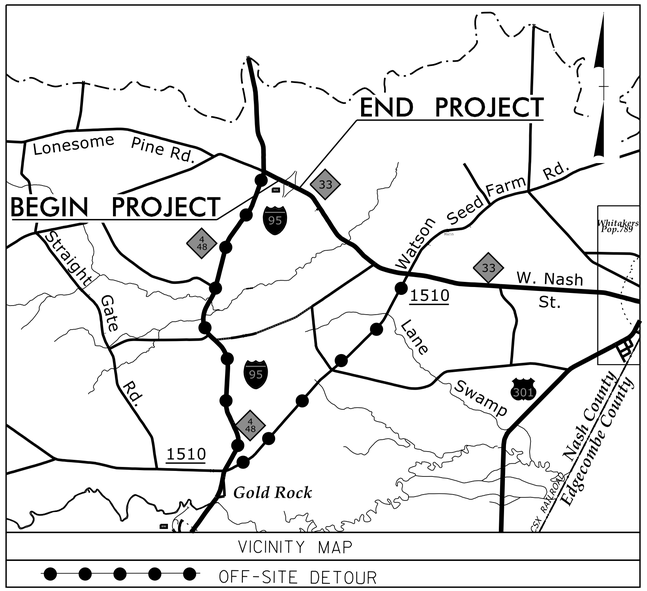
TIP PROJECT: BR-0036

CONTRACT: C204350



VICINITY MAP

OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

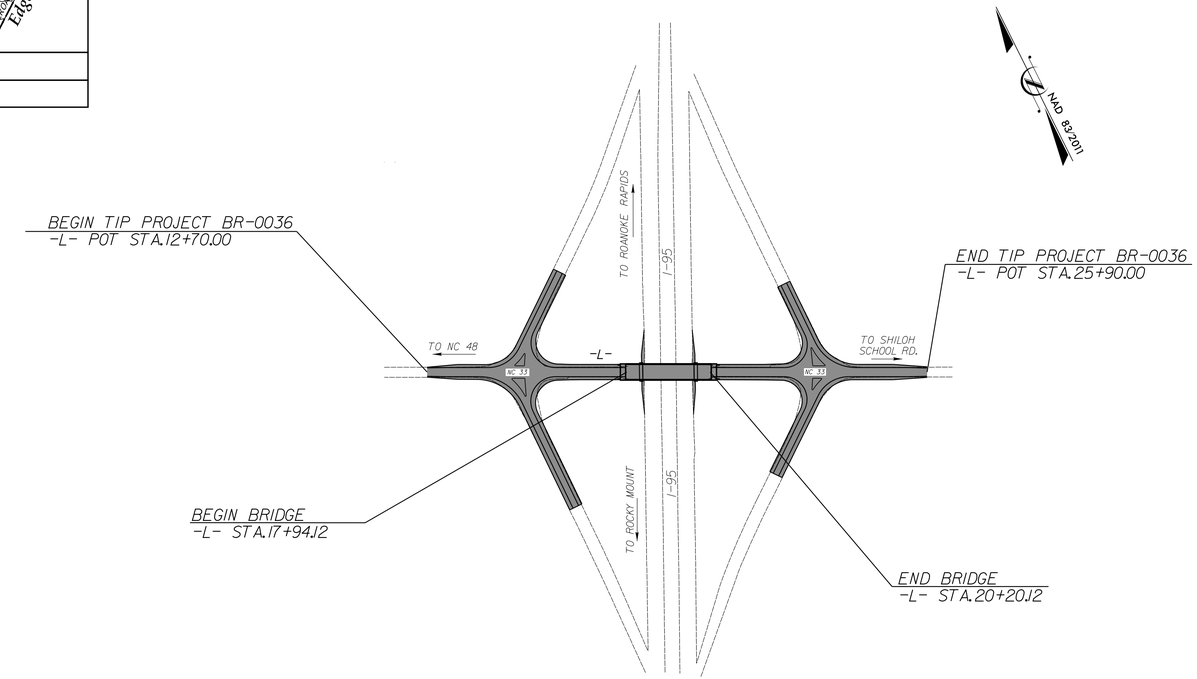
NASH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0036		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
49074.1.1		P.E.
49074.2.1		R/W
49074.3.2		CONST

LOCATION: BRIDGE NO. 630041 ON NC 33 OVER I-95.

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



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Tri-Cities, TN 423-467-8401
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042880 PATRICK R. GALLAGHER
Patrick R. Gallagher
4/21/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA

ADT 2020 = 3,100
ADT 2040 = 3,600
T = 14 % *
V = 55 MPH
K = 8 %
D = 60 %
* TTST = 10% DUAL 4%
FUNC CLASS = RURAL MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY PROJECT = 0.207 MI
LENGTH STRUCTURE PROJECT = 0.043 MI
TOTAL LENGTH OF PROJECT = 0.250 MI

NCDOT CONTACT: DAVID STUTTS, P.E.
PROJECT ENGINEER, PEF/PROGRAM MANAGEMENT

Prepared in the Office of:
VAUGHN & MELTON
1318-F PATTON AVE.
ASHEVILLE NC, 28806
FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

