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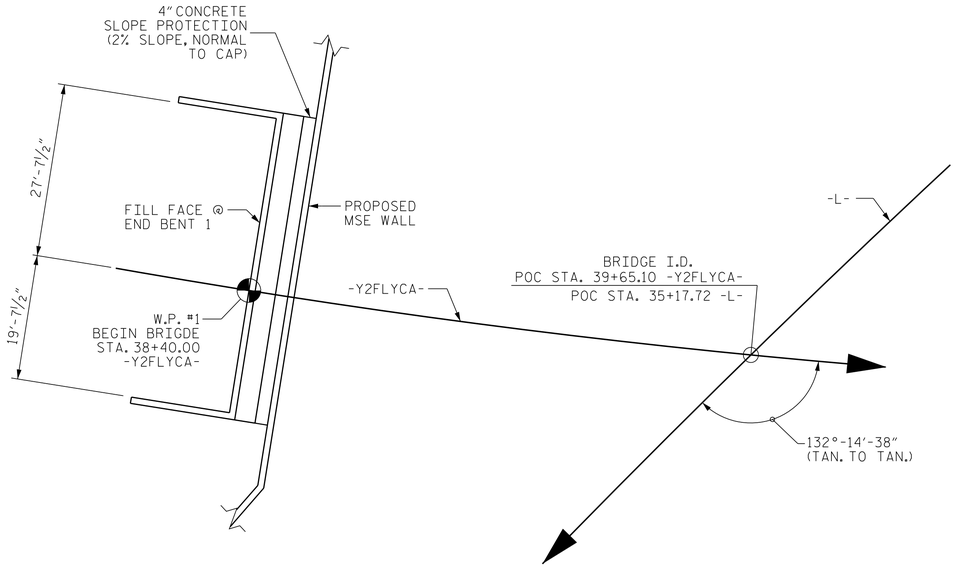
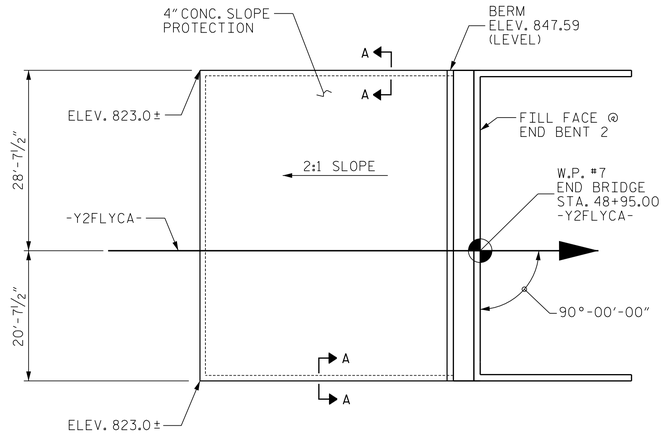
GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

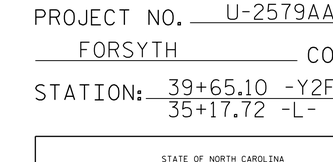
SLOPE PROTECTION SHALL CONSIST OF 4'' POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS ''B''. THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60'' WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE ''POURING DETAIL'' WITH 2'-0''LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6'' MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE ''OPTIONAL POURING DETAIL'' WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6''. THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.



PLAN @ END BENT 1

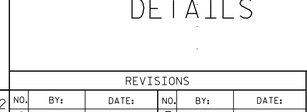


PLAN @ END BENT 2



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL

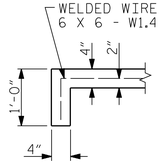


POUR A 4'-0'' STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

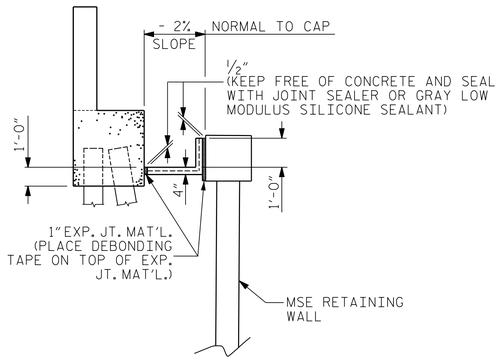
OPTIONAL POURING DETAIL

BRIDGE @ STA. 39+65.10 -Y2FLYCA-	4-INCH SLOPE PROTECTION	✳ WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	14	26
END BENT 2	360	648

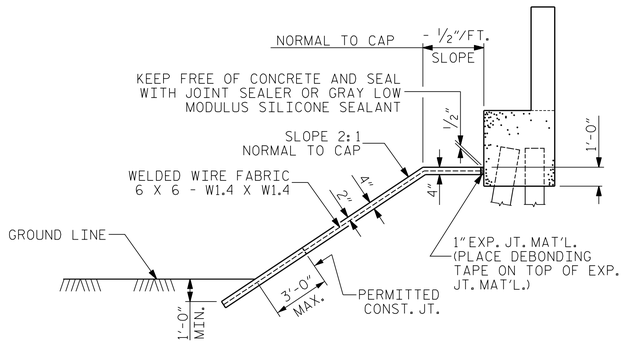
✳ QUANTITY SHOWN IS BASED ON 5' POURS.



SECTION A-A



SECTION ALONG -Y2FLYCA-
@ END BENT 1



SECTION ALONG -Y2FLYCA-
@ END BENT 2

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 39+65.10 -Y2FLYCA-
35+17.72 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

V&M Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828-253-2796
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3590

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24777 Digitally signed by Mark Andrew Ashley Date: 2022.07.26 11:55:41 -04'00'

7/26/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : ELR 5/92	REV. 12/21/11	MAA/GM
CHECKED BY : GRP 6/92	REV. 1/16	MAA/TMG
	REV. 12/17	MAA/THC

DWN. BY: NCW	DATE: 03/2022
CHKD. BY: PRG	DATE: 03/2022
DES. EGR. OF RECORD: RTS	DATE: 03/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-88
1			3			TOTAL SHEETS
2			4			92

STD. NO. SP1

wdcrutcher
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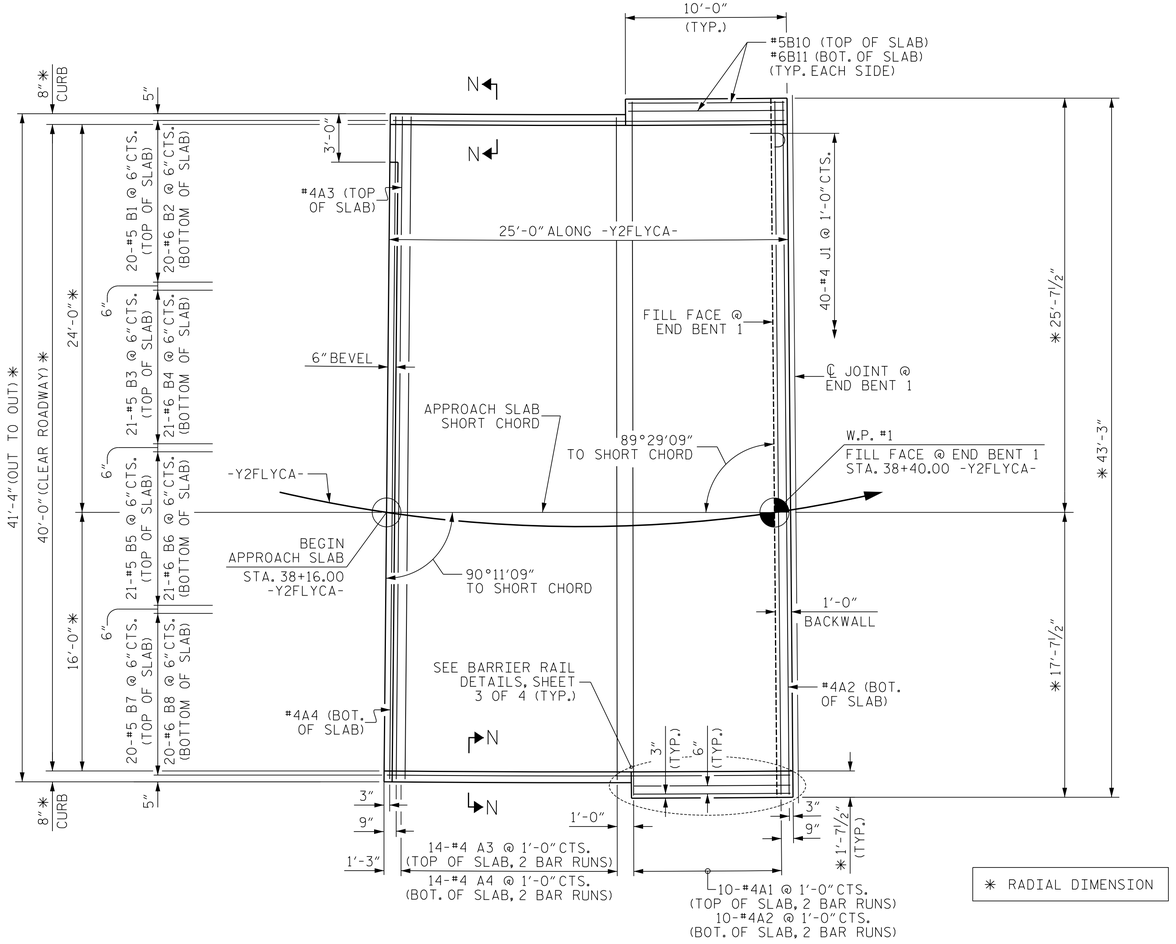
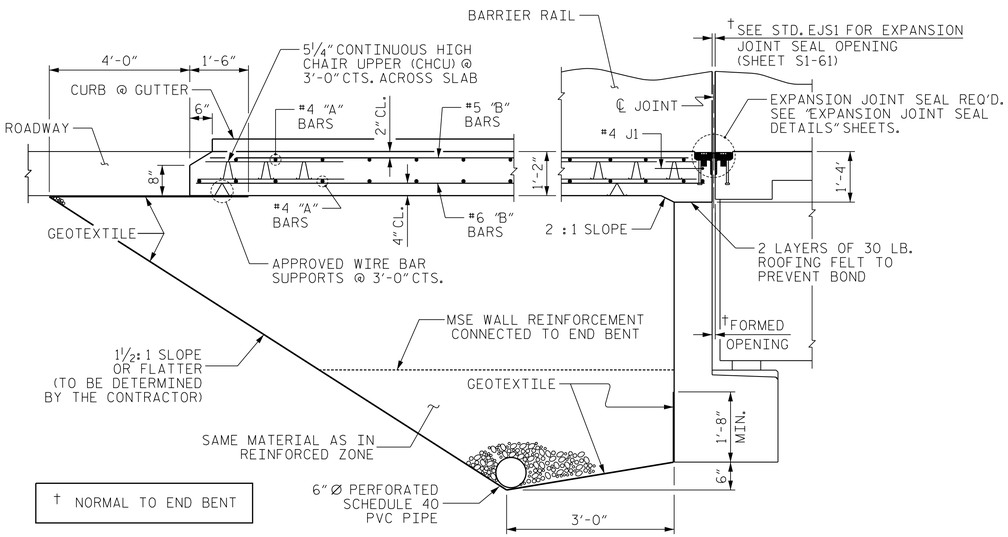
TIME: 8:09 AM on Tuesday, July 26, 2022

FOR NOTES, SEE SHEET 3 OF 4.

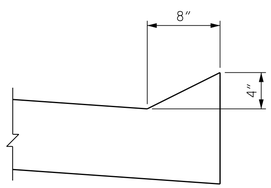


PLAN AT END BENT 1

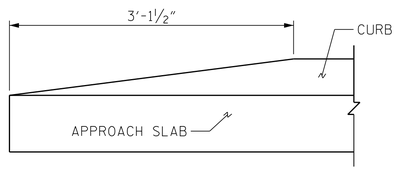


SECTION THRU SLAB

(TYPE III - REINFORCED APPROACH FILL)
(END BENT 1 ONLY, SEE SHEET 2 OF 4 FOR SECTION THRU END BENT 2)



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27771 PARKER L. WILLIS COPYRIGHT 2022

7/26/2022

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Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3590

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 39+65.10 -Y2FLYCA-
35+17.72 -L-
SHEET 1 OF 4

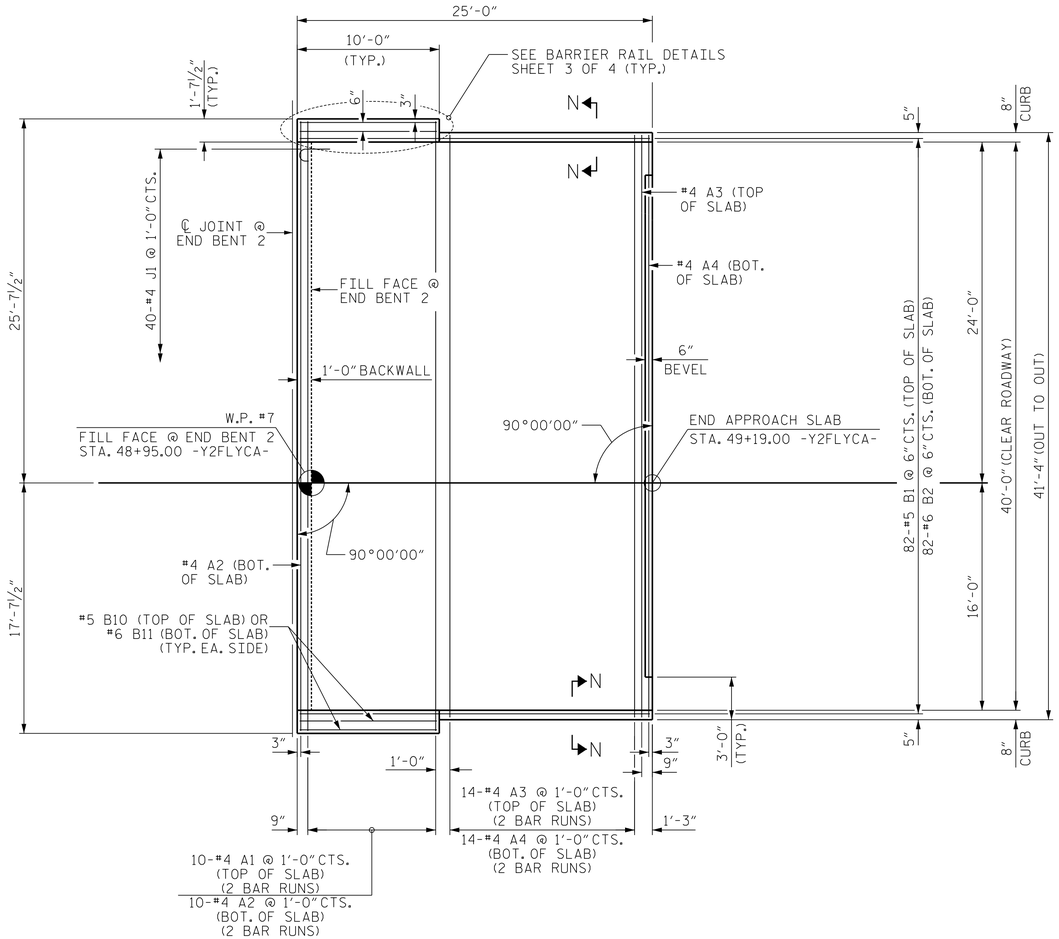
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB PLAN AND SECTION END BENT 1

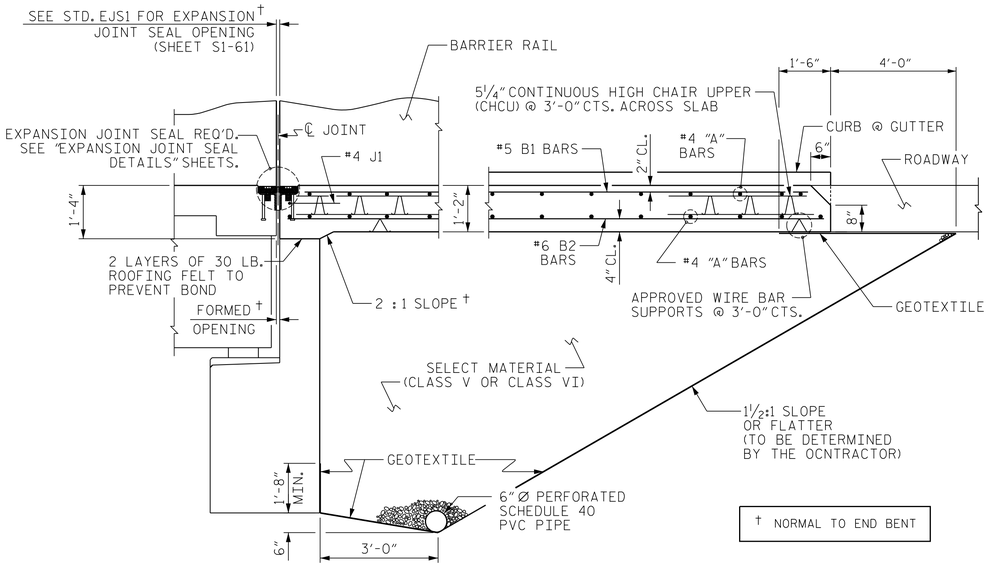
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-89
1			3			TOTAL SHEETS
2			4			92

CHKD. BY: AW DATE: 11/2021
CHKD. BY: PRG DATE: 03/2022
DES. EGR. OF RECORD: PRG DATE: 03/2022

FOR NOTES, SEE SHEET 3 OF 4.

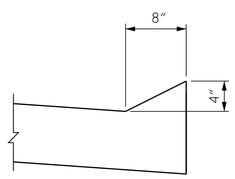


PLAN @ END BENT 2

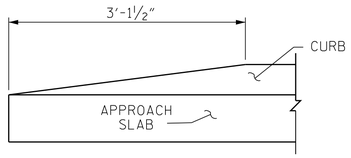


SECTION THRU SLAB

(TYPE I - STANDARD APPROACH FILL)
(END BENT 2 ONLY, SEE SHEET 1 OF 4 FOR SECTION THRU END BENT 1)



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038461 HARDIN L. WELLS

Digitally signed by: Hardin Wells
2022.07.26 11:17:...

7/26/2022

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Vaughn & Melton
Consulting Engineers
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Charlotte, NC 704-357-0488

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 39+65.10 -Y2FLYCA-
35+17.72 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

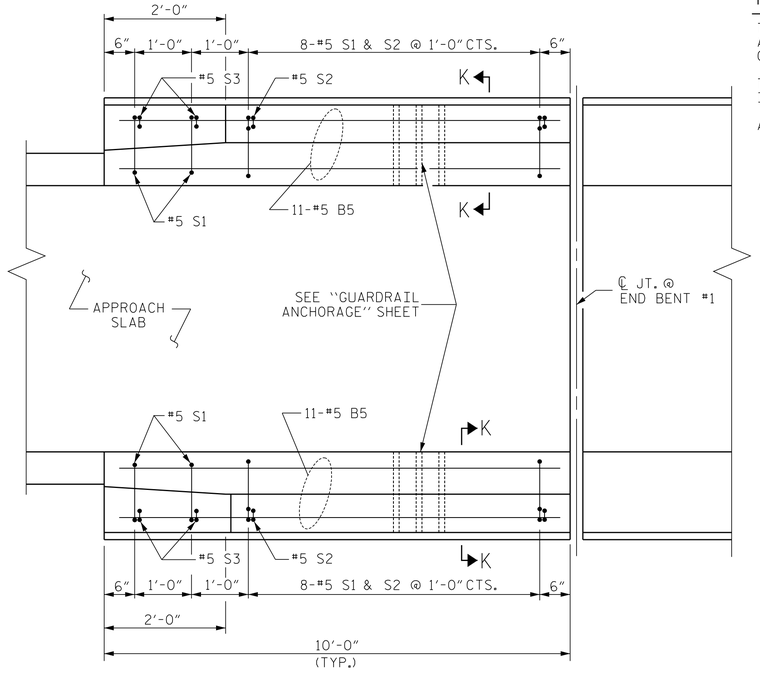
BRIDGE APPROACH SLAB PLAN AND SECTION END BENT 2

DWN. BY: NCW	DATE: 03/2022
CHKD. BY: PRG	DATE: 03/2022
DES. EGR. OF RECORD: PRG	DATE: 03/2022

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

SHEET NO. S1-90

TOTAL SHEETS 92



PLAN OF BARRIER RAIL

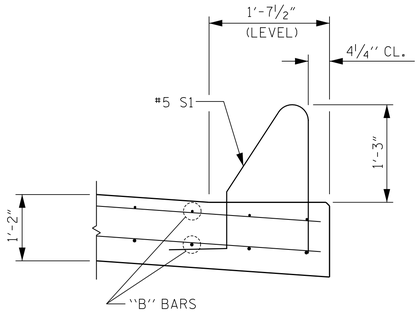
(END BENT #1 SHOWN, END BENT #2 SIMILAR)

NOTES (BARRIER RAIL)

THE BARRIER RAIL ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL APPROACH SLAB CONCRETE AHS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

THE COST OF THE BARRIER RAIL ON APPROACH SLABS SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.



SECTION K-K

NOTES (APPROACH SLABS)

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, MSE WALL REINFORCEMENT AND BACKFILL MATERIAL SEE ROADWAY PLANS.

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

BACKFILL MATERIAL AT END BENT 1 SHALL BE THE SAME MATERIAL USED IN THE MSE REINFORCED ZONE.

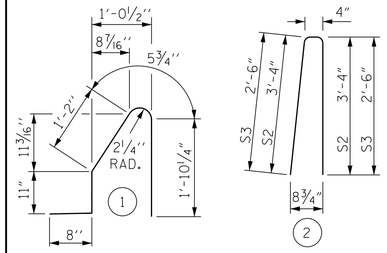
APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR THE 6"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

BAR TYPES



(ALL BAR DIMENSIONS ARE OUT TO OUT)

BILL OF MATERIAL

BARRIER RAILS ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B5	44	#5	STR	9'-8"	444
✳ S1	40	#5	1	5'-2"	216
✳ S2	32	#5	2	7'-0"	234
✳ S3	8	#5	2	5'-4"	45

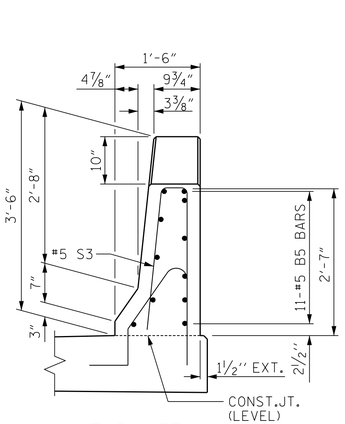
✳ EPOXY COATED REINFORCING STEEL	939 LBS.
CLASS AA CONCRETE	5.3 CU. YDS.
CONCRETE BARRIER RAIL	40.0 LIN. FT.

BILL OF MATERIAL

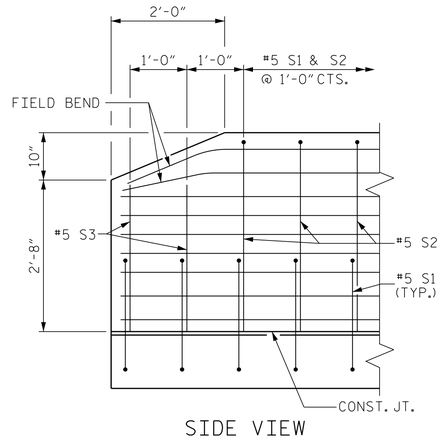
APPROACH SLAB AT EB 1						APPROACH SLAB AT EB 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	20	#4	STR	22'-6"	301	✳A1	20	#4	STR	22'-6"	301
A2	22	#4	STR	22'-6"	331	A2	22	#4	STR	22'-6"	331
✳A3	30	#4	STR	21'-6"	431	✳A3	30	#4	STR	21'-6"	431
A4	30	#4	STR	21'-6"	431	A4	30	#4	STR	21'-6"	431
✳B1	20	#5	STR	24'-2"	504	✳B1	82	#5	STR	23'-8"	2024
B2	20	#6	STR	24'-2"	726	B2	82	#6	STR	24'-8"	3038
✳B3	21	#5	STR	24'-4"	533	✳B10	4	#5	STR	9'-8"	40
B4	21	#6	STR	24'-4"	768	B11	4	#6	STR	9'-8"	58
✳B5	21	#5	STR	24'-7"	538						
B6	21	#6	STR	24'-7"	775	✳J1	40	#4	3	1'-5"	38
✳B7	20	#5	STR	24'-9"	516						
B8	20	#6	STR	24'-9"	743	REINFORCING STEEL				LBS.	3858
✳B10	4	#5	STR	9'-8"	40	✳EPOXY COATED REINFORCING STEEL				LBS.	2834
B11	4	#6	STR	9'-8"	58						
						CLASS AA CONCRETE				C.Y.	45.8
✳J1	40	#4	3	1'-5"	38						
REINFORCING STEEL				LBS.	3832						
✳EPOXY COATED REINFORCING STEEL				LBS.	2901						
CLASS AA CONCRETE				C.Y.	45.8						

SPLICE LENGTHS

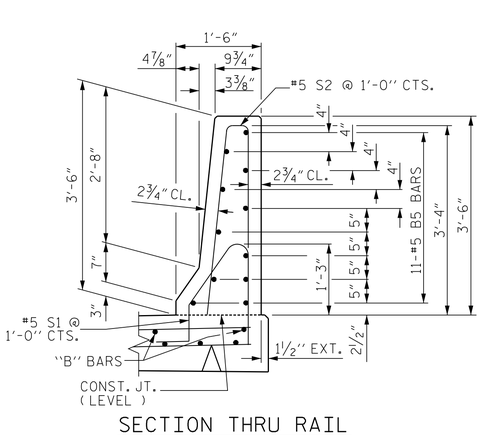
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



END VIEW



SIDE VIEW



SECTION THRU RAIL

END OF RAIL DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027771 HARRY L. WILLIS JR. REGISTERED

Digitally signed by HarryWillis
DocuSigned by: 2B2B9FCFCD2B481...
7/26/2022

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V&M Vaughn & Melton Consulting Engineers
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Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3590
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 39+65.10 -Y2FLYCA-
35+17.72 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB PLAN AND SECTION

DWN. BY: NCW	DATE: 03/2022	REVISIONS					SHEET NO. S1-91
CHKD. BY: PRG	DATE: 03/2022	NO.	BY:	DATE:	NO.	BY: DATE:	
DES. EGR. OF RECORD: PRG	DATE: 03/2022	1			3		TOTAL SHEETS 92
		2			4		

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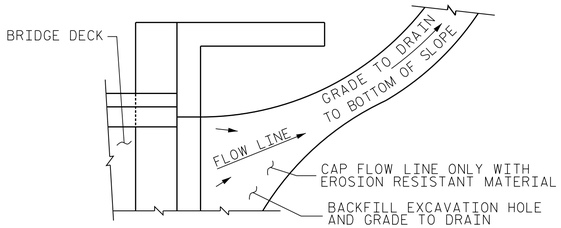
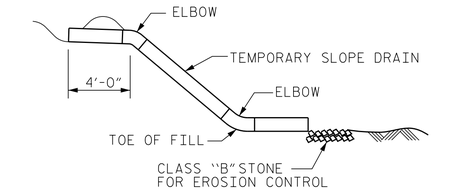
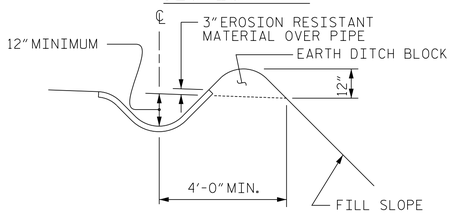


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

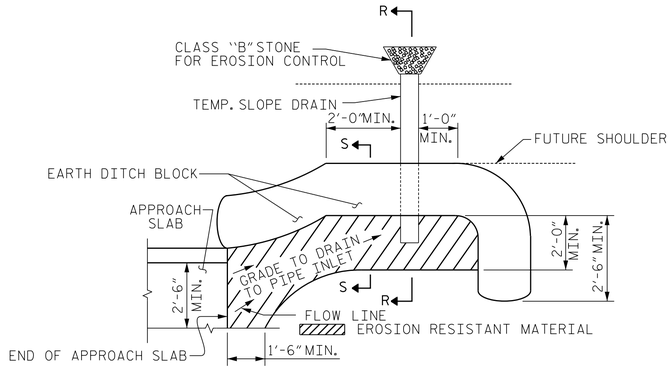
TEMPORARY DRAINAGE DETAIL



SECTION R-R



SECTION S-S



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

PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

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Charlotte, NC 704-357-0488

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 39+65.10 -Y2FLYCA-
35+17.72 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

DWN. BY: NCW	DATE: 03/2022
CHKD. BY: PRG	DATE: 03/2022
DES. EGR. OF RECORD: PRG	DATE: 03/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-92
1			3			TOTAL SHEETS
2			4			92

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 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 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

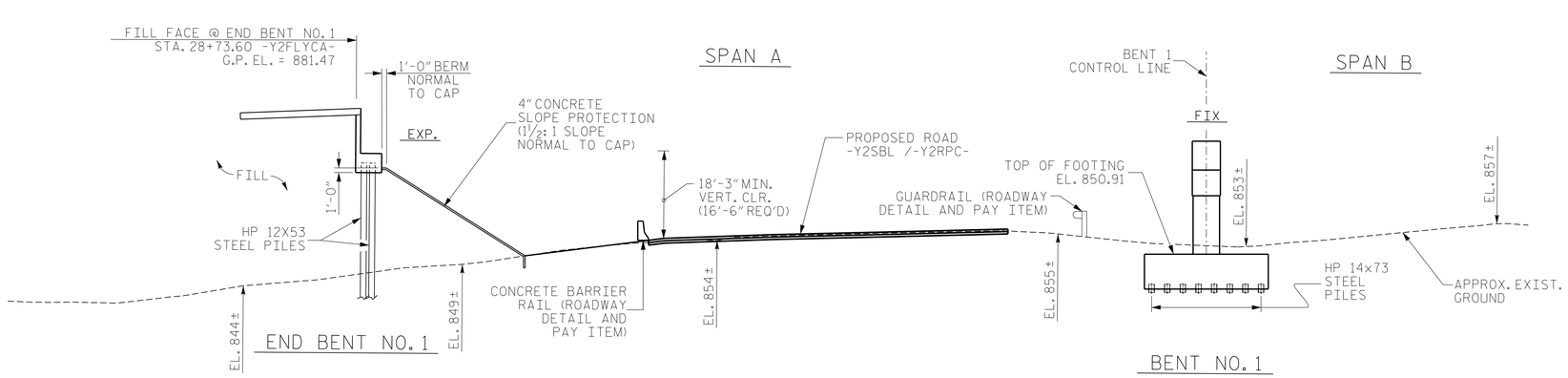
ENGLISH

JANUARY, 1990

STD. NO. SN

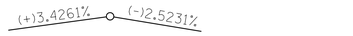
REV. 6-16-95 EEM (✓) RGW
REV. 8-16-99 RWW (✓) LES
REV. 5-7-03 RWW (✓) JTE
REV. 5-1-06 TLA (✓) GM
REV. 10-1-11 MAA (✓) GM
REV. 12-17 MAA (✓) THC

F.A. PROJECT NO. 0074226



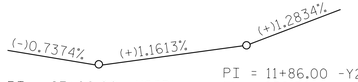
PARTIAL SECTION ALONG -Y2FLYCA-

SECTIONS AT END BENTS AND BENTS ARE AT RIGHT ANGLES.



PI = 33+84.00
EL = 898.95
VC = 1000'

GRADE DATA -Y2FLYCA-



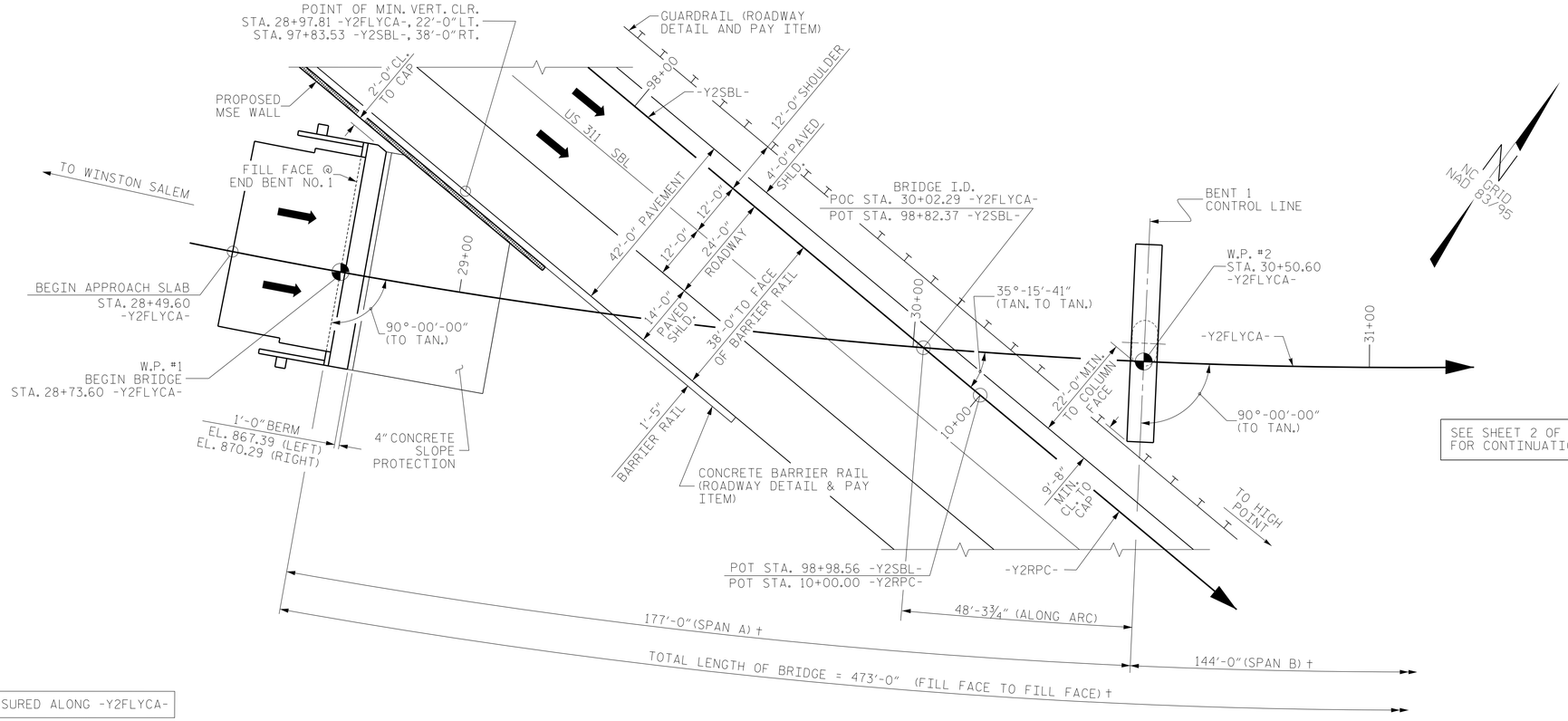
PI = 87+06.00 -Y2SBL-
EL = 842.31
VC = 1000'

PI = 11+86.00 -Y2RPC-
EL = 858.32
VC = 100'

GRADE DATA -Y2SBL- & -Y2RPC-

PI STA. 36+95.48
△ = 110°-02'-48.8"(LT)
D = 4°-18'-28.6"
L = 2,554.51'
T = 1,901.09'
R = 1,330.00'
SE = 06

HORIZONTAL CURVE DATA -Y2FLYCA-



† = DIMENSIONS MEASURED ALONG -Y2FLYCA-

NOTE: ALL BENTS AND END BENTS ARE RADIAL TO -Y2FLYCA-.

PARTIAL PLAN ALONG -Y2FLYCA-

(PILES AND BENT FOOTING NOT SHOWN FOR CLARITY)
(CONCRETE COPING ON MSE WALL NOT SHOWN FOR CLARITY)

SEE SHEET 2 OF 2 FOR CONTINUATION.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047287 HARRY L. WILLIS
DocuSigned by: Harry Willis 465287FCF0223B1...
8/8/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828-253-2796
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Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3590
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-
BRIDGE NO. 330730
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

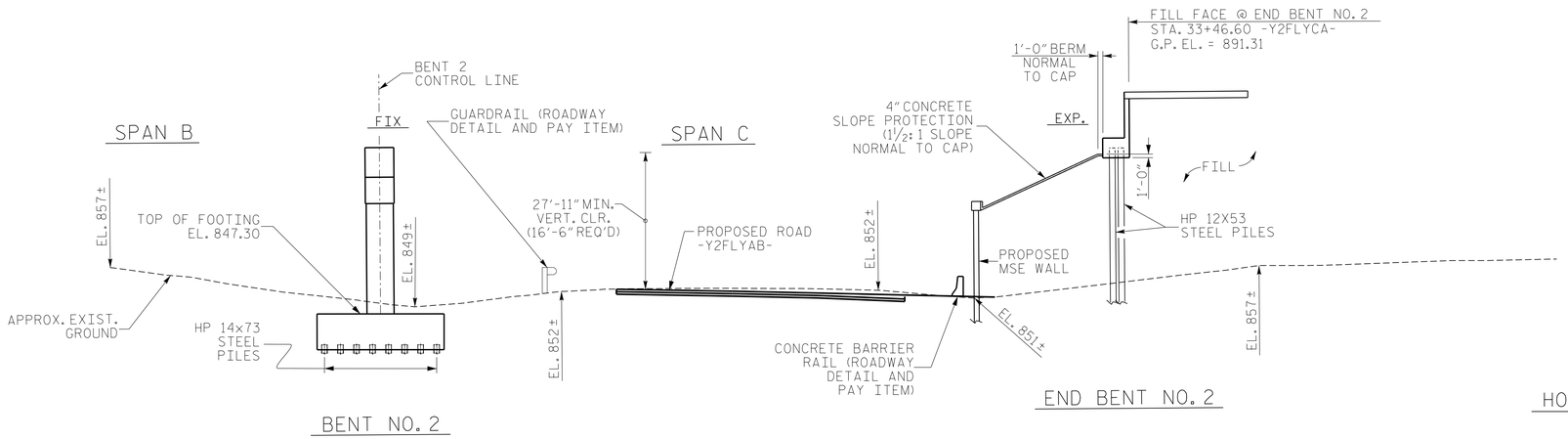
GENERAL DRAWING

BRIDGE ON -Y2FLYCA-
OVER US 311
FROM US 311 TO I-40

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-1
1			3			TOTAL SHEETS
2			4			59

V & M PROJECT NO.: 31748.44 08:24 AM on Monday, August 08, 2022 402.001.LU.2579AA_SMU_GD01_S01_330730.dgn



PARTIAL SECTION ALONG -Y2FLYCA-

SECTIONS AT END BENTS AND BENTS ARE AT RIGHT ANGLES.

(+)3.4261% (-)2.5231%

PI = 33+84.00
EL = 898.95
VC = 1000'

GRADE DATA -Y2FLYCA-

(-)4.0310% (-)1.4036%

PI = 34+63.00
EL = 853.80
VC = 360'

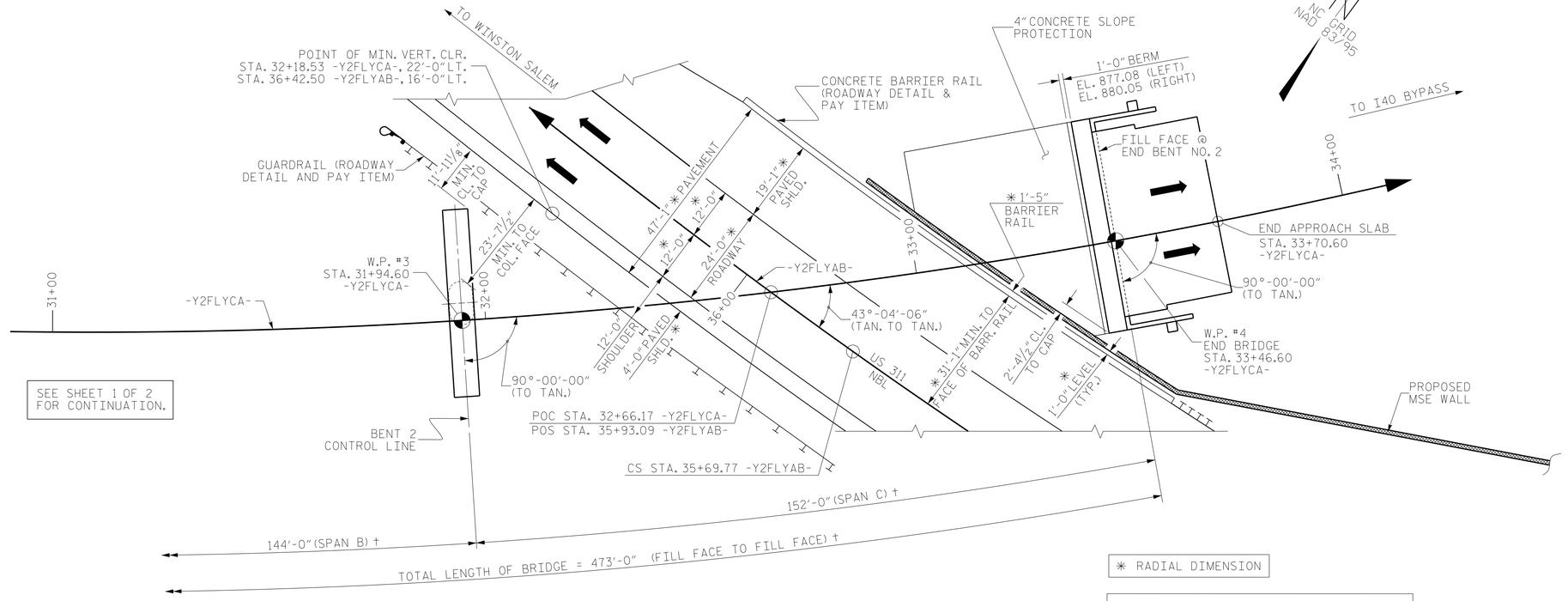
GRADE DATA -Y2FLYAB-

PI STA. 36+95.48
△ = 110°-02'-48.8" (LT)
D = 4°-18'-28.6"
L = 2,554.51'
T = 1,901.09'
R = 1,330.00'
SE = 06

HORIZONTAL CURVE DATA -Y2FLYCA-

PI STA. 34+35.36
△ = 11°-37'-12.8" (RT)
D = 4°-18'-28.6"
L = 269.74'
T = 135.33'
R = 1,330.00'
SE = 06

HORIZONTAL CURVE DATA -Y2FLYAB-



SEE SHEET 1 OF 2
FOR CONTINUATION.

* RADIAL DIMENSION

† = DIMENSIONS MEASURED ALONG -Y2FLYCA-

PARTIAL PLAN ALONG -Y2FLYCA-

(PILES AND BENT FOOTINGS NOT SHOWN FOR CLARITY)
(CONCRETE COPING ON MSE WALL NOT SHOWN FOR CLARITY)

NOTE: ALL BENTS AND END BENTS ARE RADIAL TO -Y2FLYCA-.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27...
DocuSigned by: Hardy Willis
02287FC...
8/8/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M Vaughn & Melton Consulting Engineers
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Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3590

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -Y2FLYCA-
OVER US 311
FROM US 311 TO I-40

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-2
1			3			TOTAL SHEETS
2			4			59

V & M PROJECT NO.: 31748-44 08:24 AM on Monday, August 08, 2022 402_003_U-2579AA_SMU_GD02_S02_330730.dgn

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 133.5 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 223 TONS PER PILE.

SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS FOR THE (SETTLEMENT GAUGES) REQUIRED AT END BENT NO. 1.

OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 1. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

PILES AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 154.5 TONS PER PILE.

DRIVE PILES AT BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 258 TONS PER PILE.

PILES AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 154.5 TONS PER PILE.

DRIVE PILES AT BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 258 TONS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 121.5 TONS PER PILE.

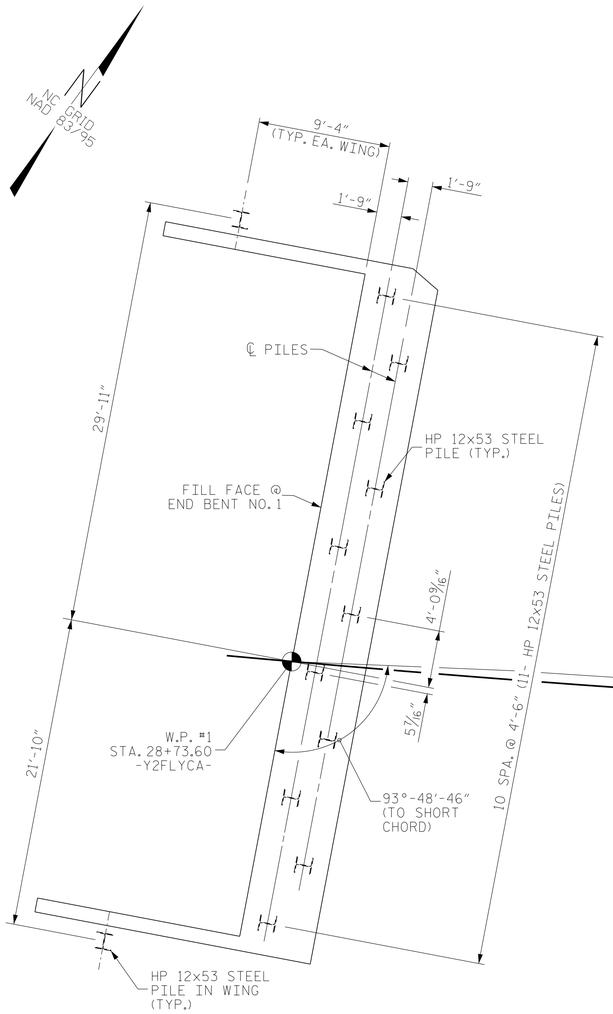
DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 203 TONS PER PILE.

SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS FOR THE (SETTLEMENT GAUGES) REQUIRED AT END BENT NO. 2.

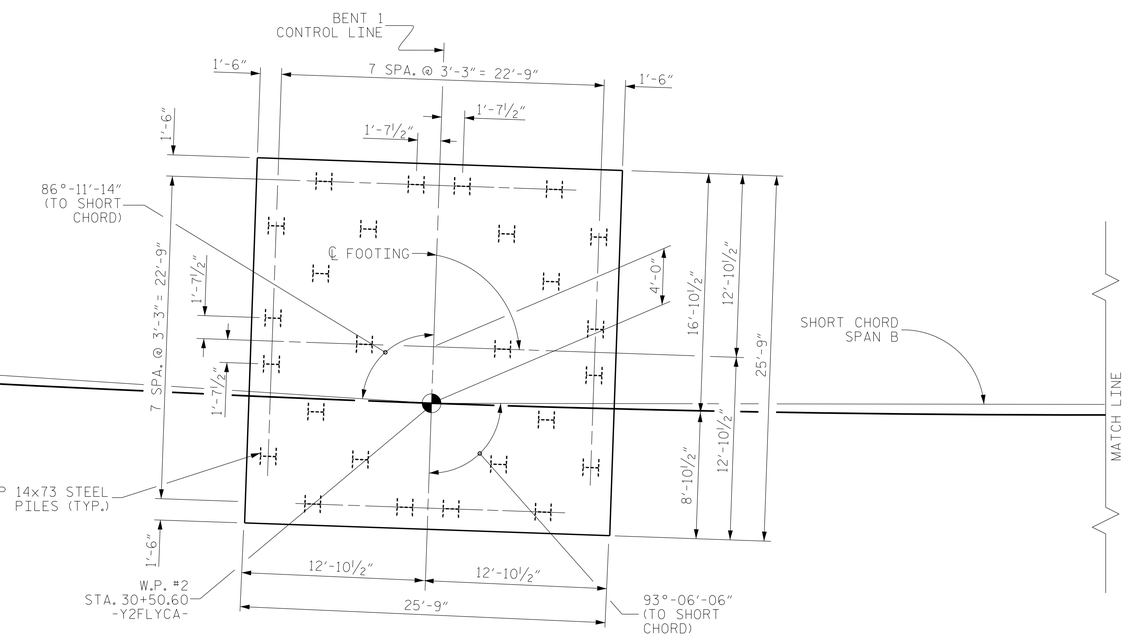
OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

CONSTRUCT MSE WALL PRIOR TO INSTALLING END BENT NO. 1 AND END BENT NO. 2 PILES. INSTALL ISOLATION CANS WHERE NECESSARY TO AVOID MSE REINFORCEMENT.

DRIVE PILES AT BENT NO. 1 AND END BENT NO. 2 AFTER THE WAITING PERIODS ARE COMPLETE.



END BENT NO. 1



SEE SHEET 2 OF 2 FOR CONTINUATION.

BENT NO. 1

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE AT BOTTOM OF THE CAP OR FOOTING, MEASURED FROM THE TANGENT TO -Y2FLYCA- AT EACH WORK POINT.

ALL BENT CONTROL LINES & ℄ FOOTINGS IN TRANSVERSE DIRECTION ARE RADIAL TO -Y2FLYCA-.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 1 OF 2

Vaughn & Melton
Consulting Engineers
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828-253-2796
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Knoxville, TN 865-546-5800
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Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3590

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20771 HARDY L. WILLIS
Designed by: Hardy Willis
DocuSigned by: 4A5C287FCF0224861...
8/8/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

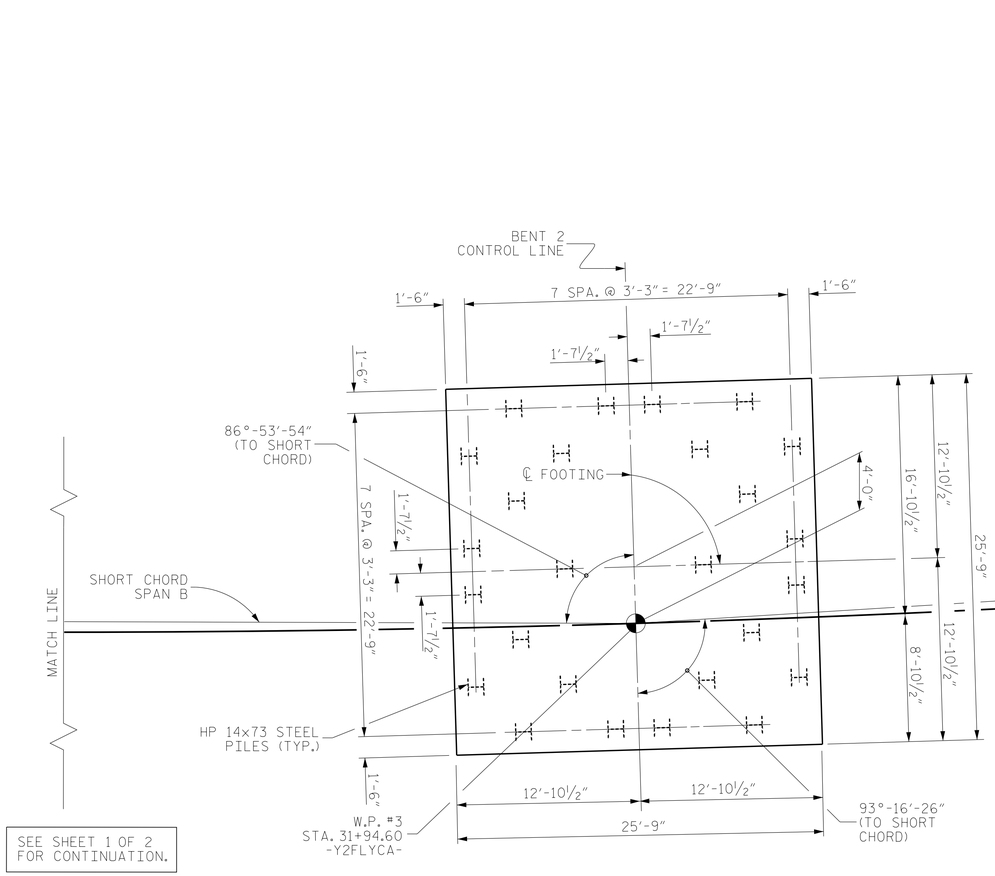
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOUNDATION LAYOUT

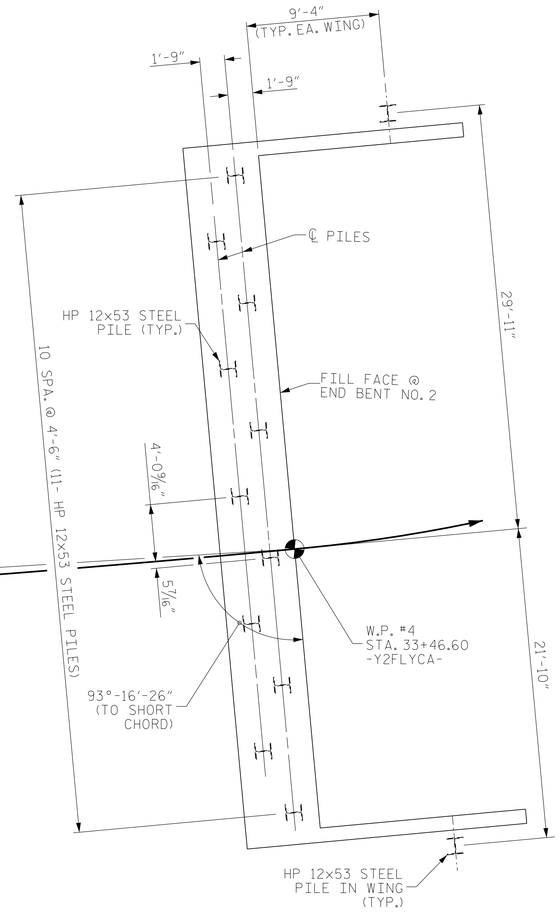
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-3
1			3			TOTAL SHEETS
2			4			59

NOTES:

SEE GENERAL DRAWING FOUNDATION LAYOUT, SHEET 1 OF 2 FOR NOTES.



BENT NO. 2



END BENT NO. 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE AT BOTTOM OF THE CAP OR FOOTING, MEASURED FROM THE TANGENT TO -Y2FLYCA- AT EACH WORK POINT.

ALL BENT CONTROL LINES & ℄ FOOTINGS IN TRANSVERSE DIRECTION ARE RADIAL TO -Y2FLYCA-.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047766 HARDY L. WILLIS

Docusigned by: Hardy Willis 8/8/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828-253-2796
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Knoxville, TN 865-546-5800
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Charlotte, NC 704-357-0488

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 2 OF 2

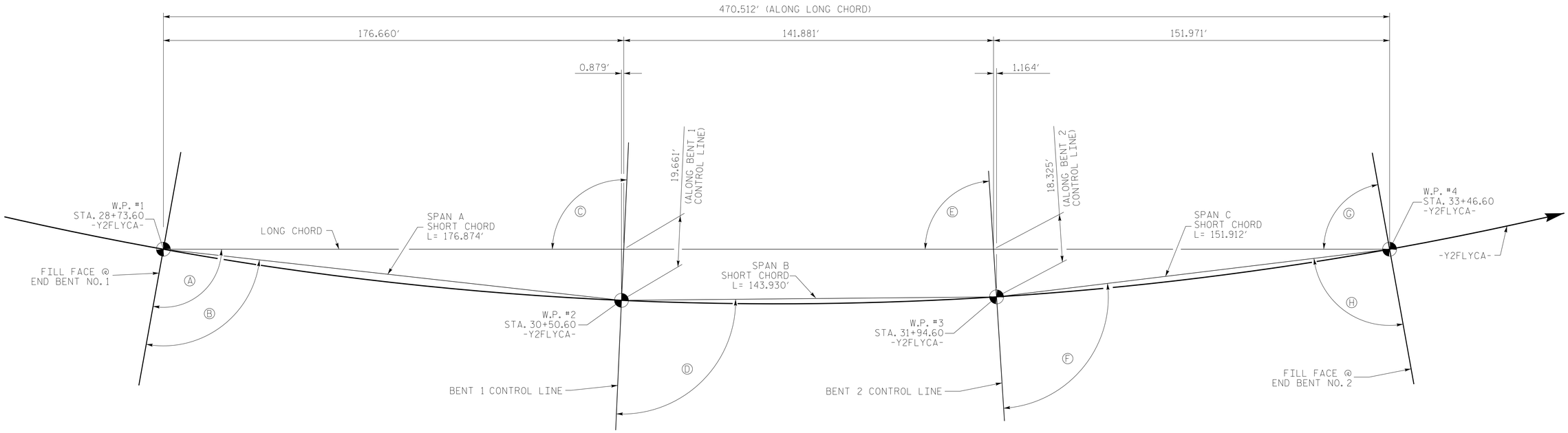
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOUNDATION LAYOUT

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-4
1			3			TOTAL SHEETS
2			4			59

V & M PROJECT NO.: 31748.44 08:24 AM on Monday, August 08, 2022 402_007_U-2579AA_SMU_FL02_S04_330730.dgn



LONG CHORD LAYOUT

END BENTS AND BENTS ARE RADIAL TO -Y2FLYCA-

ANGLES

Ⓐ 100°-11′-18″(TO LONG CHORD)
Ⓑ 93°-48′-46″(TO SPAN A SHORT CHORD)
Ⓒ 92°-33′-47″(TO LONG CHORD)
Ⓓ 93°-06′-06″(TO SPAN B SHORT CHORD)
Ⓔ 86°-21′-34″(TO LONG CHORD)
Ⓕ 93°-16′-26″(TO SPAN C SHORT CHORD)
Ⓖ 79°-48′-42″(TO LONG CHORD)
Ⓗ 93°-16′-26″(TO SPAN C SHORT CHORD)

HORIZ. CURVE DATA -Y2FLYCA-

PI STA. 36+95.48
△ = 110°-02′-48.8″(LT)
D = 4°-18′-28.6″
L = 2,554.51′
T = 1,901.09′
R = 1,330.00′
SE = 06

Vaughn & Melton
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Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3590

SEAL 23777 NORTH CAROLINA PROFESSIONAL ENGINEER
DocuSigned by: Harry Willis
8/8/2022

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DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

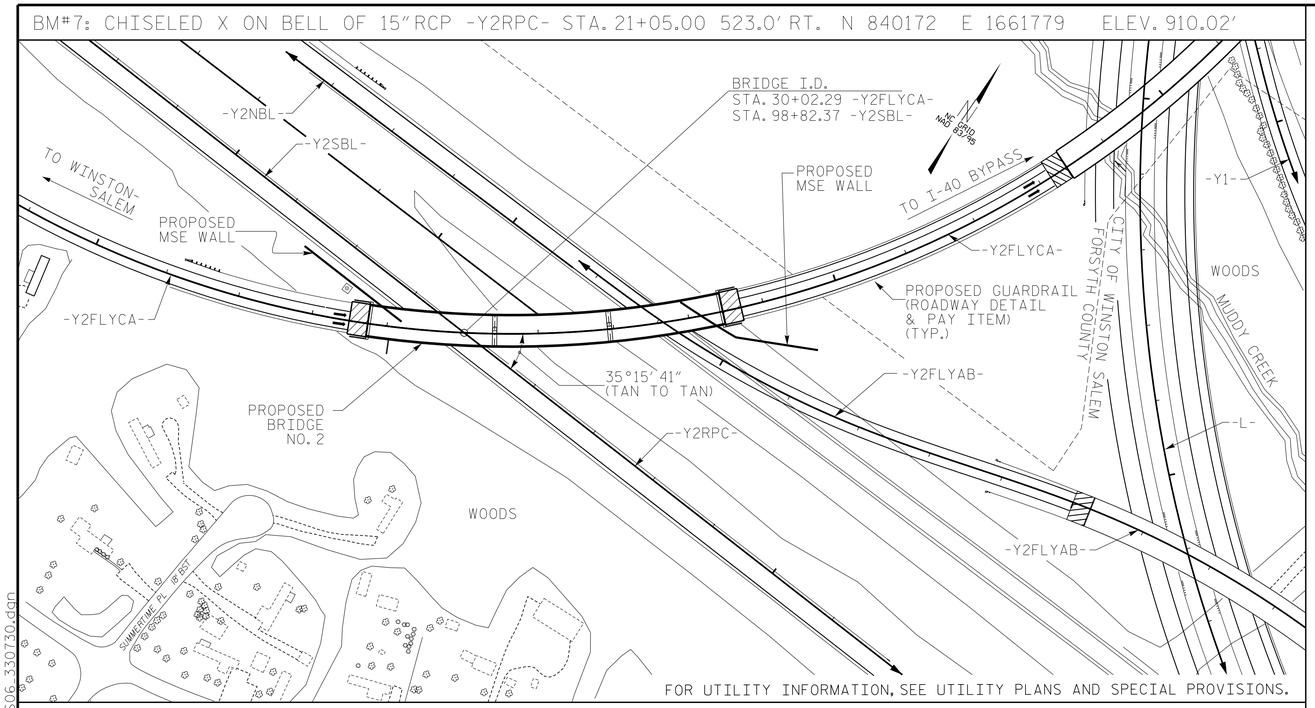
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
LONG CHORD LAYOUT

BRIDGE ON -Y2FLYCA-
OVER US 311
FROM US 311 TO I-40

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-5
1			3			TOTAL SHEETS
2			4			59

V & M PROJECT NO.: 31748-44 08:24 AM on Monday, August 08, 2022 402.009_U-2579AA_SMU_LC01_S05_330730.dgn



LOCATION SKETCH

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

FOR MASS CONCRETE, SEE SPECIAL PROVISIONS. BENTS 1 AND 2 INCLUDE MASS CONCRETE.

FOR MSE RETAINING WALLS, SEE GEOTECHNICAL SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

SAMPLE BAR REPLACEMENT

SIZE	LENGTH	SIZE	LENGTH	SIZE	LENGTH
#3	6'-2"	#6	9'-8"	#9	13'-2"
#4	7'-4"	#7	10'-10"	#10	14'-6"
#5	8'-6"	#8	12'-0"	#11	15'-10"

NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND f_y = 60ksi

TOTAL BILL OF MATERIAL

	FOUNDATION EXCAVATION FOR BENT	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL APPROX. 918,403 LBS.	PILE DRIVING EQUIPMENT SETUP FOR HP12 X 53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR HP14 X 73 STEEL PILES	HP 12 X 53 STEEL PILES		HP 14 X 73 STEEL PILES		CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	DISC BEARINGS	EXPANSION JOINT SEALS
	LUMP SUM	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	LUMP SUM	EACH	EACH	NO.	LIN.FT.	NO.	LIN.FT.	LIN.FT.	SQ.YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		20,295	19,096		LUMP SUM		LUMP SUM							938.82		LUMP SUM	LUMP SUM
END BENT NO.1				72.2		9,523		13		13	871				179		
BENT NO. 1	LUMP SUM			299.9		54,271			26			26	995				
BENT NO. 2	LUMP SUM			316.9		56,721			26			26	1190				
END BENT NO.2				72.9		9,597		13		13	936				181		
TOTAL	LUMP SUM	20,295	19,096	761.9	LUMP SUM	130,112	LUMP SUM	26	52	26	1,807	52	2,185	938.82	360	LUMP SUM	LUMP SUM

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
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Vaughn & Melton
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Spartanburg, SC 864-574-4715
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3590

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27771 HARDY L. WILLIS
Digitally signed by: Hardy Willis
8/8/2022

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON -Y2FLYCA-
OVER US 311
FROM US 311 TO I-40

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LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE										SERVICE II 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 RATING		HL-93 (INVENTORY)	N/A	(1)	1.086	--	1.75	--	1.086	A	4	176.216	--	2.528	A	4	175.963	1.30		2.062	B	4	16.225	--
		HL-93 (OPERATING)	N/A		1.407	--	1.35	--	1.407	A	4	176.216	--	3.277	A	4	175.963	1.00	--	2.681	B	4	16.225	--
		HS-20 (INVENTORY)	36.000	(2)	2.374	85.46	1.75	--	2.374	A	4	70.486	--	4.414	A	4	175.963	1.30	--	3.891	B	4	16.225	--
		HS-20 (OPERATING)	36.000		3.078	110.81	1.35	--	3.078	A	4	70.486	--	5.722	A	4	175.963	1.00	--	5.058	B	4	16.225	--
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH	12.500		7.898	98.73	1.40	--	7.898	A	4	109.706	--	14.889	A	4	175.963	1.30	--	10.500	A	4	109.706	--
		S3C	21.500		4.622	99.37	1.40	--	4.622	A	4	109.706	--	8.815	A	4	175.963	1.30	--	6.108	A	4	109.706	--
		S3A	22.750		4.378	99.60	1.40	--	4.378	A	4	70.486	--	8.426	A	4	175.963	1.30	--	5.788	A	4	70.486	--
		S4A	26.750		3.796	101.54	1.40	--	3.796	A	4	70.486	--	7.143	A	4	175.963	1.30	--	5.013	A	4	70.486	--
		S5A	30.500		3.356	102.36	1.40	--	3.356	A	4	70.486	--	6.282	A	4	175.963	1.30	--	4.432	A	4	70.486	--
		S6A	34.500		3.006	103.71	1.40	--	3.006	A	4	70.486	--	5.67	A	4	175.963	1.30	--	3.969	A	4	70.486	--
		S7B	38.500		2.734	105.26	1.40	--	2.734	A	4	70.486	--	5.232	A	4	175.963	1.30	--	3.610	A	4	70.486	--
		S7A	40.000		2.652	106.08	1.40	--	2.652	A	4	72.131	--	5.155	A	4	175.963	1.30	--	3.505	A	4	72.131	--
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A	28.250		3.681	103.99	1.40	--	3.681	A	4	72.131	--	6.772	A	4	175.963	1.30	--	4.862	A	4	72.131	--
		T5B	32.000		3.131	100.19	1.40	--	3.131	A	4	70.486	--	5.890	A	4	175.963	1.30	--	4.142	A	4	70.486	--
		T6A	36.000		2.924	105.26	1.40	--	2.924	A	4	70.486	--	5.632	A	4	175.963	1.30	--	3.863	A	4	70.486	--
		T7A	40.000	(3)	2.587	103.48	1.40	--	2.587	A	4	70.486	--	4.947	A	4	175.963	1.30	--	3.422	A	4	70.486	--
		T7B	40.000		2.674	106.96	1.40	--	2.674	A	4	109.706	--	4.783	A	4	175.963	1.30	--	3.449	B	4	16.225	--
FATIGUE		HL-93 (INVENTORY)	γ_{LL}=0.75																				

LOAD FACTORS:

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

NOTES:

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

ALLOWABLE STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1. THE ORIGINAL DESIGN AND RATING OF THIS BRIDGE WERE BASED ON AN INFLUENCE SURFACE ANALYSIS. LIVE LOAD DISTRIBUTION FACTORS WERE NOT USED AND ARE NOT PROVIDED.
2. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.
3. FATIGUE RATING IS NOT REQUIRED OR REPORTED SINCE GIRDER DESIGN DOES NOT INCLUDE FATIGUE-PRONE DETAILS.
4. LEAP BRIDGE STEEL VERSION 19.00.00.51 WAS USED FOR INFLUENCE SURFACE ANALYSIS.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

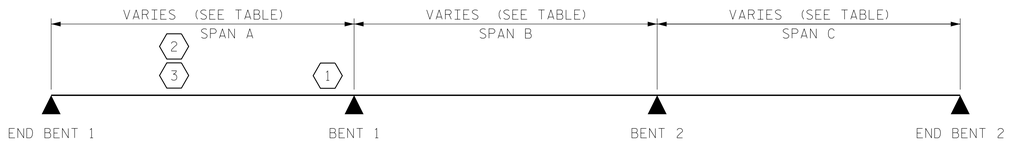
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE EXTERIOR GIRDER TO THE LEFT OF -Y2FLYCA-



℄ BRG TO ℄ BRG SPAN LENGTHS			
GIRDER	SPAN A	SPAN B	SPAN C
1	171′-5 7/16″	141′-7 7/16″	146′-10 1/4″
2	173′-0 9/16″	142′-11″	148′-2 3/4″
3	174′-7 3/4″	144′-2 5/8″	149′-7 3/16″
4	176′-2 15/16″	145′-6 3/16″	150′-11 5/8″

LRFR SUMMARY

DocuSigned by: Frank L. Willis, PE, 2077... — 8/8/2022

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V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828-253-2796
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PROJECT NO. U-2579AA

FORSYTH COUNTY

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98+82.37 -Y2SBL-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR STEEL GIRDERS

(INTERSTATE TRAFFIC)

DWN. BY: WDC	DATE: 03/2021
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-7
1			3			TOTAL SHEETS
2			4			59

STD. NO. LRFR4

DRAWN BY : MAA 1/08	REV. 11/12/08RR	MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM
	REV. 12/17	MAA/THC

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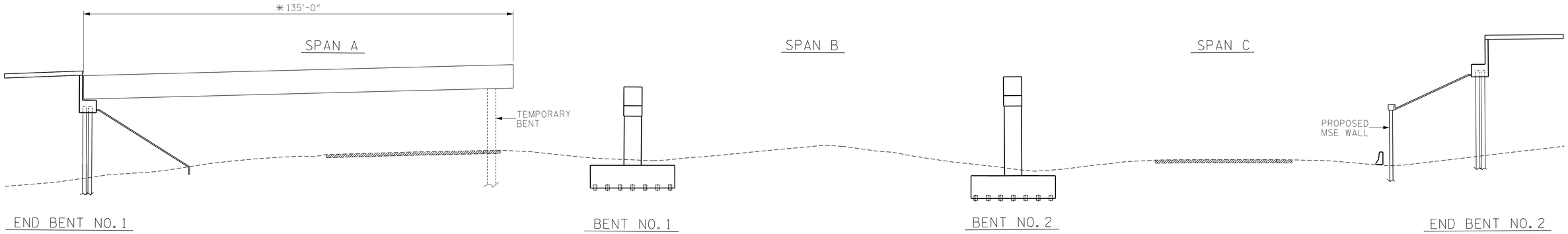
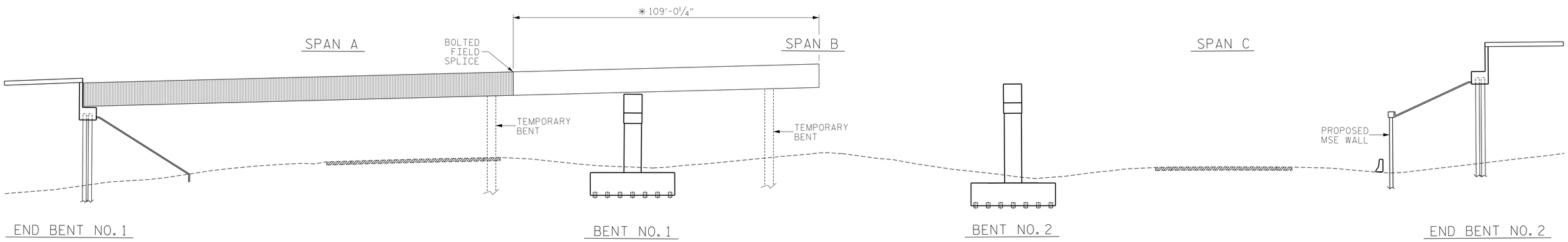


✳ - FIELD SECTION LENGTHS ARE MEASURED ALONG -Y2FLYCA- ACTUAL FIELD SECTION LENGTHS VARY BY GIRDER. (SEE GIRDER DETAIL SHEETS)

STEP 1 - GIRDER ERECTION



STEP 2 - GIRDER ERECTION

GIRDER ERECTION NOTES:

FOR TEMPORARY BENTS, SEE SPECIAL PROVISIONS.

