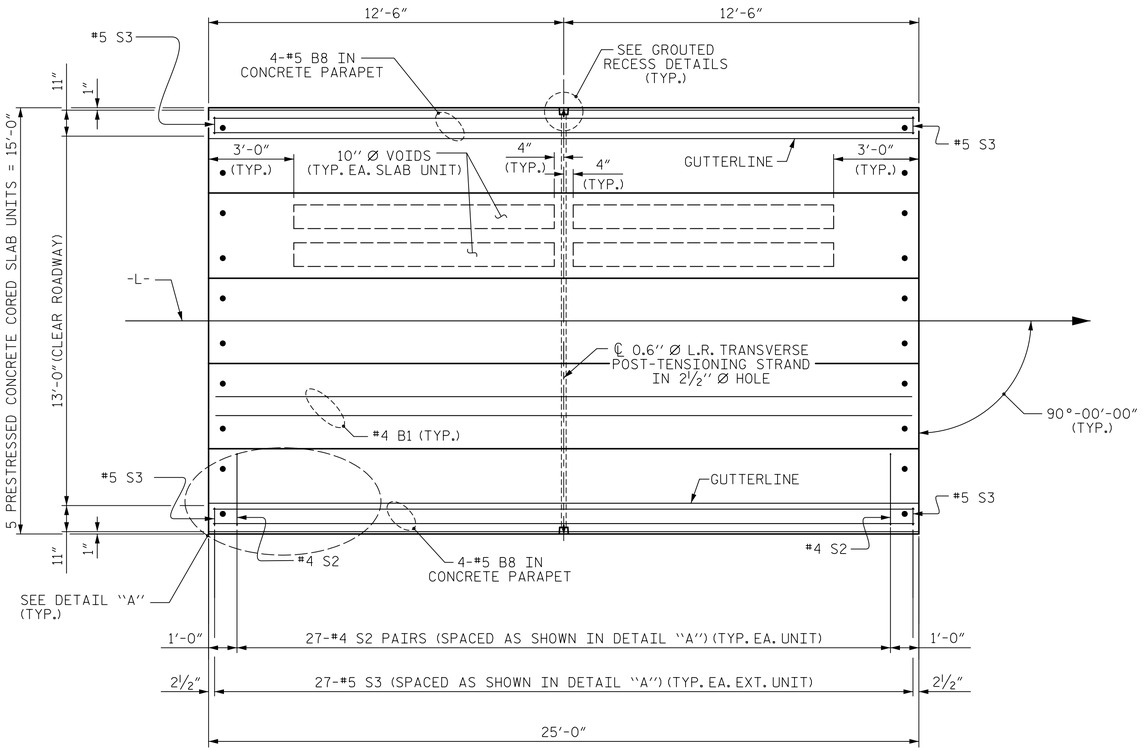
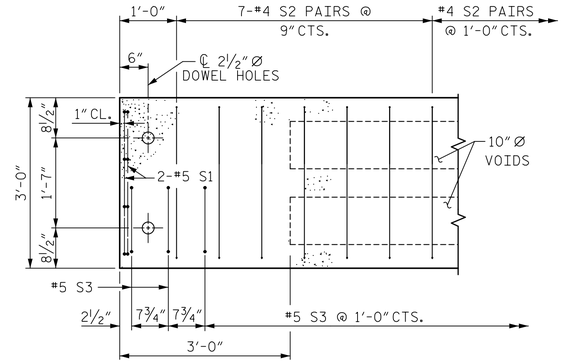


PLAN OF UNIT



DETAIL ''A''

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

PROJECT NO. 061-01-f64aa

MITCHELL COUNTY

STATION: 11+57.50 -L-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS

Signed by: David W. Hawkins

12/9/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

PLAN OF 25' UNIT 13'-0'' CLEAR ROADWAY 90° SKEW

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY D. HORTON DATE 11/25
CHECKED BY D. HAWKINS DATE 11/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 11/25

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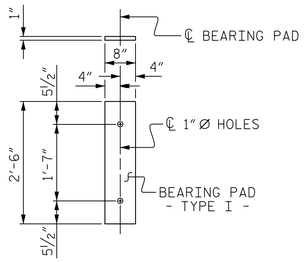
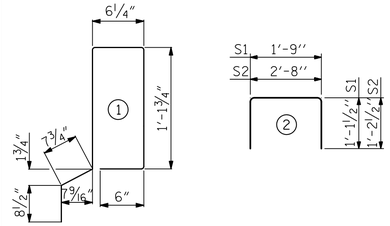


FIXED END
(TYPE I - 10 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
25' UNIT			
EXTERIOR C.S.	2	25'-0"	50'-0"
INTERIOR C.S.	3	25'-0"	75'-0"
TOTAL	5	25'-0"	125'-0"

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-6"
25' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	¼" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	0" ↓
FINAL CAMBER	¼" ↑

** INCLUDES FUTURE WEARING SURFACE

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

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

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

ALL REINFORCING STEEL IN THE CONCRETE PARAPET SHALL BE EPOXY COATED.

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CONCRETE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CONCRETE PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF CONCRETE PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10.

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

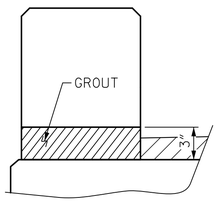
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

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

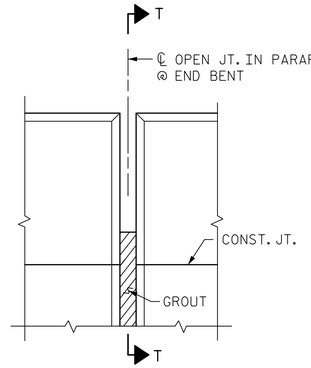
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

BILL OF MATERIAL FOR ONE 25' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	2	#4	STR	24'-8"	33	24'-8"	33
S1	8	#5	2	4'-0"	33	4'-0"	33
S2	54	#4	2	5'-1"	183	5'-1"	183
✳ S3	27	#5	1	4'-8"	131		
REINFORCING STEEL			LBS.		249		249
✳ EPOXY COATED REINFORCING STEEL			LBS.		131		
6000 P.S.I. CONCRETE			CU. YDS.		3.4		3.4
0.6" Ø L.R. STRANDS			No.		9		9

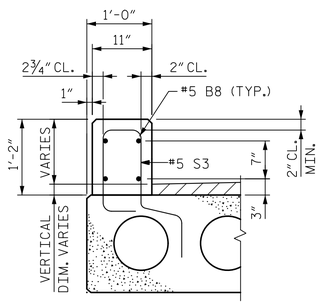


SECTION T-T
AT OPEN JOINT AT END BENT



ELEVATION AT PARAPET JT.

GUTTERLINE ASPHALT THICKNESS	
	ASPHALT OVERLAY THICKNESS
	@ MID-SPAN
25' UNITS	1¾"



SECTION THRU CONCRETE PARAPET

CONCRETE RELEASE STRENGTH	
UNIT	PSI
25' UNIT	4500

GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

BILL OF MATERIAL FOR CONCRETE PARAPET

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
✳ B8	8	#5	STR	24'-8"	206
✳ EPOXY COATED REINFORCING STEEL				LBS.	206
CLASS AA CONCRETE				CU. YDS.	2.0
TOTAL CONCRETE PARAPET				LN. FT.	50.00

CONCRETE PARAPET DETAILS

PROJECT NO. 061-01-f64aa
MITCHELL COUNTY
STATION: 11+57.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

3'-0" X 1'-6" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
12/9/2025

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY D. HORTON DATE 11/25
CHECKED BY D. HAWKINS DATE 11/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 11/25
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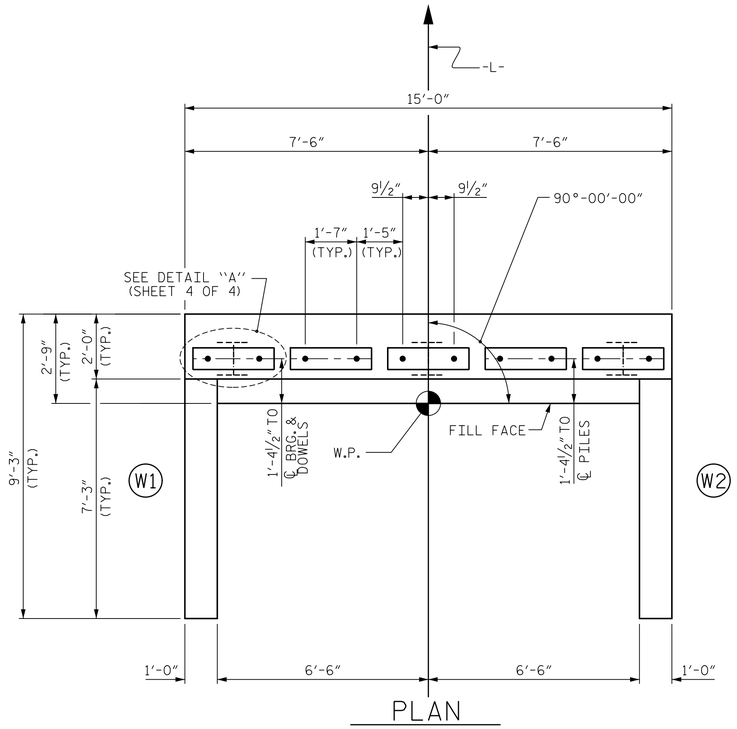
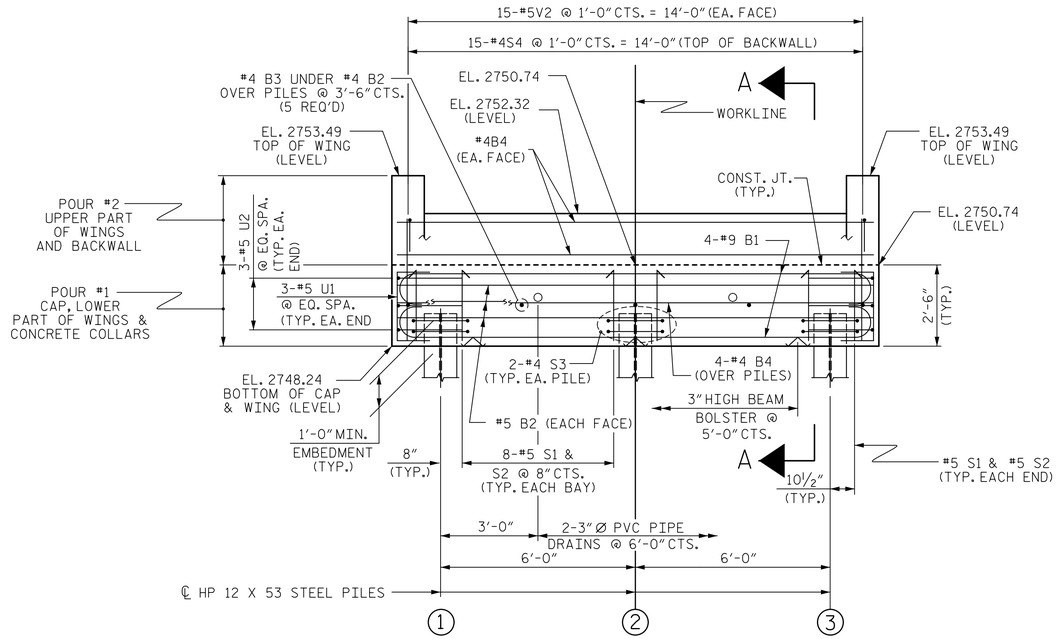


PLAN



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.

NOTES

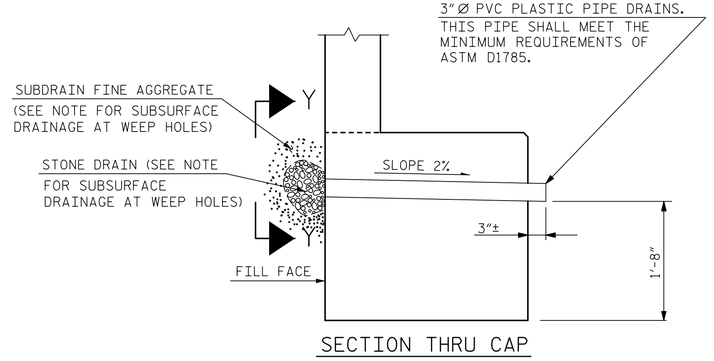
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND DOWELS.

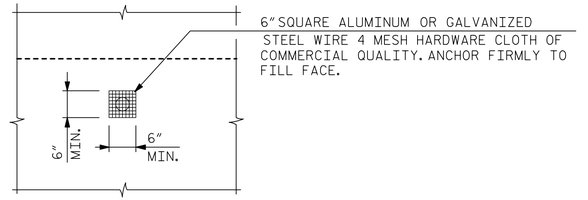
FOR SUBSURFACE DRAINAGE AT WEEP HOLES, SEE ARTICLE 414-8 OF THE STANDARD SPECIFICATIONS.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



SECTION THRU CAP



VIEW Y-Y

NOTE:

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC PLASTIC PIPE DRAINS, HARDWARE CLOTH AND FASTENERS. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

PIPE DRAIN DETAILS

PROJECT NO. 061-01-f64aa

MITCHELL COUNTY

STATION: 11+57.50 -L-

SHEET 1 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS — Digitally signed by David W. Hawkins — 12/9/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

SUBSTRUCTURE

END BENT No. 1

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 11/25
CHECKED BY D. HAWKINS DATE 11/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 11/25

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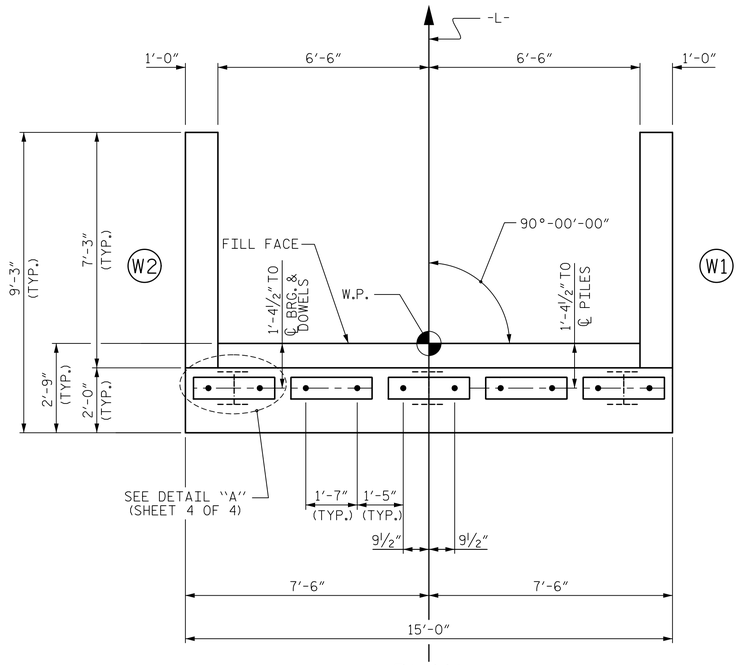
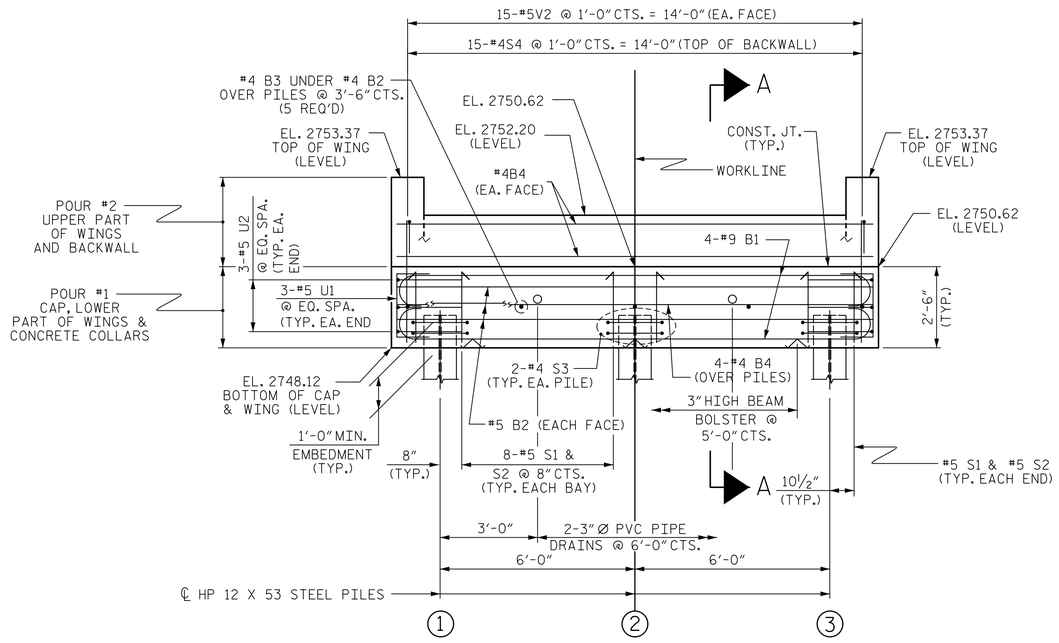


PLAN



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.

NOTES

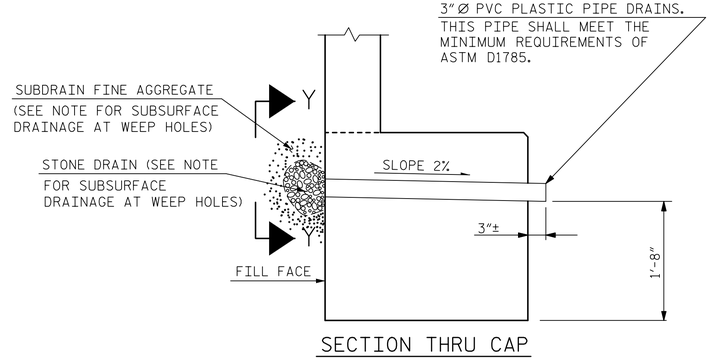
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND DOWELS.

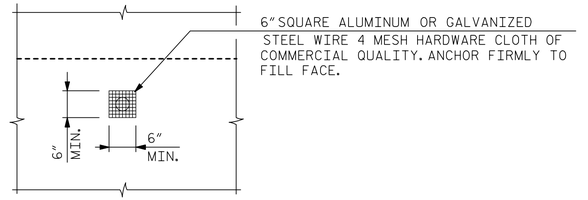
FOR SUBSURFACE DRAINAGE AT WEEP HOLES, SEE ARTICLE 414-8 OF THE STANDARD SPECIFICATIONS.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



SECTION THRU CAP



VIEW Y-Y

NOTE:

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC PLASTIC PIPE DRAINS, HARDWARE CLOTH AND FASTENERS. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

PIPE DRAIN DETAILS

PROJECT NO. 061-01-f64aa

MITCHELL COUNTY

STATION: 11+57.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

SUBSTRUCTURE

END BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
12/9/2025

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 11/25
CHECKED BY D. HAWKINS DATE 11/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 11/25

DWG. NO. 9

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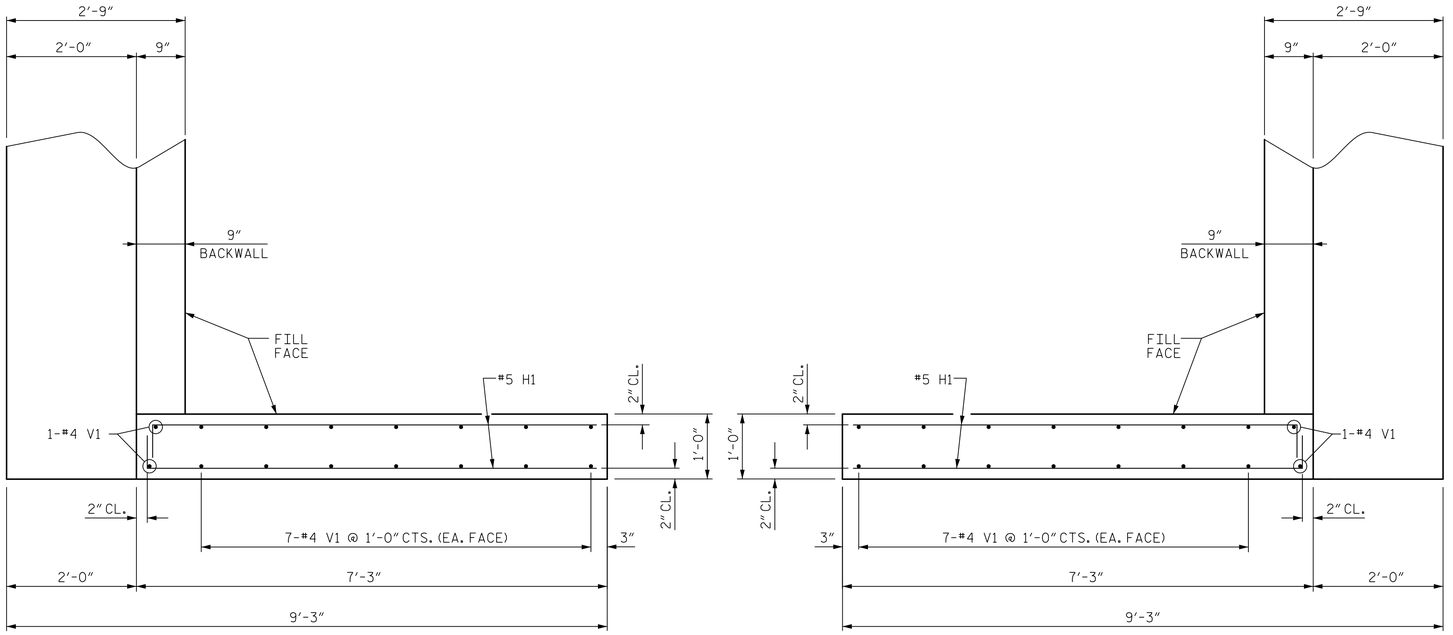
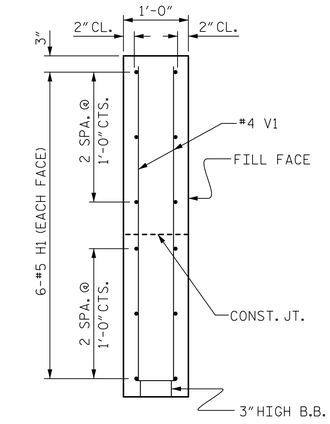
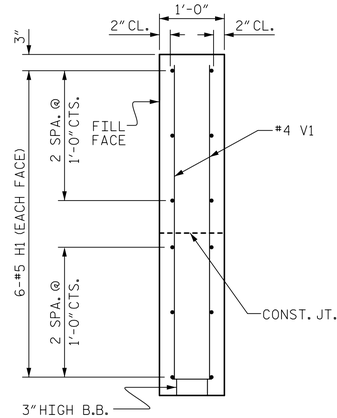


PLAN OF WING (W1)

PLAN OF WING (W2)

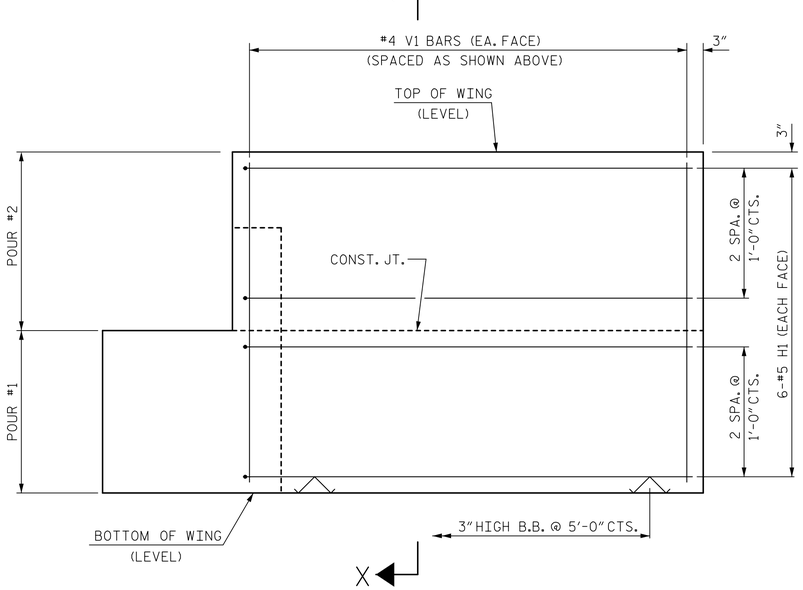


SECTION X-X



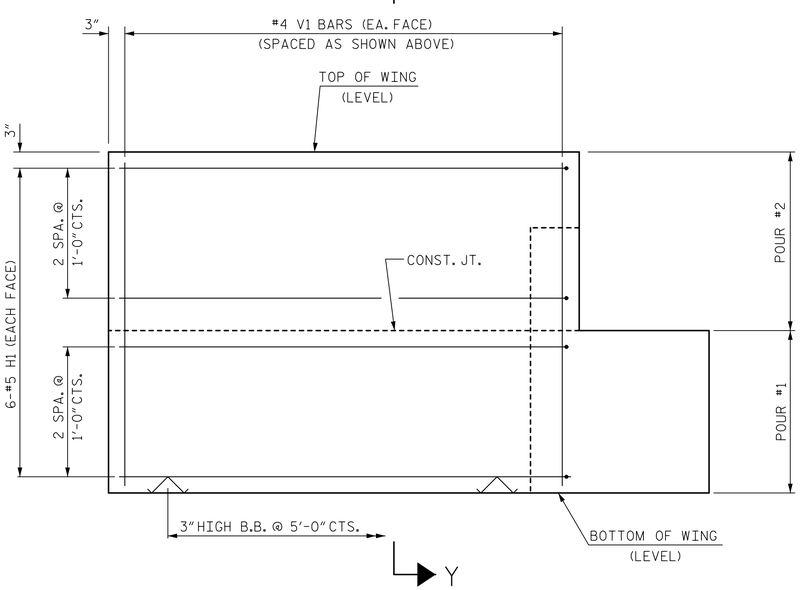
SECTION Y-Y

X



ELEVATION OF WING (W1)

Y



ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. 061-01-f64aa

MITCHELL COUNTY

STATION: 11+57.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

SUBSTRUCTURE

END BENT
WING DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
David W. Hawkins
12/9/2025

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 11/25
CHECKED BY D. HAWKINS DATE 11/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 11/25

DWG. NO. 10

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NO.	BY	DATE	NO.	BY	DATE	S1-10
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2			4			12

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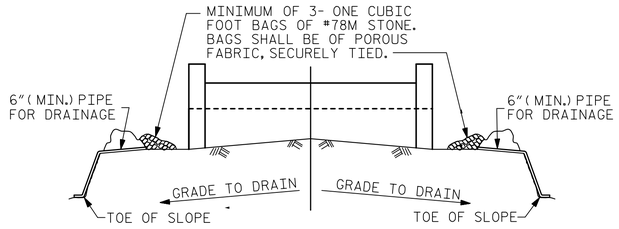
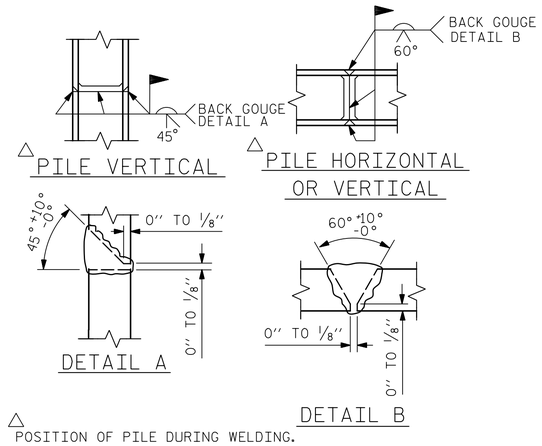