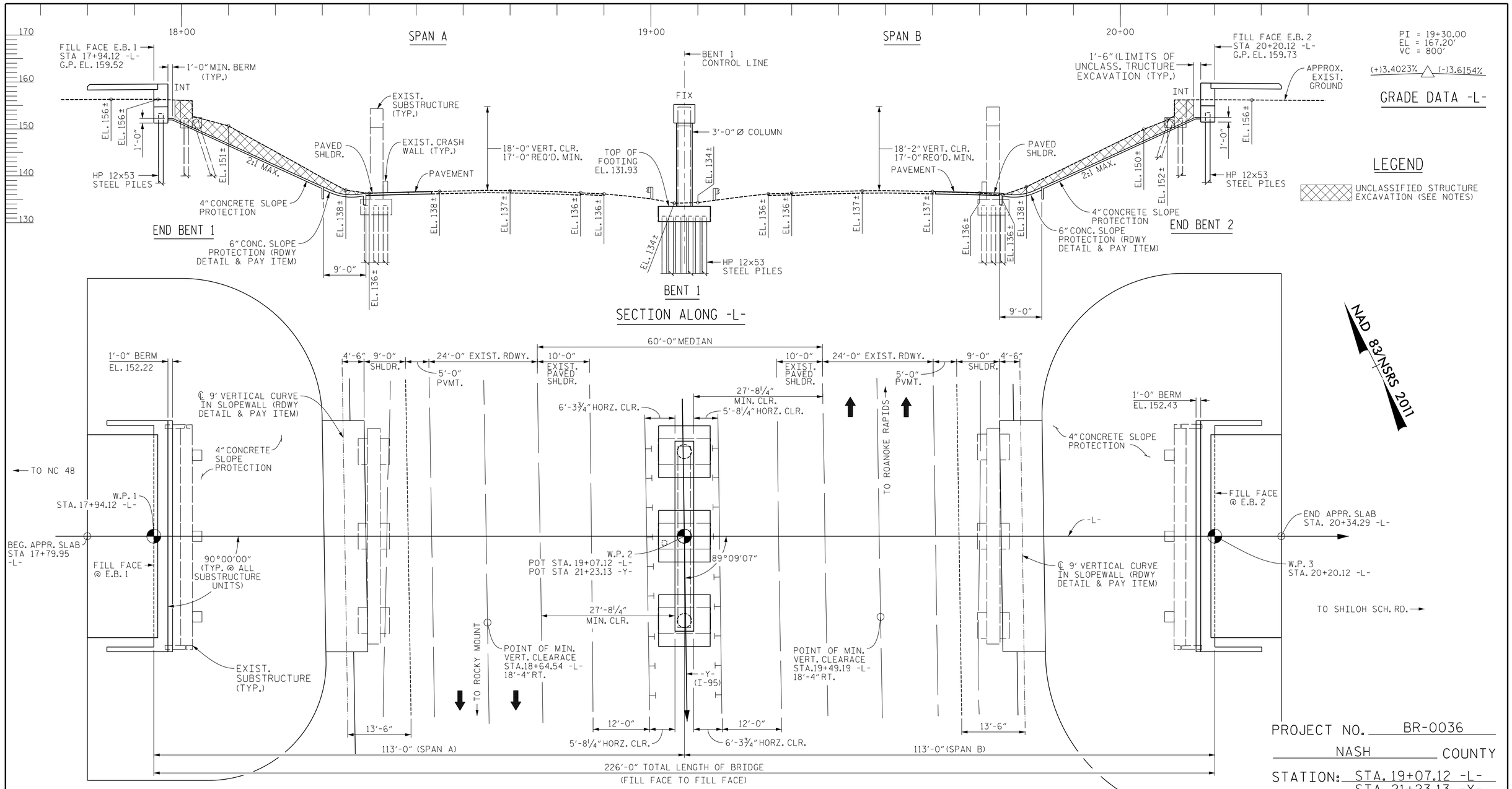
2018 STANDARD SPECIFICATIONS

LETTING DATE:
JUNE 15, 2021

PAUL GARRETT, PE
PROJECT ENGINEER

PATRICK R. GALLAGHER, PE
PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •



PLAN ALONG -L-

PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.

V & M PROJECT NO.: 31748-41

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Patrick R. Gallagher
4/3/2020

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DSG. ENG. OF RECORD.: PRG
DWN. BY: FRJ DATE: 07/19
CHKD. BY: PRG DATE: 12/19

PROJECT NO. BR-0036
NASH COUNTY
STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

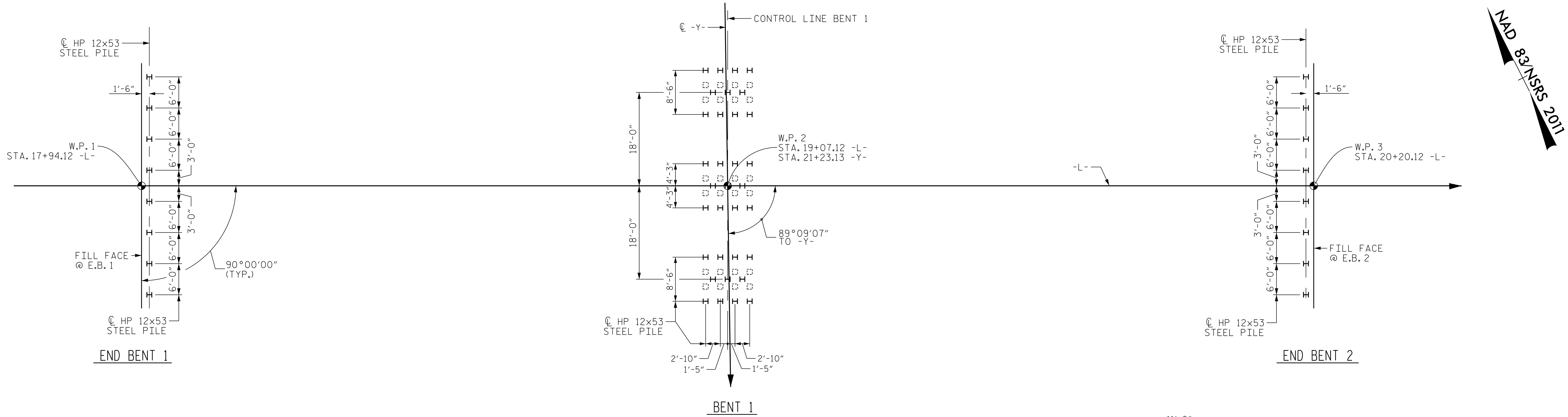
SHEET 1 OF 3 REPLACES BRIDGE #630041

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER I-95
ON NC 33 BETWEEN
NC 48 AND SHILOH SCHOOL ROAD

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-1
1			3			TOTAL SHEETS
2			4			29