ERECT A MINIMUM OF TWO GIRDERS WITH ALL DIAPHRAGMS/CROSSFRAMES BETWEEN THE GIRDERS IN PLACE AND THE BOLTS TIGHTENED PRIOR TO RELEASING THE GIRDERS.

ERECT EACH SUBSEQUENT GIRDER WITH DIAPHRAGMS/CROSSOVERS CONNECTING TO THE ADJACENT PREVIOUSLY ERECTED GIRDER AND TIGHTEN ALL BOLTS BEFORE RELEASING THE GIRDERS.

THE STRUCTURAL STEEL SHALL BE SUPPORTED DURING ERECTION IN ITS CAMBERED POSITION. TEMPORARY BENT(S) AS SHOWN SHALL BE USED.

THE TEMPORARY BENT(S) SHALL REMAIN IN PLACE UNTIL ALL GIRDERS, DIAPHRAGMS, AND CROSSFRAMES ARE IN PLACE AND ALL HIGH STRENGTH BOLTS ARE TIGHTENED.

THE TEMPORARY BENT(S) SHALL PROVIDE BEARING AT CONNECTOR PLATE LOCATIONS. WHEN CONNECTOR PLATES ARE USED AS TEMPORARY BEARING STIFFENERS, DIAPHRAGMS MUST BE ATTACHED.

THE CONTRACTOR'S ERECTION PLANS SHALL INCLUDE A METHOD OF TEMPORARY BENT REMOVAL THAT WILL UNIFORMLY TRANSFER THE STRUCTURAL WEIGHT TO THE DIAPHRAMS/CROSSFRAMES AND THE GIRDERS WILL REMAIN IN THE CAMBERED POSITIONS.

PLANS FOR TEMPORARY BENT ERECTION AND REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING THE TEMPORARY BENT(S). THE DESIGNS SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF THE AASHTO LRFD DESIGN CODE, AND BE COMPLETED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. THE CONTRACTOR SHALL SUBMIT SIGNED AND SEALED WORKING DRAWINGS AND CALCULATIONS FOR APPROVAL BY THE ENGINEER.

DURING THE GIRDER ERECTION PROCEDURE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT, AS REQUIRED, TO ENSURE STABILITY OF THE GIRDERS, AVOID UPLIFT OF THE GIRDERS AT POINTS OF SUPPORT(S), AND TO ENSURE PLUMBNESS OF THE GIRDERS IN THE FINAL CONDITION.

NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR PROVIDING THE TEMPORARY BENT. THE COST FOR ALL MATERIALS, EQUIPMENT, TOOLS, LABOR, AND ANY INCIDENTALS NECESSARY TO PROVIDE THE TEMPORARY BENT(S) SHALL BE CONSIDERED INCIDENTAL TO THE LUMP SUM BID PRICE FOR STRUCTURAL STEEL.

THE CONTRACTOR MAY SUBMIT AN ALTERNATE ERECTION METHOD TO THE ENGINEER FOR REVIEW AND APPROVAL.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27771 L. W. HARDY WILLIS
Digitally Signed By: HardyWillis
8/8/2022

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Vaughn & Melton
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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
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SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER ERECTION DETAILS

DWN. BY: WDC	DATE: 03/2021
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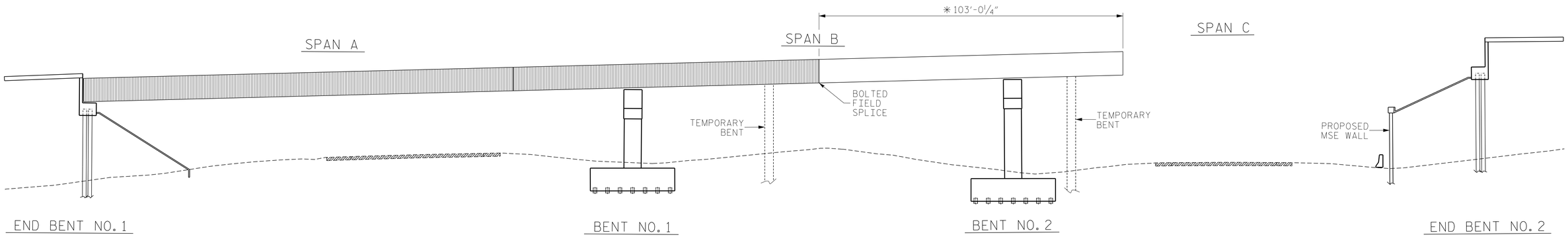
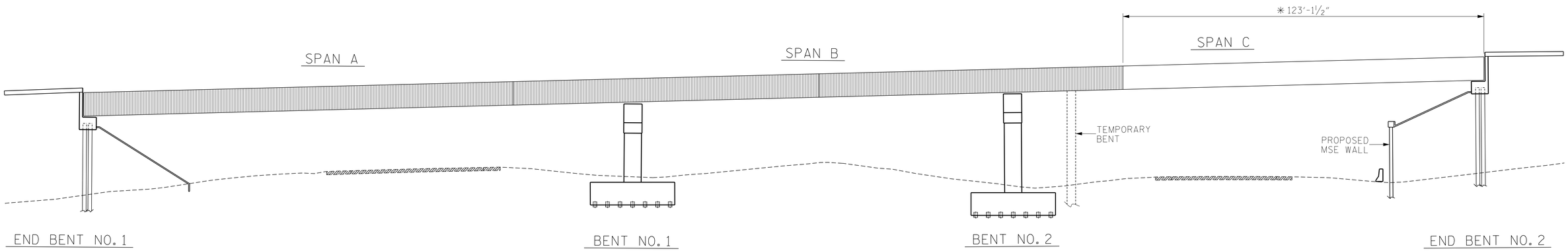
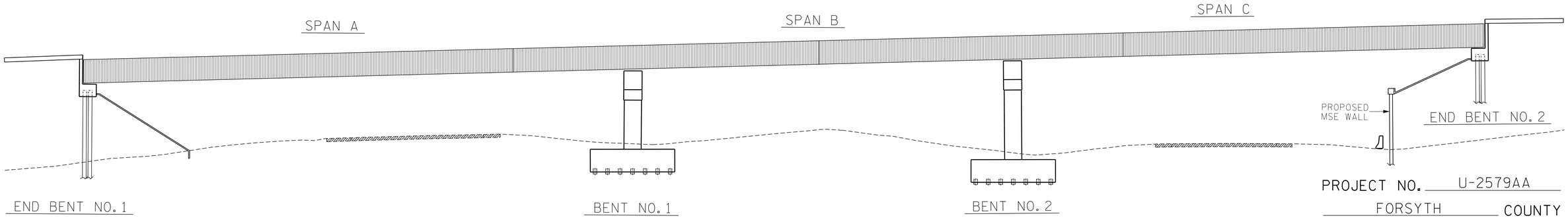


STEP 3 - GIRDER ERECTION



STEP 4 - GIRDER ERECTION



COMPLETE - GIRDER ERECTION

* - FIELD SECTION LENGTHS ARE MEASURED ALONG -Y2FLYCA- ACTUAL FIELD SECTION LENGTHS VARY BY GIRDER. (SEE GIRDER DETAIL SHEETS)

NOTES:
FOR NOTES, SEE SHEET 1 OF 2.

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 30+02.29 -Y2FLYCA-
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SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER ERECTION DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047287 — DocuSigned by: Hardy Wiles — 8/8/2022

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina
828-253-2796
Raleigh, NC 919-977-9455 · Charlotte, NC 704-357-0488
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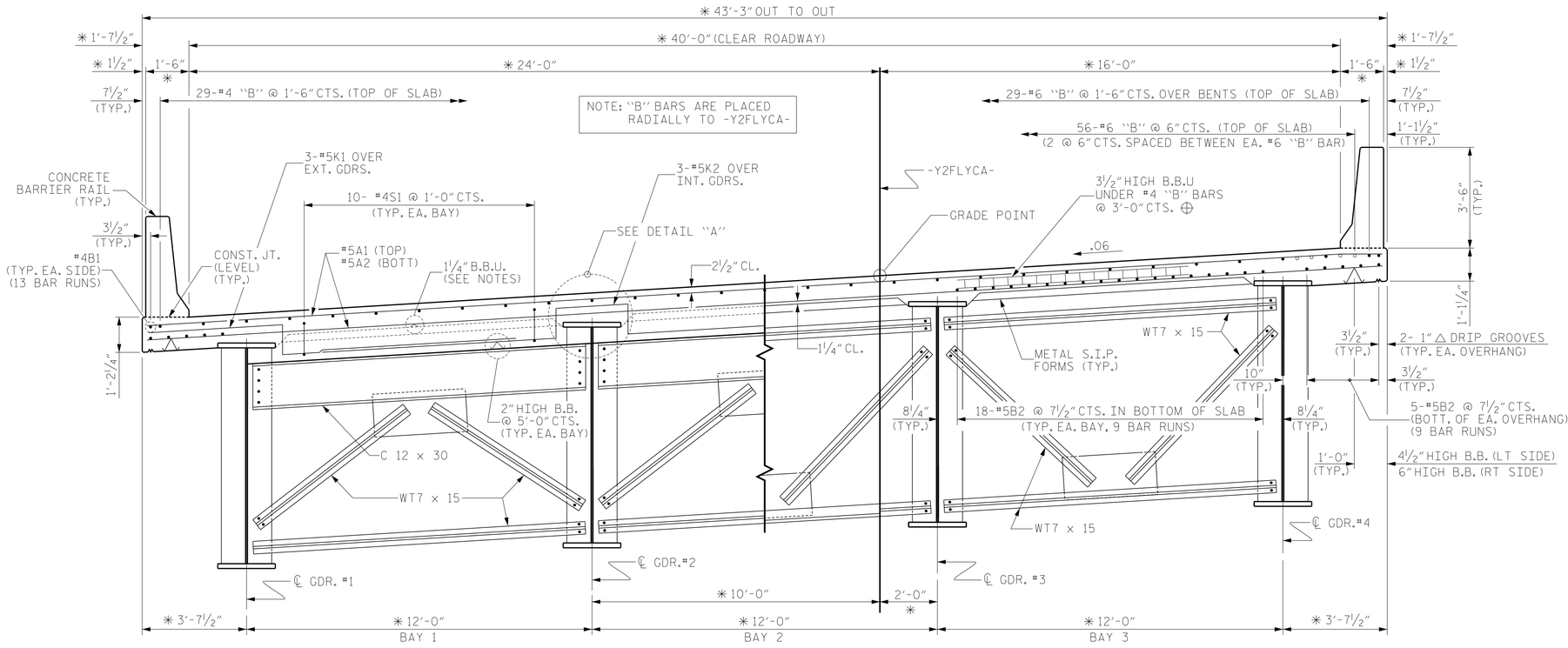


PARTIAL TYPICAL SECTION

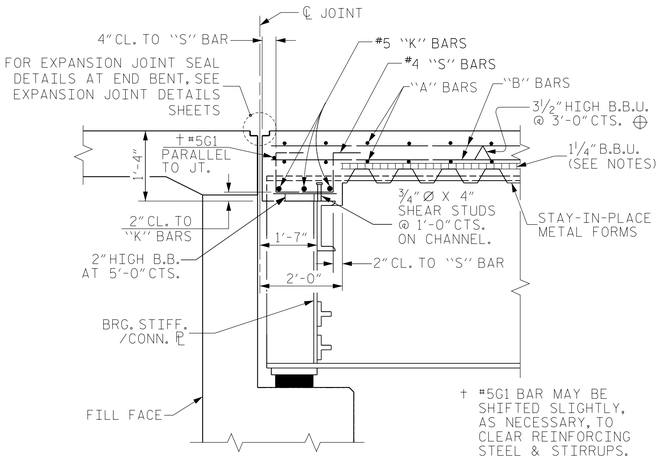
(SHOWING END BENT DIAPHRAGMS)

PARTIAL TYPICAL SECTION

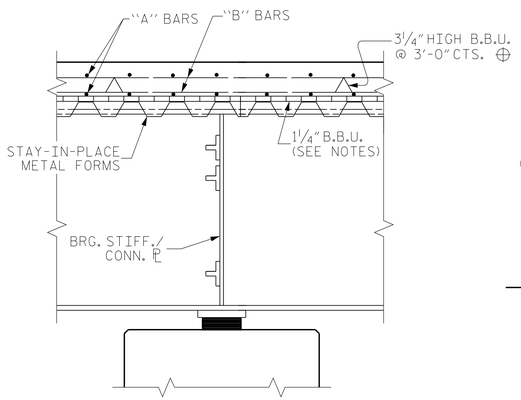
(SHOWING BENT DIAPHRAGMS)

⊕ - USE 3¼" HIGH B.B.U IN THE AREAS OF THE SLAB WITH #6 TOP "B" BARS.

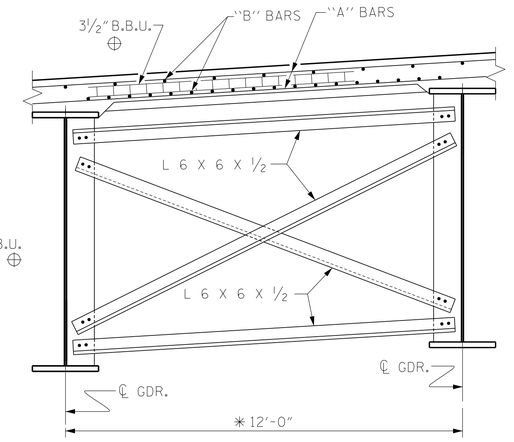
∗ - RADIAL DIMENSIONS



SECTION THRU END BENT

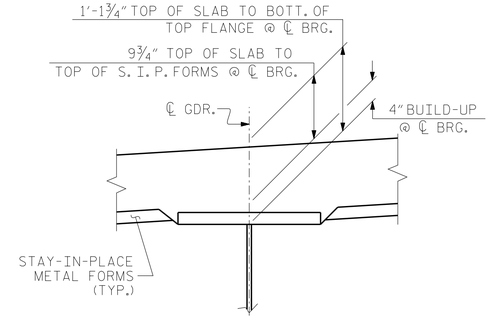


SECTION THRU BENT



PARTIAL TYPICAL SECTION

(SHOWING INTERMEDIATE DIAPHRAGMS)



DETAIL "A"

NOTES

PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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

† #5G1 BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM/GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

SET TOP OF EXPANSION JOINT SEAL DEVICE A MINIMUM OF ⅛" AND A MAXIMUM OF ¼" BELOW TOP OF SLAB.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 38787 HARDIN L. WILLIS

DocuSigned by: Hardin Willis 8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-10
1			3			TOTAL SHEETS
2			4			59

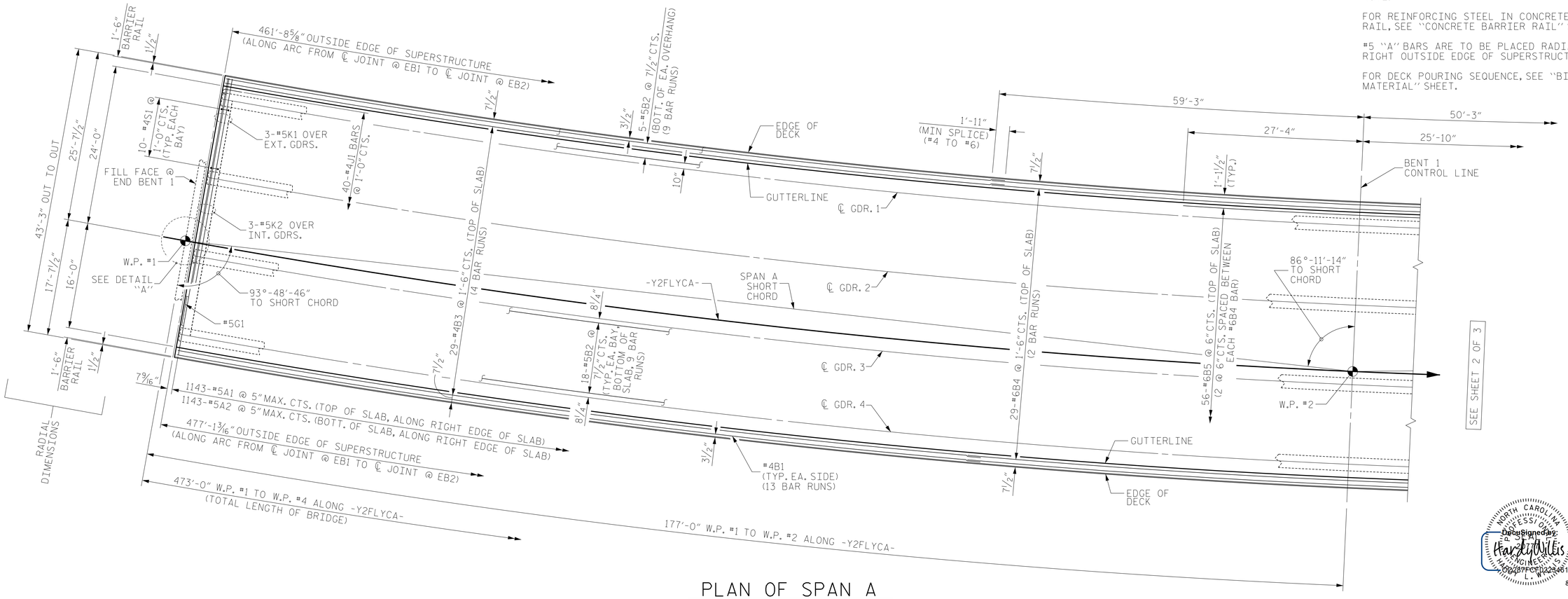
V & M PROJECT NO.: 31748.44 08:25 AM on Monday, August 08, 2022 402.019.U-2579AA SMU_TS01_S10_330730.dgn

NOTE:

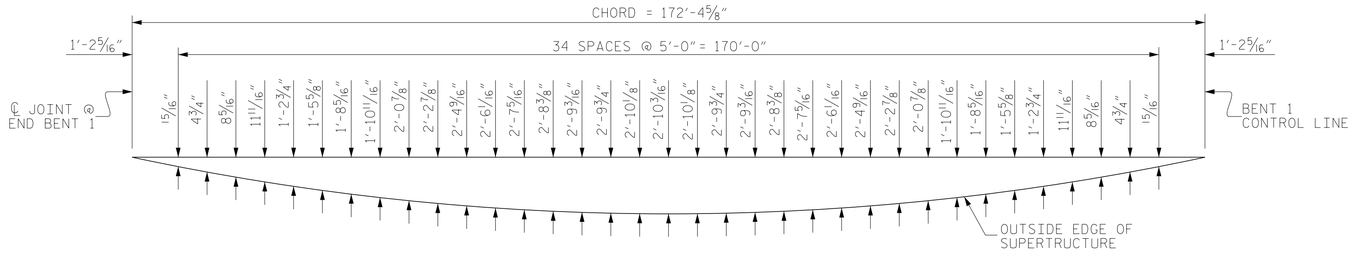
FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE ''CONCRETE BARRIER RAIL'' SHEETS.

#5 ''A'' BARS ARE TO BE PLACED RADIALLY ALONG RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE.

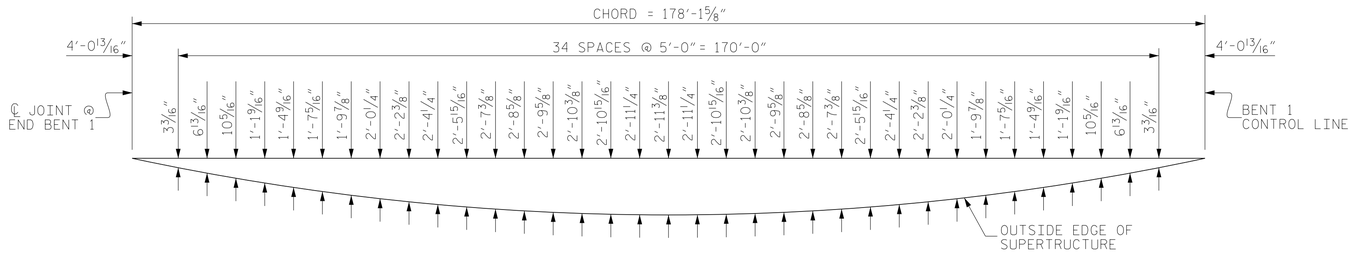
FOR DECK POURING SEQUENCE, SEE ''BILL OF MATERIAL'' SHEET.



PLAN OF SPAN A



ARC OFFSETS - LEFT SIDE



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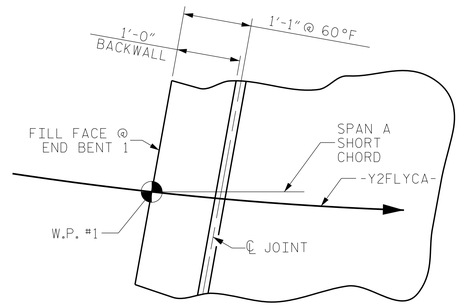

DETAIL A

DocuSigned by: Harold Wiles 6047FCF0223481...
L. NC 8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 1 OF 3

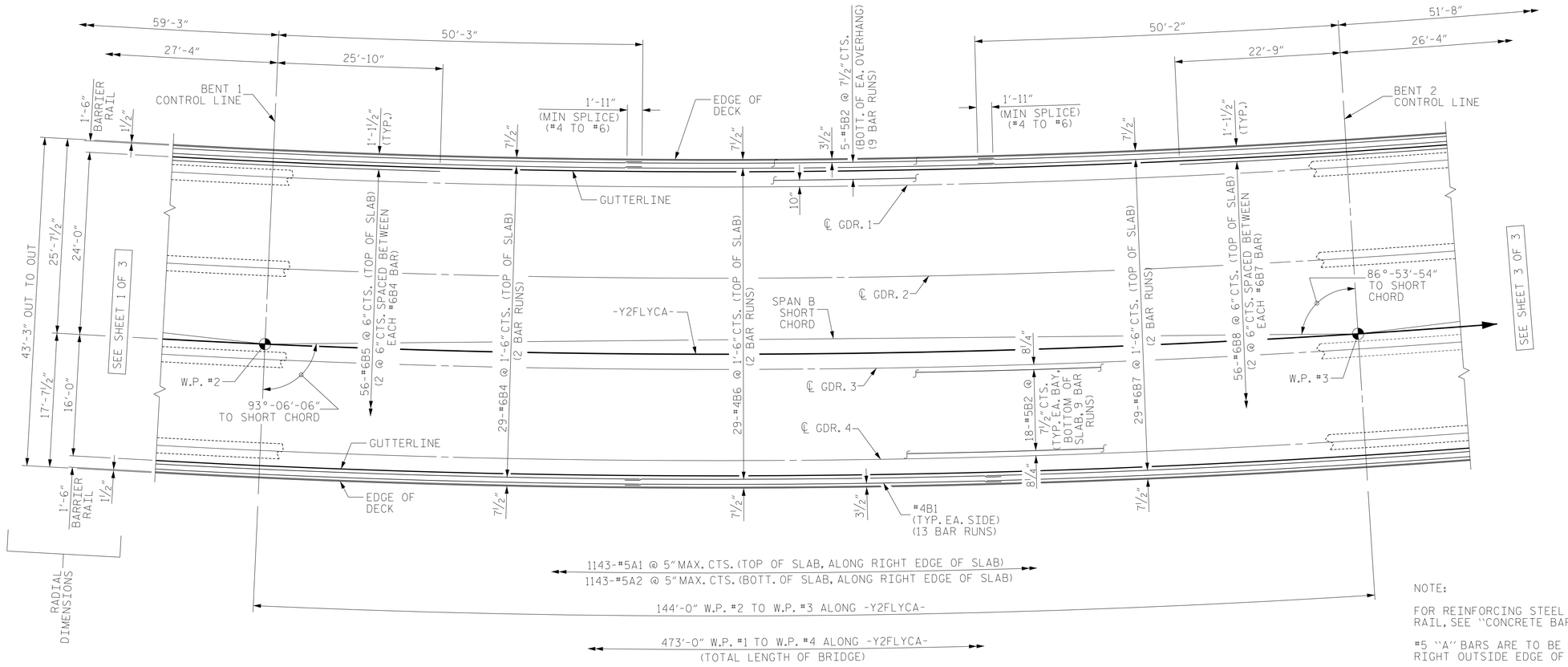
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN A

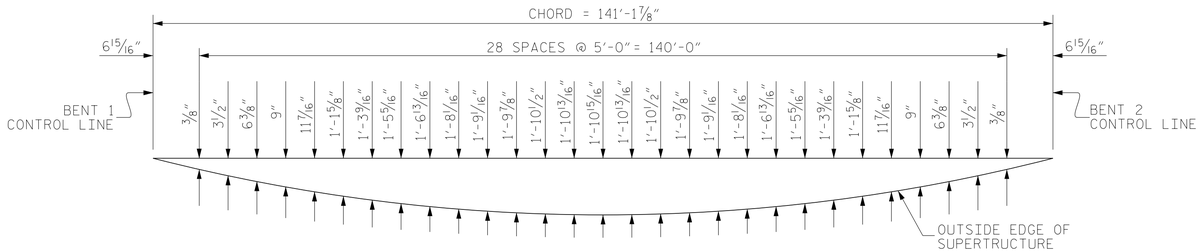
DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-11
1			3			TOTAL SHEETS
2			4			59

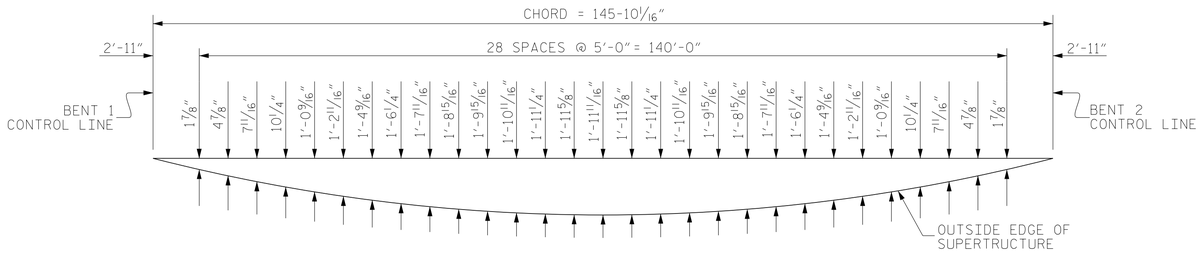
V & M PROJECT NO.: 31748.44 08:25 AM on Monday, August 08, 2022 402_021_U-2579AA_SMU_PS01_S11_330730.dgn



PLAN OF SPAN B



ARC OFFSETS - LEFT SIDE



ARC OFFSETS - RIGHT SIDE

NOTE:

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#5 "A" BARS ARE TO BE PLACED RADIALLY ALONG RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE.

FOR DECK POURING SEQUENCE, SEE "BILL OF MATERIAL" SHEET.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047287 HARDY L. WILLIS

DocuSigned by: HardyWillis 8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN B

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-12
1			3			TOTAL SHEETS
2			4			59

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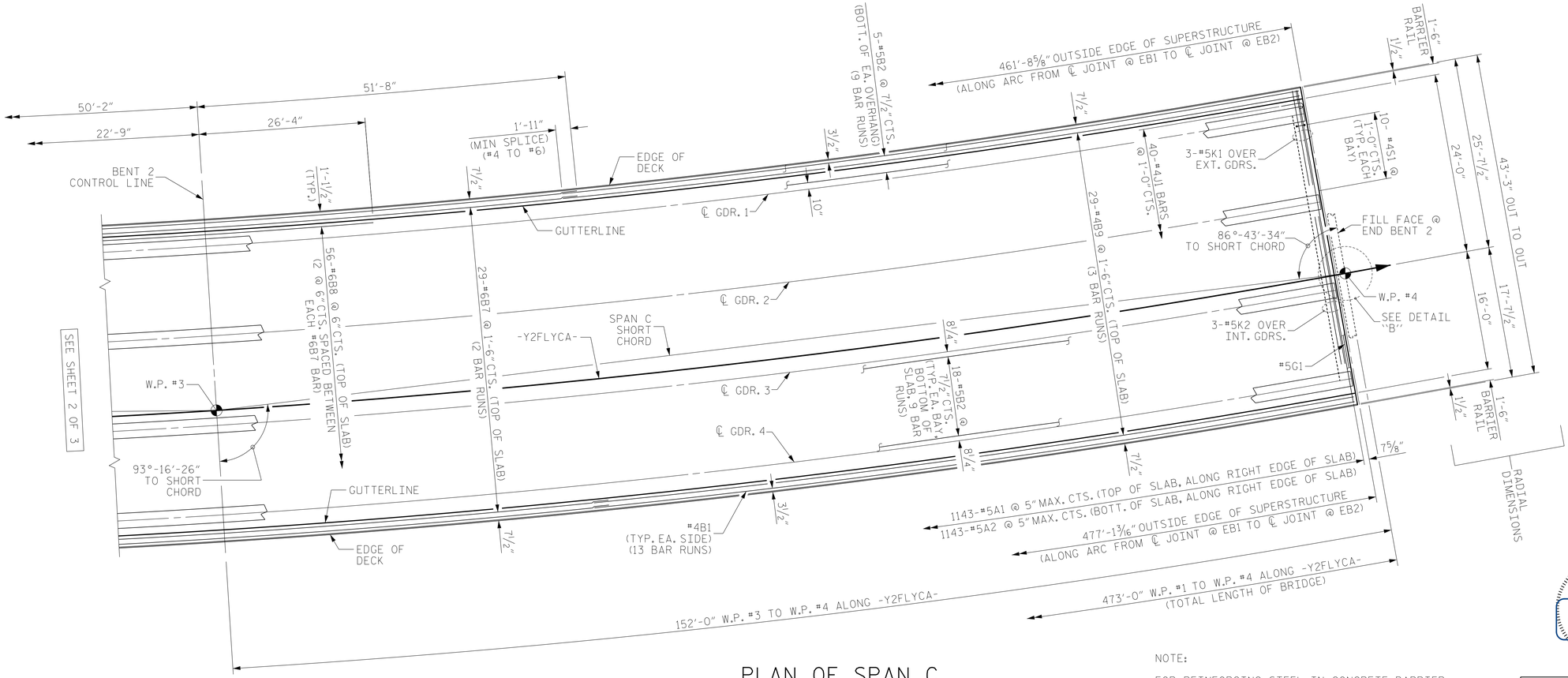
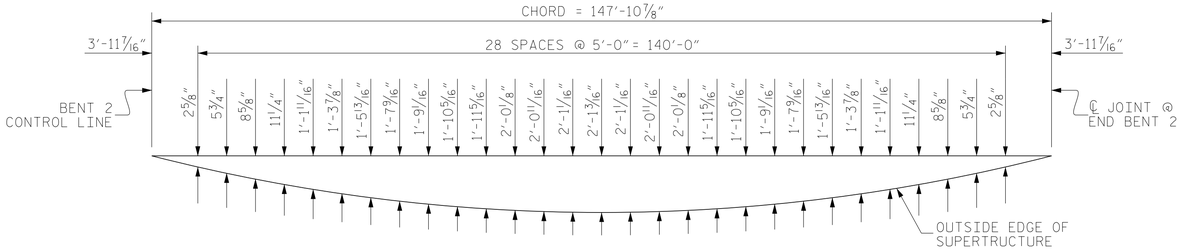


PLAN OF SPAN C



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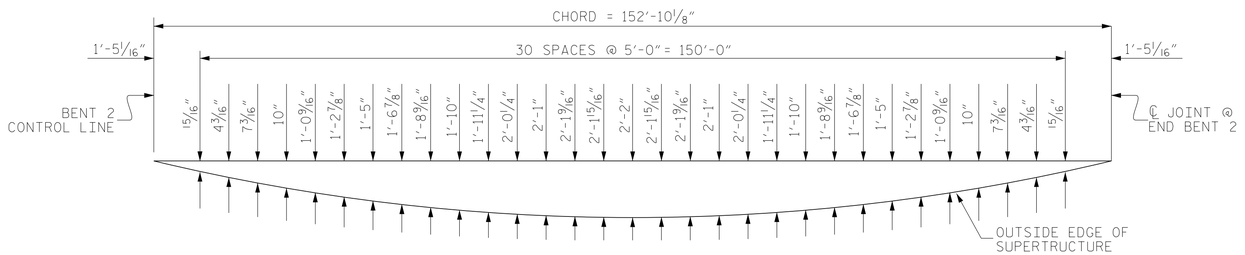

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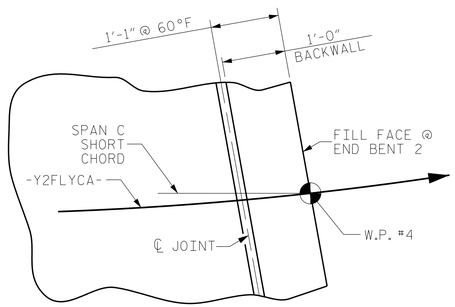

DETAIL B

NOTE:

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#5 "A" BARS ARE TO BE PLACED RADIALLY ALONG RIGHT OUTSIDE EDGE OF SUPERSTRUCTURE.

FOR DECK POURING SEQUENCE, SEE "BILL OF MATERIAL" SHEET.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL L-WILLIS
DocuSigned by: Hardin Willis
HLW2878F0F1223461...
8/8/2022

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PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-
SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN C

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-13
1			3			TOTAL SHEETS
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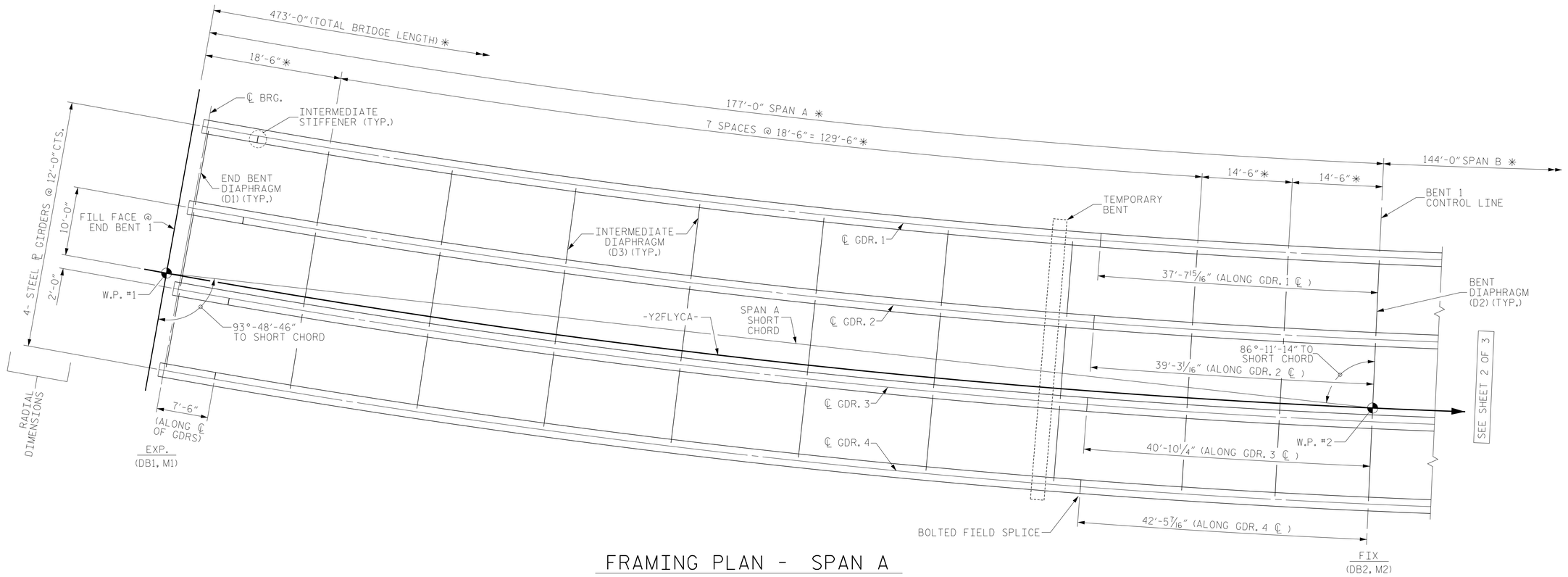

FRAMING PLAN - SPAN A

* - ARC LENGTH ALONG -Y2FLYCA-

STRUCTURAL STEEL NOTES

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

AT ALL POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED PLUS AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE TFE OR URETHANE DISC.

SOLE PLATES SHOULD BE WELDED TO GIRDER FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

TENSION ON THE ASTM F3125 GRADE A325 TYPE 3 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

END OF GIRDERS SHALL BE PLUMB.

BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR NO LOAD FIT UP.

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

PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION (NOR WITHIN 15 FEET OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS). KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038141 HARDY L. WILLIS
DocuSigned by: Hardy Willis
8/8/2022

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DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
FRAMING PLAN
SPAN A

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-14
1			3			TOTAL SHEETS
2			4			59

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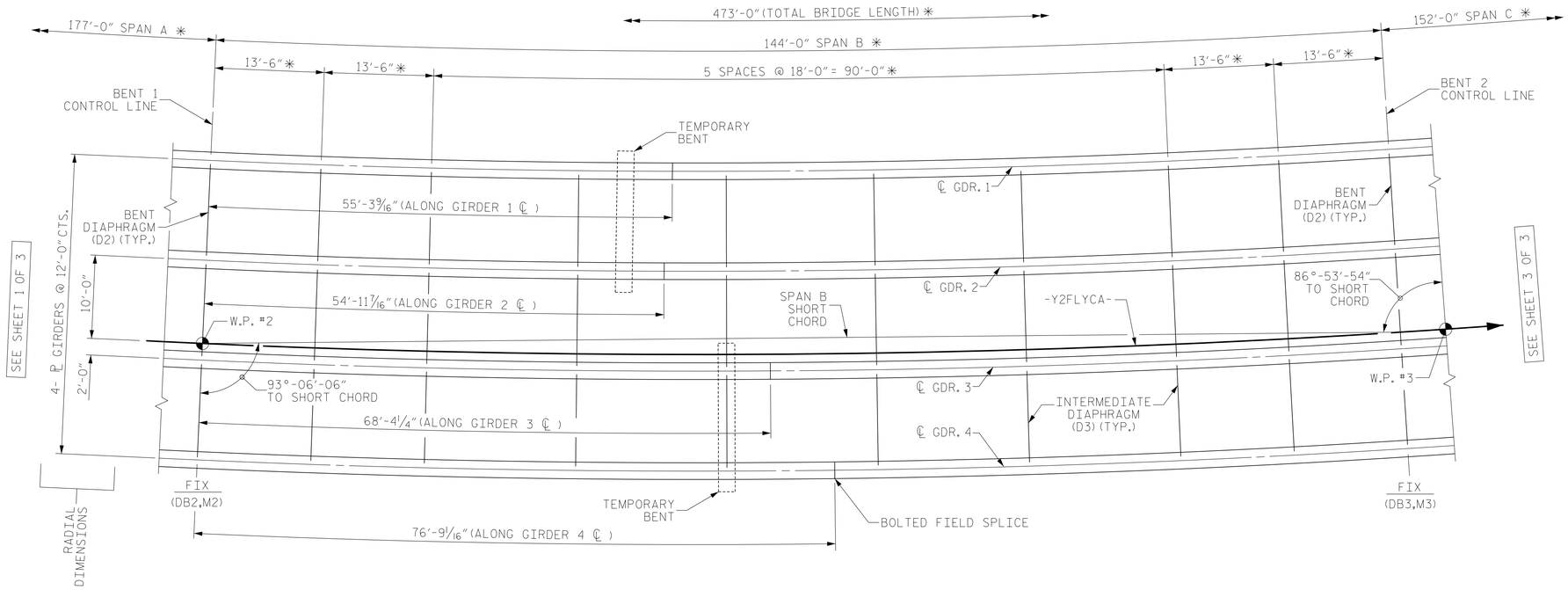

FRAMING PLAN - SPAN B

* - ARC LENGTH ALONG -Y2FLYCA-

NOTE:

SEE SHEET "SUPERSTRUCTURE FRAMING PLAN SPAN A" FOR STRUCTURAL STEEL NOTES.

NORTH CAROLINA PROFESSIONAL SEAL 047287 ENGINEER HARDY L. WILLIS

DocuSigned by: HardyWillis 287FCF029461...

8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
FRAMING PLAN
SPAN B

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-15
1			3			TOTAL SHEETS
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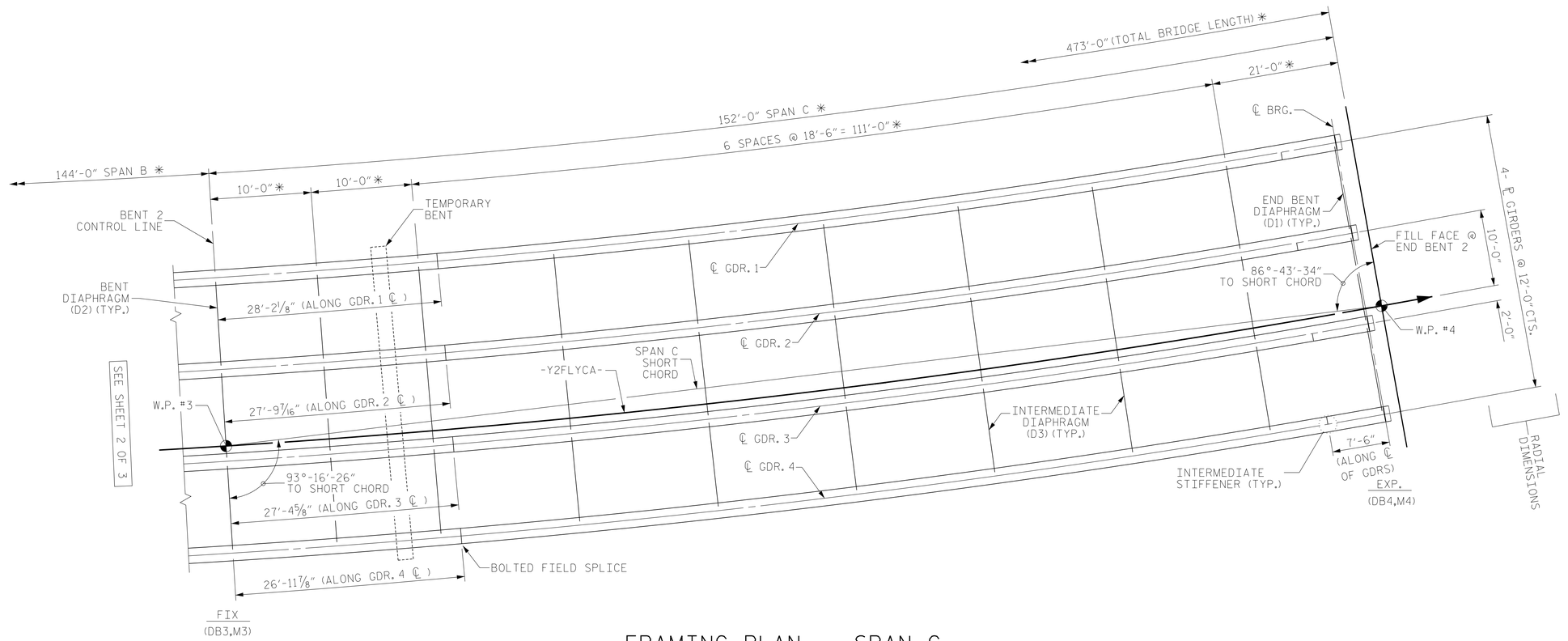

FRAMING PLAN - SPAN C

✳ - ARC LENGTH ALONG -Y2FLYCA-

NOTE:

SEE SHEET "SUPERSTRUCTURE FRAMING PLAN SPAN A" FOR STRUCTURAL STEEL NOTES.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047287 HARDY L. WILLIS

Digitally signed by: HardyWillis
DocuSigned by: 287FC1D23461...
8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
FRAMING PLAN
SPAN C

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-16
1			3			TOTAL SHEETS
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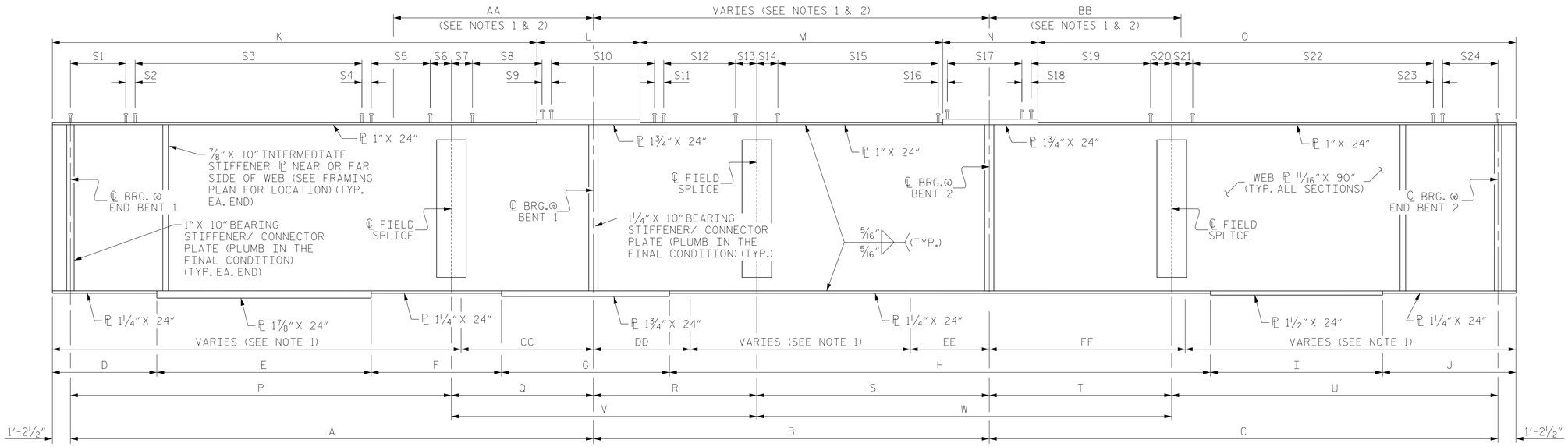
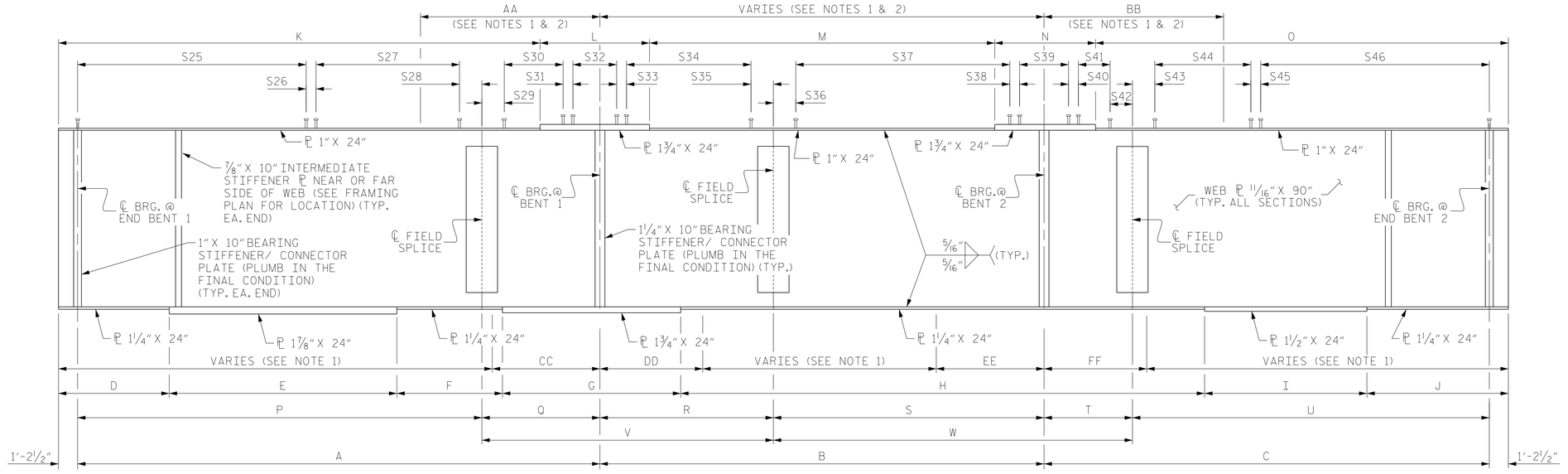


ELEVATION - GIRDERS 1 & 4



ELEVATION - GIRDERS 2 & 3

NOTES

1. CHARPY V-NOTCH TESTS ARE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALL WITHIN THESE LIMITS, ALL WEB PLATES AND ALL SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. SEE ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

2. NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.

   DIMENSIONS ARE HORIZONTAL ARC DIMENSIONS ALONG THE ℄ OF GIRDER. NO CORRECTIONS HAVE BEEN MADE TO ADJUST FOR THE DISTANCE ALONG THE GRADE.

   FOR SHEAR CONNECTOR TRANSVERSE SPACING, SEE "STRUCTURAL STEEL DETAILS" SHEET 1 OF 2.

   FOR PLATE DIMENSIONS AND SHEAR CONNECTOR SPACING, SEE "GIRDER DETAILS" SHEET 2 OF 2.

   FOR STRUCTURAL STEEL NOTES, SEE "FRAMING PLAN" SHEET 1 OF 3.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL L. WILLIS 049228 REGISTERED

DocuSigned by: Harold Willis 8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
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SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

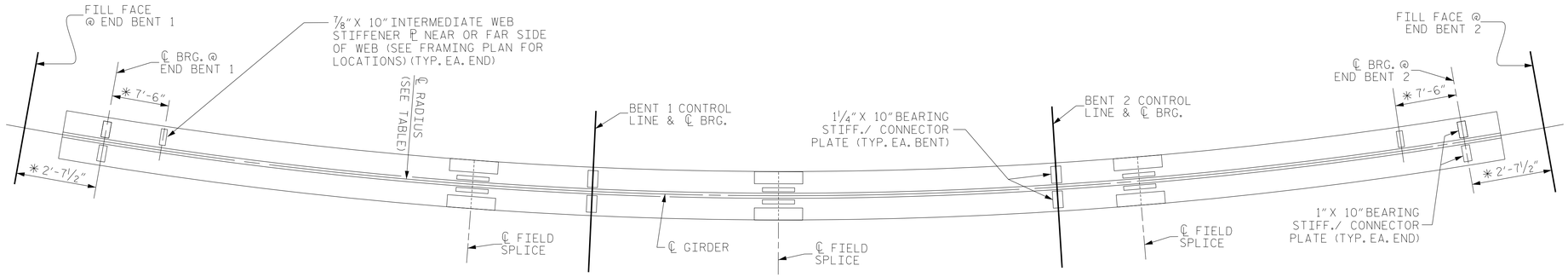
SUPERSTRUCTURE

GIRDER DETAILS

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-17
1			3			TOTAL SHEETS
2			4			59

FOR NOTES, SEE "GIRDER DETAILS" SHEET 1 OF 2.



PLAN OF BOTTOM FLANGE

* ALONG ℄ GIRDER

GIRDER DIMENSIONS

GIRDER	℄ RADIUS	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	1308'-0"	171'-5 5/16"	141'-7 7/16"	146'-10 1/4"	35'-3 3/4"	72'-7"	33'-8"	56'-10"	167'-1"	51'-9"	45'-1 3/8"	153'-6 5/8"	34'-11"	110'-1"	32'-2"	131'-7 1/2"	133'-9 1/2"	37'-7 15/16"	55'-3 9/16"	86'-3 7/8"	28'-2 1/8"	118'-8 1/8"	92'-11 1/2"	114'-6"
2	1320'-0"	173'-0 9/16"	142'-11"	148'-2 3/4"	35'-5 11/16"	73'-6"	33'-10"	57'-5"	168'-7"	52'-3"	45'-6 5/8"	155'-0 1/16"	35'-2"	111'-1"	32'-5"	132'-11 1/4"	133'-9 1/2"	39'-3 1/16"	54'-11 7/16"	87'-11 9/16"	27'-9 7/16"	120'-5 5/16"	94'-2 1/2"	115'-9"
3	1332'-0"	174'-7 3/4"	144'-2 5/8"	149'-7 3/16"	35'-10 13/16"	74'-0"	34'-4"	57'-10"	170'-2"	52'-8"	45'-11 3/4"	156'-4 1/2"	35'-7"	112'-0"	32'-10"	134'-1 1/16"	133'-9 1/2"	40'-10 1/4"	68'-4 1/4"	75'-10 3/8"	27'-4 5/8"	122'-2 9/16"	109'-2 1/2"	103'-3"
4	1344'-0"	176'-2 15/16"	145'-6 3/16"	150'-11 5/8"	36'-1 11/16"	74'-9"	34'-6"	58'-6"	171'-8	53'-3"	46'-4 1/16"	157'-9 1/4"	36'-0"	112'-11"	33'-2"	135'-3 1/2"	133'-9 1/2"	42'-5 7/16"	76'-9 1/16"	68'-9 1/8"	26'-11 7/8"	123'-11 3/4"	119'-2 1/2"	95'-9"

STUD SPACING DIMENSIONS - GIRDERS 1 & 4

GIRDER	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24
1	10 SPA. @ 9"	11"	114 SPA. @ 1'-0"	10"	9 SPA. @ 11"	2'-3 1/2"	2'-3 1/2"	19 SPA. @ 11"	6 1/4"	60 SPA. @ 7"	6 1/4"	42 SPA. @ 10"	2'-2 1/2"	1'-10 1/2"	82 SPA. @ 10"	8"	53 SPA. @ 7"	8"	11 SPA. @ 11"	1'-11 1/2"	2'-4 1/2"	108 SPA. @ 1'-0"	9 5/8"	10 SPA. @ 9"
4	10 SPA. @ 9"	7"	124 SPA @ 11"	8"	11 SPA. @ 10"	2'-2 1/2"	2'-2 1/2"	22 SPA. @ 10"	8 3/4"	72 SPA. @ 7"	8 3/4"	58 SPA. @ 11"	2'-0 1/2"	2'-3 1/2"	53 SPA. @ 11"	8 7/8"	58 SPA. @ 7"	8 15/16"	9 SPA. @ 10"	2'-0 11/16"	2'-0 1/2"	124 SPA. @ 11"	9 1/4"	10 SPA. @ 9"

STUD SPACING DIMENSIONS - GIRDERS 2 & 3

GIRDER	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36	S37	S38	S39	S40	S41	S42	S43	S44	S45	S46
2	87 SPA. @ 11"	8"	51 SPA. @ 1'-0"	2'-4 1/2"	2'-1 1/4"	28 SPA. @ 1'-0"	9"	22 SPA. @ 9"	9"	44 SPA. @ 1'-0"	2'-1 1/4"	2'-4 1/2"	77 SPA. @ 1'-0"	1'-0"	20 SPA. @ 9"	1'-0"	17 SPA. @ 1'-0"	2'-4 1/2"	2'-0 5/16"	38 SPA. @ 1'-0"	8"	87 SPA. @ 11"
3	87 SPA. @ 11"	8"	51 SPA. @ 1'-0"	2'-4 1/2"	2'-4 1/2"	30 SPA. @ 1'-0"	8 3/4"	20 SPA. @ 9"	8 3/4"	58 SPA. @ 1'-0"	2'-4 1/2"	2'-4 1/2"	65 SPA. @ 1'-0"	9"	20 SPA. @ 9"	9"	17 SPA. @ 1'-0"	2'-4 1/2"	2'-4 1/2"	32 SPA. @ 1'-0"	9 1/16"	95 SPA. @ 11"

LIMITS OF TENSION FLANGES FOR CHARPY V-NOTCH TESTS

GIRDER	AA	BB	CC	DD	EE	FF
1	44'-2"	39'-5"	25'-8"	31'-10"	25'-3"	19'-7"
2	40'-0"	35'-3"	26'-8"	35'-9"	27'-7"	20'-3"
3	40'-6"	35'-7"	26'-8"	36'-10"	28'-9"	19'-5"
4	42'-8"	38'-0"	25'-11"	35'-5"	27'-3"	18'-0"

DocuSigned by: Harold Willis 8/8/2022

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V&M Vaughn & Melton
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Atlanta, GA 770-627-3509
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488

DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

GIRDER DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-18
1			3			TOTAL SHEETS
2			4			59

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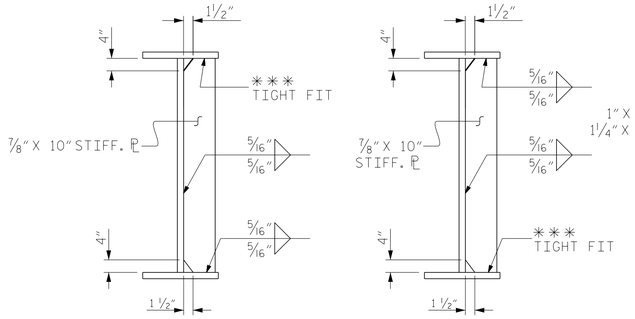
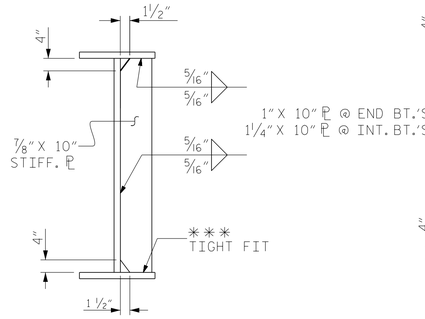
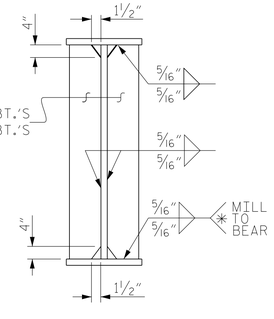


INTERMEDIATE STIFFENER

✱✱✱ TIGHT FIT TO FLANGE WHERE CHARPY V-NOTCH TESTING ON FLANGE IS REQUIRED. IF STIFFENER IS USED AS A CONNECTOR PLATE, TIGHT FIT AND WELD TO THE FLANGE.

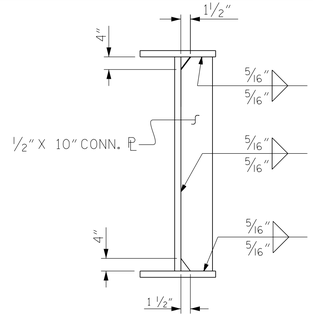




BEARING STIFFENER

✱ WELD TO BOTTOM FLANGE IS ONLY REQUIRED WHEN BEARING STIFFENER IS ALSO CONNECTOR PLATE

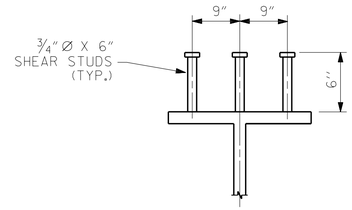
BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE



CONNECTOR PLATE

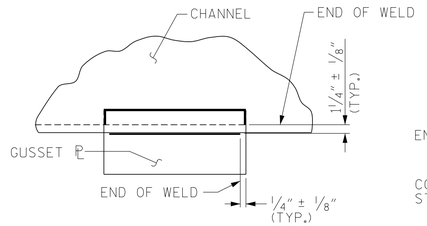
NOTES

FOR STRUCTURAL STEEL NOTES SEE "FRAMING PLAN" SHEET 1 OF 3.

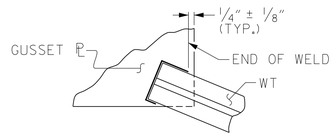


GIRDER DIAPHRAGM

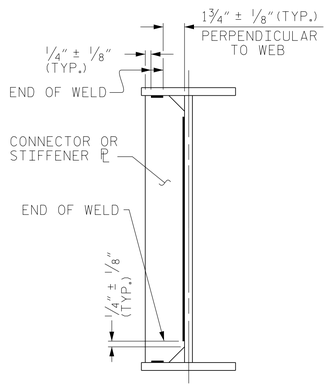
SHEAR STUD DETAILS



TYPICAL GUSSET PLATE CONNECTION

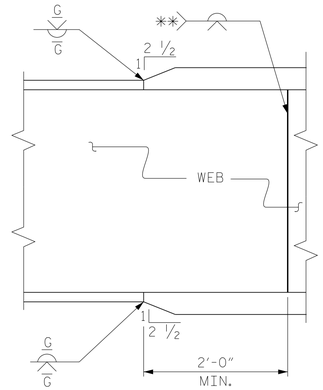


TYPICAL "TEE" TO GUSSET PLATE CONNECTION



TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS

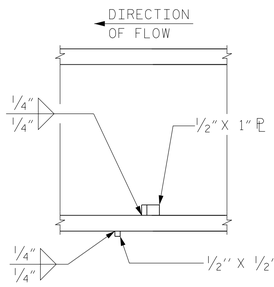
WELD TERMINATION DETAILS



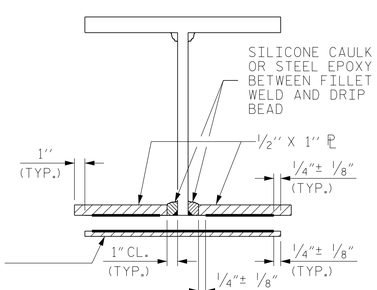
ELEVATION

TYPICAL FLANGE & WEB BUTT JOINT

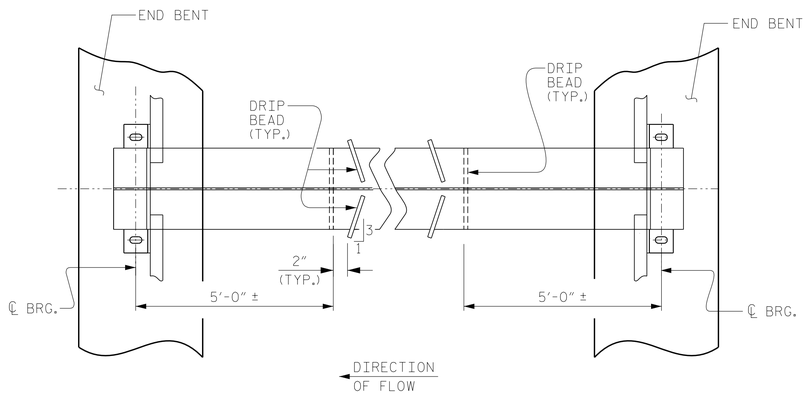
✱✱ GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS



SIDE VIEW



SECTION



PART PLAN - BOTTOM FLANGE

DRIP BEAD DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29771 HARRY L. WILLIS

DocuSigned by: Harry Willis 287FC6F0234461...

8/8/2022

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Vaughn & Melton
Consulting Engineers
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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 1 OF 2

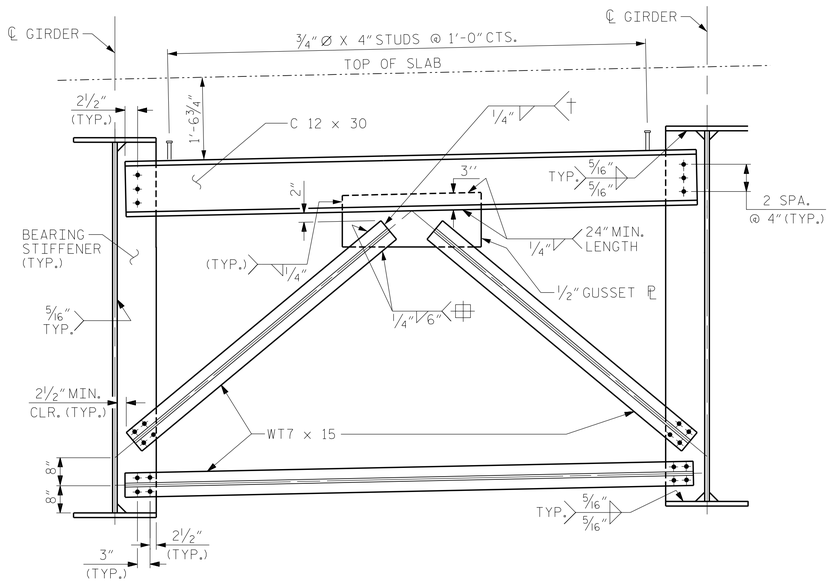
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

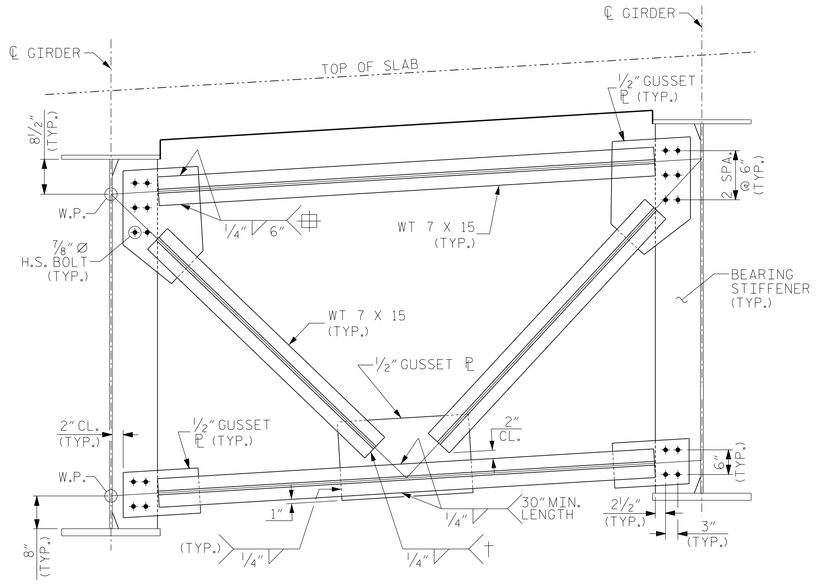
DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-19
1			3			TOTAL SHEETS
2			4			59



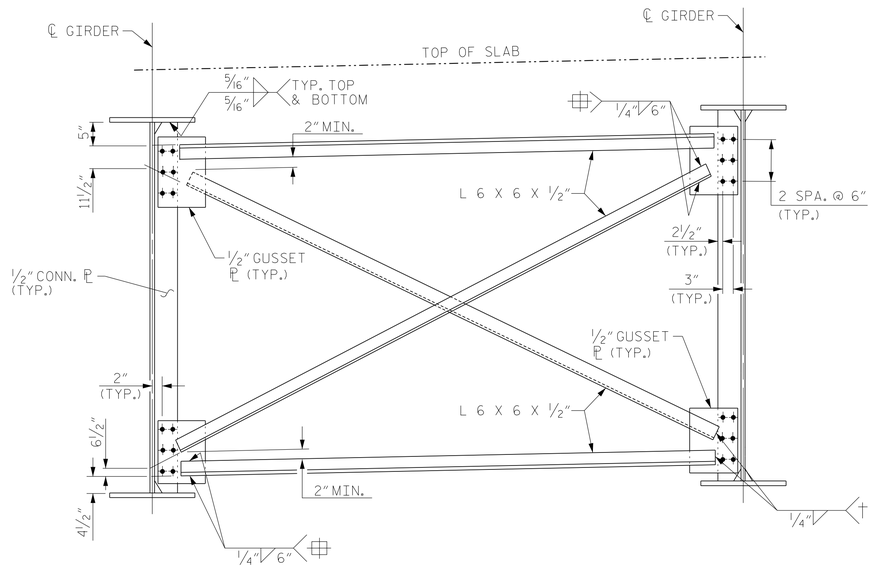
TYPICAL END BENT CROSSFRAME

(D1)



TYPICAL BENT CROSSFRAME

(D2)



TYPICAL INTERMEDIATE CROSSFRAME

(D3)

= TYP. ALONG SIDES OF ALL ANGLES OR WT'S

† = TYP. @ ENDS OF ALL ANGLES OR WT'S

DocuSigned by:
Hardy Willis
1652B7AGP0233461...
8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-20
1			3			TOTAL SHEETS
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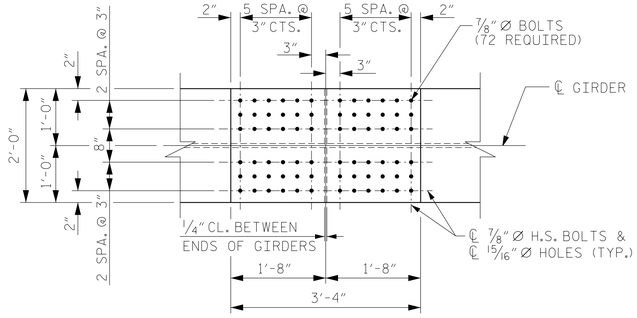
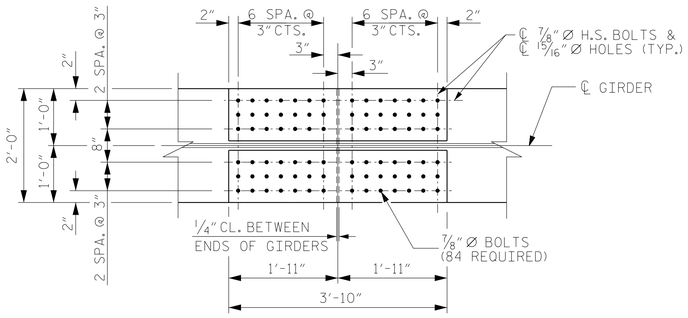
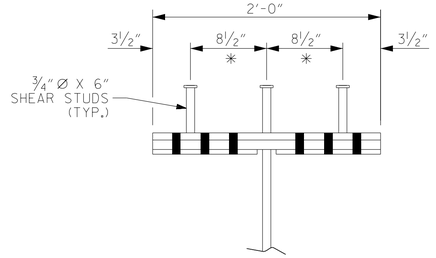


PLAN (TOP OF TOP FLANGE)

(STUDS NOT SHOWN FOR CLARITY)



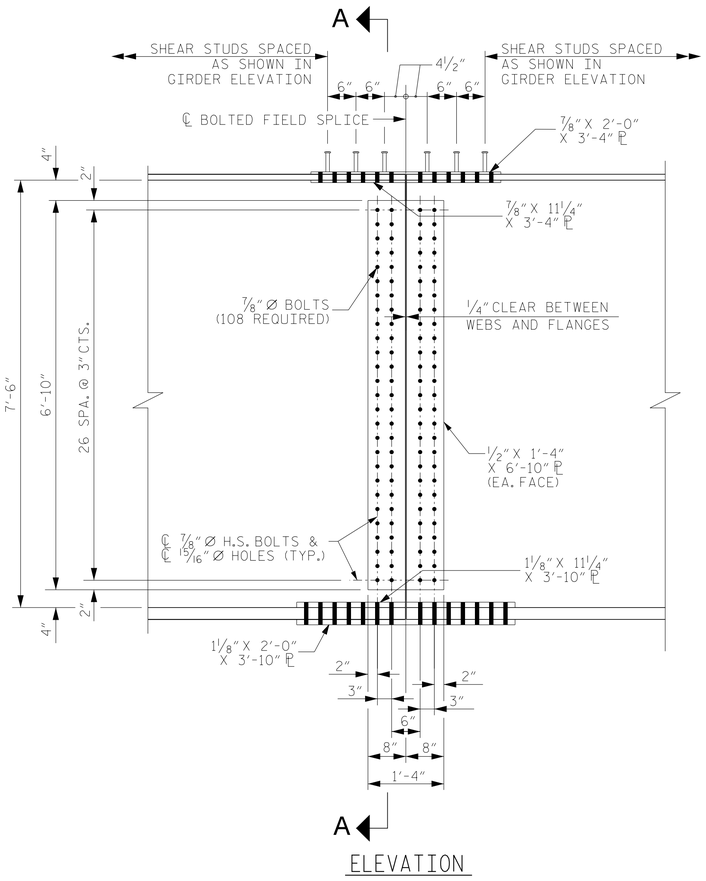
PLAN (TOP OF BOTTOM FLANGE)



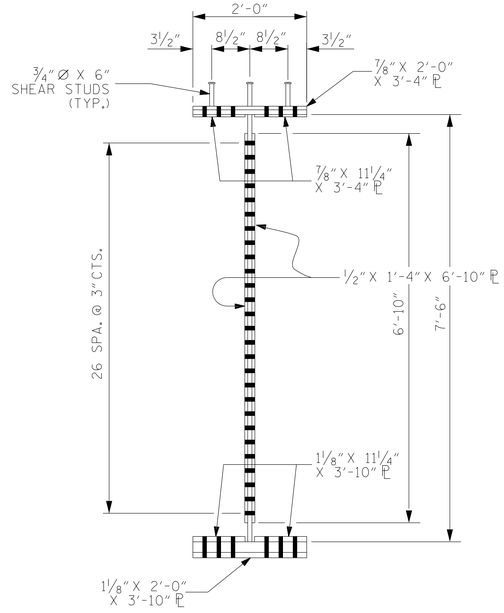
SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE

SHEAR STUDS ARE TO BE SHOP WELDED ON TOP OF PLATE BEFORE FIELD ASSEMBLY.