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

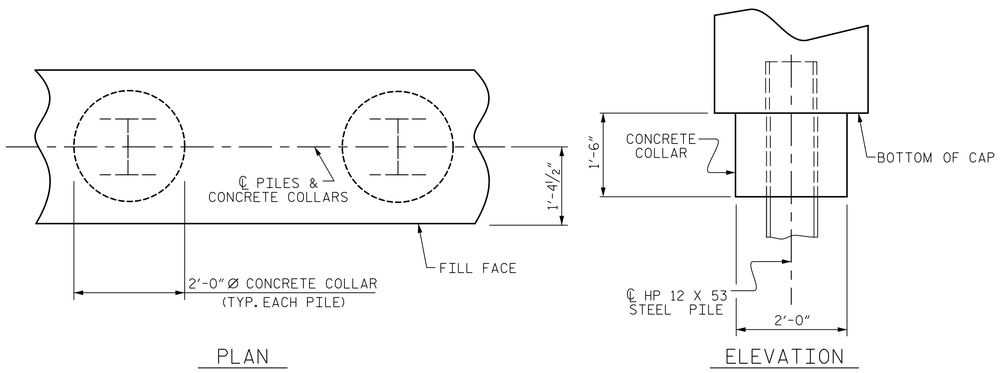
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

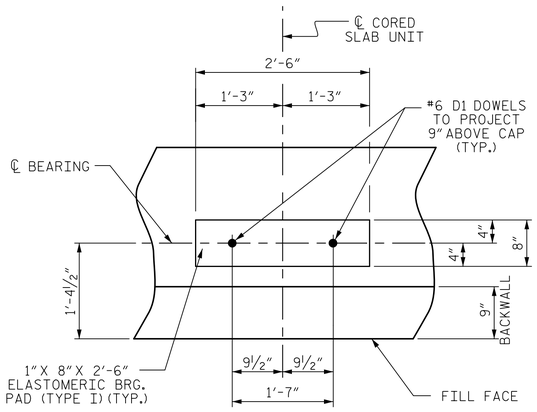
PILE SPLICE DETAILS



PLAN ELEVATION

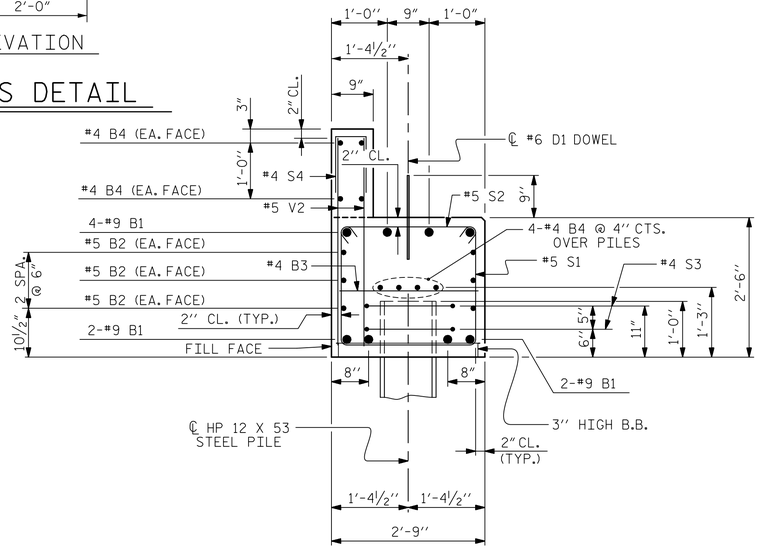
CORROSION PROTECTION FOR STEEL PILES DETAIL

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



DETAIL "A"

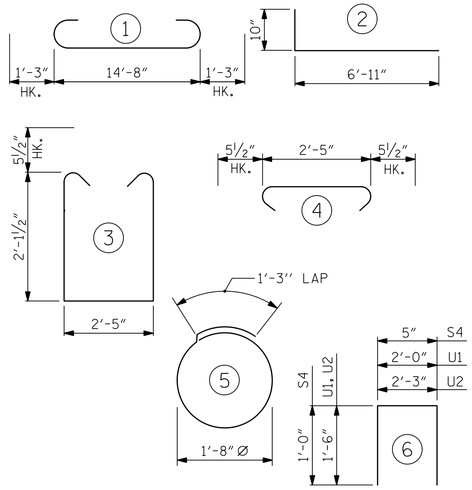
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



SECTION A-A

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES NO: 3 LIN. FT. = 75.0	HP 12 X 53 STEEL PILES NO: 3 LIN. FT. = 45.0
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 3	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 3

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	17'-2"	467
B2	6	#5	STR	14'-8"	92
B3	5	#4	STR	2'-5"	8
B4	8	#4	STR	14'-8"	78
D1	20	#6	STR	1'-6"	45
H1	24	#5	2	7'-9"	194
S1	18	#5	3	7'-7"	142
S2	18	#5	4	3'-4"	63
S3	6	#4	5	6'-6"	26
S4	15	#4	6	2'-5"	24
U1	6	#5	6	5'-0"	31
U2	6	#5	6	5'-3"	33
V1	32	#4	STR	4'-10"	103
V2	30	#5	STR	3'-8"	115

REINFORCING STEEL (FOR ONE END BENT) 1421 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 5.7 C.Y.

POUR #2 UPPER PART OF WINGS & BACKWALL 2.0 C.Y.

TOTAL CLASS A CONCRETE 7.7 C.Y.

PROJECT NO. 061-01-f64aa

MITCHELL COUNTY

STATION: 11+57.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS — Signed by: David W. Hawkins — 12/9/2025

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
4000 Center at North Hills St., Suite 500, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT DATE 11/25
CHECKED BY D. HAWKINS DATE 11/25
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 11/25

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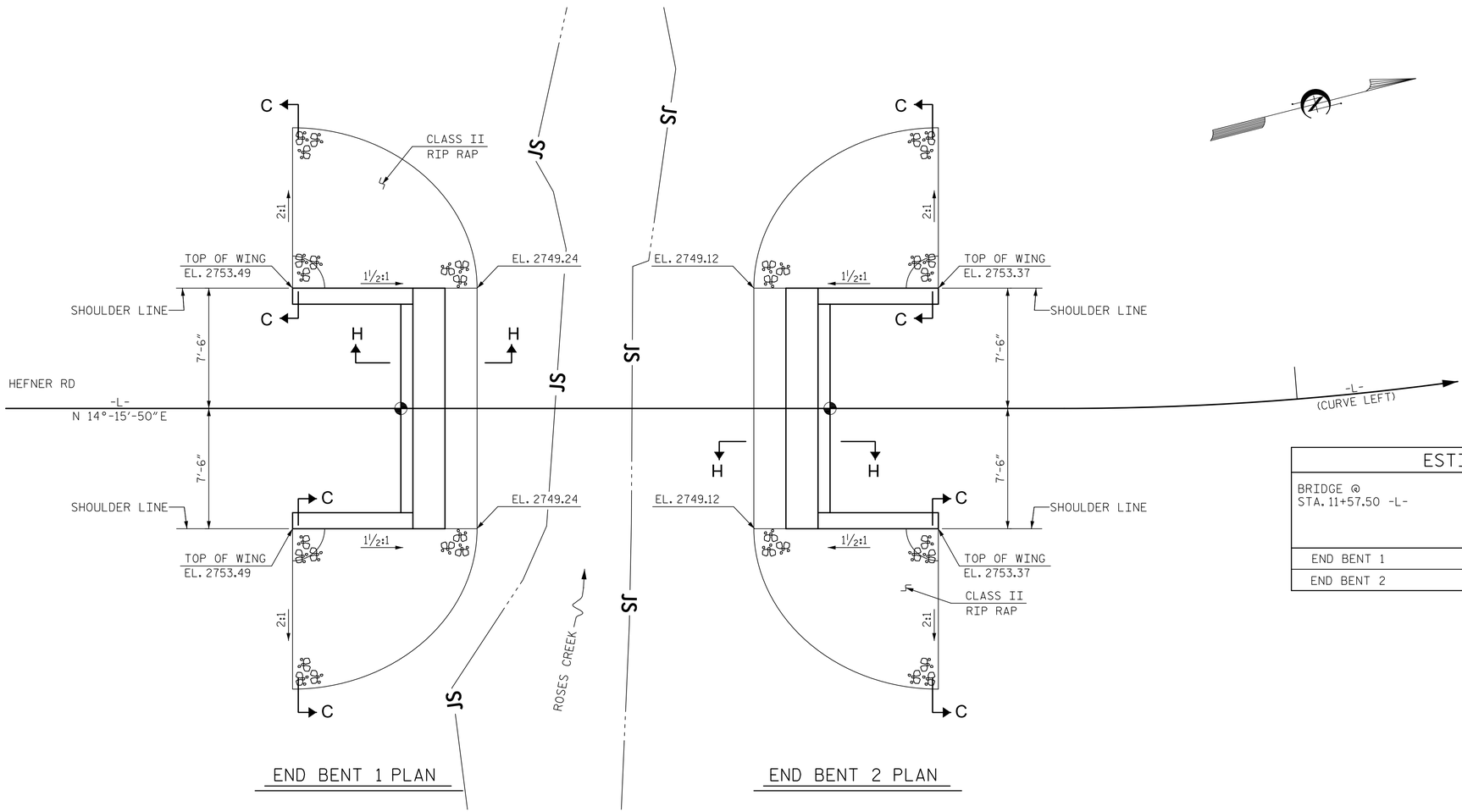
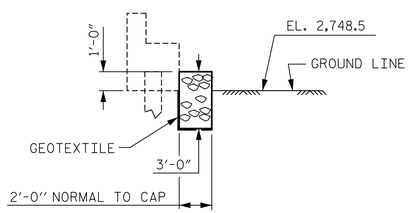


END BENT 1 PLAN

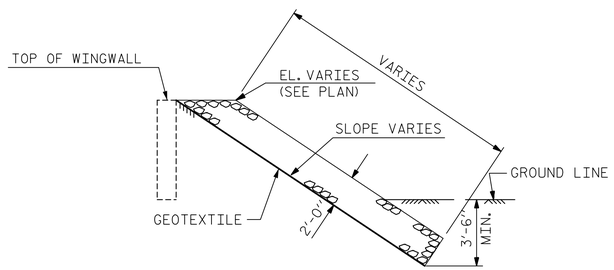
END BENT 2 PLAN

ESTIMATED QUANTITIES

BRIDGE @ STA. 11+57.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	36	45
END BENT 2	36	45



SECTION H-H



SECTION C-C

PROJECT NO. 061-01-f64aa

MITCHELL COUNTY

STATION: 11+57.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF PUBLIC SAFETY

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS
Signed by: David W. Hawkins
12/9/2025

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NC License No. C-1554
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DESIGN ENGINEER OF RECORD D. HAWKINS DATE 11/25

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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾" 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 $\frac{5}{16}$" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

PRB.35493

Site # 100-01-00204
164 Wheeler Farm Drive, Burnsville
Cane Creek in Yancey County
WBS 51830.2.13.52

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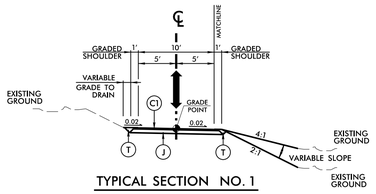
8/17/99

PAVEMENT SCHEDULE

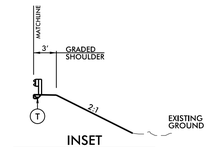
C1	PROPOSED 2" ASPHALT SURFACE COURSE, TYPE S4.75A, AT AN AVERAGE RATE OF 220 LBS PER SQ YD
C2	PROPOSED ASPHALT SURFACE COURSE, TYPE S4.75A, AT AN AVERAGE RATE OF 110 LBS PER SQ YD PER INCH
J	6" AGGREGATE BASE COURSE
T	EARTH MATERIAL

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



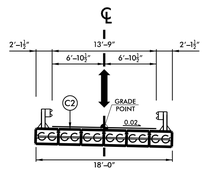
TYPICAL SECTION NO. 1

ASPHALT SURFACE



INSET

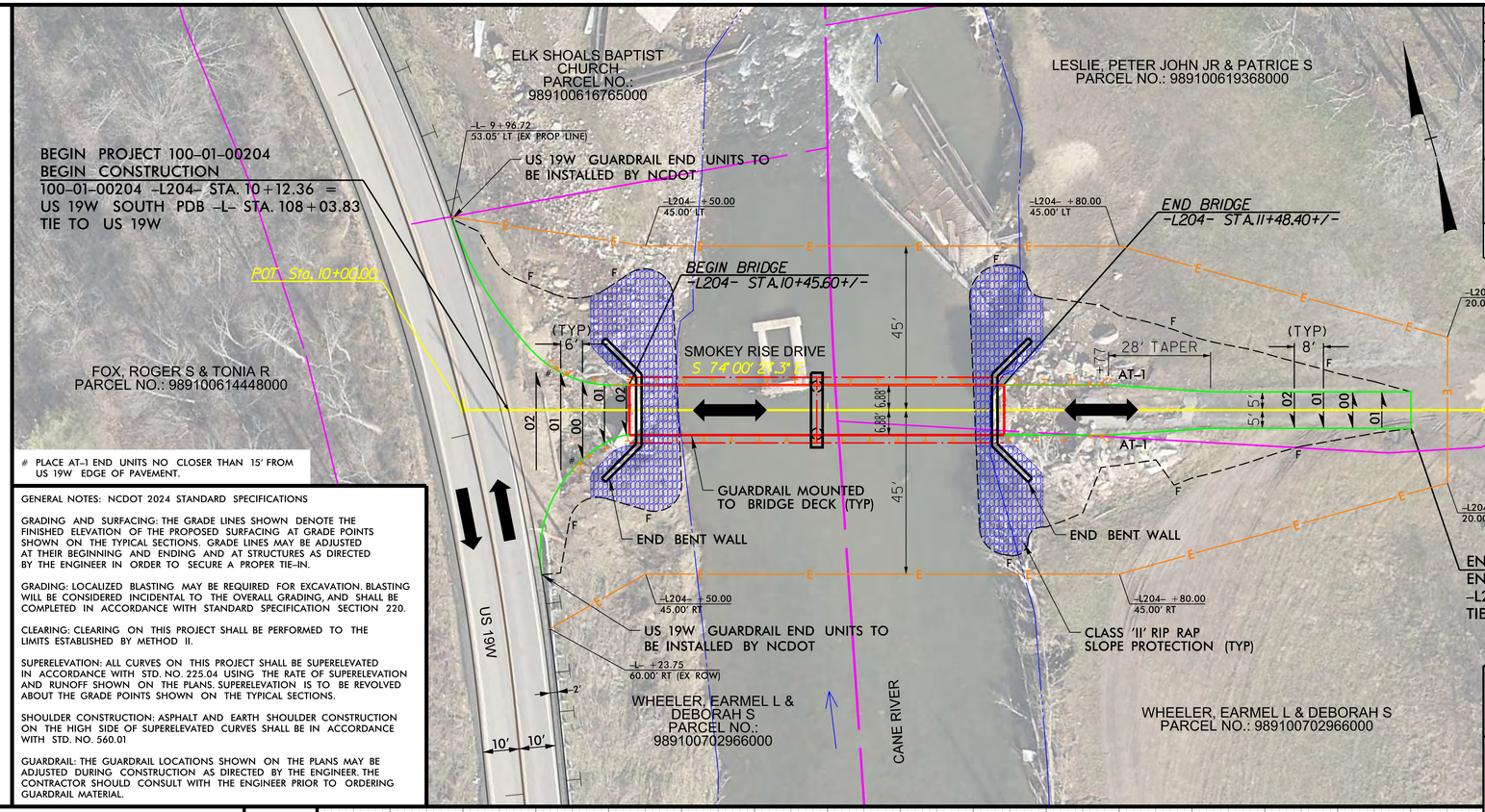
GUARDRAIL SECTIONS



TYPICAL SECTION NO. 2

BRIDGE 001-01-00204

(SEE STRUCTURE PLANS)



PLACE AT-1 END UNITS NO CLOSER THAN 15' FROM US 19W EDGE OF PAVEMENT.

GENERAL NOTES: NCDOT 2024 STANDARD SPECIFICATIONS

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.

GRADING: LOCALIZED BLASTING MAY BE REQUIRED FOR EXCAVATION. BLASTING WILL BE CONSIDERED INCIDENTAL TO THE OVERALL GRADING, AND SHALL BE COMPLETED IN ACCORDANCE WITH STANDARD SPECIFICATION SECTION 220.

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

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.

PROJECT REFERENCE NO.	SHEET NO.
100-01-00204	1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032584 ENGINEER R. ERSKINE BROOKS

3/30/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038053 ENGINEER DEVIN C. MORRISON

3/31/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTE: THIS SHEET DEPICTS THE POST-STORM AERIAL

SCALE (HORIZONTAL)

20 10 0 20 40

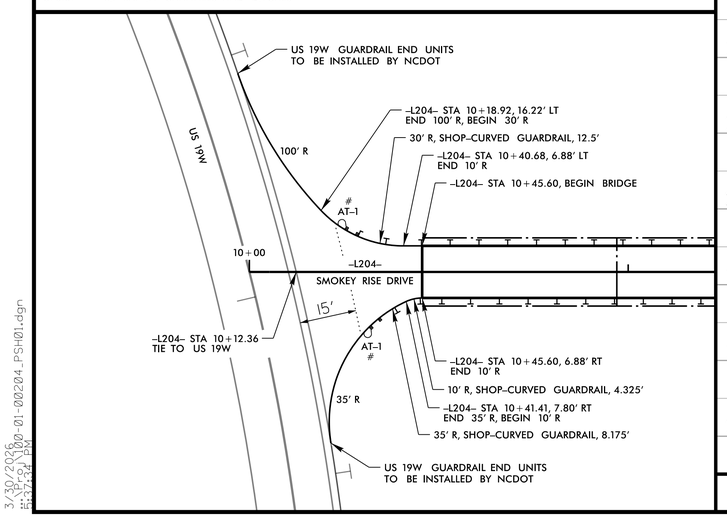
SCALE (VERTICAL)

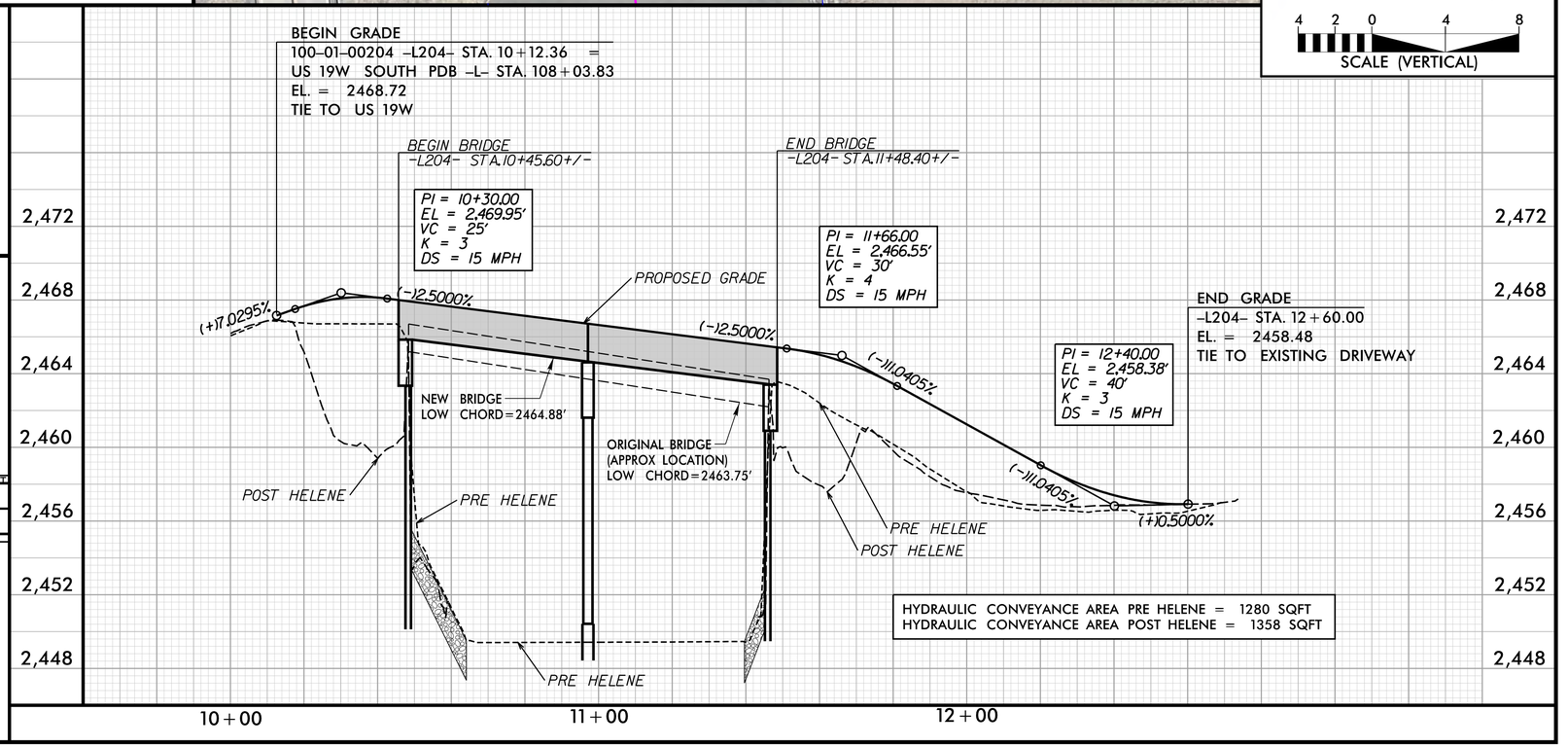
4 2 0 4 8

NCDOT 2024 ROADWAY ENGLISH STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" CONTRACTS STANDARDS AND DEVELOPMENT UNIT – N. C. DEPARTMENT OF TRANSPORTATION – RALEIGH, N. C., DATED JANUARY 16, 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD.NO.	TITLE
DIVISION 2 – EARTHWORK	
200.02	METHOD OF CLEARING – METHOD II
225.02	GUIDE FOR GRADING SUBGRADE – SECONDARY AND LOCAL
225.04	METHOD OF OBTAINING SUPERELEVATION – TWO LANE PAVEMENT
DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.01	METHOD OF SHOULDER CONSTRUCTION – HIGH SIDE OF SUPERELEVATED CURVE – METHOD I
DIVISION 8 – INCIDENTALS	
862.01	GUARDRAIL PLACEMENT (USE DETAILS IN LIEU OF STANDARDS FOR SHEETS 4, 6, 11, 12, AND 14 OF 15)
862.02	GUARDRAIL INSTALLATION (USE DETAIL IN LIEU OF STANDARD FOR SHEET 5 OF 9)
862.03	STRUCTURE ANCHOR UNITS (USE DETAIL IN LIEU OF STANDARDS FOR SHEET 6 AND 8 OF 9)
876.01	RIP RAP IN CHANNELS AND DITCHES





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100-01-00204_PSH01.dgn
RJSTAGG
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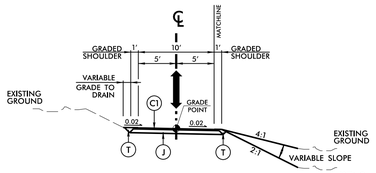
Docusign Envelope ID: 61C876F7-9CDC-4841-97DA-79E3F9A14A5A

8/17/99

PAVEMENT SCHEDULE

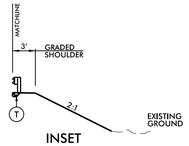
C1	PROPOSED 2" ASPHALT SURFACE COURSE, TYPE S4.75A, AT AN AVERAGE RATE OF 220 LBS PER SQ YD
C2	PROPOSED ASPHALT SURFACE COURSE, TYPE S4.75A, AT AN AVERAGE RATE OF 110 LBS PER SQ YD PER INCH
J	6" AGGREGATE BASE COURSE
T	EARTH MATERIAL

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



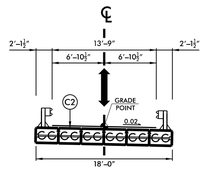
TYPICAL SECTION NO. 1

ASPHALT SURFACE



INSET

GUARDRAIL SECTIONS



TYPICAL SECTION NO. 2

BRIDGE 001-01-00204

(SEE STRUCTURE PLANS)

ELK SHOALS BAPTIST CHURCH
PARCEL NO.:
989100616765000

LESLIE, PETER JOHN JR & PATRICE S
PARCEL NO.: 989100619368000

–L– 9+96.72
53.05' LT (EX PROP LINE)

BEGIN PROJECT 100-01-00204
BEGIN CONSTRUCTION
100-01-00204 –L204– STA. 10+12.36 =
US 19W SOUTH PDB –L– STA. 108+03.83
TIE TO US 19W

US 19W GUARDRAIL END UNITS TO BE INSTALLED BY NCDOT

–L204– +50.00
45.00' LT

POT Sta. 10+00.00

BEGIN BRIDGE
–L204– STA.10+45.60+/–

–L204– +80.00
45.00' LT

END BRIDGE
–L204– STA.11+48.40+/–

–L204– +70.00
20.00' LT

WHEELER FARM DRIVE

FOX, ROGER S & TONIA R
PARCEL NO.: 989100614448000

(TYP) 6'

SMOKEY RISE DRIVE
S 74°00'27.3" E

28' TAPER

(TYP) 8'

AT–1

45'

6.88'

5'

5'

02 01 00

GUARDRAIL MOUNTED TO BRIDGE DECK (TYP)

END BENT WALL

POT Sta. 12+80.00

–L204– +70.00
20.00' RT

END PROJECT 100-01-00204
END CONSTRUCTION
–L204– STA. 12+60.00
TIE TO EXISTING DRIVEWAY

–L– +23.75
60.00' RT (EX ROW)

US 19W GUARDRAIL END UNITS TO BE INSTALLED BY NCDOT

CLASS 'II' RIP RAP SLOPE PROTECTION (TYP)

US 19W

CANE RIVER

WHEELER, EARMEL L & DEBORAH S
PARCEL NO.:
989100702966000

WHEELER, EARMEL L & DEBORAH S
PARCEL NO.: 989100702966000

10' 10' 2'

PLACE AT–1 END UNITS NO CLOSER THAN 15' FROM US 19W EDGE OF PAVEMENT.