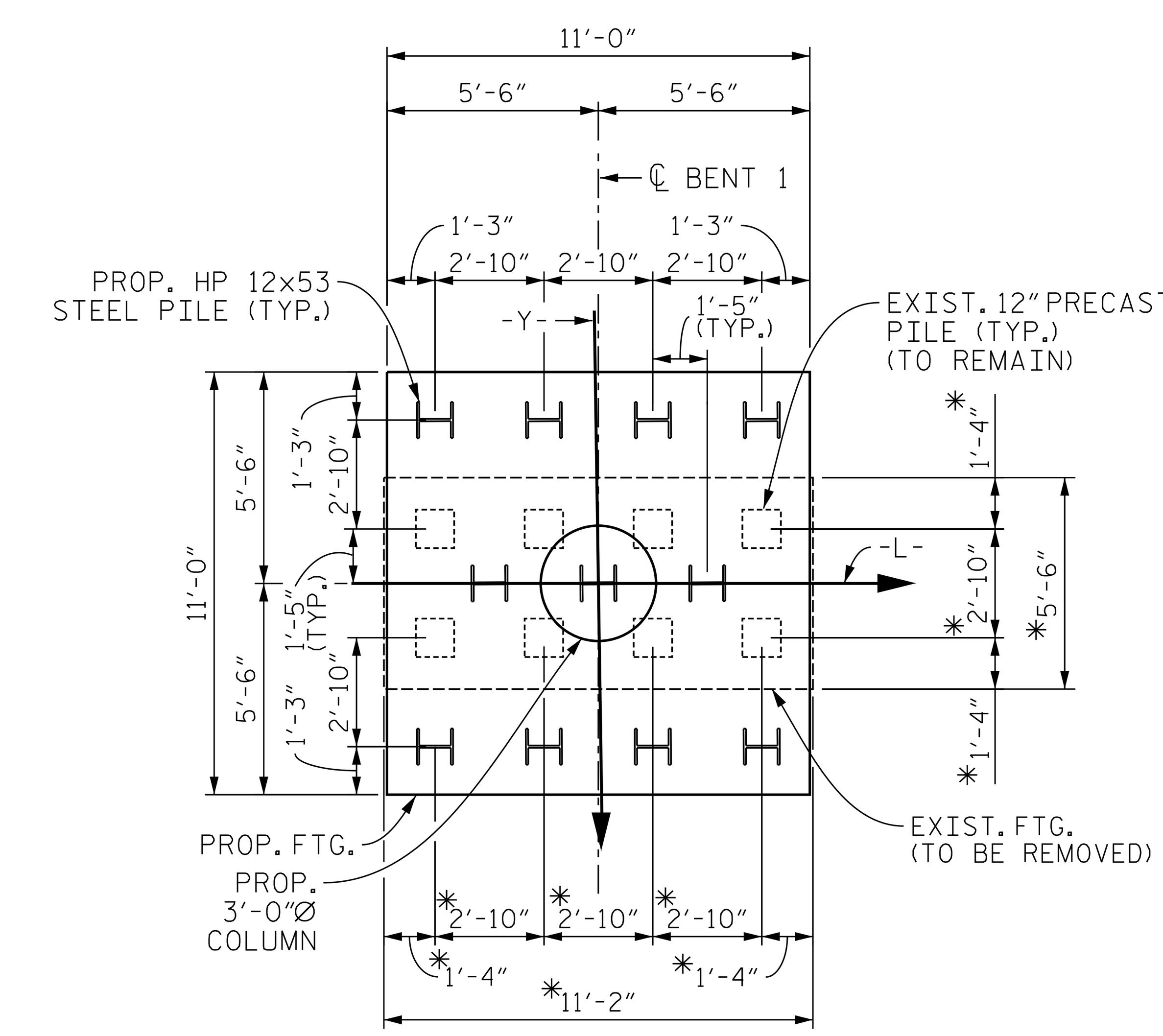
LEGEND

VERTICAL STEEL H-PILE H

EX. PRECAST CONC. PILE ⬚

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE ℄ OF THE PILES.
ALL PILES ARE VERTICAL



TYPICAL BENT 1 PILE FOOTING PLAN

(COLUMN 2 SHOWN)

*FIELD VERIFY EXISTING PILE SPACINGS AND SIZE OF EXISTING FOOTING AND PILES

NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.

PILES AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE.

DRIVE PILES AT BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 145 TONS PER PILE.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PRESERVE EXISTING BENT 1 PILES FOR REUSE IN THE PROPOSED BENT 1 FOUNDATION. FIELD ADJUST TOP OF EXISTING PILES TO CONFORM TO THE PROPOSED BENT 1 PLANS.

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PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Patrick R. Gallagher
4/3/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER I-95
ON NC 33 BETWEEN
NC 48 AND SHILOH SCHOOL ROAD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DSG. ENG. OF RECORD.: PRG	
DWN. BY: FRJ	DATE: 07/19
CHKD. BY: PRG	DATE: 12/19

REVISIONS

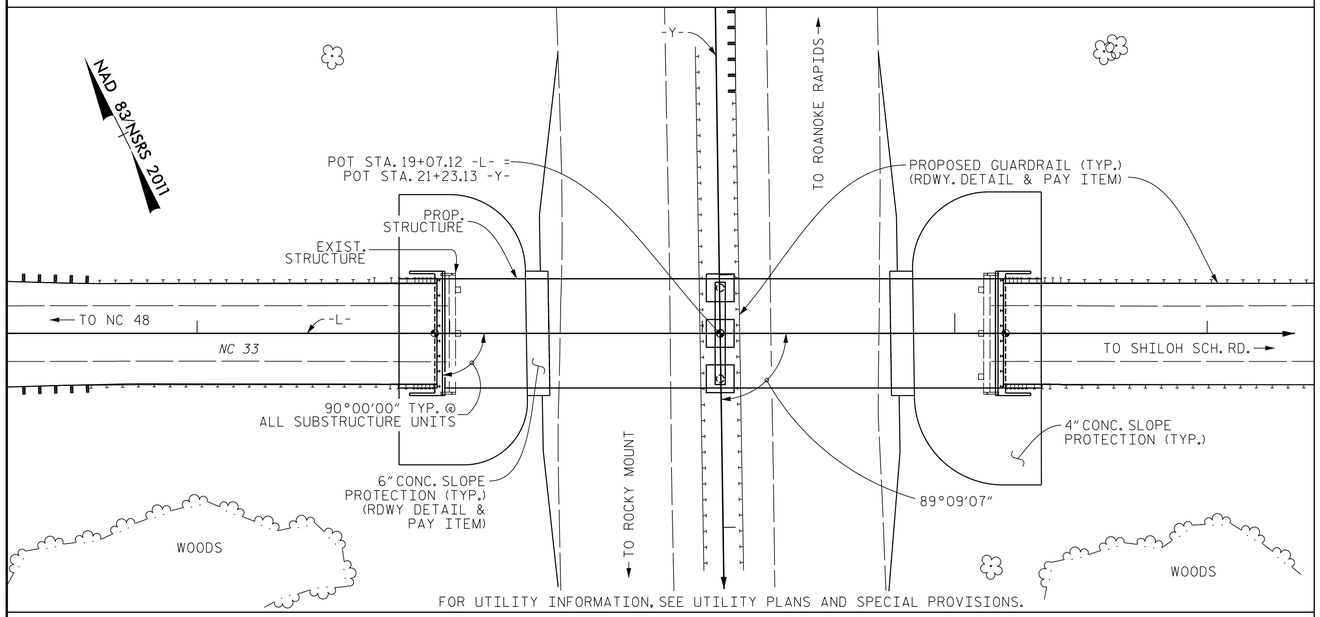
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S1-2

TOTAL SHEETS 29

V & M PROJECT NO.: 31748-41

BM #2: BENCHNAIL IN BASE OF 18" PINE; STA. 21+36.87; 244' RT.; ELEV. 143.80; N 866872.254, E 2355825.241



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

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 FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE ELEVATION(S) AND CLEARANCE(S) SHOWN ON THE PLAN AT THE POINT(S) OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) ON THE EXISTING 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.

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

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

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

THE EXISTING STRUCTURE CONSISTING OF 4 SPANS (1 @ 41', 2 @ 66', 1 @ 41') OF REINFORCED CONCRETE FLOOR ON I-BEAMS, WITH A CLEAR ROADWAY WIDTH OF 44', ON REINF CONC END BENTS WITH REINF CONC PILES, AND INTERIOR BENTS OF REINF. CONC POST AND BEAM ON PILE FOOTINGS, LOCATED AT THE PROPOSED SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SEE SPECIAL PROVISIONS.