* USE THIS SPACING ONLY AT FIELD SPLICES. EVERYWHERE ELSE, USE SHEAR STUD SPACING SHOWN ON STRUCTURAL STEEL DETAILS SHEET.



ELEVATION



SECTION A-A

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29771 — Docusigned by: Hardy Wilds — 8/8/2022

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BOLTED FIELD SPLICE DETAILS

DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
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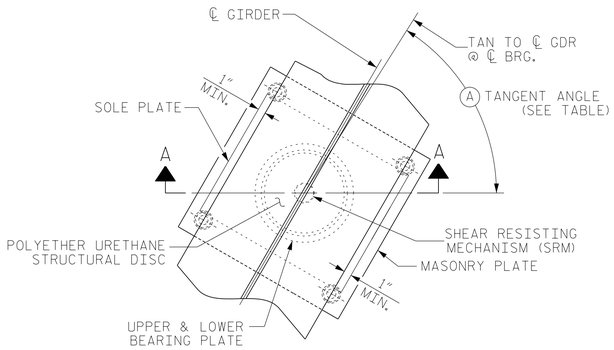
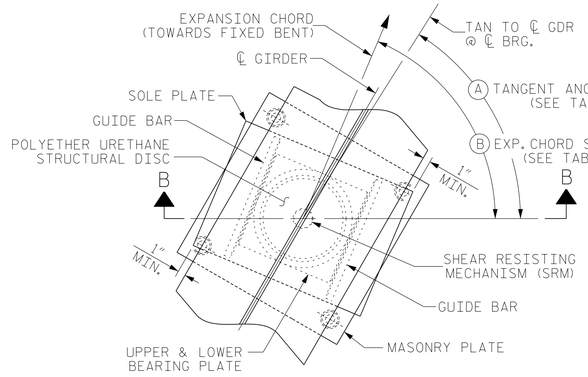
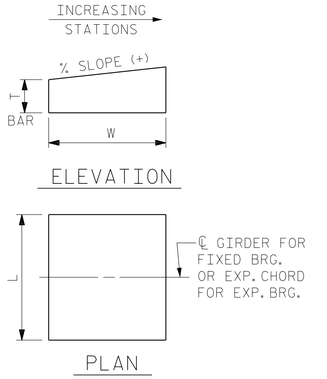


PLAN, FIXED



PLAN, EXP.

END BENT 1 SHOWN,
END BENT 2 SIMILAR BY ROTATION



NOTE:
DIMENSIONS "L", "W", AND "T" SHALL BE DETERMINED BY THE BEARING MANUFACTURER. SET DIMENSION "L" SUCH THAT THE MINIMUM EDGE DISTANCE TO THE GIRDER FLANGE IS 1".

SOLE PLATE DETAILS

NOTES

FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.

ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 50W OR GRADE 50.

AT ALL POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED PLUS AN ADDITIONAL 1/4 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE TFE OR URETHANE DISC.

AFTER BEARING ASSEMBLY IS IN PLACE AND ANCHOR BOLTS HAVE BEEN FINALLY POSITIONED, THEY SHALL BE GROUTED IN PLACE AS SHOWN.

THE CLOSURE PLATE, GROUT PIPE, AND STANDARD PIPE FOR THIS ASSEMBLY NEED NOT BE GALVANIZED.

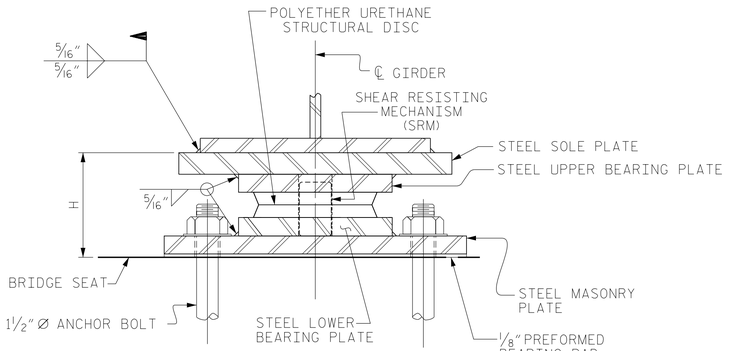
SOLE PLATES SHOULD BE WELDED TO GIRDER FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

FOR ATTACHMENT OF THE STAINLESS STEEL SHEETS TO THE STEEL SOLE PLATE AND GUIDE BARS, AS WELL AS THE TOP AND SIDE PTFE SHEETS TO THE STEEL UPPER BEARING PLATE, SEE SPECIAL PROVISIONS.

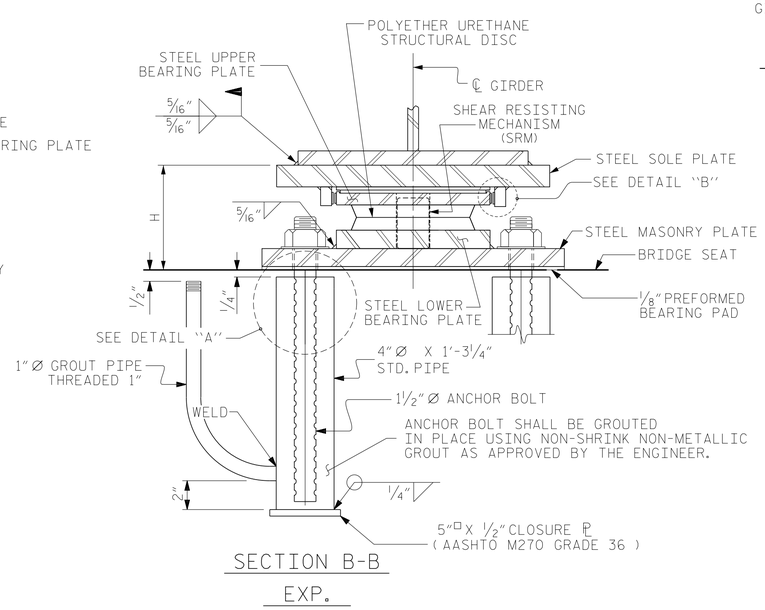
FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE MINIMUM ROTATIONAL CAPACITY FOR ALL BEARINGS SHALL BE 0.02 RADIANS.



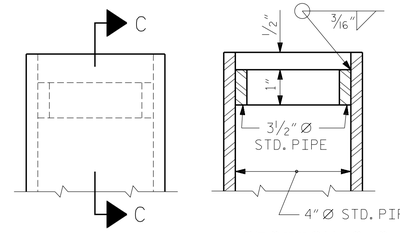
SECTION A-A

FIXED



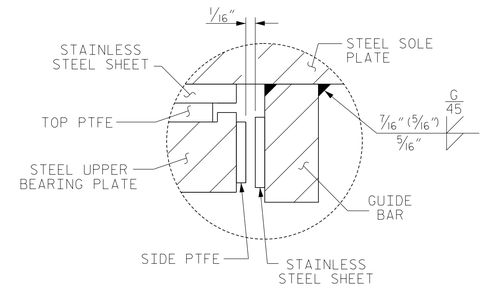
SECTION B-B

EXP.

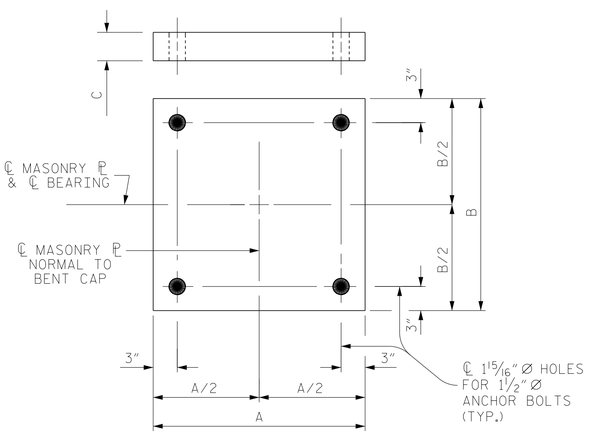


SECTION C-C

DETAIL "A"



DETAIL "B"



PLAN

MASONRY PLATE DETAILS

TABLE OF ANGLES

GIRDER	END BENT 1 (EXP.) Ⓐ	END BENT 1 (EXP.) Ⓑ	BENT 1 (FIX) Ⓐ	BENT 1 (FIX) Ⓑ	BENT 2 (FIX) Ⓐ	BENT 2 (FIX) Ⓑ	END BENT 2 (EXP.) Ⓐ	END BENT 2 (EXP.) Ⓑ
1	90°-06'-54"	93°-52'-12"	90°-00'-00"	--	90°-00'-00"	--	89°-53'-06"	86°-40'-07"
2	90°-06'-50"	93°-52'-11"	90°-00'-00"	--	90°-00'-00"	--	89°-53'-10"	86°-40'-09"
3	90°-06'-46"	93°-52'-09"	90°-00'-00"	--	90°-00'-00"	--	89°-53'-14"	86°-40'-11"
4	90°-06'-43"	93°-52'-07"	90°-00'-00"	--	90°-00'-00"	--	89°-53'-17"	86°-40'-12"

DESIGNATIONS		LOCATION	NUMBER OF BEARINGS	DIMENSIONS					LOADS AND MOVEMENT				
				BEARING	MASONRY PLATE			SOLE PLATE	UNFACTORED VERTICAL LOAD (KIPS)			FACTORED HORIZONTAL LOAD (KIPS)	ONE-WAY MOVEMENT (IN.)
									DEAD		LIVE		
BEARINGS	MASONRY ℙ			H (IN.)	A (IN.)	B (IN.)	C (IN.)	TOP SLOPE (%)	DC	DW	LL+IM		
DB1 (EXP)	M1	EB 1	4	6 5/16"	27"	27"	¾"	3.426	187	24	148	73	1⅝"
DB2 (FIX)	M2	BENT 1	4	7 5/16"	28½"	28½"	1"	2.435	424	54	263	152	0
DB3 (FIX)	M3	BENT 2	4	7 3/16"	28½"	28½"	1"	1.578	352	45	243	130	0
DB4 (EXP.)	M4	EB 2	4	5 15/16"	27"	27"	¾"	.690	157	20	138	61	2"

DocuSigned by:
Hardy Willis
8/8/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina
828-253-2796
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Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3509

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

DISC BEARING DETAILS

DRAWN BY : TMG 08/13	REV. 12/17 MAA/THC
CHECKED BY : EKP 10/13	

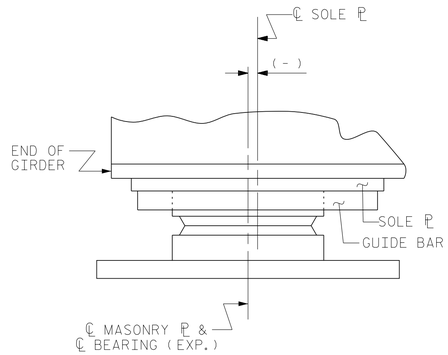
DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-22
1			3			TOTAL SHEETS
2			4			59

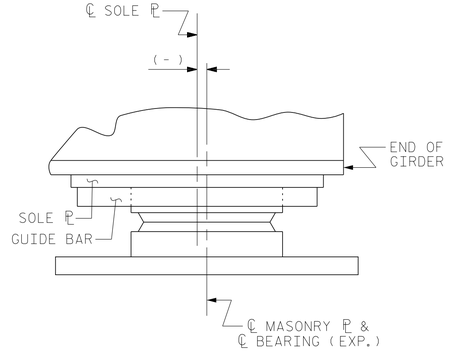
STD. NO. DB1 (SHT 2)

V & M PROJECT NO: 31748.44 08:25 AM on Monday, August 08, 2022 402.043_U-2579AA_SMU_BG01_S22_330730.dgn

FOR NOTES, SEE SHEET 1 OF 2.



END BENT 1



END BENT 2

PLATE SETTING DATA
(EXPANSION DISC BEARINGS)

LOCATION	GIRDER	TEMPERATURE AT TIME OF SETTING			*
		45° F	60° F	90° F	
END BENT 1	GIRDER 1	-1/4"	0	1/2"	-3/16"
	GIRDER 2	-1/4"	0	1/2"	-1/4"
	GIRDER 3	-1/4"	0	1/2"	-1/4"
	GIRDER 4	-1/4"	0	1/2"	-1/4"
END BENT 2	GIRDER 1	-5/16"	0	5/8"	-1/16"
	GIRDER 2	-5/16"	0	5/8"	-1/16"
	GIRDER 3	-5/16"	0	5/8"	-1/8"
	GIRDER 4	-5/16"	0	5/8"	-1/8"

* CORRECTION FOR END ROTATION DUE TO WEIGHT OF SLAB AND COMPOSITE DEAD LOAD.

TEMPERATURE SETTING DETAIL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29777 HARDY L. WILLIS

DocuSigned by: HardyWillis C2879CFC0233461...

8/8/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828-253-2796
Boone, NC 828-355-9333
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3509
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

DISC BEARING DETAILS

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-23
1			3			TOTAL SHEETS
2			4			59

STD. NO. DB1

DRAWN BY : TMG 08/13	REV. 12/17 MAA/THC
CHECKED BY : EKP 10/13	

V & M PROJECT NO.: 31748.44 08:25 AM on Monday, August 08, 2022 402.045.U-2579AA_SMU_BG02_S23_330730.dgn

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

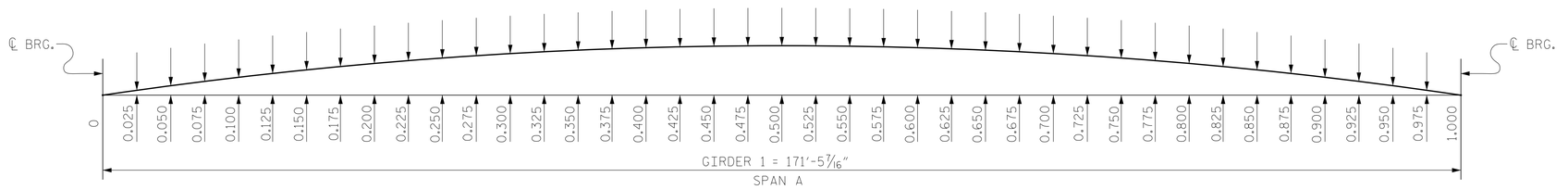
	SPAN A																				
	GIRDER 1																				
FOURTIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.007	-0.014	-0.021	-0.027	-0.034	-0.040	-0.045	-0.050	-0.055	-0.059	-0.063	-0.067	-0.070	-0.072	-0.074	-0.075	-0.076	-0.076	-0.076	-0.075
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	-0.023	-0.045	-0.067	-0.089	-0.109	-0.129	-0.147	-0.164	-0.179	-0.193	-0.206	-0.217	-0.226	-0.234	-0.240	-0.244	-0.247	-0.248	-0.247	-0.245
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	-0.002	-0.005	-0.007	-0.009	-0.011	-0.013	-0.015	-0.016	-0.018	-0.019	-0.020	-0.021	-0.022	-0.023	-0.024	-0.024	-0.025	-0.025	-0.025	-0.024
TOTAL DEAD LOAD DEFLECTION	0.000	-0.032	-0.064	-0.095	-0.125	-0.154	-0.181	-0.206	-0.230	-0.252	-0.272	-0.289	-0.305	-0.318	-0.329	-0.338	-0.344	-0.348	-0.349	-0.348	-0.345
VERTICAL CURVE ORDINATE ↑	0.000	0.021	0.041	0.061	0.080	0.097	0.114	0.129	0.143	0.156	0.168	0.179	0.189	0.197	0.205	0.211	0.216	0.220	0.223	0.225	0.225
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING ✳✳	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	5/8"	1 1/4"	1 7/8"	2 7/16"	3"	3 3/16"	4"	4 1/2"	4 7/8"	5 5/16"	5 5/8"	5 15/16"	6 3/16"	6 3/8"	6 9/16"	6 3/4"	6 13/16"	6 7/8"	6 7/8"	6 13/16"

✳ INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
✳✳ HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN A																				
	GIRDER 1 (CONT.)																				
FOURTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
DEFLECTION DUE TO WEIGHT OF GIRDER	-0.074	-0.073	-0.070	-0.068	-0.065	-0.061	-0.058	-0.053	-0.049	-0.044	-0.040	-0.035	-0.030	-0.025	-0.020	-0.015	-0.011	-0.007	-0.003	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	-0.241	-0.235	-0.228	-0.220	-0.210	-0.199	-0.187	-0.173	-0.159	-0.144	-0.128	-0.112	-0.096	-0.080	-0.064	-0.050	-0.035	-0.022	-0.010	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	-0.024	-0.023	-0.023	-0.022	-0.021	-0.020	-0.019	-0.017	-0.016	-0.014	-0.013	-0.011	-0.010	-0.008	-0.006	-0.005	-0.004	-0.002	-0.001	0.000
TOTAL DEAD LOAD DEFLECTION	-0.339	-0.331	-0.321	-0.310	-0.296	-0.280	-0.263	-0.244	-0.224	-0.202	-0.180	-0.158	-0.135	-0.113	-0.091	-0.070	-0.050	-0.032	-0.015	0.000
VERTICAL CURVE ORDINATE ↑	0.225	0.223	0.220	0.216	0.211	0.205	0.198	0.189	0.180	0.169	0.157	0.144	0.130	0.115	0.099	0.081	0.063	0.043	0.022	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING ✳✳	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	6 3/4"	6 5/8"	6 1/2"	6 5/16"	6 1/16"	5 13/16"	5 1/2"	5 3/16"	4 7/8"	4 7/16"	4 1/16"	3 5/8"	3 3/16"	2 3/4"	2 1/4"	1 13/16"	1 3/8"	7/8"	7/16"	0

✳ INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
✳✳ HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER FOURTIETH POINTS, SEE TABLES ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VALUES.

NOTES:

VALUES GIVEN ARE AT FORTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

DOWNWARD DEFLECTION IS INDICATED WITH A ''-'' SIGN.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 1 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042361 HAROLD L. WILLIS
Designed by:
Harold Willis
8/8/2022

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

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DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS SPAN A - GDR. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-24
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748-44

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

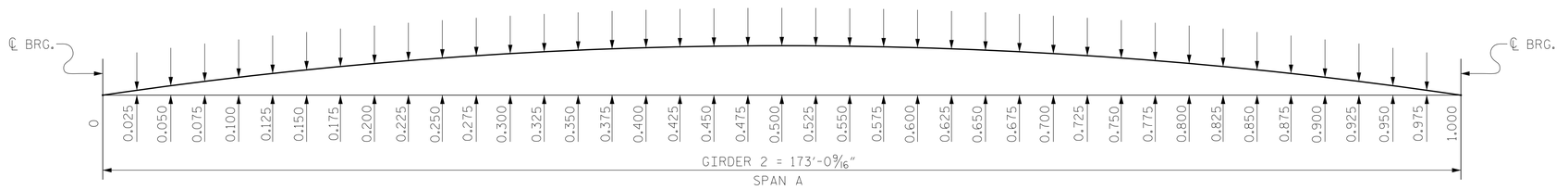
	SPAN A																				
	GIRDER 2																				
FOURTIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.008	-0.016	-0.024	-0.031	-0.039	-0.046	-0.052	-0.058	-0.064	-0.069	-0.073	-0.077	-0.080	-0.083	-0.085	-0.087	-0.088	-0.088	-0.088	-0.087
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	-0.027	-0.053	-0.078	-0.103	-0.127	-0.150	-0.171	-0.191	-0.209	-0.225	-0.240	-0.252	-0.263	-0.272	-0.280	-0.285	-0.288	-0.289	-0.288	-0.286
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	-0.003	-0.005	-0.008	-0.010	-0.013	-0.015	-0.017	-0.019	-0.021	-0.022	-0.024	-0.025	-0.026	-0.027	-0.028	-0.028	-0.029	-0.029	-0.029	-0.028
TOTAL DEAD LOAD DEFLECTION	0.000	-0.037	-0.074	-0.110	-0.145	-0.178	-0.210	-0.240	-0.268	-0.293	-0.316	-0.336	-0.354	-0.370	-0.383	-0.393	-0.400	-0.405	-0.406	-0.405	-0.401
VERTICAL CURVE ORDINATE ↑	0.000	0.021	0.041	0.061	0.080	0.097	0.114	0.129	0.143	0.156	0.168	0.179	0.189	0.197	0.205	0.211	0.216	0.220	0.223	0.225	0.225
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	1 1/16"	1 3/8"	2 1/16"	2 11/16"	3 5/16"	3 7/8"	4 7/16"	4 15/16"	5 3/8"	5 13/16"	6 3/16"	6 1/2"	6 13/16"	7 1/16"	7 1/4"	7 3/8"	7 1/2"	7 9/16"	7 9/16"	7 1/2"

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN A																				
	GIRDER 2 (CONT.)																				
FOURTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
DEFLECTION DUE TO WEIGHT OF GIRDER	-0.086	-0.084	-0.082	-0.079	-0.075	-0.071	-0.067	-0.062	-0.057	-0.052	-0.046	-0.040	-0.035	-0.029	-0.023	-0.018	-0.013	-0.008	-0.004	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	-0.281	-0.275	-0.266	-0.257	-0.245	-0.233	-0.218	-0.203	-0.186	-0.168	-0.150	-0.131	-0.113	-0.094	-0.076	-0.059	-0.042	-0.027	-0.012	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	-0.028	-0.027	-0.027	-0.026	-0.024	-0.023	-0.022	-0.020	-0.019	-0.017	-0.015	-0.013	-0.011	-0.009	-0.008	-0.006	-0.004	-0.003	-0.001	0.000
TOTAL DEAD LOAD DEFLECTION	-0.395	-0.386	-0.375	-0.361	-0.345	-0.327	-0.307	-0.285	-0.261	-0.237	-0.211	-0.185	-0.159	-0.132	-0.107	-0.083	-0.059	-0.037	-0.018	0.000
VERTICAL CURVE ORDINATE ↑	0.225	0.223	0.220	0.216	0.211	0.205	0.198	0.189	0.180	0.169	0.157	0.144	0.130	0.115	0.099	0.081	0.063	0.043	0.022	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	7 7/16"	7 5/16"	7 1/8"	6 15/16"	6 11/16"	6 3/8"	6 1/16"	5 11/16"	5 5/16"	4 7/8"	4 7/16"	3 15/16"	3 1/2"	2 15/16"	2 7/16"	2"	1 7/16"	15/16"	1/2"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER FOURTIETH POINTS, SEE TABLES ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VALUES.

NOTES:

VALUES GIVEN ARE AT FORTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

DOWNWARD DEFLECTION IS INDICATED WITH A "-" SIGN.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 2 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047261 HARDY L. WILLIS

Docusigned by:
Hardy Willis
4A2284A0F0223461...

8/8/2022

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS SPAN A - GDR. 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-25
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748-44

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

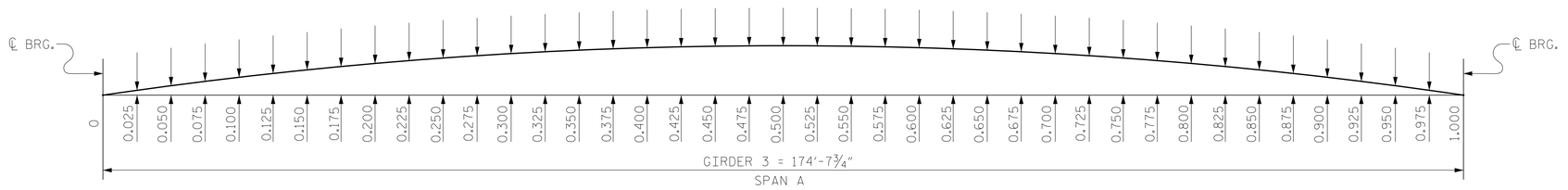
	SPAN A																				
	GIRDER 3																				
FOURTIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.009	-0.018	-0.027	-0.036	-0.044	-0.052	-0.059	-0.066	-0.072	-0.078	-0.083	-0.087	-0.091	-0.094	-0.097	-0.099	-0.100	-0.100	-0.100	-0.099
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	-0.030	-0.060	-0.089	-0.117	-0.144	-0.170	-0.194	-0.216	-0.237	-0.255	-0.272	-0.287	-0.299	-0.310	-0.318	-0.324	-0.327	-0.329	-0.328	-0.325
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	-0.003	-0.006	-0.009	-0.012	-0.014	-0.017	-0.019	-0.022	-0.024	-0.025	-0.027	-0.029	-0.030	-0.031	-0.032	-0.032	-0.033	-0.033	-0.033	-0.032
TOTAL DEAD LOAD DEFLECTION	0.000	-0.042	-0.084	-0.125	-0.164	-0.202	-0.238	-0.272	-0.303	-0.332	-0.358	-0.382	-0.402	-0.420	-0.435	-0.446	-0.455	-0.460	-0.462	-0.461	-0.456
VERTICAL CURVE ORDINATE ↑	0.000	0.021	0.041	0.061	0.080	0.097	0.114	0.129	0.143	0.156	0.168	0.179	0.189	0.197	0.205	0.211	0.216	0.220	0.223	0.225	0.225
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	¾"	1½"	2¼"	2 15/16"	3 9/16"	4¼"	4 13/16"	5⅜"	5⅞"	6 5/16"	6¾"	7 1/16"	7 7/16"	7 11/16"	7⅞"	8 1/16"	8 3/16"	8 3/16"	8¼"	8 3/16"

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN A																				
	GIRDER 3 (CONT.)																				
FOURTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
DEFLECTION DUE TO WEIGHT OF GIRDER	-0.098	-0.095	-0.093	-0.089	-0.085	-0.081	-0.076	-0.071	-0.065	-0.059	-0.052	-0.046	-0.040	-0.033	-0.027	-0.021	-0.015	-0.010	-0.005	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	-0.320	-0.312	-0.303	-0.292	-0.279	-0.265	-0.249	-0.231	-0.212	-0.192	-0.171	-0.150	-0.129	-0.108	-0.087	-0.067	-0.049	-0.031	-0.015	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	-0.032	-0.031	-0.030	-0.029	-0.028	-0.027	-0.025	-0.023	-0.021	-0.019	-0.017	-0.015	-0.013	-0.011	-0.009	-0.007	-0.005	-0.003	-0.001	0.000
TOTAL DEAD LOAD DEFLECTION	-0.449	-0.439	-0.426	-0.411	-0.393	-0.372	-0.350	-0.325	-0.298	-0.270	-0.241	-0.211	-0.182	-0.152	-0.123	-0.095	-0.068	-0.043	-0.020	0.000
VERTICAL CURVE ORDINATE ↑	0.225	0.223	0.220	0.216	0.211	0.205	0.198	0.189	0.180	0.169	0.157	0.144	0.130	0.115	0.099	0.081	0.063	0.043	0.022	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	8 1/16"	7 15/16"	7¾"	7½"	7¼"	6 15/16"	6 9/16"	6 3/16"	5¾"	5¼"	4¾"	4¼"	3¾"	3 3/16"	2 11/16"	2⅛"	1 9/16"	1"	½"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER FOURTIETH POINTS, SEE TABLES ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VALUES.

NOTES:

VALUES GIVEN ARE AT FORTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

DOWNWARD DEFLECTION IS INDICATED WITH A "-" SIGN.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 3 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039287 GREGORY L. ...

Docusigned by:
Hardy Wells
20777...
C03287FGF0223461...

8/8/2022

Vaughn & Melton
Consulting Engineers
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828-253-2796
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
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DWN. BY: WDC DATE: 03/2021
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DES. EGR. OF RECORD: RTS DATE: 03/2021

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS SPAN A - GDR. 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-26
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748.44

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

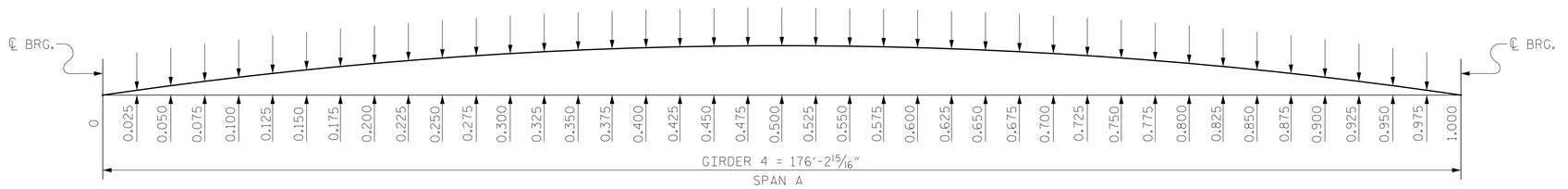
	SPAN A																				
	GIRDER 4																				
FOURTIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.010	-0.020	-0.030	-0.040	-0.049	-0.058	-0.066	-0.073	-0.080	-0.087	-0.093	-0.098	-0.102	-0.106	-0.108	-0.110	-0.112	-0.112	-0.112	-0.111
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	-0.034	-0.067	-0.099	-0.131	-0.161	-0.190	-0.217	-0.242	-0.265	-0.285	-0.304	-0.321	-0.335	-0.346	-0.356	-0.362	-0.366	-0.368	-0.367	-0.364
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	-0.003	-0.007	-0.010	-0.013	-0.016	-0.019	-0.022	-0.024	-0.027	-0.029	-0.031	-0.032	-0.034	-0.035	-0.036	-0.037	-0.037	-0.037	-0.037	-0.037
TOTAL DEAD LOAD DEFLECTION	0.000	-0.047	-0.094	-0.139	-0.184	-0.226	-0.266	-0.304	-0.339	-0.372	-0.401	-0.427	-0.451	-0.470	-0.487	-0.500	-0.509	-0.515	-0.517	-0.516	-0.511
VERTICAL CURVE ORDINATE ↑	0.000	0.021	0.041	0.061	0.080	0.097	0.114	0.129	0.143	0.156	0.168	0.179	0.189	0.197	0.205	0.211	0.216	0.220	0.223	0.225	0.225
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING ✳✳	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	13/16"	1 5/8"	2 3/8"	3 3/16"	3 7/8"	4 9/16"	5 3/16"	5 13/16"	6 5/16"	6 13/16"	7 1/4"	7 11/16"	8"	8 5/16"	8 1/2"	8 11/16"	8 13/16"	8 7/8"	8 7/8"	8 13/16"

✳ INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
✳✳ HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN A																				
	GIRDER 4 (CONT.)																				
FOURTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
DEFLECTION DUE TO WEIGHT OF GIRDER	-0.109	-0.107	-0.104	-0.100	-0.095	-0.090	-0.085	-0.079	-0.073	-0.066	-0.059	-0.052	-0.044	-0.037	-0.030	-0.023	-0.017	-0.011	-0.005	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	-0.358	-0.350	-0.340	-0.327	-0.313	-0.297	-0.278	-0.259	-0.237	-0.215	-0.192	-0.168	-0.145	-0.121	-0.098	-0.076	-0.055	-0.035	-0.017	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	-0.036	-0.035	-0.034	-0.033	-0.032	-0.030	-0.028	-0.026	-0.024	-0.022	-0.020	-0.017	-0.015	-0.012	-0.010	-0.008	-0.006	-0.004	-0.002	0.000
TOTAL DEAD LOAD DEFLECTION	-0.503	-0.492	-0.478	-0.460	-0.440	-0.417	-0.392	-0.364	-0.334	-0.303	-0.271	-0.237	-0.204	-0.171	-0.138	-0.107	-0.077	-0.049	-0.023	0.000
VERTICAL CURVE ORDINATE ↑	0.225	0.223	0.220	0.216	0.211	0.205	0.198	0.189	0.180	0.169	0.157	0.144	0.130	0.115	0.099	0.081	0.063	0.043	0.022	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING ✳✳	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	8 3/4"	8 9/16"	8 3/8"	8 1/8"	7 13/16"	7 7/16"	7 1/16"	6 5/8"	6 3/16"	5 11/16"	5 1/8"	4 9/16"	4"	3 7/16"	2 13/16"	2 1/4"	1 11/16"	1 1/8"	9/16"	0

✳ INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
✳✳ HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER FOURTIETH POINTS, SEE TABLES ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VALUES.

NOTES:

VALUES GIVEN ARE AT FORTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

DOWNWARD DEFLECTION IS INDICATED WITH A ''-'' SIGN.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 4 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047287 HARDY L. WILLIS

DocuSigned by: Hardy Willis
287FC0...

8/8/2022

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS
SPAN A - GDR. 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-27
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748-44

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

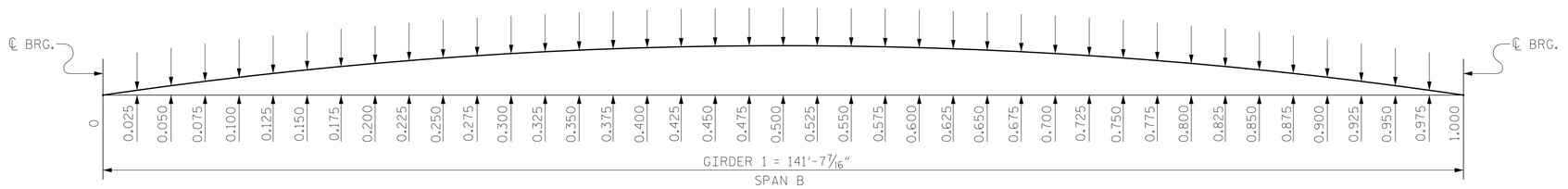
	SPAN B																				
	GIRDER 1																				
FOURTIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.002	0.004	0.005	0.007	0.008	0.009	0.009	0.010	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.008	0.008	0.008	0.008
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.007	0.013	0.017	0.021	0.024	0.027	0.028	0.029	0.030	0.030	0.029	0.028	0.028	0.027	0.025	0.024	0.023	0.022	0.021	0.021
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001
TOTAL DEAD LOAD DEFLECTION	0.000	0.010	0.018	0.024	0.030	0.034	0.037	0.040	0.041	0.042	0.042	0.041	0.040	0.039	0.038	0.036	0.034	0.033	0.032	0.030	0.029
VERTICAL CURVE ORDINATE ↑	0.000	0.015	0.029	0.043	0.056	0.067	0.079	0.089	0.099	0.108	0.116	0.123	0.130	0.135	0.140	0.145	0.148	0.151	0.153	0.154	0.154
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	1/16"	1/8"	1/4"	5/16"	3/8"	1/2"	9/16"	11/16"	13/16"	7/8"	1"	1 1/16"	1 1/8"	1 1/4"	1 3/16"	1 3/8"	1 7/16"	1 7/16"	1 1/2"	1 1/2"

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN B																				
	GIRDER 1 (CONT.)																				
FOURTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000	
DEFLECTION DUE TO WEIGHT OF GIRDER	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.003	0.001	0.000	
DEFLECTION DUE TO WEIGHT OF SLAB *	0.020	0.020	0.019	0.019	0.019	0.019	0.019	0.019	0.020	0.020	0.020	0.019	0.019	0.018	0.017	0.015	0.012	0.009	0.005	0.000	
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	
TOTAL DEAD LOAD DEFLECTION	0.028	0.028	0.027	0.027	0.027	0.027	0.027	0.027	0.028	0.028	0.028	0.027	0.026	0.025	0.023	0.020	0.017	0.012	0.007	0.000	
VERTICAL CURVE ORDINATE ↑	0.154	0.153	0.151	0.148	0.145	0.140	0.135	0.130	0.123	0.116	0.108	0.099	0.089	0.079	0.067	0.056	0.043	0.029	0.015	0.000	
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
REQUIRED CAMBER	1 1/2"	1 1/2"	1 1/2"	1 7/16"	1 7/16"	1 3/8"	1 5/16"	1 1/4"	1 1/8"	1 1/16"	1 5/16"	7/8"	3/4"	5/8"	9/16"	7/16"	5/16"	3/16"	1/8"	0	

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER FOURTIETH POINTS, SEE TABLES ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VALUES.

NOTES:

VALUES GIVEN ARE AT FORTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

DOWNWARD DEFLECTION IS INDICATED WITH A ''-'' SIGN.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 5 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20777 — DocuSigned by: Hardy Willis — 8/8/2022

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS SPAN B - GDR. 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-28
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748-44

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

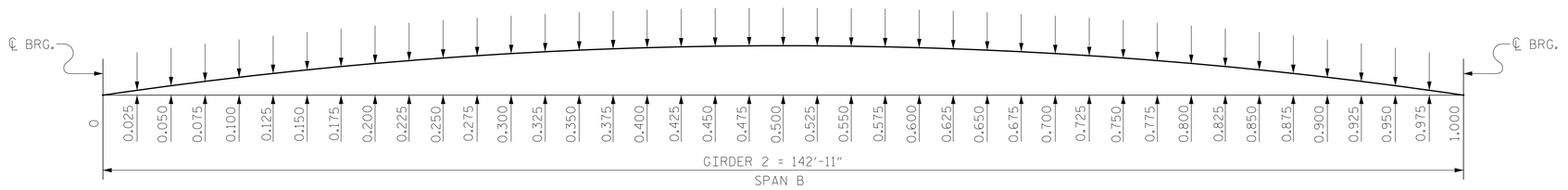
	SPAN B GIRDER 2																				
FOURTIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.003	0.005	0.007	0.008	0.010	0.011	0.012	0.012	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.012	0.012	0.012	0.012	0.011
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.008	0.015	0.021	0.027	0.031	0.034	0.036	0.038	0.039	0.040	0.040	0.039	0.039	0.038	0.037	0.036	0.035	0.034	0.033	0.032
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.001	0.001	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
TOTAL DEAD LOAD DEFLECTION	0.000	0.012	0.022	0.030	0.037	0.043	0.048	0.052	0.054	0.056	0.056	0.056	0.056	0.055	0.054	0.053	0.051	0.050	0.049	0.047	0.046
VERTICAL CURVE ORDINATE ↑	0.000	0.015	0.029	0.043	0.056	0.067	0.079	0.089	0.099	0.108	0.116	0.123	0.130	0.135	0.140	0.145	0.148	0.151	0.153	0.154	0.154
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	1/16"	1/16"	1/8"	1/4"	5/16"	3/8"	7/16"	9/16"	5/8"	11/16"	13/16"	7/8"	15/16"	1 1/16"	1 1/8"	1 3/16"	1 3/16"	1 1/4"	1 5/16"	1 3/16"

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN B GIRDER 2 (CONT.)																				
FOURTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
DEFLECTION DUE TO WEIGHT OF GIRDER	0.011	0.011	0.011	0.010	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.008	0.007	0.007	0.006	0.005	0.003	0.002	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.031	0.031	0.030	0.030	0.029	0.029	0.029	0.029	0.028	0.028	0.027	0.026	0.025	0.024	0.021	0.019	0.015	0.011	0.006	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.000
TOTAL DEAD LOAD DEFLECTION	0.045	0.044	0.043	0.042	0.042	0.041	0.041	0.041	0.040	0.039	0.038	0.037	0.035	0.033	0.030	0.026	0.021	0.015	0.008	0.000
VERTICAL CURVE ORDINATE ↑	0.154	0.153	0.151	0.148	0.145	0.140	0.135	0.130	0.123	0.116	0.108	0.099	0.089	0.079	0.067	0.056	0.043	0.029	0.015	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	1 5/16"	1 5/16"	1 5/16"	1 1/4"	1 1/4"	1 3/16"	1 1/8"	1 1/16"	1"	15/16"	13/16"	3/4"	5/8"	9/16"	7/16"	3/8"	1/4"	3/16"	1/16"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER FOURTIETH POINTS, SEE TABLES ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VALUES.

NOTES:

VALUES GIVEN ARE AT FORTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

DOWNWARD DEFLECTION IS INDICATED WITH A ''-'' SIGN.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 6 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042641 HARDY L. WILLIS

DocuSigned by: Hardy Willis 8/8/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS SPAN B - GDR. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-29
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748-44

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

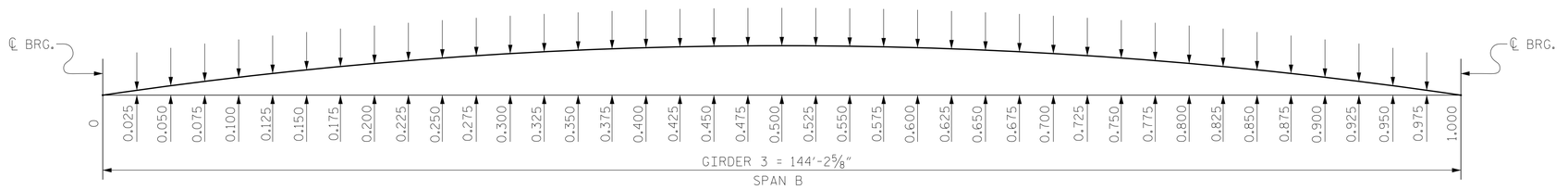
	SPAN B																				
	GIRDER 3																				
FOURTIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.003	0.006	0.008	0.010	0.012	0.013	0.014	0.015	0.016	0.016	0.017	0.017	0.017	0.017	0.017	0.016	0.016	0.016	0.016	0.015
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.010	0.018	0.026	0.032	0.037	0.042	0.045	0.048	0.050	0.051	0.051	0.051	0.051	0.051	0.050	0.049	0.048	0.047	0.046	0.045
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.001	0.002	0.002	0.003	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004
TOTAL DEAD LOAD DEFLECTION	0.000	0.014	0.026	0.036	0.045	0.053	0.059	0.064	0.068	0.070	0.072	0.073	0.073	0.073	0.072	0.071	0.070	0.069	0.067	0.066	0.064
VERTICAL CURVE ORDINATE ↑	0.000	0.015	0.029	0.043	0.056	0.067	0.079	0.089	0.099	0.108	0.116	0.123	0.130	0.135	0.140	0.145	0.148	0.151	0.153	0.154	0.154
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	0	1/16"	1/16"	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	11/16"	3/4"	13/16"	7/8"	15/16"	1"	1"	1 1/16"	1 1/16"

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN B																				
	GIRDER 3 (CONT.)																				
FOURTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000	
DEFLECTION DUE TO WEIGHT OF GIRDER	0.015	0.015	0.014	0.014	0.014	0.013	0.013	0.013	0.012	0.012	0.011	0.011	0.010	0.009	0.008	0.007	0.006	0.004	0.002	0.000	
DEFLECTION DUE TO WEIGHT OF SLAB *	0.044	0.043	0.043	0.042	0.041	0.040	0.040	0.039	0.038	0.037	0.036	0.034	0.032	0.030	0.027	0.023	0.018	0.013	0.007	0.000	
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.001	0.001	0.000	
TOTAL DEAD LOAD DEFLECTION	0.063	0.062	0.061	0.059	0.058	0.057	0.056	0.055	0.054	0.052	0.050	0.048	0.045	0.042	0.037	0.032	0.026	0.018	0.010	0.000	
VERTICAL CURVE ORDINATE ↑	0.154	0.153	0.151	0.148	0.145	0.140	0.135	0.130	0.123	0.116	0.108	0.099	0.089	0.079	0.067	0.056	0.043	0.029	0.015	0.000	
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
REQUIRED CAMBER	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1"	15/16"	7/8"	13/16"	3/4"	11/16"	5/8"	1/2"	7/16"	3/8"	5/16"	3/16"	1/8"	1/16"	0	

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER FOURTIETH POINTS, SEE TABLES ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VALUES.

NOTES:

VALUES GIVEN ARE AT FORTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

DOWNWARD DEFLECTION IS INDICATED WITH A ''-'' SIGN.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 7 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20777 HARDY LEE WILLIS

Positively by: HardyWillis
DocuSigned by: 2077...
8/8/2022

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS SPAN B - GDR. 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-30
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748-44

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

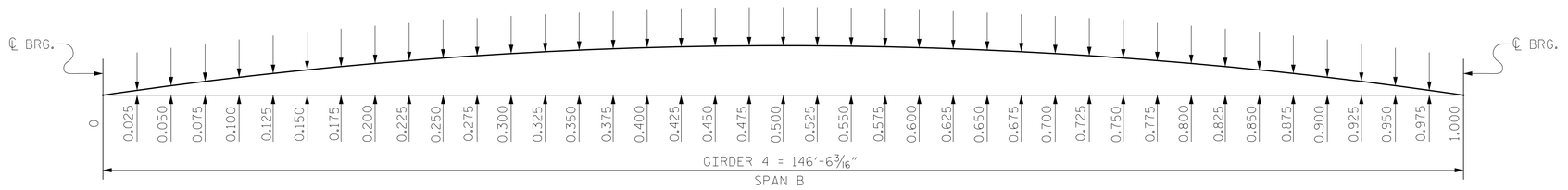
	SPAN B GIRDER 4																				
FOURTIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	0.004	0.007	0.009	0.012	0.014	0.016	0.017	0.018	0.019	0.020	0.021	0.021	0.021	0.021	0.021	0.021	0.020	0.020	0.020	0.020
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	0.011	0.022	0.030	0.038	0.045	0.050	0.055	0.058	0.061	0.063	0.064	0.065	0.065	0.065	0.064	0.063	0.063	0.062	0.061	0.059
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	0.001	0.002	0.003	0.004	0.004	0.005	0.005	0.005	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.005
TOTAL DEAD LOAD DEFLECTION	0.000	0.016	0.030	0.043	0.054	0.063	0.071	0.077	0.082	0.086	0.089	0.090	0.091	0.092	0.091	0.091	0.090	0.089	0.087	0.086	0.084
VERTICAL CURVE ORDINATE ↑	0.000	0.015	0.029	0.043	0.056	0.067	0.079	0.089	0.099	0.108	0.116	0.123	0.130	0.135	0.140	0.145	0.148	0.151	0.153	0.154	0.154
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING ✳✳	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	0	0	0	0	1/16"	1/16"	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	11/16"	3/4"	13/16"	13/16"	13/16"

✳ INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
✳✳ HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN B GIRDER 4 (CONT.)																			
FOURTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
DEFLECTION DUE TO WEIGHT OF GIRDER	0.019	0.019	0.018	0.018	0.018	0.017	0.017	0.016	0.016	0.015	0.014	0.013	0.012	0.011	0.010	0.008	0.007	0.005	0.002	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.058	0.057	0.056	0.055	0.054	0.053	0.051	0.050	0.049	0.047	0.045	0.042	0.040	0.036	0.032	0.027	0.022	0.015	0.008	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.002	0.002	0.001	0.000
TOTAL DEAD LOAD DEFLECTION	0.083	0.081	0.079	0.078	0.076	0.074	0.073	0.071	0.068	0.066	0.063	0.060	0.055	0.051	0.045	0.038	0.031	0.022	0.012	0.000
VERTICAL CURVE ORDINATE ↑	0.154	0.153	0.151	0.148	0.145	0.140	0.135	0.130	0.123	0.116	0.108	0.099	0.089	0.079	0.067	0.056	0.043	0.029	0.015	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING ✳✳	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	7/8"	7/8"	7/8"	13/16"	13/16"	13/16"	3/4"	11/16"	11/16"	5/8"	9/16"	7/16"	7/16"	5/16"	1/4"	3/16"	1/8"	1/16"	1/16"	0

✳ INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
✳✳ HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER FOURTIETH POINTS, SEE TABLES ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VALUES.

NOTES:

VALUES GIVEN ARE AT FORTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

DOWNWARD DEFLECTION IS INDICATED WITH A ''-'' SIGN.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047287 REGISTERED ENGINEERING SERVICES HARDY L. WILLIS
DocuSigned by: Hardy Willis 1D2287FDF0122481...
8/8/2022

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS SPAN B - GDR. 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-31
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748-44

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

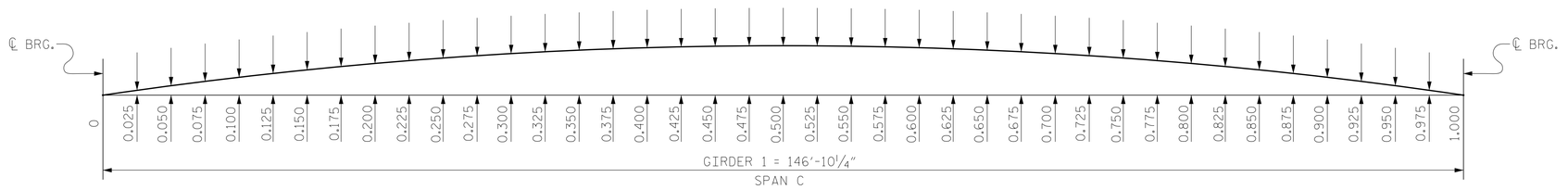
	SPAN C																				
	GIRDER 1																				
FOURTIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.002	-0.004	-0.007	-0.009	-0.012	-0.015	-0.018	-0.021	-0.023	-0.026	-0.029	-0.031	-0.034	-0.036	-0.038	-0.040	-0.041	-0.043	-0.044	-0.044
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	-0.007	-0.014	-0.022	-0.031	-0.040	-0.050	-0.059	-0.069	-0.079	-0.088	-0.098	-0.106	-0.115	-0.122	-0.129	-0.135	-0.140	-0.145	-0.148	-0.151
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	-0.001	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.007	-0.008	-0.009	-0.010	-0.011	-0.012	-0.012	-0.013	-0.014	-0.014	-0.015	-0.015	-0.015
TOTAL DEAD LOAD DEFLECTION	0.000	-0.009	-0.020	-0.031	-0.043	-0.056	-0.069	-0.083	-0.097	-0.110	-0.124	-0.136	-0.149	-0.160	-0.171	-0.180	-0.188	-0.196	-0.202	-0.207	-0.210
VERTICAL CURVE ORDINATE ↑	0.000	0.016	0.032	0.046	0.060	0.073	0.085	0.096	0.106	0.116	0.124	0.132	0.139	0.146	0.151	0.155	0.159	0.162	0.164	0.165	0.166
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	5/16"	5/8"	15/16"	1¼"	1 9/16"	1 13/16"	2⅛"	2 7/16"	2 11/16"	3"	3¼"	3 7/16"	3 11/16"	3⅜"	4"	4 3/16"	4 5/16"	4⅜"	4½"	4½"

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN C																				
	GIRDER 1 (CONT.)																				
FOURTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
DEFLECTION DUE TO WEIGHT OF GIRDER	-0.045	-0.045	-0.045	-0.044	-0.043	-0.042	-0.041	-0.039	-0.037	-0.035	-0.032	-0.029	-0.026	-0.023	-0.020	-0.016	-0.012	-0.008	-0.004	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	-0.152	-0.153	-0.152	-0.150	-0.148	-0.144	-0.139	-0.133	-0.127	-0.119	-0.110	-0.100	-0.090	-0.079	-0.067	-0.054	-0.041	-0.028	-0.014	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	-0.015	-0.015	-0.015	-0.015	-0.015	-0.015	-0.014	-0.013	-0.013	-0.012	-0.011	-0.010	-0.009	-0.008	-0.007	-0.005	-0.004	-0.003	-0.001	0.000
TOTAL DEAD LOAD DEFLECTION	-0.212	-0.213	-0.212	-0.210	-0.206	-0.201	-0.194	-0.186	-0.177	-0.166	-0.153	-0.140	-0.125	-0.110	-0.093	-0.075	-0.057	-0.038	-0.019	0.000
VERTICAL CURVE ORDINATE ↑	0.165	0.164	0.162	0.159	0.155	0.151	0.146	0.139	0.132	0.124	0.116	0.106	0.096	0.085	0.073	0.060	0.046	0.032	0.016	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	4½"	4½"	4½"	4 7/16"	4 5/16"	4¼"	4 1/16"	3⅞"	3 11/16"	3½"	3¼"	2 15/16"	2⅝"	2 5/16"	2"	1⅝"	1¼"	13/16"	7/16"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER FOURTIETH POINTS, SEE TABLES ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VALUES.

NOTES:

VALUES GIVEN ARE AT FORTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

DOWNWARD DEFLECTION IS INDICATED WITH A ''-'' SIGN.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 9 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL L-WILLIS
DocuSigned by: Hardy Willis
8/8/2022

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS SPAN C - GDR. 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-32
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748-44

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

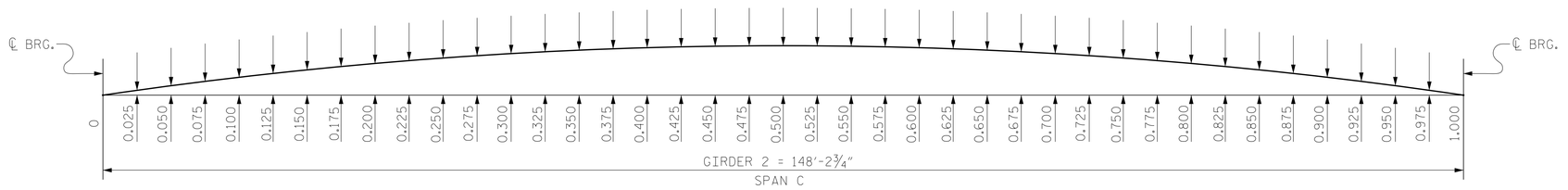
	SPAN C																				
	GIRDER 2																				
FOURTIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.002	-0.005	-0.008	-0.011	-0.014	-0.017	-0.021	-0.024	-0.027	-0.030	-0.033	-0.036	-0.039	-0.041	-0.044	-0.046	-0.047	-0.049	-0.050	-0.051
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	-0.008	-0.017	-0.026	-0.036	-0.047	-0.058	-0.069	-0.081	-0.092	-0.103	-0.113	-0.123	-0.133	-0.141	-0.149	-0.156	-0.162	-0.167	-0.171	-0.173
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.007	-0.008	-0.009	-0.010	-0.011	-0.012	-0.013	-0.014	-0.015	-0.016	-0.016	-0.017	-0.017	-0.017
TOTAL DEAD LOAD DEFLECTION	0.000	-0.011	-0.023	-0.037	-0.051	-0.066	-0.081	-0.097	-0.112	-0.128	-0.143	-0.158	-0.172	-0.185	-0.197	-0.208	-0.217	-0.225	-0.232	-0.238	-0.241
VERTICAL CURVE ORDINATE ↑	0.000	0.016	0.032	0.046	0.060	0.073	0.085	0.096	0.106	0.116	0.124	0.132	0.139	0.146	0.151	0.156	0.159	0.162	0.164	0.165	0.166
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	5/16"	5/8"	1"	1 5/16"	1 11/16"	2"	2 5/16"	2 5/8"	2 15/16"	3 3/16"	3 1/2"	3 3/4"	3 15/16"	4 3/16"	4 3/8"	4 1/2"	4 5/8"	4 3/4"	4 13/16"	4 7/8"

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN C																				
	GIRDER 2 (CONT.)																				
FOURTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
DEFLECTION DUE TO WEIGHT OF GIRDER	-0.051	-0.051	-0.051	-0.050	-0.050	-0.048	-0.047	-0.045	-0.042	-0.040	-0.037	-0.034	-0.030	-0.026	-0.022	-0.018	-0.014	-0.009	-0.005	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	-0.175	-0.176	-0.175	-0.173	-0.170	-0.165	-0.160	-0.153	-0.145	-0.136	-0.126	-0.115	-0.103	-0.090	-0.077	-0.062	-0.047	-0.032	-0.016	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	-0.018	-0.018	-0.017	-0.017	-0.017	-0.017	-0.016	-0.015	-0.015	-0.014	-0.013	-0.012	-0.010	-0.009	-0.008	-0.006	-0.005	-0.003	-0.002	0.000
TOTAL DEAD LOAD DEFLECTION	-0.244	-0.244	-0.243	-0.241	-0.236	-0.230	-0.223	-0.213	-0.202	-0.190	-0.176	-0.160	-0.144	-0.126	-0.106	-0.086	-0.065	-0.044	-0.022	0.000
VERTICAL CURVE ORDINATE ↑	0.165	0.164	0.162	0.159	0.156	0.151	0.146	0.139	0.132	0.124	0.116	0.106	0.096	0.085	0.073	0.060	0.046	0.032	0.016	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	4 15/16"	4 7/8"	4 7/8"	4 13/16"	4 11/16"	4 9/16"	4 7/16"	4 1/4"	4"	3 3/4"	3 1/2"	3 3/16"	2 7/8"	2 1/2"	2 1/8"	1 3/4"	1 5/16"	7/8"	7/16"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER FOURTIETH POINTS, SEE TABLES ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VALUES.

NOTES:

VALUES GIVEN ARE AT FORTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

DOWNWARD DEFLECTION IS INDICATED WITH A "-" SIGN.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 10 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027711 HARDY L. WILLIS

DocuSigned by: Hardy Willis
8/8/2022

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS SPAN C - GDR. 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-33
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748-44

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

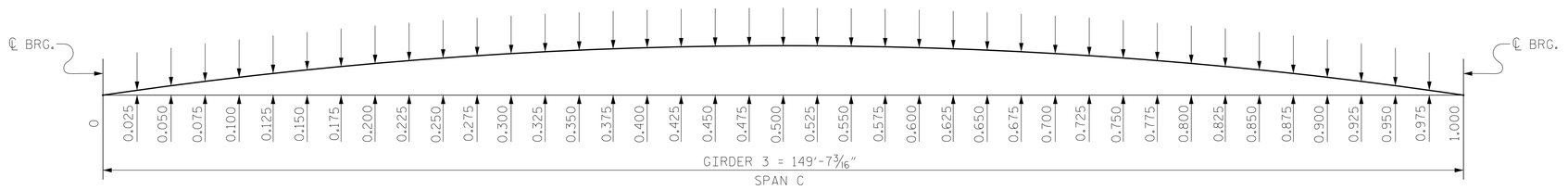
	SPAN C																				
	GIRDER 3																				
FOURTIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.003	-0.006	-0.009	-0.012	-0.016	-0.020	-0.023	-0.027	-0.031	-0.034	-0.038	-0.041	-0.044	-0.047	-0.049	-0.051	-0.053	-0.055	-0.056	-0.057
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	-0.009	-0.019	-0.030	-0.042	-0.054	-0.066	-0.079	-0.091	-0.104	-0.116	-0.128	-0.139	-0.149	-0.159	-0.168	-0.175	-0.182	-0.187	-0.192	-0.195
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	-0.001	-0.002	-0.003	-0.004	-0.005	-0.007	-0.008	-0.009	-0.011	-0.012	-0.013	-0.014	-0.015	-0.016	-0.017	-0.018	-0.018	-0.019	-0.019	-0.020
TOTAL DEAD LOAD DEFLECTION	0.000	-0.013	-0.027	-0.042	-0.058	-0.075	-0.092	-0.110	-0.128	-0.145	-0.162	-0.178	-0.194	-0.208	-0.222	-0.234	-0.244	-0.253	-0.261	-0.267	-0.271
VERTICAL CURVE ORDINATE ↑	0.000	0.016	0.032	0.046	0.060	0.073	0.085	0.096	0.106	0.116	0.124	0.132	0.139	0.146	0.151	0.156	0.159	0.162	0.164	0.166	0.166
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	3/8"	11/16"	1 1/16"	1 7/16"	1 3/4"	2 1/8"	2 1/2"	2 13/16"	3 1/8"	3 7/16"	3 3/4"	4"	4 1/4"	4 1/2"	4 11/16"	4 13/16"	5"	5 1/8"	5 3/16"	5 1/4"

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN C																				
	GIRDER 3 (CONT.)																				
FOURTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
DEFLECTION DUE TO WEIGHT OF GIRDER	-0.057	-0.057	-0.057	-0.056	-0.055	-0.054	-0.052	-0.050	-0.047	-0.044	-0.041	-0.037	-0.033	-0.029	-0.025	-0.020	-0.015	-0.010	-0.005	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	-0.197	-0.197	-0.196	-0.194	-0.190	-0.185	-0.179	-0.172	-0.163	-0.153	-0.141	-0.129	-0.115	-0.101	-0.086	-0.069	-0.053	-0.035	-0.018	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	-0.020	-0.020	-0.020	-0.019	-0.019	-0.019	-0.018	-0.017	-0.016	-0.015	-0.014	-0.013	-0.012	-0.010	-0.009	-0.007	-0.005	-0.004	-0.002	0.000
TOTAL DEAD LOAD DEFLECTION	-0.274	-0.274	-0.273	-0.270	-0.265	-0.258	-0.249	-0.239	-0.227	-0.212	-0.197	-0.179	-0.161	-0.140	-0.119	-0.096	-0.073	-0.049	-0.025	0.000
VERTICAL CURVE ORDINATE ↑	0.166	0.164	0.162	0.159	0.156	0.151	0.146	0.139	0.132	0.124	0.116	0.106	0.096	0.085	0.073	0.060	0.046	0.032	0.016	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	5 1/4"	5 1/4"	5 1/4"	5 1/8"	5 1/16"	4 15/16"	4 3/4"	4 9/16"	4 5/16"	4 1/16"	3 3/4"	3 7/16"	3 1/16"	2 11/16"	2 5/16"	1 7/8"	1 7/16"	1 5/16"	1/2"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER FOURTIETH POINTS, SEE TABLES ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VALUES.

NOTES:

VALUES GIVEN ARE AT FORTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

DOWNWARD DEFLECTION IS INDICATED WITH A ''-'' SIGN.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 11 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029870 HARDY L. WILLIS

DocuSigned by: Hardy Willis
6F5228A7CF0223461...

8/8/2022

Vaughn & Melton
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Asheville, North Carolina
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DWN. BY: WDC DATE: 03/2021
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DES. EGR. OF RECORD: RTS DATE: 03/2021

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS SPAN C - GDR. 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-34
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748-44

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

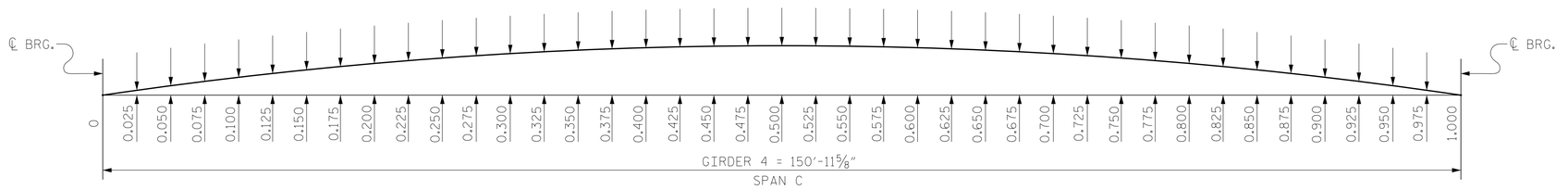
	SPAN C																				
	GIRDER 4																				
FOURTIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
DEFLECTION DUE TO WEIGHT OF GIRDER	0.000	-0.003	-0.006	-0.010	-0.014	-0.018	-0.022	-0.026	-0.030	-0.034	-0.038	-0.042	-0.045	-0.049	-0.052	-0.054	-0.057	-0.059	-0.061	-0.062	-0.063
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	-0.010	-0.022	-0.034	-0.047	-0.060	-0.074	-0.088	-0.102	-0.116	-0.129	-0.142	-0.154	-0.166	-0.176	-0.186	-0.194	-0.202	-0.208	-0.212	-0.216
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0.000	-0.001	-0.002	-0.003	-0.005	-0.006	-0.008	-0.009	-0.011	-0.012	-0.013	-0.015	-0.016	-0.017	-0.018	-0.019	-0.020	-0.021	-0.021	-0.022	-0.022
TOTAL DEAD LOAD DEFLECTION	0.000	-0.014	-0.030	-0.047	-0.065	-0.084	-0.103	-0.123	-0.142	-0.162	-0.180	-0.198	-0.215	-0.231	-0.246	-0.259	-0.271	-0.281	-0.289	-0.296	-0.301
VERTICAL CURVE ORDINATE ↑	0.000	0.016	0.032	0.046	0.060	0.073	0.085	0.096	0.106	0.116	0.124	0.132	0.139	0.146	0.151	0.156	0.159	0.162	0.164	0.166	0.166
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	0	3/8"	3/4"	1 1/8"	1 1/2"	1 7/8"	2 1/4"	2 5/8"	3"	3 5/16"	3 5/8"	3 15/16"	4 1/4"	4 1/2"	4 3/4"	5"	5 3/16"	5 5/16"	5 7/16"	5 9/16"	5 5/8"

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN C																				
	GIRDER 4 (CONT.)																				
FOURTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
DEFLECTION DUE TO WEIGHT OF GIRDER	-0.063	-0.064	-0.063	-0.062	-0.061	-0.060	-0.058	-0.055	-0.052	-0.049	-0.045	-0.041	-0.037	-0.032	-0.027	-0.022	-0.017	-0.011	-0.006	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	-0.217	-0.218	-0.217	-0.214	-0.210	-0.205	-0.198	-0.190	-0.180	-0.169	-0.156	-0.142	-0.127	-0.111	-0.094	-0.076	-0.058	-0.039	-0.020	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	-0.022	-0.022	-0.022	-0.022	-0.021	-0.021	-0.020	-0.019	-0.018	-0.017	-0.016	-0.015	-0.013	-0.011	-0.010	-0.008	-0.006	-0.004	-0.002	0.000
TOTAL DEAD LOAD DEFLECTION	-0.303	-0.304	-0.302	-0.299	-0.293	-0.285	-0.276	-0.264	-0.250	-0.235	-0.217	-0.198	-0.177	-0.155	-0.131	-0.106	-0.081	-0.054	-0.027	0.000
VERTICAL CURVE ORDINATE ↑	0.166	0.164	0.162	0.159	0.156	0.151	0.146	0.139	0.132	0.124	0.116	0.106	0.096	0.085	0.073	0.060	0.046	0.032	0.016	0.000
ORDINATE DUE TO SUPERELEVATION	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CAMBER DUE TO DISSIPATION RESULTING FROM HEAT CURVING **	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
REQUIRED CAMBER	5 5/8"	5 5/8"	5 9/16"	5 1/2"	5 3/8"	5 1/4"	5 1/16"	4 13/16"	4 9/16"	4 5/16"	4"	3 5/8"	3 1/4"	2 7/8"	2 7/16"	2"	1 1/2"	1"	1/2"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
** HEAT CURVING IS ALLOWED. CAMBER DISSIPATION DUE TO HEAT CURVING IS ZERO FOR ALL GIRDERS.
↑ VERTICAL CURVE ORDINATE VALUES ARE POSITIVE.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER FOURTIETH POINTS, SEE TABLES ABOVE.
SLOPE FOR ZERO CAMBER BASE LINE VALUES.

NOTES:

VALUES GIVEN ARE AT FORTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

DEFLECTIONS AND ORDINATES ARE IN FEET (DECIMAL FORM).

REQUIRED CAMBER VALUES ARE IN INCHES (FRACTION FORM).

DOWNWARD DEFLECTION IS INDICATED WITH A ''-'' SIGN.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 12 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047287 HARDY L. WILLIS

DocuSigned by: Hardy Willis
F2287CF0223461...