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PROJECT REFERENCE NO.	SHEET NO.
100-01-00204	1A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032584 ENGINEER R. ERSKINE BROOKS

3/30/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038053 ENGINEER DAVID C. MORRISON

3/31/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTE: THIS SHEET DEPICTS THE HORIZONTAL ALIGNMENT AND CONTOURS

SCALE (HORIZONTAL)
20 10 0 20 40

SCALE (VERTICAL)
4 2 0 4 8

NCDOT 2024 ROADWAY ENGLISH STANDARD DRAWINGS

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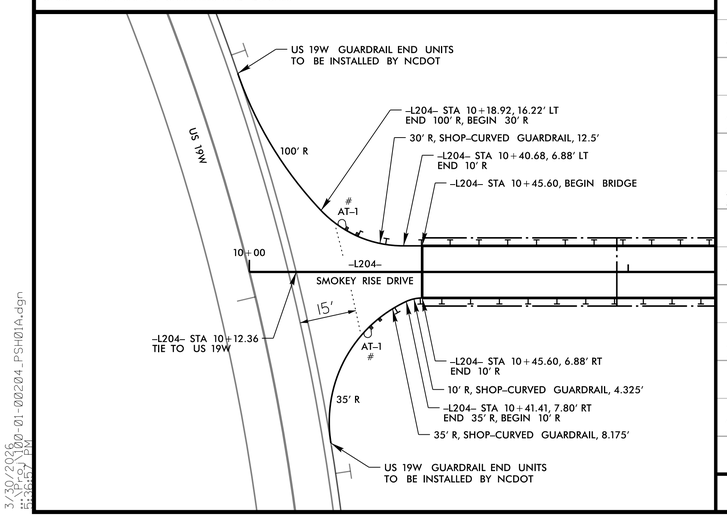

BEGIN GRADE
100–01–00204 –L204– STA. 10+12.36 =
US 19W SOUTH PDB –L– STA. 108+03.83
EL. = 2468.72
TIE TO US 19W

BEGIN BRIDGE
–L204– STA.10+45.60+/–

END BRIDGE
–L204– STA.11+48.40+/–

PI = 10+30.00
EL = 2,469.95'
VC = 25'
K = 3
DS = 15 MPH

PI = 11+66.00
EL = 2,466.55'
VC = 30'
K = 4
DS = 15 MPH

PI = 12+40.00
EL = 2,458.38'
VC = 40'
K = 3
DS = 15 MPH

END GRADE
–L204– STA. 12+60.00
EL. = 2458.48
TIE TO EXISTING DRIVEWAY

PROPOSED GRADE

(+)17.0295%
(–)12.5000%
(–)12.5000%
(–)111.0405%
(–)111.0405%
(+)10.5000%

NEW BRIDGE
LOW CHORD=2464.88'

ORIGINAL BRIDGE
(APPROX LOCATION)
LOW CHORD=2463.75'

POST HELENE
PRE HELENE
PRE HELENE
POST HELENE
PRE HELENE

HYDRAULIC CONVEYANCE AREA PRE HELENE = 1280 SQFT
HYDRAULIC CONVEYANCE AREA POST HELENE = 1358 SQFT

2,472
2,468
2,464
2,460
2,456
2,452
2,448

10+00 11+00 12+00

3/30/2026
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FLAGLER, DW

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PROJ. REFERENCE NO. 100-01-00204 | SHEET NO. TMP-1

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
US 19W	MON-FRI: 7:00 AM TO 9:00 AM 4:00 PM TO 6:00 PM

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME

US 19W

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 4:00 PM DECEMBER 31ST TO 9:00 AM JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9:00 AM THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 4:00 PM THURSDAY AND 9:00 AM MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 4:00 PM FRIDAY TO 9:00 AM TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 4:00 PM THE DAY BEFORE INDEPENDENCE DAY AND 9:00 AM THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 4:00 PM THE THURSDAY BEFORE INDEPENDENCE DAY AND 9:00 AM THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 4:00 PM FRIDAY AND 9:00 AM TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 4:00 PM TUESDAY TO 9:00 AM MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 4:00 PM THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 AM THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

C) DO NOT CLOSE ROAD AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
US 19W	ANYTIME

D) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS	DURATION AND OPERATION
US 19W	MONDAY - SUNDAY 7:00 AM TO 9:00 AM 4:00 PM TO 6:00 PM	30 MINUTES FOR GIRDER/MATERIAL DELIVERY

E) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

F) 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.

G) 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.

H) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING 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.

I) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL, 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.

J) NOTIFY THE NCDOT STATEWIDE TRANSPORTATION OPERATIONS CENTER (STOC) AT 877-627-7862 APPROXIMATELY 30 MINUTES PRIOR TO INSTALLING AND WITHIN 15 MINUTES AFTER REMOVING THE LANE CLOSURE.

PAVEMENT EDGE DROP OFF REQUIREMENTS

K) 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 THAT EXCEEDS 2 INCHES.

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

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

M) 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.

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

TRAFFIC CONTROL DEVICES

O) 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.

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

PAVEMENT MARKINGS AND MARKERS

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

MISCELLANEOUS

R) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGERS
1180.01	SKINNY-DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING

APPROVED: R. Erskine Brooks

DATE: 12/23/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032584 ENGINEER R. ERSKINE BROOKS

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TRANSPORTATION MANAGMENT PLAN

REVISIONS

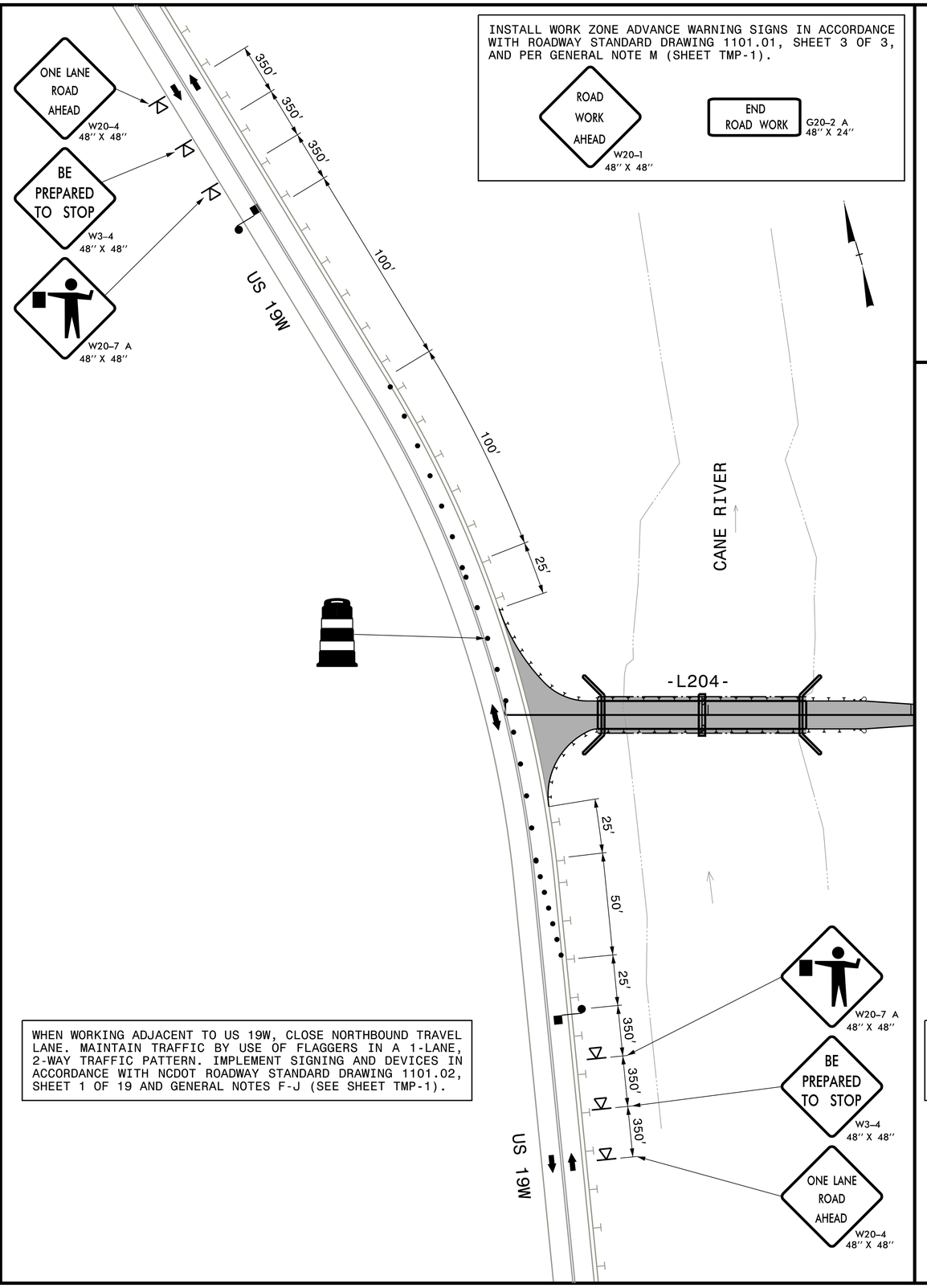
PLOT DRIVER: NCDOT_pdf_color_eng_50.plt PENTABLE: NCDOT_tcp.tbl
USER: ERBROOKS DATE: 12/19/2025 TIME: 7:58:39 AM
FILE: pw:\pwdrusea01a.intranet.hdr-HDR_US_East_01A\Documents\2540098\10434317\6.0_CAD_BIM\6.2_WIP\Site 100-01-00204\Traffic\TrafficControl\TCP\100-01-00204_TMP_TMP01.dgn

Docusign Envelope ID: 0F3730BA-0CE1-4202-A516-650B41355140

INSTALL WORK ZONE ADVANCE WARNING SIGNS IN ACCORDANCE WITH ROADWAY STANDARD DRAWING 1101.01, SHEET 3 OF 3, AND PER GENERAL NOTE M (SHEET TMP-1).

ROAD WORK AHEAD
W20-1
48" X 48"

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



WHEN WORKING ADJACENT TO US 19W, CLOSE NORTHBOUND TRAVEL LANE. MAINTAIN TRAFFIC BY USE OF FLAGGERS IN A 1-LANE, 2-WAY TRAFFIC PATTERN. IMPLEMENT SIGNING AND DEVICES IN ACCORDANCE WITH NCDOT ROADWAY STANDARD DRAWING 1101.02, SHEET 1 OF 19 AND GENERAL NOTES F-J (SEE SHEET TMP-1).

LEGEND

GENERAL
- DIRECTION OF TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA

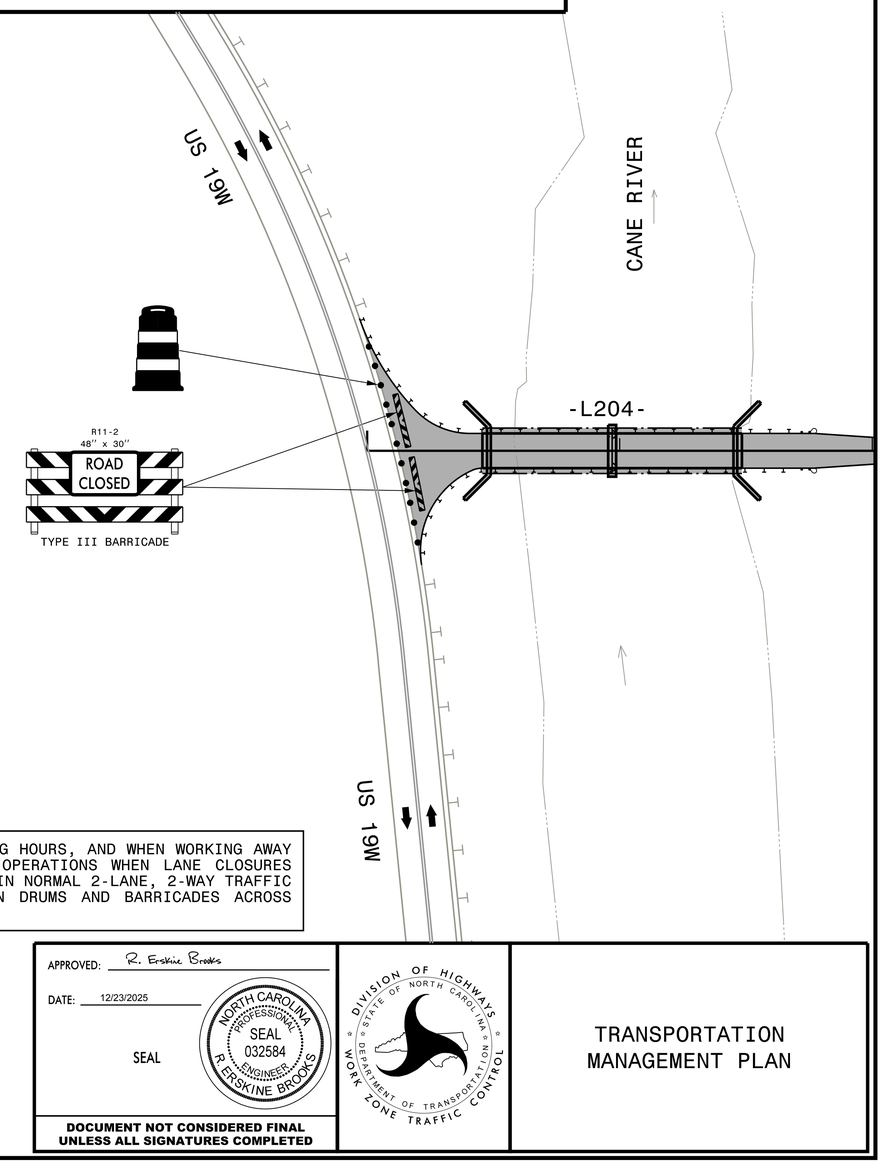
PAVEMENT MARKINGS
- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES
- BARRICADE (TYPE III)
- CONE
- DRUM
- FLAGGER

TEMPORARY SIGNING
- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PROJ. REFERENCE NO.	SHEET NO.
100-01-00204	TMP-2

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116



OUTSIDE OF NORMAL WORKING HOURS, AND WHEN WORKING AWAY FROM TRAFFIC AND OTHER OPERATIONS WHEN LANE CLOSURES ARE NOT REQUIRED, MAINTAIN NORMAL 2-LANE, 2-WAY TRAFFIC ON US 19W, AND MAINTAIN DRUMS AND BARRICADES ACROSS -L204- INTERSECTION.

APPROVED: R. Erskine Brooks

DATE: 12/23/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032584 ENGINEER R. ERSKINE BROOKS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TRANSPORTATION MANAGEMENT PLAN

REVISIONS

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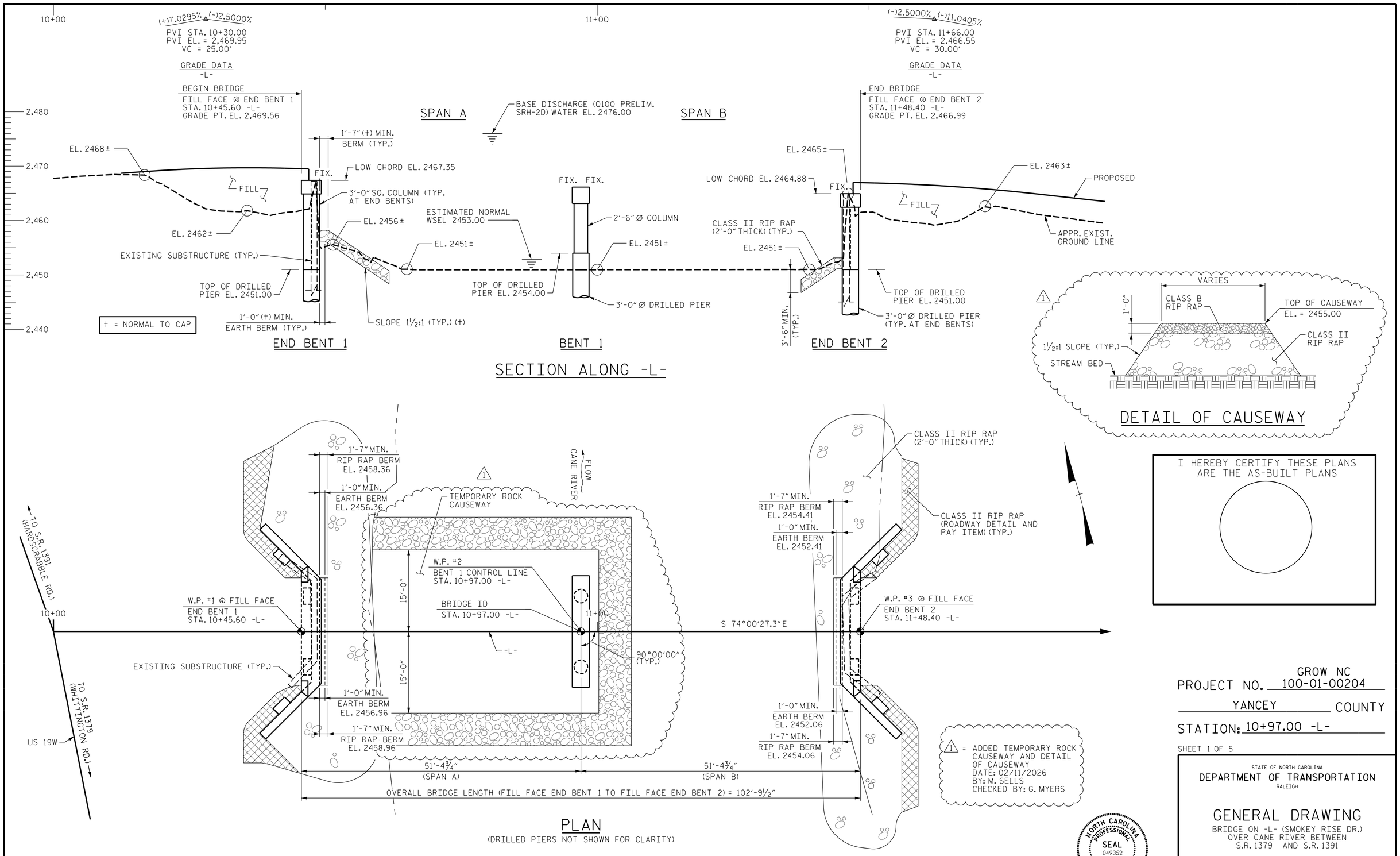

1 = ADDED TEMPORARY ROCK CAUSEWAY AND DETAIL OF CAUSEWAY
DATE: 02/11/2026
BY: M. SELLS
CHECKED BY: G. MYERS

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -L- (SMOKEY RISE DR.) OVER CANE RIVER BETWEEN S.R. 1379 AND S.R. 1391

REVISIONS						SHEET NO. S-01
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	GEM	02/11/2026	3	--	--	TOTAL SHEETS 18
2	--	--	4	--	--	

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS
2/23/2026
Gregory E. Myers

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DES BY:	G. MYERS	DATE :	10/25
DES CHK:	G. CASTREJON	DATE :	10/25
DWG BY:	B. PETERSON	DATE :	10/25
CHK BY:	G. CASTREJON	DATE :	11/25

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FILE: ...\CAD\Plan Production Set\1

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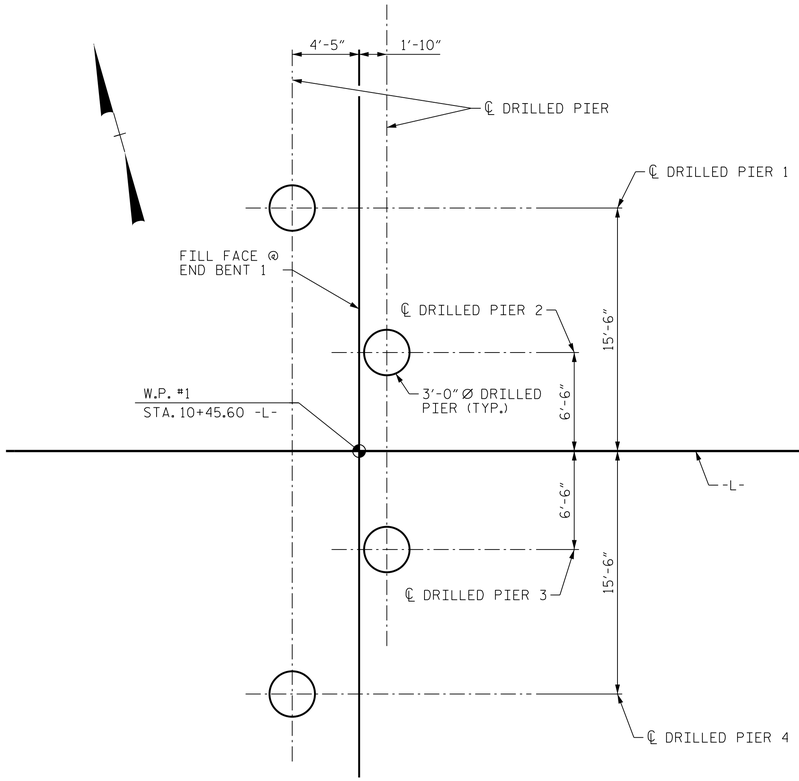
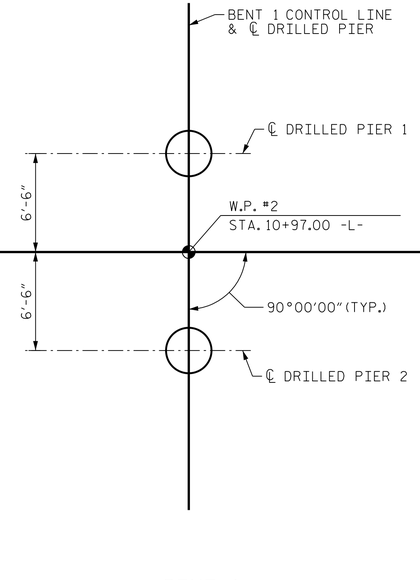
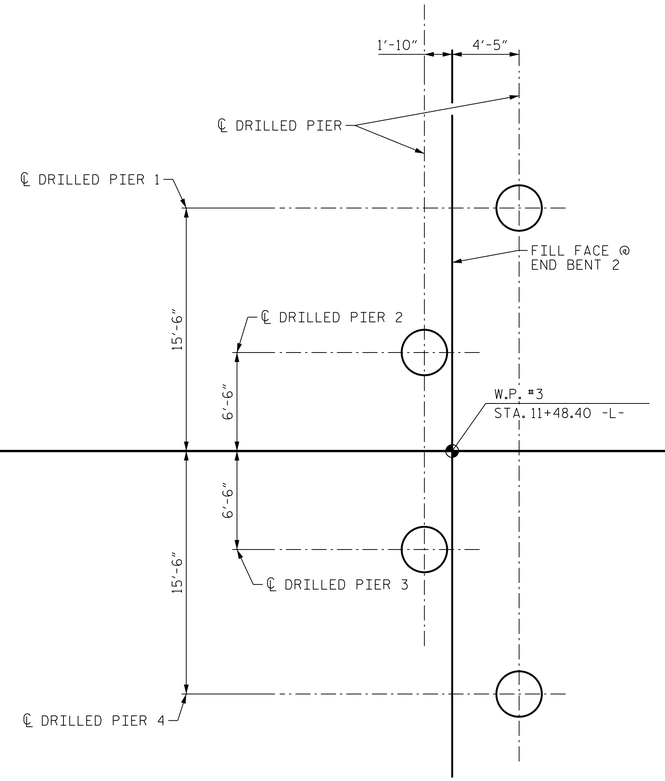


END BENT 1



BENT 1



END BENT 2

FOUNDATION LAYOUT

NOTES

FOR GEOTECHNICAL FOUNDATION TABLES, SEE SHEET S01-03.

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOUNDATION LAYOUT

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS

12/22/2025

Gregory E. Myers

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-02
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	18

DES BY: G. MYERS	DATE : 11/25	DWG BY: B. PETERSON	DATE : 11/25
DES CHK: G. MARTINEZ	DATE : 11/25	CHK BY: K. DICKENS	DATE : 11/25

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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TIME: 1:07:01 PM

Docusign Envelope ID: 20970CAC-0730-401D-B229-D92F8E56164C

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip Elevation FT	Required Tip Resistance per Pier KSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier LIN FT	Drilled Pier Length* per Pier LIN FT	Drilled Pier Length Not In Soil* per Pier LIN FT	Drilled Pier Length In Soil* per Pier LIN FT	Permanent Steel Casing Required? YES	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
End Bent 1, Piers 1-4	4	400	2437.00	130		10	14	10	3.9			
Bent 1, Piers 1-2	2	615	2438.00	210	2447.10	9	16	9	2.3	YES	2447.10	7
End Bent 2, Piers 1-4	4	400	2437.00	130		10	14	10	3.9			
TOTAL QUANTITY:							144	98	35.8			14

* Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "36" Dia. Drilled Piers" or "36" Dia. Drilled Piers Not in Soil" and "36" Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "36" Dia. Drilled Piers in Soil."

** Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casing for 36" Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications.

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
End Bent 1, Piers 1-4	MAYBE	1		1	
Bent 1, Piers 1-2	MAYBE	1		MAYBE	
End Bent 2, Piers 1-4	MAYBE	1		MAYBE	
TOTAL QUANTITY:		3		1	

NOTES:

1. The Drilled Pier Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Saket Kabra, #053059) on 11-21-2025.
2. The Engineer may adjust the quantity for Permanent Steel Casing, SPTs, TIPs, CSL Testing, SID Inspections and PITs when necessary.
3. For Drilled Piers, see Section 411 of the Standard Specifications.
4. CSL tubes are required and CSL testing may be required for drilled piers. The engineer will determine the need for CSL testing. For CSL testing, see section 411 of the Standard Specifications.
5. SID inspections may be required for drilled piers. The engineer will determine the need for SID inspections.
6. Permanent steel casings are required for drilled piers at Bent No. 1. Do not extend permanent casings below elevation 2447 ft without prior approval from the Engineer.
7. Test Holes are required for drilled piers at End Bent No.2 and Bent No. 1 to confirm continous rock. For Test holes, see Section 411 of the Standard Specifications.