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.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTILCE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH THE APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 19+07.12.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 115 FEET LEFT AND 95 FEET RIGHT OF CENTERLINE OF ROADWAY AT END BENT 1, AND 100 FEET LEFT AND RIGHT OF END BENT 2 CENTERLINE OF ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	FOUNDATION EXCAVATION FOR BENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	STRUCTURAL STEEL APPROX. 434,000 LBS.	PILE DRIVING EQUIP. SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	DISC BEARINGS	ELASTOMERIC BEARINGS	FIBER OPTIC CONDUIT SYSTEM WITH HANGERS	JUNCTION BOX (OVERSIZE, HEAVY DUTY)
	LUMP SUM	LUMP SUM	LUMP SUM	EACH	LUMP SUM	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	LBS.	LUMP SUM	EACH	NO.	LIN.FT.	EACH	LIN.FT.	SQ.YDS.	LUMP SUM	LUMP SUM	LIN. FT.	EACH
SUPERSTRUCTURE						9775	9336		LUMP SUM			LUMP SUM					448.7		LUMP SUM	LUMP SUM	254	2
END BENT NO. 1								24.7		3825			8	8	596	4		774				
BENT NO. 1			LUMP SUM					89.0		14161	1278		33	33	1785	12						
END BENT NO. 2								24.7		3825			8	8	676	4		780				
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	1	LUMP SUM	9775	9336	138.4	LUMP SUM	21811	1278	LUMP SUM	49	49	3057	20	448.7	1554	LUMP SUM	LUMP SUM	254	2

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

SHEET 3 OF 3

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER I-95
ON NC 33 BETWEEN
NC 48 AND SHILOH SCHOOL ROAD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DSG. ENG. OF RECORD.: PRG
DWN. BY: FRJ DATE: 07/19
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-3
1			3			TOTAL SHEETS
2			4			29

V & M PROJECT NO.: 31748-41

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	(#) CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x 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	1.20	--	1.75	0.764	1.56	B	EXT.	0.00	0.648	1.20	B	EXT.	0.00	1.30	0.764	2.53	B	EXT.	0.00	
		HL-93 (OPERATING)	N/A		1.55	--	1.35	0.764	2.03	B	EXT.	0.00	0.648	1.55	B	EXT.	0.00	1.00	0.764	3.29	B	EXT.	0.00	
		HS-20 (INVENTORY)	36.00	2	1.80	64.76	1.75	0.764	3.25	A	EXT.	44.60	0.648	1.80	B	EXT.	0.00	1.30	0.764	3.86	A	EXT.	44.60	
		HS-20 (OPERATING)	36.00		2.33	83.92	1.35	0.764	4.21	A	EXT.	71.32	0.648	2.33	B	EXT.	0.00	1.00	0.764	5.02	A	EXT.	44.60	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		5.77	77.84	1.40	0.764	9.66	A	EXT.	44.60	0.648	5.77	B	EXT.	0.00	1.30	0.764	9.19	A	EXT.	44.60	
		SNGARBS2	20.000		3.96	79.18	1.40	0.764	6.94	A	EXT.	44.60	0.648	3.96	B	EXT.	0.00	1.30	0.764	6.60	A	EXT.	44.60	
		SNAGRIS2	22.000		3.62	79.73	1.40	0.764	6.47	A	EXT.	44.60	0.648	3.62	B	EXT.	0.00	1.30	0.764	6.15	A	EXT.	44.60	
		SNCOTTS3	27.250		2.86	77.91	1.40	0.764	4.79	A	EXT.	44.60	0.648	2.86	B	EXT.	0.00	1.30	0.764	4.55	A	EXT.	44.60	
		SNAGGRS4	34.925		2.28	79.45	1.40	0.764	3.94	A	EXT.	46.25	0.648	2.28	B	EXT.	0.00	1.30	0.764	3.75	A	EXT.	46.25	
		SNS5A	35.550		2.26	80.41	1.40	0.764	3.87	A	EXT.	46.25	0.648	2.26	B	EXT.	0.00	1.30	0.764	3.68	A	EXT.	46.25	
		SNS6A	39.950		2.03	81.26	1.40	0.764	3.52	A	EXT.	46.25	0.648	2.03	B	EXT.	0.00	1.30	0.764	3.35	A	EXT.	46.25	
		SNS7B	42.000		1.96	82.15	1.40	0.764	3.36	A	EXT.	46.25	0.648	1.96	B	EXT.	0.00	1.30	0.764	3.19	A	EXT.	46.25	
	TRUCK TRACTOR SEMI-TRAILER (TTST1)	TNAGRIT3	33.000		2.44	80.65	1.40	0.764	4.31	A	EXT.	46.25	0.648	2.44	B	EXT.	0.00	1.30	0.764	4.10	A	EXT.	46.25	
		TNT4A	33.075		2.42	79.98	1.40	0.764	4.26	A	EXT.	46.25	0.648	2.42	B	EXT.	0.00	1.30	0.764	4.05	A	EXT.	46.25	
		TNT6A	41.600		2.01	83.53	1.40	0.764	3.48	A	EXT.	46.25	0.648	2.01	B	EXT.	0.00	1.30	0.764	3.30	A	EXT.	44.60	
		TNT7A	42.000		1.98	83.29	1.40	0.764	3.48	A	EXT.	46.25	0.648	1.98	B	EXT.	0.00	1.30	0.764	3.31	A	EXT.	44.60	
		TNT7B	42.000		1.94	81.56	1.40	0.764	3.52	A	EXT.	44.60	0.648	1.94	B	EXT.	0.00	1.30	0.764	3.34	A	EXT.	44.60	
		TNAGRIT4	43.000		1.88	81.01	1.40	0.764	3.39	A	EXT.	44.60	0.648	1.88	B	EXT.	0.00	1.30	0.764	3.22	A	EXT.	44.60	
		TNAGT5A	45.000		1.83	82.31	1.40	0.764	3.24	A	EXT.	44.60	0.648	1.83	B	EXT.	0.00	1.30	0.764	3.08	A	EXT.	44.60	
		TNAGT5B	45.000	3	1.80	81.05	1.40	0.764	3.21	A	EXT.	44.60	0.648	1.80	B	EXT.	0.00	1.30	0.764	3.05	A	EXT.	44.60	
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.

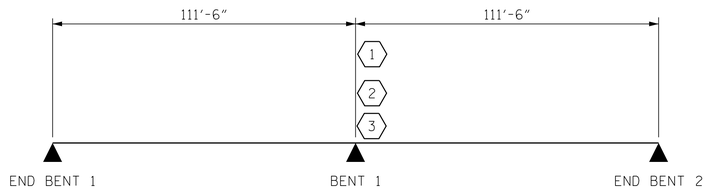
(#) CONTROLLING LOAD RATING

1. DESIGN LOAD RATING (HL-93) **
2. DESIGN LOAD RATING (HS-20) **
3. LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

INT.- INTERIOR GIRDER
EXT.- EXTERIOR GIRDER



LRFR SUMMARY

DIMENSIONS ARE SHOWN BEARING TO BEARING

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828-253-2796
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Patrick R. Gallagher
4/3/2020

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PROJECT NO. BR-0036
NASH COUNTY
STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