8/8/2022

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Atlanta, GA 770-627-3509
Raleigh, NC 919-977-9455
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS SPAN C - GDR. 4

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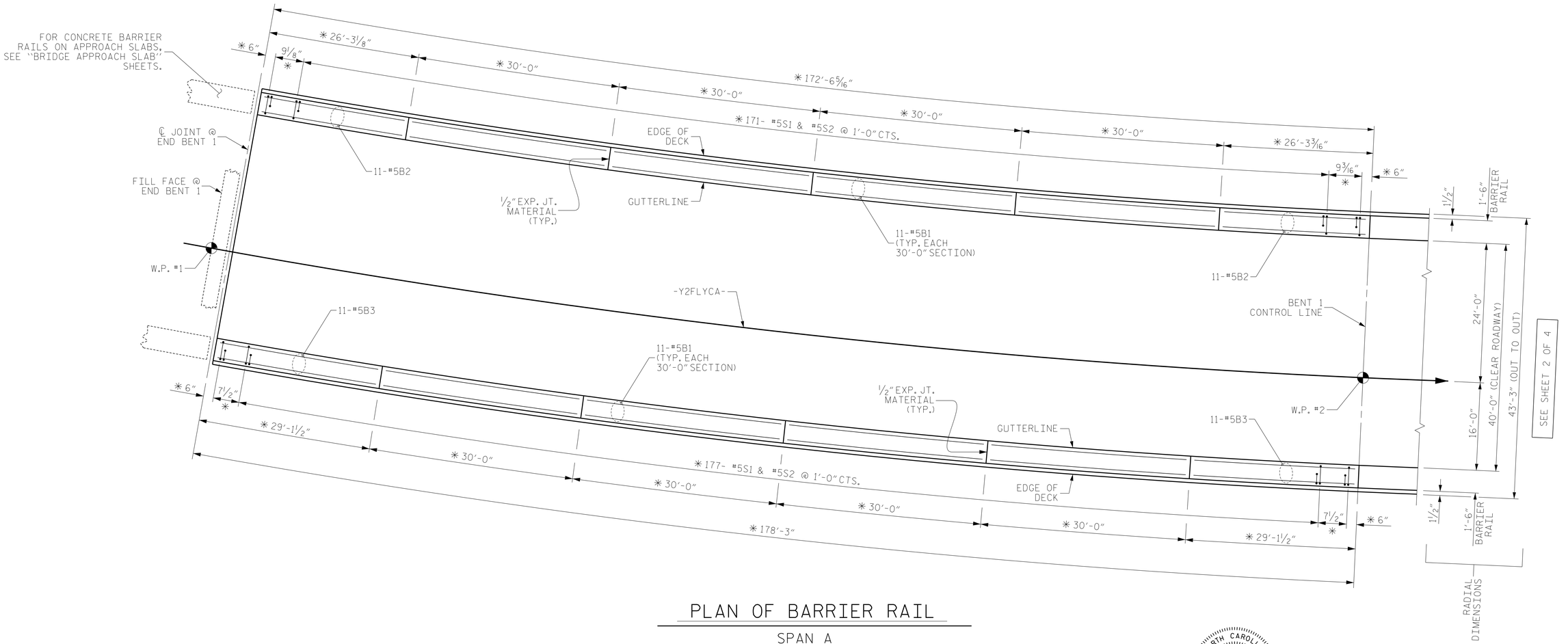
DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-35
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748.44



PLAN OF BARRIER RAIL

SPAN A

✳ - MEASURED ALONG OUTSIDE EDGE OF BARRIER RAIL.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022161 HARLEY L. WILLIS
Digitally Signed by: Harley Willis
8/8/2022

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Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3509

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

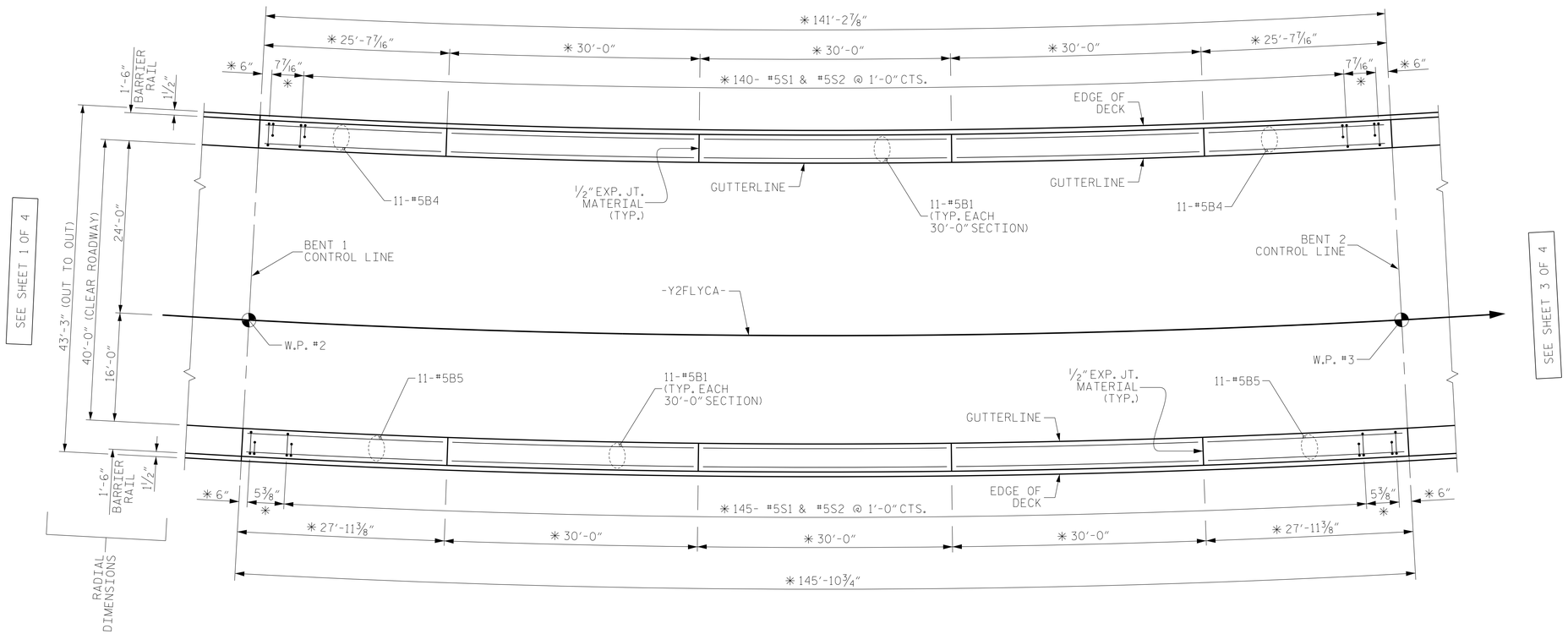
SUPERSTRUCTURE

CONCRETE BARRIER RAIL
SPAN A

DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-36
1			3			TOTAL SHEETS
2			4			59

$FILES$ $DATE$ V & M PROJECT NO.: 31748.44



PLAN OF BARRIER RAIL

SPAN B

✳ - MEASURED ALONG OUTSIDE EDGE OF BARRIER RAIL.

DocuSigned by:
Harold Wilson
8/8/2022

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Boone, NC 828-355-9933
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Atlanta, GA 770-627-3509

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

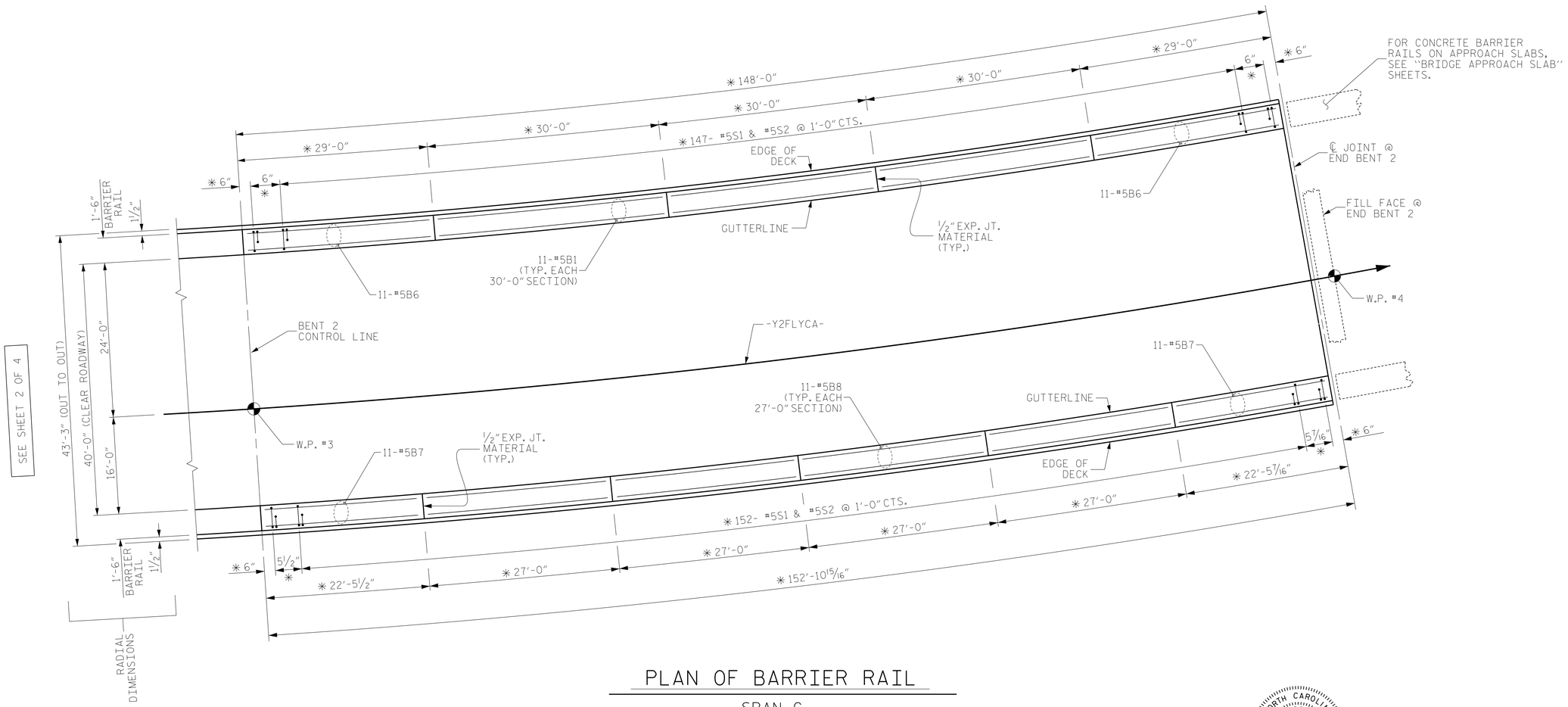
SUPERSTRUCTURE

CONCRETE BARRIER RAIL
SPAN B

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-37
1			3			TOTAL SHEETS
2			4			59

V & M PROJECT NO.: 31748.44 $DATE$ $FILES$



PLAN OF BARRIER RAIL

SPAN C

∗ - MEASURED ALONG OUTSIDE EDGE OF BARRIER RAIL.

NORTH CAROLINA PROFESSIONAL SEAL L-4801 ENGINEER HARDY L. WILLIS

DocuSigned by: Hardy Willis

8/8/2022

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DES. EGR. OF RECORD: RTS	DATE: 03/2021	

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE BARRIER RAIL
SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-38
1			3			TOTAL SHEETS
2			4			59

V & M PROJECT NO: 31748.44 $DATE$ $FILES$

NOTES

THE BARRIER RAIL IN A CONTINUOS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

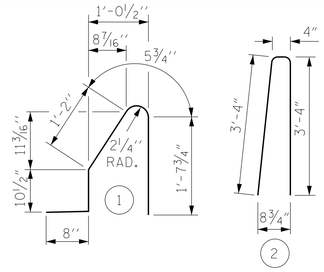
FOR CONCRETE BARRIER RAILS ON APPROACH SLABS, SEE "BRIDGE APPROACH SLAB" SHEETS.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

THE #5S1 & #5S2 BARS MAY BE SHIFTED SLIGHTLY TO CLEAR THE 1/2" EXPANSION JOINTS OPENINGS IN THE RAIL.

BAR TYPES



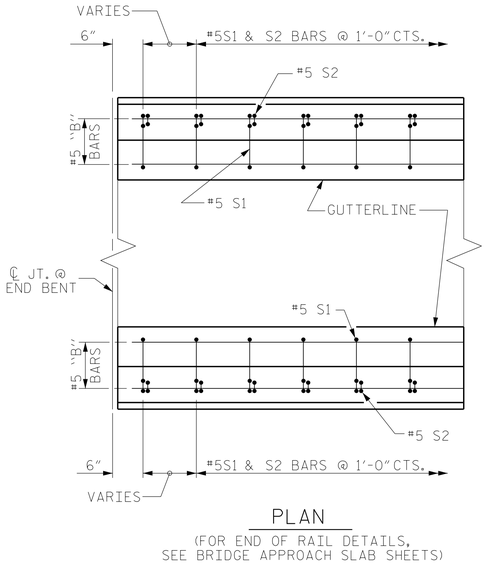
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ON BRIDGE DECK ONLY

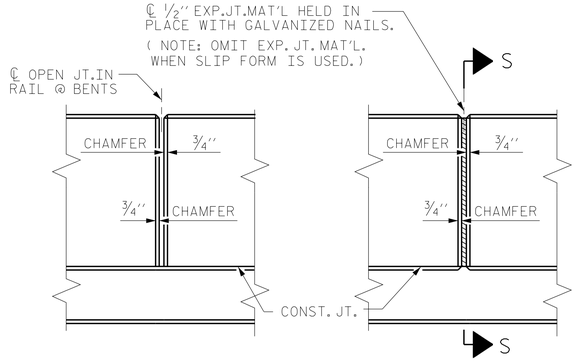
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	187	#5	STR	29'-7"	5770
* B2	22	#5	STR	25'-10"	593
* B3	22	#5	STR	28'-7"	656
* B4	22	#5	STR	25'-3"	579
* B5	22	#5	STR	27'-6"	631
* B6	22	#5	STR	28'-7"	656
* B7	22	#5	STR	22'-0"	505
* B8	44	#5	STR	26'-7"	1220
* S1	944	#5	1	4'-10"	4759
* S2	944	#5	2	7'-0"	6892

* EPOXY COATED REINFORCING STEEL	22,261 LBS.
CLASS AA CONCRETE	127.8 CU. YDS.
CONCRETE BARRIER RAIL	938.82 LIN. FT.

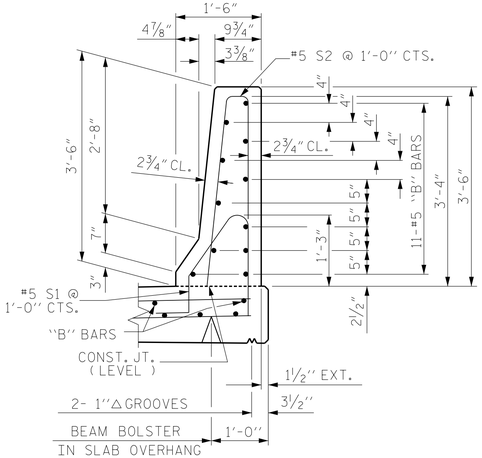


PLAN

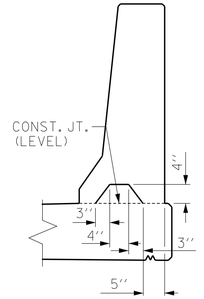
(FOR END OF RAIL DETAILS, SEE BRIDGE APPROACH SLAB SHEETS)



ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL



SECTION S-S

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

BARRIER RAIL DETAILS

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
CONCRETE
BARRIER RAIL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 023481 HAROLD L. WILLIS

DocuSigned by: Harold Willis

8/8/2022

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Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3509
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488

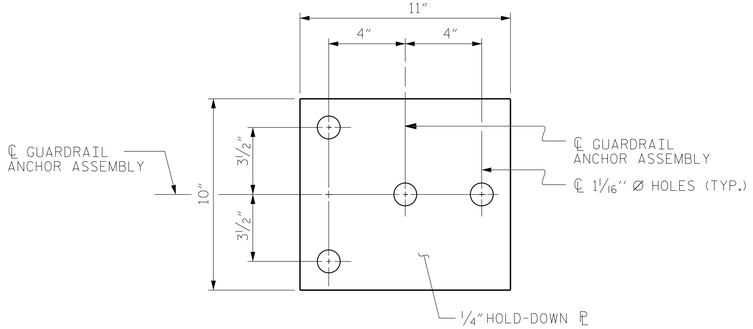
DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-39
1			3			TOTAL SHEETS
2			4			59

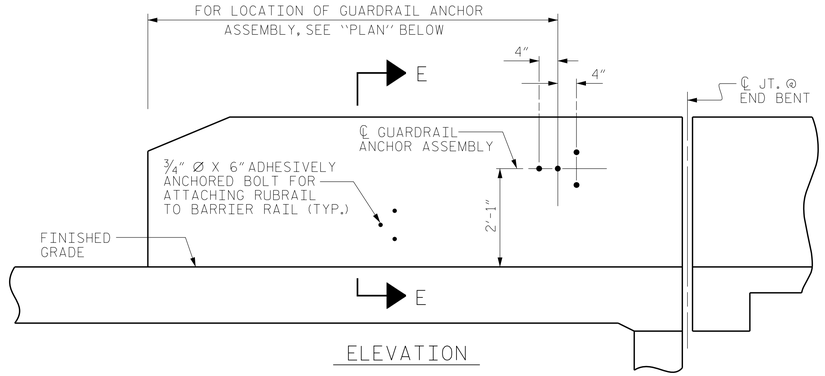
DRAWN BY : ARB 5/87	REV. 7/12	MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13	MAA/GM
	REV. 12/17	MAA/THC

STD. NO. CBR1

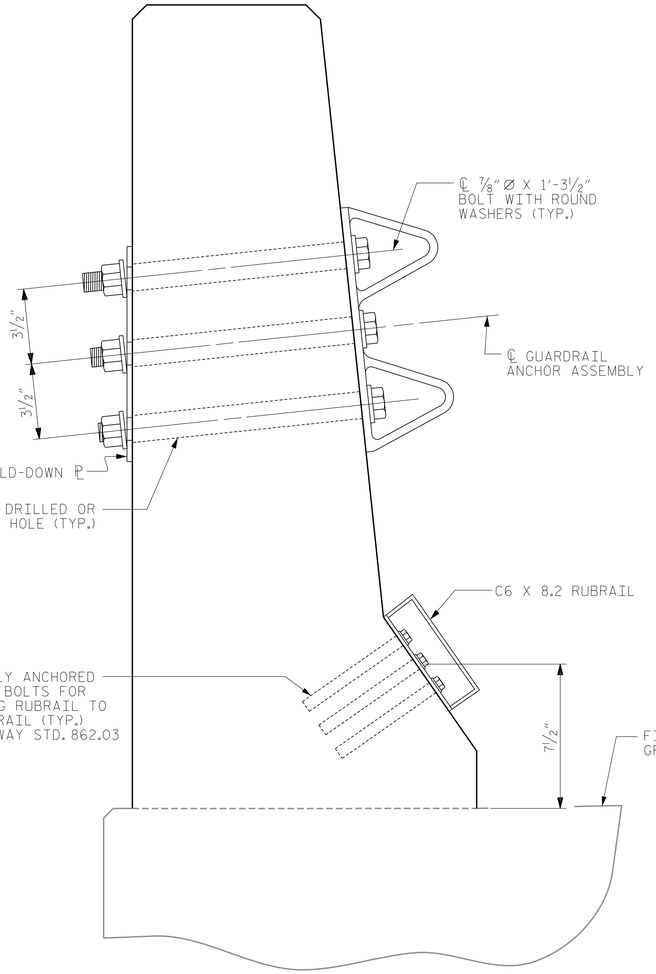
$FILES$ $DATE$ V & M PROJECT NO.: 31748.44



PLAN

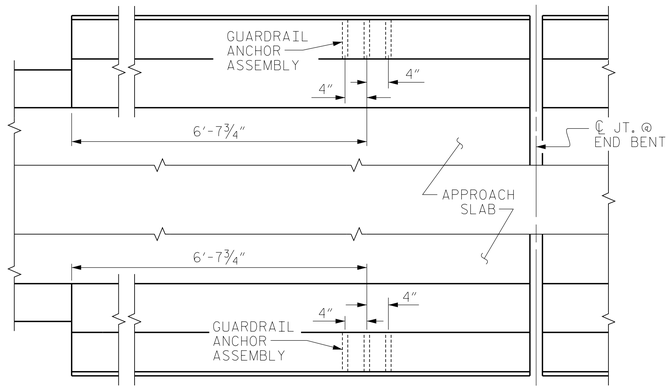


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

NOTES

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

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

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

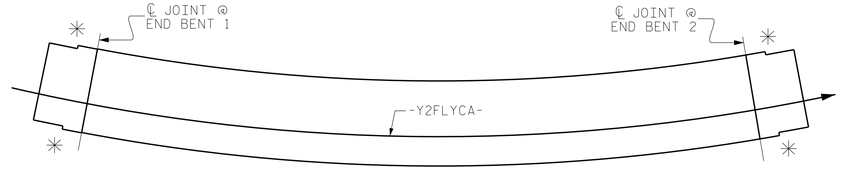
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL L-4...
DocuSigned by: HardyWillis
8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828-253-2796
Boone, NC 828-355-9933
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Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
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Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3509

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

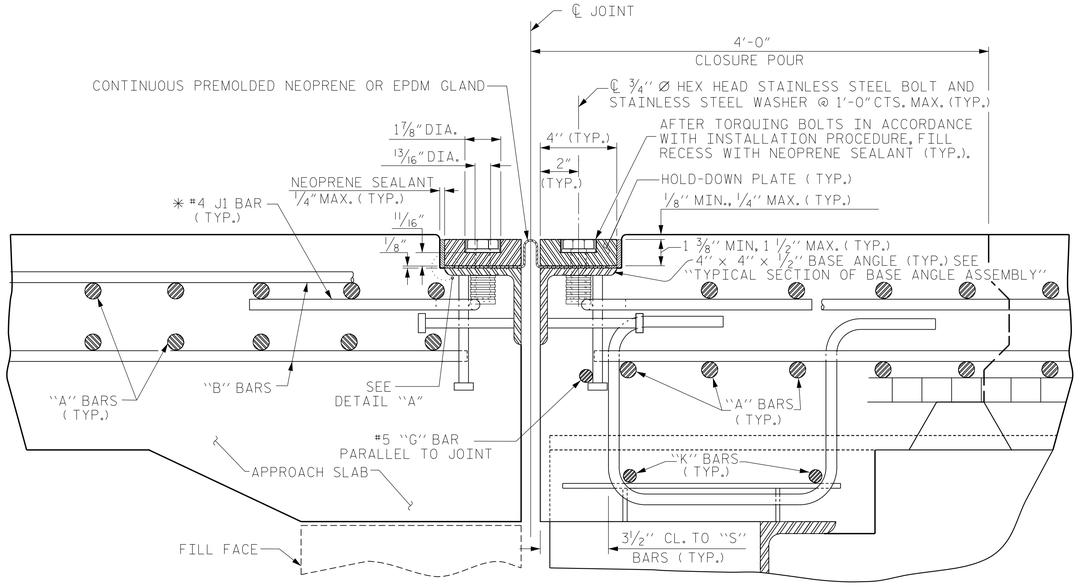
STANDARD
GUARDRAIL ANCHORAGE FOR BARRIER RAIL

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-40
1			3			TOTAL SHEETS
2			4			59

STD. NO. GRA2

V & M PROJECT NO.: 31748-44 $DATE$ $FILES$



EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- STEEL SUPERSTRUCTURE

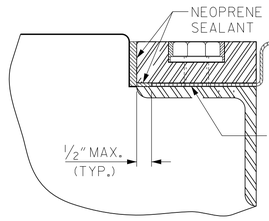
* THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.

INSTALLATION PROCEDURE

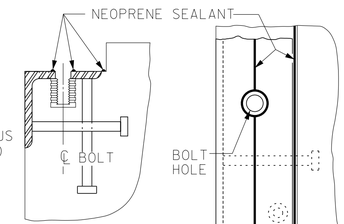
1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4 1/8" TO 4 1/4" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE ¾" Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 1" Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 4"X 4"X ½" BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED ⅛" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES, THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, AND THE LIFTING HOLES IN THE HOLD-DOWN PLATE, AND COMPLETELY FILL THE RECESSES AND LIFTING HOLES WITH NEOPRENE SEALANT.

GENERAL NOTES

1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MINIMUM.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD-DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE " TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
7. THE COVER PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
8. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
9. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
10. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
11. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE ¾" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
12. THE FABRICATOR SHALL PROVIDE ½" Ø THREADED HOLES IN THE HOLD-DOWN PLATES TO ASSIST IN LIFTING AND PLACING. THE HOLES SHALL BE ¾" DEEP AT 6'-0" MAXIMUM SPACING AND A MINIMUM OF TWO HOLES PER PLATE.

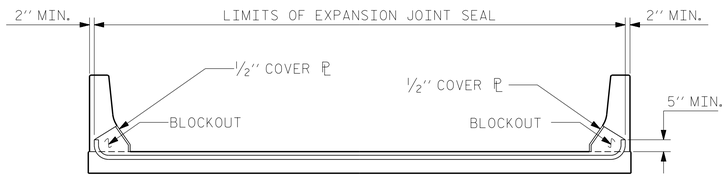


DETAIL "A"



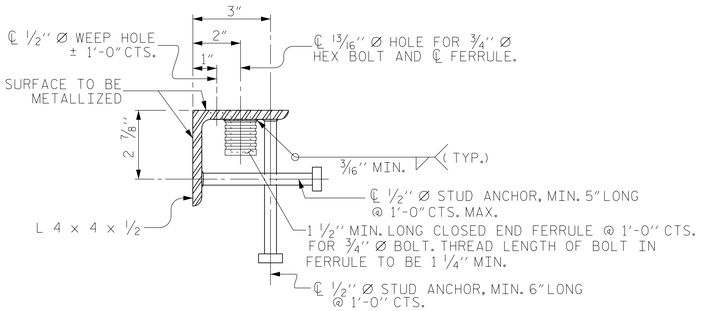
CROSS SECTION PLAN VIEW

INSTALLATION SKETCH

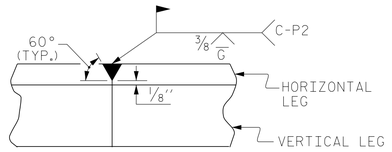


SKETCH SHOWING LIMITS OF EXPANSION JOINT SEAL

MOVEMENT AND SETTING AT JOINT					
END BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG ℄ RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
1	90°	1 5/8"	2 1/4"	2"	1 1/2"
2	90°	2"	2 5/16"	2"	1 1/16"



TYPICAL SECTION OF BASE ANGLE ASSEMBLY



DETAIL- FIELD WELD SPLICE OF BASE ANGLE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036707 H. L. WILLIS
Docusigned by: H. Lawton Willis
C287F0F0234461...
8/8/2022

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Vaughn & Melton
Consulting Engineers
Asheville, North Carolina
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Knoxville, TN 865-546-5800
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PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

EXPANSION JOINT SEAL DETAILS

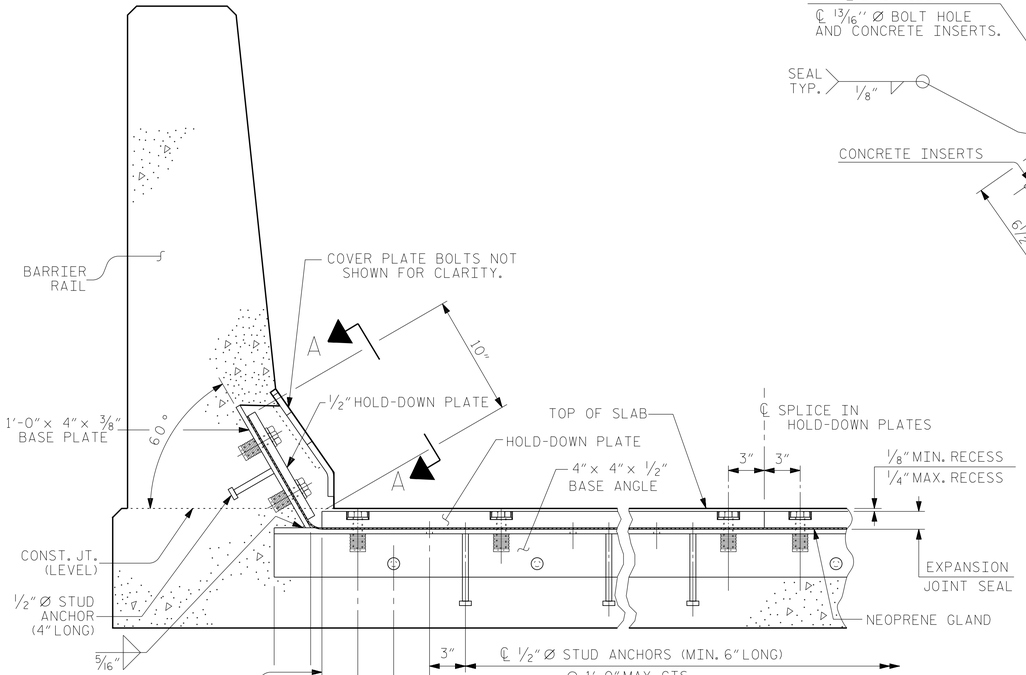
DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-41
1			3			TOTAL SHEETS
2			4			59

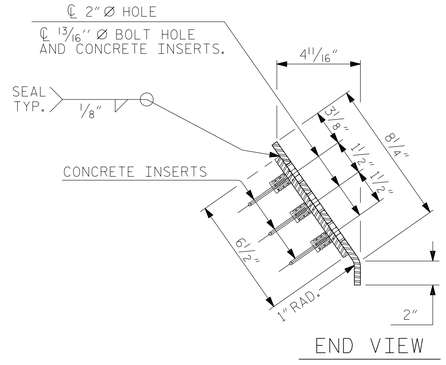
STD. NO. EJS1

DRAWN BY : REK 9/87	REV. 10/1/11 MAA/GM
CHECKED BY : CRK 10/87	REV. 10/17 MAA/THC
	REV. 6/18 MAA/THC

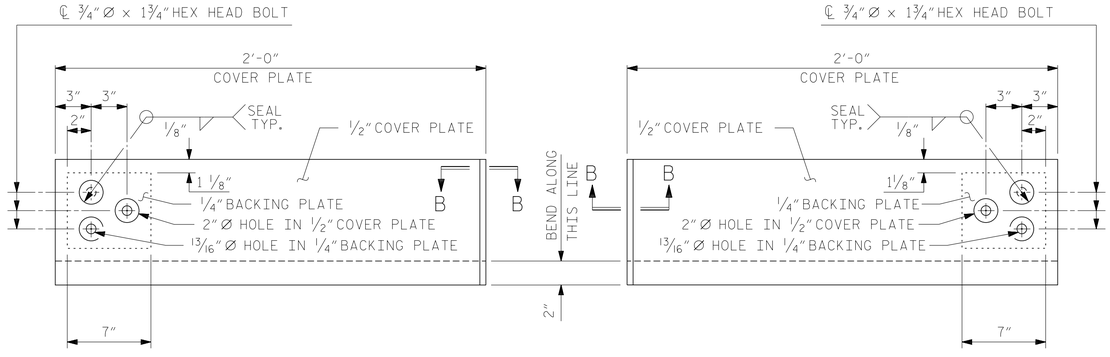
V & M PROJECT NO.: 31748-44 $DATE$ $FILES$



SECTION THRU RAIL NORMAL TO JOINT



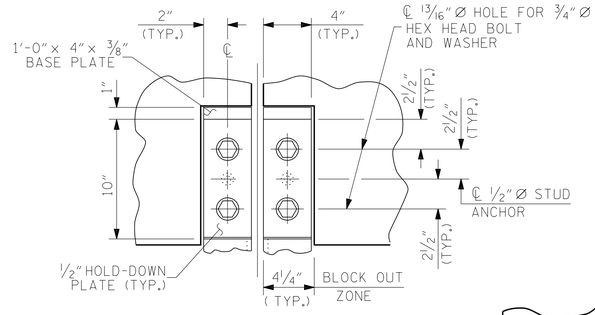
END VIEW



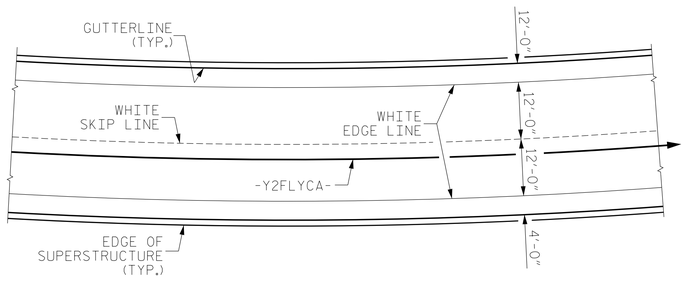
TYPE I - ELEVATION VIEW

TYPE II - ELEVATION VIEW

COVER PLATE DETAILS



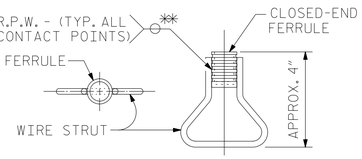
SECTION A-A



PAVEMENT MARKING ALIGNMENT

BLOCK OUT DETAIL

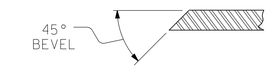
SEE "SECTION A-A" FOR OTHER DETAILS.



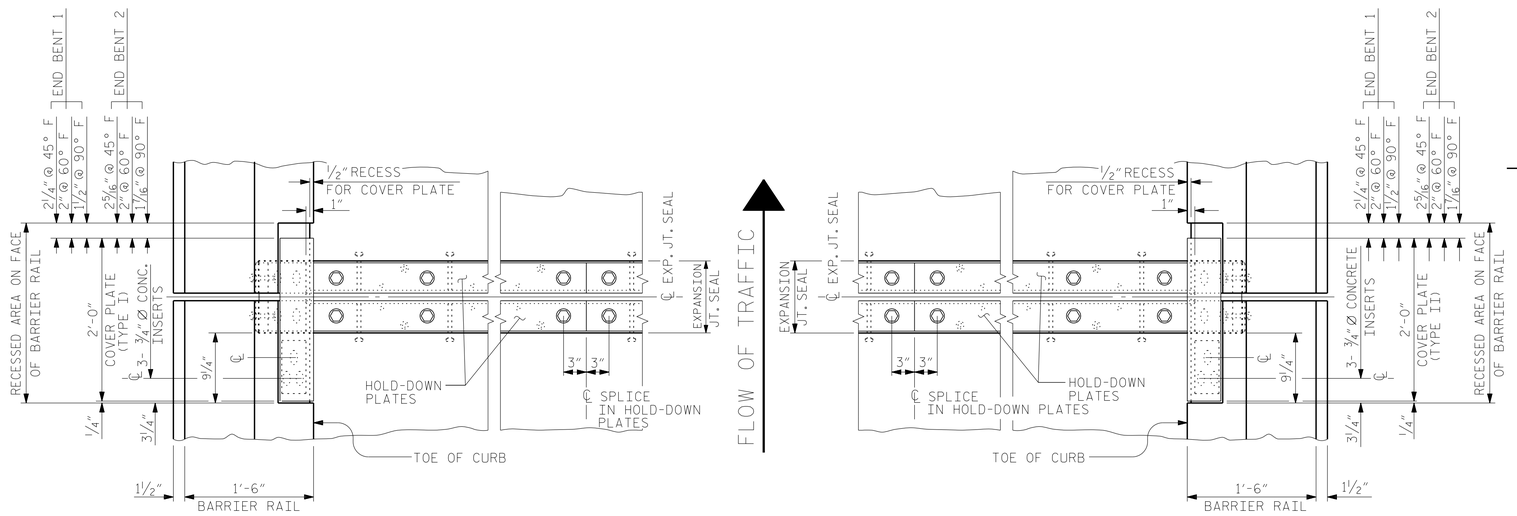
PLAN ELEVATION

CONCRETE INSERT

** EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



SECTION B-B



PLAN OF EXPANSION JOINT SEAL

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL

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Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3509

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047261 HAROLD L. WILLIS
Designed by: HLW
DocuSigned by: 8/8/2022

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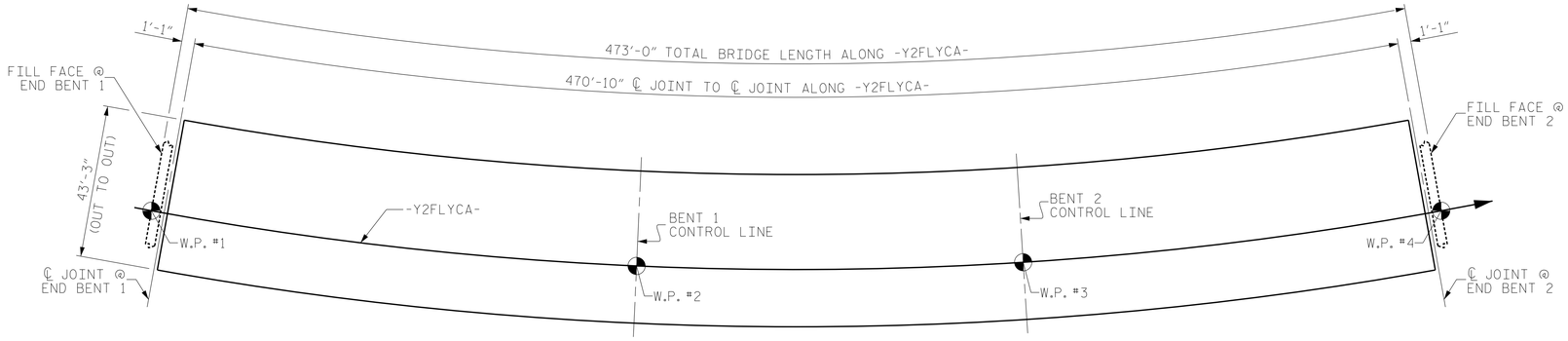
DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-42
1			3			TOTAL SHEETS
2			4			59

STD. NO. EJS2

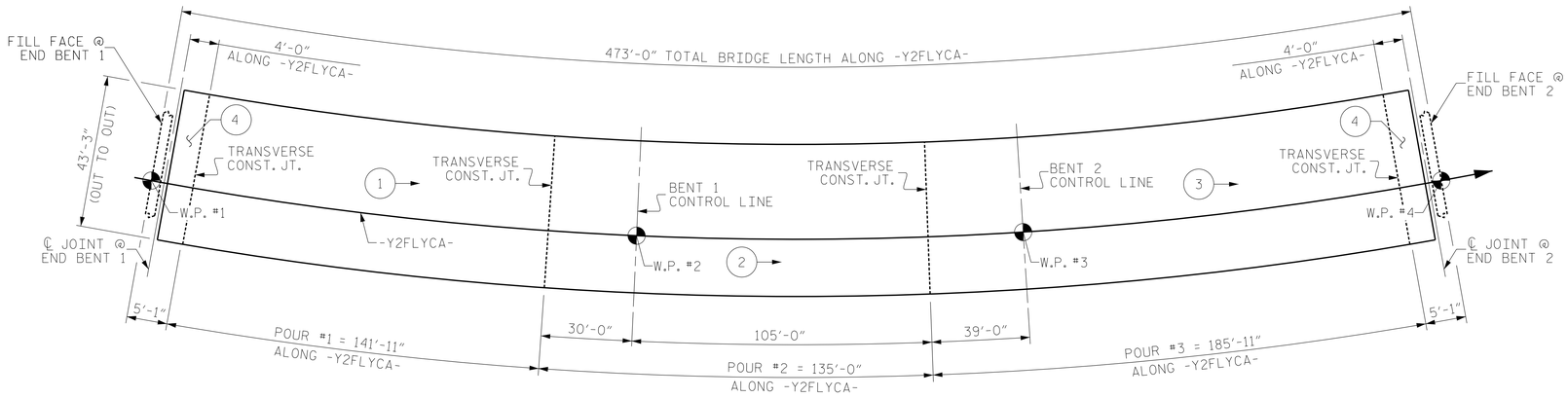
DRAWN BY : REK	9/87	REV. 7/12 MAA/GM
CHECKED BY : CRK	10/87	REV. 6/13 MAA/GM
		REV. 12/17 MAA/THC

V & M PROJECT NO.: 31748-44 $DATE$ $FILES$

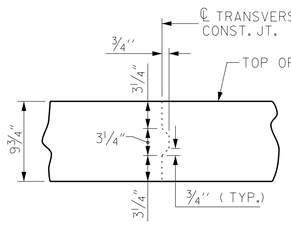


LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB

TOTAL = 20,295 SQ.FT.



POURING SEQUENCE



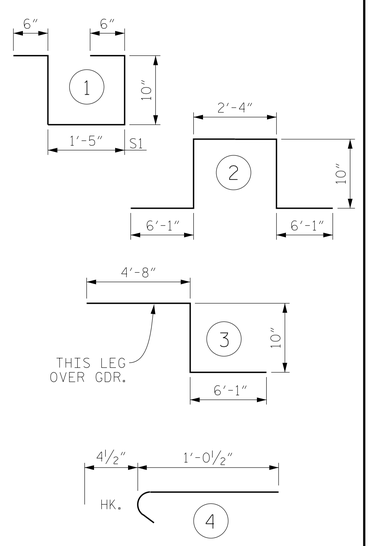
TRANSVERSE CONSTRUCTION JOINT DETAIL

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

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	1143	#5	STR	42'-11"	51,163
A2	1143	#5	STR	42'-11"	51,163
✳ B1	26	#4	STR	38'-6"	669
B2	576	#5	STR	54'-10"	32,942
✳ B3	116	#4	STR	31'-10"	2,467
✳ B4	58	#6	STR	56'-2"	4,893
✳ B5	56	#6	STR	53'-2"	4,472
✳ B6	58	#4	STR	25'-11"	1,004
✳ B7	58	#6	STR	52'-4"	4,559
✳ B8	56	#6	STR	49'-1"	4,128
✳ B9	87	#4	STR	35'-8"	2,073
✳ G1	2	#5	STR	42'-11"	90
✳ J1	80	#4	4	1'-5"	76
✳ K1	12	#5	3	11'-7"	145
✳ K2	12	#5	2	16'-2"	202
✳ S1	60	#4	1	4'-1"	164
REINFORCING STEEL					84,105 LBS.
✳ EPOXY COATED REINF. STEEL					76,105 LBS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR 1	220.4	——	——
POUR 2	209.8	——	——
POUR 3	288.7	——	——
POUR 4	14.7		
TOTALS**	733.6	84,105	76,105

** QUANTITIES FOR BARRIER RAILS ARE NOT INCLUDED.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,771	SQ.FT.
BRIDGE DECK	17,325	SQ.FT.
TOTAL	19,096	SQ.FT.

DocuSigned by: Hal Willis
8/8/2022

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Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3509

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

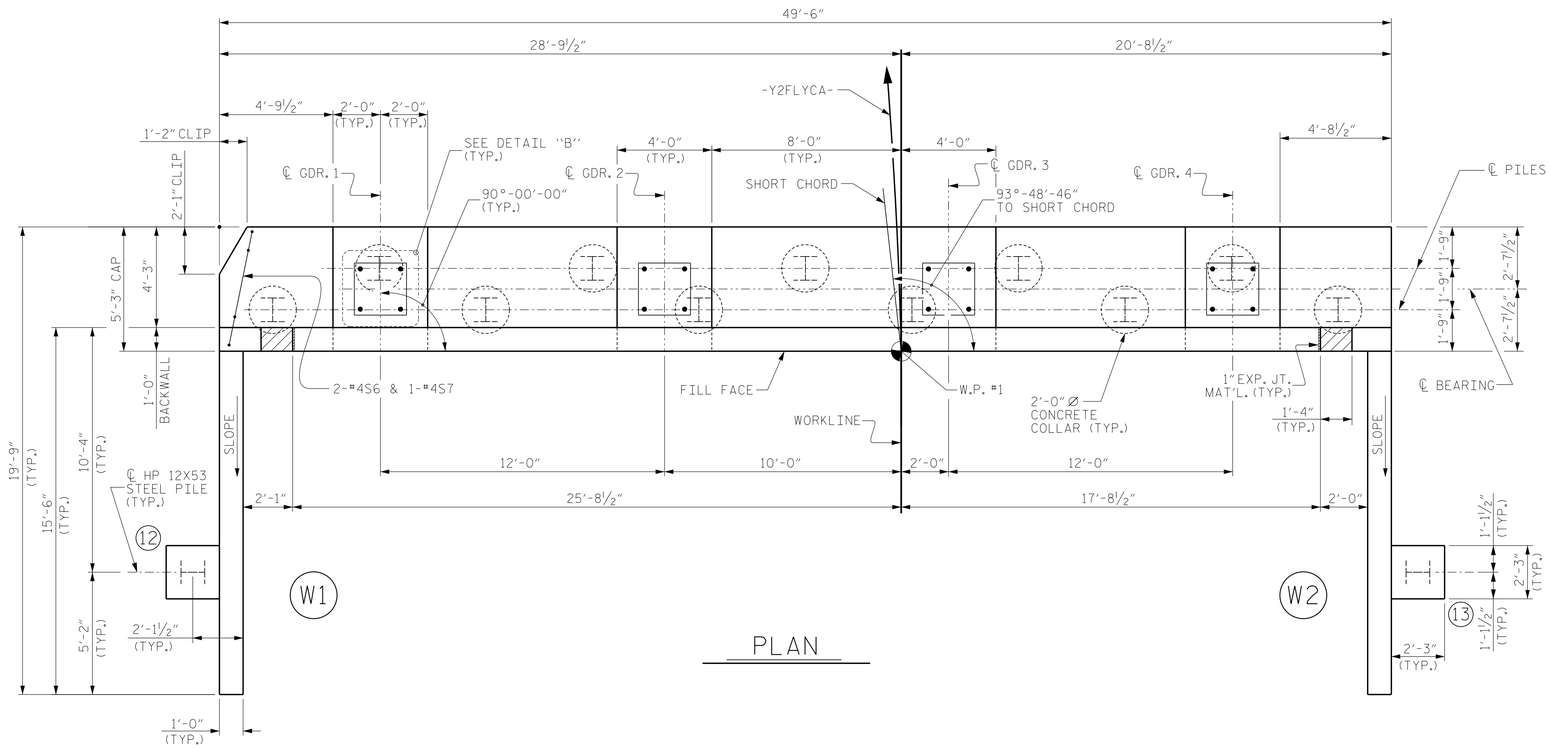
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BILL OF MATERIAL

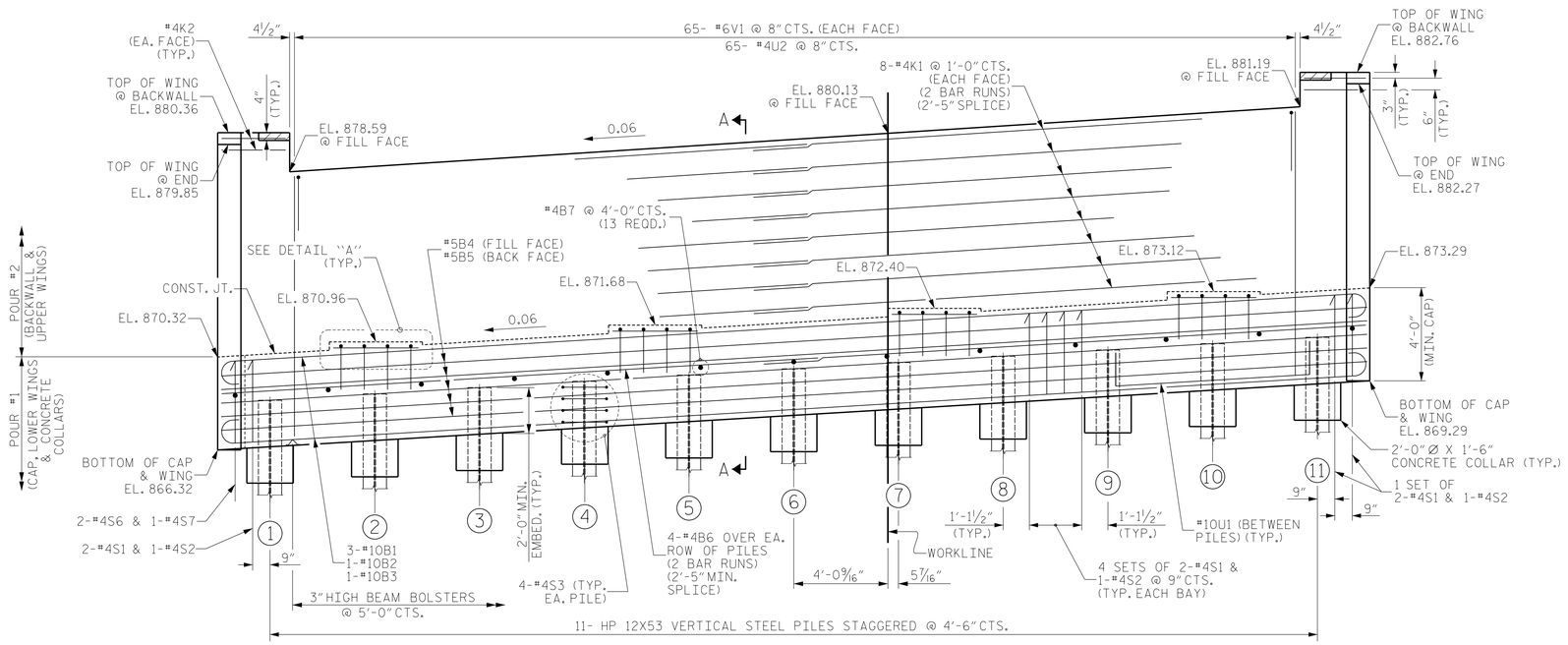
DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-43
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748.44



PLAN



ELEVATION

(WING BRACE PILES NOT SHOWN FOR CLARITY)
(SEE SHEET 3 OF 3 FOR SECTION A-A)

NOTES

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

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

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

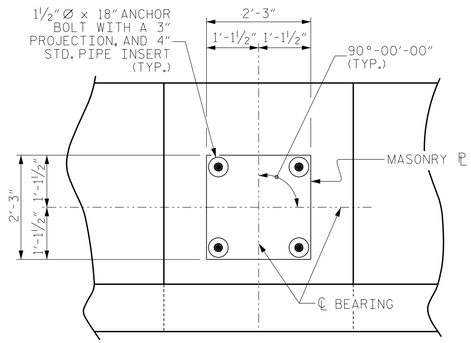
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

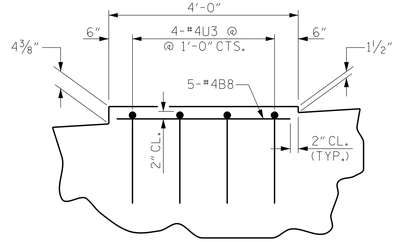
FOR PIPE INSERT DETAILS, SEE DISC BEARING SHEET.

FOR WING DETAILS, SEE SHEET 2 OF 3.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.



DETAIL "B"



DETAIL "A"

(TYP. UNDER EA. GIRDER)

TOP OF PILE ELEVATIONS *			
①	868.49	⑧	870.38
②	868.76	⑨	870.65
③	869.03	⑩	870.92
④	869.30	⑪	871.19
⑤	869.57		
⑥	869.84		
⑦	870.11		

* 2'-0" MIN. EMBEDMENT IS MEASURED FROM RIGHT SIDE OF PILE

DocuSigned by: Harold Wilis
ENGINEER SEAL 040223 NORTH CAROLINA
8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 1 OF 3

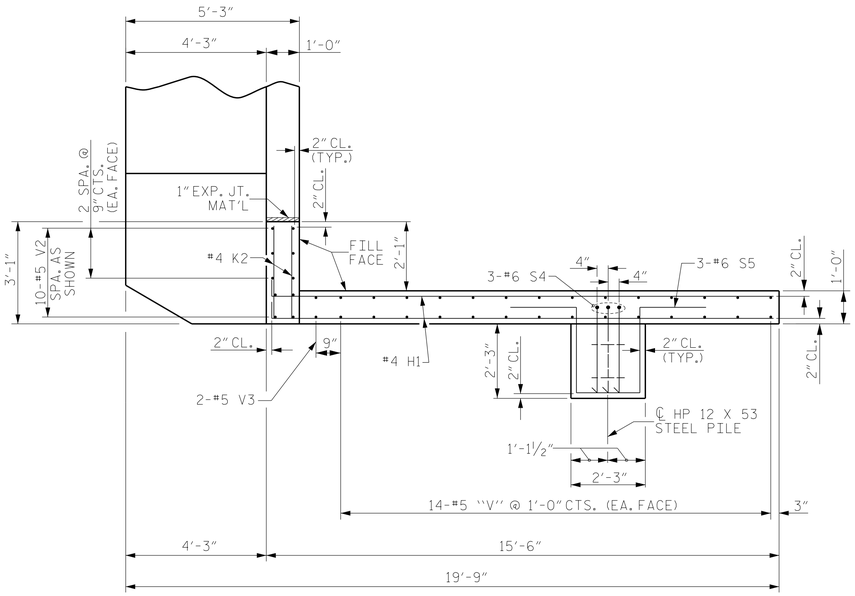
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

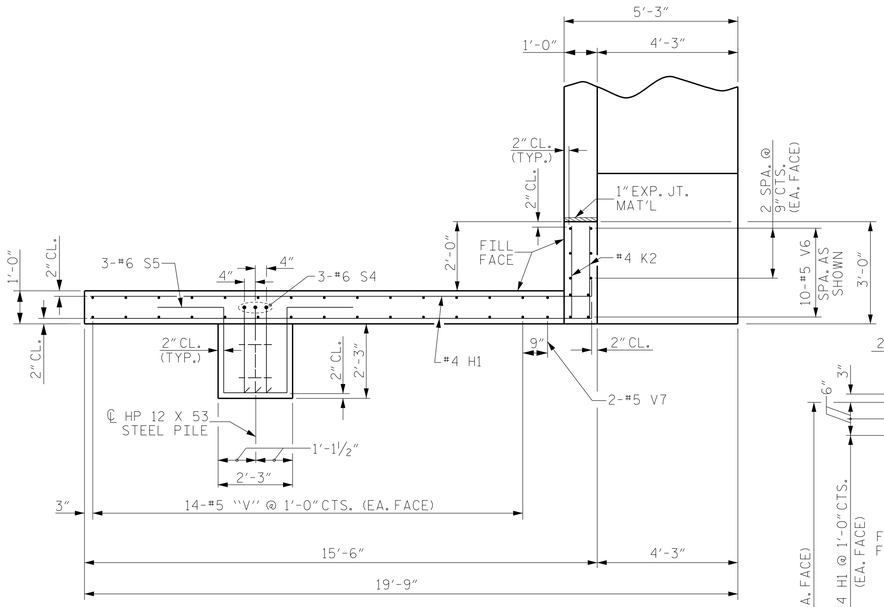
END BENT NO. 1

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

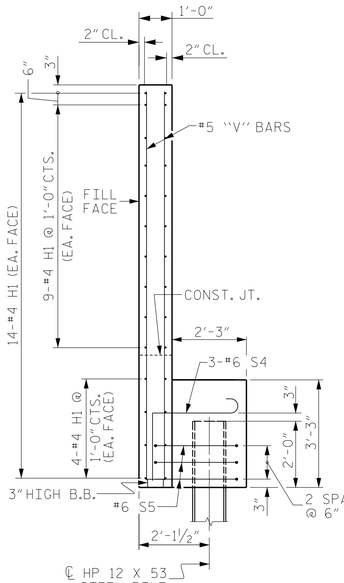
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-44
1			3			TOTAL SHEETS
2			4			59



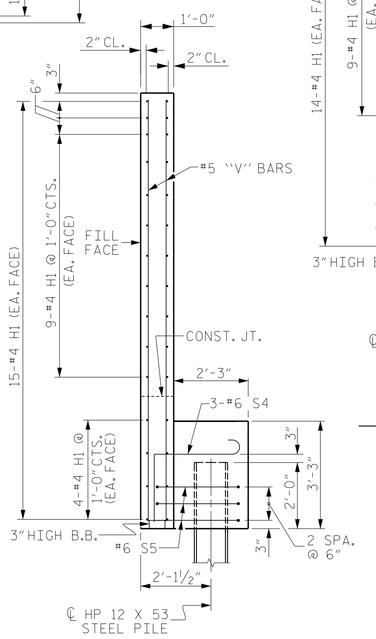
PLAN OF WING (W1)



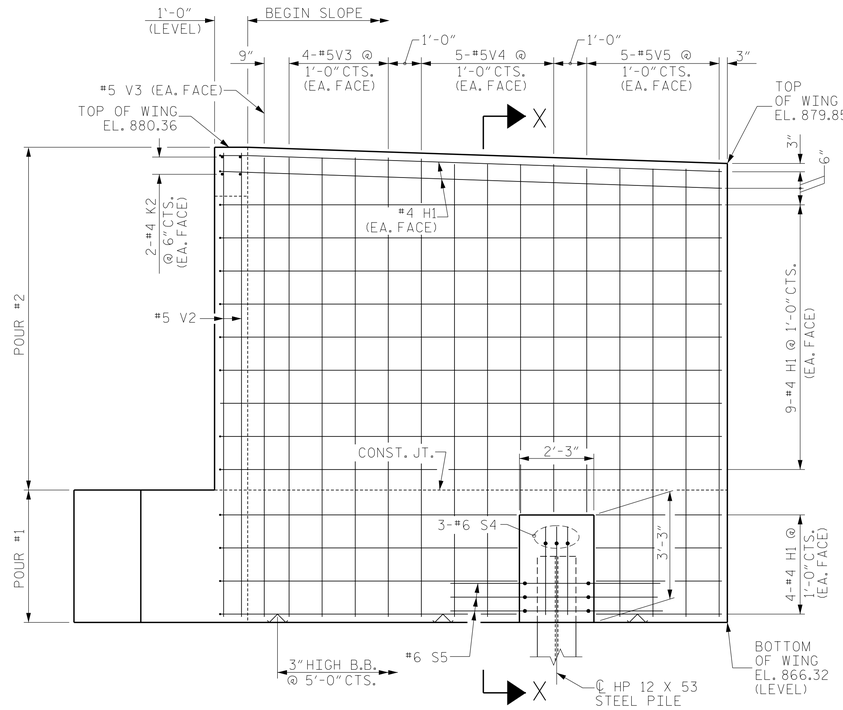
PLAN OF WING (W2)



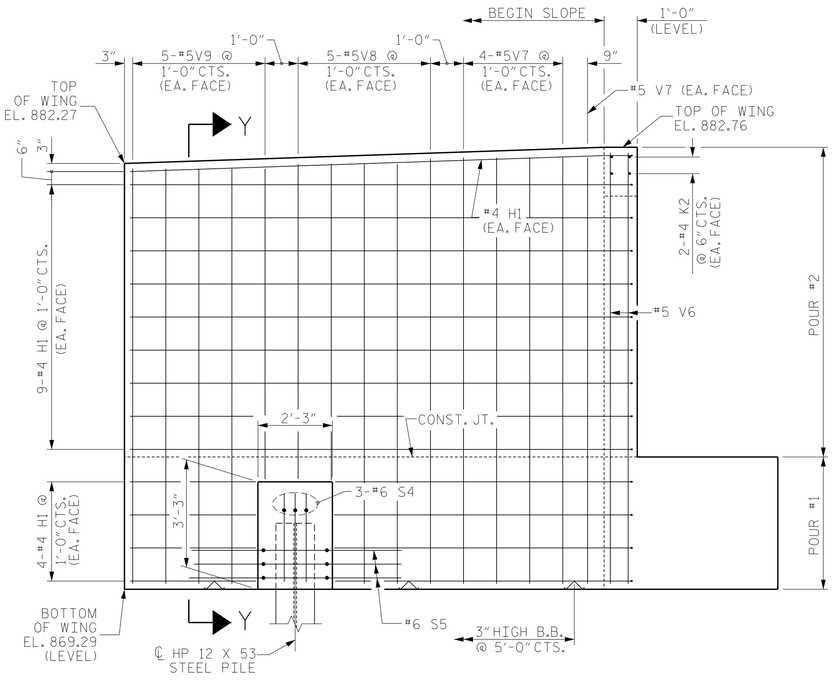
SECTION Y-Y



SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
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SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT NO. 1

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047281 HARLEY L. WILLIS
DocuSigned by: HarleyWillis
8/8/2022

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-45
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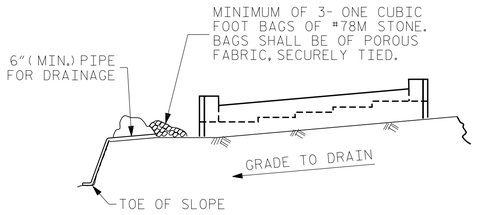
V & M PROJECT NO.: 31748.44

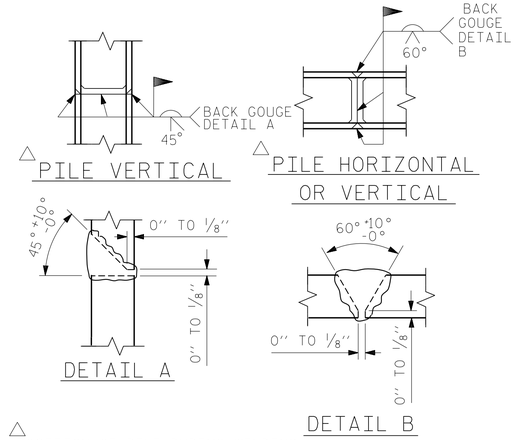


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

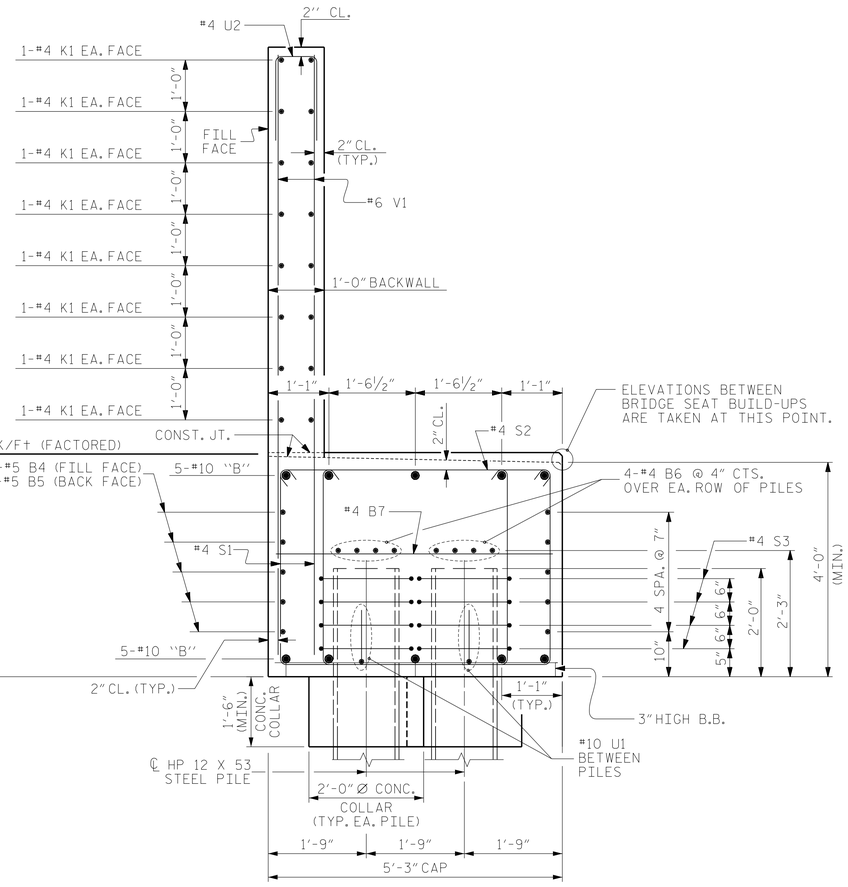
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

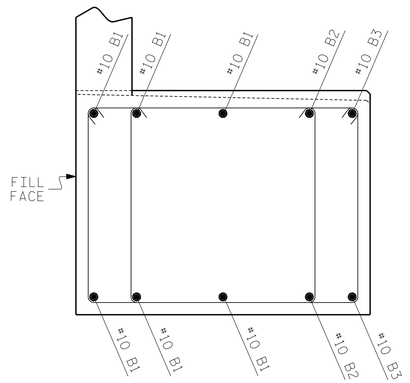


△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

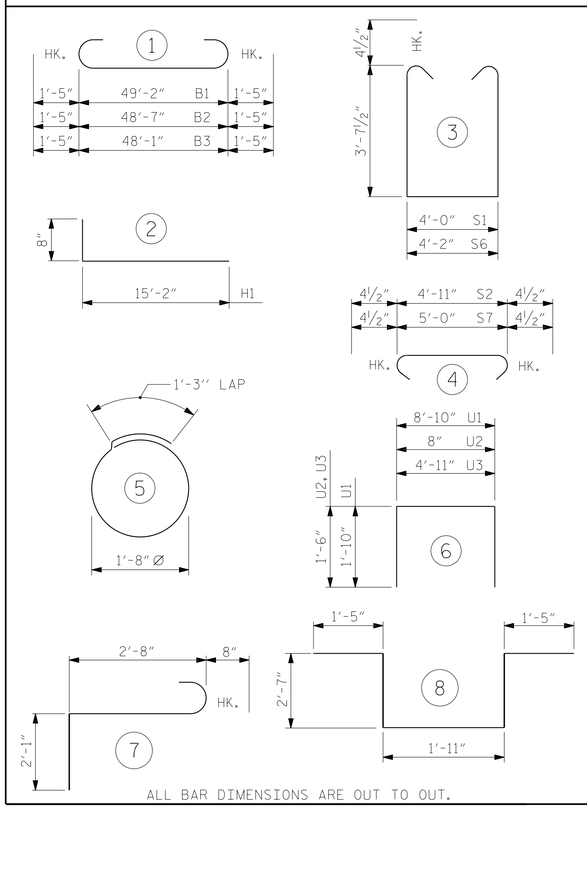


SECTION A-A



B-BAR LAYOUT

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	52'-0"	1343
B2	2	#10	1	51'-5"	442
B3	2	#10	1	50'-11"	438
B4	5	#5	STR	49'-2"	256
B5	5	#5	STR	48'-1"	251
B6	16	#4	STR	25'-10"	276
B7	13	#4	STR	4'-11"	43
B8	20	#4	STR	3'-8"	49
H1	58	#4	2	15'-10"	613
K1	32	#4	STR	25'-10"	552
K2	8	#4	STR	2'-8"	14
S1	86	#4	3	12'-0"	689
S2	43	#4	4	5'-8"	163
S3	44	#4	5	6'-6"	191
S4	6	#6	7	5'-5"	49
S5	6	#6	8	9'-11"	89
S6	2	#4	3	12'-2"	16
S7	1	#4	4	5'-9"	4
U1	9	#10	6	12'-6"	484
U2	65	#4	6	3'-8"	159
U3	16	#4	6	7'-11"	85
V1	130	#6	STR	11'-5"	2229
V2	10	#5	STR	13'-7"	142
V3	10	#5	STR	13'-5"	140
V4	10	#5	STR	13'-3"	138
V5	10	#5	STR	13'-1"	136
V6	10	#5	STR	13'-0"	136
V7	10	#5	STR	12'-10"	134
V8	10	#5	STR	12'-8"	132
V9	10	#5	STR	12'-6"	130

REINFORCING STEEL 9,523 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1	CAP, LOWER PART OF WINGS, CONCRETE COLLARS, & WING BRACE PILE BLOCKS	46.9 C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS	25.3 C.Y.
TOTAL CLASS A CONCRETE		72.2 C.Y.

HP 12 X 53 STEEL PILES
NO: 13 LIN. FT.= 871

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 13

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL L-4287 HARDY L. WILLIS JR.

DocuSigned by: Hardy Willis 2B7F0CE2A2461...

8/6/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

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SHEET 3 OF 3

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT NO. 1

DWN. BY: WDC	DATE: 03/2021
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DES. EGR. OF RECORD: RTS	DATE: 03/2021

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1			3		
2			4		

SHEET NO. S2-46

TOTAL SHEETS 59

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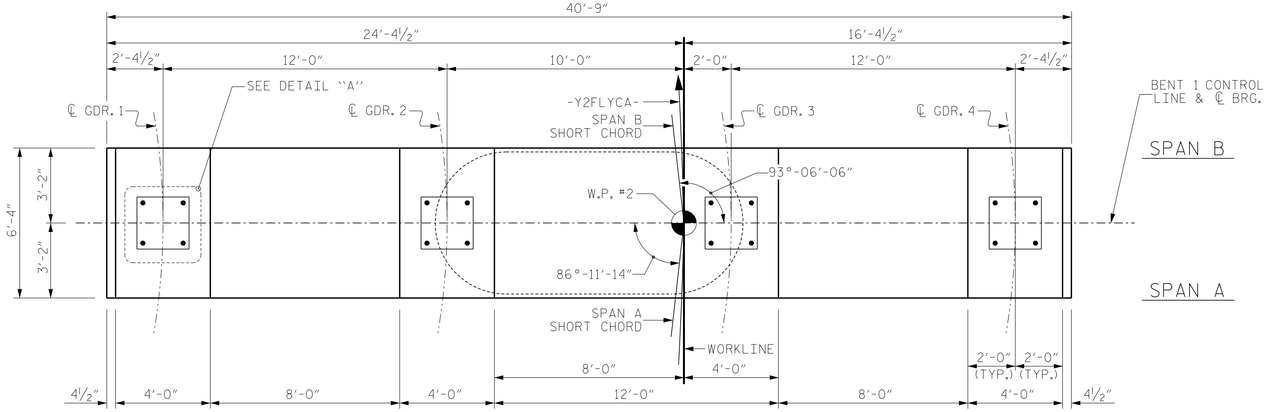
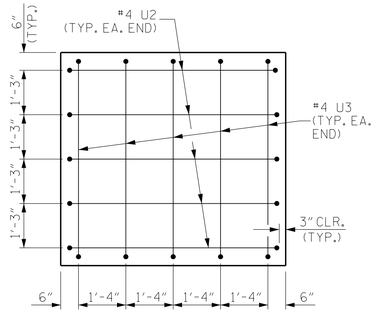
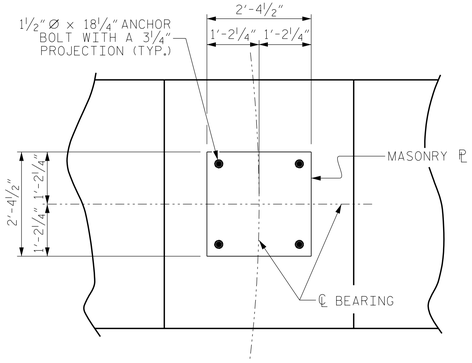


PLAN OF CAP



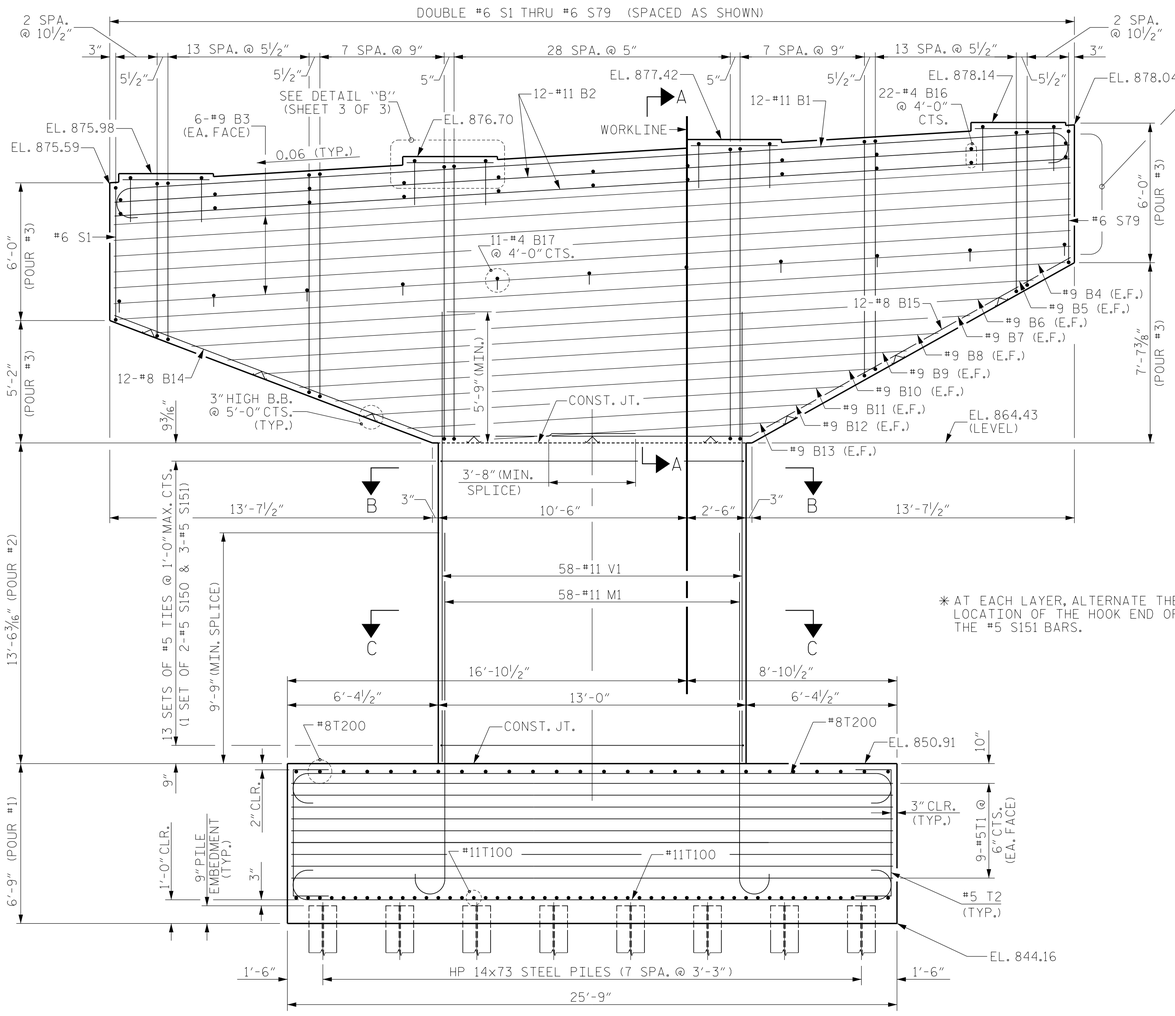
END OF CAP VIEW

(TYPICAL BOTH ENDS)



DETAIL "A"

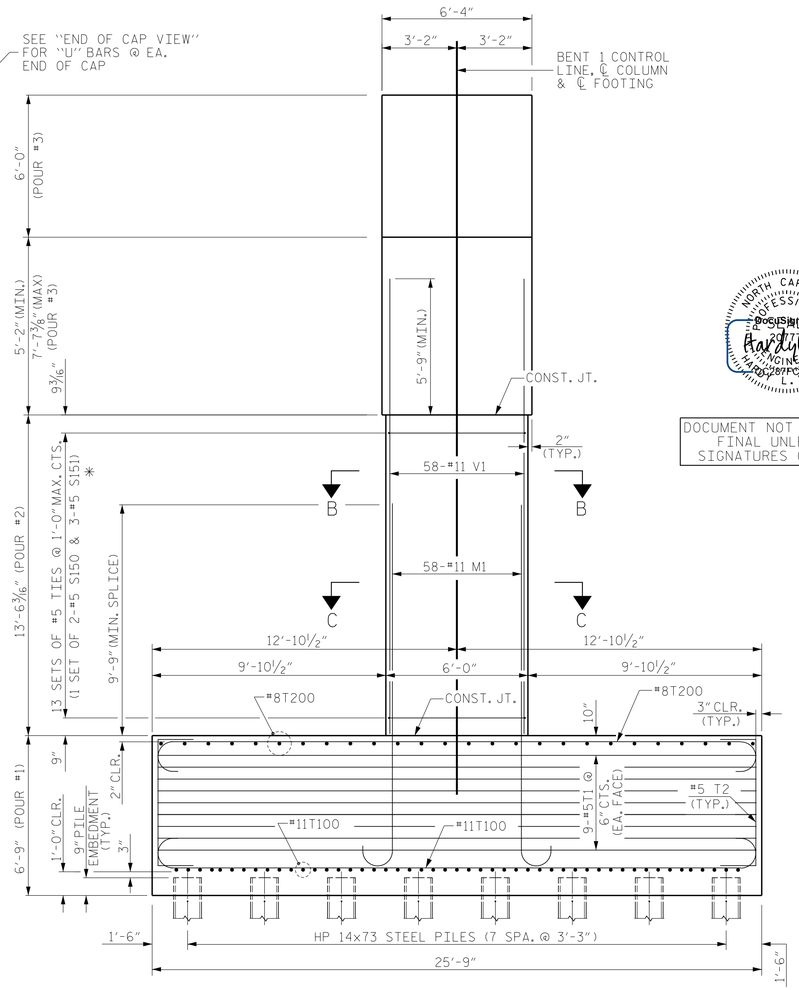
FOR NOTES, SEE SHEET 2 OF 3.