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS

Gregory E. Myers 12/22/2025

DES BY: J. PATT DATE: 10/25
DES CHK: S. DICKENS DATE: 10/25

DWG BY: B. PETERSON DATE: 10/25
CHK BY: G. MYERS DATE: 11/25

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
GEOTECHNICAL
FOUNDATION TABLES

REVISIONS						SHEET NO. S-03
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 18
2	--	--	4	--	--	

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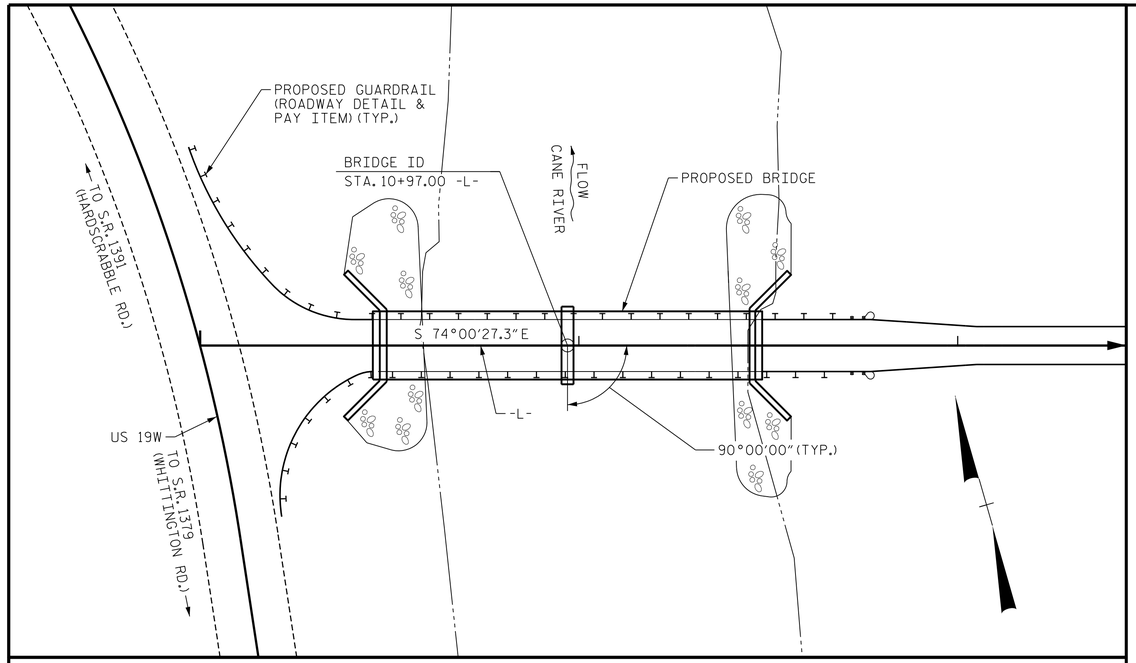

LOCATION SKETCH

HYDRAULIC DATA	
Q100 PRELIM. SRH-20 DISCHARGE	= 36,270 CFS
BASE FLOOD ELEVATION	= 2470.1 FT.
DRAINAGE AREA	= 106.0 SQ. MI.
Q100 PRELIM. SRH-20 WATER ELEVATION	= 2476.0 FT.

1

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA. 10+97.00 -L-	REMOVAL OF EXISTING STRUCTURE AT STATION 10+97.00 -L-	ASBESTOS ASSESSMENT	3'-0" DIA DRILLED PIERS IN SOIL	3'-0" DIA DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" DIA DRILLED PIER	SID INSPECTIONS	CSL TESTING
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.
SUPERSTRUCTURE								
END BENT 1				15.6	40.0		1	1
BENT 1				4.6	18.0	14.0		1
END BENT 2				15.6	40.0			1
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	35.8	98.0	14.0	1	3

	CLASS A CONCRETE (BRIDGE)	REINFORCING STEEL (BRIDGE)	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONC CORED SLABS	
	CU. YDS.	LBS.	LBS.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE						LUMP SUM	12	600.0
END BENT 1	60.7	16,346	1,903	140	155			
BENT 1	10.6	6,278	918					
END BENT 2	52.6	14,894	1,726	140	155			
TOTAL	123.9	37,518	4,547	280	310	LUMP SUM	12	600.0

NOTES

ASSUMED LIVE LOAD = HS-20 OR ALTERNATE LOADING

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

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

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

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 2447.10. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

GUARDRAIL IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

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

THE FUNCTION OF GUARDRAIL PROVIDED ON STRUCTURE IS TO GUIDE DRIVERS ACROSS THE BRIDGE RATHER THAN MEET CRASH DESIGN REQUIREMENTS.

1 AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 10+97.00 -L-.

1 = ADDED NOTE AND PAY ITEM
RELATED TO TEMPORARY ACCESS
DATE: 02/11/2026
BY: M. SELLS
CHECKED BY: G. MYERS

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -L- (SMOKEY RISE DR.)
OVER CANE RIVER BETWEEN
S.R. 1379 AND S.R. 1391

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS
2/23/2026
Gregory E Myers

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-04
1	GEM	02/11/2026	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	18

DES BY: G. MYERS DATE: 11/25
DES CHK: G. CASTREJON DATE: 11/25

DWG BY: B. PETERSON DATE: 11/25
CHK BY: G. CASTREJON DATE: 11/25

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

LOAD TYPE		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						
							LIVE-LOAD FACTORS (γ LL)	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)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93 (INVENTORY)	N/A	1	1.394	--	1.75	0.276	1.57	50'	EL	24.5	0.531	1.39	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5	
		HL-93 (OPERATING)	N/A		1.807	--	1.35	0.276	2.03	50'	EL	24.5	0.531	1.81	50'	EL	2.45	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	2	1.667	60.007	1.75	0.276	1.95	50'	EL	24.5	0.531	1.67	50'	EL	2.45	0.80	0.276	1.79	50'	EL	24.5	
		HS-20 (OPERATING)	36.000		2.161	77.787	1.35	0.276	2.52	50'	EL	24.5	0.531	2.16	50'	EL	2.45	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		3.635	49.079	1.4	0.276	4.95	50'	EL	24.5	0.531	4.70	50'	EL	2.45	0.80	0.276	3.64	50'	EL	24.5	
		SNGARBS2	20.000		2.871	57.420	1.4	0.276	3.91	50'	EL	24.5	0.531	3.42	50'	EL	2.45	0.80	0.276	2.87	50'	EL	24.5	
		SNAGRIS2	22.000		2.778	61.109	1.4	0.276	3.78	50'	EL	19.6	0.531	3.21	50'	EL	2.45	0.80	0.276	2.78	50'	EL	24.5	
		SNCOTTS3	27.250		1.814	49.418	1.4	0.276	2.47	50'	EL	24.5	0.531	2.36	50'	EL	2.45	0.80	0.276	1.81	50'	EL	24.5	
		SNAGGRS4	34.925		1.577	55.063	1.4	0.276	2.15	50'	EL	24.5	0.531	2.01	50'	EL	2.45	0.80	0.276	1.58	50'	EL	24.5	
		SNS5A	35.550		1.537	54.657	1.4	0.276	2.09	50'	EL	24.5	0.531	2.07	50'	EL	2.45	0.80	0.276	1.54	50'	EL	24.5	
		SNS6A	39.950		1.438	57.430	1.4	0.276	1.96	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5	
		SNS7B	42.000		1.370	57.540	1.4	0.276	1.87	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.37	50'	EL	24.5	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.761	58.118	1.4	0.276	2.40	50'	EL	24.5	0.531	2.25	50'	EL	2.45	0.80	0.276	1.76	50'	EL	24.5	
		TNT4A	33.075		1.777	58.759	1.4	0.276	2.42	50'	EL	24.5	0.531	2.17	50'	EL	2.45	0.80	0.276	1.78	50'	EL	24.5	
		TNT6A	41.600		1.480	61.558	1.4	0.276	2.01	50'	EL	24.5	0.531	2.08	50'	EL	2.45	0.80	0.276	1.48	50'	EL	24.5	
		TNT7A	42.000		1.502	63.087	1.4	0.276	2.05	50'	EL	24.5	0.531	1.94	50'	EL	2.45	0.80	0.276	1.50	50'	EL	24.5	
		TNT7B	42.000		1.566	65.773	1.4	0.276	2.13	50'	EL	24.5	0.531	1.84	50'	EL	2.45	0.80	0.276	1.57	50'	EL	24.5	
		TNAGRIT4	43.000		1.486	63.902	1.4	0.276	2.02	50'	EL	24.5	0.531	1.77	50'	EL	2.45	0.80	0.276	1.49	50'	EL	24.5	
		TNAGT5A	45.000		1.388	62.470	1.4	0.276	1.89	50'	EL	24.5	0.531	1.80	50'	EL	2.45	0.80	0.276	1.39	50'	EL	24.5	
		TNAGT5B	45.000	3	1.360	61.206	1.4	0.276	1.85	50'	EL	24.5	0.531	1.68	50'	EL	2.45	0.80	0.276	1.36	50'	EL	24.5	
EMERGENCY VEHICLE (EV)		EV2	28.750		2.154	61.929	1.3	0.276	2.97	50'	EL	24.5	0.531	2.50	50'	EL	5.50	0.80	0.276	2.15	50'	EL	24.5	
		EV3	43.000	4	1.392	59.852	1.3	0.276	1.92	50'	EL	24.5	0.531	1.69	50'	EL	5.50	0.80	0.276	1.39	50'	EL	24.5	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.

2.

3.

4.

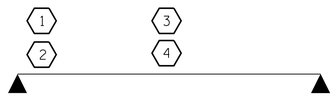
(#) CONTROLLING LOAD RATING

- (1) DESIGN LOAD RATING (HL-93)
- (2) DESIGN LOAD RATING (HS-20)
- (3) LEGAL LOAD RATING **
- (4) EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

FOR SPANS A & B

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DES BY: G. MYERS DATE : 10/25
DES CHK: G. MARTINEZ DATE : 10/25

DWG BY: B. PETERSON DATE : 10/25
CHK BY: G. MYERS DATE : 10/25

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS
12/22/2025
Gregory E. Myers

PROJECT NO. GROW NC 100-01-00204
YANCEY COUNTY
STATION: 10+97.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 50' CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO. S-05
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 18
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STD. NO. 21LRFR_90S_50L

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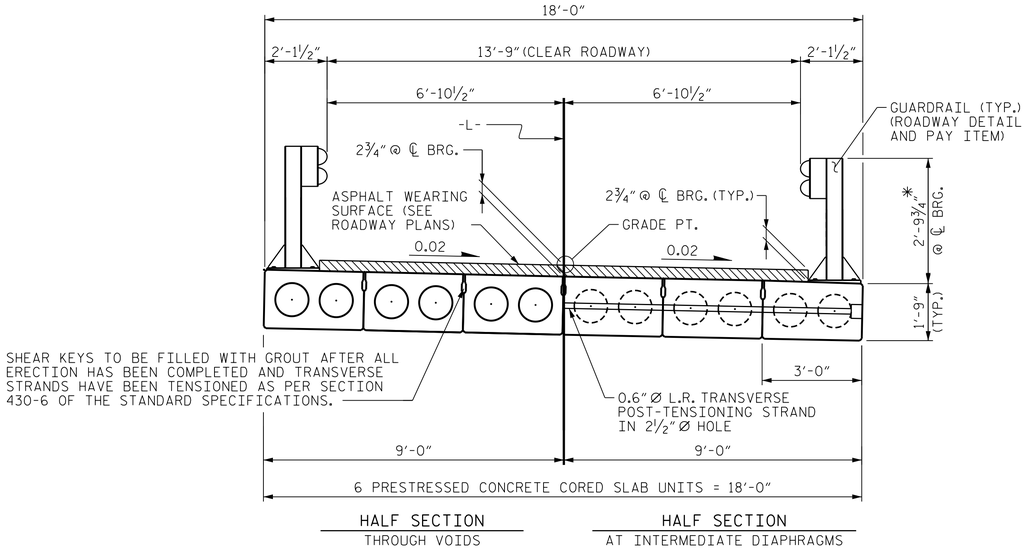
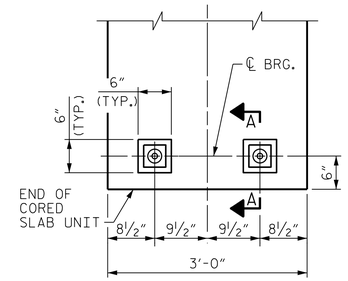


HALF SECTION THROUGH VOIDS

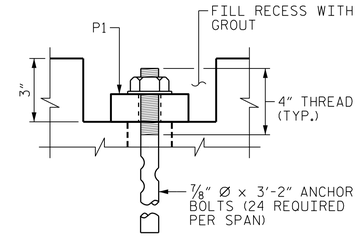
HALF SECTION AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

* - THE MAXIMUM GUARDRAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE GUARDRAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE GUARDRAIL FOLLOWS THE PROFILE OF THE GUTTERLINE.

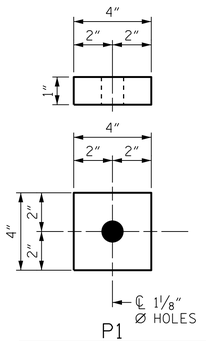


TYPICAL PLAN
(TYP. EA. CORED SLAB UNIT)



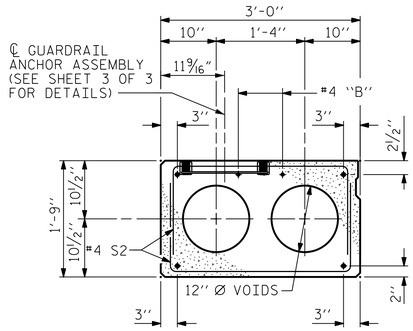
SECTION A-A

BLOCKOUT DETAIL FOR ANCHOR BOLTS



P1
(24 REQUIRED PER SPAN)

PLATE DETAILS

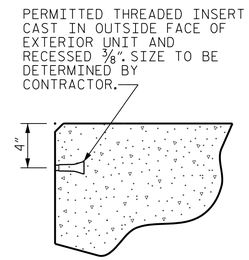


EXT. SLAB SECTION

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

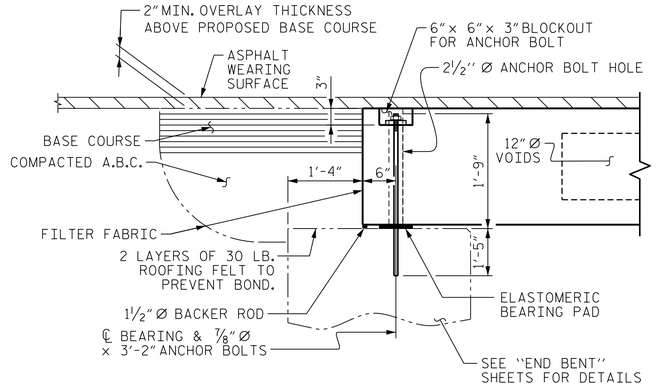
▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6′-0″ FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



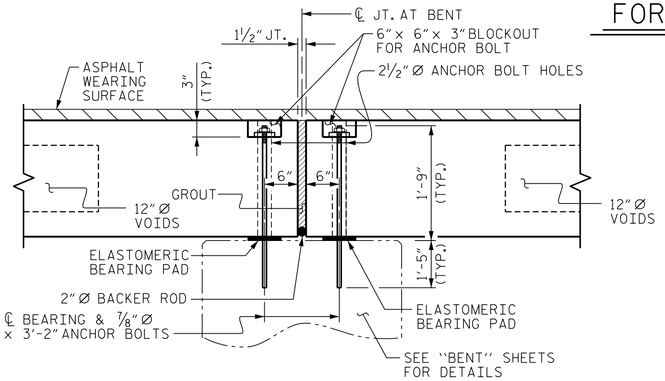
THREADED INSERT DETAIL

FIXED END

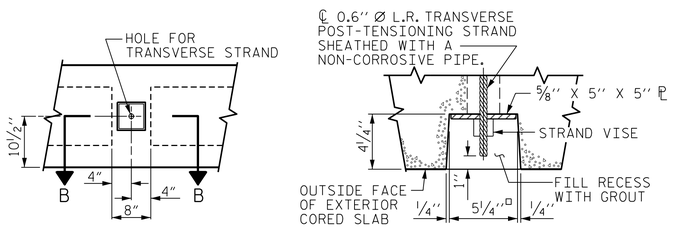


SECTION AT END BENT

FIXED END FIXED END



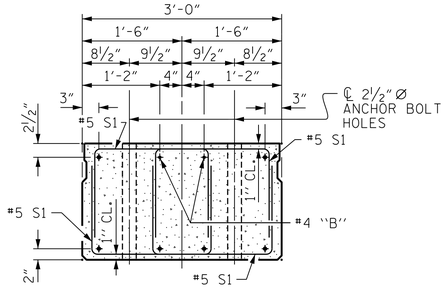
SECTION AT BENT



ELEVATION VIEW

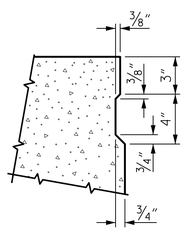
SECTION B-B

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



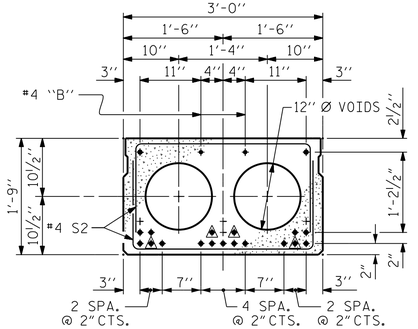
END ELEVATION

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



SHEAR KEY DETAIL

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



INTERIOR SLAB SECTION (50′ UNIT)
(19 STRANDS REQUIRED)

0.6″ Ø LOW RELAXATION STRAND LAYOUT

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS

Gregory E Myers 12/22/2025

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PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3′-0″ x 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-06
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	18

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DES CHK:	G. MYERS	DATE :	10/25
DWG BY:	B. PETERSON	DATE :	09/25
CHK BY:	G. MYERS	DATE :	10/25

STD. NO. 21″PCS2_27_90S

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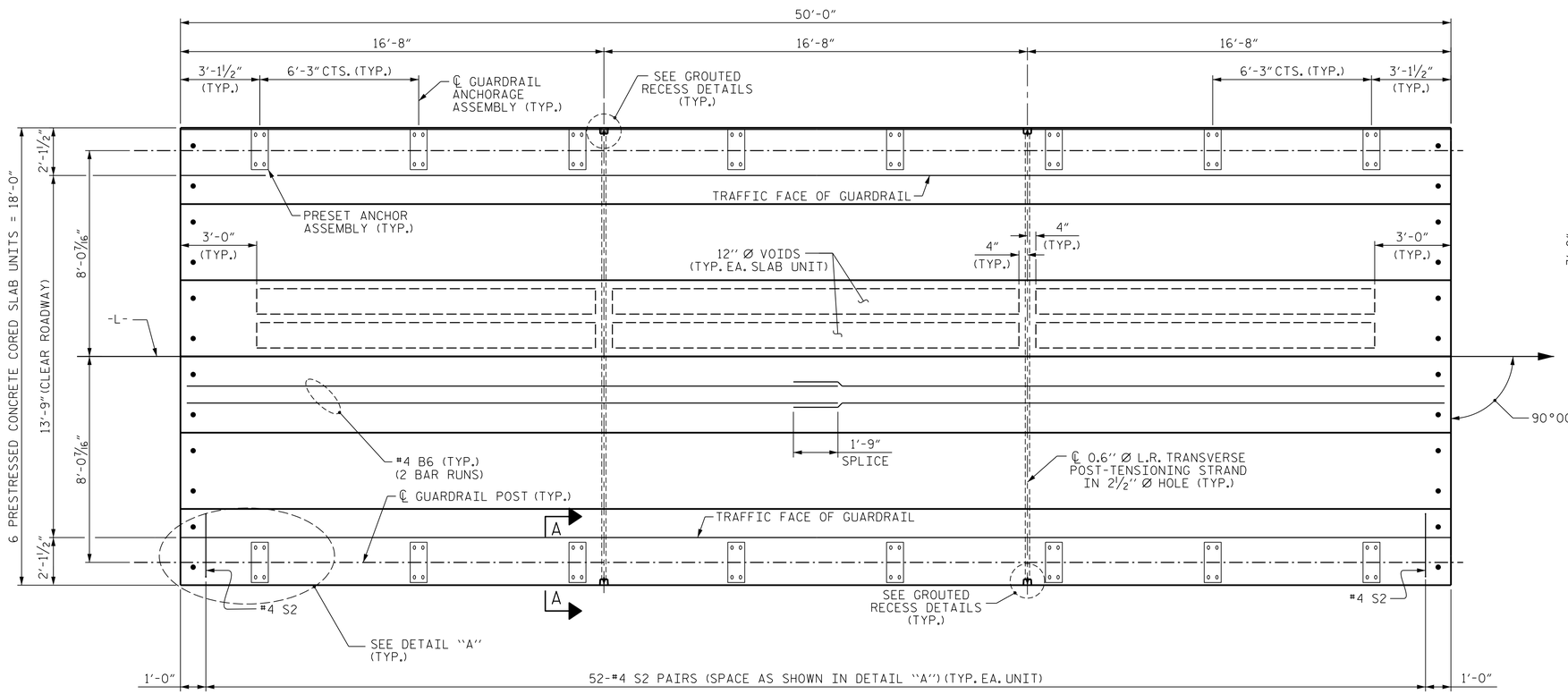
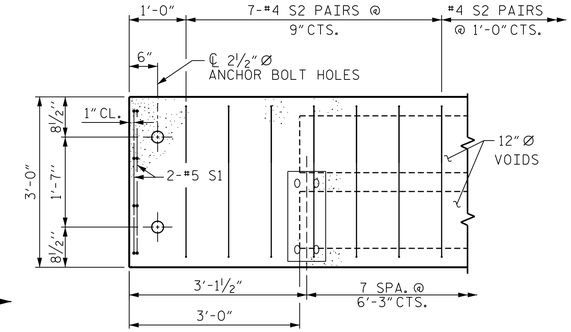


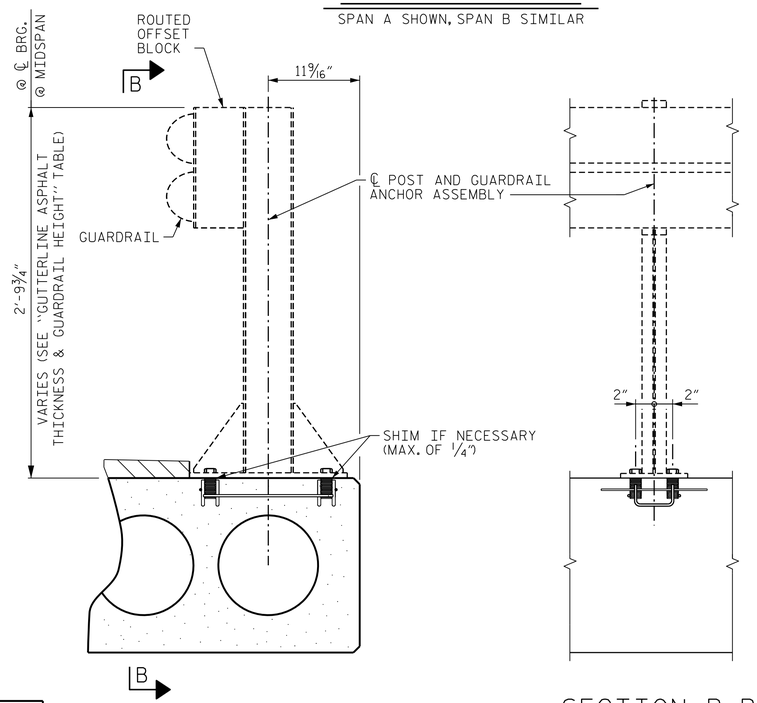
PLAN OF UNIT

SPAN A SHOWN, SPAN B SIMILAR



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR



SECTION A-A

SECTION B-B

GUTTERLINE ASPHALT THICKNESS GUARDRAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	GUARDRAIL HEIGHT
50' UNIT	1⅜"	2'-8⅜"

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 50' UNIT 13'-9" CLEAR ROADWAY 90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS

Gregory E. Myers 12/22/2025

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DES CHK: G. MARTINEZ	DATE: 10/25	CHK BY: G. MYERS	DATE: 10/25

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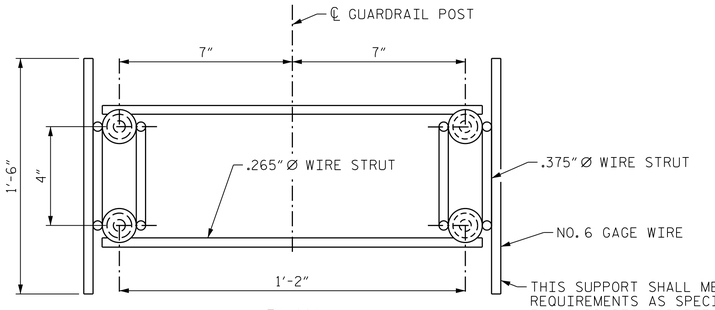
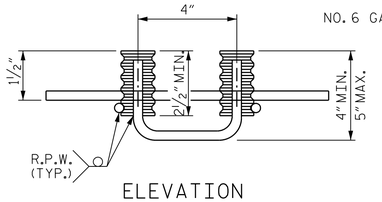
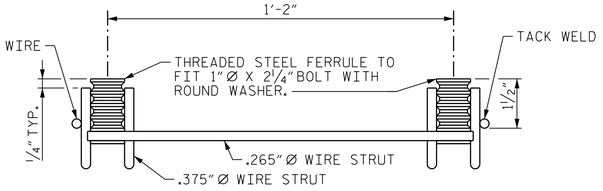


PLAN



ELEVATION



SIDE VIEW

GUARDRAIL ANCHOR ASSEMBLY FOR PRESTRESSED CONCRETE CORED SLAB UNIT

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 2½" Ø ANCHOR BOLT HOLES AND BLOCKOUTS AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

THE GUARDRAIL ANCHOR ASSEMBLY FOR CORED SLABS SHALL CONSIST OF THE FOLLOWING COMPONENTS:

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

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

C. WIRE STRUTS SHOWN IN THE GUARDRAIL ANCHOR ASSEMBLY FOR CORED SLABS DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR PRESTRESSED CORED SLAB UNITS.

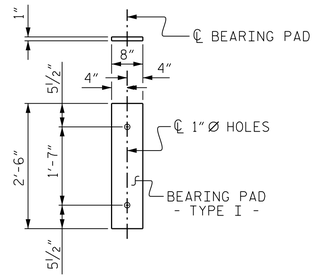
FERRULES TO BE PLUGGED DURING CASTING OF PRESTRESSED CONCRETE CORED SLAB UNITS AS RECOMMENDED BY THE MANUFACTURER.

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

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

PRESTRESSED CONCRETE CORED SLAB UNITS REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR GUARDRAIL ANCHOR ASSEMBLY. CARE SHOULD BE TAKEN TO KEEP THE SHIFTING OF REINFORCING STEEL TO A MINIMUM.

THE FUNCTION OF GUARDRAIL PROVIDED ON STRUCTURE IS TO GUIDE DRIVERS ACROSS THE BRIDGE RATHER THAN MEET CRASH DESIGN REQUIREMENTS.



FIXED END
(TYPE I - 24 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARING SHALL BE 50 DUROMETER HARDNESS.