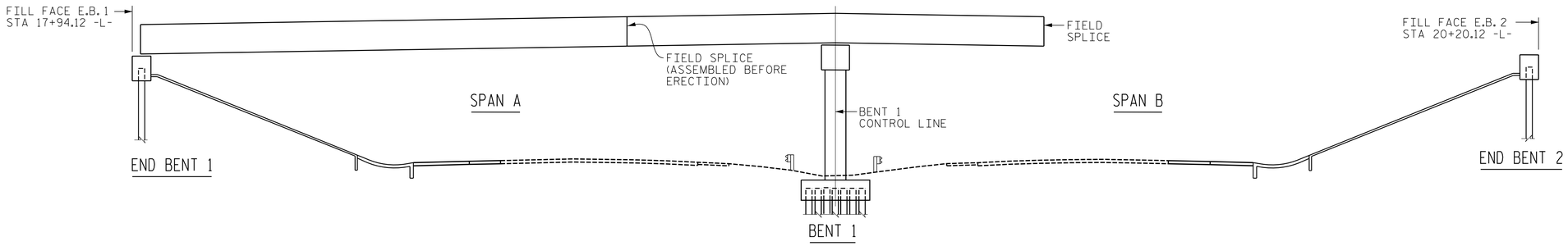
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

LRFR SUMMARY FOR STEEL GIRDERS
(NON-INTERSTATE TRAFFIC)

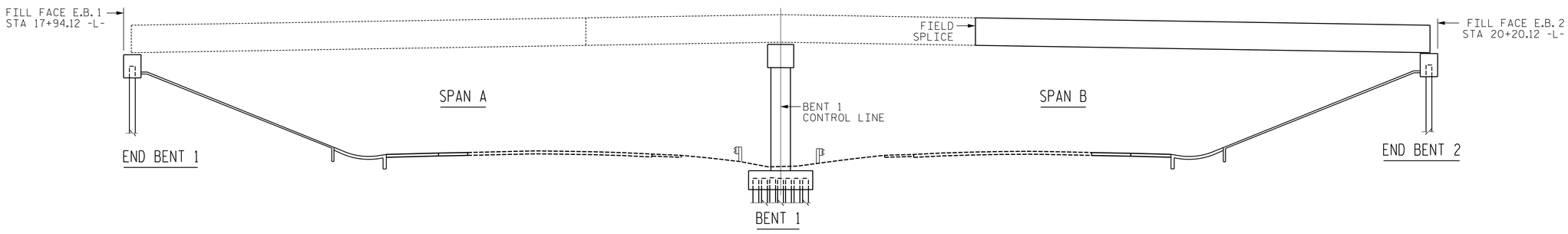
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-4
1			3			TOTAL SHEETS
2			4			29

STD. NO. LRFR3

ASSEMBLED BY : FRJ	DATE : 8/2019	
CHECKED BY : PRG	DATE : 8/2019	
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



STAGE I GIRDER ERECTION



STAGE II GIRDER ERECTION

ERECTION NOTES

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/CROSSFRAMES CONNECTING TO THE ADJACENT PREVIOUSLY ERECTED GIRDER AND TIGHTEN ALL BOLTS BEFORE RELEASING THE GIRDER.

THE STRUCTURAL STEEL SHALL BE SUPPORTED DURING ERECTION IN ITS CAMBERED POSITION.

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

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

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER 4/3/2020

Patrick R. Gallagher

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GIRDER ERECTION DETAILS

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NO.	BY:	DATE:	NO.	BY:	DATE:	S1-5
1			3			TOTAL SHEETS
2			4			29

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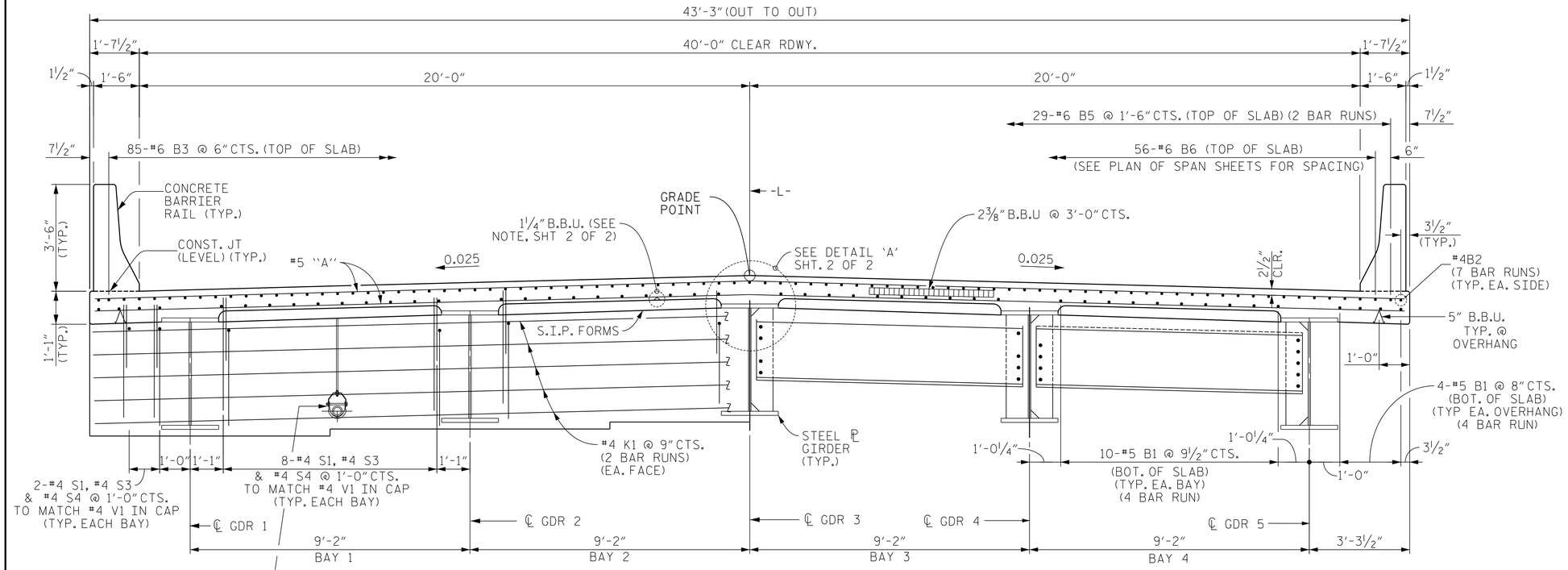
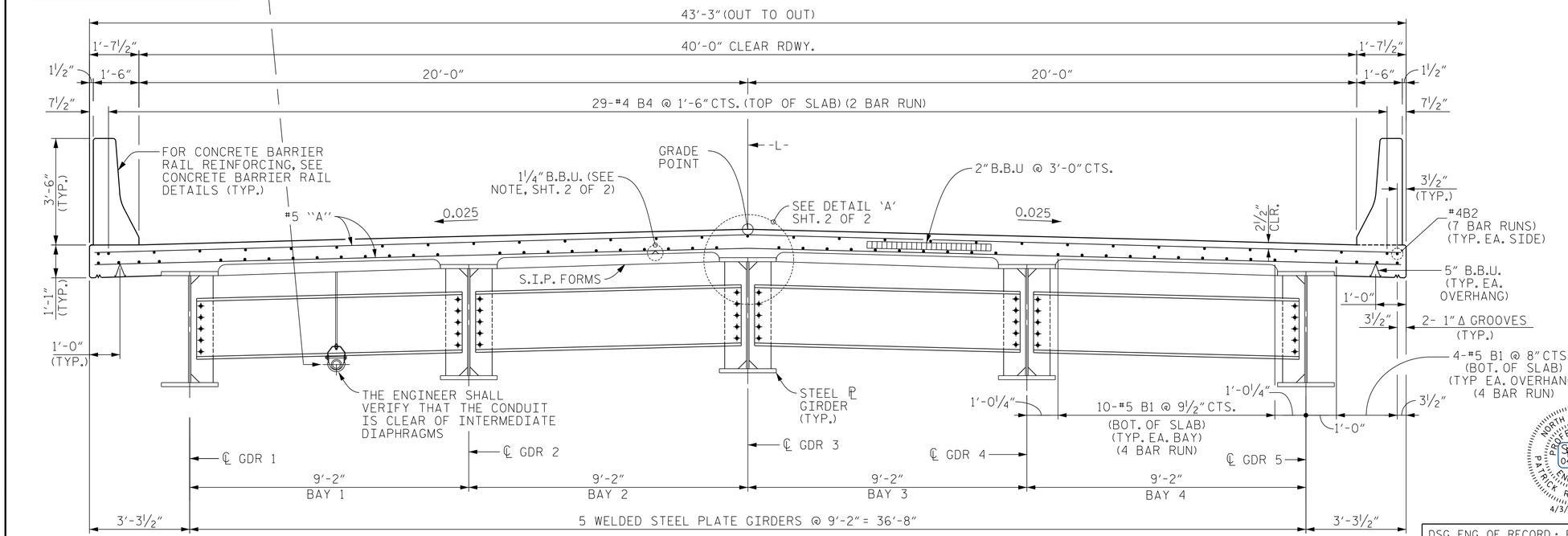