ELEVATION

FOR SECTION B-B & SECTION C-C, SEE SHEET 2 OF 3.

✳ AT EACH LAYER, ALTERNATE THE LOCATION OF THE HOOK END OF THE #5 S151 BARS.



END ELEVATION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047771 HARDY L. WILLIS

DocuSigned by: HardyWillis 7C5287FCF0234B1...

8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 1

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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-47
1			3			TOTAL SHEETS
2			4			59

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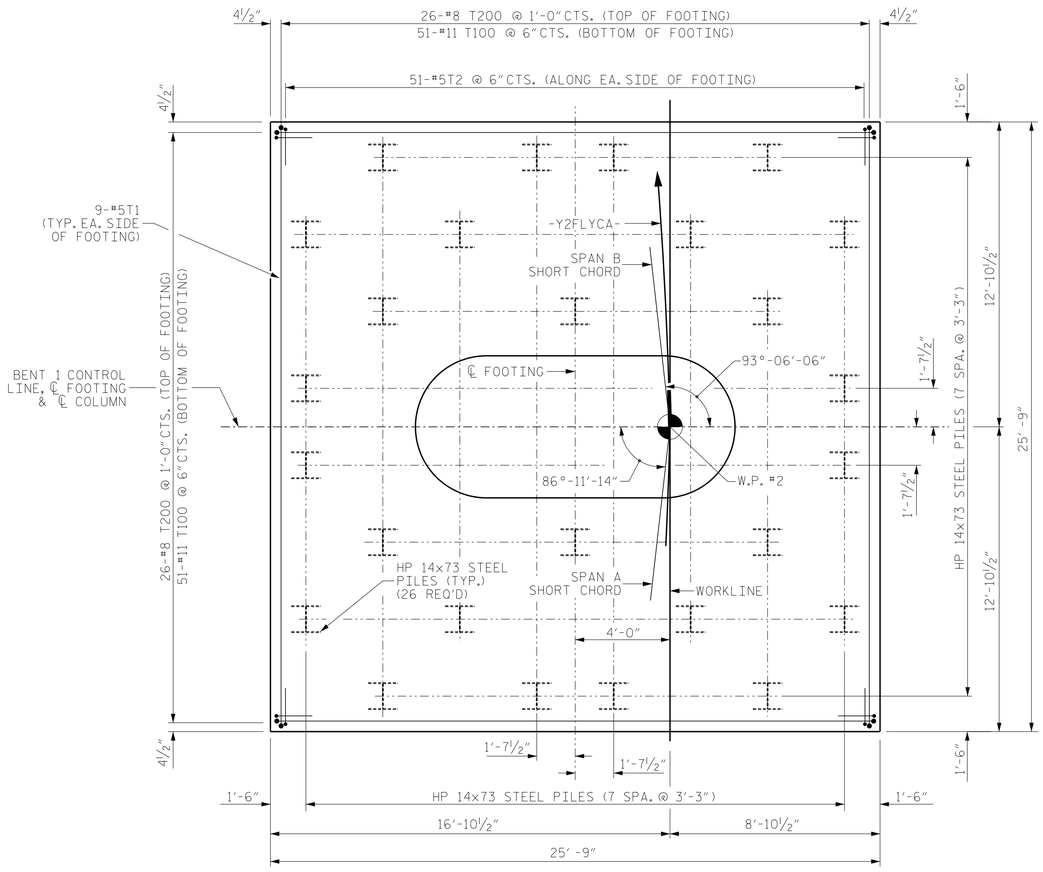
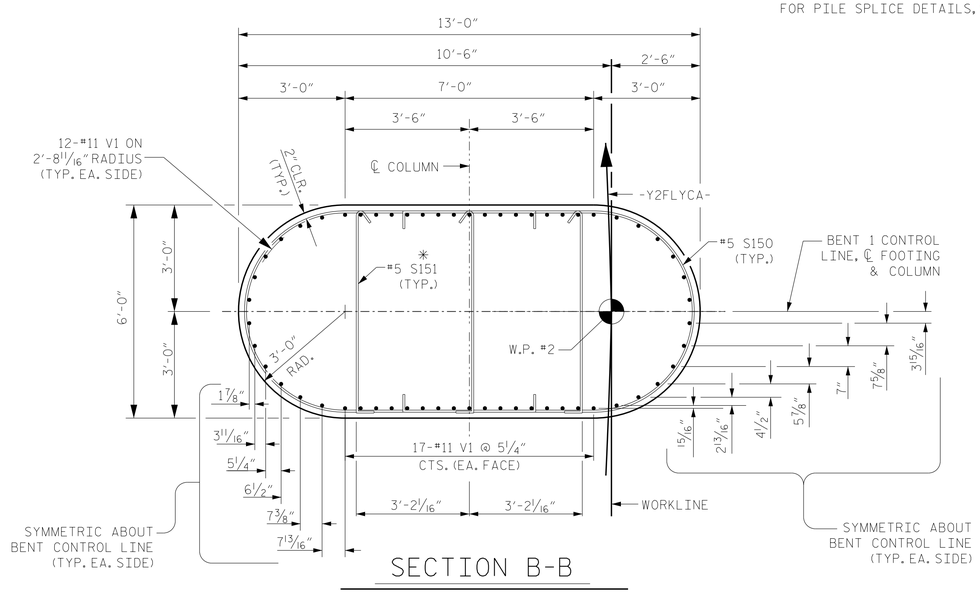


PLAN OF FOOTING



SECTION B-B

NOTES

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

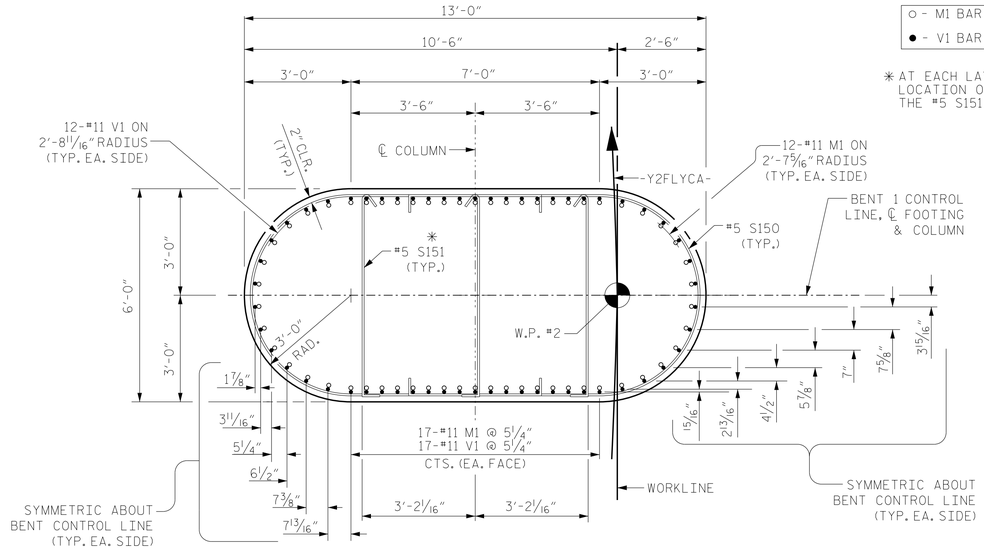
HOOKS ON "M" & "T" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

"T" BARS IN THE FOOTING MAY BE SHIFTED AS NECESSARY TO CLEAR "M" BARS EXTENDING INTO THE COLUMN.

FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THIS HAMMERHEAD BENT CAP SHALL BE BE SUBMITTED. SEE SPECIAL PROVISIONS FOR FALSEWORK & FORMWORK.

FOR PILE SPLICE DETAILS, SEE END BENT NO. 1 SHEET 3 OF 3.



SECTION C-C

o - M1 BAR LOCATION
● - V1 BAR LOCATION

✳ AT EACH LAYER, ALTERNATE THE LOCATION OF THE HOOK END OF THE #5 S151 BARS.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047161 HARRY L. WILLIS

DocuSigned by: Harry Willis 2C0E8F0FD2C3461...

8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

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98+82.37 -Y2SBL-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 1

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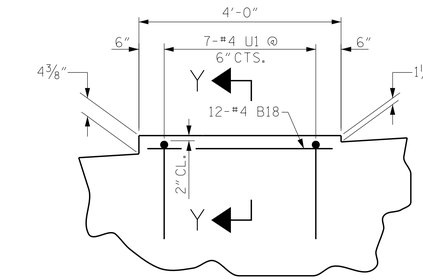
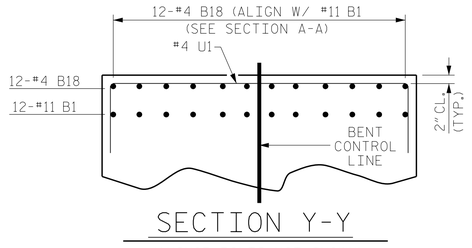
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-48
1			3			TOTAL SHEETS
2			4			59



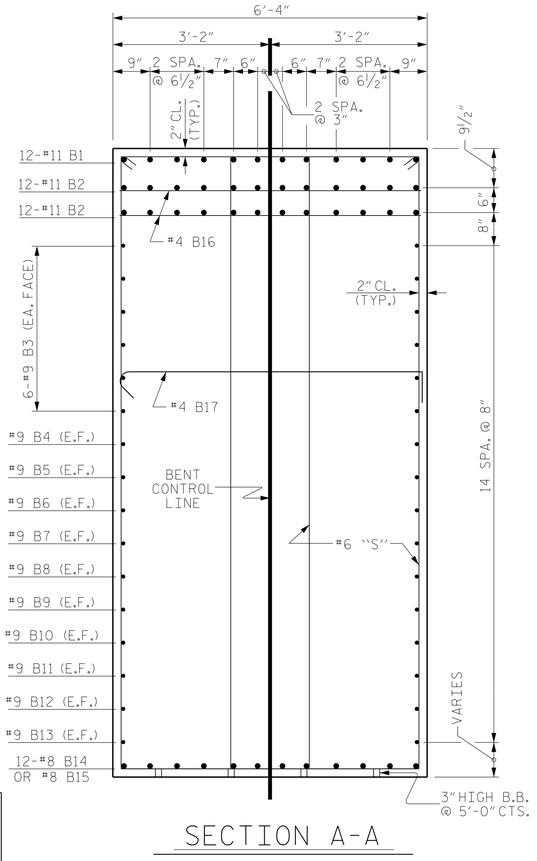
DETAIL "B"

(TYP. UNDER EA. GIRDER)



SECTION Y-Y

(ANCHOR BOLTS NOT SHOWN)



SECTION A-A

BILL OF MATERIAL

BENT NO. 1

BAR	NO.	SIZE	TYPE	DIM. "A"	LENGTH	WEIGHT
B1	12	#11	1	---	43'-7"	2779
B2	24	#11	STR	---	40'-5"	5154
B3	12	#9	STR	---	40'-5"	1649
B4	2	#9	STR	---	40'-2"	273
B5	2	#9	STR	---	37'-3"	253
B6	2	#9	STR	---	34'-5"	234
B7	2	#9	STR	---	31'-7"	215
B8	2	#9	STR	---	28'-8"	195
B9	2	#9	STR	---	25'-10"	176
B10	2	#9	STR	---	23'-0"	156
B11	2	#9	STR	---	20'-1"	137
B12	2	#9	STR	---	17'-3"	117
B13	2	#9	STR	---	12'-2"	83
B14	12	#8	2	---	23'-0"	737
B15	12	#8	2	---	24'-1"	772
B16	22	#4	STR	---	6'-0"	88
B17	11	#4	7	---	6'-11"	51
B18	48	#4	STR	---	3'-8"	118
M1	58	#11	4	---	17'-1"	5264
S1	2	#6	5	5'-9"	20'-5"	61
S2	2	#6	5	6'-1 1/2"	21'-2"	64
S3	2	#6	5	6'-6"	21'-11"	66
S4	2	#6	5	6'-8 1/2"	22'-4"	67
S5	2	#6	5	6'-11"	22'-9"	68
S6	2	#6	5	7'-1 1/2"	23'-2"	70
S7	2	#6	5	7'-4"	23'-7"	71
S8	2	#6	5	7'-6 1/2"	24'-0"	72
S9	2	#6	5	7'-8 1/2"	24'-4"	73
S10	2	#6	5	7'-11"	24'-9"	74
S11	2	#6	5	8'-1 1/2"	25'-2"	76
S12	2	#6	5	8'-4"	25'-7"	77
S13	2	#6	5	8'-6 1/2"	26'-0"	78
S14	2	#6	5	8'-9"	26'-5"	79
S15	2	#6	5	8'-11"	26'-9"	80
S16	2	#6	5	9'-1 1/2"	27'-2"	82
S17	2	#6	5	9'-4"	27'-7"	83
S18	2	#6	5	9'-6 1/2"	28'-0"	84
S19	2	#6	5	9'-10"	28'-7"	86
S20	2	#6	5	10'-2 1/2"	29'-4"	88
S21	2	#6	5	10'-6 1/2"	30'-0"	90
S22	2	#6	5	10'-10"	30'-7"	92
S23	2	#6	5	11'-2"	31'-3"	94
S24	2	#6	5	11'-6"	31'-11"	96
S25	2	#6	5	11'-8"	32'-3"	97
S26	2	#6	5	11'-8 1/2"	32'-4"	97
S27	2	#6	5	11'-8 1/2"	32'-4"	97
S28	2	#6	5	11'-9"	32'-5"	97
S29	2	#6	5	11'-9"	32'-5"	97
S30	2	#6	5	11'-9 1/2"	32'-6"	98
S31	2	#6	5	11'-10"	32'-7"	98
S32	2	#6	5	11'-10"	32'-7"	98
S33	2	#6	5	11'-10 1/2"	32'-8"	98
S34	2	#6	5	11'-10 1/2"	32'-8"	98
S35	2	#6	5	11'-11"	32'-9"	98
S36	2	#6	5	11'-11 1/2"	32'-10"	99
S37	2	#6	5	11'-11 1/2"	32'-10"	99
S38	2	#6	5	12'-0"	32'-11"	99
S39	2	#6	5	12'-0"	32'-11"	99
S40	2	#6	5	12'-0 1/2"	33'-0"	99
S41	2	#6	5	12'-1"	33'-1"	99
S42	2	#6	5	12'-1"	33'-1"	99
S43	2	#6	5	12'-1 1/2"	33'-2"	100
S44	2	#6	5	12'-1 1/2"	33'-2"	100
S45	2	#6	5	12'-2"	33'-3"	100
S46	2	#6	5	12'-2 1/2"	33'-4"	100
S47	2	#6	5	12'-2 1/2"	33'-4"	100
S48	2	#6	5	12'-3"	33'-5"	100
S49	2	#6	5	12'-3"	33'-5"	100
S50	2	#6	5	12'-3 1/2"	33'-6"	101
S51	2	#6	5	12'-4"	33'-7"	101
S52	2	#6	5	12'-4"	33'-7"	101
S53	2	#6	5	12'-4 1/2"	33'-8"	101
S54	2	#6	5	12'-4 1/2"	33'-8"	101
S55	2	#6	5	12'-5"	33'-9"	101
S56	2	#6	5	12'-3 1/2"	33'-6"	101
S57	2	#6	5	11'-11"	32'-9"	98
S58	2	#6	5	11'-6 1/2"	32'-0"	96
S59	2	#6	5	11'-2"	31'-3"	94
S60	2	#6	5	10'-9 1/2"	30'-6"	92
S61	2	#6	5	10'-5"	29'-9"	89
S62	2	#6	5	10'-0 1/2"	29'-0"	87
S63	2	#6	5	9'-10"	28'-7"	86
S64	2	#6	5	9'-7"	28'-1"	84
S65	2	#6	5	9'-4 1/2"	27'-8"	83
S66	2	#6	5	9'-1 1/2"	27'-2"	82
S67	2	#6	5	8'-11"	26'-9"	80
S68	2	#6	5	8'-8"	26'-3"	79
S69	2	#6	5	8'-5 1/2"	25'-10"	78
S70	2	#6	5	8'-2 1/2"	25'-4"	76
S71	2	#6	5	8'-0"	24'-11"	75
S72	2	#6	5	7'-9"	24'-5"	73
S73	2	#6	5	7'-6 1/2"	24'-0"	72
S74	2	#6	5	7'-3 1/2"	23'-6"	71
S75	2	#6	5	7'-1"	23'-1"	69
S76	2	#6	5	6'-10"	22'-7"	68
S77	2	#6	5	6'-7 1/2"	22'-2"	67
S78	2	#6	5	6'-2"	21'-3"	64
S79	2	#6	5	5'-9"	20'-5"	61
S150	26	#5	6	---	20'-7"	558
S151	39	#5	7	---	6'-8"	271
T1	36	#5	STR	---	25'-3"	948
T2	204	#5	3	---	8'-4"	1773
T100	102	#11	1	---	28'-5"	15400
T200	52	#8	1	---	27'-1"	3760
U1	28	#4	3	---	9'-0"	168
U2	10	#4	3	---	8'-10"	59
U3	10	#4	3	---	8'-6"	57
V1	58	#11	STR	---	19'-4"	5958

REINFORCING STEEL 54,271 LBS.

CLASS A CONCRETE BREAKDOWN

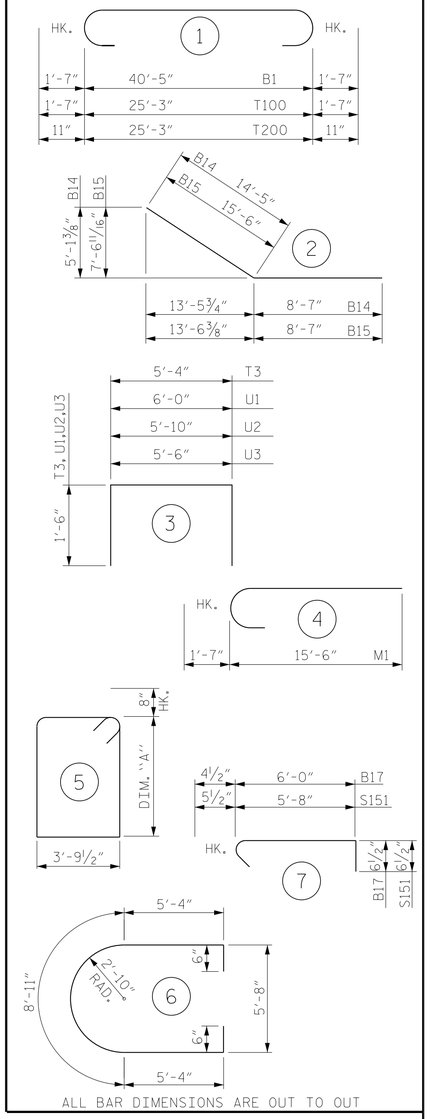
POUR #1 (FOOTING)	165.8 C.Y.
POUR #2 (COLUMN)	35.2 C.Y.
POUR #3 (CAP)	98.9 C.Y.
TOTAL CLASS A CONCRETE	299.9 C.Y.

FOUNDATION EXCAVATION LUMP SUM

HP 14 X 73 STEEL PILES NO. 26 LIN. FT. 995

PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES NO. 26

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 3 OF 3

DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

V & M PROJECT NO.: 31748.44 $DATE$ $FILES$

DocuSigned by:
Hardy Willis
4A6C281F1DF0223461...
8/8/2022

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER HARDY L. WILLIS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

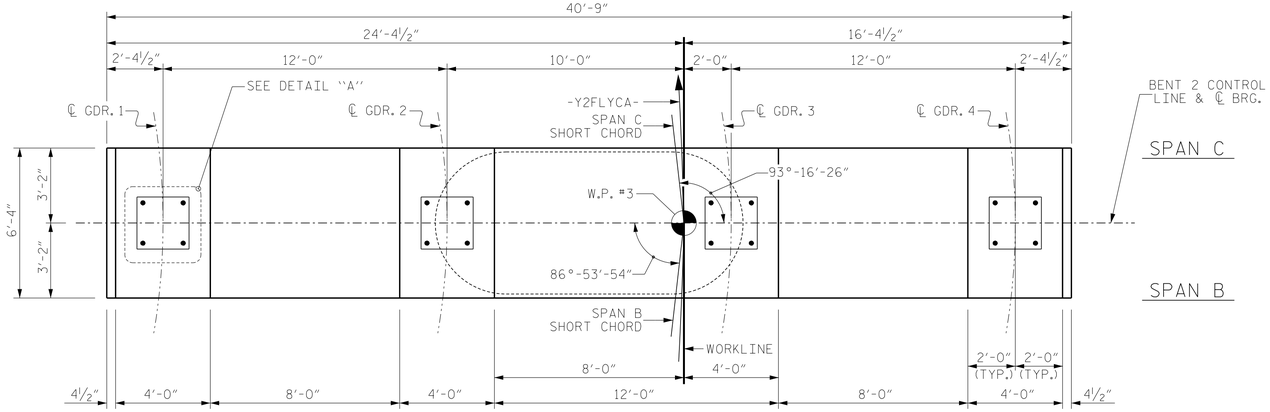
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina
828-253-2796
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3590

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

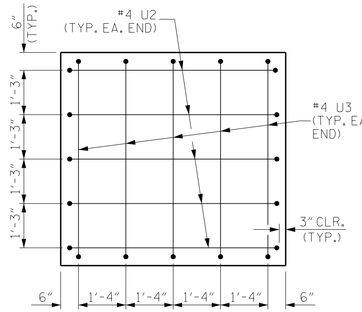
SUBSTRUCTURE

BENT NO. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-49
1			3			TOTAL SHEETS
2			4			59

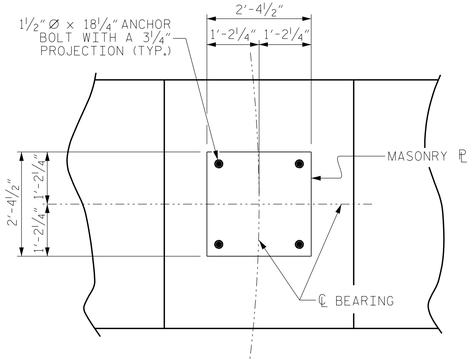


PLAN OF CAP



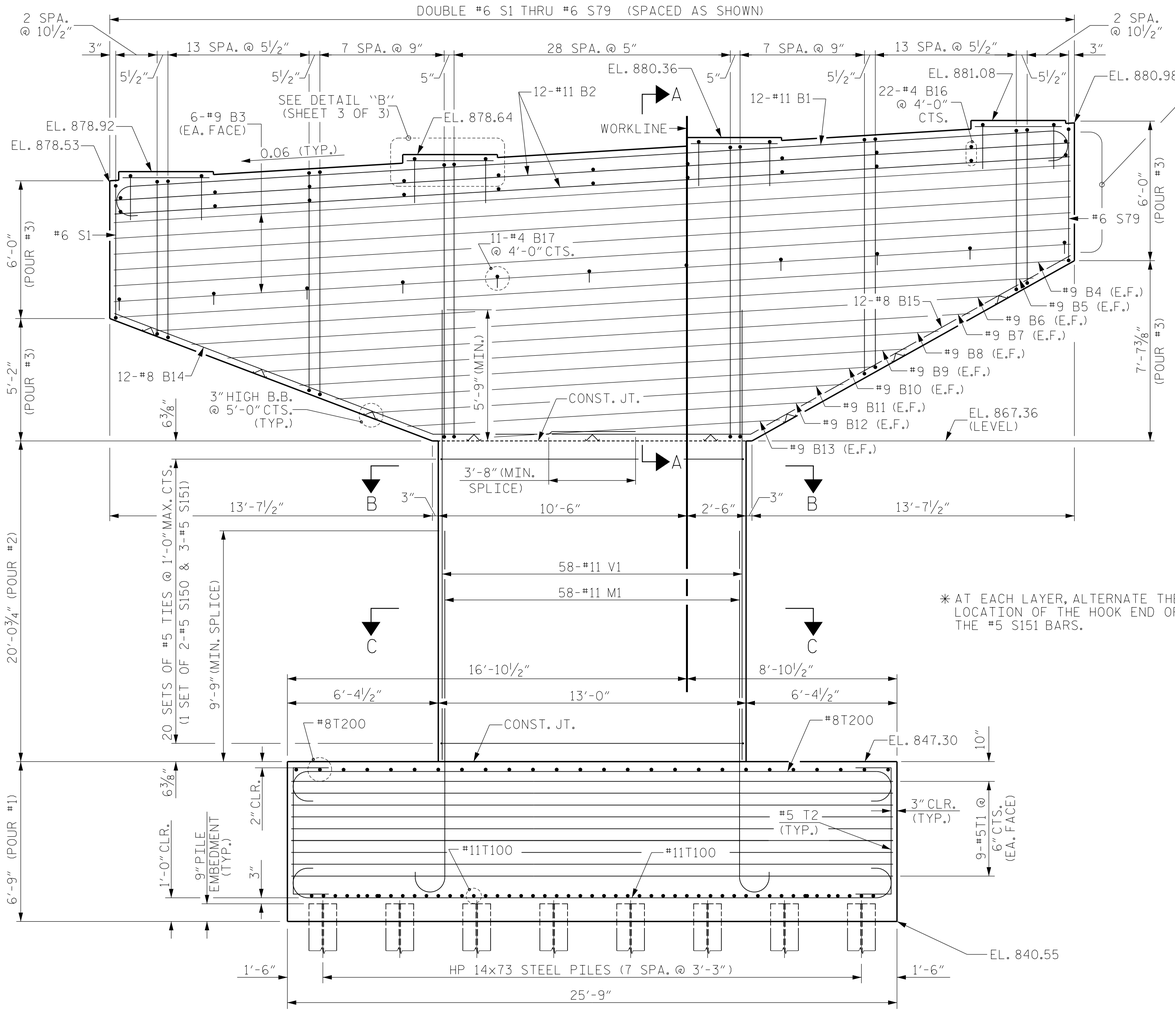
END OF CAP VIEW

(TYPICAL BOTH ENDS)



DETAIL "A"

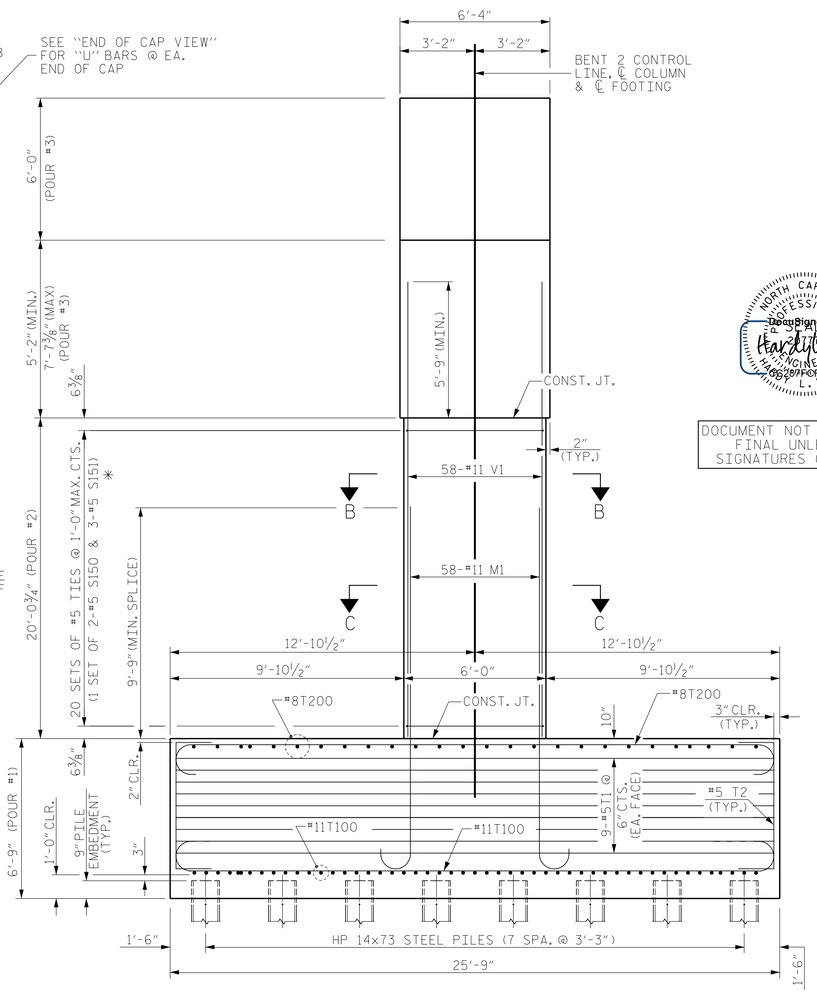
FOR NOTES, SEE SHEET 2 OF 3.



✳ AT EACH LAYER, ALTERNATE THE LOCATION OF THE HOOK END OF THE #5 S151 BARS.

ELEVATION

FOR SECTION B-B & SECTION C-C, SEE SHEET 2 OF 3.



END ELEVATION

DocuSigned by:
Hardy Willis
0827F0F0228481...
8/8/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DWN. BY: WDC		DATE: 03/2021
CHKD. BY: HLW		DATE: 03/2021
DES. EGR. OF RECORD: RTS		DATE: 03/2021

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 1 OF 3

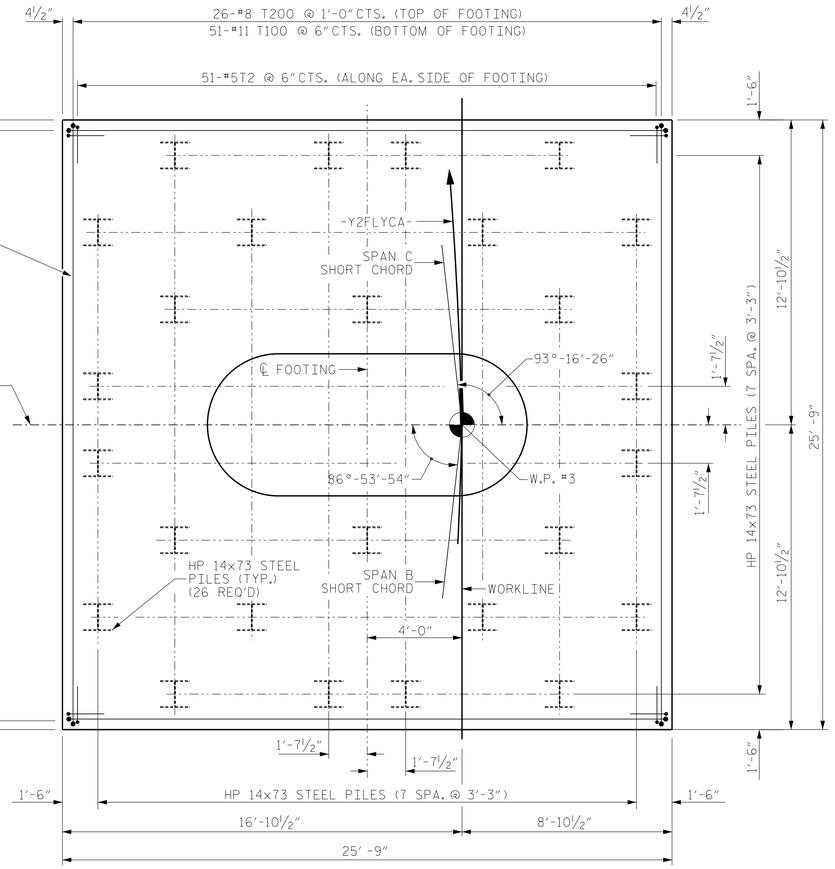
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

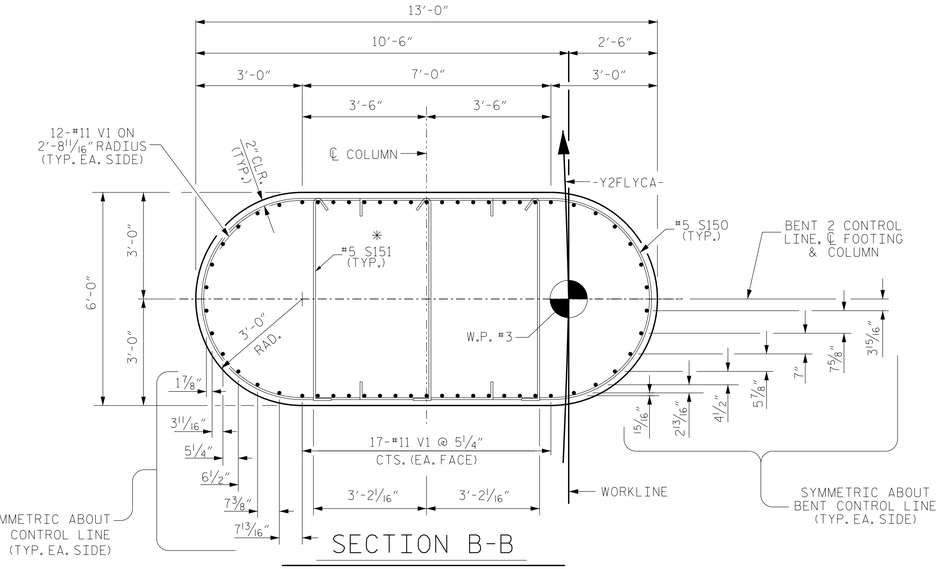
BENT NO. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-50
1			3			TOTAL SHEETS
2			4			59

$FILE$ $DATE$ V & M PROJECT NO.: 31748.44



PLAN OF FOOTING



SECTION B-B

NOTES

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

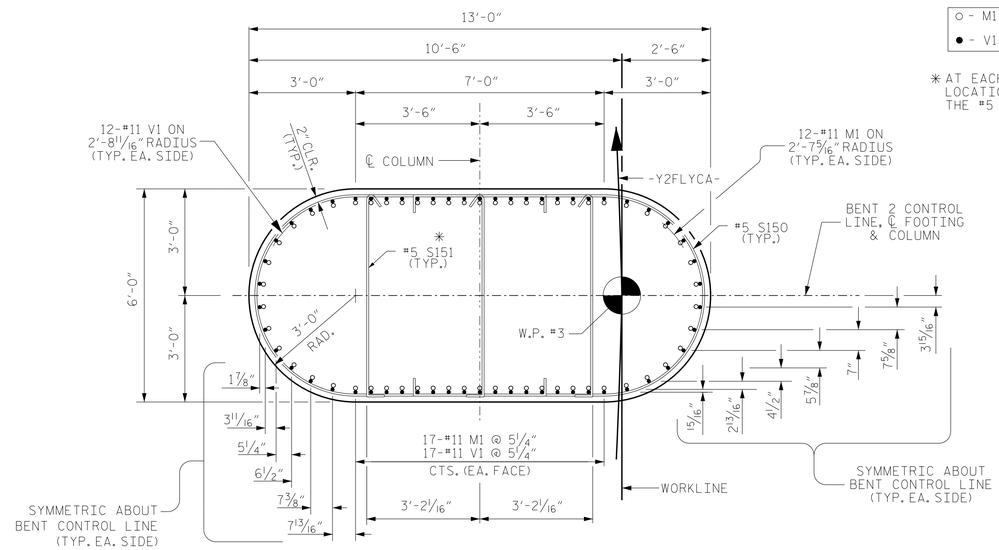
HOOKS ON "M" & "T" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

"T" BARS IN THE FOOTING MAY BE SHIFTED AS NECESSARY TO CLEAR "M" BARS EXTENDING INTO THE COLUMN.

FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THIS HAMMERHEAD BENT CAP SHALL BE BE SUBMITTED. SEE SPECIAL PROVISIONS FOR FALSEWORK & FORMWORK.

FOR PILE SPLICE DETAILS, SEE END BENT NO. 1 SHEET 3 OF 3.



SECTION C-C

○ - M1 BAR LOCATION
● - V1 BAR LOCATION

✳ AT EACH LAYER, ALTERNATE THE LOCATION OF THE HOOK END OF THE #5 S151 BARS.

NORTH CAROLINA PROFESSIONAL SEAL 047161 ENGINEER HARDY L. WILLIS

DocuSigned by: Hardy Willis
E4C28A0A0D224B1...
8/8/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-
SHEET 2 OF 3

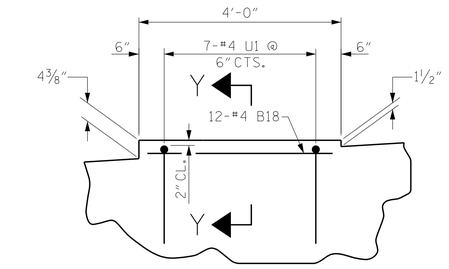
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 2

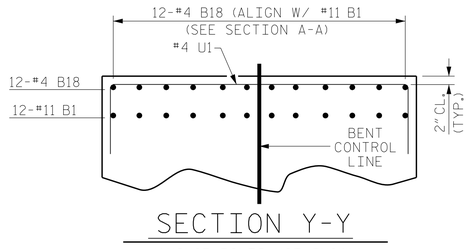
DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-51
1			3			TOTAL SHEETS
2			4			59



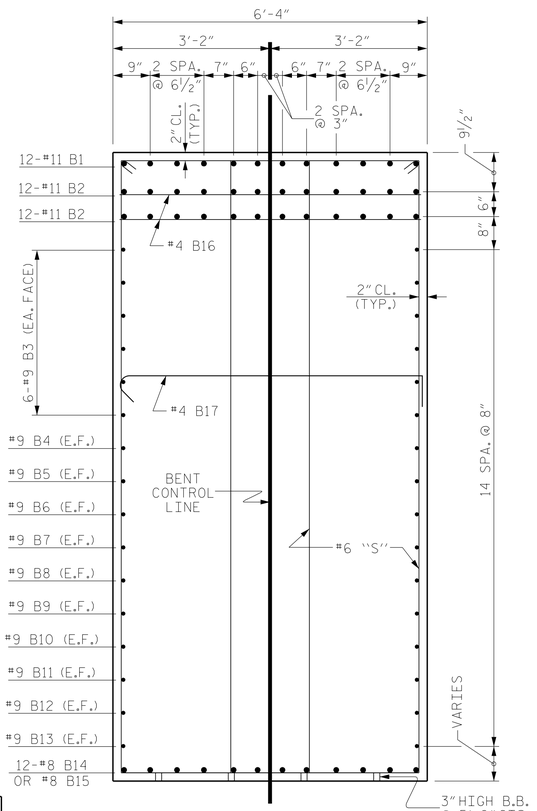
DETAIL ''B''

(TYP. UNDER EA. GIRDER)



SECTION Y-Y

(ANCHOR BOLTS NOT SHOWN)



SECTION A-A

BILL OF MATERIAL

BENT NO. 2

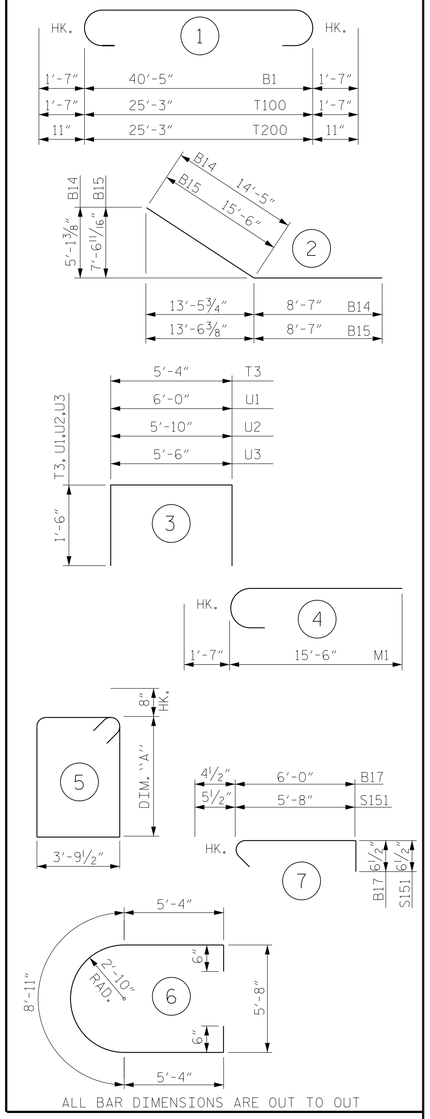
BAR	NO.	SIZE	TYPE	DIM. ''A''	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	DIM. ''A''	LENGTH	WEIGHT
B1	12	#11	1	---	43'-7"	2779	S58	2	#6	5	11'-6 1/2"	32'-0"	96
B2	24	#11	STR	---	40'-5"	5154	S59	2	#6	5	11'-2"	31'-3"	94
B3	12	#9	STR	---	40'-5"	1649	S60	2	#6	5	10'-9 1/2"	30'-6"	92
B4	2	#9	STR	---	40'-2"	273	S61	2	#6	5	10'-5"	29'-9"	89
B5	2	#9	STR	---	37'-3"	253	S62	2	#6	5	10'-0 1/2"	29'-0"	87
B6	2	#9	STR	---	34'-5"	234	S63	2	#6	5	9'-10"	28'-7"	86
B7	2	#9	STR	---	31'-7"	215	S64	2	#6	5	9'-7"	28'-1"	84
B8	2	#9	STR	---	28'-8"	195	S65	2	#6	5	9'-4 1/2"	27'-8"	83
B9	2	#9	STR	---	25'-10"	176	S66	2	#6	5	9'-1 1/2"	27'-2"	82
B10	2	#9	STR	---	23'-0"	156	S67	2	#6	5	8'-11"	26'-9"	80
B11	2	#9	STR	---	20'-1"	137	S68	2	#6	5	8'-8"	26'-3"	79
B12	2	#9	STR	---	17'-3"	117	S69	2	#6	5	8'-5 1/2"	25'-10"	78
B13	2	#9	STR	---	12'-2"	83	S70	2	#6	5	8'-2 1/2"	25'-4"	76
B14	12	#8	2	---	23'-0"	737	S71	2	#6	5	8'-0"	24'-11"	75
B15	12	#8	2	---	24'-1"	772	S72	2	#6	5	7'-9"	24'-5"	73
B16	22	#4	STR	---	6'-0"	88	S73	2	#6	5	7'-6 1/2"	24'-0"	72
B17	11	#4	7	---	6'-11"	51	S74	2	#6	5	7'-3 1/2"	23'-6"	71
B18	48	#4	STR	---	3'-8"	118	S75	2	#6	5	7'-1"	23'-1"	69
							S76	2	#6	5	6'-10"	22'-7"	68
M1	58	#11	4	---	17'-1"	5264	S77	2	#6	5	6'-7 1/2"	22'-2"	67
							S78	2	#6	5	6'-2"	21'-3"	64
S1	2	#6	5	5'-9"	20'-5"	61	S79	2	#6	5	5'-9"	20'-5"	61
S2	2	#6	5	6'-1 1/2"	21'-2"	64							
S3	2	#6	5	6'-6"	21'-11"	66	S150	40	#5	6	---	20'-7"	859
S4	2	#6	5	6'-8 1/2"	22'-4"	67	S151	60	#5	7	---	6'-8"	417
S5	2	#6	5	6'-11"	22'-9"	68							
S6	2	#6	5	7'-1 1/2"	23'-2"	70	T1	36	#5	STR	---	25'-3"	948
S7	2	#6	5	7'-4"	23'-7"	71	T2	204	#5	3	---	8'-4"	1773
S8	2	#6	5	7'-6 1/2"	24'-0"	72							
S9	2	#6	5	7'-8 1/2"	24'-4"	73	T100	102	#11	1		28'-5"	15400
S10	2	#6	5	7'-11"	24'-9"	74	T200	52	#8	1		27'-1"	3760
S11	2	#6	5	8'-1 1/2"	25'-2"	76							
S12	2	#6	5	8'-4"	25'-7"	77	U1	28	#4	3	---	9'-0"	168
S13	2	#6	5	8'-6 1/2"	26'-0"	78	U2	10	#4	3	---	8'-10"	59
S14	2	#6	5	8'-9"	26'-5"	79	U3	10	#4	3	---	8'-6"	57
S15	2	#6	5	8'-11"	26'-9"	80							
S16	2	#6	5	9'-1 1/2"	27'-2"	82	V1	58	#11	STR	---	25'-10"	7961
S17	2	#6	5	9'-4"	27'-7"	83							
S18	2	#6	5	9'-6 1/2"	28'-0"	84							
S19	2	#6	5	9'-10"	28'-7"	86							
S20	2	#6	5	10'-2 1/2"	29'-4"	88							
S21	2	#6	5	10'-6 1/2"	30'-0"	90							
S22	2	#6	5	10'-10"	30'-7"	92							
S23	2	#6	5	11'-2"	31'-3"	94							
S24	2	#6	5	11'-6"	31'-11"	96							
S25	2	#6	5	11'-8"	32'-3"	97							
S26	2	#6	5	11'-8 1/2"	32'-4"	97							
S27	2	#6	5	11'-8 1/2"	32'-4"	97							
S28	2	#6	5	11'-9"	32'-5"	97							
S29	2	#6	5	11'-9"	32'-5"	97							
S30	2	#6	5	11'-9 1/2"	32'-6"	98							
S31	2	#6	5	11'-10"	32'-7"	98							
S32	2	#6	5	11'-10"	32'-7"	98							
S33	2	#6	5	11'-10 1/2"	32'-8"	98							
S34	2	#6	5	11'-10 1/2"	32'-8"	98							
S35	2	#6	5	11'-11"	32'-9"	98							
S36	2	#6	5	11'-11 1/2"	32'-10"	99							
S37	2	#6	5	11'-11 1/2"	32'-10"	99							
S38	2	#6	5	12'-0"	32'-11"	99							
S39	2	#6	5	12'-0"	32'-11"	99							
S40	2	#6	5	12'-0 1/2"	33'-0"	99							
S41	2	#6	5	12'-1"	33'-1"	99							
S42	2	#6	5	12'-1"	33'-1"	99							
S43	2	#6	5	12'-1 1/2"	33'-2"	100							
S44	2	#6	5	12'-1 1/2"	33'-2"	100							
S45	2	#6	5	12'-2"	33'-3"	100							
S46	2	#6	5	12'-2 1/2"	33'-4"	100							
S47	2	#6	5	12'-2 1/2"	33'-4"	100							
S48	2	#6	5	12'-3"	33'-5"	100							
S49	2	#6	5	12'-3"	33'-5"	100							
S50	2	#6	5	12'-3 1/2"	33'-6"	101							
S51	2	#6	5	12'-4"	33'-7"	101							
S52	2	#6	5	12'-4"	33'-7"	101							
S53	2	#6	5	12'-4 1/2"	33'-8"	101							
S54	2	#6	5	12'-4 1/2"	33'-8"	101							
S55	2	#6	5	12'-5"	33'-9"	101							
S56	2	#6	5	12'-3 1/2"	33'-6"	101							
S57	2	#6	5	11'-11"	32'-9"	98							

REINFORCING STEEL	56,721 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 (FOOTING)	165.8 C.Y.
POUR #2 (COLUMN)	52.2 C.Y.
POUR #3 (CAP)	98.9 C.Y.
TOTAL CLASS A CONCRETE	316.9 C.Y.
FOUNDATION EXCAVATION	LUMP SUM
HP 14 X 73 STEEL PILES NO. 26	LIN. FT. 1190
PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES	NO. 26

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-52
1			3			TOTAL SHEETS
2			4			59

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21771 HAROLD L. WILLIS

DocuSigned by: Harold Willis 1A0D87F6F1D23A61...

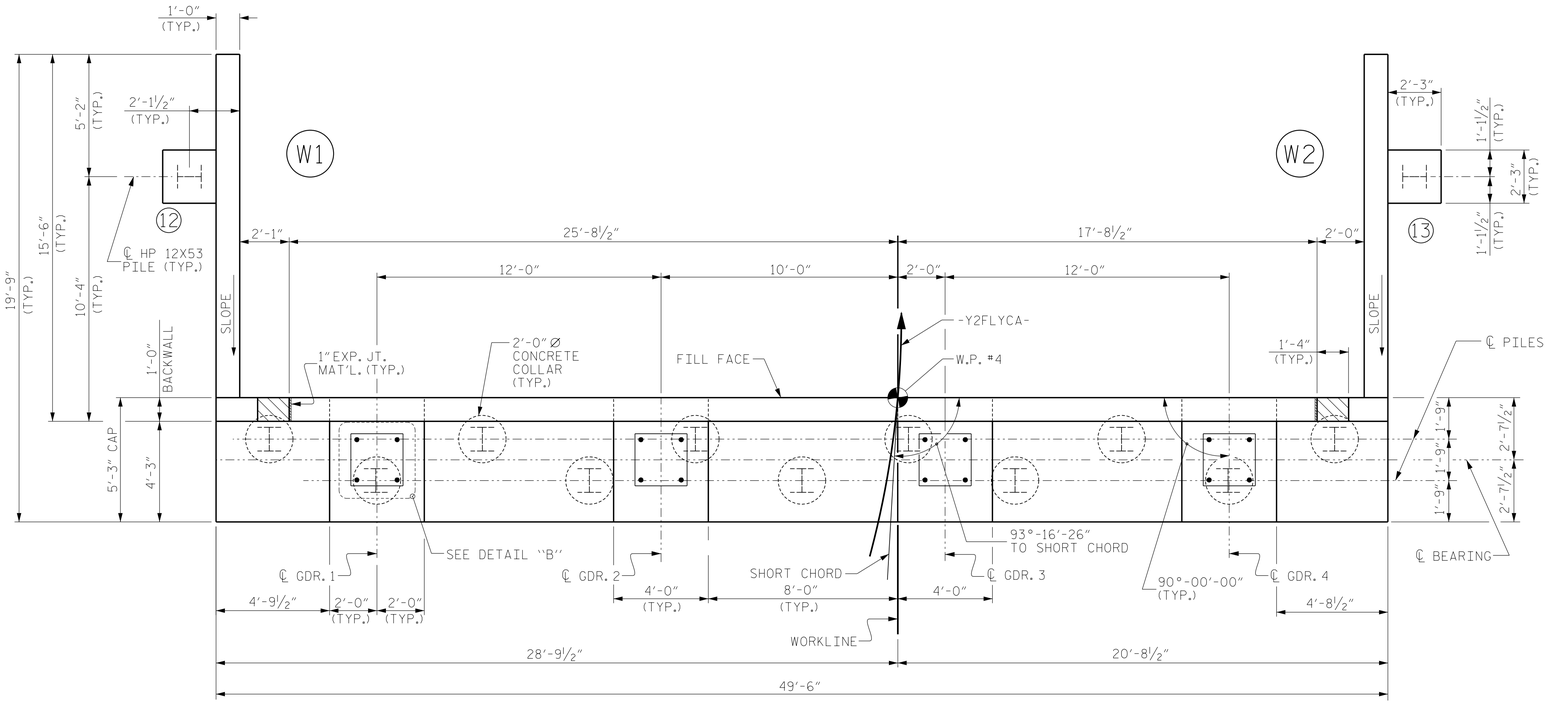
8/8/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

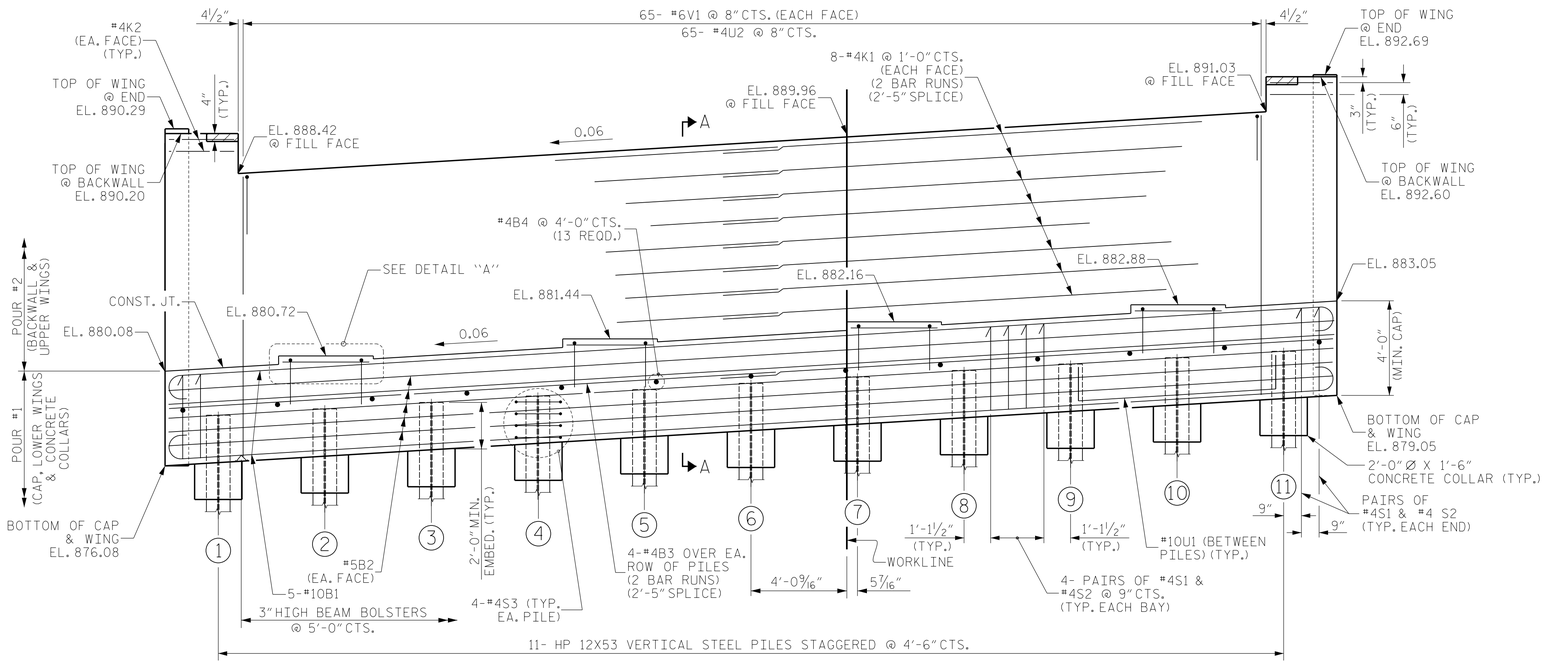
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina
828-253-2796
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3590

DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

V & M PROJECT NO.: 31748-44 $DATE$ $FILES$



PLAN



ELEVATION

(WING BRACE PILES NOT SHOWN FOR CLARITY)
(SEE SHEET 3 OF 3 FOR SECTION A-A)

NOTES

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

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

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

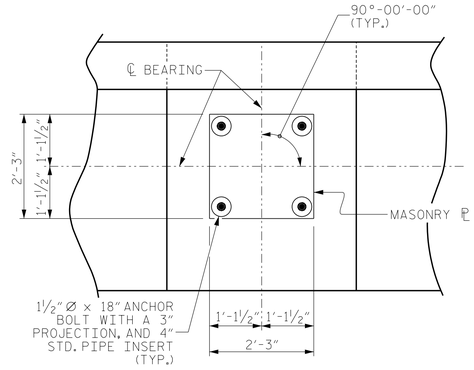
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

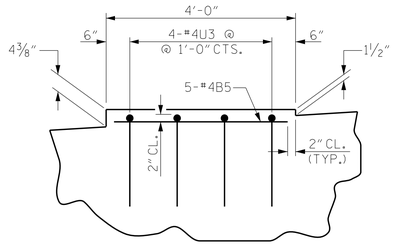
FOR PIPE INSERT DETAILS, SEE DISC BEARING SHEET.

FOR WING DETAILS, SEE SHEET 2 OF 3.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.



DETAIL "B"



DETAIL "A"

(TYP. UNDER EA. GIRDER)

TOP OF PILE ELEVATIONS*			
①	878.25	⑨	880.41
②	878.52	⑩	880.68
③	878.79	⑪	880.95
④	879.06		
⑤	879.33		
⑥	879.60		
⑦	879.87		
⑧	880.14		

* 2'-0" MIN. EMBEDMENT IS MEASURED FROM RIGHT SIDE OF PILE

DWN. BY: WDC	DATE: 03/2021
CHKD. BY: HLW	DATE: 03/2021
DES. EGR. OF RECORD: RTS	DATE: 03/2021

NORTH CAROLINA PROFESSIONAL SEAL 030281 ENGINEER L. WILLIS

DocuSigned by: HardyWillis 6528FFCD223461...

8/8/2022

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V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828-253-2796
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Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3509

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 1 OF 3

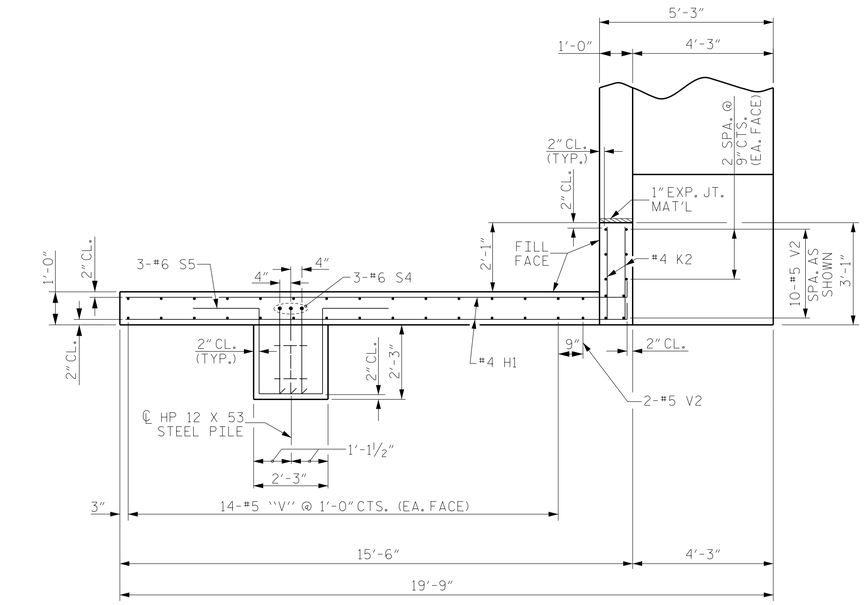
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

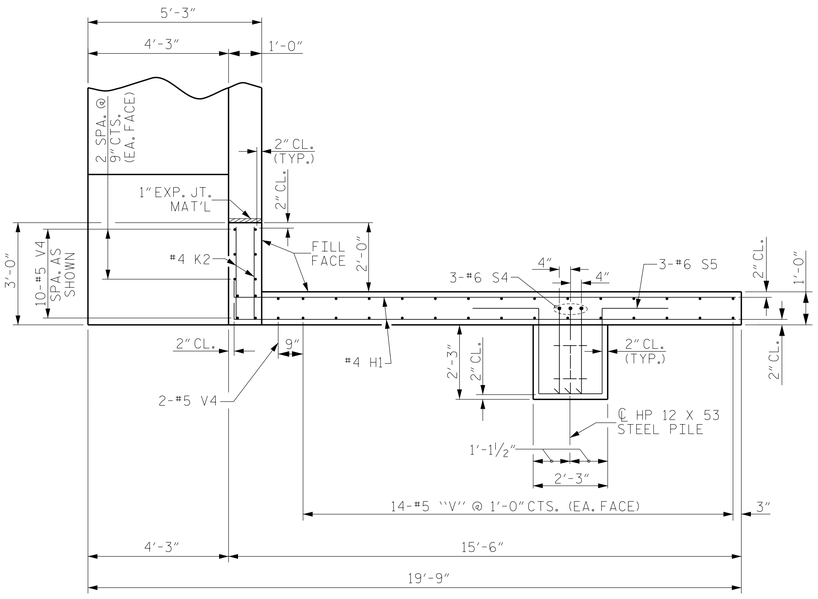
END BENT NO. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-53
1			3			TOTAL SHEETS
2			4			59

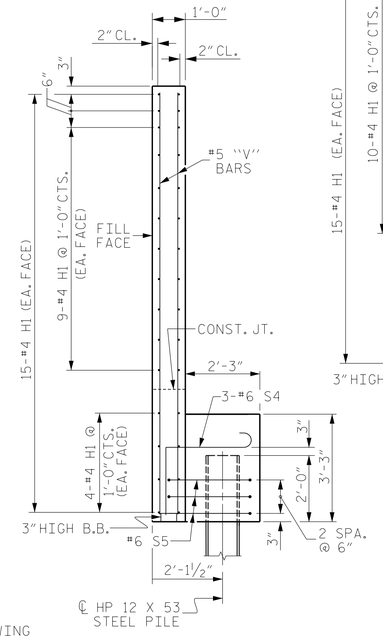
$FILE$ $DATE$ V & M PROJECT NO.: 31748.44



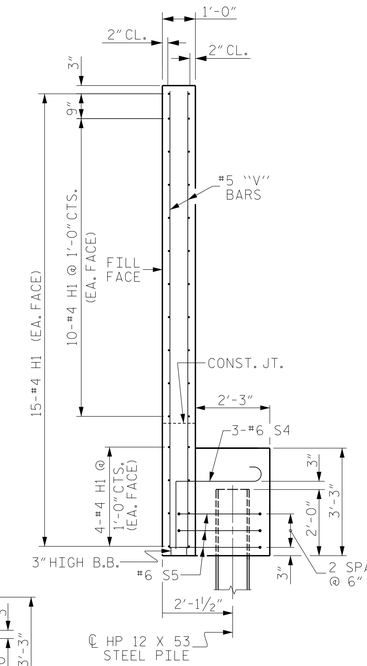
PLAN OF WING (W1)



PLAN OF WING (W2)



SECTION X-Y



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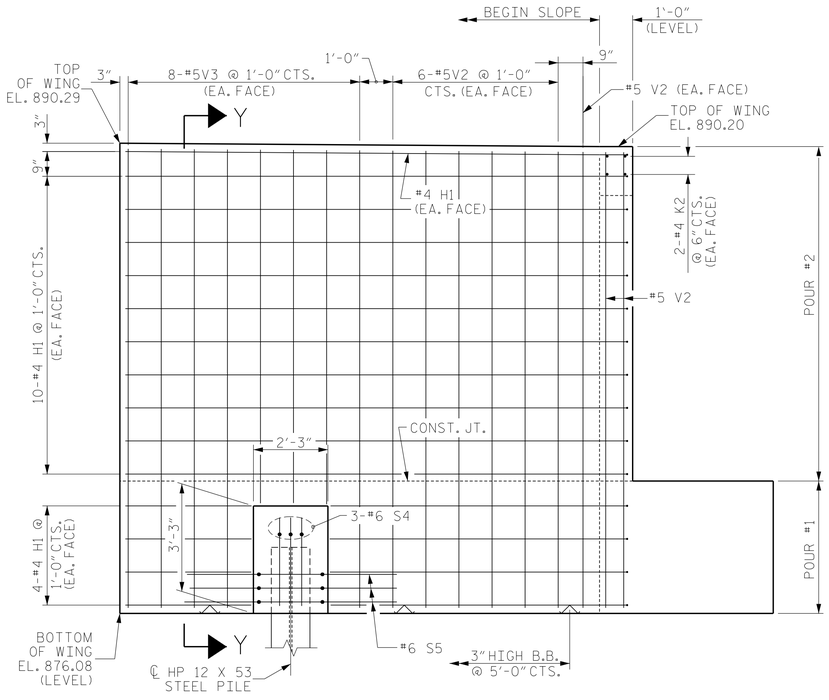
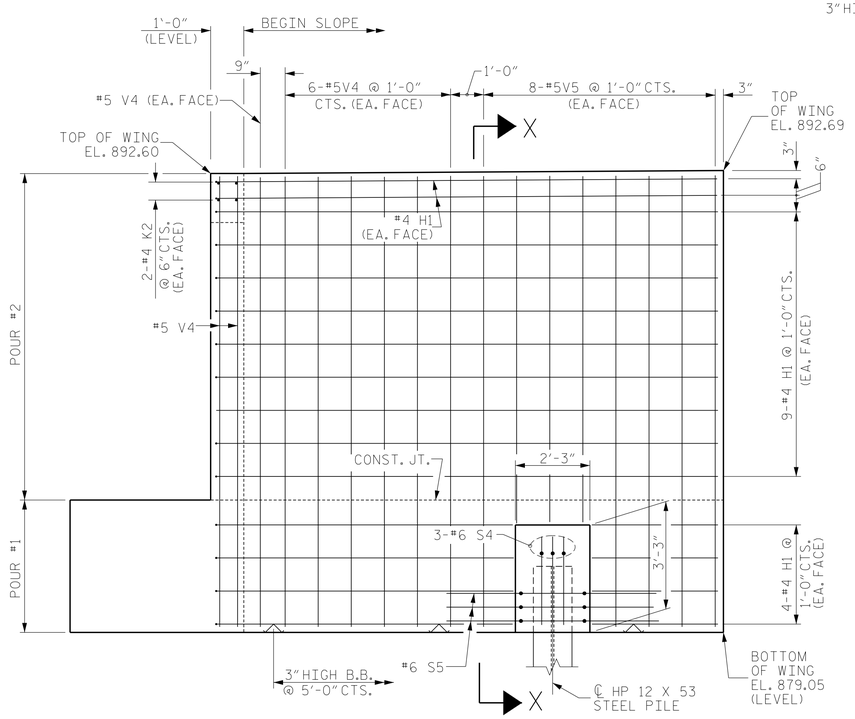


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina
828-253-2796
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
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Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3509

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT NO. 2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029267 HARLEY L. WILLIS
DocuSigned by: Harley Willis 2077...
8/8/2022

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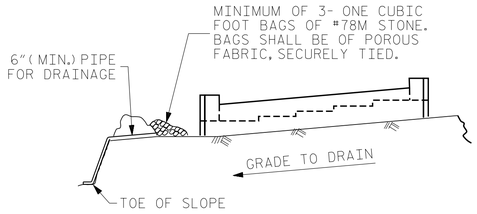
DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-54
1			3			TOTAL SHEETS
2			4			59

$FILES$
$DATE$
V & M PROJECT NO.: 31748.44

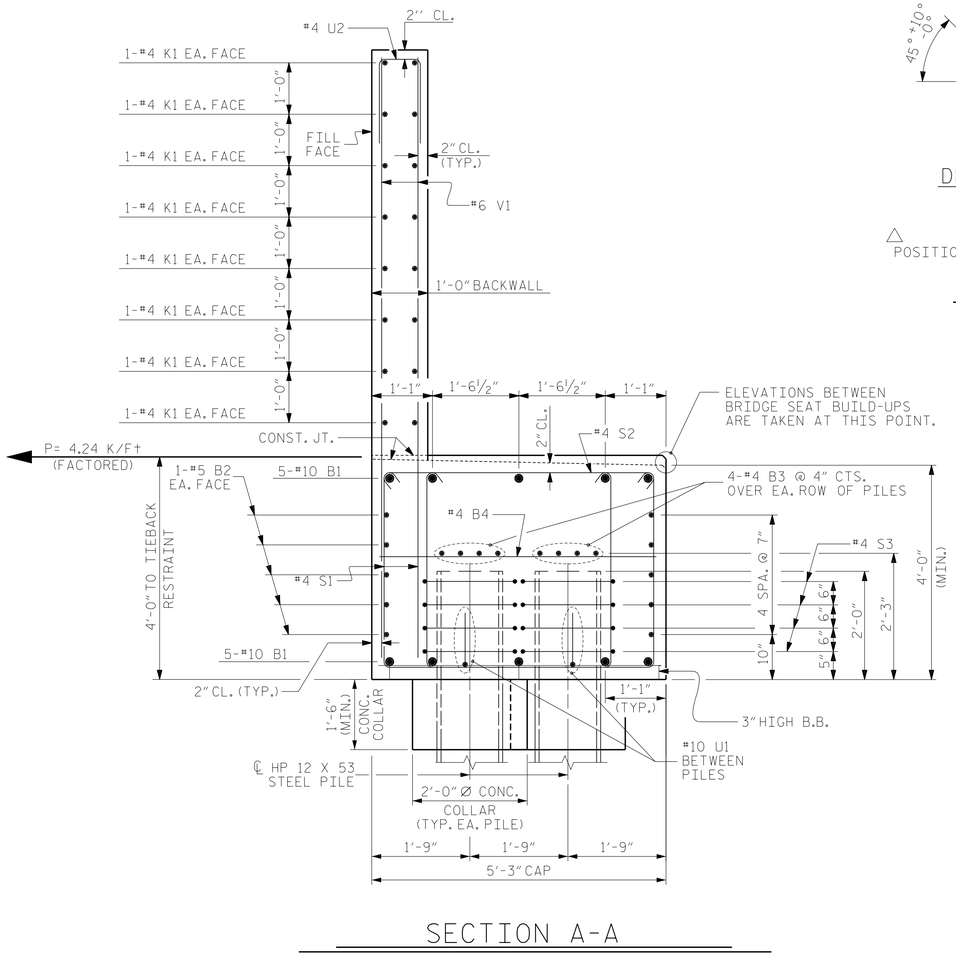


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

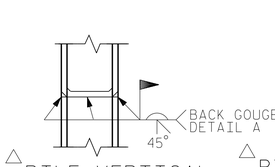
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

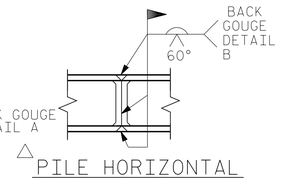
TEMPORARY DRAINAGE AT END BENT



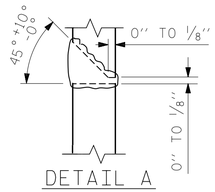
SECTION A-A



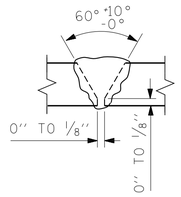
△ PILE VERTICAL



△ PILE HORIZONTAL OR VERTICAL



DETAIL A

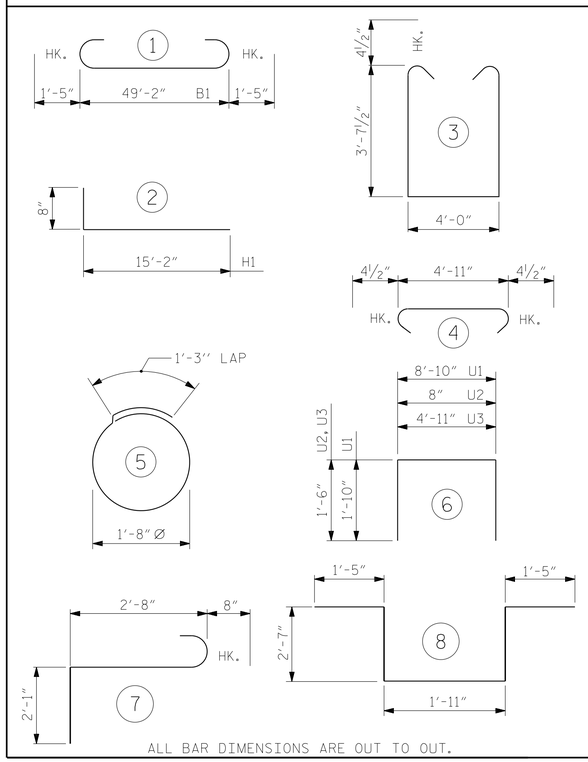


DETAIL B

△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#10	1	52'-0"	2238
B2	10	#5	STR	49'-2"	513
B3	16	#4	STR	25'-10"	276
B4	13	#4	STR	4'-11"	43
B5	20	#4	STR	3'-8"	49
H1	60	#4	2	15'-10"	635
K1	32	#4	STR	25'-10"	552
K2	8	#4	STR	2'-8"	14
S1	88	#4	3	12'-0"	705
S2	44	#4	4	5'-8"	167
S3	44	#4	5	6'-6"	191
S4	6	#6	7	5'-5"	49
S5	6	#6	8	9'-11"	89
U1	9	#10	6	12'-6"	484
U2	65	#4	6	3'-8"	159
U3	16	#4	6	7'-11"	85
V1	130	#6	STR	11'-5"	2229
V2	24	#5	STR	13'-8"	342
V3	16	#5	STR	13'-9"	229
V4	24	#5	STR	13'-1"	328
V5	16	#5	STR	13'-2"	220

REINFORCING STEEL 9,597 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP, LOWER PART OF WINGS, CONCRETE COLLARS, & WING BRACE PILE BLOCKS 47.1 C.Y.