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-9"
50' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1½" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD **	⅜" ↓
FINAL CAMBER	1⅛" ↑

** INCLUDES FUTURE WEARING SURFACE

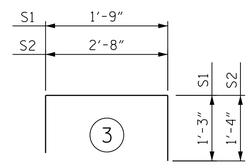
GRADE 270 STRANDS	
	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

CORED SLAB REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
50' UNIT			
EXTERIOR C.S.	4	50'-0"	200'-0"
INTERIOR C.S.	8	50'-0"	400'-0"
TOTAL	12	50'-0"	600'-0"

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	69
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	104	#4	3	5'-4"	371	5'-4"	371
REINFORCING STEEL		LBS.			475		475
6500 P.S.I. CONCRETE		LBS.			7.1		7.1
0.6" Ø L.R. STRANDS		NO.			19		19

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

CONCRETE RELEASE STRENGTH	
UNIT	PSI
50' UNITS	4900

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" x 1'-9"
PRESTRESSED CONCRETE CORED SLAB UNIT
90° SKEW

REVISIONS						SHEET NO. S-08
NO.	BY:	DATE:	NO.	BY:	DATE:	
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NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS

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DWG BY:	B. PETERSON	DATE :	10/25
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STD. NO. 21"PCS3_27_90S

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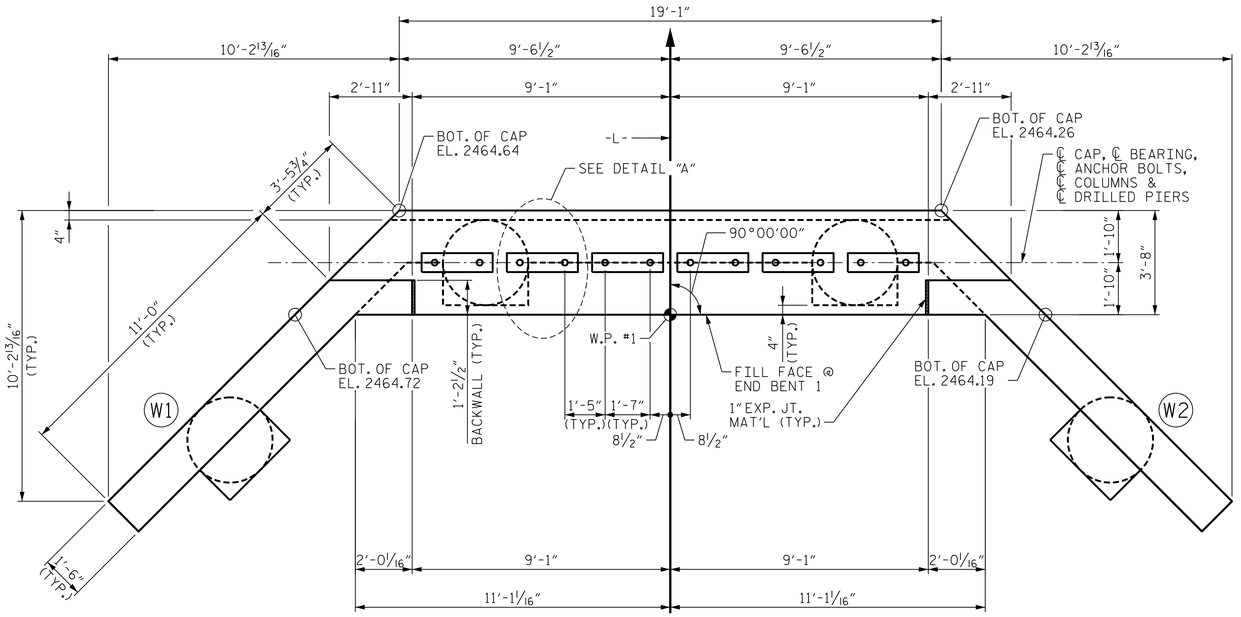
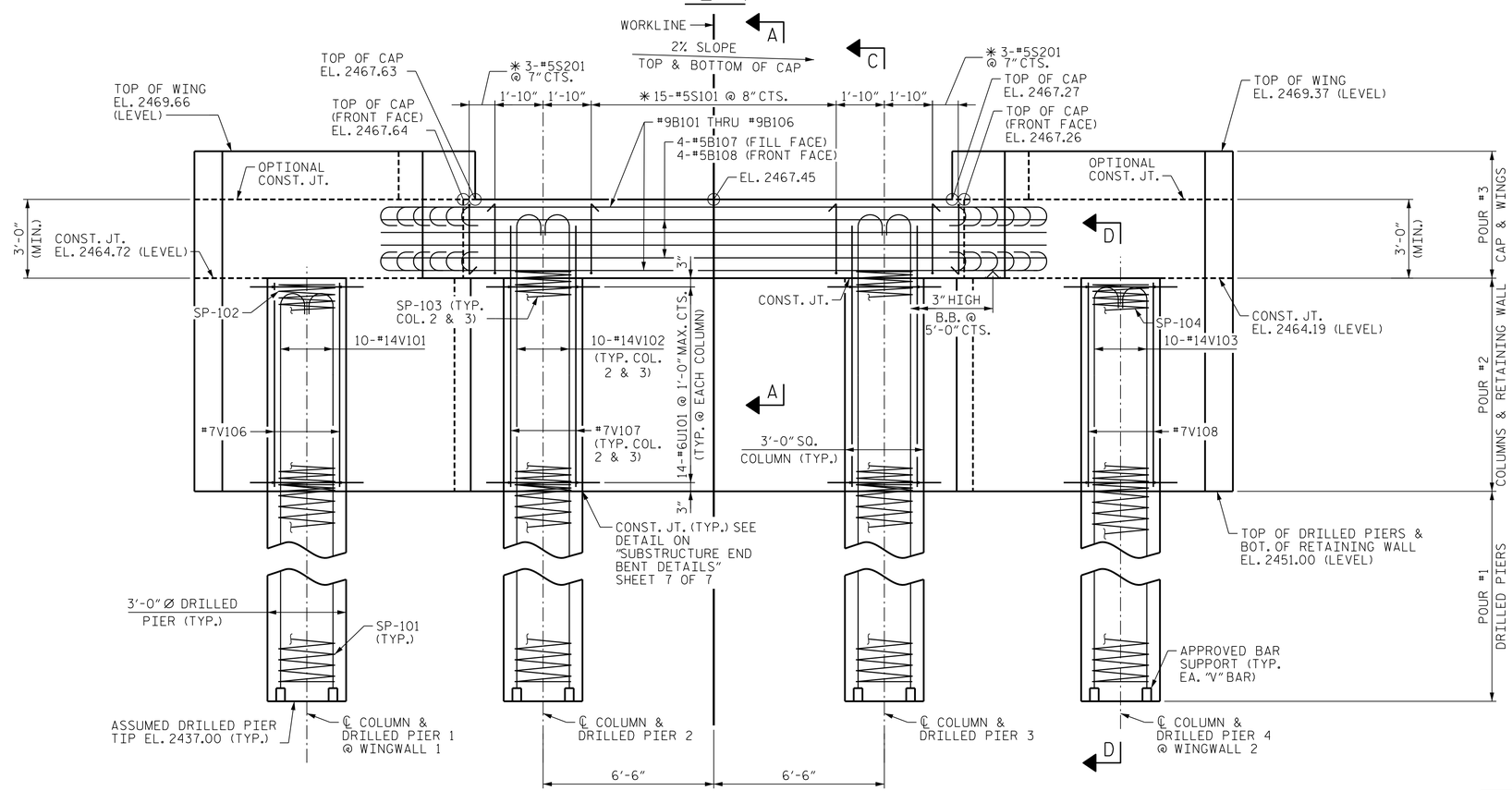


PLAN



ELEVATION

NOTES

FOR SECTION A-A AND CONSTRUCTION JOINT DETAIL AT BASE OF WALL, SEE SHEET 7 OF 7.

FOR SECTION C-C AND D-D, SEE SHEET 6 OF 7.

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

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

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

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

✳ INVERT ALTERNATE STIRRUPS.

THE CONTRACTOR SHALL FIELD VERIFY THE DRILLED PIER TIP ELEVATION AT EACH DRILLED PIER, PRIOR TO ORDERING REINFORCEMENT FOR DRILLED PIERS. DRILLED PIERS LONGITUDINAL REINFORCEMENT AND SPIRAL LENGTHS ARE BASED ON THE ASSUMED DRILLED PIER TIP ELEVATION AND SHALL BE ADJUSTED AS NECESSARY TO MEET THE MINIMUM DRILLED PIER PENETRATION INTO ROCK.

TOP OF COLUMN ELEVATIONS

COLUMN NO.	ELEVATION
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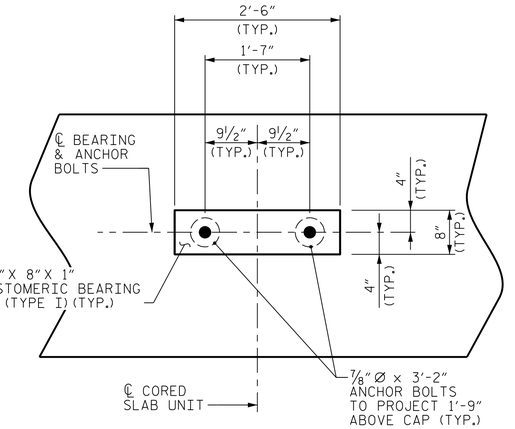
2	2464.58
3	2464.32
4	2464.19



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 1 PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS

Gregory E. Myers 12/22/2025

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-09
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	18

DES BY:	J. PATT	DATE :	10/25
DES CHK:	K. DICKENS	DATE :	10/25
DWG BY:	B. PETERSON	DATE :	09/25
CHK BY:	G. MYERS	DATE :	11/25

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.plt PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
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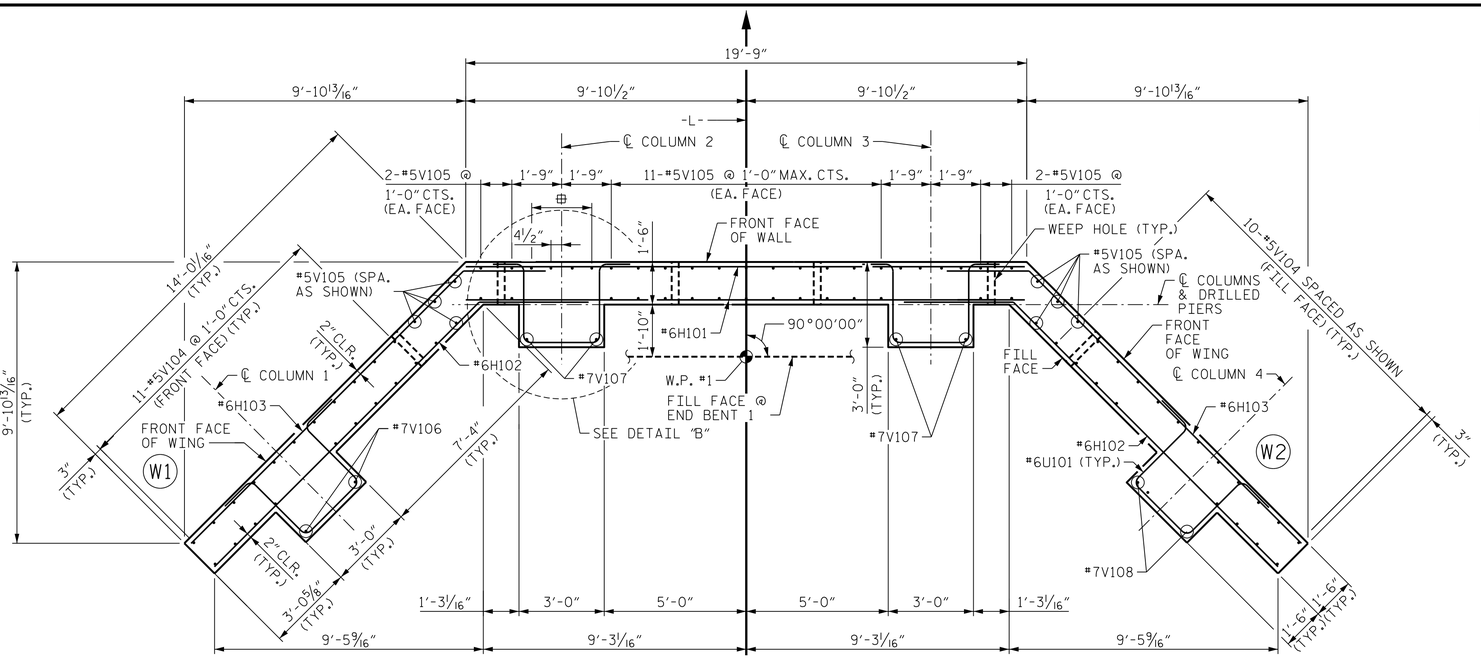
Docusign Envelope ID: 20970CAC-0730-401D-B229-D92F8E56164C

NOTES

FOR SECTIONS E-E, F-F & G-G, SHEET 6 OF 7.

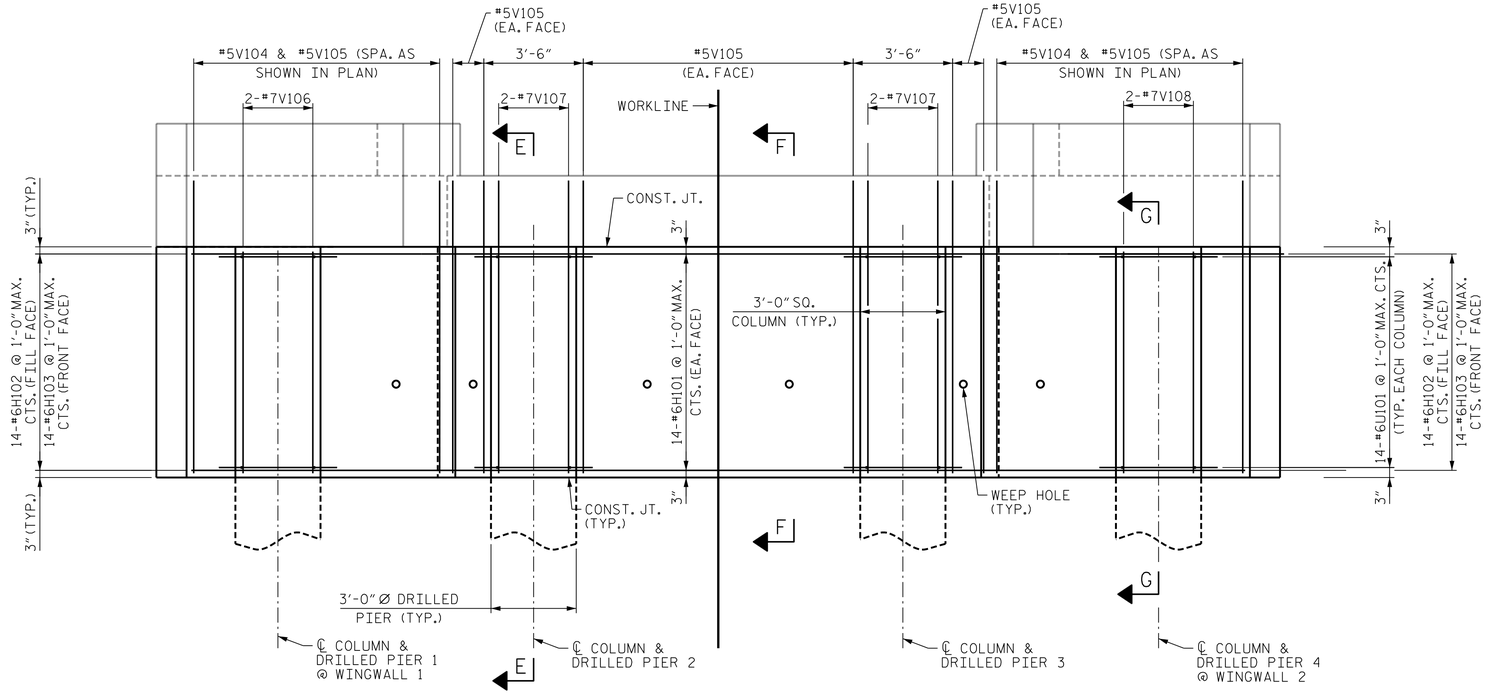
FOR DETAIL "B", SEE SHEET 7 OF 7.



⊞ 4-#5V105 @ 9" CTS. (FRONT FACE) (TYP. COL. 2 & 3)

PLAN OF RETAINING WALL

(DRILLED PIERS AND MAIN REINFORCEMENT FOR DRILLED PIERS AND COLUMNS NOT SHOWN FOR CLARITY)



ELEVATION OF RETAINING WALL

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 1 RETAINING WALL LAYOUT

REVISIONS						SHEET NO. S-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 18
2	--	--	4	--	--	

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS
12/22/2025
Gregory E. Myers

DES BY:	J. PATT	DATE :	10/25
DES CHK:	G. MYERS	DATE :	11/25
DWG BY:	B. PETERSON	DATE :	09/25
CHK BY:	G. MYERS	DATE :	11/25

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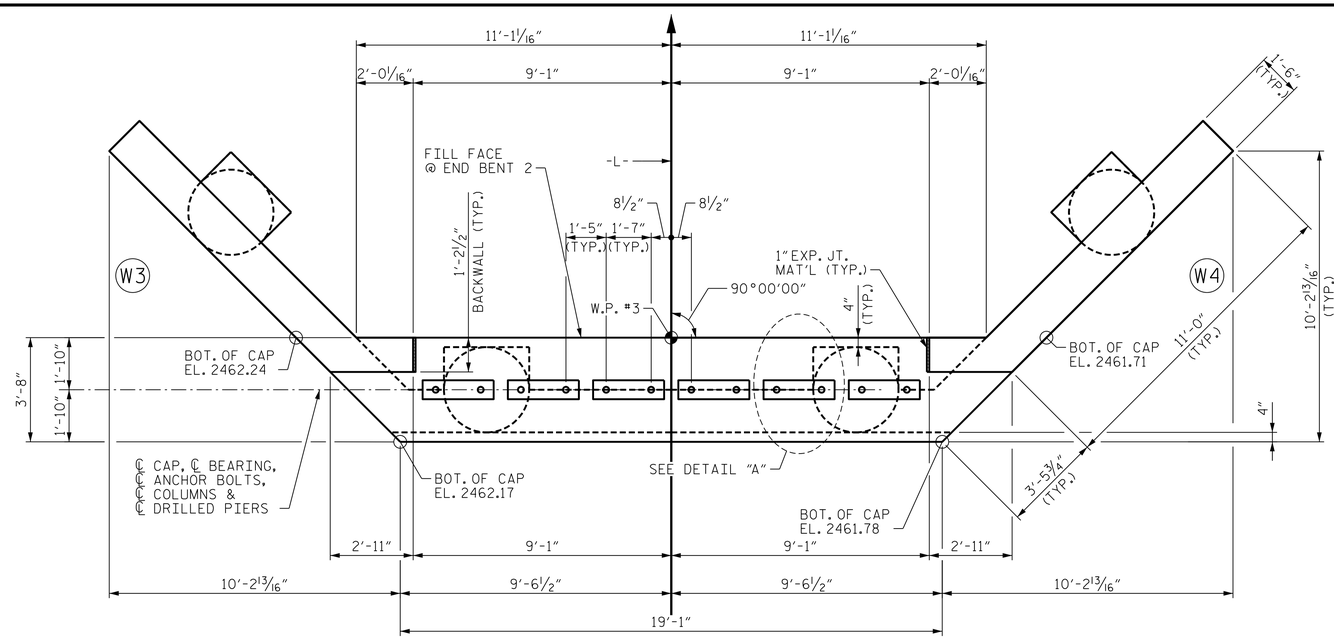
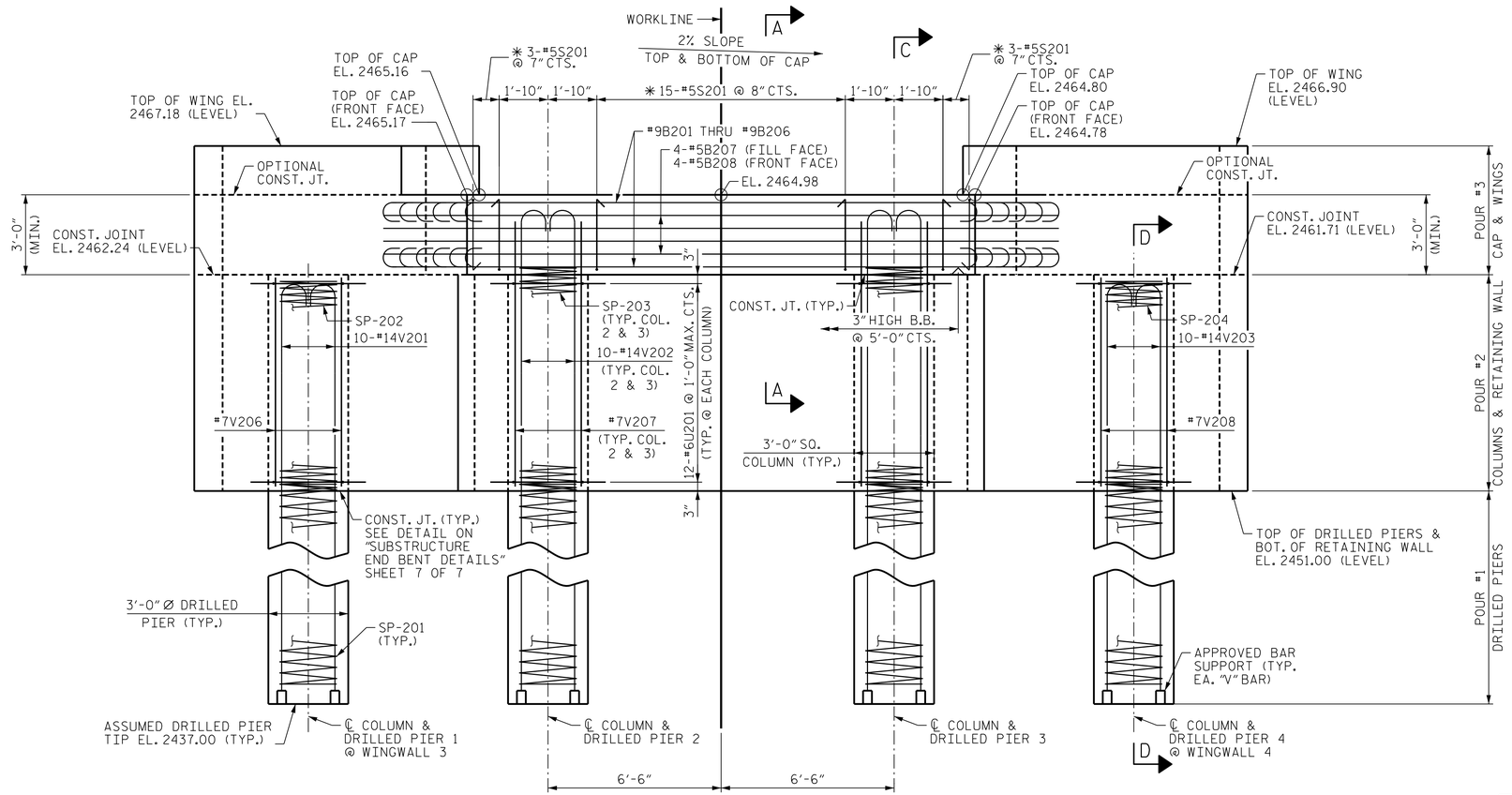


PLAN



ELEVATION

NOTES

FOR SECTION A-A AND CONSTRUCTION JOINT DETAIL AT BASE OF WALL, SEE SHEET 7 OF 7.

FOR SECTION C-C AND D-D, SEE SHEET 6 OF 7.

FOR DETAILS "A", SEE SHEET 1 OF 7.

THE CONTRACTOR SHALL FIELD VERIFY THE DRILLED PIER TIP ELEVATION AT EACH DRILLED PIER, PRIOR TO ORDERING REINFORCEMENT FOR DRILLED PIERS. DRILLED PIERS LONGITUDINAL REINFORCEMENT AND SPIRAL LENGTHS ARE BASED ON THE ASSUMED DRILLED PIER TIP ELEVATION AND SHALL BE ADJUSTED AS NECESSARY TO MEET THE MINIMUM DRILLED PIER PENETRATION INTO ROCK.

TOP OF COLUMN ELEVATIONS

COLUMN NO.	ELEVATION
1	2462.24
2	2462.11
3	2461.85
4	2461.71

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 3 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2 PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	18

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS
12/22/2025
Gregory E. Myers

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
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DES CHK:	K. DICKENS	DATE :	10/25
DWG BY:	B. PETERSON	DATE :	09/25
CHK BY:	G. MYERS	DATE :	11/25

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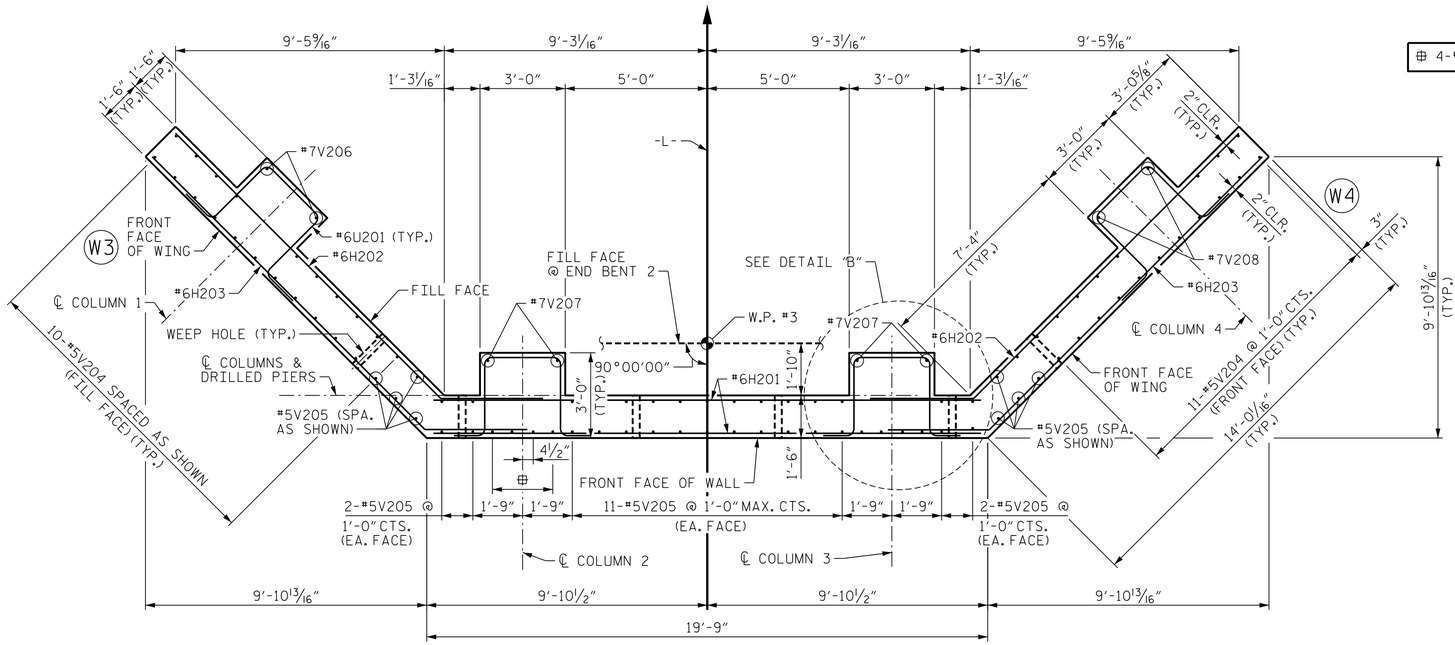
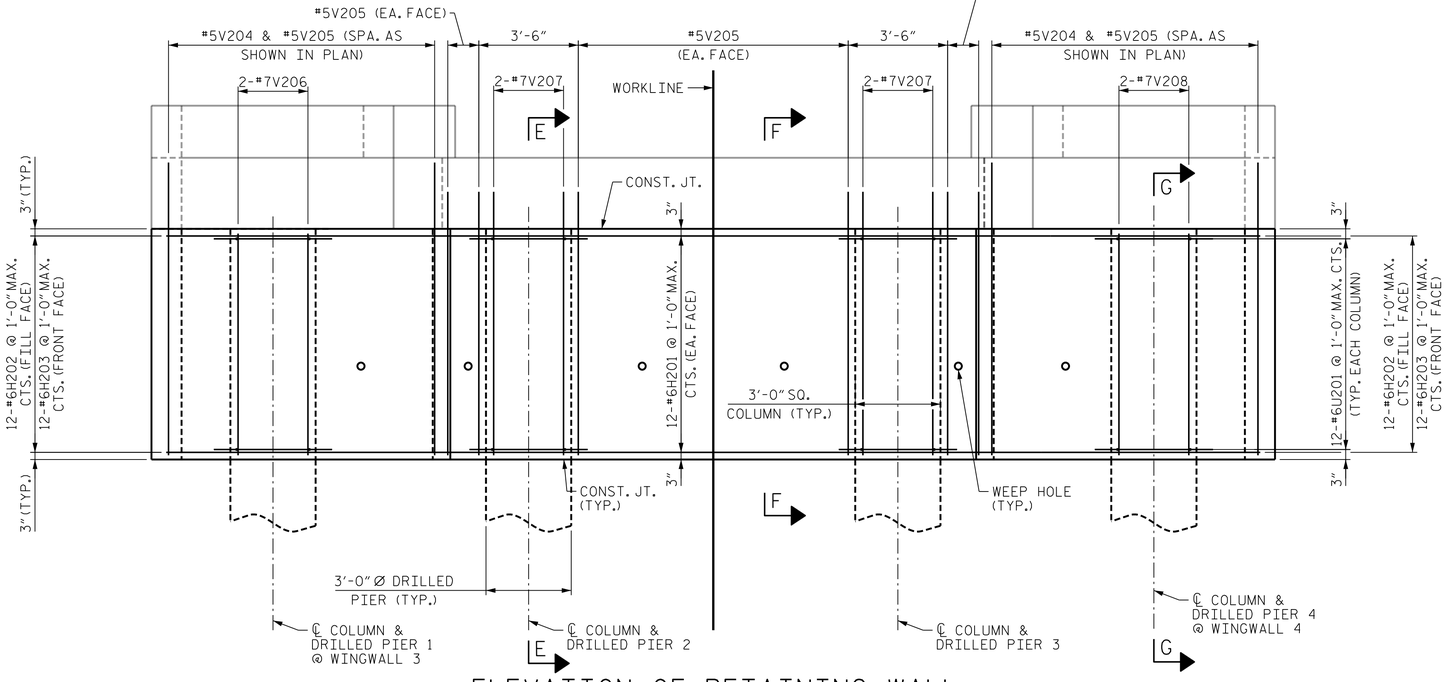


PLAN OF RETAINING WALL

(DRILLED PIERS AND MAIN REINFORCEMENT FOR DRILLED PIERS AND COLUMNS NOT SHOWN FOR CLARITY)



ELEVATION OF RETAINING WALL

⊞ 4-#5V205 @ 9" CTS. (FRONT FACE) (TYP. COL. 2 & 3)

NOTES

FOR DETAIL "B", SEE SHEET 7 OF 7.