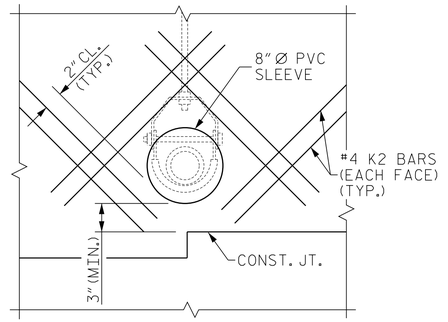
HALF SECTION
SHOWING END BENT 1 DIAPHRAGM

HALF SECTION
SHOWING BENT DIAPHRAGM

FIBER OPTIC CONDUIT (SEE "FIBER OPTIC CONDUIT SYSTEM WITH HANGERS" SHEET FOR DETAILS)



TYPICAL SECTION
SHOWING INTERMEDIATE DIAPHRAGMS



CONDUIT THRU END BENT DIAPH. DETAIL
THE 8" Ø PVC SLEEVE SHALL BE LOCATED BY THE ENGINEER

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NASH COUNTY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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SUPERSTRUCTURE

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Patrick R. Gallagher
4/3/2020

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2			4		

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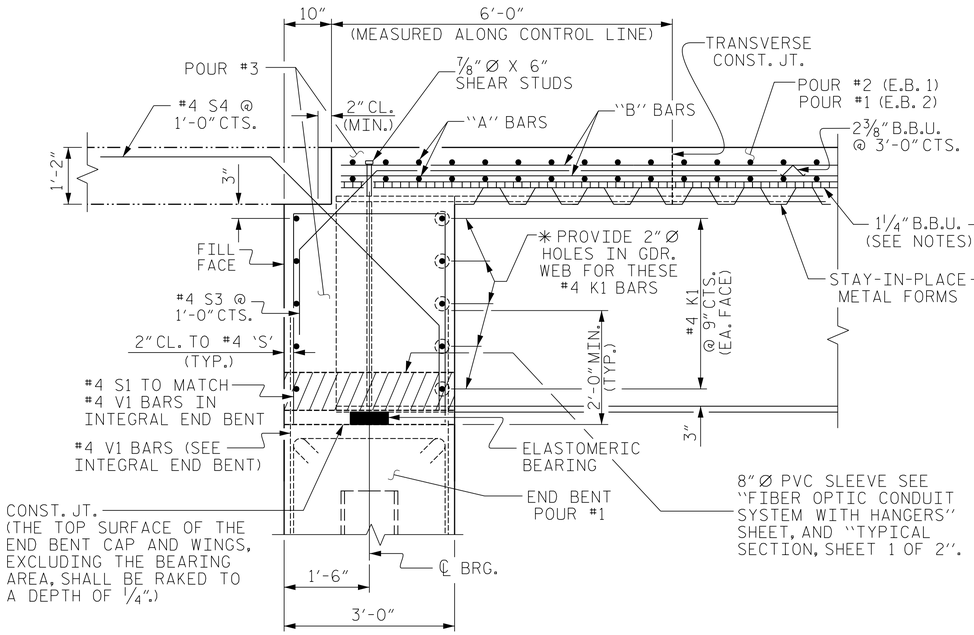
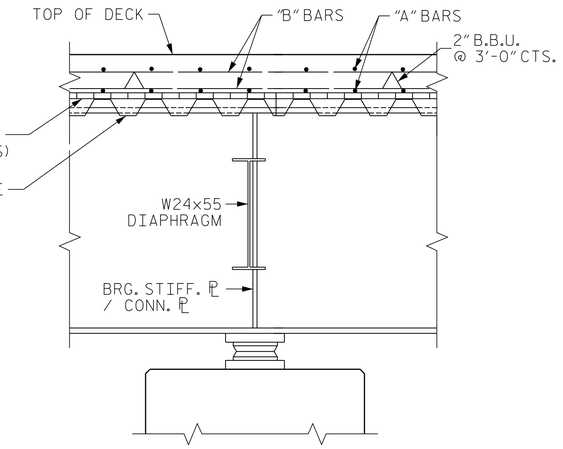


SECTION THRU INTEGRAL END BENT



SECTION THRU BENT

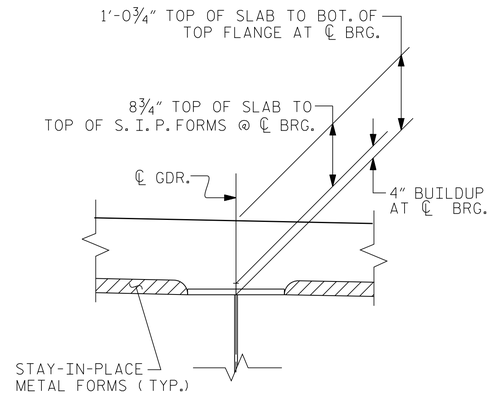
NOTES:

PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER @ 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.