POUR #2 BACKWALL & UPPER PART OF WINGS 25.8 C.Y.

TOTAL CLASS A CONCRETE 72.9 C.Y.

HP 12 X 53 STEEL PILES
NO: 13 LIN. FT.= 936

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 13

Digitally signed by: Hardy Wilis
2021.03.17 15:47:15 -04'00'
287FCF0223481...
8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 3 OF 3

Vaughn & Melton
Consulting Engineers
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Atlanta, GA 770-627-3590
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

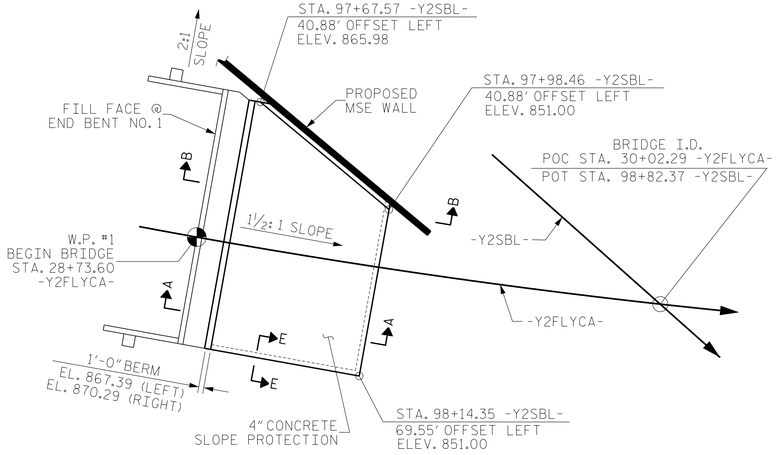
SUBSTRUCTURE

END BENT NO. 2

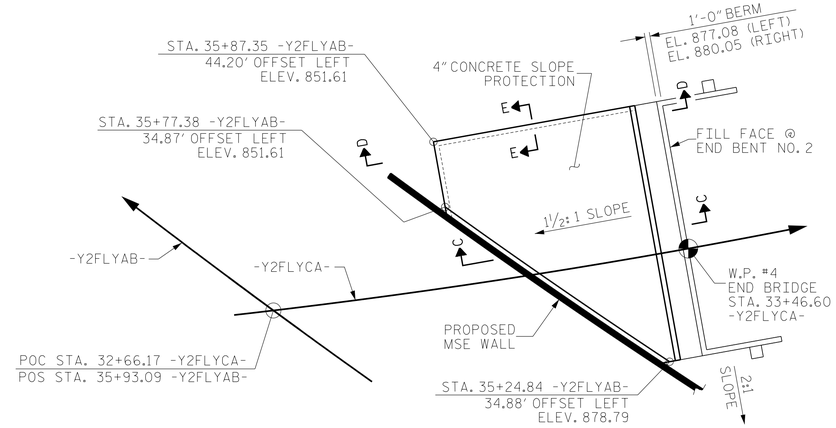
DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-55
1			3			TOTAL SHEETS
2			4			59

V & M PROJECT NO.: 31748.44 $DATE$ $FILES$



PLAN @ END BENT 1

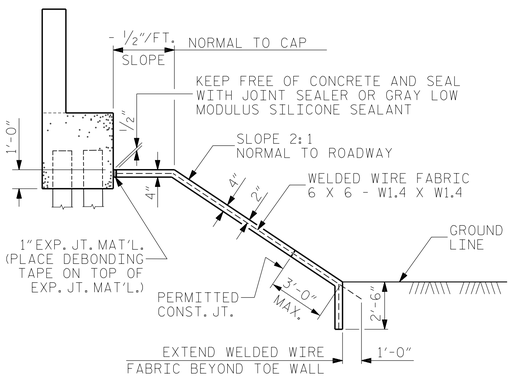


PLAN @ END BENT 2

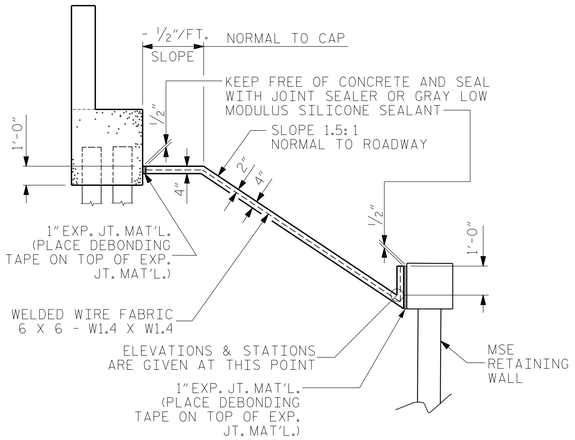
GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

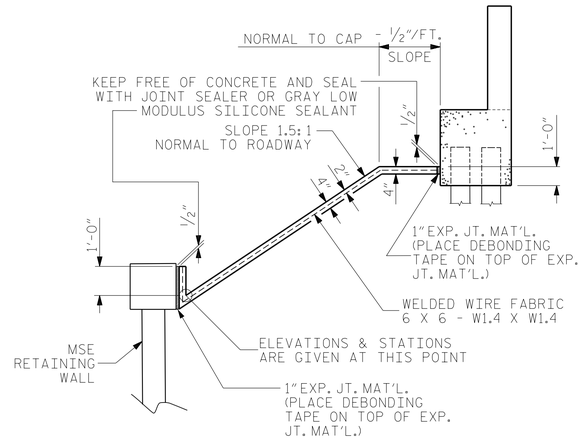
SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.



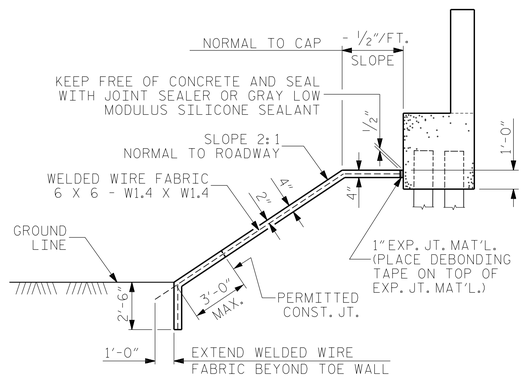
SECTION A-A ALONG -Y2FLYCA- @ END BENT 1



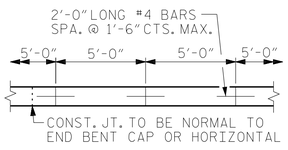
SECTION B-B ALONG -Y2FLYCA- @ END BENT 1



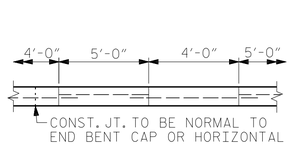
SECTION C-C ALONG -Y2FLYCA- @ END BENT 2



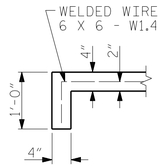
SECTION D-D ALONG -Y2FLYCA- @ END BENT 2



POURING DETAIL



OPTIONAL POURING DETAIL



SECTION E-E

BRIDGE @ STA. 30+02.29 -Y2FLYCA-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	179	323
END BENT 2	181	326

* QUANTITY SHOWN IS BASED ON 5' POURS.

DocuSigned by:
Hardy Willis
1AC287F0F0223461...
8/8/2022

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PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

Vaughn & Melton
Consulting Engineers
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Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3590
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488

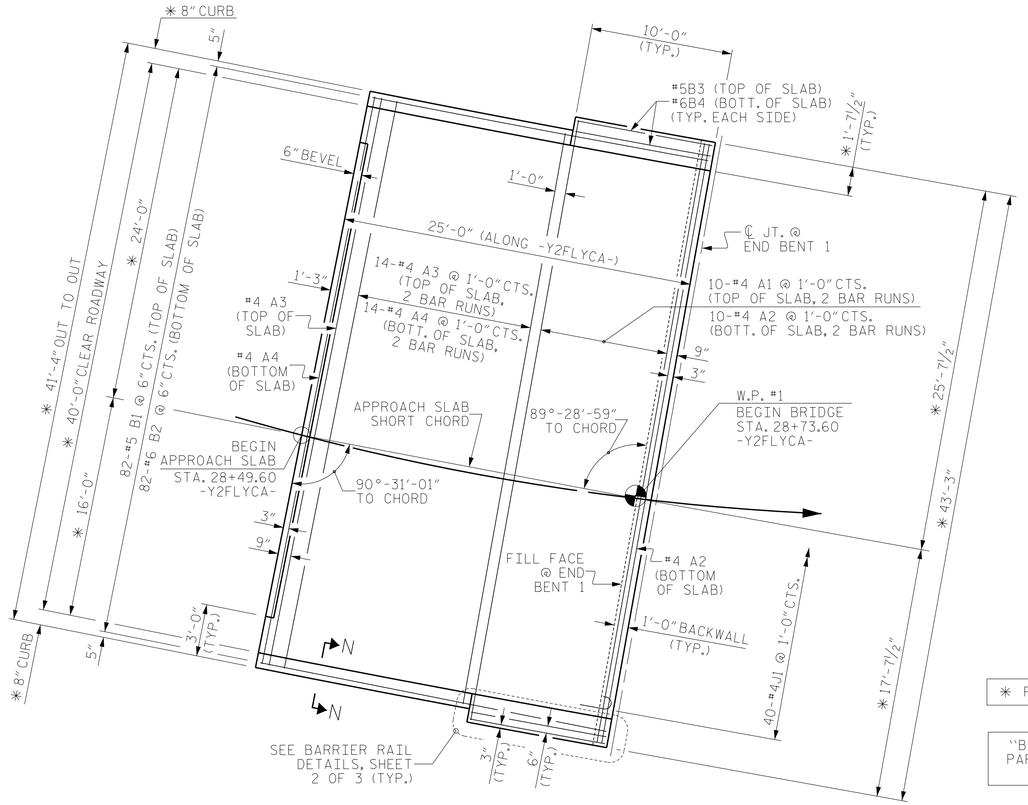
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION DETAILS

DWN. BY: WDC DATE: 03/2021
CHKD. BY: HLW DATE: 03/2021
DES. EGR. OF RECORD: RTS DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-56
1			3			TOTAL SHEETS
2			4			59

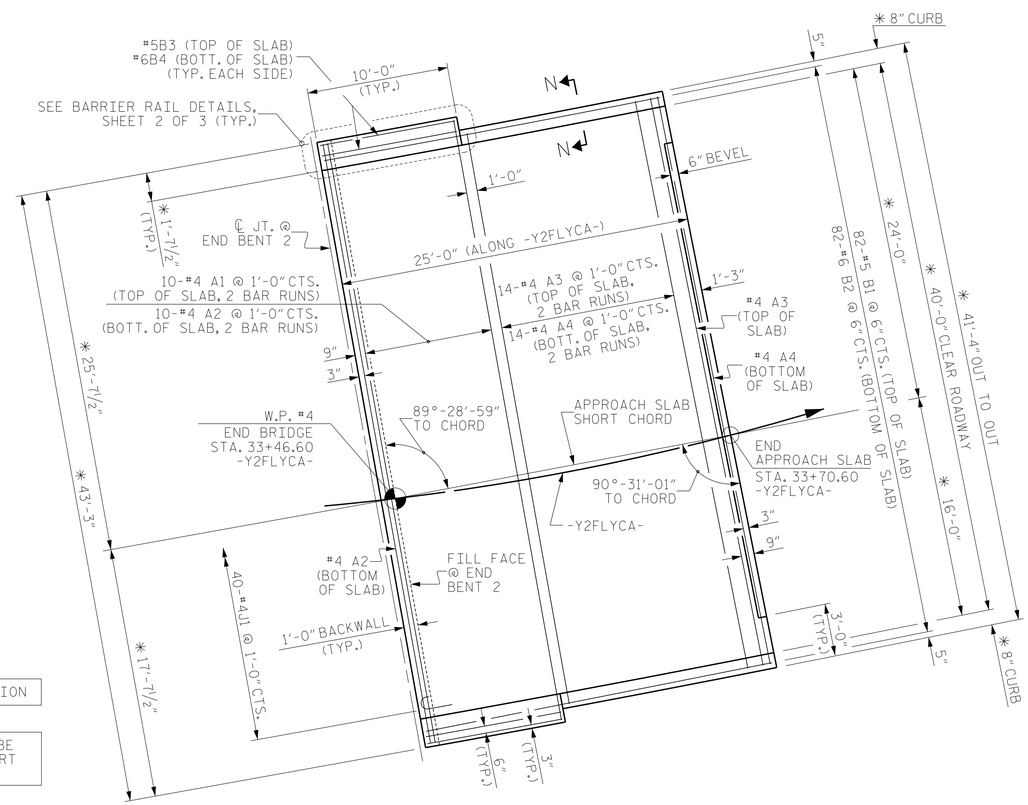
$FILES$ $DATE$ V & M PROJECT NO.: 31748.44



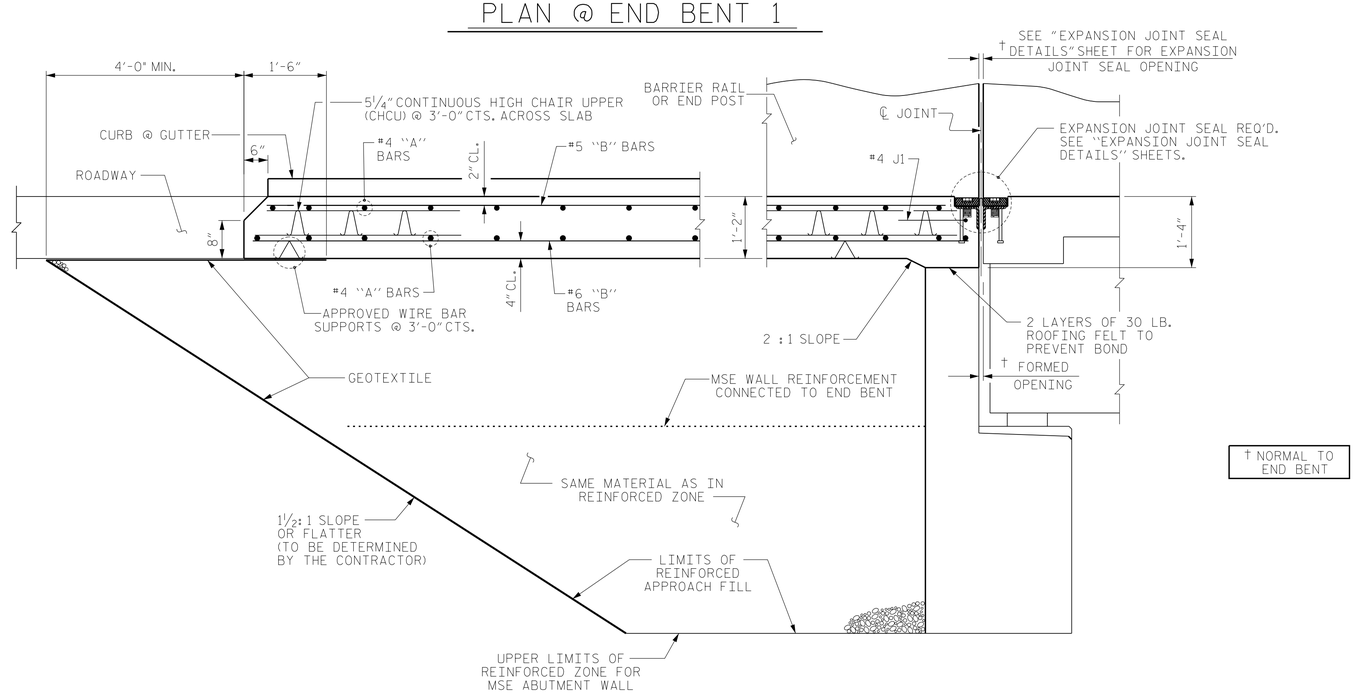
* RADIAL DIMENSION

"B" BARS SHALL BE PARALLEL TO SHORT CHORDS

PLAN @ END BENT 1



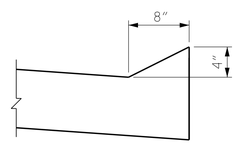
PLAN @ END BENT 2



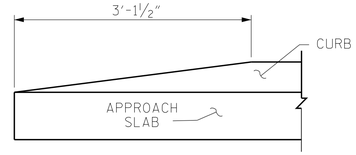
† NORMAL TO END BENT

SECTION THRU SLAB

(TYPE III - REINFORCED APPROACH FILL) (END BENT 1 SHOWN, END BENT 2 SIMILAR)



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20777 HARDY L. WILLIS

Digitally signed by: Hardy Willis
DN: C=US, E=hwillis@vandm.com, O=Vaughn & Melton, CN=Hardy Willis
Date: 2022.08.08 07:57:11 -04'00'

8/8/2022

Vaughn & Melton
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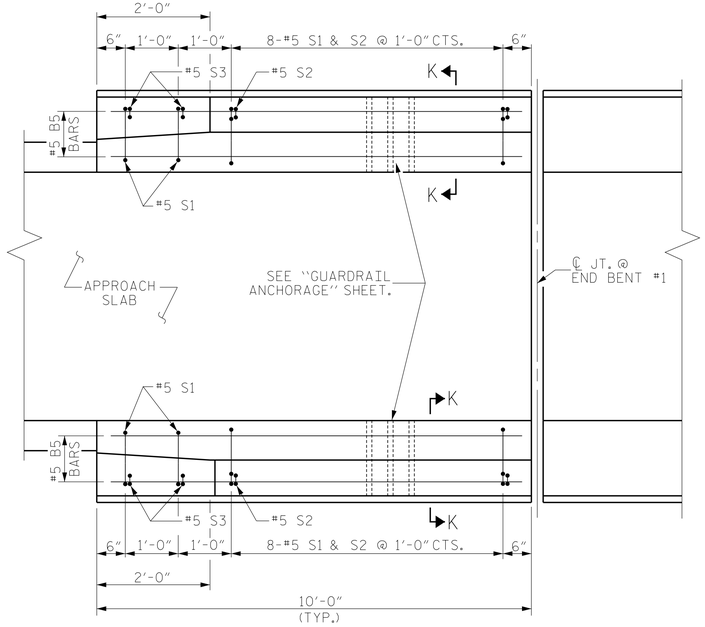
DES. EGR. OF RECORD: RTS DATE: 03/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-57
1			3			TOTAL SHEETS
2			4			59

$FILE$
$DATE$
V & M PROJECT NO.: 31748.44



PLAN OF BARRIER RAIL

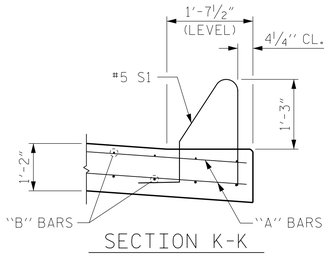
(END BENT #1 SHOWN, END BENT #2 SIMILAR)

NOTES (BARRIER RAIL)

THE BARRIER RAIL ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

THE COST OF THE BARRIER RAIL ON APPROACH SLABS SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.



SECTION K-K

NOTES (APPROACH SLABS)

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, MSE WALL REINFORCEMENT AND BACKFILL MATERIAL SEE ROADWAY PLANS.

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

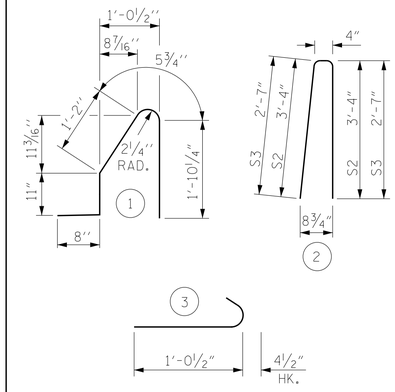
BACKFILL MATERIAL SHALL BE THE SAME MATERIAL USED IN THE MSE REINFORCED ZONE.

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

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

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

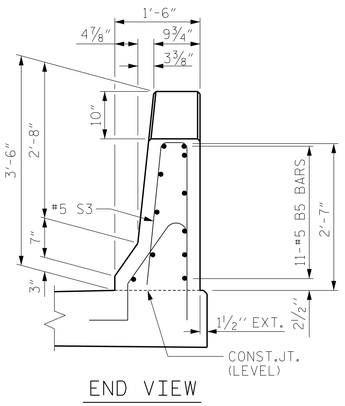
BILL OF MATERIAL

BARRIER RAILS ONLY

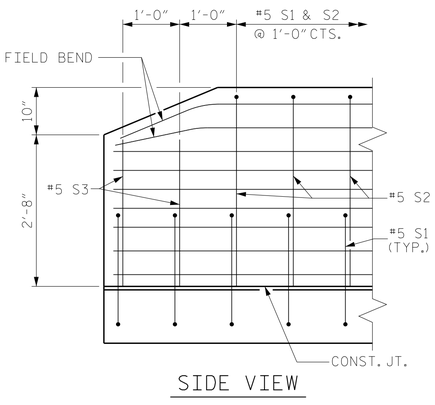
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B5	44	#5	STR	9'-8"	444
* S1	40	#5	1	5'-1"	212
* S2	32	#5	2	7'-0"	234
* S3	8	#5	2	5'-6"	46
* EPOXY COATED REINFORCING STEEL					936 LBS.
CLASS AA CONCRETE					5.4 CU. YDS.
CONCRETE BARRIER RAIL					40.0 LIN. FT.

BILL OF MATERIAL

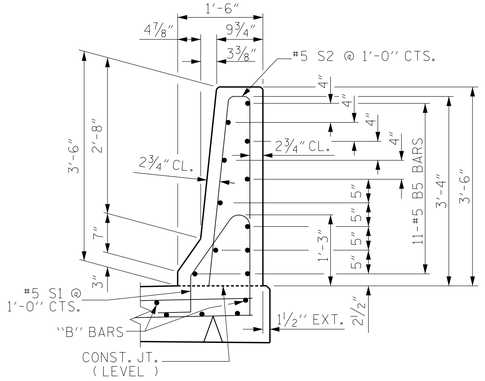
APPROACH SLAB @ END BENT #1						APPROACH SLAB @ END BENT #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	20	#4	STR	22'-5"	299	* A1	20	#4	STR	22'-5"	299
A2	22	#4	STR	22'-3"	327	A2	22	#4	STR	22'-3"	327
* A3	30	#4	STR	21'-6"	431	* A3	30	#4	STR	21'-6"	431
A4	30	#4	STR	21'-4"	428	A4	30	#4	STR	21'-4"	428
* B1	82	#5	STR	23'-10"	2038	* B1	82	#5	STR	23'-10"	2038
B2	82	#6	STR	24'-8"	3038	B2	82	#6	STR	24'-8"	3038
* B3	4	#5	STR	9'-8"	40	* B3	4	#5	STR	9'-8"	40
B4	4	#6	STR	9'-8"	58	B4	4	#6	STR	9'-8"	58
* J1	40	#4	3	1'-5"	38	* J1	40	#4	3	1'-5"	38
REINFORCING STEEL					3,851 LBS.	REINFORCING STEEL					3,851 LBS.
* EPOXY COATED REINFORCING STEEL					2,846 LBS.	* EPOXY COATED REINFORCING STEEL					2,846 LBS.
CLASS AA CONCRETE					45.9 CU. YDS.	CLASS AA CONCRETE					45.9 CU. YDS.



END VIEW



SIDE VIEW



SECTION THRU RAIL

END OF RAIL DETAILS

SPLICE LENGTHS

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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047277 HARDIN L. WILLIS

Digitally signed by Hardin Willis

8/8/2022

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Vaughn & Melton
Consulting Engineers
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Tri-Cities, TN 423-467-8401
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Middlesboro, KY 606-248-6600
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Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3509

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

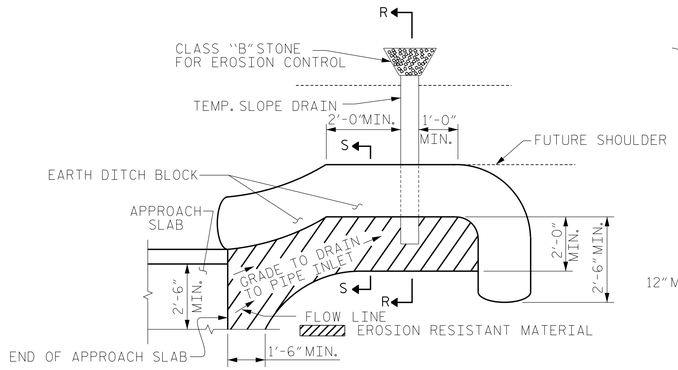
BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

DWN. BY: WDC	DATE: 03/2021	
CHKD. BY: HLW	DATE: 03/2021	
DES. EGR. OF RECORD: RTS	DATE: 03/2021	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-58
1			3			TOTAL SHEETS
2			4			59

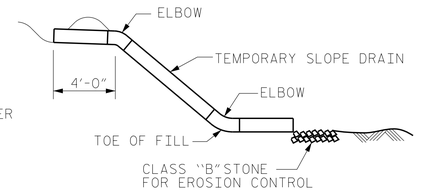
STD. NO. BAS4

V & M PROJECT NO.: 31748.44 $DATE$ $FILES$

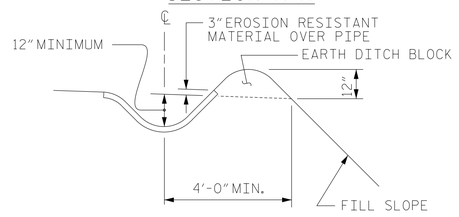


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



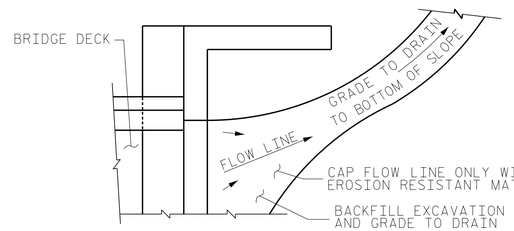
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+02.29 -Y2FLYCA-
98+82.37 -Y2SBL-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047287 HARDY L. WILLIS
Designed by: Hardy Willis
8/8/2022

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-59
1			3			TOTAL SHEETS
2			4			59

STD. NO. BAS4

DRAWN BY : FCJ	11/88	REV. 10/1/11	MAA/GM
CHECKED BY : ARB	11/88	REV. 7/12	MAA/GM
		REV. 6/13	MAA/GM

V & M PROJECT NO.: 31748.44 $DATE$ $FILES$

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 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 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

REV. 6-16-95 EEM (√) RGW REV. 5-7-03 RWW (√) JTE REV. 10-1-11 MAA (√) GM
REV. 8-16-99 RWW (√) LES REV. 5-1-06 TLA (√) GM REV. 12-17 MAA (√) THC

F.A. PROJECT NO. 0074226

22+00 22+50 23+00 23+50 24+00

870 860 850 840 830

FILL FACE @ END BENT 1
STA. 22+24.09 -Y1-
GRADE POINT EL. 863.68

BERM WIDTH
SEE PLAN VIEW

INTEGRAL

FILL

EL. 846±

4" CONC. SLOPE PROTECTION (TYP.)

EL. 844.3±

FILL

ROADWAY EXCAVATION (ROADWAY PAY ITEM)

EL. 843.5±

18'-4" MIN. VERT. CL.

SPAN A

HP 12X53 STEEL PILES

℄ DITCH & PI OF 6' VERT. CURVE

EL. 838.5±

END BENT 1
(INTEGRAL)

FILL FACE @ END BENT 2
STA. 23+40.76 -Y-
GRADE POINT EL. 864.66

BERM WIDTH
SEE PLAN VIEW

INTEGRAL

1.5:1 SLOPE NORMAL TO CAP (TYP.)

1'-6" (TYP.)

FILL

FILL

APPROXIMATE EXISTING GROUND LINE

EL. 840±

HP 12X53 STEEL PILES

EL. 842.2±

℄ DITCH & PI OF 6' VERT. CURVE

END BENT 2
(INTEGRAL)

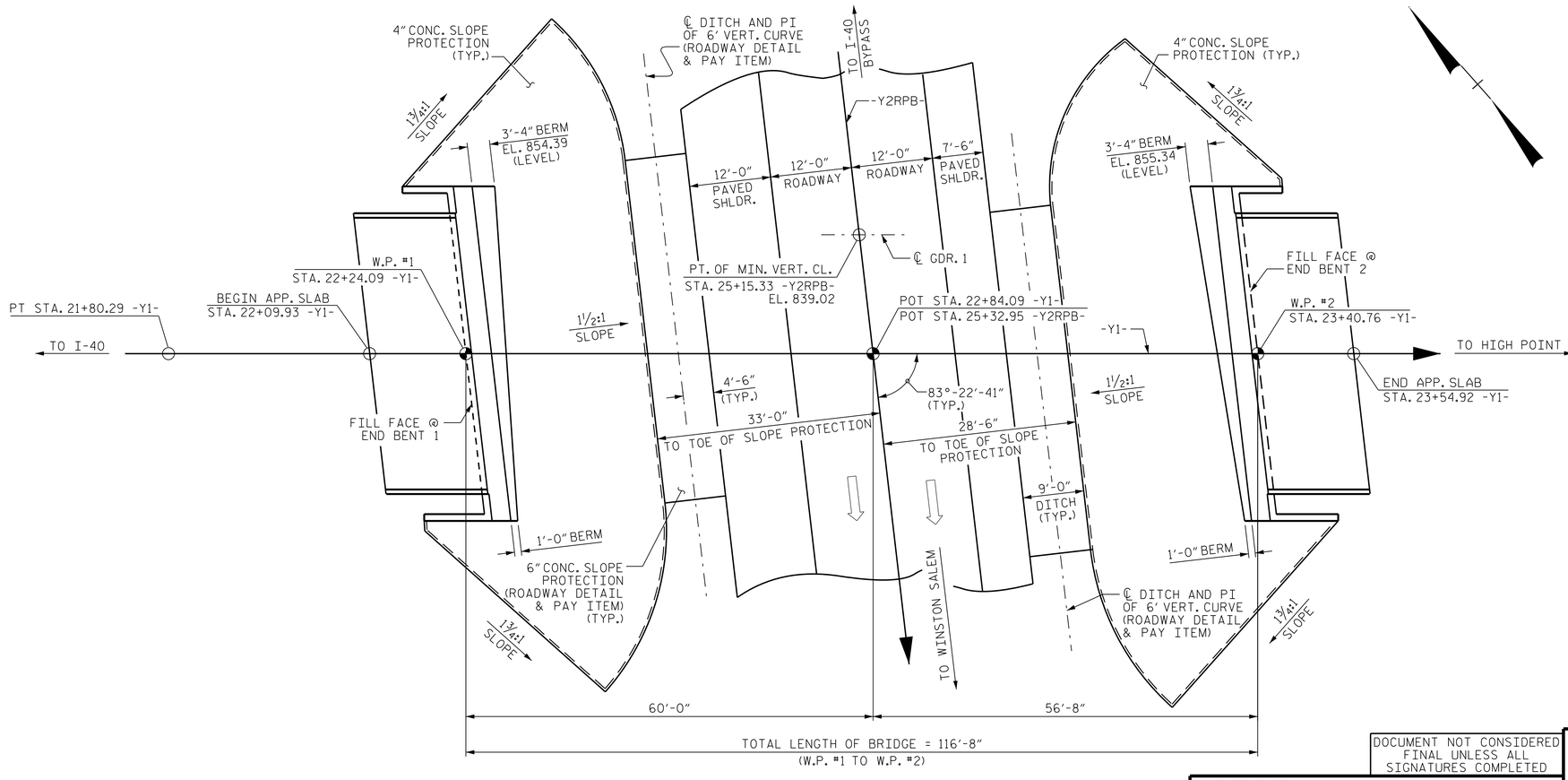
0.8447% ∆ -3.1561%

PVI STA. 27+48.00 -L-
PVI EL. = 868.10
V.C. = 640'

GRADE DATA -Y1-

SECTION ALONG -Y1-

(SECTION AT END BENTS ARE AT RIGHT ANGLES)



PLAN

(PILES NOT SHOWN FOR CLARITY)

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 22+84.09 -Y1-
= 25+32.95 -Y2RPB-

SHEET 1 OF 3 BRIDGE NO. 330731

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1003
OVER RAMP -Y2RPB-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CDM Smith
CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DRAWN BY : VDK DATE : 9/18
CHECKED BY : THF DATE : 9/18
DESIGN ENGINEER : VDK DATE : 9/18

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSIUNG FANG
Ting Fang
7/14/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-01
1			3			TOTAL SHEETS
2			4			22

SITE #3

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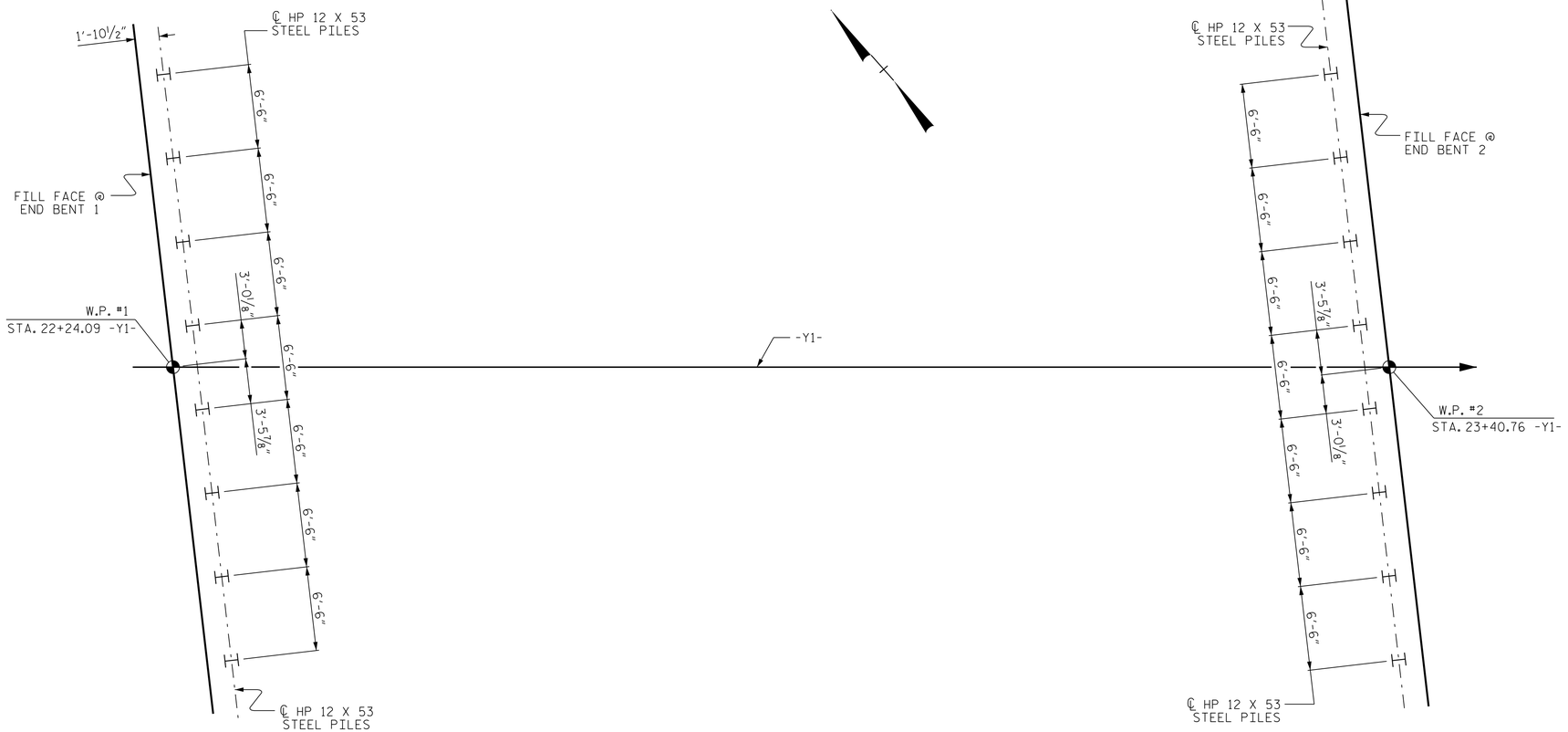

END BENT 1
(INTEGRAL)

END BENT 2
(INTEGRAL)

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT THE BOTTOM OF CAPS. ALL PILES ARE VERTICAL.

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT 1. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT END BENT 1 TO ELEVATION OF 820 FEET WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 12". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.

FILE: SPILES
DATE: 12DATES
STIMES

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 22+84.09 -Y1-

SHEET 2 OF 3

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DESIGN ENGINEER :	VDK	DATE :	9/18

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING-HSIUNG FANG
Ting Fang
7/4/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

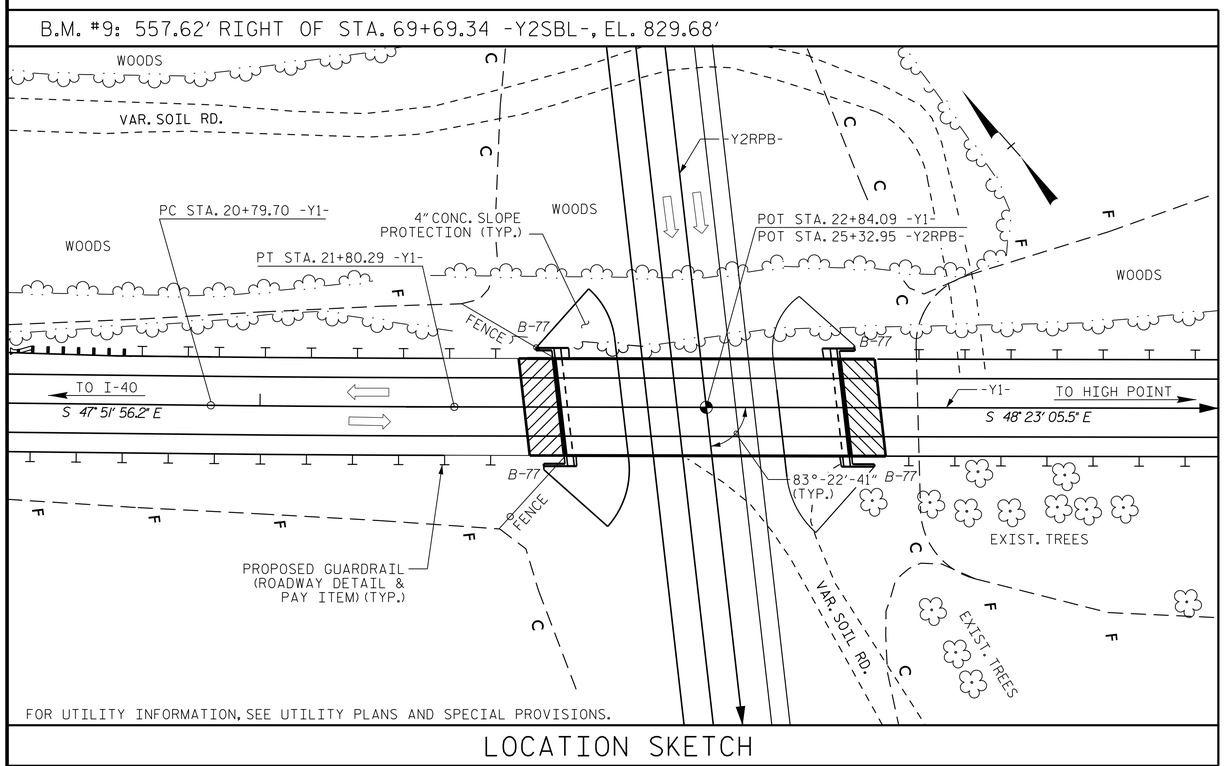
GENERAL DRAWING

FOR BRIDGE ON SR 1003
OVER RAMP -Y2PRB-

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-02
1			3			TOTAL SHEETS
2			4			22

TOTAL BILL OF MATERIAL

	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	PREDRILLING FOR PILES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
	SQ. FT.	SQ. FT.	CU. YDS	LUMP SUM	LBS.	NO.	LIN. FT.	EACH	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE	4,973	5,315				5	571.56						229.98		LUMP SUM
END BENT 1			38.3		5,602			8	8	440	8	200		280	
END BENT 2			38.3		5,602			8	8	280				300	
TOTAL	4,973	5,315	76.6	LUMP SUM	11,204	5	571.56	16	16	720	8	200	229.98	580	LUMP SUM



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

THE ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINTS OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) ON THE PROPOSED PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

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.

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND fy = 60 ksi.

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 22+84.09 -Y1-

SHEET 3 OF 3

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DESIGN ENGINEER : VDK DATE : 9/18

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSIUNG FANG
Ting Fang
60EA3C9AEA60462...
7/14/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1003
OVER RAMP -Y2RPB-

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-03
1			3			TOTAL SHEETS
2			4			22

FILE: SFILES
DATE: SDATES
STIMES

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	(#) CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × 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 RATING		HL-93 (INVENTORY)	N/A	1	1.12	--	1.75	0.857	1.28	A	E	56.4	0.872	1.48	A	E	10.7	0.80	0.857	**1.12**	A	E	**56.4**	
		HL-93 (OPERATING)	N/A	--	1.66	--	1.35	0.857	1.66	A	E	56.4	0.872	1.95	A	E	10.7	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	2	1.60	58.680	1.75	0.857	1.84	A	E	56.4	0.872	2.08	A	E	10.7	0.80	0.857	**1.60**	A	E	**56.4**	
		HS-20 (OPERATING)	36.000	--	2.39	87.120	1.35	0.857	2.39	A	E	56.4	0.872	2.74	A	E	10.7	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	3.87	46.980	1.40	0.857	5.56	A	E	56.4	0.872	6.77	A	E	10.7	0.80	0.857	3.87	A	E	56.4	
		SNGARBS2	20.000	--	2.77	50.000	1.40	0.857	3.99	A	E	56.4	0.872	4.67	A	E	10.7	0.80	0.857	2.77	A	E	56.4	
		SNAGRIS2	22.000	--	2.58	51.040	1.40	0.857	3.71	A	E	56.4	0.872	4.32	A	E	10.7	0.80	0.857	2.58	A	E	56.4	
		SNCOTTS3	27.250	--	1.92	47.143	1.40	0.857	2.76	A	E	56.4	0.872	3.30	A	E	10.7	0.80	0.857	1.92	A	E	56.4	
		SNAGGRS4	34.925	--	1.56	49.244	1.40	0.857	2.25	A	E	56.4	0.872	2.66	A	E	10.7	0.80	0.857	1.56	A	E	56.4	
		SNS5A	35.550	--	1.53	49.059	1.40	0.857	2.20	A	E	56.4	0.872	2.65	A	E	10.7	0.80	0.857	1.53	A	E	56.4	
		SNS6A	39.950	--	1.39	49.937	1.40	0.857	2.00	A	E	56.4	0.872	2.38	A	E	10.7	0.80	0.857	1.39	A	E	56.4	
		SNS7B	42.000	--	1.32	49.980	1.40	0.857	1.90	A	E	56.4	0.872	2.30	A	E	10.7	0.80	0.857	1.32	A	E	56.4	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	--	1.69	50.160	1.40	0.857	2.43	A	E	56.4	0.872	2.88	A	E	10.7	0.80	0.857	1.69	A	E	56.4	
		TNT4A	33.075	--	1.69	50.274	1.40	0.857	2.43	A	E	56.4	0.872	2.83	A	E	10.7	0.80	0.857	1.69	A	E	56.4	
		TNT6A	41.600	--	1.37	51.168	1.40	0.857	1.96	A	E	56.4	0.872	2.40	A	E	10.7	0.80	0.857	1.37	A	E	56.4	
		TNT7A	42.000	--	1.37	51.660	1.40	0.857	1.96	A	E	56.4	0.872	2.36	A	E	10.7	0.80	0.857	1.37	A	E	56.4	
		TNT7B	42.000	--	1.39	52.500	1.40	0.857	2.00	A	E	56.4	0.872	2.26	A	E	10.7	0.80	0.857	1.39	A	E	56.4	
		TNAGRIT4	43.000	--	1.34	52.030	1.40	0.857	1.93	A	E	56.4	0.872	2.20	A	E	10.7	0.80	0.857	1.34	A	E	56.4	
		TNAGT5A	45.000	--	1.27	51.300	1.40	0.857	1.83	A	E	56.4	0.872	2.15	A	E	10.7	0.80	0.857	1.27	A	E	56.4	
		TNAGT5B	45.000	3	1.26	51.300	1.40	0.857	1.81	A	E	56.4	0.872	2.09	A	E	10.7	0.80	0.857	**1.26**	A	E	**56.4**	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

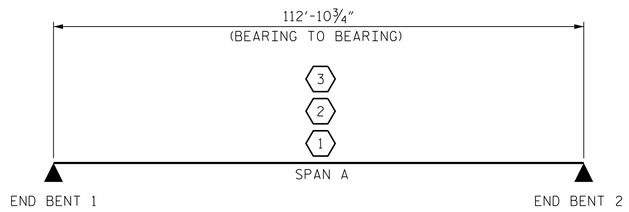
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 22+84.09 -Y1-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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NC COA No. F-1255

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DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSIUNG FANG
Ting Fang
7/4/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

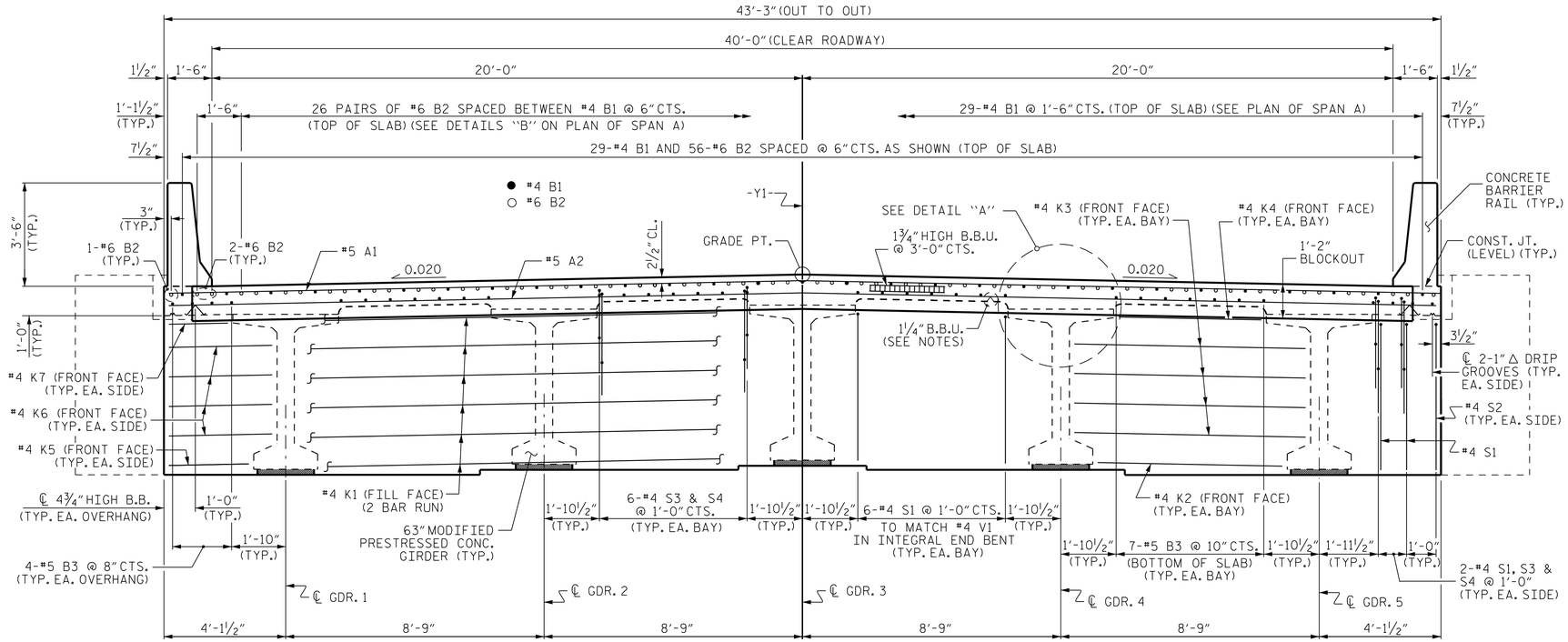
LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-04
1			3			TOTAL SHEETS
2			4			22

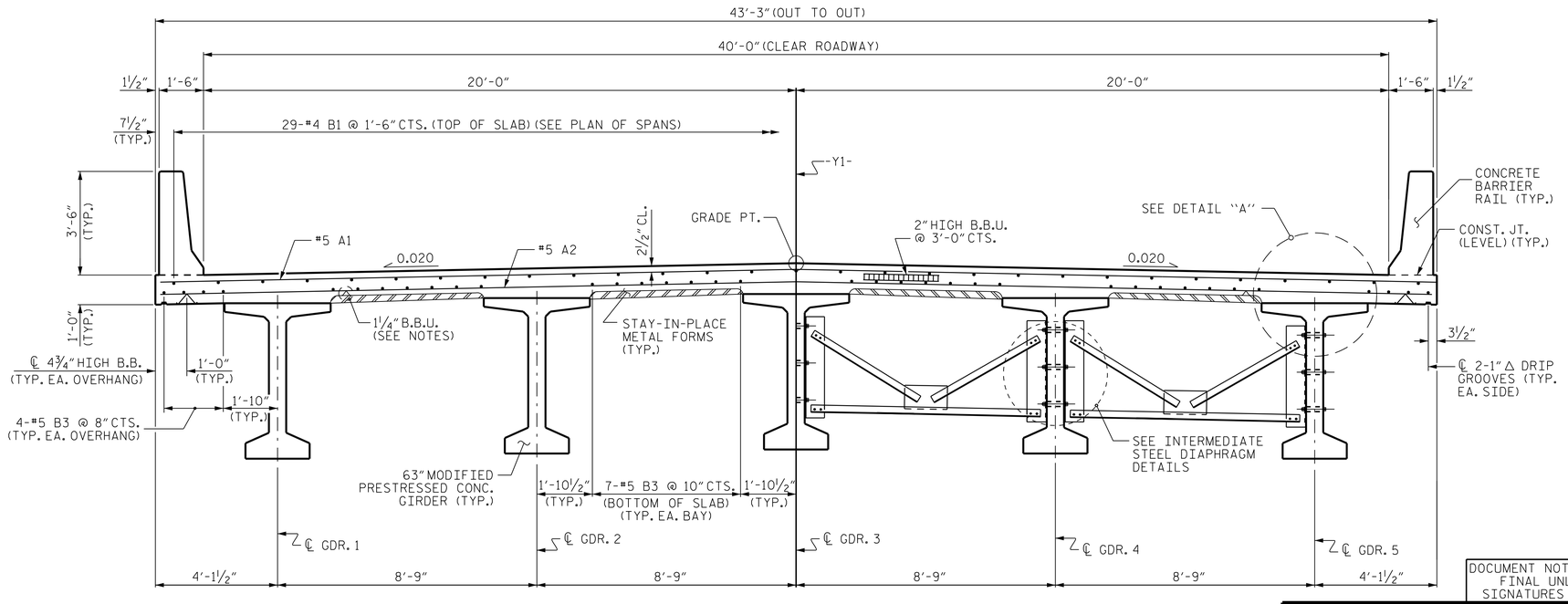
FILE: SFILES
DATE: SDATES
STAKES

STD. NO. LRFR1



TYPICAL SECTION

SHOWING ABUTMENT WALL AT END BENT



HALF TYPICAL SECTION

(SHOWING DECK)

HALF TYPICAL SECTION

(SHOWING INTERMEDIATE DIAPHRAGMS)

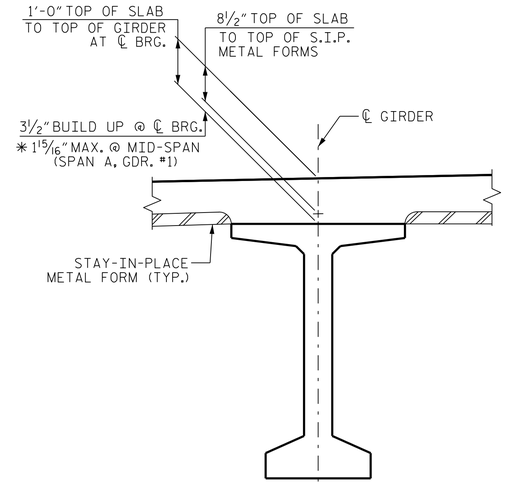
NOTES

PROVIDE 1¼" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

BARRIER RAILS IN THE SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

FOR INTERMEDIATE STEEL DIAPHRAGMS DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" PRESTRESSED CONCRETE MODIFIED BULB TEE GIRDERS" SHEET.



DETAIL "A"

✱ BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 22+84.09 -Y1-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

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60E43C8AEA60462...
7/14/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-05
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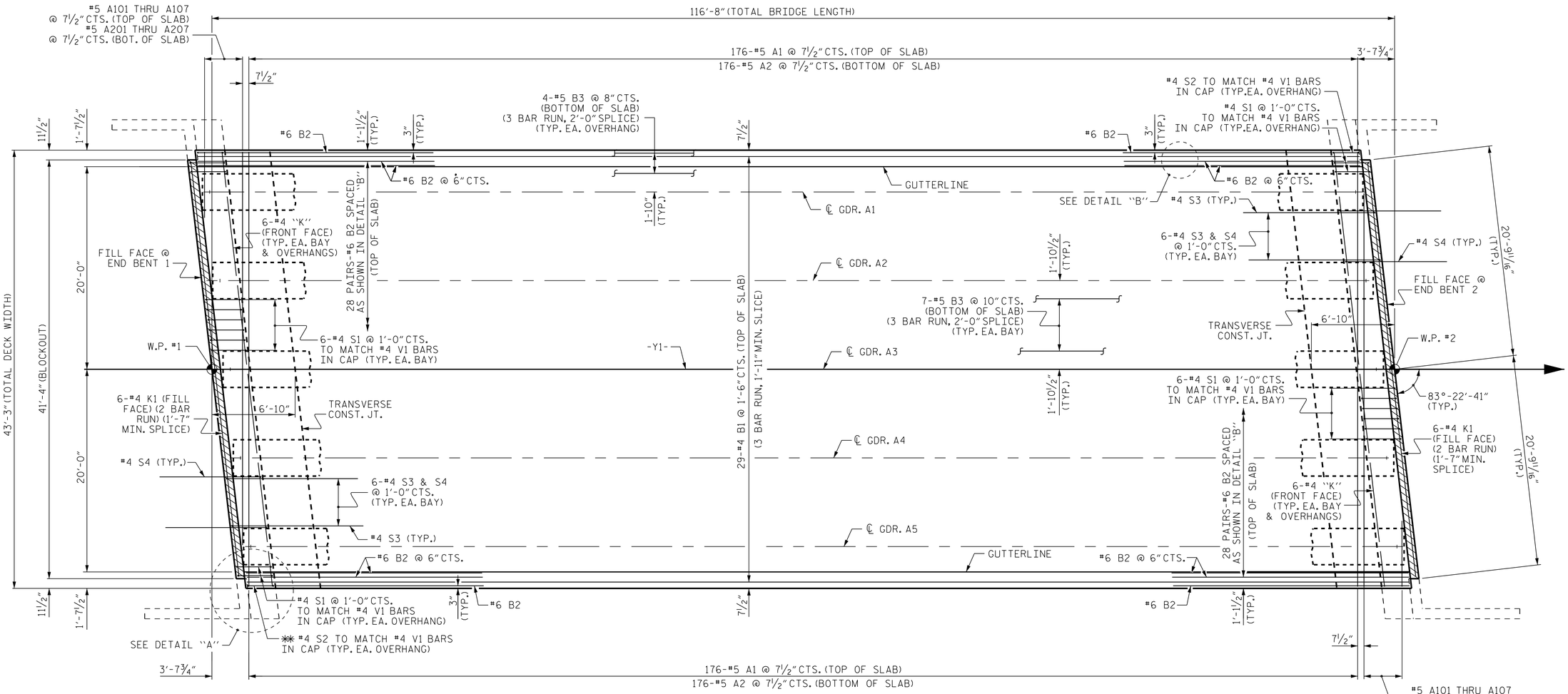
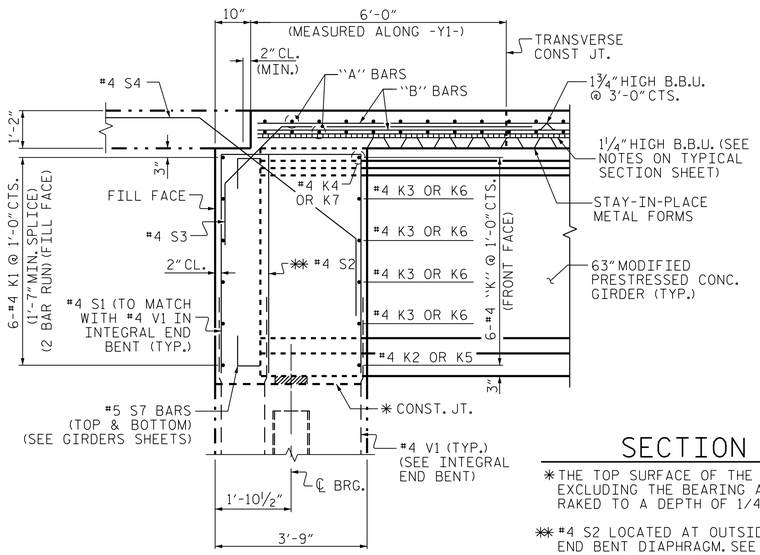
FILE: SFILES STIMES
DATE: SDATES



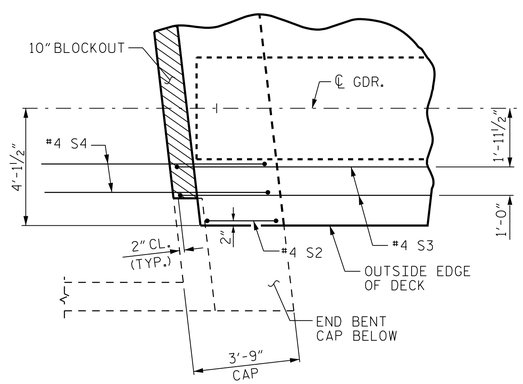
PLAN OF SPAN



SECTION A-A

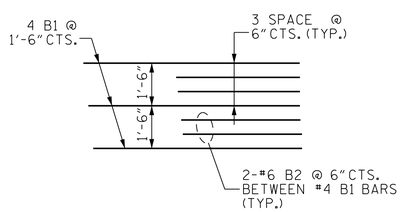
* THE TOP SURFACE OF THE END BENT CAP EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4"

** #4 S2 LOCATED AT OUTSIDE EDGES OF INTEGRAL END BENT DIAPHRAGM. SEE PLAN OF SPANS AND TYPICAL SECTION FOR PLACEMENT DETAILS.



DETAIL "A"

#4 S1 NOT SHOWN FOR CLARITY.



DETAIL "B"

SHOWING PLACEMENT OF #6 B2 BETWEEN #4 B1 IN TOP OF SLAB IN INTEGRAL END BENT REGION.

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 22+84.09 -Y1-

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CHECKED BY :	THF	DATE : 9/18
DESIGN ENGINEER :	VDK	DATE : 9/18

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSILING FANG
Digitally signed by: Ting Fang
DocuSigned by: 7/4/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS
SPAN A

REVISIONS						SHEET NO.
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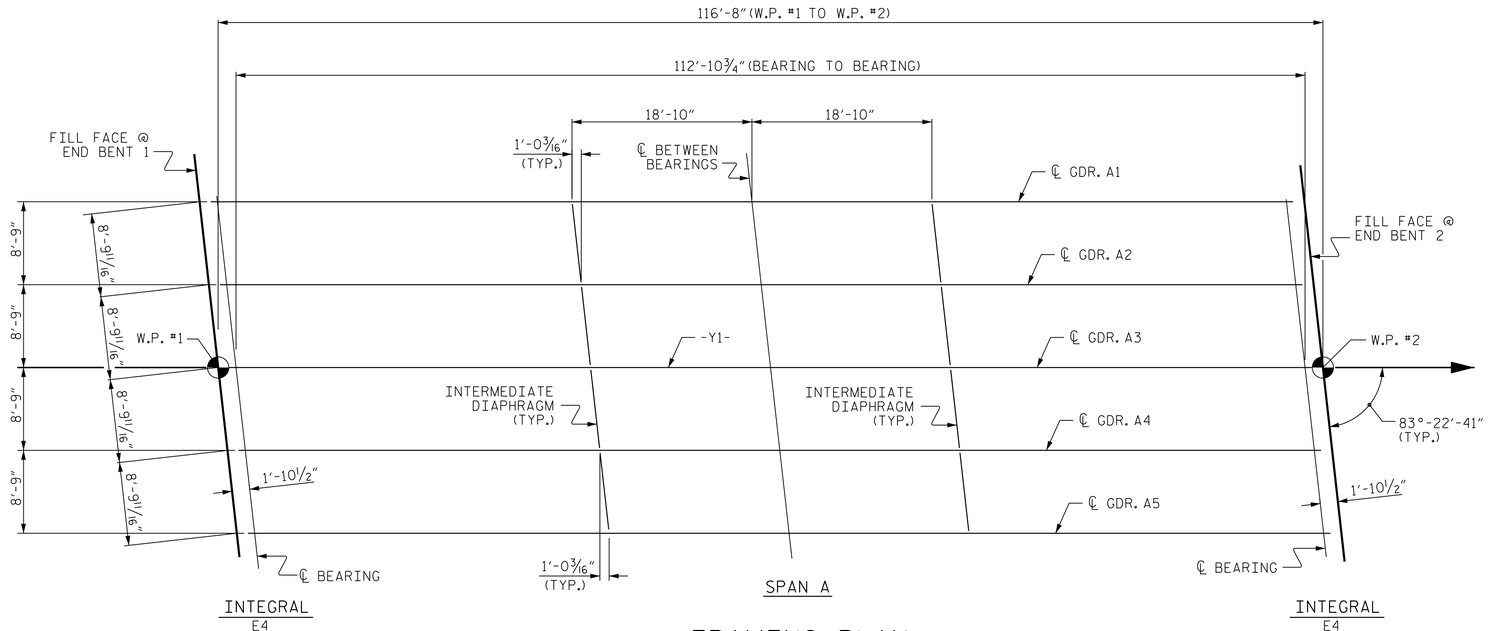
DATE: SDATES
STIWES



FRAMING PLAN

DEAD LOAD DEFLECTION TABLE

	SPAN A																					
	GIRDERS 1 & 5																					
FORTIETH POINTS	BRG.	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.026	0.051	0.076	0.101	0.125	0.148	0.170	0.192	0.211	0.230	0.246	0.262	0.276	0.289	0.298	0.307	0.313	0.319	0.321	0.323
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.015	0.030	0.044	0.058	0.073	0.087	0.101	0.114	0.126	0.137	0.148	0.158	0.166	0.174	0.180	0.186	0.190	0.193	0.194	0.195
FINAL CAMBER ↑	0	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	13/16"	15/16"	1"	1 1/8"	1 3/16"	1 1/4"	1 5/16"	1 3/8"	1 7/16"	1 7/16"	1 1/2"	1 1/2"	1 1/2"	1 9/16"
	GIRDERS 1 & 5 (CONT.)																					
FORTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	BRG.		
CAMBER (GIRDER ALONE IN PLACE) ↑	0.321	0.319	0.313	0.307	0.298	0.289	0.276	0.262	0.246	0.230	0.211	0.192	0.170	0.148	0.125	0.101	0.076	0.051	0.026	0		
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.194	0.193	0.190	0.186	0.180	0.174	0.166	0.158	0.148	0.137	0.126	0.114	0.101	0.087	0.073	0.058	0.044	0.030	0.015	0		
FINAL CAMBER ↑	1 1/2"	1 1/2"	1 1/2"	1 7/16"	1 7/16"	1 3/8"	1 5/16"	1 1/4"	1 3/16"	1 1/8"	1"	15/16"	13/16"	3/4"	5/8"	1/2"	3/8"	1/4"	1/8"	0		
	GIRDERS 2, 3 & 4																					
FORTIETH POINTS	BRG.	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.026	0.051	0.076	0.101	0.125	0.148	0.170	0.192	0.211	0.230	0.246	0.262	0.276	0.289	0.298	0.307	0.313	0.319	0.321	0.323
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.015	0.030	0.045	0.059	0.074	0.088	0.102	0.115	0.127	0.138	0.149	0.159	0.167	0.175	0.181	0.187	0.191	0.194	0.195	0.196
FINAL CAMBER ↑	0	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	13/16"	15/16"	1"	1 1/8"	1 3/16"	1 1/4"	1 5/16"	1 3/8"	1 7/16"	1 7/16"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
	GIRDERS 2, 3 & 4 (CONT.)																					
FORTIETH POINTS	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	BRG.		
CAMBER (GIRDER ALONE IN PLACE) ↑	0.321	0.319	0.313	0.307	0.298	0.289	0.276	0.262	0.246	0.230	0.211	0.192	0.170	0.148	0.125	0.101	0.076	0.051	0.026	0		
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.195	0.194	0.191	0.187	0.181	0.175	0.167	0.159	0.149	0.138	0.127	0.115	0.102	0.088	0.074	0.059	0.045	0.030	0.015	0		
FINAL CAMBER ↑	1 1/2"	1 1/2"	1 1/2"	1 7/16"	1 7/16"	1 3/8"	1 5/16"	1 1/4"	1 3/16"	1 1/8"	1"	15/16"	13/16"	3/4"	5/8"	1/2"	3/8"	1/4"	1/8"	0		

✳ INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM) EXCEPT "FINAL CAMBER," WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 22+84.09 -Y1-

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CHECKED BY : THF DATE : 9/18
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DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSIUNG FANG
Ting Fang
60E43C0AEA60462...
7/14/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN AND DEAD LOAD DEFLECTIONS

REVISIONS						SHEET NO.
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2			4			22

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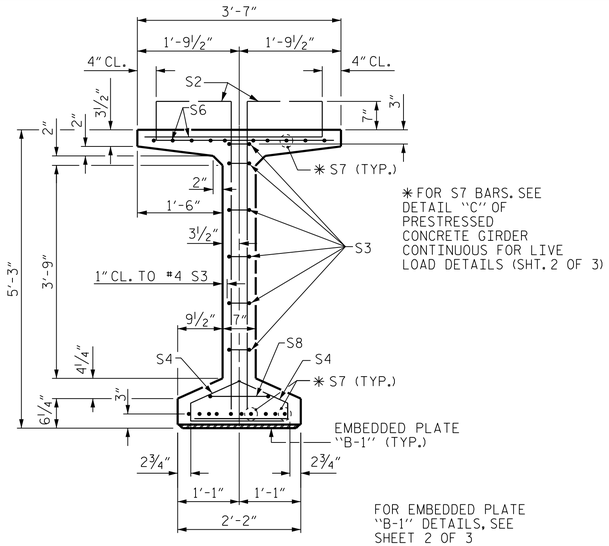
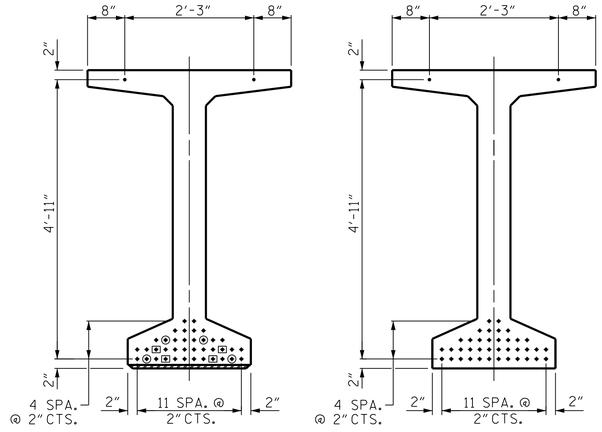
DATE: $DATE$ $TIME$



SECTION A-A

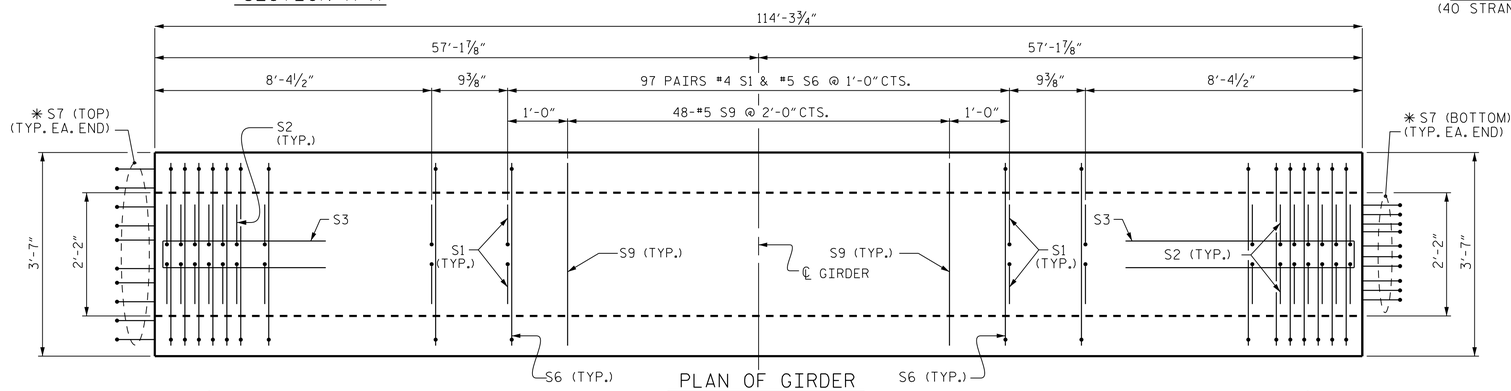
DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ⊡ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER
- ⊙ STRANDS DEBONDED FOR 36'-0" FROM END OF GIRDER



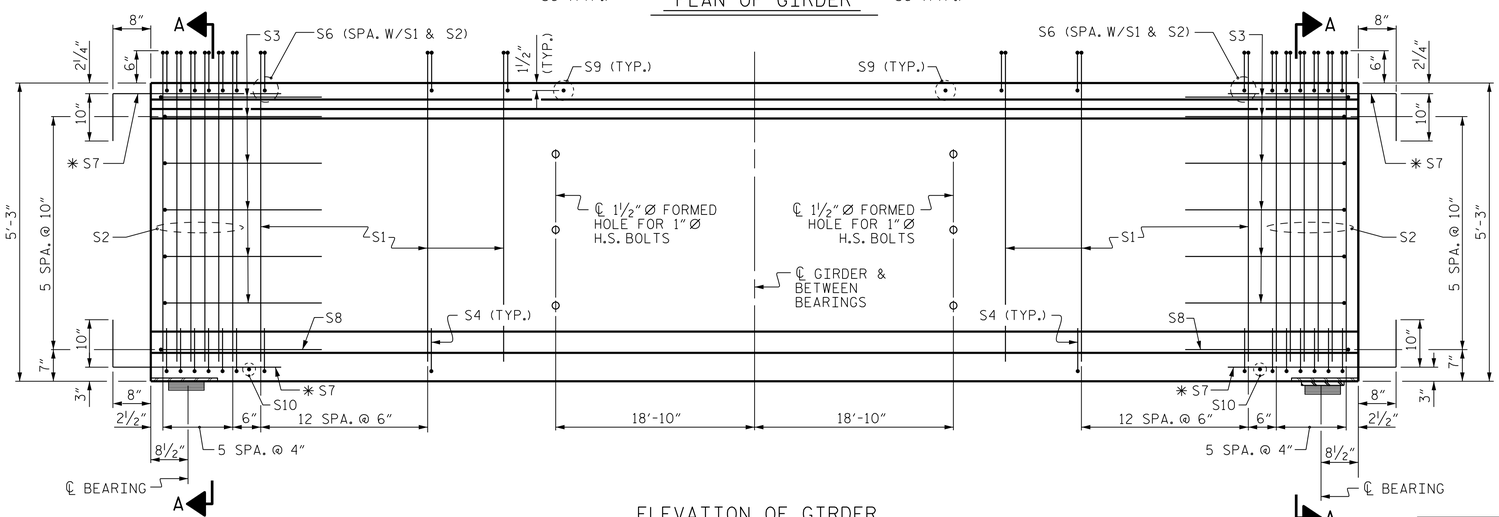
0.6" Ø LOW RELAXATION STRAND LAYOUT

(40 STRANDS, ALL STRAIGHT, 8 PARTIALLY DEBONDED STRANDS)



PLAN OF GIRDER

NO BEVEL REQUIRED AT THE END OF GIRDERS. ALL DIMENSIONS SHOWN ARE HORIZONTAL DISTANCE.