FOR SECTIONS E-E, F-F & G-G, SEE SHEET 6 OF 7.

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 4 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2 RETAINING WALL LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	18

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS

Gregory E Myers 12/22/2025

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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DES BY:	J. PATT	DATE :	10/25
DES CHK:	G. MYERS	DATE :	11/25
DWG BY:	B. PETERSON	DATE :	09/25
CHK BY:	G. MYERS	DATE :	11/25

PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.plt
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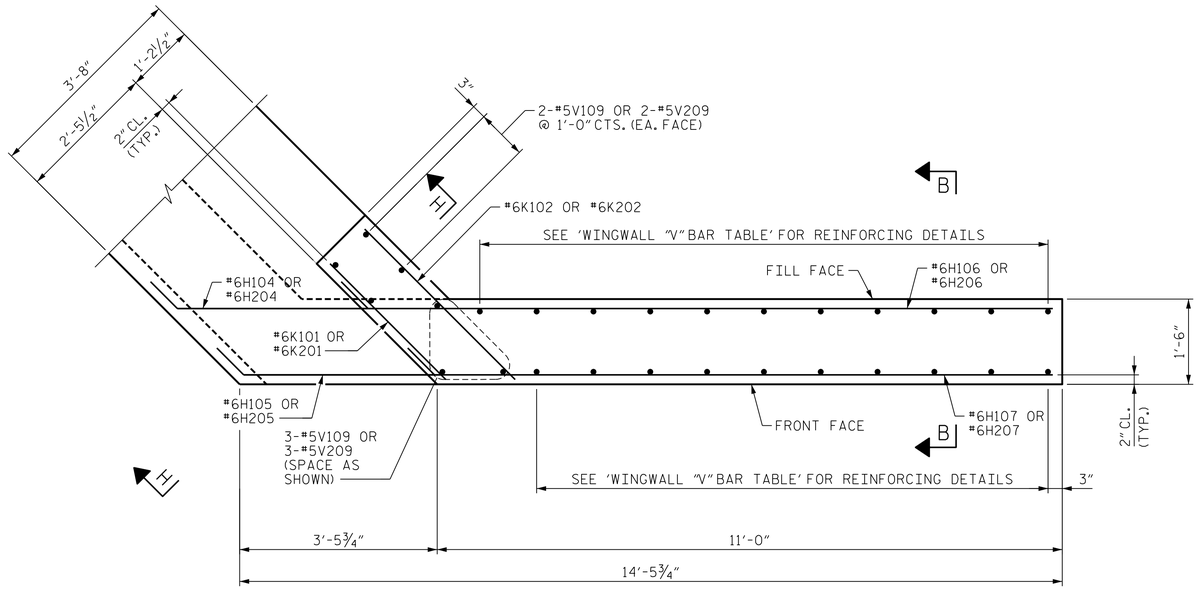
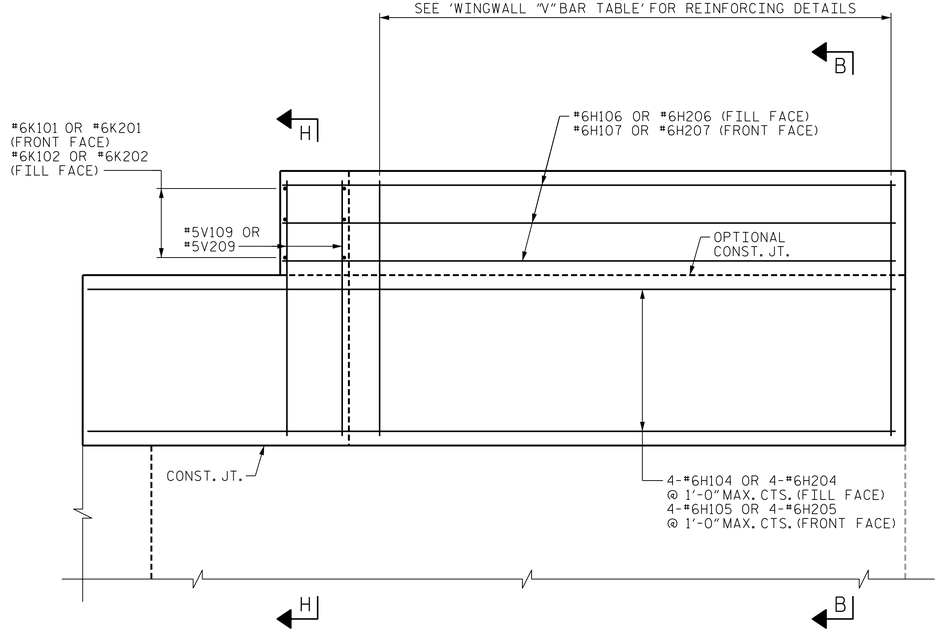
Docusign Envelope ID: 20970CAC-0730-401D-B229-D92F8E56164C

WINGWALL "V" BAR TABLE		
LOCATION	FRONT FACE	FILL FACE
WINGWALL 1	10-#5V110 @ 1'-0" CTS.	11-#5V110 @ 1'-0" CTS.
WINGWALL 2	10-#5V111 @ 1'-0" CTS.	11-#5V111 @ 1'-0" CTS.
WINGWALL 3	10-#5V210 @ 1'-0" CTS.	11-#5V210 @ 1'-0" CTS.
WINGWALL 4	10-#5V211 @ 1'-0" CTS.	11-#5V211 @ 1'-0" CTS.



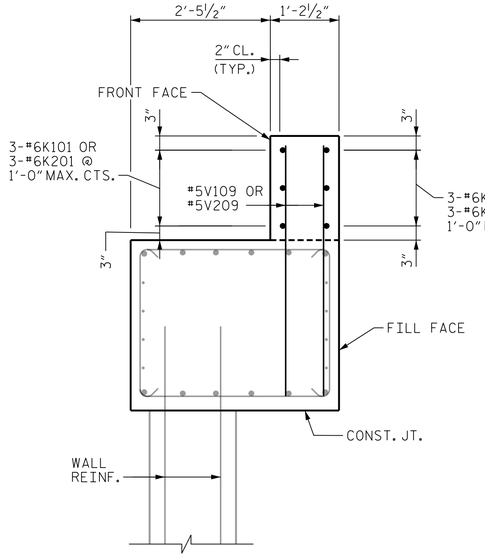
PLAN OF WING

(WING W1 & W4 SHOWN, WING W2 & W3 OPPOSITE HAND)
(DRILLED PIER AND COLUMN NOT SHOWN FOR CLARITY)

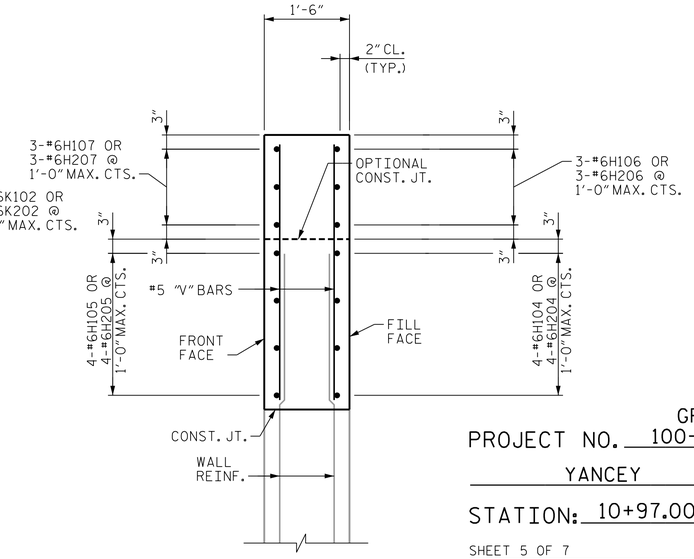


ELEVATION OF WING

(WING W1 & W4 SHOWN, WING W2 & W3 OPPOSITE HAND)
(COLUMN NOT SHOWN FOR CLARITY)



SECTION H-H



SECTION B-B

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 5 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT WINGWALL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS

Gregory E. Myers 12/22/2025

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1	--	--	3	--	--	TOTAL SHEETS
2	--	--	4	--	--	18

DES BY: J. PATT	DATE: 10/25	DWG BY: B. PETERSON	DATE: 09/25
DES CHK: G. MYERS	DATE: 11/25	CHK BY: G. MYERS	DATE: 11/25

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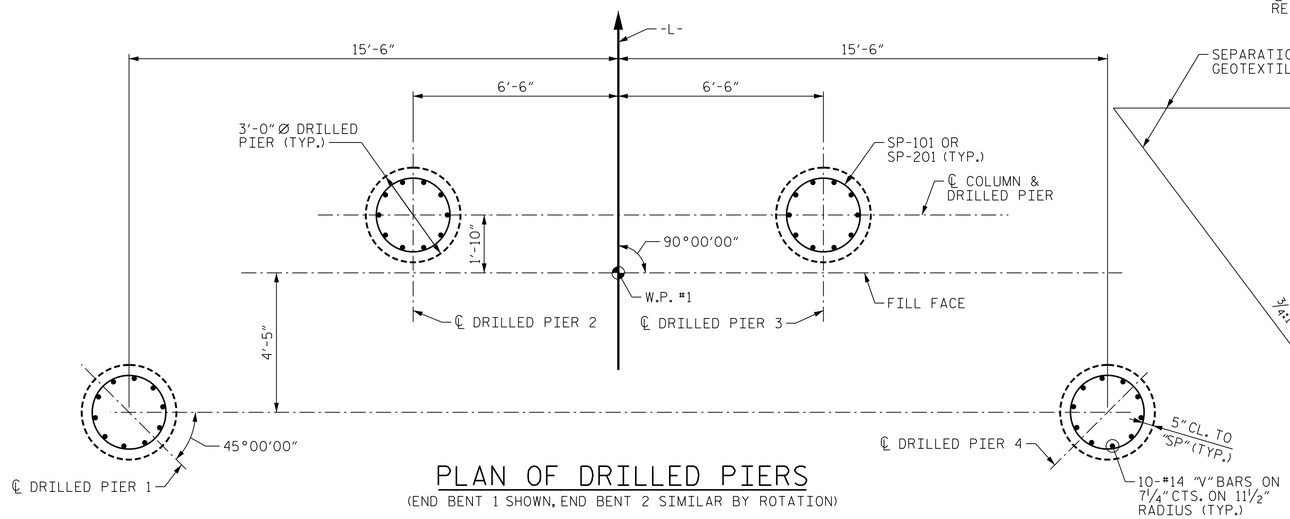
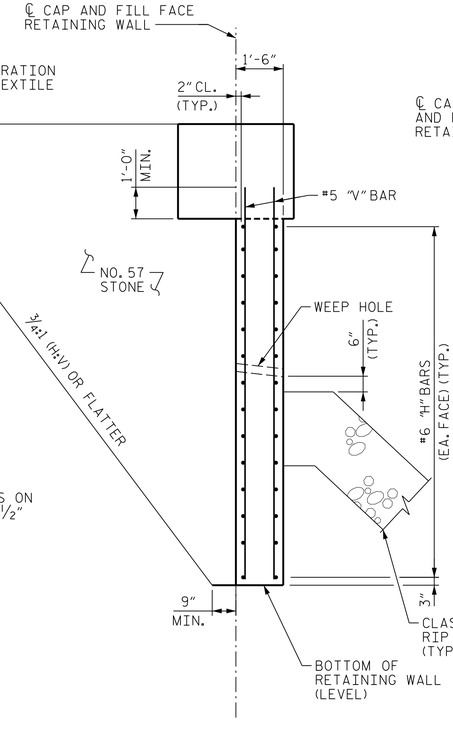
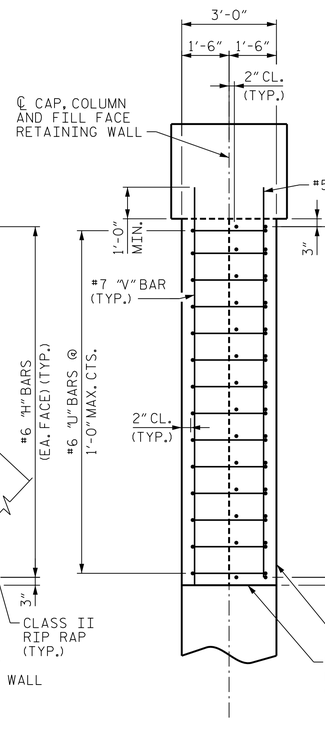


PLAN OF DRILLED PIERS

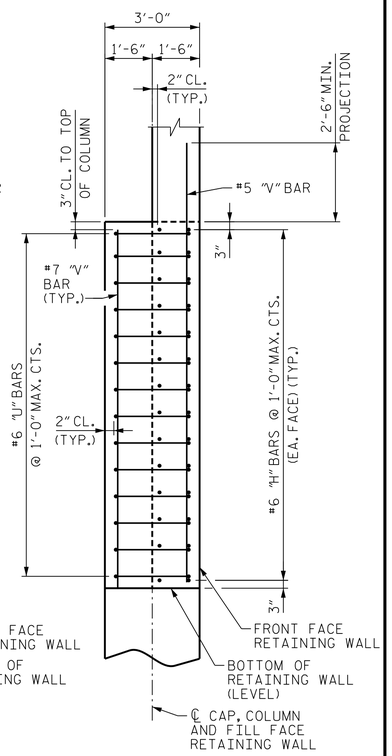
(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION)



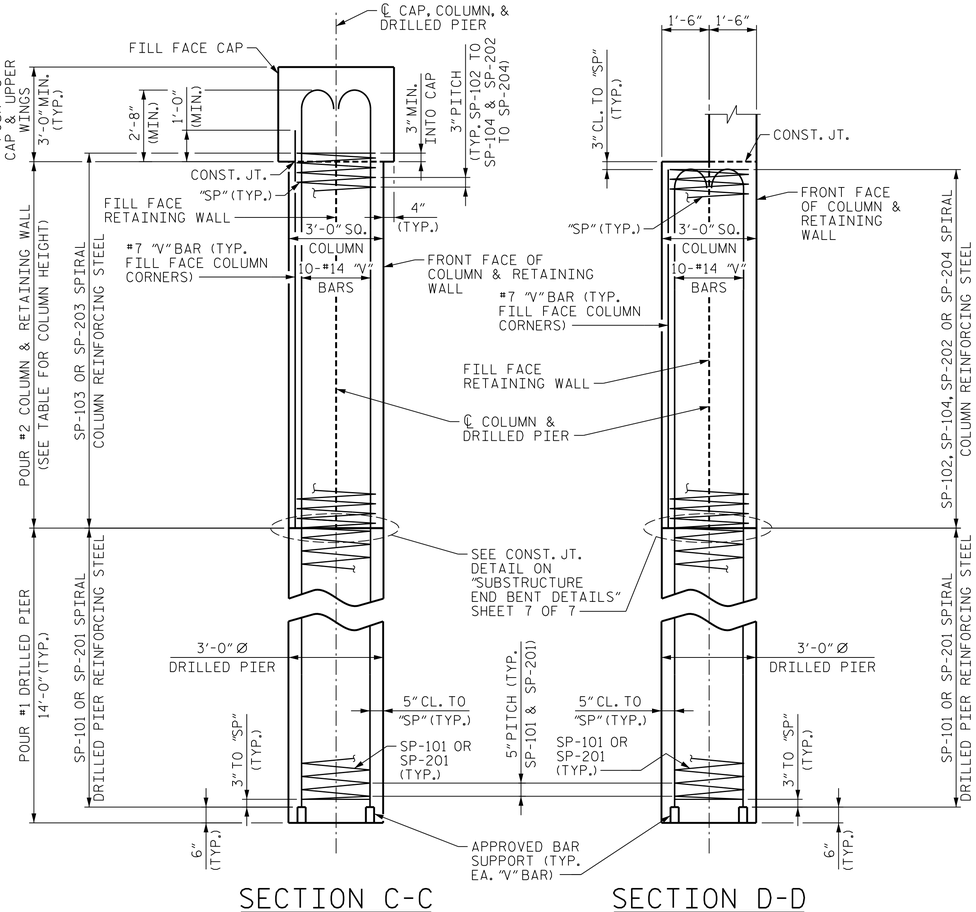
SECTION F-F



SECTION E-E

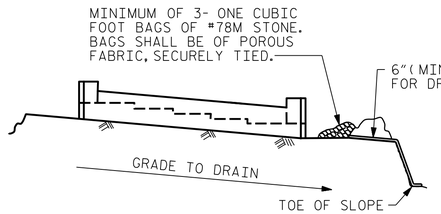


SECTION G-G



SECTION C-C

SECTION D-D



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

COLUMN HEIGHTS	
COLUMN NO.	HEIGHT
1-1	13'-8 5/8"
1-2	13'-6 15/16"
1-3	13'-3 13/16"
1-4	13'-2 1/4"
2-1	11'-2 1/8"
2-2	11'-1 5/16"
2-3	10'-10 3/16"
2-4	10'-8 1/2"

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS

Gregory E Myers 12/22/2025

REVISIONS						SHEET NO. S-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 18
2	--	--	4	--	--	

DES BY: J. PATT DATE: 10/25
DES CHK: K. DICKENS DATE: 11/25
DWG BY: M. SELLS DATE: 11/25
CHK BY: J. PATT DATE: 11/25

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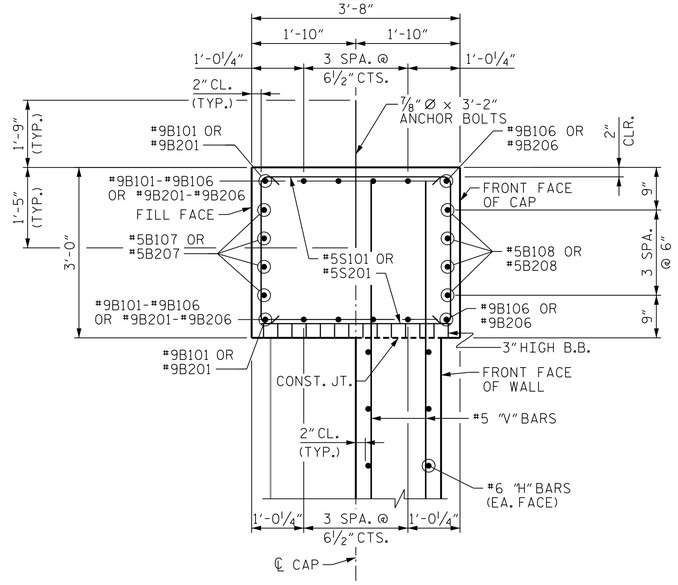
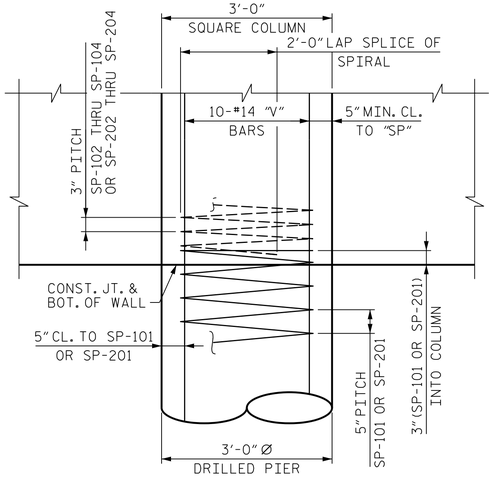
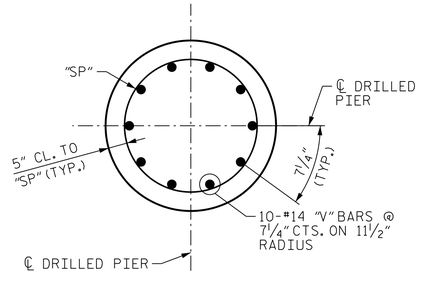


SECTION A-A



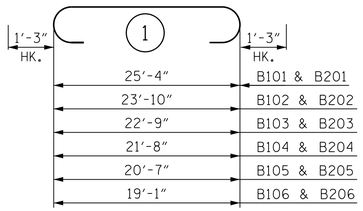
CONSTRUCTION JOINT DETAIL

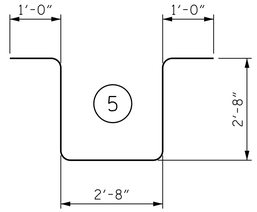
(WALL REINFORCEMENT NOT SHOWN FOR CLARITY)

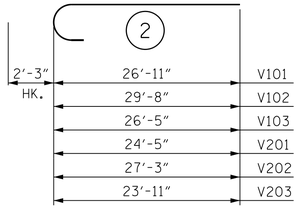


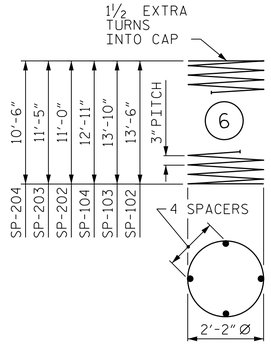
SECTION THRU DRILLED PIER

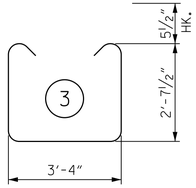
BAR TYPES

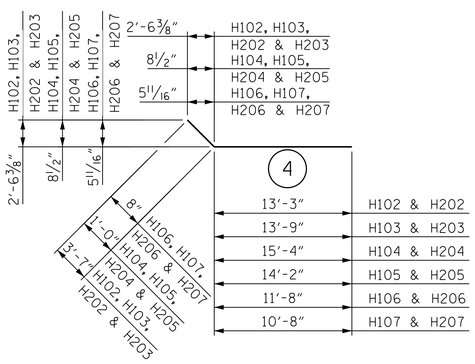


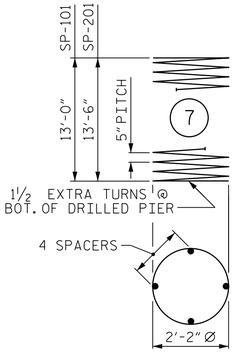




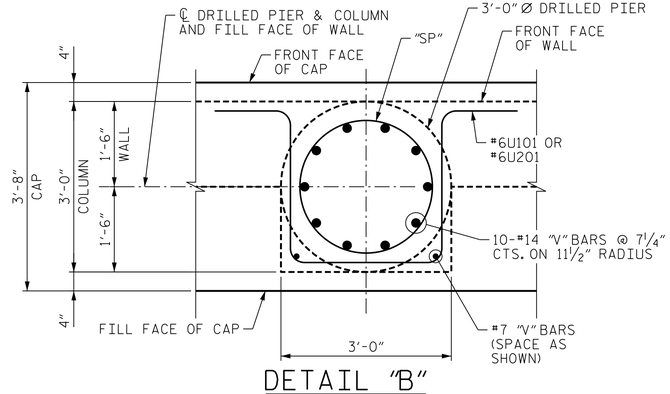








ALL BAR DIMENSIONS ARE OUT TO OUT



DETAIL "B"

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

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B101	2	#9	1	27'-10"	189
B102	2	#9	1	26'-4"	179
B103	2	#9	1	25'-3"	172
B104	2	#9	1	24'-2"	164
B105	2	#9	1	23'-1"	157
B106	2	#9	1	21'-7"	147
B107	4	#5	STR	25'-4"	106
B108	4	#5	STR	19'-2"	80
H101	28	#6	STR	19'-7"	824
H102	28	#6	4	16'-10"	708
H103	28	#6	4	17'-4"	729
H104	8	#6	4	16'-4"	196
H105	8	#6	4	15'-2"	182
H106	6	#6	4	12'-4"	111
H107	6	#6	4	11'-4"	102
K101	6	#6	STR	2'-7"	23
K102	6	#6	STR	3'-5"	31
S101	21	#5	3	9'-6"	208
U101	56	#6	5	10'-0"	841
V101	10	#14	2	29'-2"	2231
V102	20	#14	2	31'-11"	4883
V103	10	#14	2	28'-8"	2193
V104	42	#5	STR	16'-1"	705
V105	46	#5	STR	14'-6"	696
V106	2	#7	STR	13'-5"	55
V107	4	#7	STR	14'-4"	117
V108	2	#7	STR	12'-11"	53
V109	14	#5	STR	4'-0"	58
V110	21	#5	STR	4'-7"	100
V111	21	#5	STR	4'-10"	106
TOTAL					16,346 LBS.