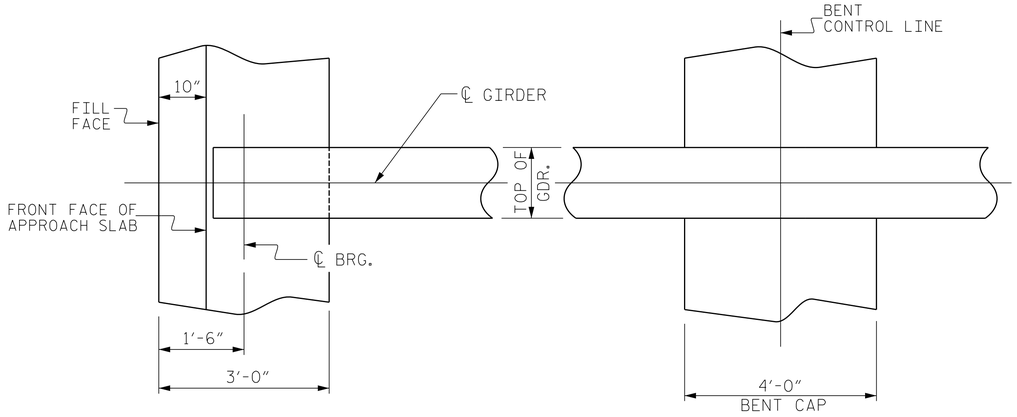
PREVIOUSLY CAST CONCRETE SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000psi BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

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

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



DETAIL A



PLAN @ END BENT

PLAN @ BENT

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PROJECT NO. BR-0036

NASH COUNTY

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SHEET 2 OF 2

STATE OF NORTH CAROLINA
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RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

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1			3			TOTAL SHEETS
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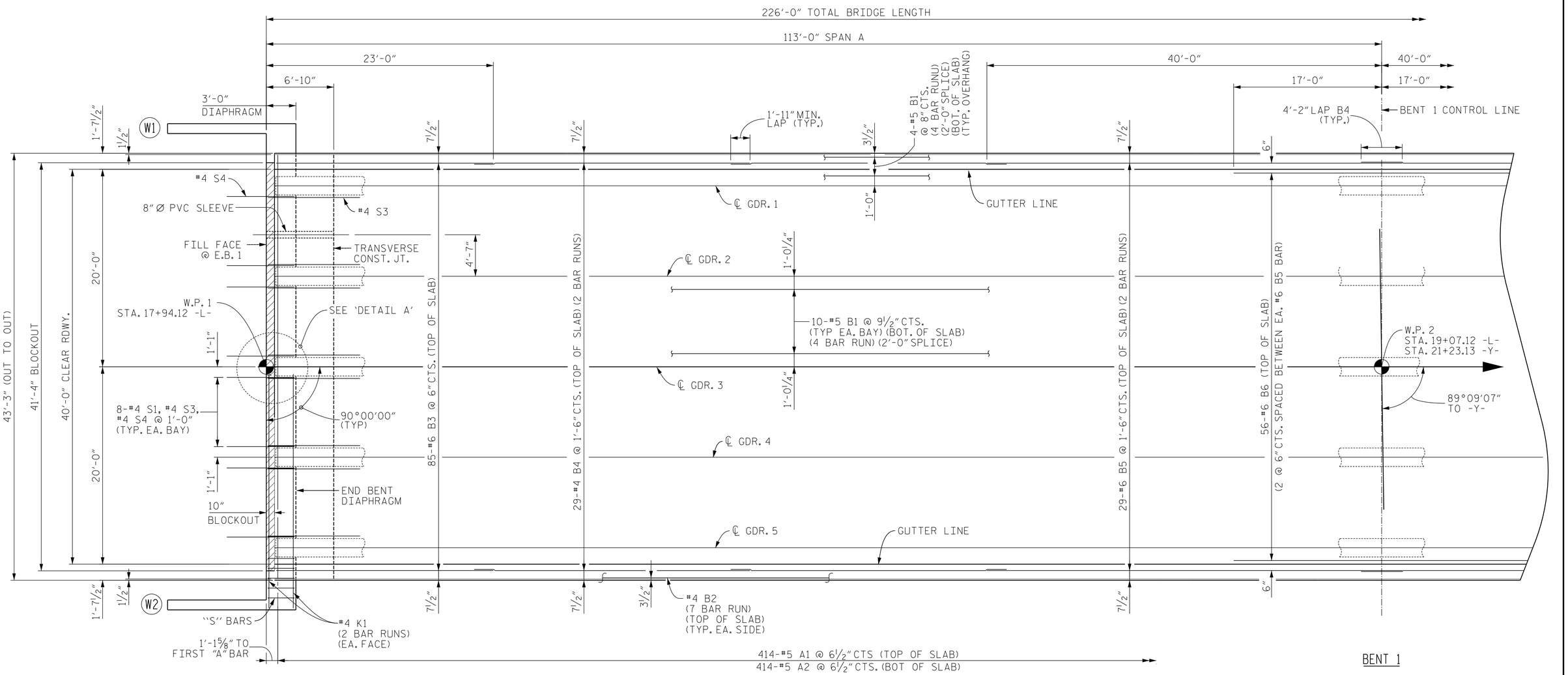
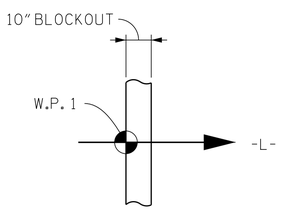


BENT 1

END BENT 1

PLAN OF SPAN A



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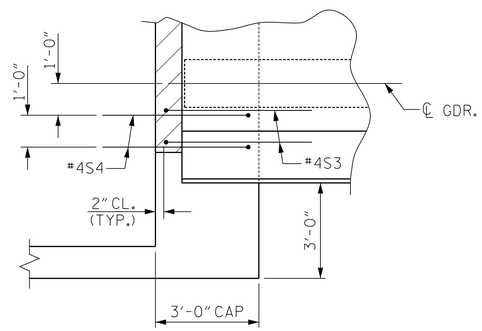

DIAPH. END DETAIL

(TYPICAL FOR EACH DECK CORNER)
(S1 BARS NOT SHOWN FOR CLARITY)