INTEGRAL END BENT 1

ELEVATION OF GIRDER

FOR PARTIAL ELEVATION AND LOCATION OF "S" BARS, SEE SHEET 2 OF 3.
FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE FRAMING PLAN.

INTEGRAL END BENT 2

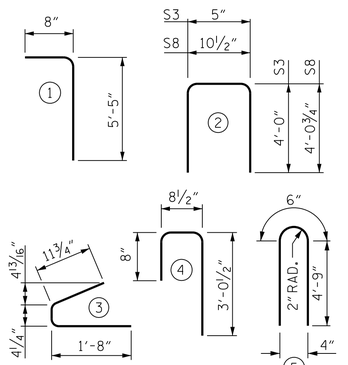
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	246	#4	1	6'-1"	1000
S2	24	#5	1	6'-1"	152
S3	12	#4	2	8'-5"	67
S4	76	#4	3	3'-0"	152
S6	270	#5	4	4'-5"	1244
✱S7	40	#5	STR	3'-8"	153
S8	2	#5	2	9'-0"	19
S9	48	#5	STR	3'-3"	163
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86

✱S7 BARS SHALL BE BENT BEFORE SHIPMENT HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	8500 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	NO.
3,121	22.64	40

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	114'-3¾"	571.56'

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 22+84.09 -Y1-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

63" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD

SPAN A

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DESIGN ENGINEER : VDK DATE : 9/18

DWG. No.

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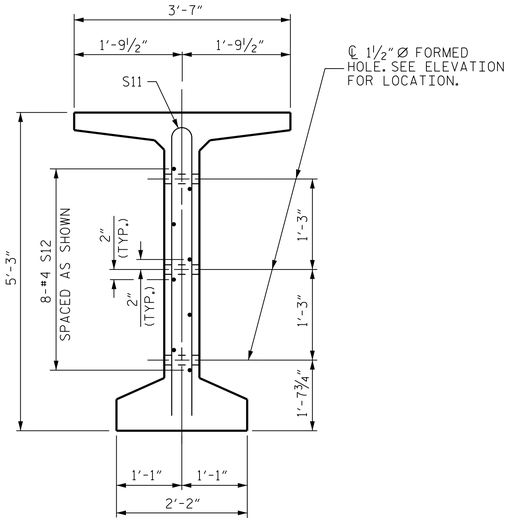
Ting Fang
7/4/2022

DRAWN BY : EEM 2/6/97
CHECKED BY : VAP 2/6/97

REV. 10/1/11 MAA/GM
REV. 6/13 MAA/GM
REV. 1/15 MAA/TMG

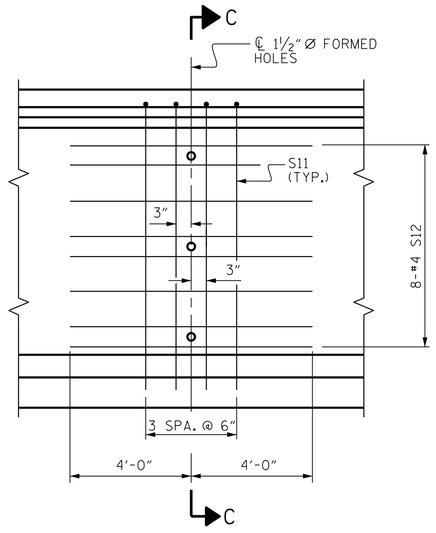
FILE: STLES
DATE: SDATES
STYLES

STD. NO. PCG7



SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS.

PRESTRESSED CONCRETE GIRDER 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 SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

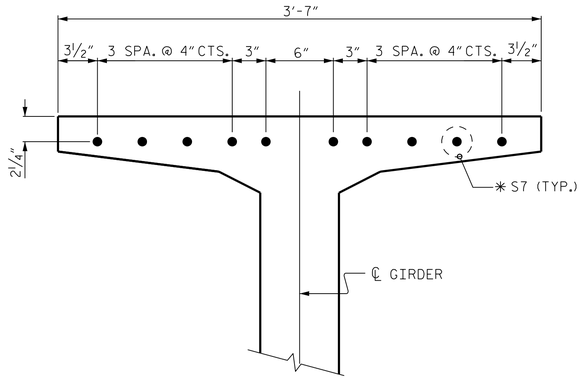
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,800 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF ¼".

A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE.

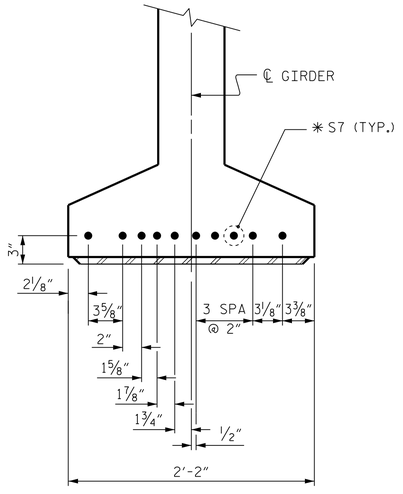
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



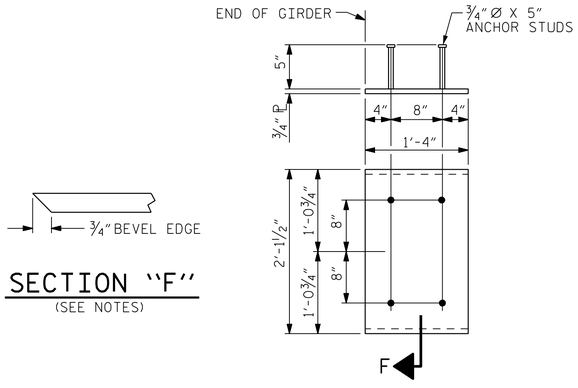
END OF GIRDER DETAILS
TOP FLANGE
TYPICAL FOR BOTH ENDS OF GIRDER

DETAIL "C"

✳ S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



END OF GIRDER DETAILS
BOTTOM FLANGE
TYPICAL FOR BOTH ENDS OF GIRDER



SECTION "F"
(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS
(2 REQ'D PER GIRDER)

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 22+84.09 -Y1-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

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DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSIUNG FANG
Ting Fang
7/4/2022

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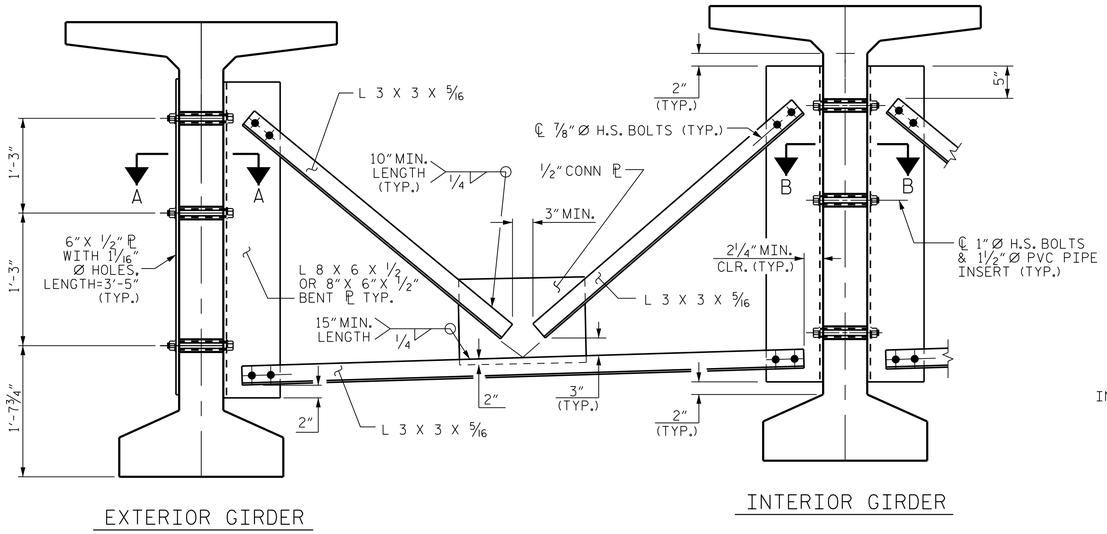
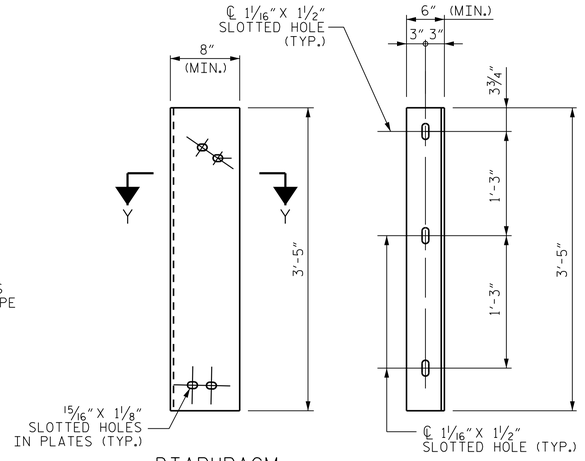
FILE: SFILES
DATE: $DATE$ $TIME$



EXTERIOR GIRDER

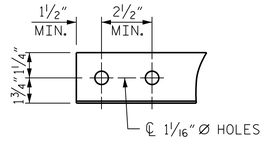
INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

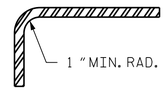


DIAPHRAGM FACE

WEB FACE



ANGLE END
(L 3 X 3 X 5/16)



SECTION Y-Y

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

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

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES, BENT PLATES, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

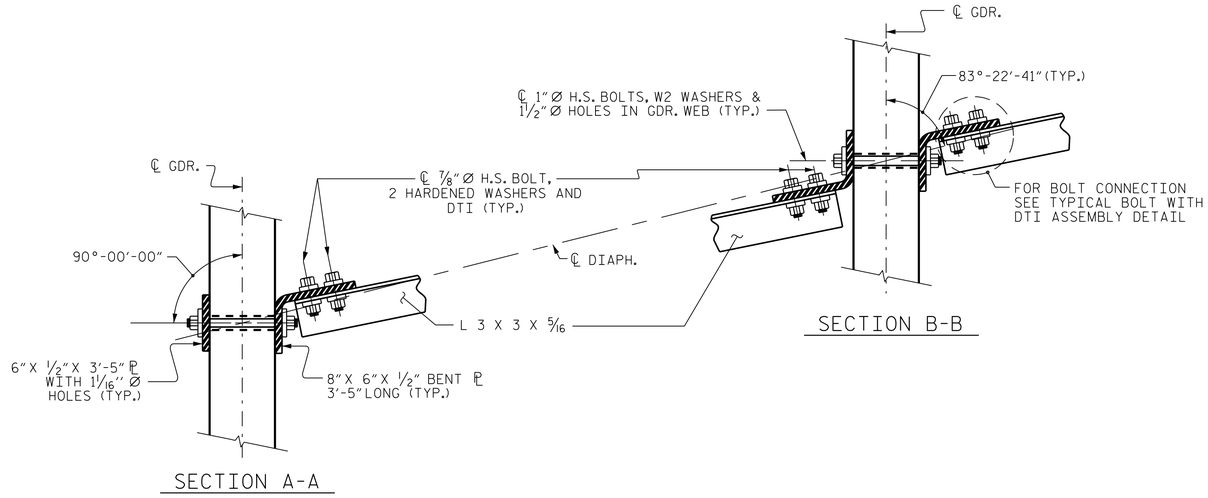
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

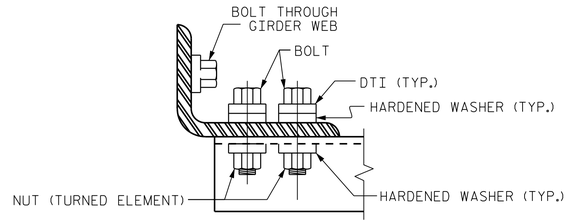


SECTION A-A

SECTION B-B

CONNECTION DETAILS

CONNECTOR PLATE DETAIL



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 22+84.09 -Y1-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

INTERMEDIATE STEEL DIAPHRAGMS 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS

REVISIONS						SHEET NO.
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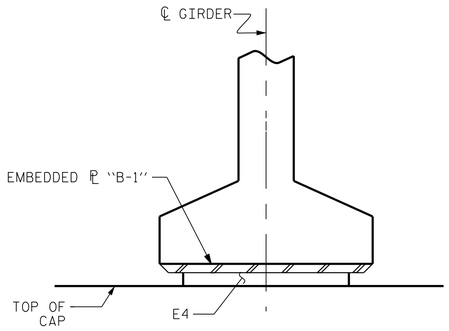
DWG. No.

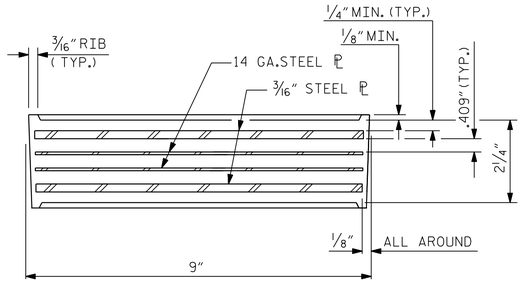
NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSIUNG FANG
Ting Fang
7/4/2022

STD. NO. PCG11

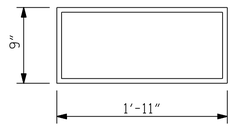
FILE: SFILES
DATE: SDATES
STAMES



SECTION E-E
(AT INTEGRAL END BENT)



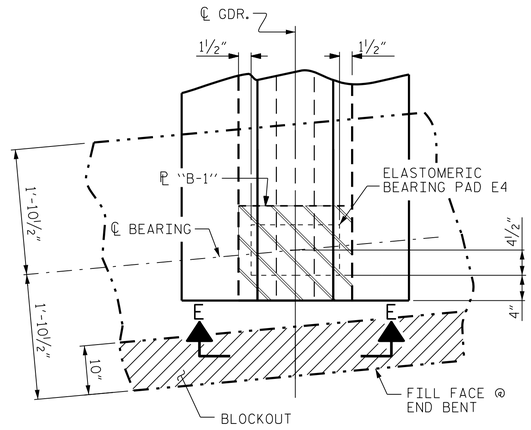
TYPICAL SECTION OF ELASTOMERIC BEARING PAD E4



E4 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING PAD E4

TYPE V



TYPICAL PLAN @ END BENT
(INTEGRAL)

NOTES

FOR EMBEDDED ℙ "B-1" DETAILS, SEE SHEET S03-09.

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 SPECIAL PROVISIONS.

— LOAD RATINGS —	
	MAX.D.L.+L.L.
TYPE V	365 K

PROJECT NO. U-2579AA
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DESIGN ENGINEER : VDK DATE : 9/18

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Ting Fang
DocuSigned by: 7/14/2022

STATE OF NORTH CAROLINA
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RALEIGH

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

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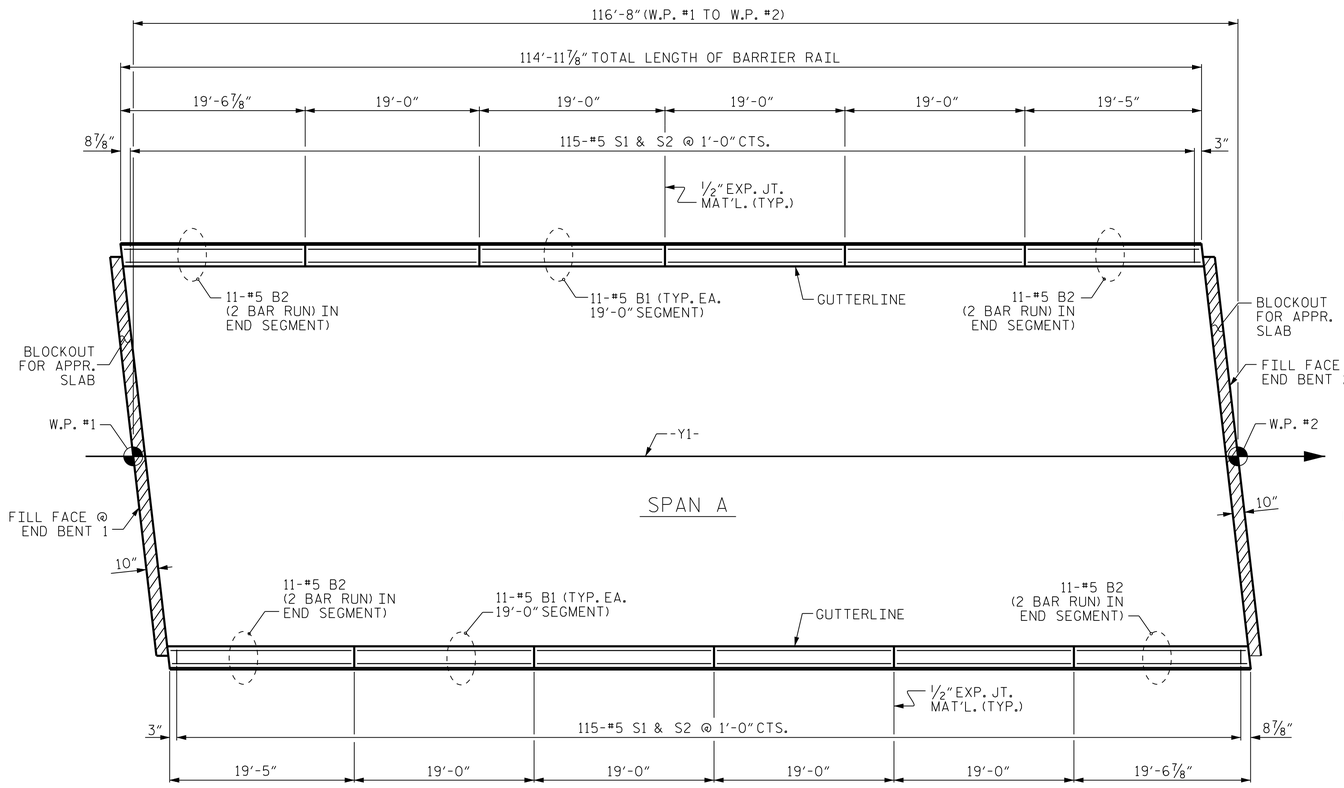
STIMES



PLAN OF CONCRETE BARRIER RAIL

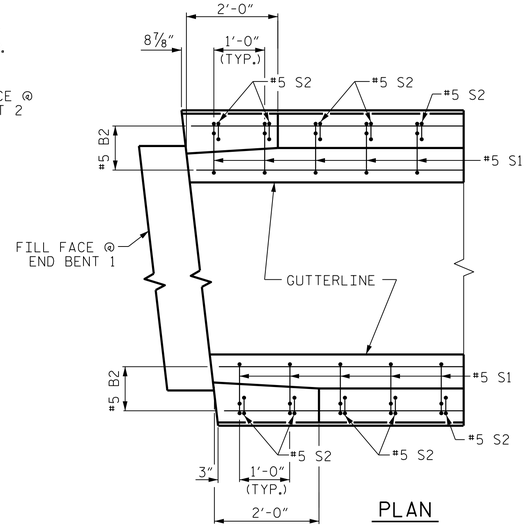
ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL.

NOTES

THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

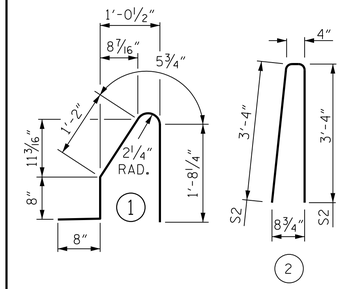
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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



PLAN

BAR TYPES



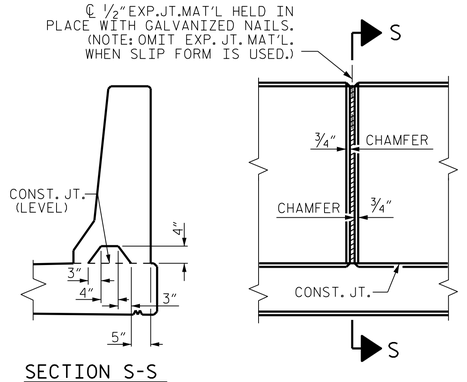
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

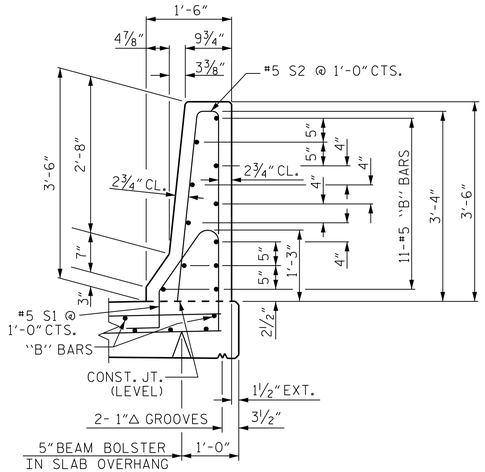
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	88	#5	STR	18'-8"	1713
* B2	88	#5	STR	11'-2"	1025
* S1	230	#5	1	4'-8"	1119
* S2	230	#5	2	7'-0"	1679

* EPOXY COATED REINFORCING STEEL	5,536 LBS.
CLASS AA CONCRETE	31.2 CU. YDS.
CONCRETE BARRIER RAIL	229.98 LIN. FT.



SECTION S-S

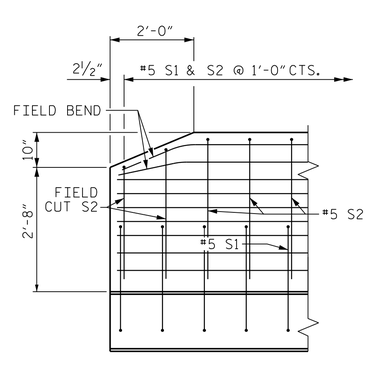
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



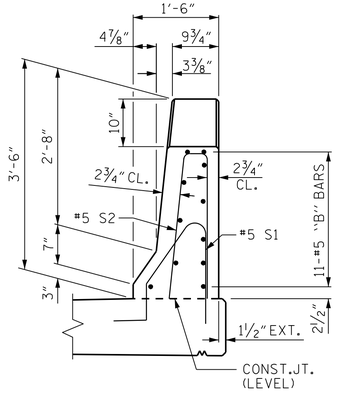
ELEVATION AT EXPANSION JOINTS

SECTION THRU RAIL

BARRIER RAIL DETAILS



SIDE VIEW



END VIEW

END OF RAIL DETAILS

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 22+84.09 -Y1-

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DESIGN ENGINEER : VDK DATE : 9/18
DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSIUNG FANG
ELECTRONICALLY SEALED BY: Ting Fang
7/7/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
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CONCRETE BARRIER RAIL AND DETAILS

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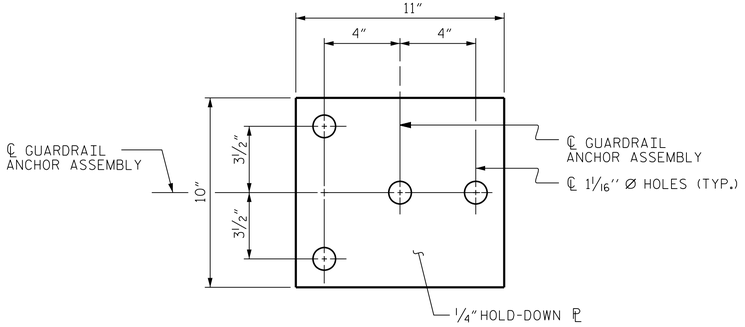
2			4			22

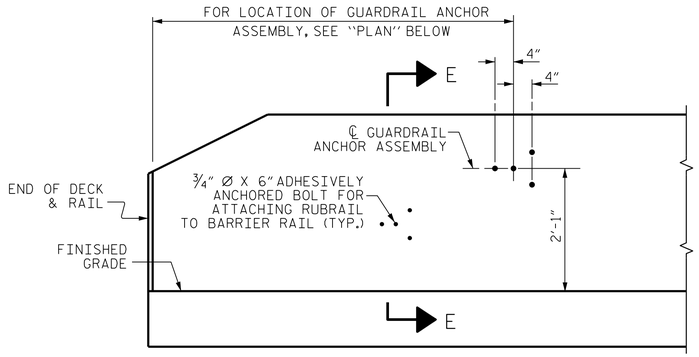
FILE: SPLICES
DATE: STATES

DRAWN BY : ARB 5/87	REV. 10/1/11	MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

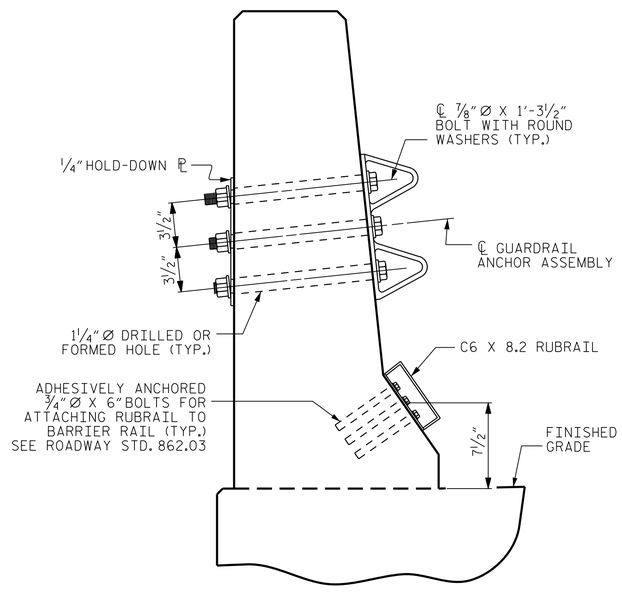
STD. NO. CBR1



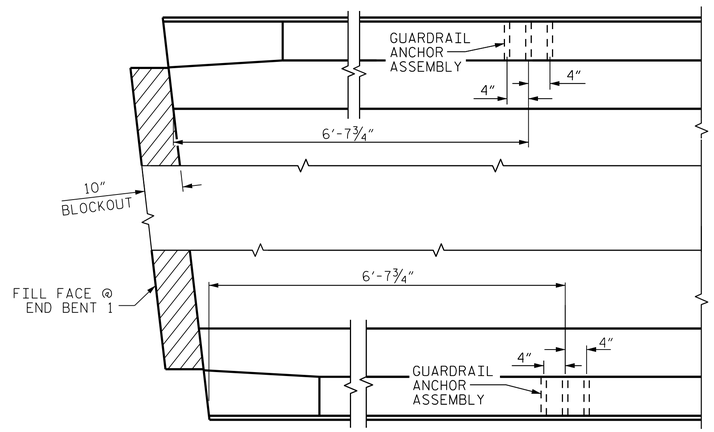
PLAN



ELEVATION



SECTION E-E



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.

GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

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

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

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

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

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

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

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

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 22+84.09 -Y1-

FILE: SPILES
DATE: STOKES

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CHECKED BY : VAP	3/95	REV. 5/1/06RR	KMM/GM
		REV. 10/1/11	MAA/GM

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NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSILING FANG
Ting Fang
7/4/2022

STATE OF NORTH CAROLINA
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STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

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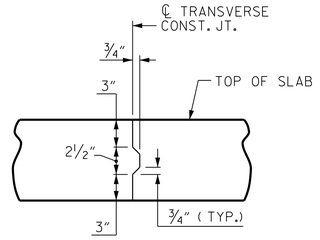
STD. NO. GRA2

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			



TRANSVERSE CONSTRUCTION JOINT DETAIL

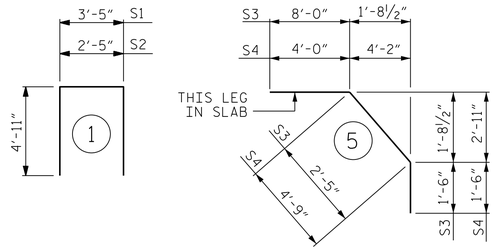
GROOVING BRIDGE FLOORS

APPROACH SLABS	1,060 SQ.FT.
BRIDGE DECK	4,255 SQ.FT.
TOTAL	5,315 SQ.FT.

REINFORCING STEEL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	176	#5	STR	42'-11"	7878
A2	176	#5	STR	42'-11"	7878
✳ A101	2	#5	STR	38'-7"	80
✳ A102	2	#5	STR	33'-2"	69
✳ A103	2	#5	STR	27'-10"	58
✳ A104	2	#5	STR	22'-5"	47
✳ A105	2	#5	STR	17'-0"	35
✳ A106	2	#5	STR	11'-8"	24
✳ A107	2	#5	STR	6'-3"	13
A201	2	#5	STR	38'-7"	80
A202	2	#5	STR	33'-2"	69
A203	2	#5	STR	27'-10"	58
A204	2	#5	STR	22'-5"	47
A205	2	#5	STR	17'-0"	35
A206	2	#5	STR	11'-8"	24
A207	2	#5	STR	6'-3"	13
✳ B1	87	#4	STR	39'-8"	2305
✳ B2	116	#6	STR	23'-4"	4065
B3	108	#5	STR	39'-7"	4459
K1	24	#4	STR	22'-3"	357
K2	8	#4	STR	6'-3"	33
K3	32	#4	STR	7'-10"	167
K4	8	#4	STR	4'-10"	26
K5	4	#4	STR	2'-8"	7
K6	16	#4	STR	3'-6"	37
K7	4	#4	STR	2'-0"	5
S1	56	#4	1	13'-3"	496
S2	4	#4	1	12'-3"	33
✳ S3	56	#4	5	11'-11"	446
✳ S4	56	#4	5	10'-3"	383
REINFORCING STEEL = 13,826 LBS					
✳ EPOXY COATED REINF. STEEL= 15,403 LBS					

BAR TYPES

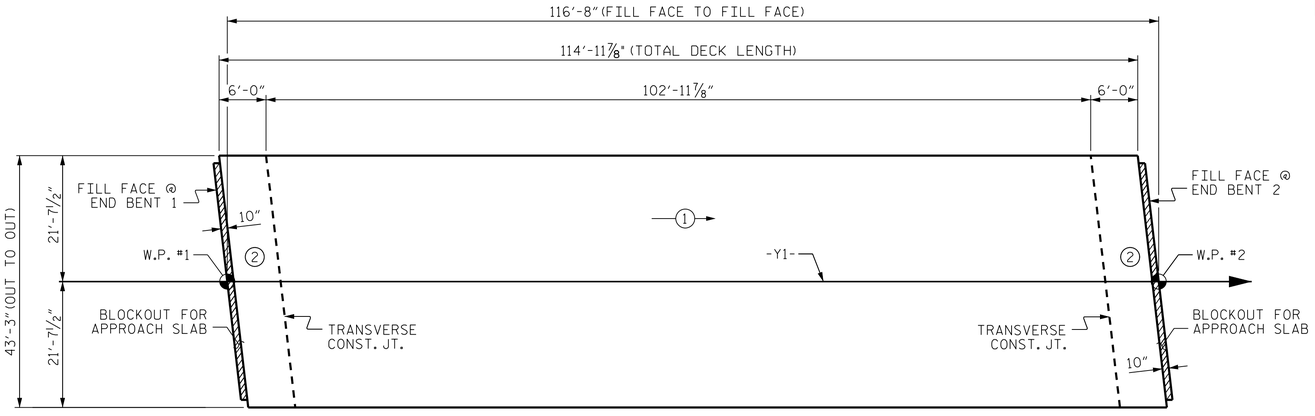


ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR 1	152.4		
POUR 2	77.7		
TOTAL ✳✳	230.1	13,826	15,403

✳✳ QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED



POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 4,973)

(1)→ INDICATES POUR NUMBER AND DIRECTION.

POUR 2 CANNOT BE STARTED UNTIL POUR 1 REACHES A MINIMUM OF 3000 PSI.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 22+84.09 -Y1-

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DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSIUNG FANG
Ting Fang
7/4/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL AND POURING SEQUENCE

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1			3			TOTAL SHEETS
2			4			22

FILE: SFILES
DATE: SDATES
STIMES

STD. NO. BOM1

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

THE TOP SURFACE OF THE END BENT CAP EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

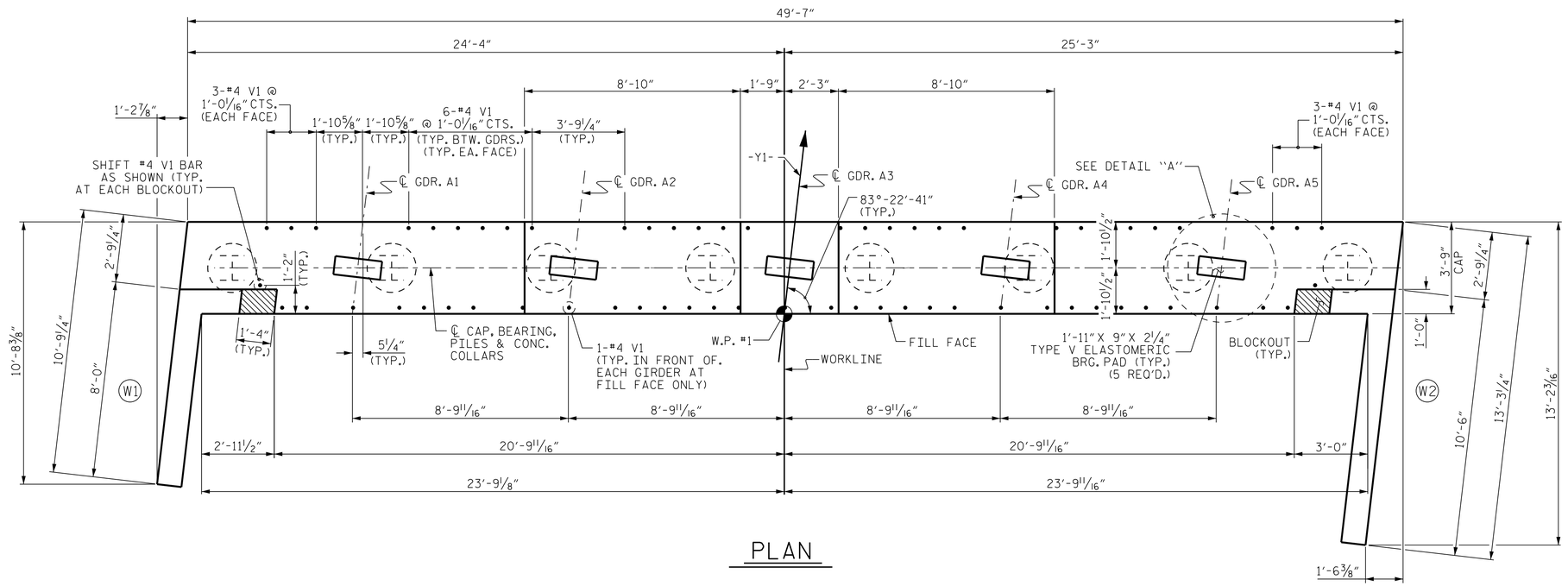
THE CONCRETE IN BLOCKOUTS SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

THE UPPER PORTION OF THE INTEGRAL END BENT SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLANS.

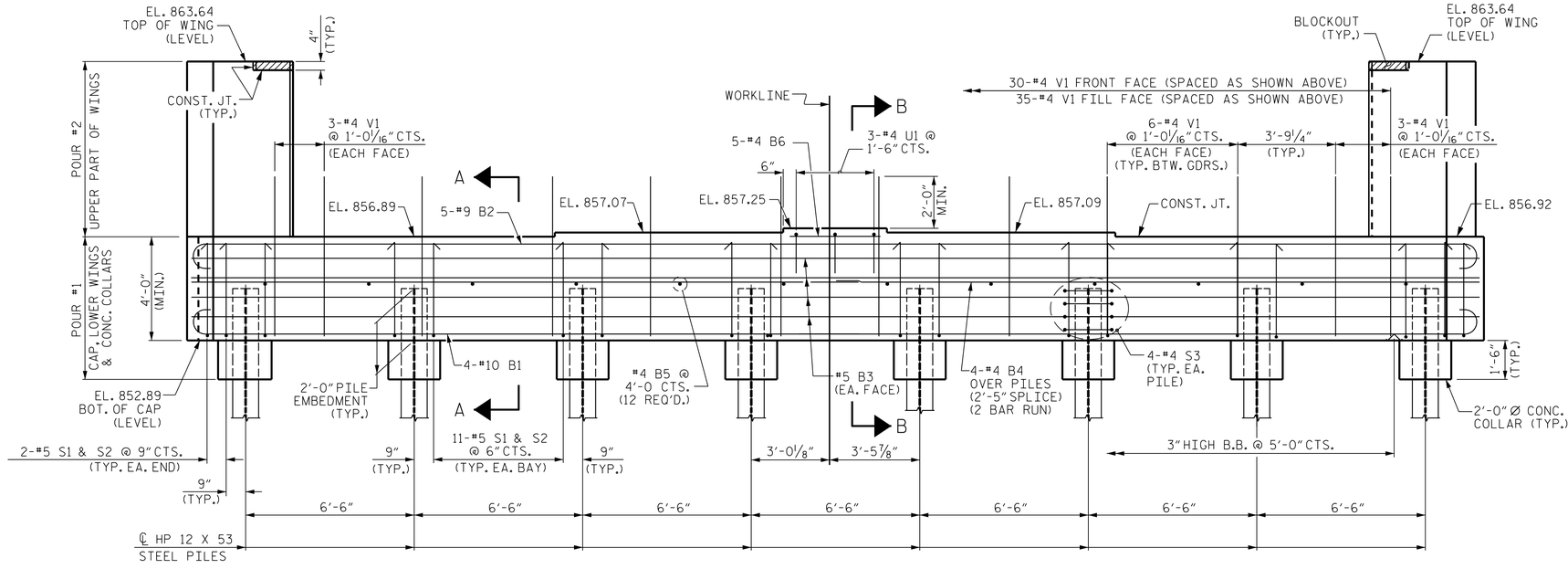
FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.

FOR SECTION A-A, SEE SHEET 5 OF 5.

FOR WING DETAILS , SEE SHEET 2 OF 5.

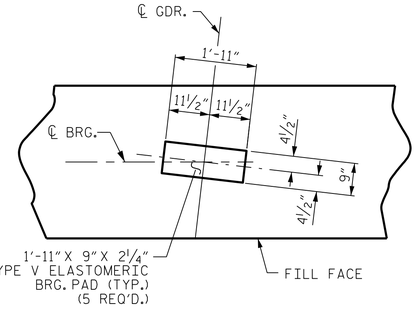


PLAN



ELEVATION

WING WALLS NOT SHOWN FOR CLARITY



DETAIL "A"

(TYP. EA. GDR.)

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 22+84.09 -Y1-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 1
(INTEGRAL)

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Ting Fang
DocuSigned by: 6A80A08C4E40462...
7/4/2022

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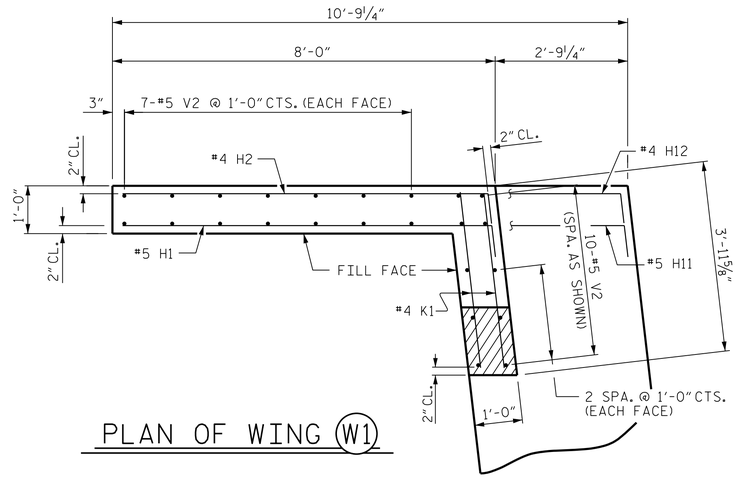
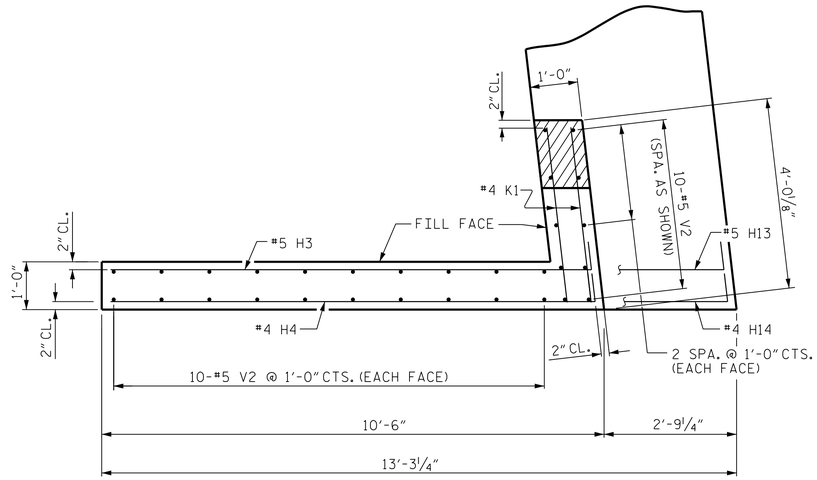
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-15
1			3			TOTAL SHEETS
2			4			22

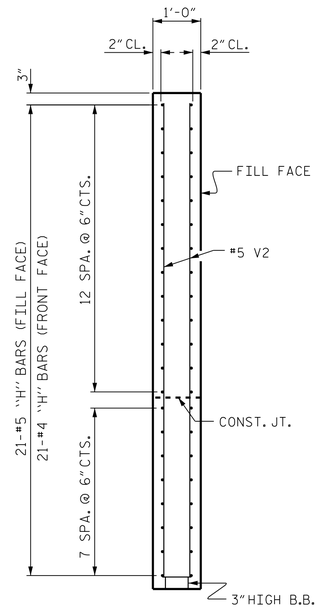
FILE: STILES
DATE: STATES
STIMES



PLAN OF WING (W1)



PLAN OF WING (W2)



SECTION X-X

ELEVATION OF WING (W1)

ELEVATION OF WING (W2)

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 22+84.09 -Y1-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 (INTEGRAL)

WING WALLS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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NC COA No. F-1255

DRAWN BY : VDK DATE : 9/18
CHECKED BY : THF DATE : 9/18
DESIGN ENGINEER : VDK DATE : 9/18

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSIUNG FANG
Ting Fang
60E43C0AEA60462...
7/14/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-16
1			3			TOTAL SHEETS
2			4			22

FILE: SFILES
DATE: SDATES
STIMES

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

THE TOP SURFACE OF THE END BENT CAP EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

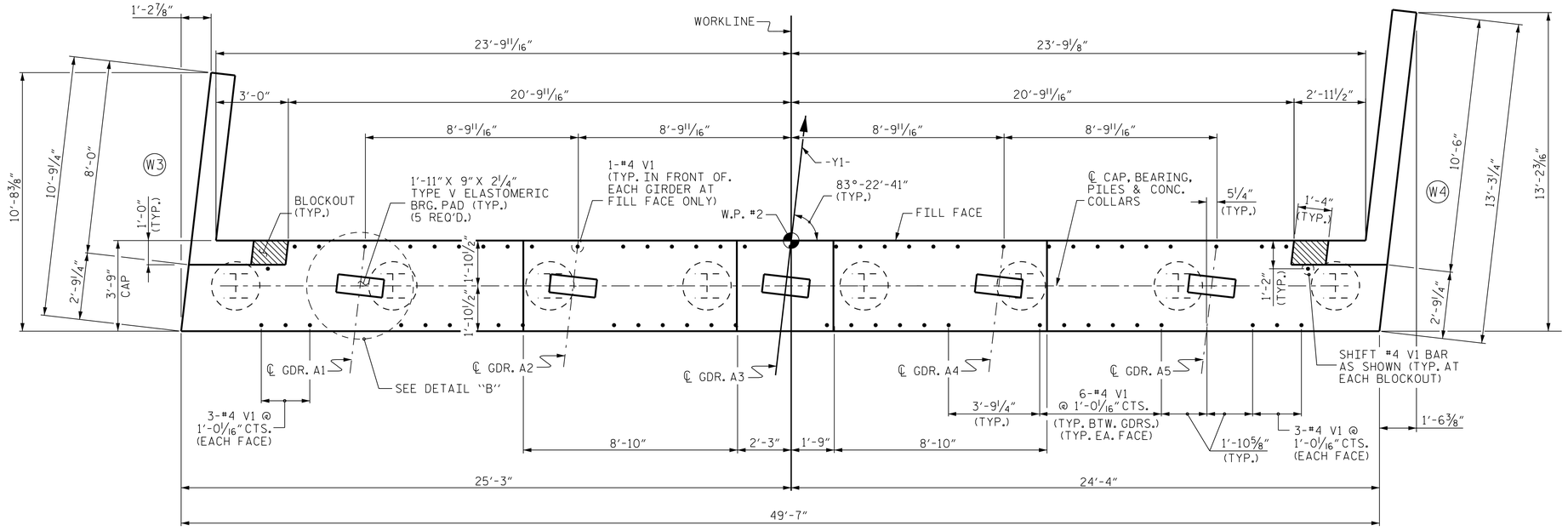
THE CONCRETE IN BLOCKOUTS SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

THE UPPER PORTION OF THE INTEGRAL END BENT SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLANS.

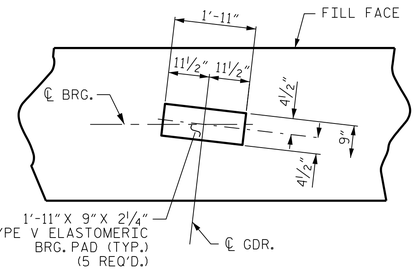
FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.

FOR SECTION A-A, SEE SHEET 5 OF 5.

FOR WING DETAILS , SEE SHEET 4 OF 5.

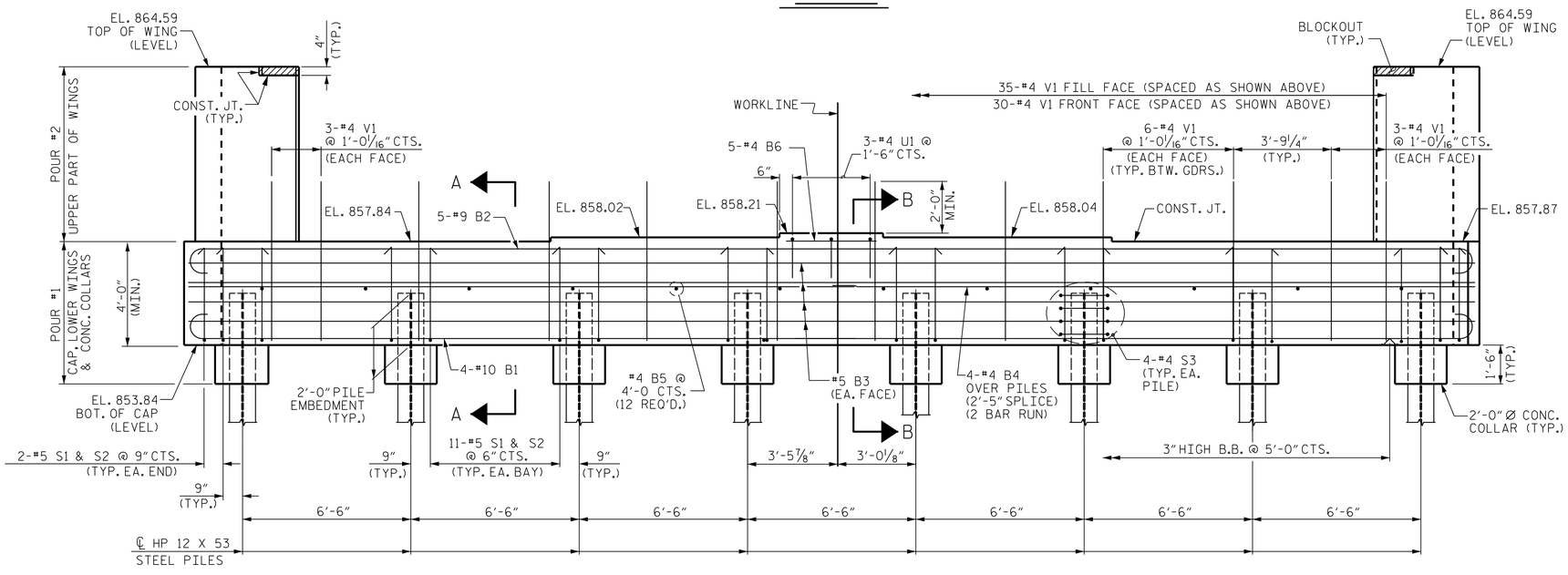


PLAN



DETAIL "B"

(TYP. EA. GDR.)



ELEVATION

WING WALLS NOT SHOWN FOR CLARITY

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 22+84.09 -Y1-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 2 (INTEGRAL)

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NC COA No. F-1255

DRAWN BY : VDK DATE : 9/18
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DESIGN ENGINEER : VDK DATE : 9/18

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSIUNG FANG
Ting Fang
7/4/2022

REVISIONS						SHEET NO.
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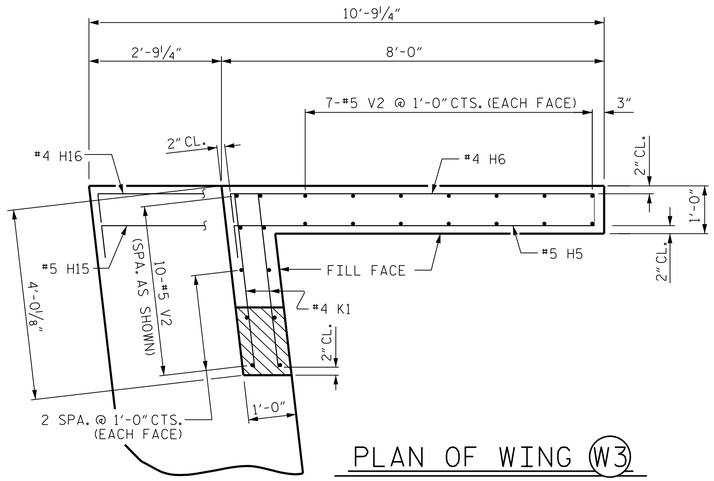
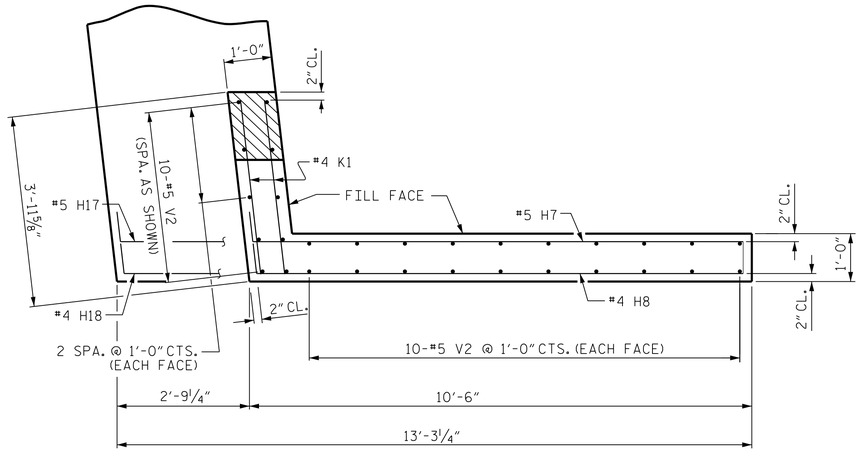
1			3			TOTAL SHEETS
2			4			22

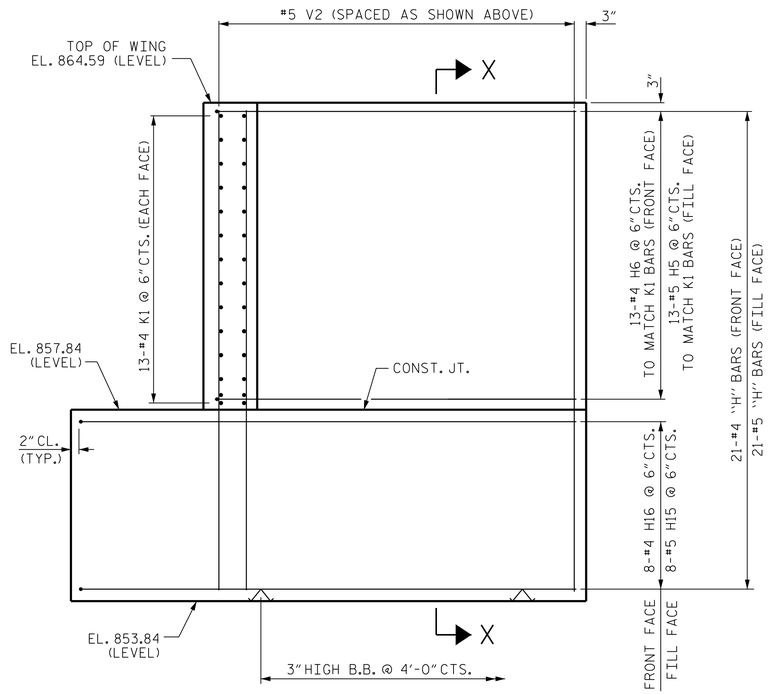
FILE: SFILES
DATE: SDATES
STIMES



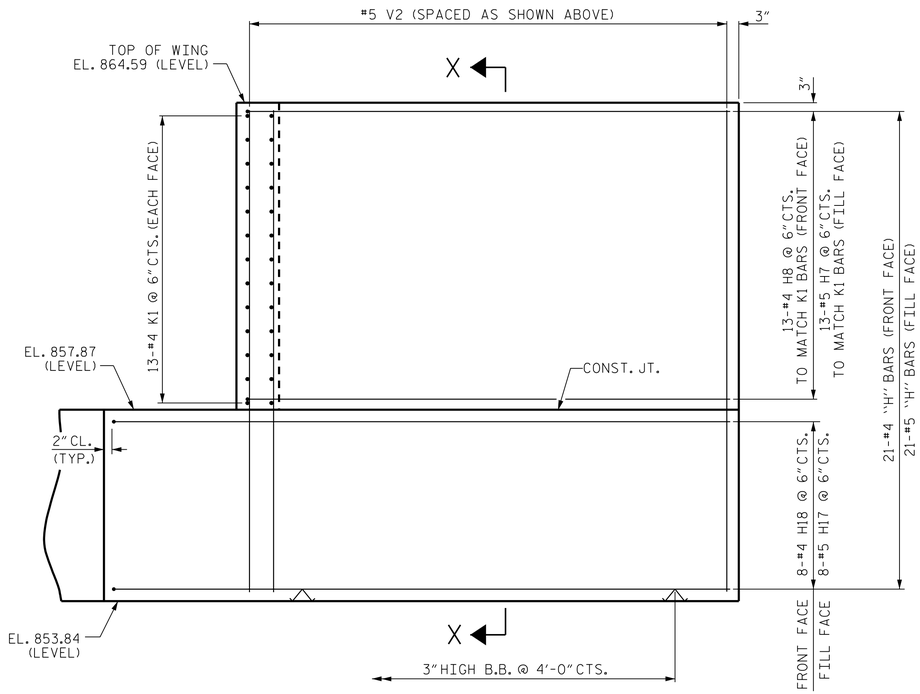
PLAN OF WING (W3)



PLAN OF WING (W4)



ELEVATION OF WING (W3)



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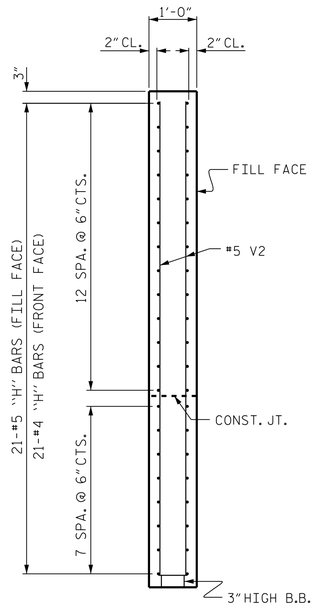

SECTION X-X

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 22+84.09 -Y1-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 (INTEGRAL)

WING WALLS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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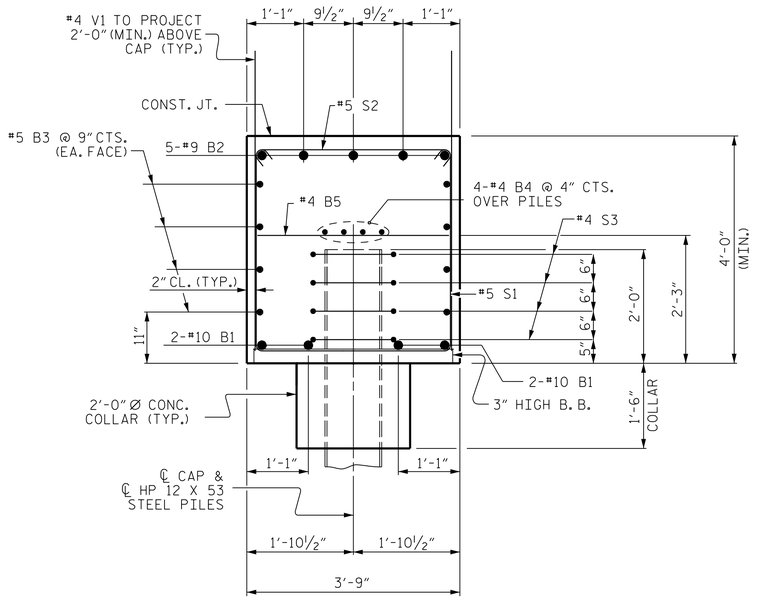
DRAWN BY :	VDK	DATE : 9/18
CHECKED BY :	THF	DATE : 9/18
DESIGN ENGINEER :	VDK	DATE : 9/18

DWG. No.

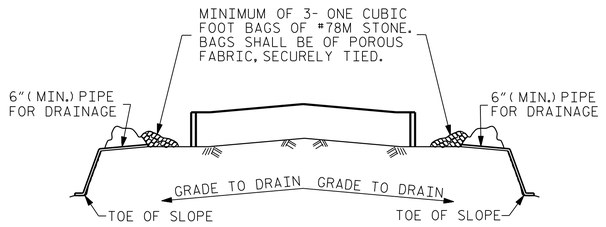
NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSILING FANG
Ting Fang
60E43C9AEA60462...
7/14/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-18
1			3			TOTAL SHEETS
2			4			22

FILE: SFILES
DATE: SDATES
STIMES



SECTION A-A

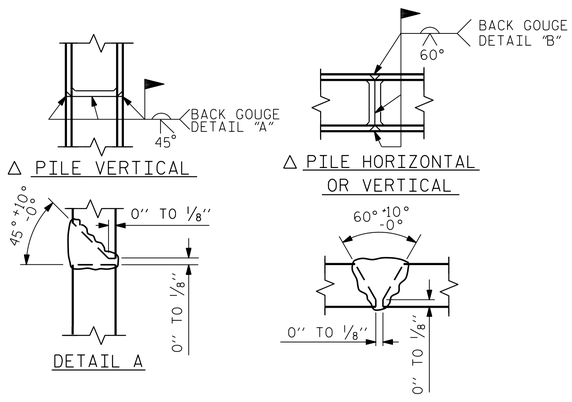


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	51'-11"	894
B2	5	#9	1	51'-7"	877
B3	8	#5	STR	49'-3"	411
B4	8	#4	STR	25'-10"	138
B5	12	#4	STR	3'-5"	27
B6	5	#4	STR	3'-8"	12
H1	13	#5	5	8'-4"	113
H2	13	#4	5	8'-4"	72
H3	13	#5	6	10'-9"	146
H4	13	#4	6	10'-9"	93
H11	8	#5	5	11'-1"	92
H12	8	#4	5	11'-1"	59
H13	8	#5	6	13'-6"	113
H14	8	#4	6	13'-6"	72
K1	52	#4	STR	3'-8"	127
S1	81	#5	2	11'-7"	979
S2	81	#5	3	4'-4"	366
S3	32	#4	7	6'-6"	139
U1	3	#4	4	6'-5"	13
V1	65	#4	STR	6'-3"	271
V2	54	#5	STR	10'-5"	587

REINFORCING STEEL = 5,602 LBS

CLASS A CONCRETE:

POUR #1:
CAP, LOWER WINGS & COLLARS = 32.2 C.Y.

POUR #2:
UPPER WINGS = 6.1 C.Y.

TOTAL 38.3 C.Y.

HP 12 X 53 STEEL PILES
No. 8 LIN. FT. 440
STEEL PILE POINTS EA. 8
PREDRILLING FOR PILES LIN. FT. 200
PILE DRIVING EQUIP. SETUP EA. 8

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	51'-11"	894
B2	5	#9	1	51'-7"	877
B3	8	#5	STR	49'-3"	411
B4	8	#4	STR	25'-10"	138
B5	12	#4	STR	3'-5"	27
B6	5	#4	STR	3'-8"	12
H5	13	#5	6	8'-3"	112
H6	13	#4	6	8'-3"	72
H7	13	#5	5	10'-10"	147
H8	13	#4	5	10'-10"	94
H15	8	#5	6	11'-0"	92
H16	8	#4	6	11'-0"	59
H17	8	#5	5	13'-7"	113
H18	8	#4	5	13'-7"	73
K1	52	#4	STR	3'-8"	127
S1	81	#5	2	11'-7"	979
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S3	32	#4	7	6'-6"	139
U1	3	#4	4	6'-5"	13
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REINFORCING STEEL = 5,602 LBS

CLASS A CONCRETE:

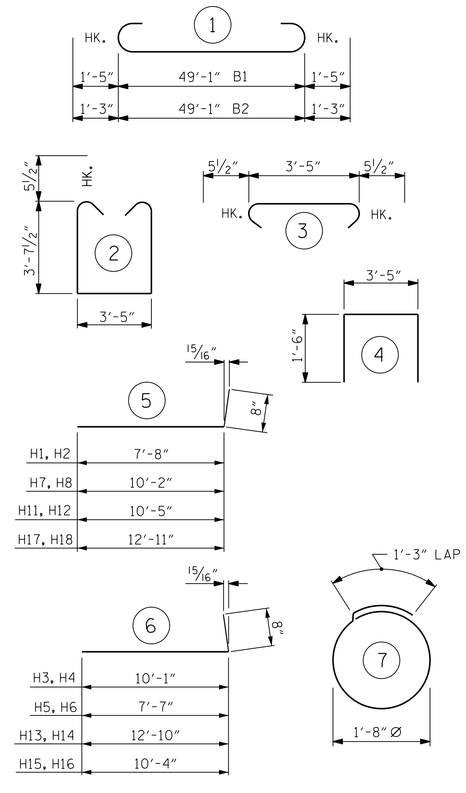
POUR #1:
CAP, LOWER WINGS & COLLARS = 32.2 C.Y.

POUR #2:
UPPER WINGS = 6.1 C.Y.

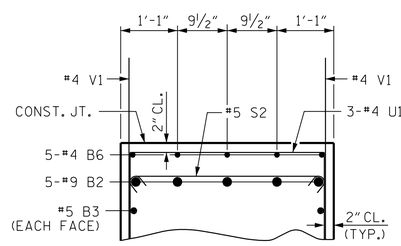
TOTAL 38.3 C.Y.