SPIRAL COLUMN REINFORCING STEEL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-101	4	*	7	217'-8"	909
SP-102	1	**	6	370'-10"	248
SP-103	2	**	6	379'-9"	508
SP-104	1	**	6	355'-3"	238
TOTAL					1,903 LBS.

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMNS & RETAINING WALL)	44.6 C.Y.
POUR #3 (CAP & UPPER WINGS)	16.1 C.Y.
TOTAL CLASS A CONCRETE	60.7 C.Y.
DRILLED PIERS	
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	14.8 C.Y.

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B201	2	#9	1	27'-10"	189
B202	2	#9	1	26'-4"	179
B203	2	#9	1	25'-3"	172
B204	2	#9	1	24'-2"	164
B205	2	#9	1	23'-1"	157
B206	2	#9	1	21'-7"	147
B207	4	#5	STR	25'-4"	106
B208	4	#5	STR	19'-2"	80
H201	24	#6	STR	19'-7"	706
H202	24	#6	4	16'-10"	607
H203	24	#6	4	17'-4"	625
H204	8	#6	4	16'-4"	196
H205	8	#6	4	15'-2"	182
H206	6	#6	4	12'-4"	111
H207	6	#6	4	11'-4"	102
K201	6	#6	STR	2'-7"	23
K202	6	#6	STR	3'-5"	31
S201	21	#5	3	9'-6"	208
U201	48	#6	5	10'-0"	721
V201	10	#14	2	26'-8"	2040
V202	20	#14	2	29'-6"	4514
V203	10	#14	2	26'-2"	2002
V204	42	#5	STR	13'-7"	595
V205	46	#5	STR	12'-3"	588
V206	2	#7	STR	10'-11"	45
V207	4	#7	STR	11'-10"	97
V208	2	#7	STR	10'-5"	43
V209	14	#5	STR	4'-0"	58
V210	21	#5	STR	4'-7"	100
V211	21	#5	STR	4'-10"	106
TOTAL					14,894 LBS.

SPIRAL COLUMN REINFORCING STEEL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-201	4	*	7	217'-8"	908
SP-202	1	**	6	304'-0"	203
SP-203	2	**	6	315'-2"	421
SP-204	1	**	6	290'-8"	194
TOTAL					1,726 LBS.

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMNS & RETAINING WALL)	36.5 C.Y.
POUR #3 (CAP & UPPER WINGS)	16.1 C.Y.
TOTAL CLASS A CONCRETE	52.6 C.Y.
DRILLED PIERS	
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	14.8 C.Y.

* THE SP-101 & SP-201 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** THE SP-102 THRU SP-104 & SP-202 THRU SP-204 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 7 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT DETAILS SECTION AND DETAILS

REVISIONS						SHEET NO. S-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 18
2	--	--	4	--	--	

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS

Gregory E. Myers 12/22/2025

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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DES BY:	J. PATT	DATE :	10/25
DES CHK:	K. DICKENS	DATE :	11/25
DWG BY:	B. PETERSON	DATE :	09/25
CHK BY:	G. MYERS	DATE :	11/25

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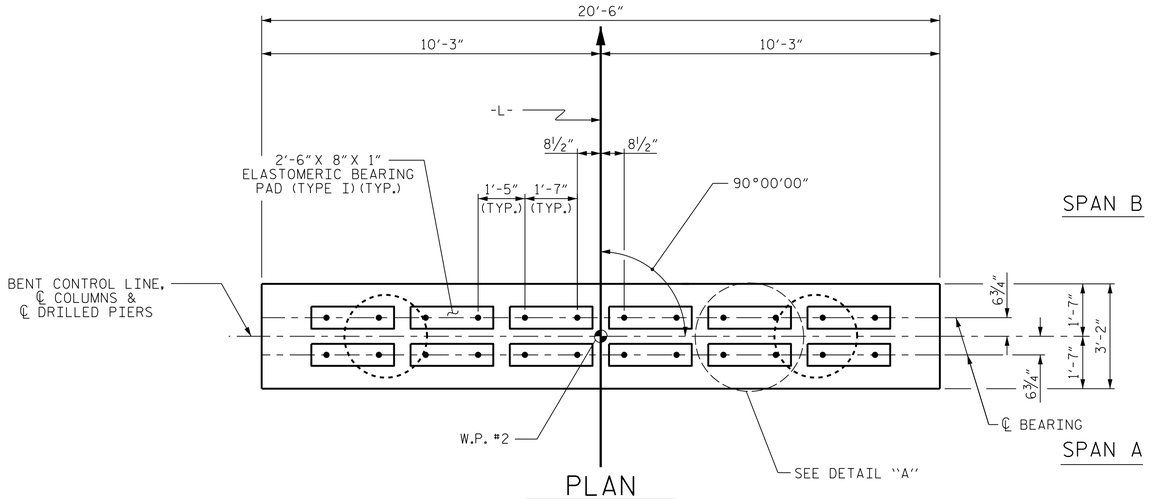
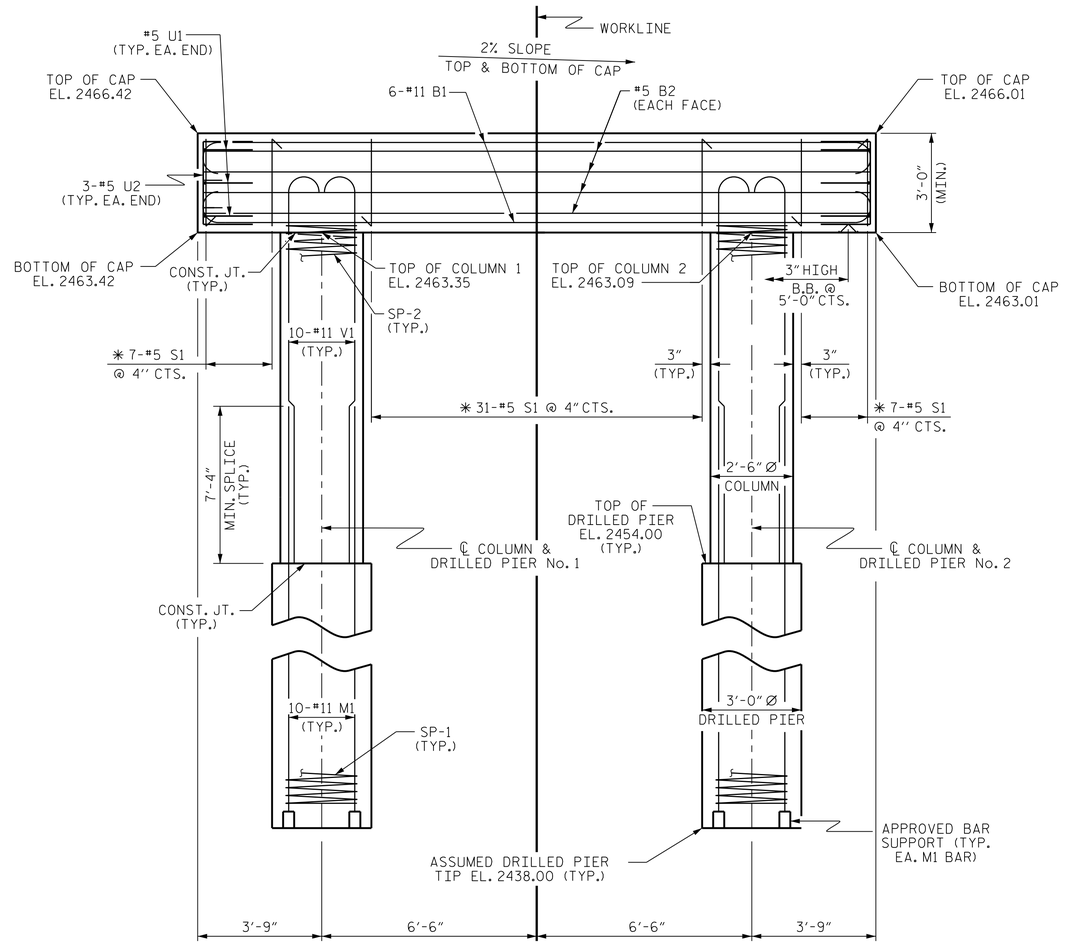


PLAN



ELEVATION

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

NOTES

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

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

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

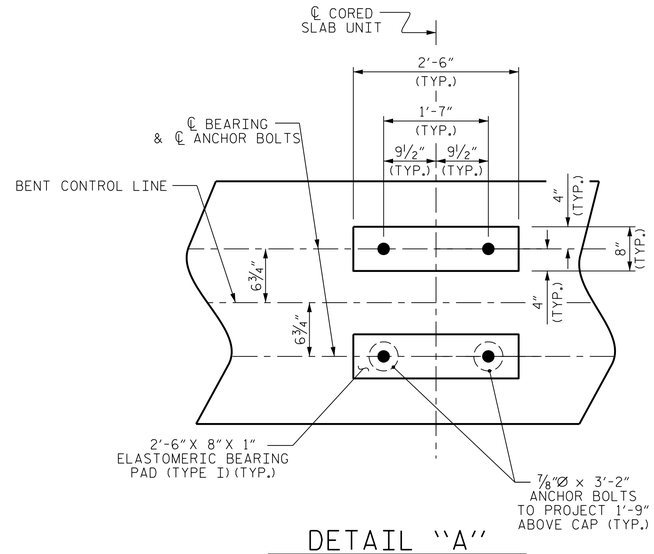
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR ″REINFORCING STEEL″ AND ″SPIRAL COLUMN REINFORCING STEEL.″

✳ INVERT ALTERNATE STIRRUPS.

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

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

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



DETAIL ″A″

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT No. 1

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS

12/22/2025

Gregory E Myers

REVISIONS						SHEET NO. S-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	--	--	3	--	--	TOTAL SHEETS 18
2	--	--	4	--	--	

DES BY:	A. AMBROSI	DATE :	11/25
DES CHK:	K. DICKENS	DATE :	12/25
DWG BY:	B. PETERSON	DATE :	09/25
CHK BY:	K. DICKENS	DATE :	12/25

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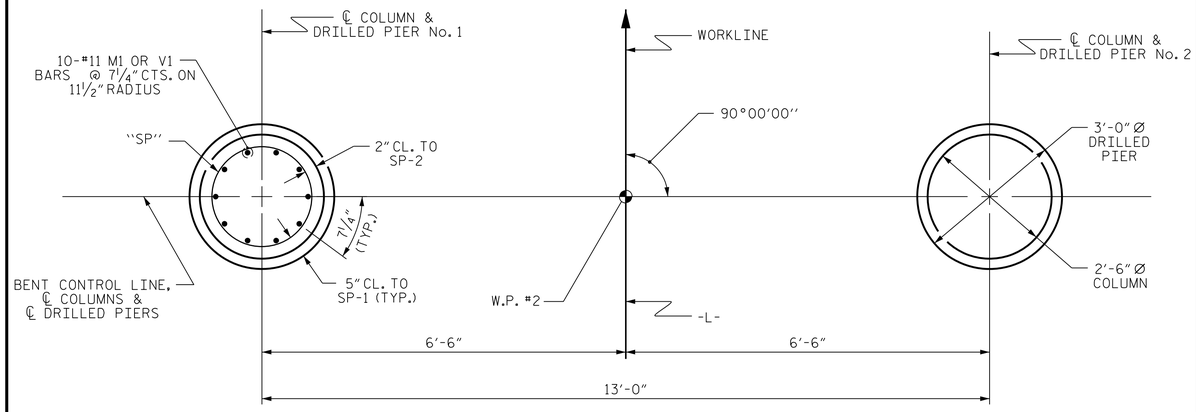
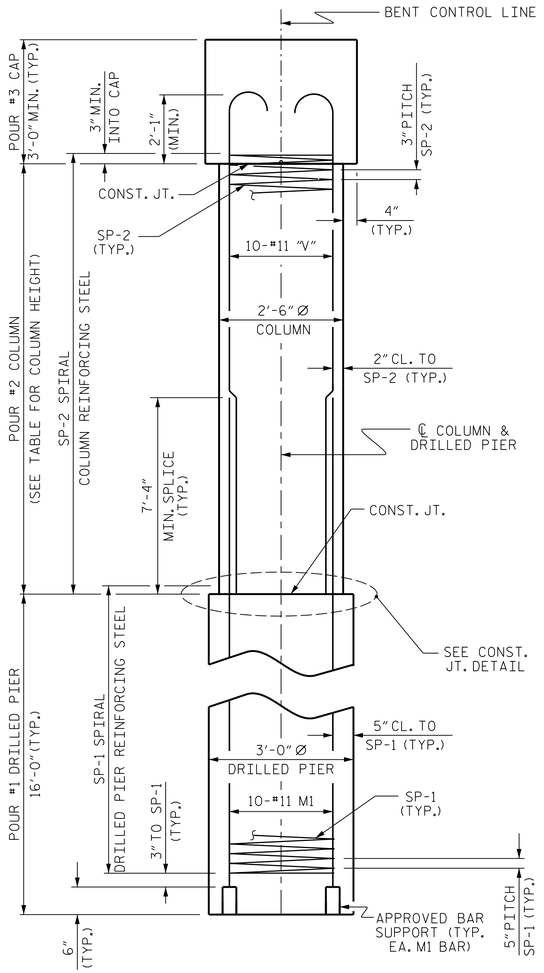
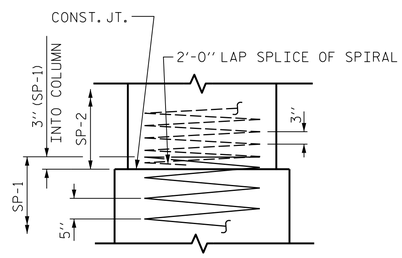


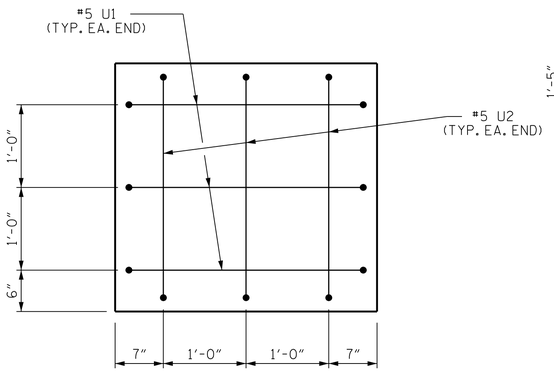
PLAN OF DRILLED PIERS & COLUMNS



END ELEVATION

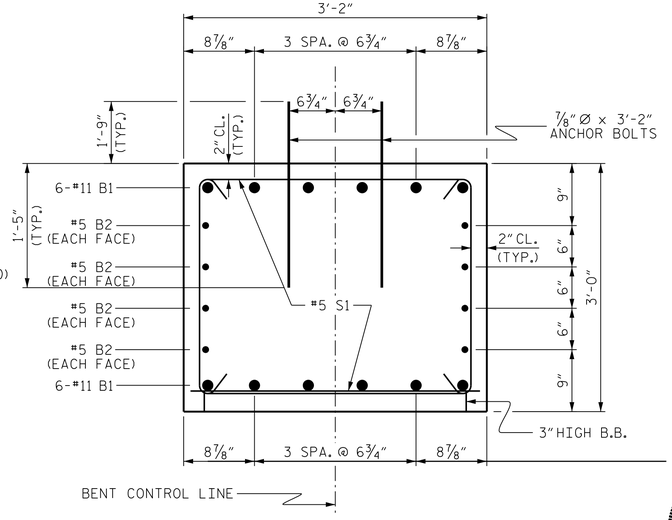


CONSTRUCTION JOINT DETAIL



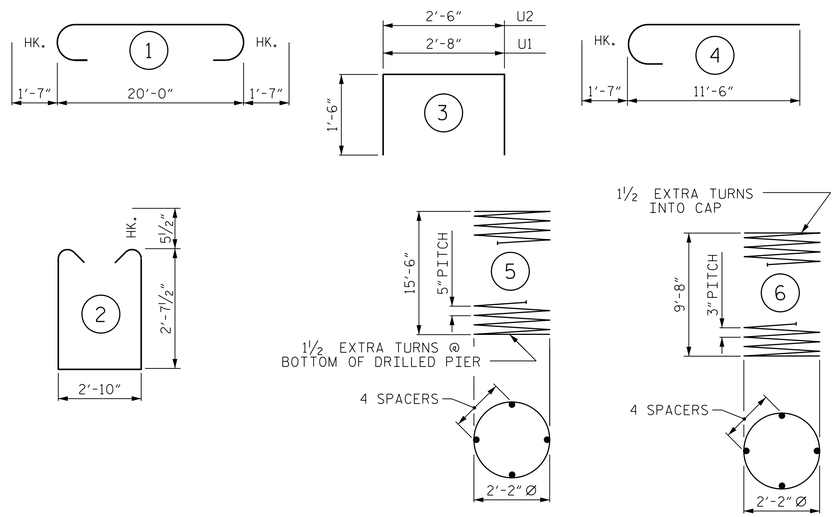
END OF CAP VIEW

(TYPICAL BOTH ENDS)



SECTION THRU CAP

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

COLUMN HEIGHTS

COLUMN NO.	HEIGHT (FT.)
1	9'-4¼"
2	9'-1⅛"

BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#11	1	23'-2"	1478
B2	8	#5	STR	20'-2"	169
M1	20	#11	STR	25'-10"	2746
S1	45	#5	2	9'-0"	423
U1	6	#5	3	5'-8"	36
U2	6	#5	3	5'-6"	35
V1	20	#11	4	13'-1"	1391

REINFORCING STEEL (FOR ONE BENT) 6,278 LBS.

SP-1	2	*	5	267'-7"	559
SP-2	2	**	6	268'-5"	359

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 918 LBS.

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

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

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	3.4 C.Y.
POUR #3 (CAP)	7.2 C.Y.
TOTAL CLASS A CONCRETE	10.6 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	8.4 C.Y.

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS
Gregory E. Myers 12/22/2025

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT No. 1

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

DES BY: J. PATT	DATE: 10/25	DWG BY: B. PETERSON	DATE: 09/25
DES CHK: K. DICKENS	DATE: 10/25	CHK BY: K. DICKENS	DATE: 10/25

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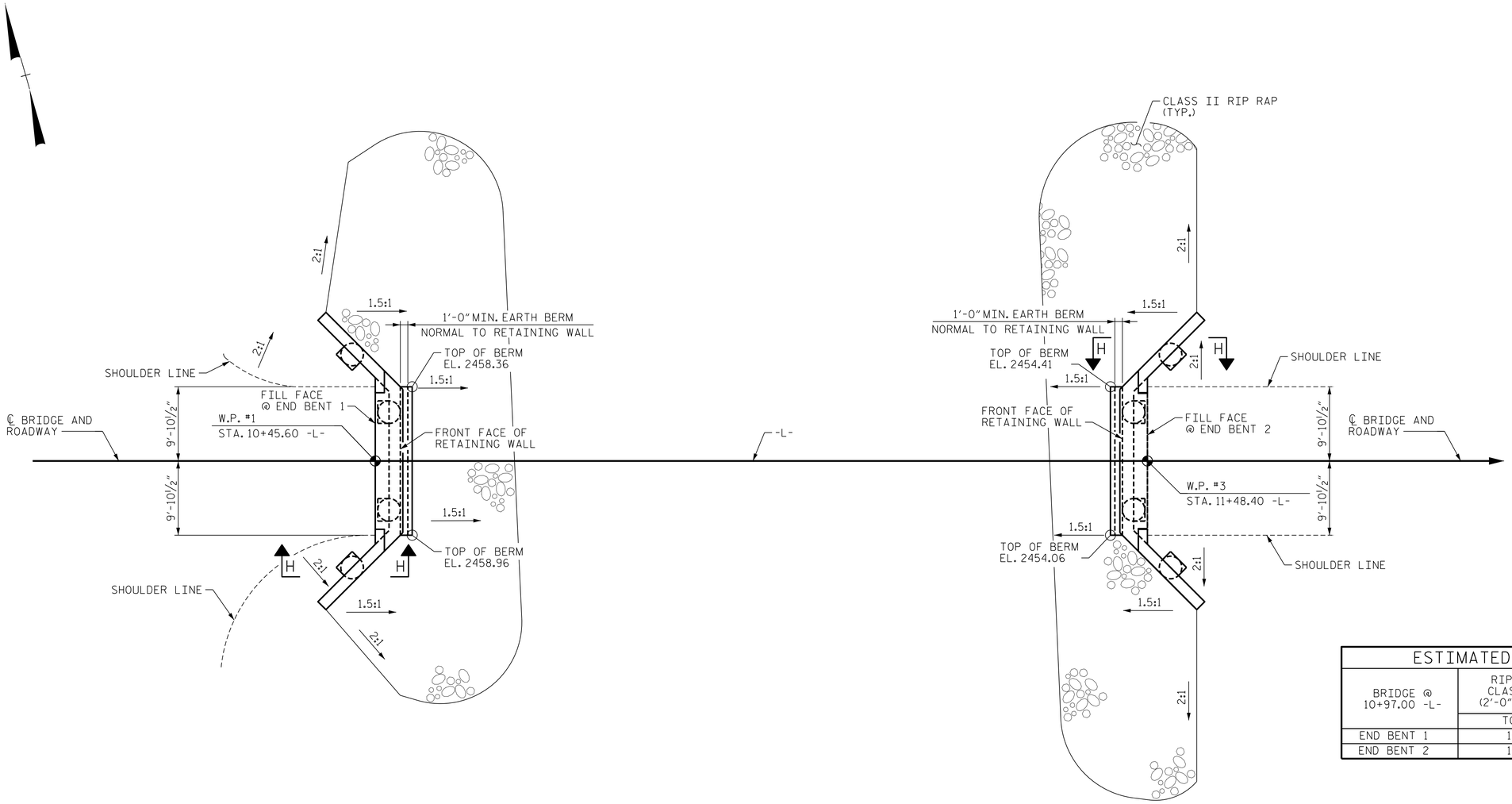
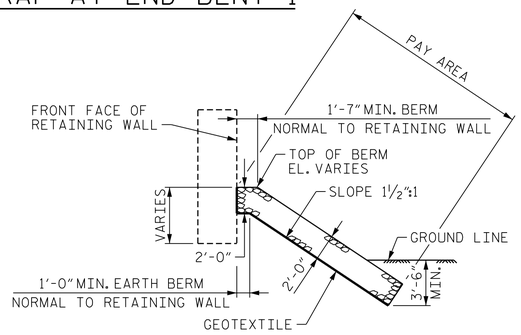


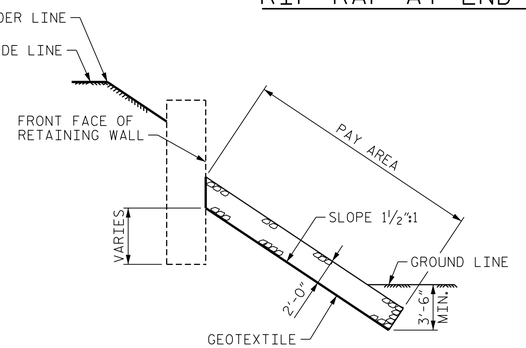
ESTIMATED QUANTITIES		
BRIDGE @ 10+97.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	140	155
END BENT 2	140	155

RIP RAP AT END BENT 1



℄ SECTION

RIP RAP AT END BENT 2



SECTION H-H

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 049352 ENGINEER GREGORY E. MYERS
12/22/2025
Gregory E. Myers

REVISIONS						SHEET NO. S-18
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DES BY: J. PATT	DATE : 11/25	DWG BY: M. SELLS	DATE : 11/25
DES CHK: K. DICKENS	DATE : 11/25	CHK BY: K. DICKENS	DATE : 11/25

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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞" Ø STUDS FOR 4 - ¾" 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" OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD NOTES

REVISIONS						SHEET NO. SN
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DWG BY: B. PETERSON DATE: 09/25
CHK BY: G. MYERS DATE: 11/25

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N.C.B.E.L.S. License Number: F-0116

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USER: GMYERS DATE: 11/25/2025
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8/17/99

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

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

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 1

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	

ELK SHOALS BAPTIST
CHURCH
PARCEL NO.:
989100616765000

LESLIE, PETER JOHN JR & PATRICE S
PARCEL NO.: 989100619368000

FOX, ROGER S & TONIA R
PARCEL NO.: 989100614448000

WHEELER, EARMEL L &
DEBORAH S
PARCEL NO.:
989100702966000

WHEELER, EARMEL L & DEBORAH S
PARCEL NO.: 989100702966000

POT Sta. 10+00.00

POT Sta. 12+80.00

S 74° 00' 27.3" E

IMPERVIOUS DIKE

FLOATING TURBIDITY CURTAIN

AT-1

AT-1

PROJECT REFERENCE NO.	SHEET NO.
100-01-00204	EC-01
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	David R. Unger II 12/22/2025

20 10 0 20 40
SCALE (HORIZONTAL)

4 2 0 4 8
SCALE (VERTICAL)

BEGIN GRADE
100-01-00204 -L204- STA. 10+12.36 =
US 19W SOUTH PDB -L- STA. 108+03.83
EL. = 2468.72
TIE TO US 19W

BEGIN BRIDGE
-L204- STA.10+45.60+/-

END BRIDGE
-L204- STA.11+48.40+/-

PI = 10+30.00
EL = 2,469.95'
VC = 25'
K = 3
DS = 15 MPH

PI = 11+66.00
EL = 2,466.55'
VC = 30'
K = 4
DS = 15 MPH

PI = 12+40.00
EL = 2,458.38'
VC = 40'
K = 3
DS = 15 MPH

PROPOSED GRADE

(+)7.0295%

(-)2.5000%

(-)2.5000%

(-)11.0405%

(-)11.0405%

(+)0.5000%

NEW BRIDGE
LOW CHORD=2464.88'

ORIGINAL BRIDGE
(APPROX LOCATION)
LOW CHORD=2463.75'

POST HELENE

PRE HELENE

PRE HELENE

PRE HELENE

POST HELENE

END GRADE
-L204- STA. 12+60.00
EL. = 2458.48
TIE TO EXISTING DRIVEWAY

2,472
2,468
2,464
2,460
2,456
2,452
2,448

10+00
11+00
12+00

11/12/2025
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8/17/99

NOTE: Place Matting for Erosion Control on Slope as Work Allows.
Sta. 10+00 to Sta. 10+40 –L– LT
Sta. 10+00 to Sta. 10+40 –L– RT
Sta. 11+50 to Sta. 12+50 –L– LT
Sta. 11+50 to Sta. 12+50 –L– RT

PROJECT REFERENCE NO.	SHEET NO.
100-01-00204	EC-02
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	David R. Weger II
	12/22/2025

ELK SHOALS BAPTIST CHURCH
PARCEL NO.: 989100616765000

LESLIE, PETER JOHN JR & PATRICE S
PARCEL NO.: 989100619368000

IMPVIOUS DIKE

POT Sta. 10+00.00

FOX, ROGER S & TONIA R
PARCEL NO.: 989100614448000

S 74° 00' 27.3" E

AT-1

AT-1

POT Sta. 12+80.00

FLOATING TURBIDITY CURTAIN

WHEELER, EARMEL L & DEBORAH S
PARCEL NO.: 989100702966000

WHEELER, EARMEL L & DEBORAH S
PARCEL NO.: 989100702966000

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	

SCALE (HORIZONTAL)
20 10 0 20 40

SCALE (VERTICAL)
4 2 0 4 8

BEGIN GRADE
100-01-00204 –L204– STA. 10+12.36 =
US 19W SOUTH PDB –L– STA. 108+03.83
EL. = 2468.72
TIE TO US 19W

BEGIN BRIDGE
–L204– STA. 10+45.60+/-

END BRIDGE
–L204– STA. 11+48.40+/-

PI = 10+30.00
EL = 2,469.95'
VC = 25'
K = 3
DS = 15 MPH

PI = 11+66.00
EL = 2,466.55'
VC = 50'
K = 4
DS = 15 MPH

PI = 12+40.00
EL = 2,458.38'
VC = 40'
K = 3
DS = 15 MPH

(+)7.0295%

(-)2.5000%

(-)2.5000%

(-)11.0405%

(-)11.0405%

(+)10.5000%

PROPOSED GRADE

NEW BRIDGE
LOW CHORD = 2464.88'

ORIGINAL BRIDGE
(APPROX LOCATION)
LOW CHORD = 2463.75'

POST HELENE

PRE HELENE

PRE HELENE

PRE HELENE

POST HELENE

PRE HELENE

END GRADE
–L204– STA. 12+60.00
EL. = 2458.48
TIE TO EXISTING DRIVEWAY

2,472
2,468
2,464
2,460
2,456
2,452
2,448

10+00 11+00 12+00

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Mr. Barry Hobbs, PE
Project Manager
Johnson, Mirmiran & Thompson, Inc.

March 17, 2026

TIP NUMBER:	100-01-00204
COUNTY:	Yancey
DESCRIPTION:	Bridge on Smokey Rise Dr. over Cane River between S. R. 1379 and S.R. 1391
SUBJECT:	Foundation Design Recommendations

Dear Mr. Hobbs,

HDR Engineering, Inc. of the Carolinas has completed the foundation recommendations for the proposed Structure on Smokey Rise Drive over Cane River. Borings performed at proposed bridge end bents were utilized for the foundation design calculations. Also attached are the foundation recommendations with notes to be placed on the structure plans and supporting calculations.

Please contact me if you have any questions.

Sincerely,
HDR ENGINEERING, INC. OF THE CAROLINAS

Saket Kabra 3/17/2026

Saket Kabra, PE
Geotechnical Engineer

Anil Kumar Varri 3/17/2026

Anil Varri, PE
Senior Geotechnical Engineer

Attachments
Foundation Recommendations
Boring Location Plan View and Boring logs
Geometry and Loading Information
Supporting Calculations

hdrinc.com

555 Fayetteville Street, Raleigh NC 27601
T 919.232.6600 F 919.785.1187

Docusign Envelope ID: C7A5ED74-DE36-451C-80ED-4052CAE0EA34

FOUNDATION RECOMMENDATIONS

WBS # 100-01-00204
T.I.P. NO. 100-01-00204
COUNTY YANCEY
STATION 10+97.00 -L-
BRIDGE NO. 204

DESCRIPTION BRIDGE ON -L- (SMOKEY RISE DR.)
OVER CANE CREEK
BETWEEN S.R.1379 AND S.R. 1391

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 053059 ENGINEER
Sakat Singh Kapra 3/17/2026
SIGNATURE

	INITIALS	DATE
DESIGN	AKV	11/21/2025
CHECK	SK	11/21/2025
APPROVAL		

	STATION	FOUNDATION TYPE	FACTORED RESISTANCE	MISCELLANEOUS DETAILS
END BENT 1	10+45.60 -L-	36" Dia Drilled Piers	400 kips/pier	Average Bottom of Cap El. = 2464.45 ft ± Top of Drilled Piers El. = 2451 ft Piers Minimum Tip El. = 2437 ft Pt of Fixity El. = 2442 ft Number of Piers = 4
BENT 1	10+97.00 -L-	36" Dia Drilled Piers	615 kips/pier	Top of Column El. 2463.35 (LT), 2463.09 (RT) Top of Drilled Piers El. 2454 (LT), 2453 (RT) Piers Minimum Tip El. = 2438 ft Pt of Fixity El. = 2443.5 ft Number of Piers = 2
END BENT 2	11+48.40 -L-	36" Dia Drilled Piers	400 kips/pier	Average Bottom of Cap El. = 2461.98 ft ± Top of Drilled Piers El. = 2451 ft Piers Minimum Tip El. = 2437 ft Pt of Fixity El. = 2442 ft Number of Piers = 4

NOTES ON PLANS & COMMENTS (See following page)

HDR Engineering, Inc. of the Carolinas
555 Fayetteville Street, Suite 900
Raleigh, NC 27601
(919) 232-6600

Docusign Envelope ID: C7A5ED74-DE36-451C-80ED-4052CAE0EA34

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip Elevation FT	Required Tip Resistance per Pier KSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier LIN FT	Drilled Pier Length* per Pier LIN FT	Drilled Pier Length Not In Soil* per Pier LIN FT	Drilled Pier Length In Soil* per Pier LIN FT	Permanent Steel Casing Required? YES	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
End Bent 1, Piers 1-4	4	400	2437.00	130		10	14	10	3.9			
Bent 1, Piers 1-2	2	615	2438.00	210	2447.10	9	16	9	2.3	YES	2447.10	7
End Bent 2, Piers 1-4	4	400	2437.00	130		10	14	10	3.9			
TOTAL QUANTITY:							144	98	35.8			14

* Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "36" Dia. Drilled Piers" or "36" Dia. Drilled Piers Not in Soil" and "36" Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "36" Dia. Drilled Piers in Soil."

** Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casing for 36" Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications.

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
End Bent 1, Piers 1-4		1			
Bent 1, Piers 1-2		1			
End Bent 2, Piers 1-4		1			
TOTAL QUANTITY:		3			

PROJECT NO. GROW NC 100-01-00204

YANCEY COUNTY

STATION: 10+97.00 -L-

NOTES:

1. The Drilled Pier Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Saket Kabra, #053059) on 03-17-2026.
2. The Engineer may adjust the quantity for Permanent Steel Casing, SPTs, TIPs, CSL Testing, SID Inspections and PITs when necessary.
3. For Drilled Piers, see Section 411 of the Standard Specifications.
4. CSL tubes are required and CSL testing may be required for drilled piers. The engineer will determine the need for CSL testing. For CSL testing, see section 411 of the Standard Specifications.
5. SID inspections may be required for drilled piers. The engineer will determine the need for SID inspections.
6. Permanent steel casings are required for drilled piers at Bent No. 1. Do not extend permanent casings below elevation 2447 ft without prior approval from the Engineer.
7. Test Holes are required for drilled piers at End Bent No.1, Bent No. 1, and End Bent No.2 to confirm continous rock. For Test holes, see Section 411 of the Standard Specifications.

NORTH CAROLINA PROFESSIONAL SEAL PE # ENGINEER PE SEAL NAME

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER FOUNDATION TABLES

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

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FOUNDATION RECOMMENDATIONS

Docusign Envelope ID: C7A5ED74-DE36-451C-80ED-4052CAE0EA34

HDR Engineering, Inc., of the Carolinas
555 Fayetteville Street, Suite 900
Raleigh, NC 27601

SUBJECT: BRIDGE ON -L- (SMOKEY RISE DR.) OVER CANE CREEK		WBS Element: 100-01-00204 YANCEY County
PREPARED BY:	AKV	100-01-00204
DATE:	10/31/25	
CHECKED BY:	SK	SHEET:
DATE:	11/3/2025	

END BENTS SUMMARY

END BENT 1

Foundation Type:	36" Drilled Piers		
Bottom of Column/ Top of Drilled Pier Elevation:	2451 +/-	ft.	*Provided by HDR Structural Engineer*
Number of Piers	4		*Provided by HDR Structural Engineer*
Max Factored Load:	400	kips/pier	*Provided by HDR Structural Engineer*
Provided Factored Resistance:	404	kips/pier	*Required factored Resistance including weight of column and pier*
Drilled Pier Minimum Tip Elevat	2437.0	ft.	*Determined from NCDOT Drilled Pier Axial Resistance Spreadsheet and LPILE*
Drilled Pier Length:	14.0	ft	*Top of Pier - Pier Tip Elevation*
Point of Fixity EL:	2441.5	ft	*From LPILE*

END BENT 2

Foundation Type:	36" Drilled Piers		
Bottom of Column/ Top of Drilled Pier Elevation:	2451 +/-	ft.	*Provided by HDR Structural Engineer*
Number of Piers	4		*Provided by HDR Structural Engineer*
Max Factored Load:	400	kips/pier	*Provided by HDR Structural Engineer*
Provided Factored Resistance:	404	kips/pier	*Required factored Resistance including weight of column and pier*
Drilled Pier Minimum Tip Elevat	2437.0	ft.	*Determined from NCDOT Drilled Pier Axial Resistance Spreadsheet and LPILE*
Drilled Pier Length:	14.0	ft	*Top of Pier - Pier Tip Elevation*
Point of Fixity EL:	2441.5	ft	*From LPILE*

Docusign Envelope ID: C7A5ED74-DE36-451C-80ED-4052CAE0EA34

HDR Engineering, Inc., of the Carolinas
555 Fayetteville Street, Suite 900
Raleigh, NC 27601

SUBJECT: BRIDGE ON -L- (SMOKEY RISE DR.) OVER CANE CREEK		WBS Element: 100-01-00204 YANCEY County
PREPARED BY:	AKV	100-01-00204
DATE:	11/21/25	
CHECKED BY:	SK	SHEET:
DATE:	11/21/2025	

INTERIOR BENTS SUMMARY

BENT 1

Foundation Type:	36" Drilled Piers		
Bottom of Column/ Top of Drilled Pier Elevation:	2454 +/-	ft.	*Provided by HDR Structural Engineer*
Number of Piers	2		*Provided by HDR Structural Engineer*
Max Factored Load:	615	kips/pier	*Provided by HDR Structural Engineer*
Provided Factored Resistance:	632	kipspier	*Required factored Resistance including weight of column and pier*
Drilled Pier Minimum Tip Elevation:	2438.0	ft.	*Determined from NCDOT Drilled Pier Axial Resistance Spreadsheet and LPILE*
Drilled Pier Length:	16.0	ft	*Top of Pier - Pier Tip Elevation*
Point of Fixity EL:	2443.5	ft	*From LPILE*

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BORING LOCATION PLAN AND BORING LOGS

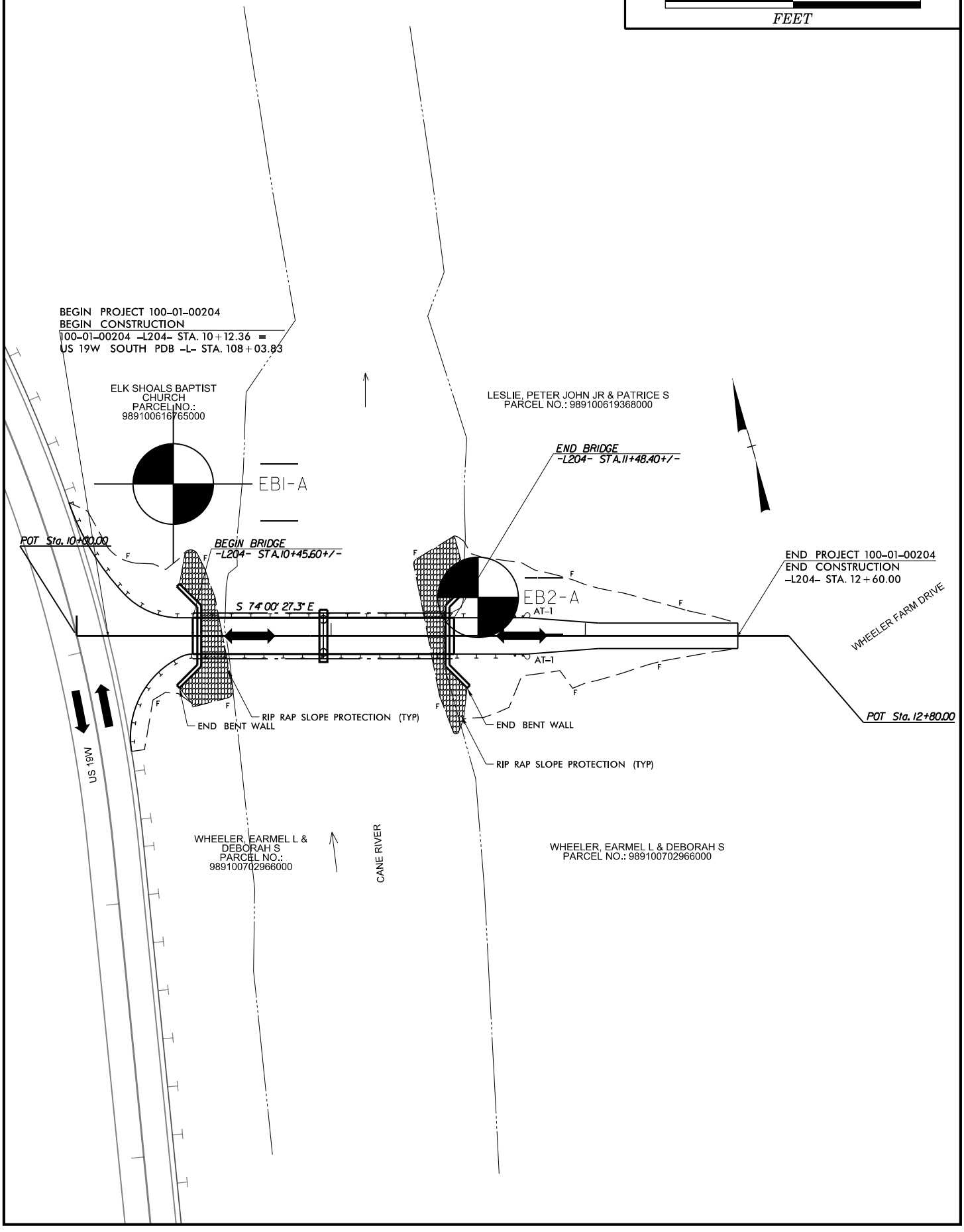
Docusign Envelope ID: C7A5ED74-DE36-451C-80ED-4052CAE0EA34

PROJECT REFERENCE NO.	SHEET NO.
100–01–00204	3

SITE PLAN

0 50 100

FEET



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SHEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 100-01-00204	**TIP** 100-01-00204	**COUNTY** YANCEY	**GEOLOGIST** A, Watkins
SITE DESCRIPTION Grow NC PRB			**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 10+38	**OFFSET** 60 ft LT	**ALIGNMENT** L — **0 HR.** 2.9
COLLAR ELEV. 2,456.5 ft	**TOTAL DEPTH** 29.3 ft	**NORTHING** 811,476	**EASTING** 996,695 — **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&R5077 CME-55 81% 06/11/2025		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Ingo, C.	**START DATE** 09/30/25	**COMP. DATE** 09/30/25	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
2460											
	2,456.5	0.0								2,456.5 GROUND SURFACE	0.0
2455	2,454.5	2.0	1	2	2	4		M		**ALLUVIAL** Dark Brown, soft to medium dense, silty SAND (A-2-4), trace mica, trace organic matter	
	2,452.5	4.0	3	2	10	12		M		2,453.5	3.0
2450	2,450.3	6.2	15	23	40	63		M		**RESIDUAL** Gray, black and brown, dense to very dense, silty SAND (A-2-4), trace to little rock fragments	
	2,448.1	8.4	20	23	21	44		W		2,448.1	8.4
	2,447.8	8.7	100/0.3			100/0.3				2,447.8 **WEATHERED ROCK** Black and gray, Amphibolite	8.7
2445			60/0.1			60/0.1				**CRYSTALLINE ROCK** Dark gray, black, and brown, AMPHIBOLITE REC = 99%' RQD = 54%' GSI = 25-35	
2440											
2435										2,434.3	22.2
										Black, gray and white, BIOTITE-CETNITIC GNEISS REC = 90% RQD = 56% GSI = 25-35	
2430										2,427.2	29.3
										Boring Terminated at Elevation 2,427.2 ft In: CRYSTALLINE ROCK: Black, gray and white, BIOTITE-CETNITIC GNEISS	

NCDOT BORE SINGLE SITE-00204.GPJ NC_DOT.GDT 11/3/25

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SHEET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 100-01-00204	**TIP** 100-01-00204	**COUNTY** YANCEY	**GEOLOGIST** A, Watkins	
SITE DESCRIPTION Grow NC PRB				**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 11+58	**OFFSET** 15 ft LT	**ALIGNMENT** L	**0 HR.** 6.7
COLLAR ELEV. 2,458.1 ft	**TOTAL DEPTH** 11.0 ft	**NORTHING** 811,400	**EASTING** 996,798	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&R5077 CME-55 81% 06/11/2025		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Ingo, C.	**START DATE** 09/29/25	**COMP. DATE** 09/29/25	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2460										ELEV. (ft) DEPTH (ft)
	2,458.1	0.0								2,458.1 GROUND SURFACE 0.0
	2,456.0	2.1	1	1	4	5		M		**ALLUVIAL**
2455			4	2	1	3		M		2,456.0 Brown and tan, loose, SAND and GRAVEL (A-1-b), trace organic matter 2.1
	2,454.0	4.1	2	1	4	5		M		Dark brown, very loose to loose, silty SAND (A-2-4)
	2,452.4	5.7	8	13	12	25		M		2,453.1 5.0
2450	2,450.4	7.7	48	14	12	26		M		**RESIDUAL** Brown, tan and gray, medium dense, silty SAND (A-2-4), trace to little rock fragments
	2,447.1	11.0	60/0.0			60/0.0				2,447.1 11.0
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 2,447.1 ft On: CRYSTALLINE ROCK: Black and gray, AMPHIBOLITE

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SHEET

GEOTECHNICAL BORING REPORT
CORE LOG

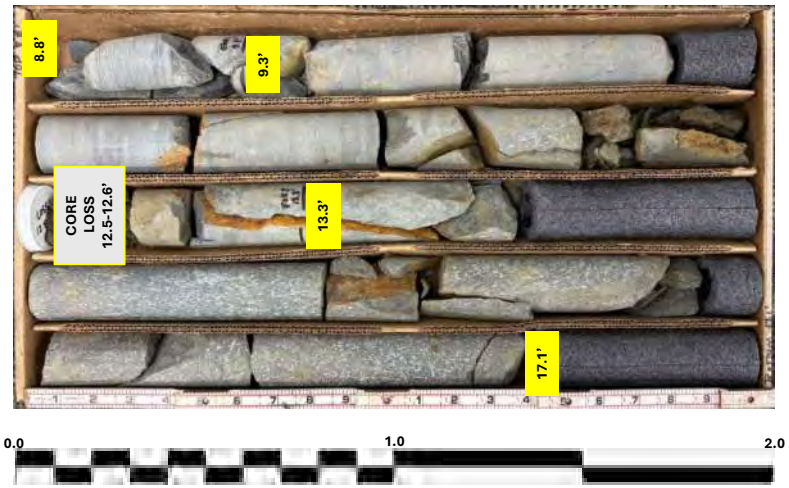
WBS 100-01-00204	**TIP** 100-01-00204	**COUNTY** YANCEY	**GEOLOGIST** A, Watkins
SITE DESCRIPTION Grow NC PRB			**GROUND WTR (ft)**
BORING NO. 00204_EB1-A	**STATION** 10+40	**OFFSET** 60 ft LT	**ALIGNMENT** L	**0 HR.** 2.9
COLLAR ELEV. 2,456.5 ft	**TOTAL DEPTH** 29.3 ft	**NORTHING** 811,476	**EASTING** 996,695	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&R5077 CME-55 81% 06/11/2025		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Ingo, C.	**START DATE** 09/30/25	**COMP. DATE** 09/30/25	**SURFACE WATER DEPTH** N/A
CORE SIZE NQZ	**TOTAL RUN** 20.5 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2447.7											ELEV. (ft) / DEPTH (ft)
	2,447.7	8.8									Begin Coring @ 8.8 ft
	2,447.2	9.3	0.5	1:57/0.5	(0.5) 100%	(0.0) 0%					**CRYSTALLINE ROCK**
2445			4.0	2:32/1.0 2:10/1.0							Dark gray and black with white and orange, AMPHIBOLITE, complete to slight weathering, very soft to moderately hard, very close to close fracture spacing, massive, primary and secondary jointing present at variable orientations
	2,443.2	13.3		2:42/1.0 2:03/1.0	(3.9) 98%	(1.8) 45%					Potential joint/ zone of severe weathering 12.7-13.0' (0.1' core loss 12.7-12.8')
			4.0	2:11/1.0 2:38/1.0 2:08/1.0 2:45/1.0	(4.0) 100%	(1.9) 48%					GSI= 25-35 *(continued)*
2440	2,439.2	17.3									
			4.0	2:38/1.0 2:41/1.0 2:40/1.0 2:43/1.0	(4.0) 100%	(3.4) 85%					
2435	2,435.2	21.3									
			5.0	1:54/1.0 3:30/1.0 7:21/1.0 2:59/1.0 2:54/1.0	(4.5) 90%	(2.4) 48%		(6.4) 90%	(4.0) 56%		2,434.3 — 22.2 Light to dark gray and white with red and brown, migmatitic amphibole GNEISS, some garnets, very severe to slight weathering, very close to moderately close fracture spacing, very thinly to thickly foliated
2430	2,430.2	26.3									Potential joint/ zone of severe weathering 22.2-23.7; (0.2' core loss 22.6-22.8', 0.3' core loss 23.4-23.7')
			3.0	2:40/1.0 2:02/1.0	(2.8) 93%	(1.6) 53%					Potential joint/ zone of severe weathering 27.5-28.4'; (0.2' core loss 28.2-28.4')
	2,427.2	29.3		2:54/1.0							2,427.2 — 29.3 GSI = 25-35
											Boring Terminated at Elevation 2,427.2 ft In: CRYSTALLINE ROCK: Black, gray and white, BIOTITE-CETNITIC GNEISS

Docusign Envelope ID: C7A5ED74-DE36-451C-80ED-4052CAE0EA34

CORE PHOTOGRAPHIC RECORD
Site 100-01-00204
Grow NC/SCEM-Support for the Private Road and Bridge

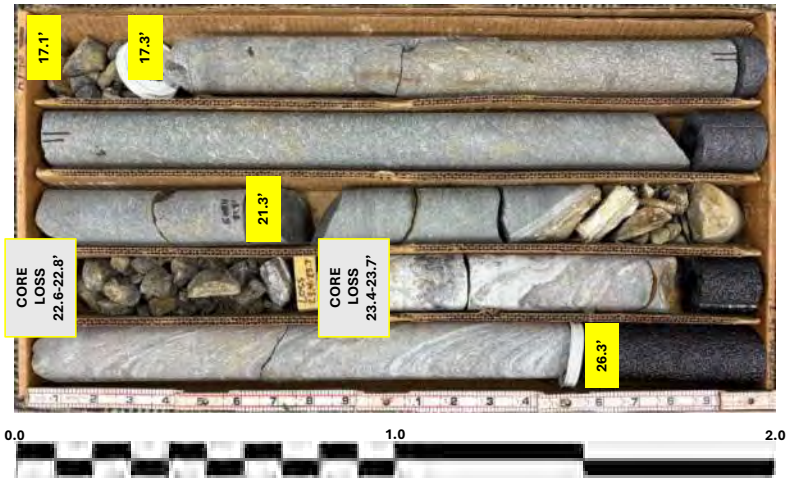
EB1-A DRY
Box 1 of 2: 8.8-17.1 FEET



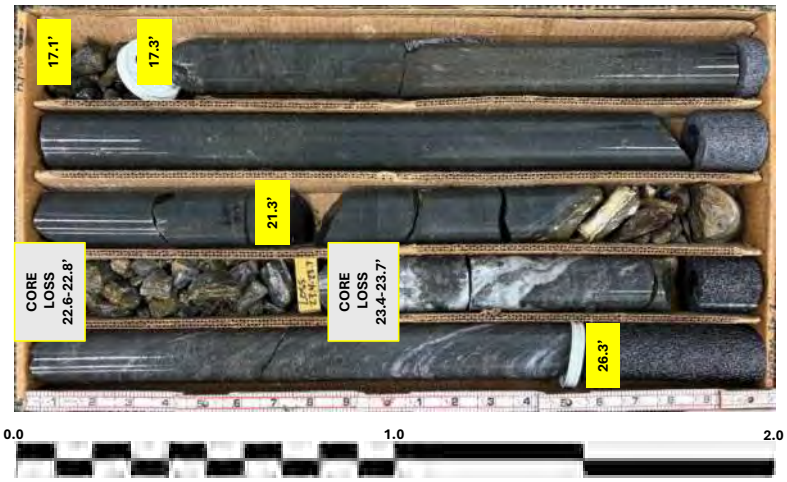
EB1-A WET
Box 1 of 2: 8.8-17.1 FEET

CORE PHOTOGRAPHIC RECORD
Site 100-01-00204
Grow NC/SCEM-Support for the Private Road and Bridge

EB1-A DRY
Box 1 of 2: 17.1-26.3 FEET

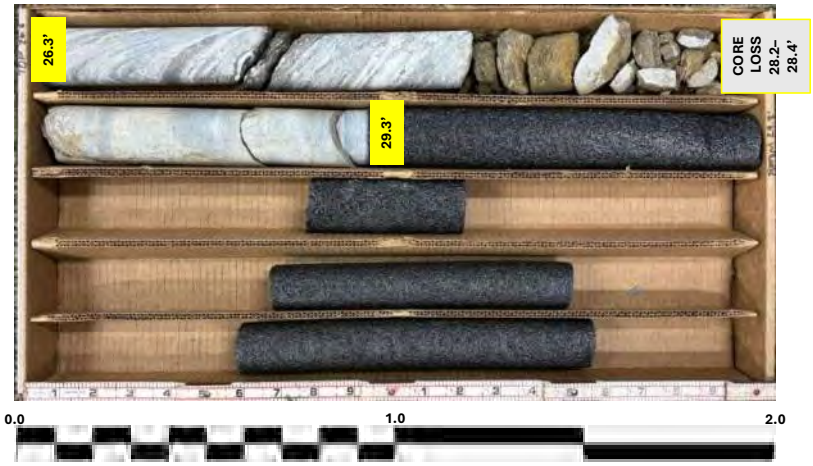


EB1-A DRY
Box 1 of 2: 17.1-26.3 FEET



CORE PHOTOGRAPHIC RECORD
Site 100-01-00204
Grow NC/SCEM-Support for the Private Road and Bridge

EB1-A DRY
Box 1 of 2: 26.3-29.3 FEET



EB1-A DRY
Box 1 of 2: 26.3-29.3 FEET