HP 12 X 53 STEEL PILES
No. 8 LIN. FT. 280
PILE DRIVING EQUIP. SETUP EA. 8

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



PARTIAL SECTION B-B

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 22+84.09 -Y1-

SHEET 5 OF 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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NC COA No. F-1255

DRAWN BY : VDK DATE : 9/18
CHECKED BY : THF DATE : 9/18
DESIGN ENGINEER : VDK DATE : 9/18

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING-HSIUNG FANG
Ting Fang
DocuSigned by: 7/14/2022

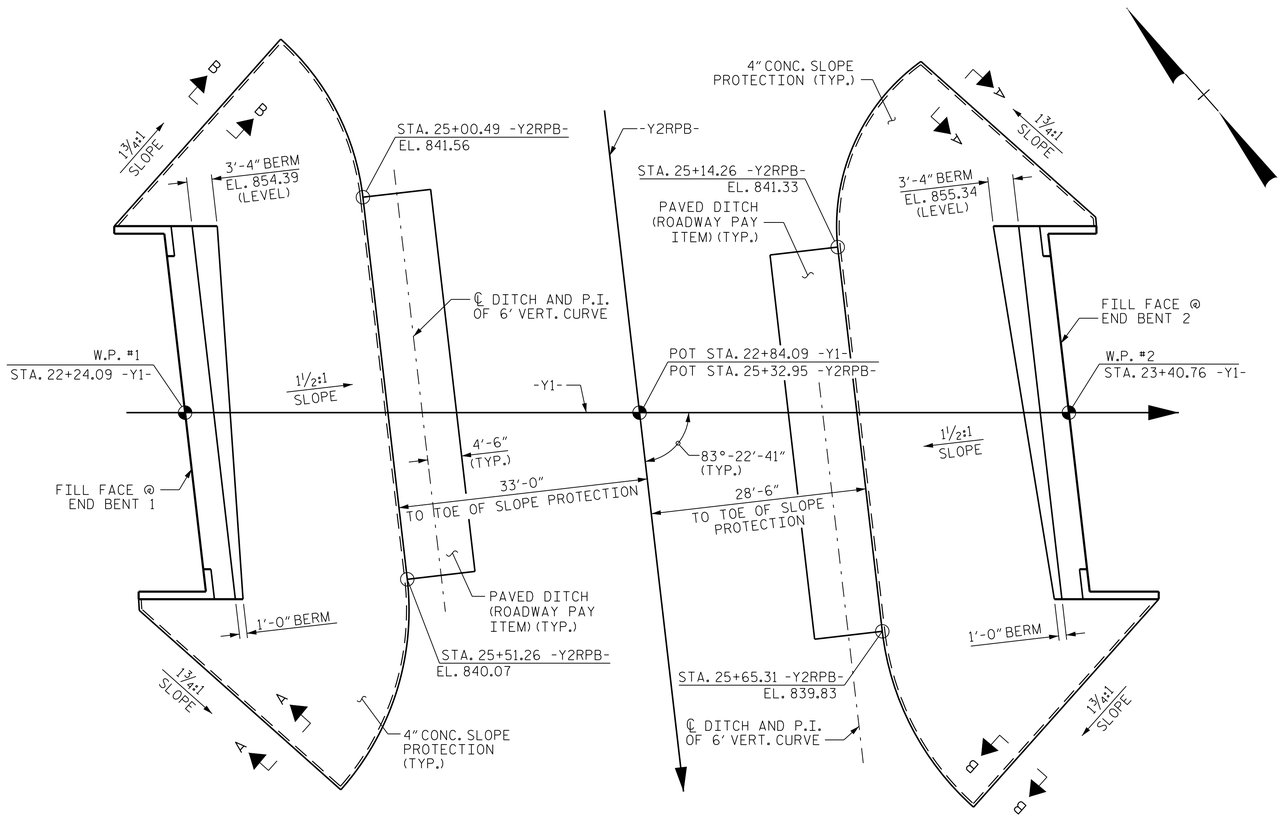
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENTS 1 & 2 (INTEGRAL)

DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-19
1			3			TOTAL SHEETS
2			4			22

FILE: SPILES $TIMES
DATE: $DATE$



AT END BENT 1

PLAN

AT END BENT 2

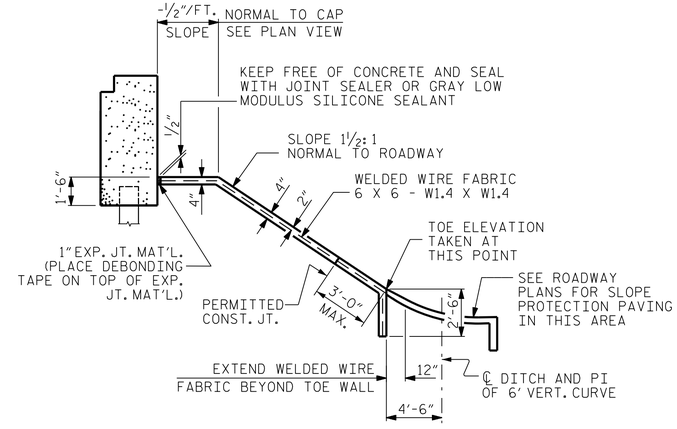
GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

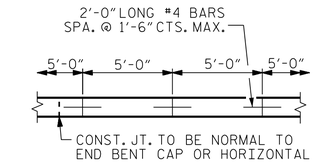
SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

BRIDGE @ STA. 22+84.09 -Y1-	4" INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	280	560
END BENT 2	300	600

* QUANTITY SHOWN IS BASED ON 5' POURS.

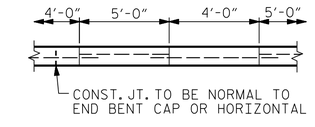


SECTION ALONG ℄ ROADWAY WHEN FILL CATCHES IN DITCH



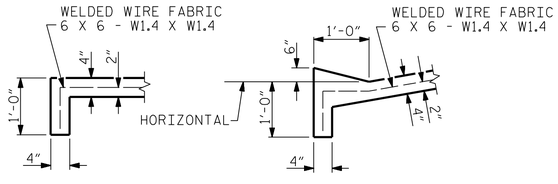
POURING DETAIL

STRIP WIDTHS MAY VARY IN CURVED PORTION.



OPTIONAL POURING DETAIL

POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.



PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 22+84.09 -Y1-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING-HSIUNG FANG
Ting Fang
DocuSigned by: E40462...
7/4/2022

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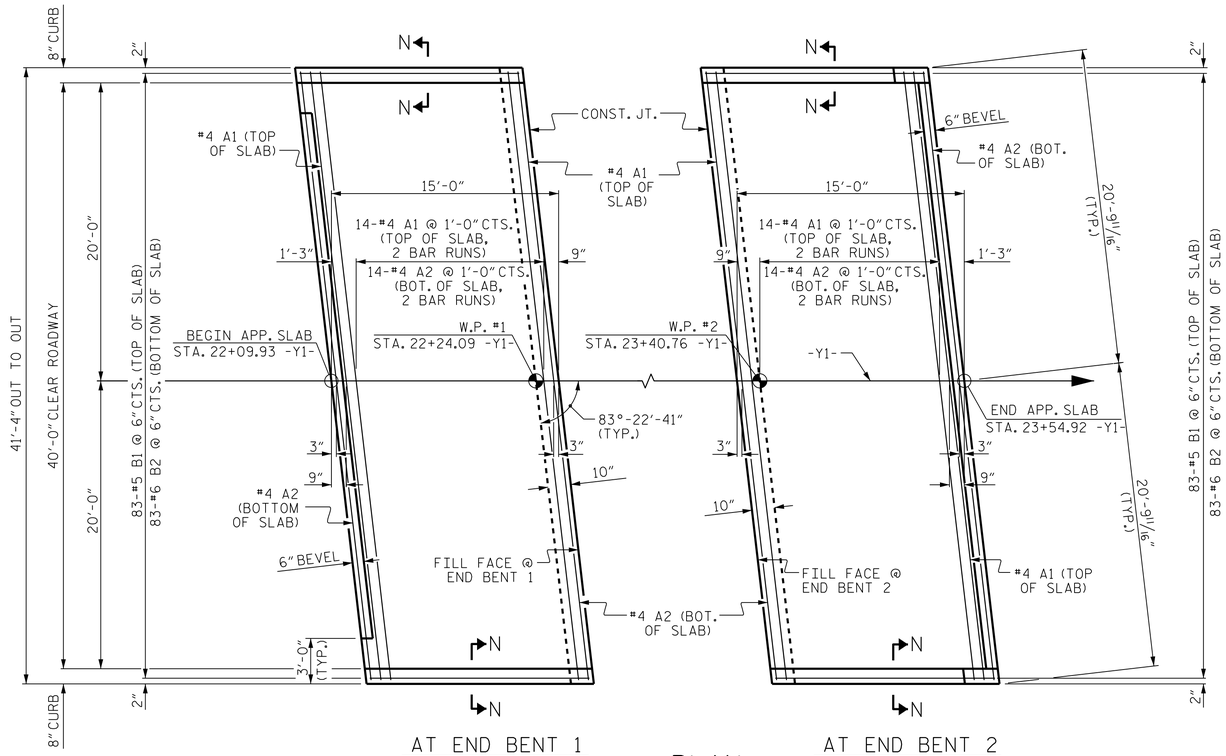
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-20
1			3			TOTAL SHEETS
2			4			22

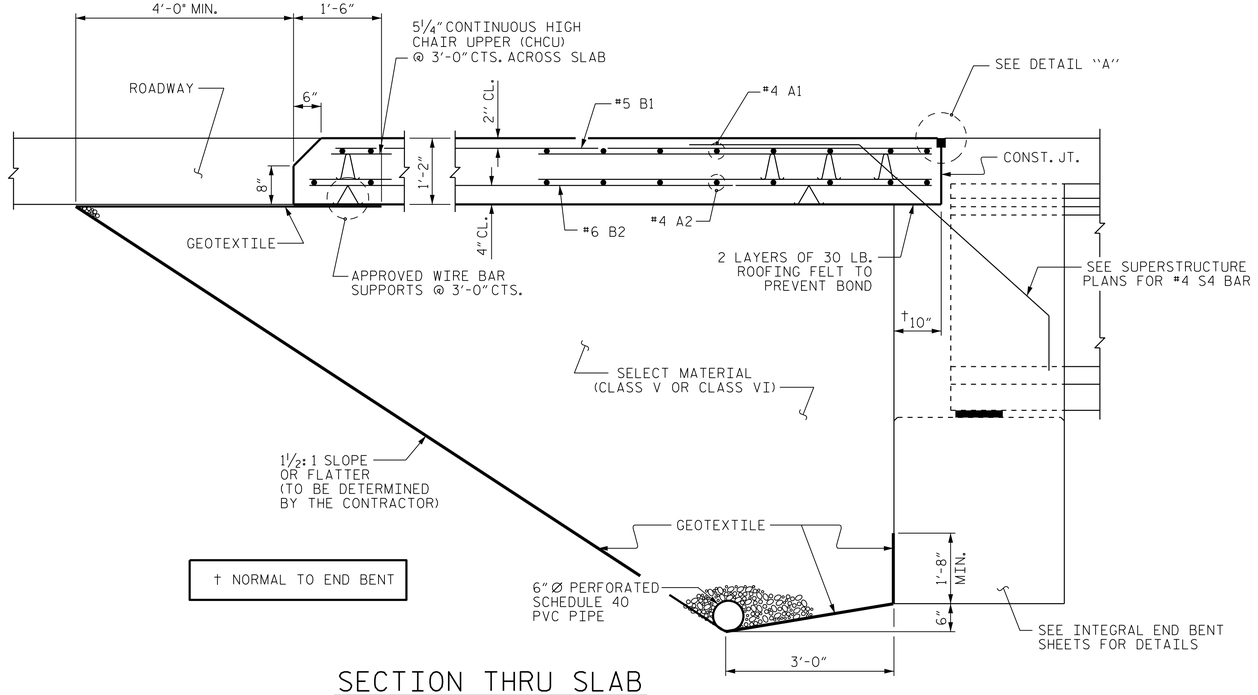
FILE: SFILES STIKES
DATE: SDATES

STD. NO. SP1



PLAN

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

(TYPE I - STANDARD APPROACH FILL)

NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

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

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

FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTORS OPTION, "TYPE A - ALTERNATE APPROACH FILL" IN LIEU OF "TYPE I - STANDARD APPROACH FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE SHEET 2 OF 2 FOR DETAILS AND NOTES.

FOR TEMPORARY BERM AND SLOPE DRAIN DETAILS, SEE SHEET 2 OF 2.

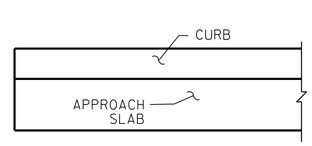
BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱A1	32	#4	STR	21'-7"	461
A2	32	#4	STR	21'-5"	458
✱B1	83	#5	STR	14'-2"	1226
B2	83	#6	STR	14'-8"	1828
REINFORCING STEEL					2,286 LBS.
✱EPOXY COATED REINFORCING STEEL					1,687 LBS.
CLASS AA CONCRETE					26.6 C.Y.

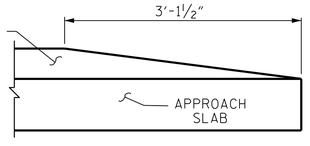
SPLICE CHART

BAR	SIZE	SPLICE
✱ A1	#4	1'-11"
A2	#4	1'-7"



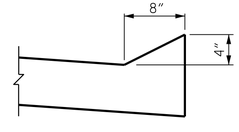
END OF CURB WITH SHOULDER BERM GUTTER

AT END BENT 1

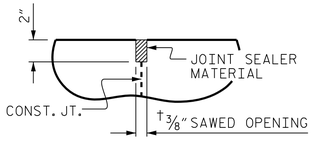


END OF CURB WITHOUT SHOULDER BERM GUTTER

AT END BENT 2



SECTION N-N



DETAIL "A"

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 22+84.09 -Y1-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CDM Smith
CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DRAWN BY :	VDK	DATE : 9/18
CHECKED BY :	THF	DATE : 9/18
DESIGN ENGINEER :	VDK	DATE : 9/18

DWG. No.

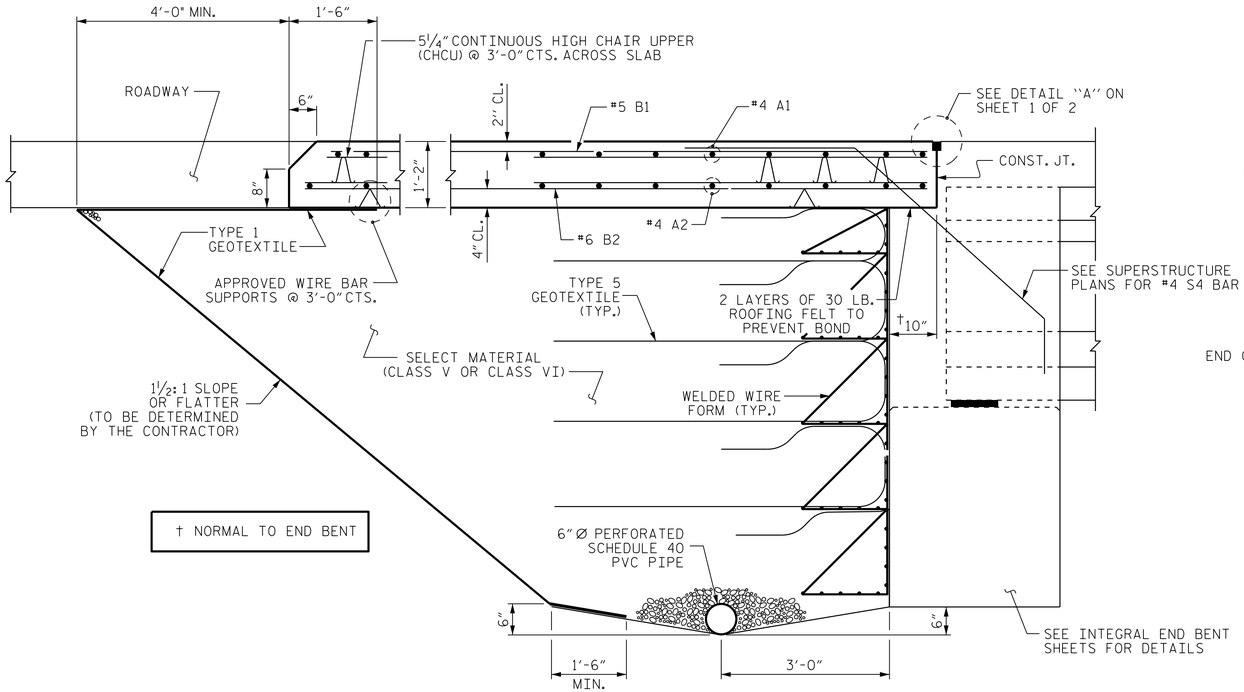
NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSIUNG TANG
Ting Tang
60E43C9AAEA60462...
7/4/2022

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-21
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : TLA 10/05	REV. 12/21/11	MAA/GM
CHECKED BY : GM 5/06	REV. 6/13	MAA/GM
	REV. 12/17	MAA/THC

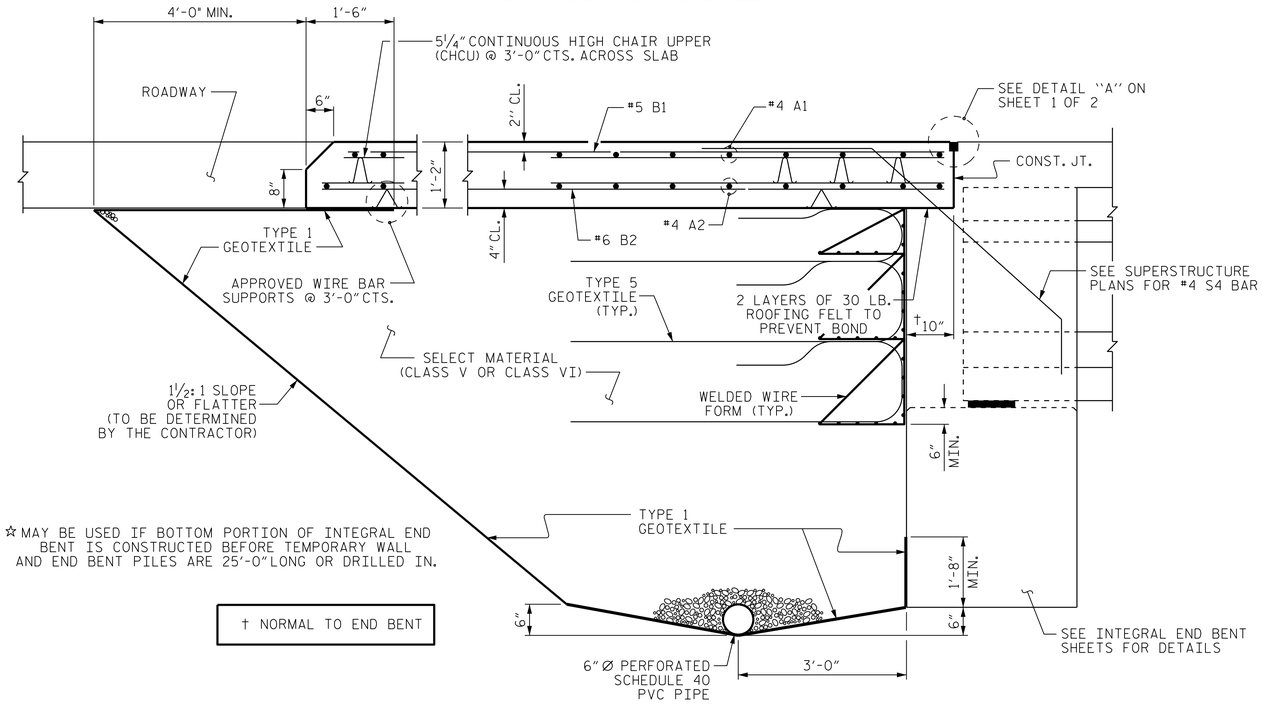
FILE: SPLICES
DATE: STIRRUPS

STD. NO. BAS5



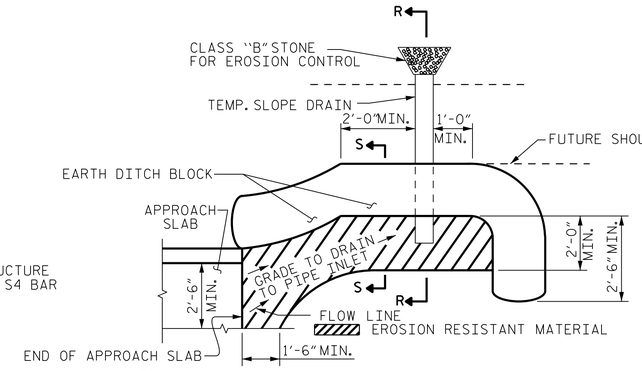
SECTION THRU SLAB

(TYPE A - ALTERNATE APPROACH FILL)



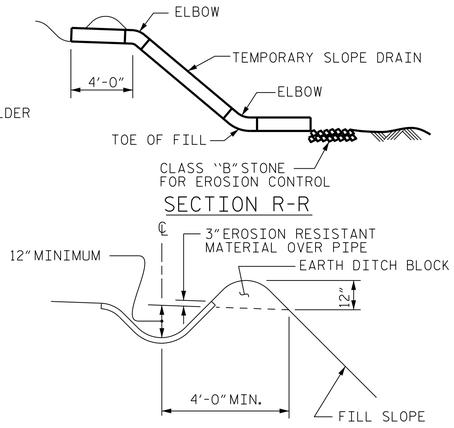
SECTION THRU SLAB

☆(TYPE A - ALTERNATE APPROACH FILL)



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

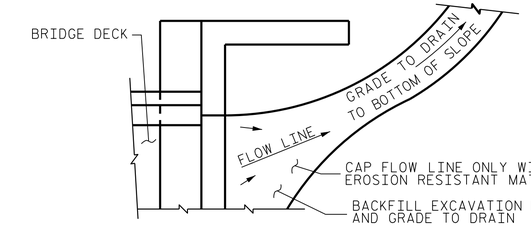
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

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

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

FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 22+84.09 -Y1-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-22
1			3			TOTAL SHEETS
2			4			22

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CDM Smith
CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DRAWN BY : VDK DATE : 9/18
CHECKED BY : THF DATE : 9/18
DESIGN ENGINEER : VDK DATE : 9/18

DWG. No.

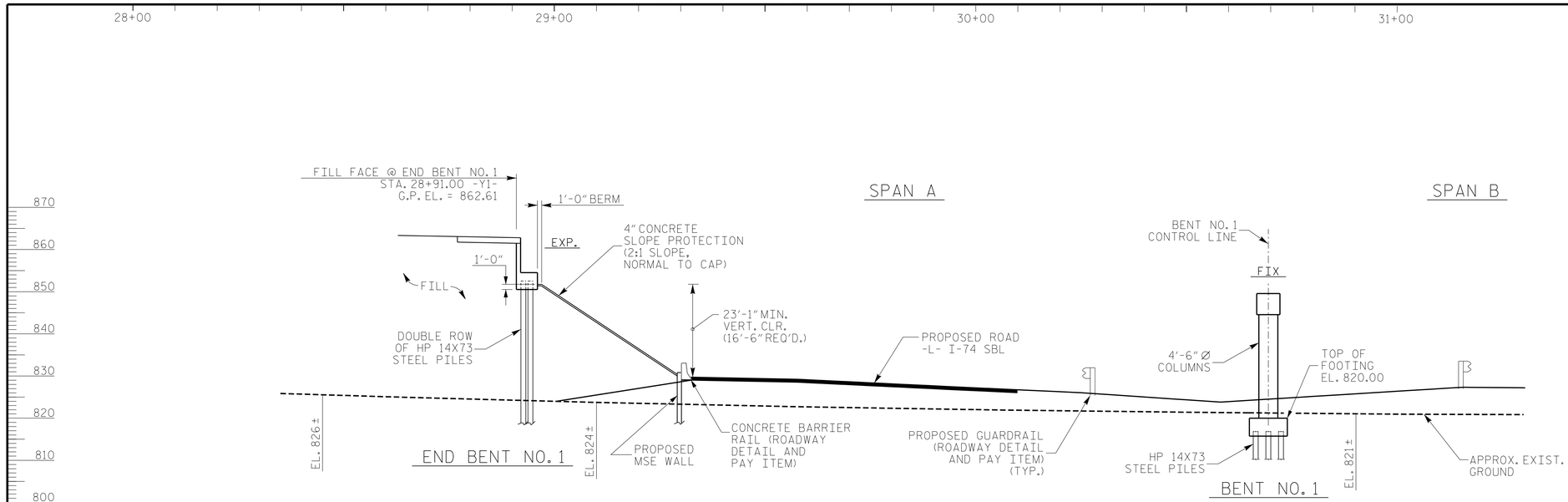
NORTH CAROLINA PROFESSIONAL SEAL 16301 ENGINEER TING HSIUNG FANG
Ting Fang
7/4/2022

DRAWN BY : TLA 10/05	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/06	REV. 12/21/11 MAA/GM
	REV. 6/13 MAA/GM

FILE: SPLES
DATE: STMES

STD. NO. BAS5

F.A. PROJECT NO. 0074226



SECTION ALONG -Y1-

SECTIONS AT END BENTS AND BENTS ARE AT RIGHT ANGLES.

(+)0.8447% (-)3.1561%
PI = 27+48.00
EL = 868.10'
VC = 640'

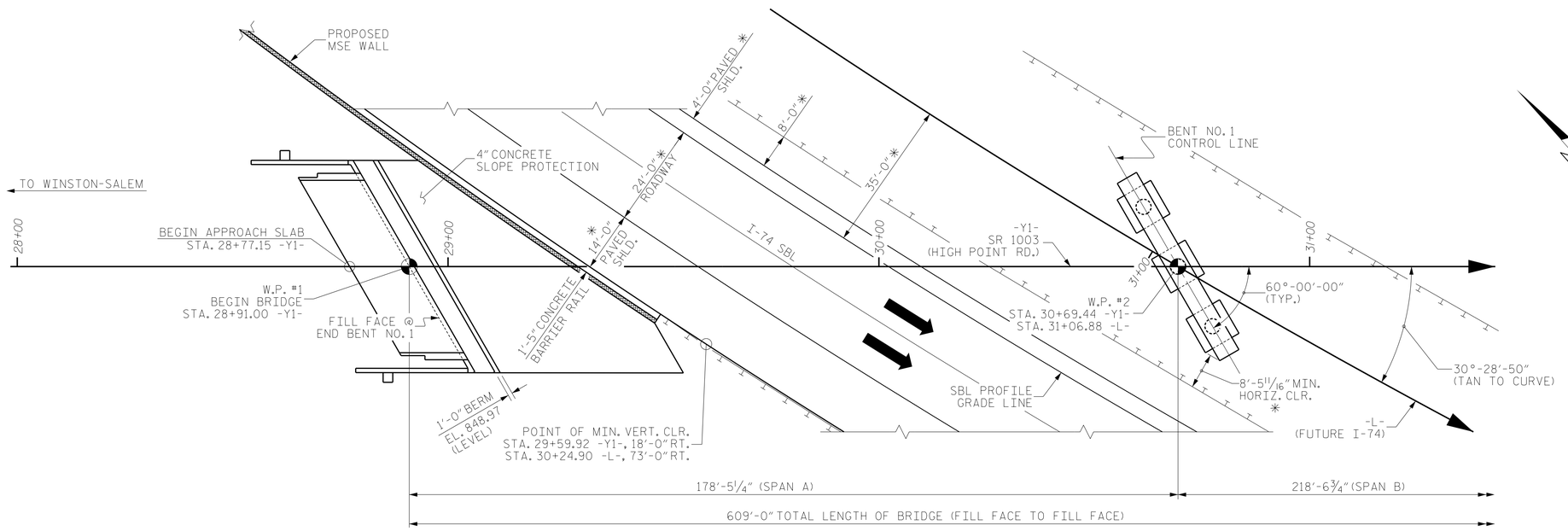
GRADE DATA -Y1-

(-)3.7377% (+)3.4198%
PI = 31+16.00
EL = 813.16'
VC = 1,550'

GRADE DATA -L-

PI Sta 38+52.35
△= 102° 02' 03.1" (LT)
D = 3° 09' 55.8"
L = 3,223.31'
T = 2,236.53'
R = 1,810.00'
SE = 08

HORIZONTAL CURVE DATA -L-



PARTIAL PLAN ALONG -Y1-

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

* RADIAL DISTANCE

NOTES:
END BENTS AND BENTS ARE PARALLEL.

NORTH CAROLINA PROFESSIONAL SEAL 042939 ENGINEER PATRICK R. GALLAGHER
Designed by: Patrick R. Gallagher
Digitally signed by: Patrick R. Gallagher
3/11/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton
Consulting Engineers
Raleigh, North Carolina 919-977-9455
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Asheville, NC 828-253-2796
New Bern, NC 252-631-5115
Atlanta, GA 770-627-3509

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 30+69.44 -Y1-
31+06.88 -L-
SHEET 1 OF 6 BRIDGE NO. 330732

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON SR 1003 (HIGH POINT RD.)
OVER FUTURE I-74
FROM US 311 TO I-40

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-1
1			3			TOTAL SHEETS
2			4			50

DWN. BY: WDC DATE: 3/22
CHKD. BY: PRG DATE: 3/22
DES. EGR. OF RECORD: PRG DATE: 3/22

wdbruder
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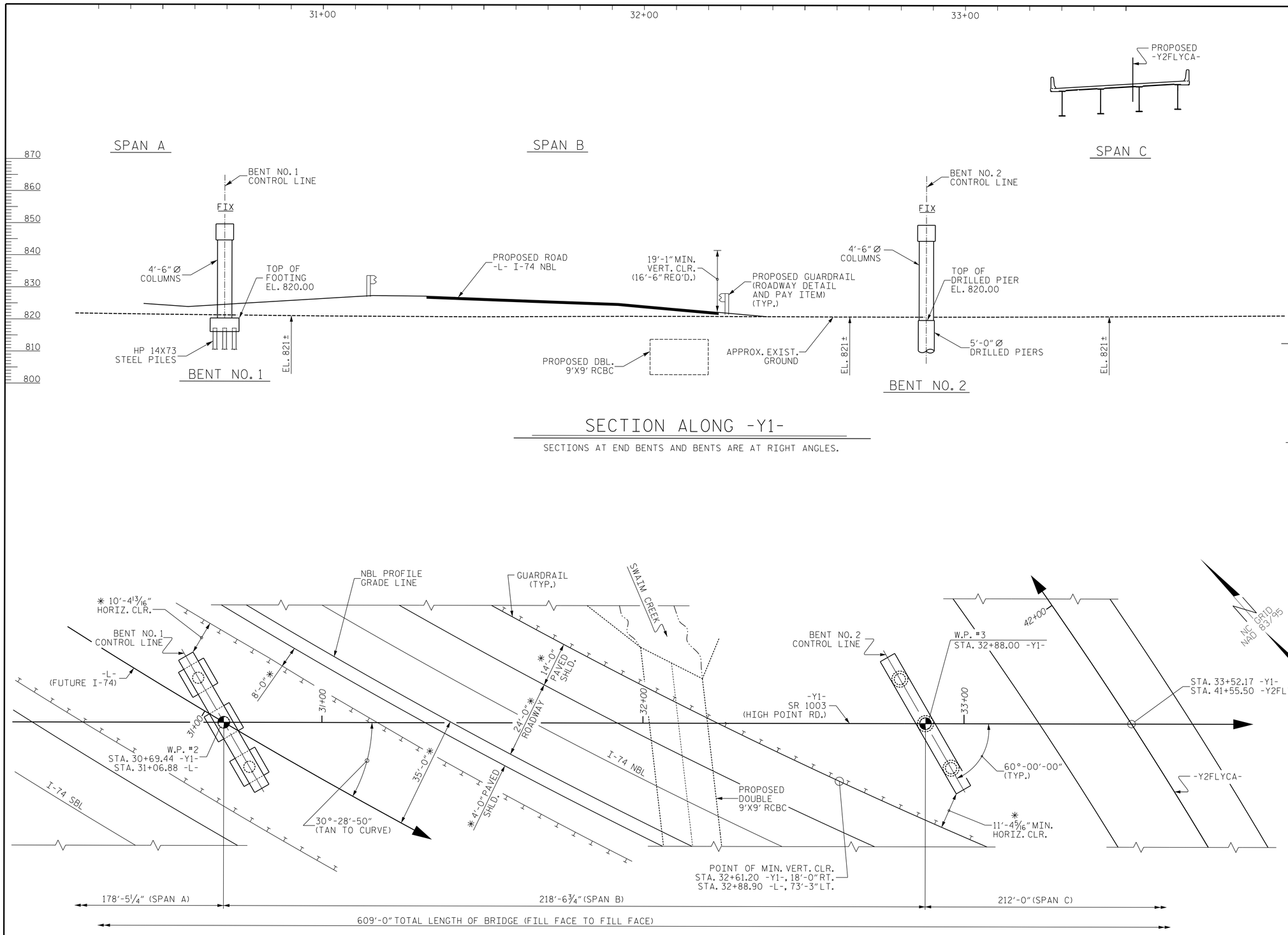
TIME: 10:03 AM on Monday, July 11, 2022



SECTION ALONG -Y1-

SECTIONS AT END BENTS AND BENTS ARE AT RIGHT ANGLES.

(+)0.8447% (-)3.1561%
PI = 27+48.00
EL = 868.10'
VC = 640'

GRADE DATA -Y1-

(-)3.7377% (+)3.4198%
PI = 31+16.00
EL = 813.16'
VC = 1,550'

GRADE DATA -L-

(+)3.4261% (-)2.5231%
PI = 33+84.00
EL = 898.95'
VC = 1,000'

GRADE DATA -Y2FLYCA-

-L-	-Y2FLYCA-
PI Sta 38+52.35	PI Sta 36+95.48
Δ= 102° 02' 03.1"(LT)	Δ= 110° 02' 48.8"(LT)
D = 3° 09' 55.8"	D = 4° 18' 28.6"
L = 3,223.31'	L = 2,554.51'
T = 2,236.53'	T = 1,901.09'
R = 1,810.00'	R = 1,330.00'
SE = 08	SE = 06

HORIZONTAL CURVE DATA

PARTIAL PLAN ALONG -Y1-

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

*RADIAL DISTANCE

NOTES:
END BENTS AND BENTS ARE PARALLEL.

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
Docusigned by: Patrick R. Gallagher DB66C5A4F3E... 6/22/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton
Consulting Engineers
Raleigh, North Carolina 919-977-9455
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3509
Asheville, NC 828-253-2796
New Bern, NC 252-631-5115

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 30+69.44 -Y1-
31+06.88 -L-
SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON SR 1003 (HIGH POINT RD.)
OVER FUTURE I-74
FROM US 311 TO I-40

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-2
1			3			TOTAL SHEETS
2			4			50

DWN. BY: WDC DATE: 3/22
CHKD. BY: PRG DATE: 3/22
DES. EGR. OF RECORD: PRG DATE: 3/22

gwpowell
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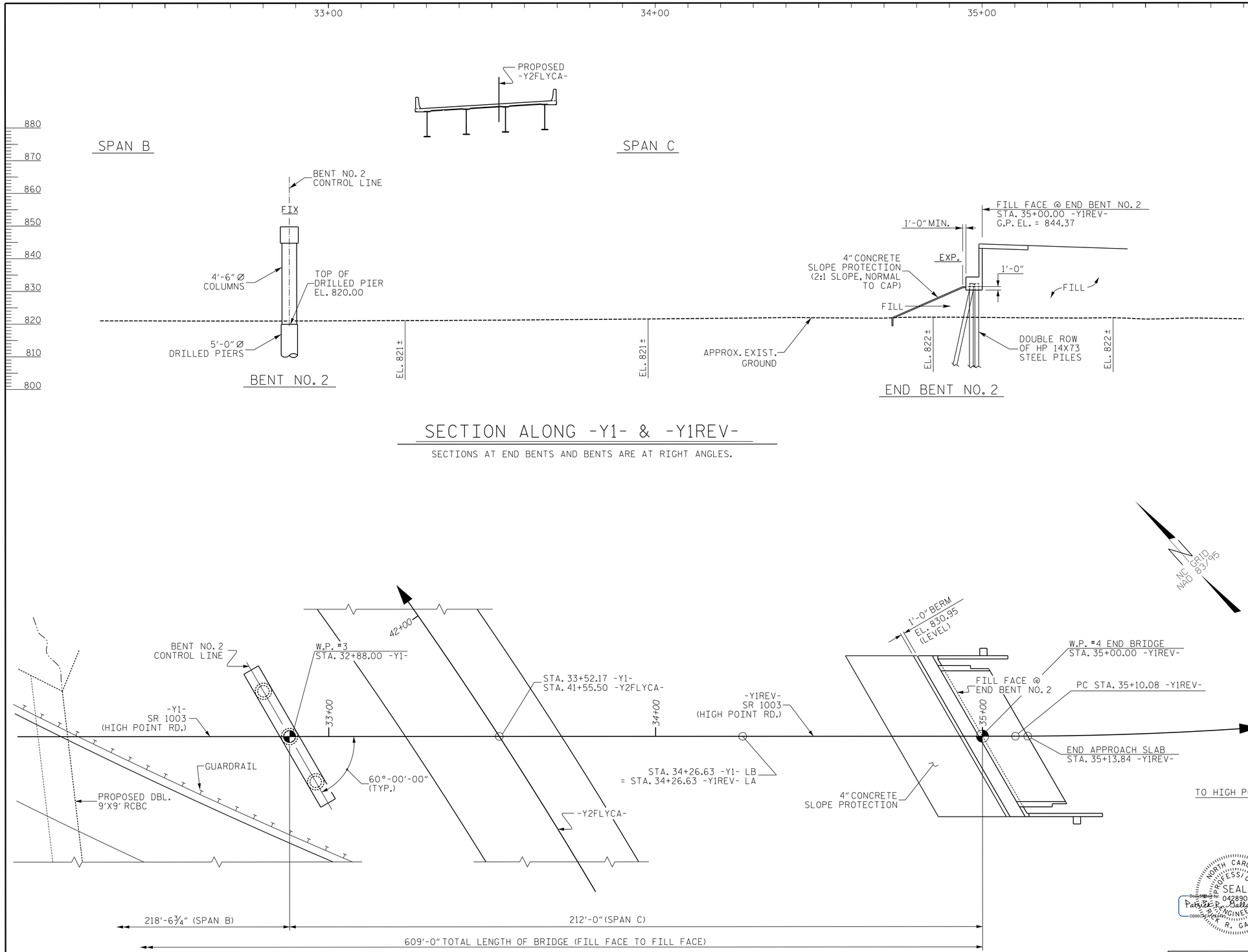

SECTION ALONG -Y1- & -Y1REV-

SECTIONS AT END BENTS AND BENTS ARE AT RIGHT ANGLES.

(+)0.8447% (-)3.1561%
PI = 27+48.00
EL = 868.10'
VC = 640'

GRADE DATA -Y1REV-

(-)3.7377% (+)3.4198%
PI = 31+16.00
EL = 813.16'
VC = 1,550'

GRADE DATA -L-

(+)3.4261% (-)2.5231%
PI = 33+84.00
EL = 898.95'
VC = 1,000'

GRADE DATA -Y2FLYCA-

-L-

PI Sta 38+52.35
Δ= 102° 02'03.1"(LT)
D = 3° 09'55.8"
L = 3,223.31'
T = 2,236.53'
R = 1,810.00'
SE = 08

-Y2FLYCA-

PI Sta 36+95.48
Δ= 110° 02' 48.8"(LT)
D = 4° 18' 28.6"
L = 2,554.51'
T = 1,901.09'
R = 1,330.00'
SE = 06

-Y1REV-

PI Sta 38+37.71
Δ= 34° 21' 03.0"(LT)
D = 5° 24' 18.9"
L = 635.51'
T = 327.63'
R = 1,060.00'
SE = 0.06

HORIZONTAL CURVE DATA

PARTIAL PLAN ALONG -Y1- & -Y1REV-

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

* RADIAL DISTANCE

NOTES:
END BENTS AND BENTS ARE PARALLEL.

Vaughn & Melton
Consulting Engineers
RALEIGH, North Carolina 919 977 9455
ASHEVILLE, NC 828-253-2796 · New Bern, NC 252-631-5115
Boone, NC 828-355-9933 · Tri-Cities, TN 423-467-8401 · Knoxville, TN 865-546-5800 · Spartanburg, SC 864-574-4775 · Charleston, SC 843-974-5650 · Middlesboro, KY 606-248-6600 · Atlanta, GA 770-427-3509

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 30+69.44 -Y1-
31+06.88 -L-
SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON SR 1003 (HIGH POINT RD.)
OVER FUTURE I-74
FROM US 311 TO I-40

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER Patrick R. Gallagher
Patrick R. Gallagher
PRG
D8D0C8F8E9F4E4...
3/22/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWN. BY: WDC	DATE: 3/22		
CHKD. BY: PRG	DATE: 3/22		
DES. EGR. OF RECORD: PRG	DATE: 3/22		

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-3
1			3			TOTAL SHEETS
2			4			50

gwzowell
DGN: V:\MC\Structures\037\48-44 U-2579AA STRS\Structures\SITE 4 - Y1 over LFTnal Plans\404_005_U2579AA_SWJ_0003_003.dgn
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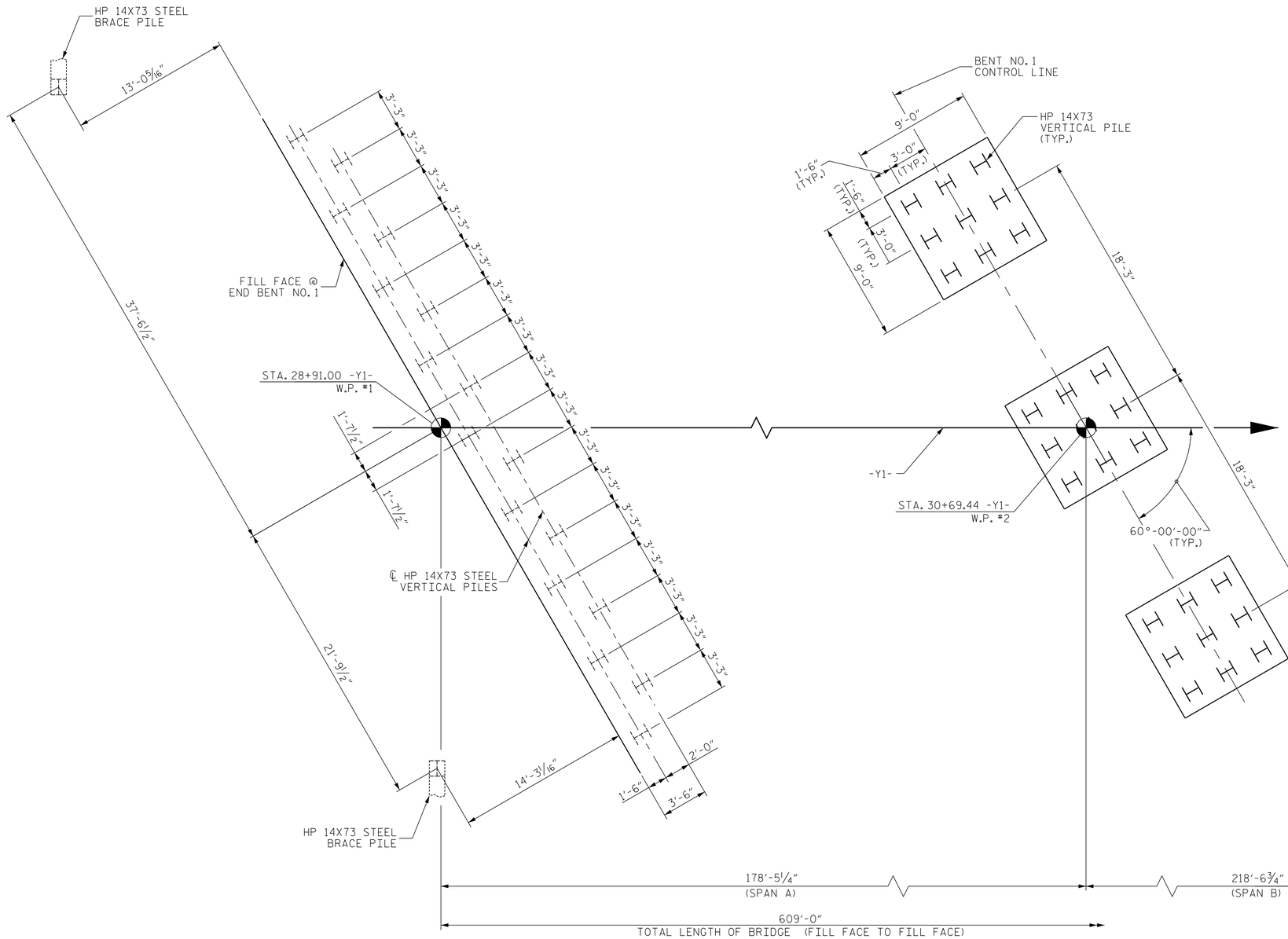


FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINES.

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 96 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 250 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG.

INSTALL PILES AT END BENT NO.1 PRIOR TO MECHANICALLY STABILIZED EARTH (MSE) WALL CONSTRUCTION.

OBSERVE A 3 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHING 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CAP CONSTRUCTION AT END BENT NO. 1. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

PILES AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 153 TONS PER PILE.

DRIVE PILES AT BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 255 TONS PER PILE.

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

DRILLED PIERS AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 1064 TONS/PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 125 TSF.

INSTALL DRILLED PIERS AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 772 FT, SATISFY THE REQUIRED TIP RESISTANCE, AND HAVE A PENETRATION OF AT LEAST 20 FT INTO ROCK /WEATHERED ROCK.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS AT BENTS NO. 2. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 165 TONS PER PILE.

DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 325 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG.

OBSERVE A 3 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT AND REINFORCED BRIDGE APPROACH FILL, IF APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT NO. 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 45,000-65,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT THE SITE. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE INVENTORY WAS COMPLETED PRIOR TO THE ADDITIONAL SPAN ADDED TO THE END BENT NO. 2 SIDE. THEREFORE THE BORINGS MARKED AS END BENT NO. 2 ARE AT BENT NO. 2. END BENT NO. 2 WAS DESIGNED USING BORING RW-6.

COFFERDAMS MAY BE REQUIRED TO PERFORM THE FOUNDATION EXCAVATION AT BENT NOS. 1 DUE TO HIGH GROUNDWATER ELEVATIONS. FOR COFFERDAMS, SEE SECTION 410 OF THE STANDARD SPECIFICATIONS.

UNDERCUT MAY BE REQUIRED PRIOR TO PILE DRIVING AT END BENT NOS. 1 AND 2. SEE EMBANKMENT STABILIZATION SPECIAL PROVISION FOR DETAILS.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+69.44 -Y1-
31+06.88 -L-

SHEET 4 OF 6

V&M Vaughn & Melton
Consulting Engineers
Raleigh, North Carolina
919 977-9455
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3509
Asheville, NC 828-253-2796
New Bern, NC 252-631-515

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
Patrick R. Gallagher
DocuSigned by:
DB6CA7A1C3E4...
6/22/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

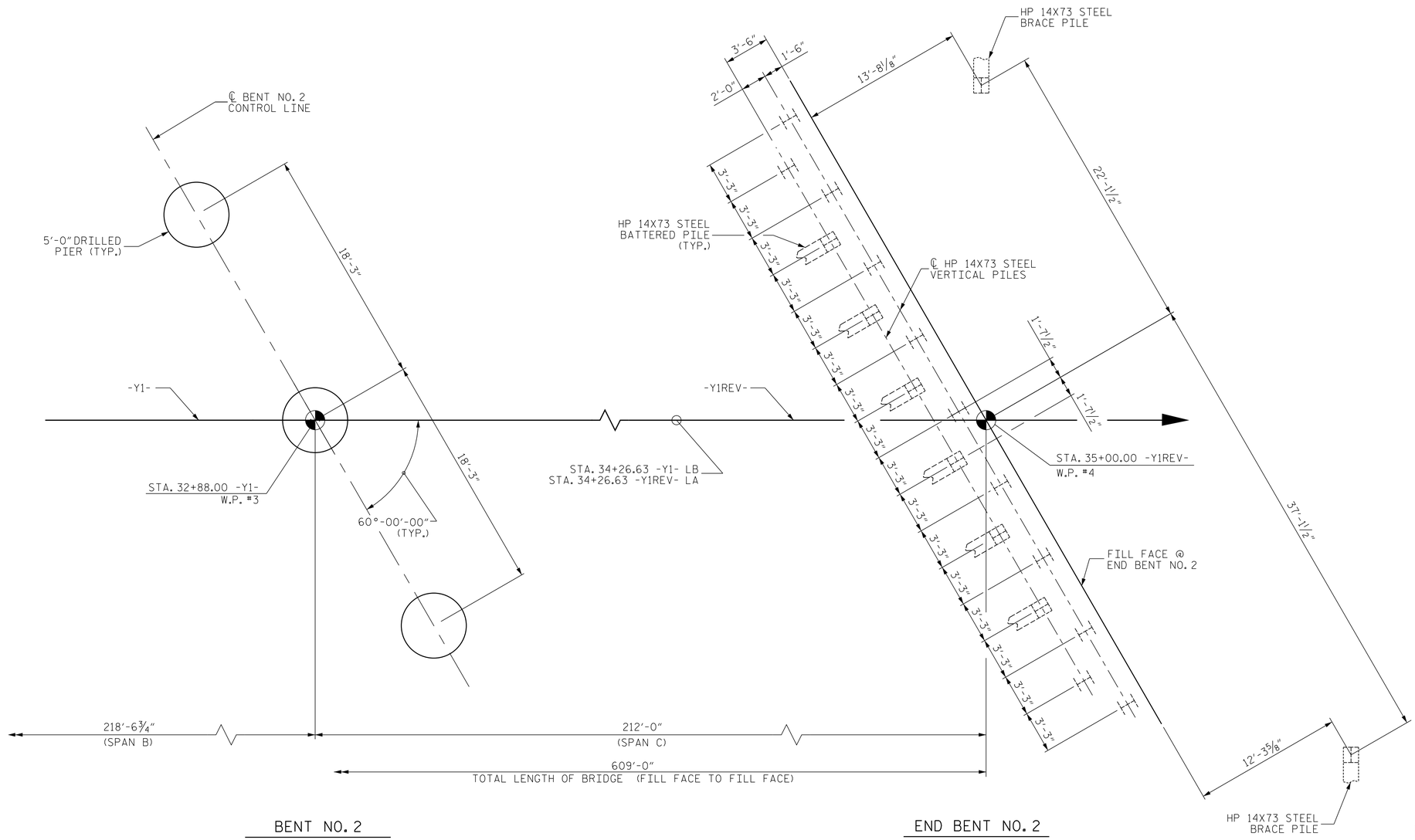
GENERAL DRAWING

FOUNDATION LAYOUT

DWN. BY: AW	DATE: 3/22		
CHKD. BY: PRG	DATE: 3/22		
DES. EGR. OF RECORD: PRG	DATE: 3/22		

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-4
1			3			TOTAL SHEETS
2			4			50

@pzowell
DGN: V:\MCS\Structure\037146-44 U-2579AA STRS\Structure\STE 4 - Y over LY\Final Plans\404_007_U2579AA_SMU_FL01_0044.dgn
TIME: 6/20/2022 11:46:52 AM



BENT NO. 2

END BENT NO. 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINES.

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
Digitally signed by Patrick R. Gallagher DB66C0A1A45A...
6/22/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M Vaughn & Melton Consulting Engineers
Raleigh, North Carolina 919-977-9455
Asheville, NC 828-253-2796
New Bern, NC 252-631-515
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3509

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+69.44 -Y1-
31+06.88 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

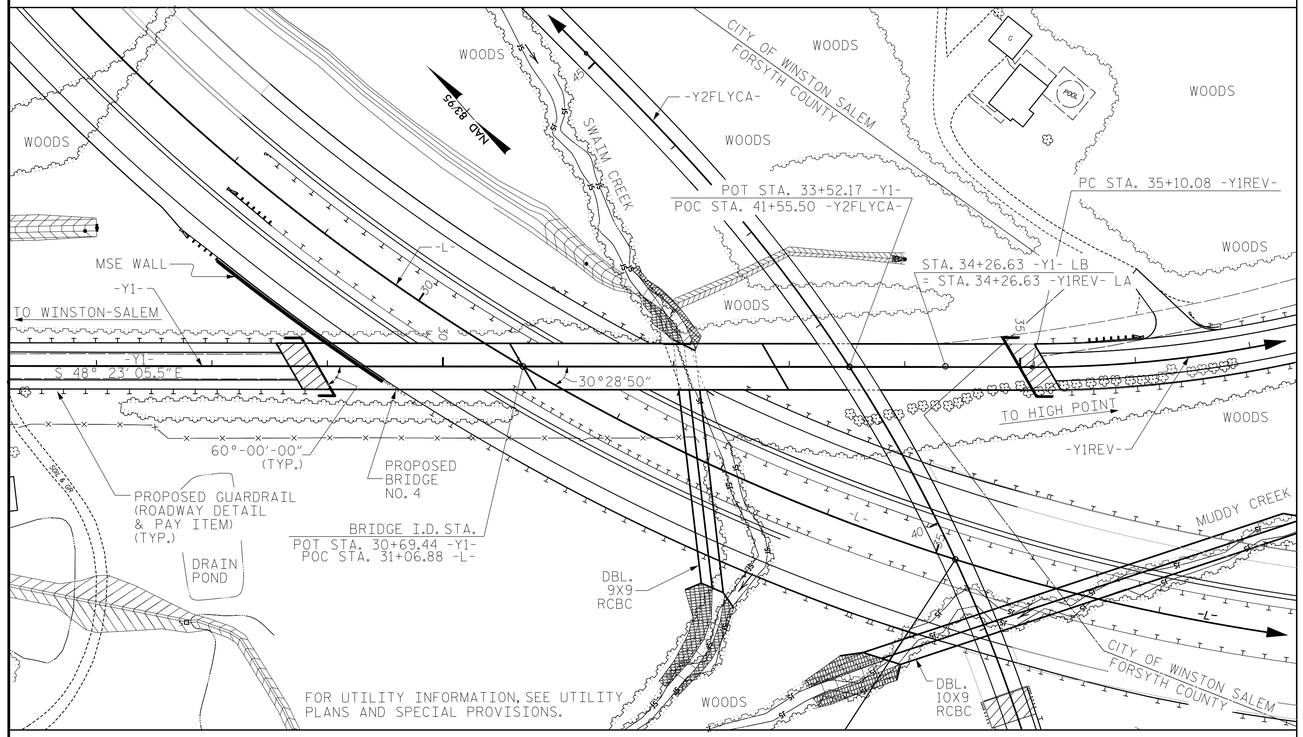
GENERAL DRAWING

FOUNDATION LAYOUT

DWN. BY: AW	DATE: 3/22
CHKD. BY: PRG	DATE: 3/22
DES. EGR. OF RECORD: PRG	DATE: 3/22

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-5
1			3			TOTAL SHEETS
2			4			50

BM#7: -Y1- STA. 41+32.08, 1193.72' RT., ELEV.= 910.02



LOCATION SKETCH

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

FOR MSE RETAINING WALLS, SEE GEOTECHNICAL SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

SAMPLE BAR REPLACEMENT

SIZE	LENGTH	SIZE	LENGTH	SIZE	LENGTH
#3	6'-2"	#6	9'-8"	#9	13'-2"
#4	7'-4"	#7	10'-10"	#10	14'-6"
#5	8'-6"	#8	12'-0"	#11	15'-10"

NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND f_y = 60ksi

TOTAL BILL OF MATERIAL

	FOUNDATION EXCAVATION FOR BENT	5'-0" Ø DRILLED PIERS IN SOIL	5'-0" Ø DRILLED PIERS NOT IN SOIL	PDA TESTING	SID INSPECTIONS	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	STRUCTURAL STEEL APPROX. LBS. 1,500,000	PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES	HP 14 X 73 STEEL PILES		CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	DISC BEARINGS	STRIP SEAL EXPANSION JOINTS
	LUMP SUM	LIN. FT.	LIN. FT.	EACH	EACH	EACH	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	LBS.	LUMP SUM	EACH	NO.	LIN.FT.	LIN.FT.	SQ. YARDS	LUMP SUM	LUMP SUM
SUPERSTRUCTURE							26,229	23,438		LUMP SUM			LUMP SUM				1,253.2		LUMP SUM	LUMP SUM
END BENT NO. 1									100.4		17,117			19	19	1,511		200.9		
BENT NO. 1	LUMP SUM								129.5		17,457	2,546		27	27	1,647				
BENT NO. 2		91.00	53.00						79.0		23,180	6,465								
END BENT NO. 2									95.0		16,715			19	19	1,178		155.8		
TOTAL	LUMP SUM	91.00	53.00	1	1	1	26,229	23,438	403.9	LUMP SUM	74,469	9,011	LUMP SUM	65	65	4,336	1,253.2	356.7	LUMP SUM	LUMP SUM

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+69.44 -Y1-
31+06.88 -L-

SHEET 6 OF 6

DocuSigned by: Patrick Gallagher
NORTH CAROLINA PROFESSIONAL SEAL 042 ENGINEER PATRICK R. GALLAGHER
8/8/2022

V&M Vaughn & Melton
Consulting Engineers
Raleigh, North Carolina
919-977-9455
Asheville, NC 828-253-2796
New Bern, NC 252-631-5115
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3509

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DWN. BY: WDC DATE: 3/22
CHKD. BY: PRG DATE: 3/22
DES. EGR. OF RECORD: PRG DATE: 3/22

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE ON SR 1003 (HIGH POINT RD.)
OVER FUTURE I-74
FROM US 311 TO I-40

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

SHEET NO. S4-6
TOTAL SHEETS 50

w5rdrucker
DGN: V:\WO\Structures\037148-44 U-2579AA STRS\Structures\SITE 4 - Y1 over LV\Final Plans\404_01\U2579AA_SMU_GD04_006_330732.dgn
TIME: 11:05 AM on Monday, August 08, 2022

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE											SERVICE II 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 RATING		HL-93 (INVENTORY)	N/A	⟨1⟩	1.16	--	1.75	0.779	1.404	C	E	150	1.004	1.156	C	I	209	1.30	0.779	1.357	C	E	150	
		HL-93 (OPERATING)	N/A		1.50	--	1.35	0.779	1.820	C	E	150	1.004	1.498	C	I	209	1.00	0.779	1.765	C	E	150	
		HS-20 (INVENTORY)	36.00	⟨2⟩	1.91	68.62	1.75	0.779	2.414	C	E	150	1.004	1.906	C	I	209	1.30	0.779	2.334	C	E	150	
		HS-20 (OPERATING)	36.00		2.47	88.96	1.35	0.779	3.129	C	E	150	1.004	2.471	C	I	209	1.00	0.779	3.034	C	E	150	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		5.92	79.87	1.40	0.779	7.706	C	E	150	1.004	6.072	C	I	209	1.30	0.779	5.961	C	E	150	
		SNGARBS2	20.000		2.90	57.94	1.40	0.779	3.745	C	E	150	1.004	2.966	C	I	209	1.30	0.779	2.897	C	E	150	
		SNAGRIS2	22.000		3.74	82.35	1.40	0.779	4.839	C	E	150	1.004	3.840	C	I	209	1.30	0.779	3.743	C	E	150	
		SNCOTTS3	27.250		2.93	79.71	1.40	0.779	3.782	C	E	150	1.004	3.021	C	I	209	1.30	0.779	2.925	C	E	150	
		SNAGGRS4	34.925		2.33	81.27	1.40	0.779	3.008	C	E	150	1.004	2.411	C	I	209	1.30	0.779	2.327	C	E	150	
		SNS5A	35.550		2.29	81.30	1.40	0.779	2.957	C	E	150	1.004	2.395	C	I	209	1.30	0.779	2.287	C	E	150	
		SNS6A	39.950		2.06	82.10	1.40	0.779	2.657	C	E	150	1.004	2.152	C	I	209	1.30	0.779	2.055	C	E	150	
		SNS7B	42.000		1.96	82.24	1.40	0.779	2.532	C	E	150	1.004	2.070	C	I	209	1.30	0.779	1.958	C	E	150	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.49	82.30	1.40	0.779	3.224	C	E	150	1.004	2.586	C	I	209	1.30	0.779	2.494	C	E	150	
		TNT4A	33.075		2.49	82.32	1.40	0.779	3.218	C	E	150	1.004	2.562	C	I	209	1.30	0.779	2.489	C	E	150	
		TNT6A	41.600		2.02	84.03	1.40	0.779	2.020	C	E	150	1.004	2.132	C	I	209	1.30	0.779	2.020	C	E	150	
		TNT7A	42.000		1.99	83.75	1.40	0.779	2.578	C	E	150	1.004	2.099	C	I	209	1.30	0.779	1.994	C	E	150	
		TNT7B	42.000		2.00	84.00	1.40	0.779	2.585	C	E	150	1.004	2.051	C	I	209	1.30	0.779	2.000	C	E	150	
		TNAGRIT4	43.000		1.94	83.59	1.40	0.779	2.513	C	E	150	1.004	2.000	C	I	209	1.30	0.779	1.944	C	E	150	
		TNAGT5A	45.000		1.86	83.75	1.40	0.779	2.406	C	E	150	1.004	1.935	C	I	209	1.30	0.779	1.861	C	E	150	
		TNAGT5B	45.000	⟨3⟩	1.85	83.16	1.40	0.779	2.388	C	E	150	1.004	1.906	C	I	209	1.30	0.779	1.848	C	E	150	
FATIGUE		HL-93 (INVENTORY)	γ_{LL}=0.75																					

LOAD FACTORS:

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

NOTES:

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

ALLOWABLE STRESS FOR SERVICE II LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.
2.
3.
4.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93) **

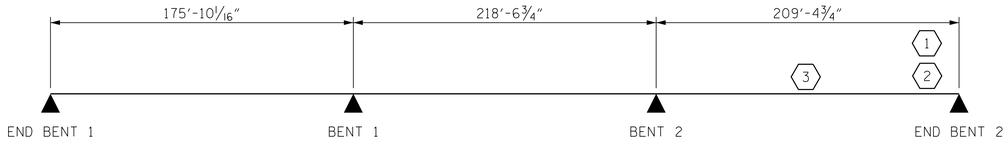
⟨2⟩ DESIGN LOAD RATING (HS-20) **

⟨3⟩ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
Patrick R. Gallagher
6/22/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+69.44 -Y1-
31+06.88 -L-

V&M Vaughn & Melton Consulting Engineers
Raleigh, North Carolina 919-977-9455
Asheville, NC 828-253-2796
New Bern, NC 252-631-515
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3509

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

LRFR SUMMARY FOR STEEL GIRDERS

(NON-INTERSTATE TRAFFIC)

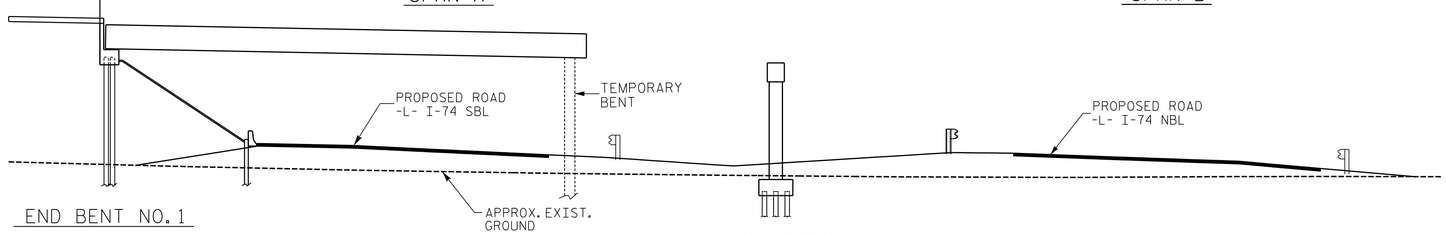
DRAWN BY : MAA 1/08
CHECKED BY : GM/DI 2/08

REV.		
REV.	11/12/08RR	MAA/GM
REV.	10/1/11	MAA/GM
REV.	12/17	MAA/THC

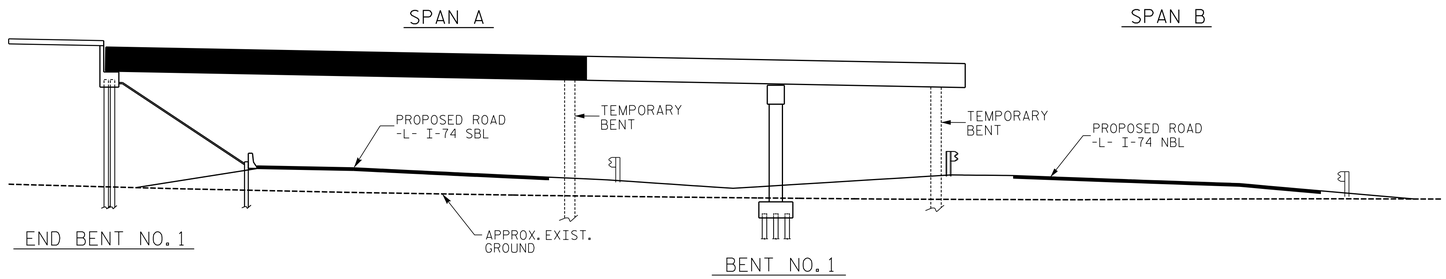
DWN. BY: WDC DATE: 3/22
CHKD. BY: PRG DATE: 3/22
DES. EGR. OF RECORD: PRG DATE: 3/22

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-7
1			3			TOTAL SHEETS
2			4			50

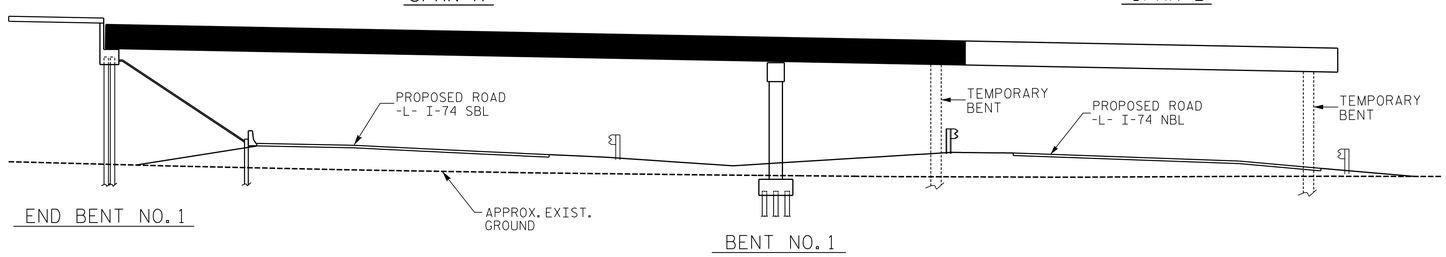
STD. NO. LRFR4



STEP 1 - GIRDER ERECTION



STEP 2 - GIRDER ERECTION



STEP 3 - GIRDER ERECTION

GIRDER ERECTION NOTES:

FOR TEMPORARY BENTS, SEE SPECIAL PROVISIONS.

ERECT A MINIMUM OF TWO GIRDERS WITH ALL DIAPHRAGMS/CROSSFRAMES BETWEEN THE GIRDERS IN PLACE AND THE BOLTS TIGHTENED PRIOR TO RELEASING THE GIRDERS.

ERECT EACH SUBSEQUENT GIRDER WITH DIAPHRAGMS/CROSSOVERS CONNECTING TO THE ADJACENT PREVIOUSLY ERECTED GIRDER AND TIGHTEN ALL BOLTS BEFORE RELEASING THE GIRDERS.

THE STRUCTURAL STEEL SHALL BE SUPPORTED DURING ERECTION IN ITS CAMBERED POSITION. A MINIMUM OF ONE TEMPORARY BENT SHALL BE USED IN SPANS A AND B.

THE TEMPORARY BENT SHALL REMAIN IN PLACE UNTIL ALL GIRDERS, DIAPHRAGMS, AND CROSSFRAMES ARE IN PLACE AND ALL HIGH STRENGTH BOLTS ARE TIGHTENED.

THE TEMPORARY BENT SHALL PROVIDE BEARING AT CONNECTOR PLATE LOCATIONS. WHEN CONNECTOR PLATES ARE USED AS TEMPORARY BEARING STIFFENERS, DIAPHRAGMS MUST BE ATTACHED.

THE CONTRACTOR'S ERECTION PLANS SHALL INCLUDE A METHOD OF TEMPORARY BENT REMOVAL THAT WILL UNIFORMLY TRANSFER THE STRUCTURAL WEIGHT TO THE DIAPHRAMS/CROSSFRAMES AND THE GIRDERS WILL REMAIN IN THE CAMBERED POSITIONS.

PLANS FOR TEMPORARY BENT ERECTION AND REMOVAL SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING TEMPORARY BENTS. THE DESIGNS SHALL BE COMPLETED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. THE CONTRACTOR SHALL SUBMIT SIGNED AND SEALED WORKING DRAWINGS AND CALCULATIONS TO THE ENGINEER FOR APPROVAL.

DURING THE GIRDER ERECTION PROCEDURE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY LATERAL BRACING AND OTHER MEANS OF SUPPORT, AS REQUIRED, TO ENSURE STABILITY OF THE GIRDERS, AVOID UPLIFT OF THE GIRDERS AT THE TEMPORARY BENTS, AND TO ENSURE PLUMBNESS OF THE GIRDERS IN THE FINAL CONDITION.

NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR PROVIDING THE TEMPORARY BENTS. THE COST FOR ALL MATERIALS, EQUIPMENT, TOOLS, LABOR, AND ANY INCIDENTALS NECESSARY TO PROVIDE THE TEMPORARY BENTS SHALL BE CONSIDERED INCIDENTAL TO THE LUMP SUM PRICE BID FOR STRUCTURAL STEEL.

THE CONTRACTOR MAY SUBMIT AN ALTERNATE ERECTION METHOD TO THE ENGINEER FOR REVIEW AND APPROVAL.

V&M Vaughn & Melton Consulting Engineers
Raleigh, North Carolina 919-977-9455
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-1800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Asheville, NC 828-253-2796
New Bern, NC 252-631-595
Atlanta, GA 770-627-3509

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+69.44 -Y1-
31+06.88 -L-

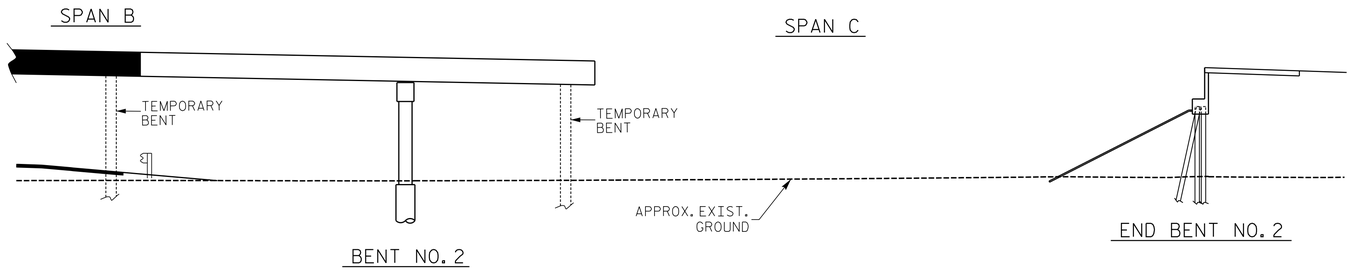
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

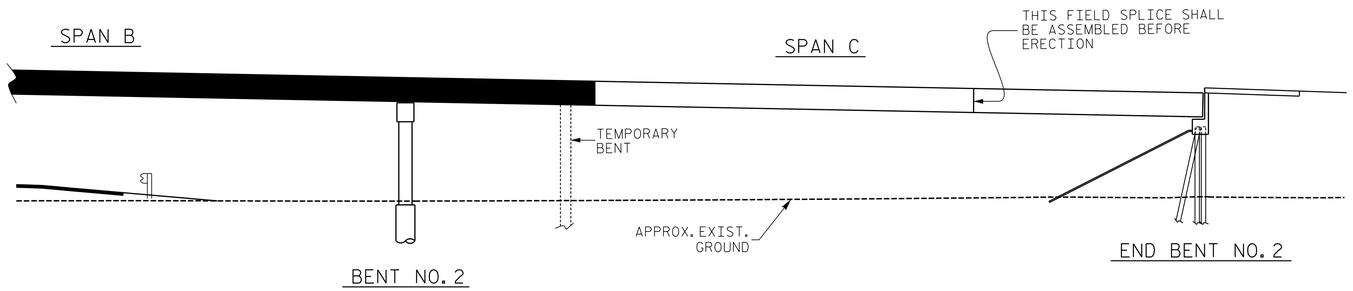
GIRDER ERECTION DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-8
1			3			TOTAL SHEETS
2			4			50

DWN. BY: WDC DATE: 3/22
CHKD. BY: PRG DATE: 3/22
DES. EGR. OF RECORD: PRG DATE: 3/22



STEP 4 - GIRDER ERECTION



STEP 5 - GIRDER ERECTION

V&M Vaughn & Melton Consulting Engineers
Raleigh, North Carolina 919-977-9455
Asheville, NC 828-253-2796
New Bern, NC 252-631-515
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
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Atlanta, GA 770-627-3509

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 30+69.44 -Y1-
31+06.88 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER ERECTION DETAILS

DWN. BY: WDC	DATE: 3/22
CHKD. BY: PRG	DATE: 3/22
DES. EGR. OF RECORD: PRG	DATE: 3/22

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-9
1			3			TOTAL SHEETS
2			4			50