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SUPERSTRUCTURE

PLAN OF SPAN A

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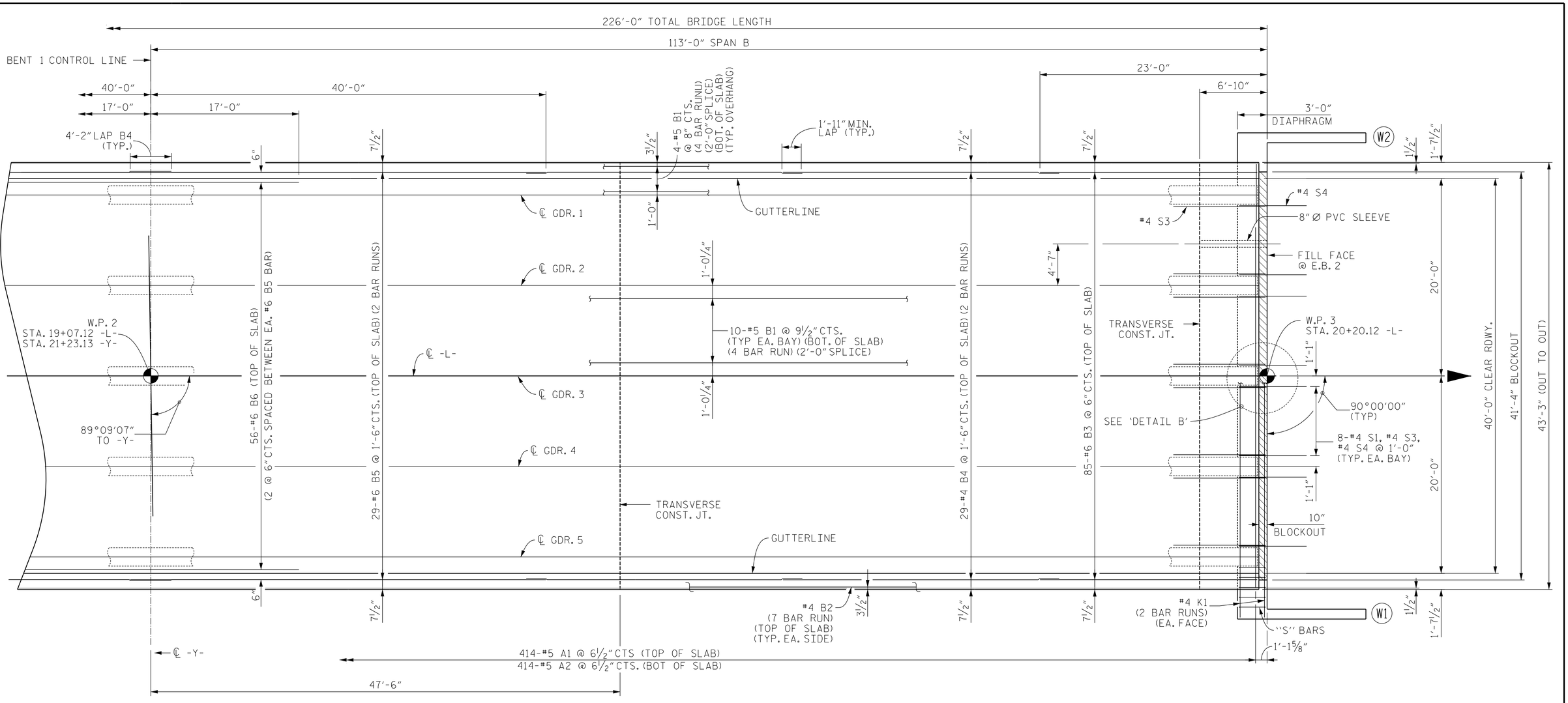
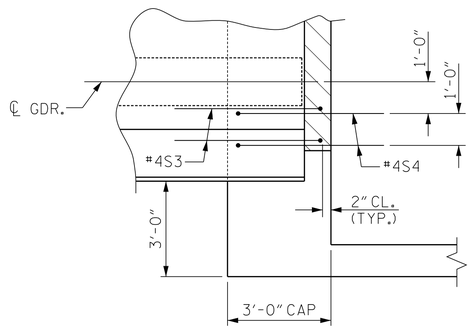


BENT 1

END BENT 2

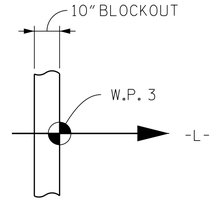


DIAPH. END DETAIL

(TYPICAL FOR EACH DECK CORNER)
(S1 BARS NOT SHOWN FOR CLARITY)

PLAN OF SPAN B

FOR BARRIER REINFORCING AND DETAILS, SEE 'CONCRETE BARRIER RAIL DETAILS'



DETAIL B

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SUPERSTRUCTURE

PLAN OF SPAN B

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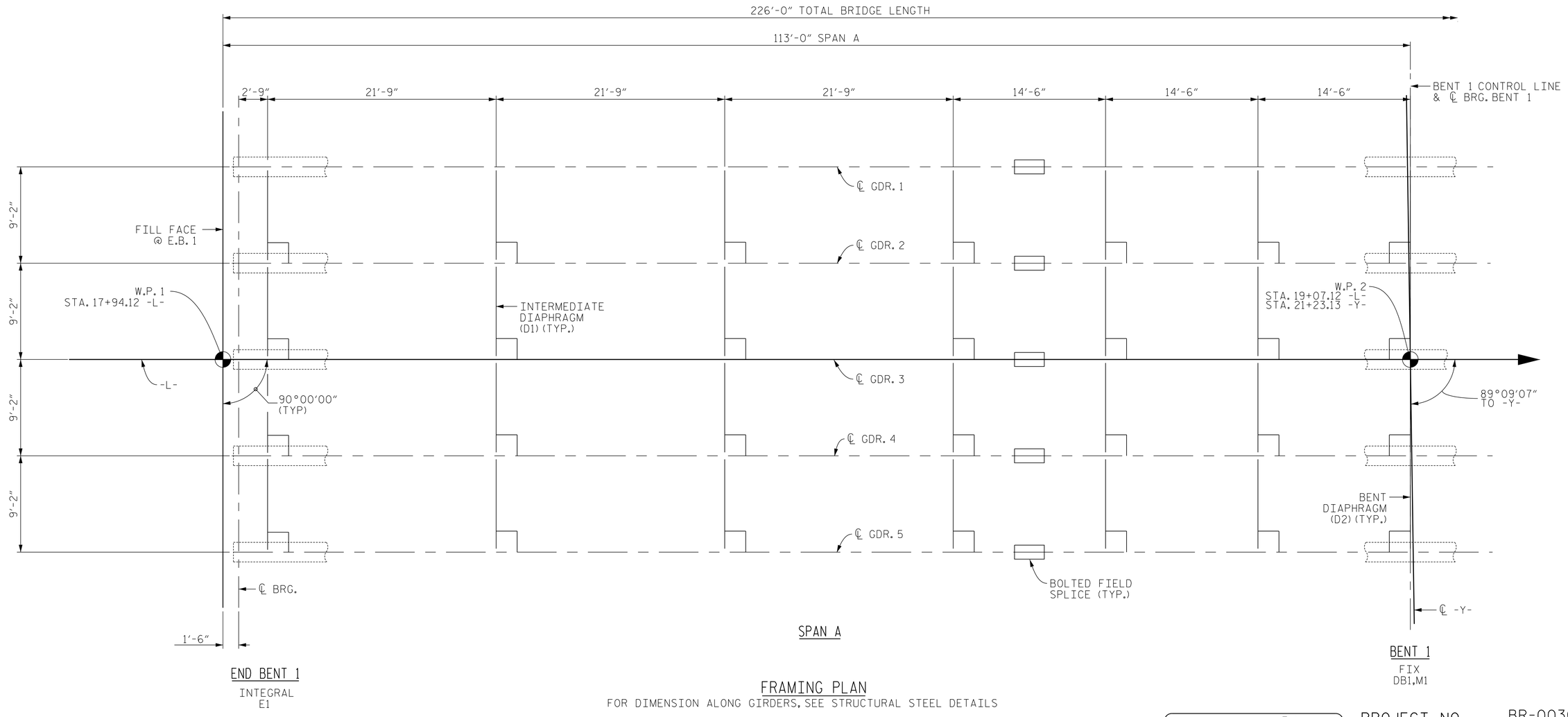

END BENT 1
INTEGRAL
E1

SPAN A

BENT 1
FIX
DB1,M1

FRAMING PLAN

FOR DIMENSION ALONG GIRDERS, SEE STRUCTURAL STEEL DETAILS

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STATE OF NORTH CAROLINA
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SUPERSTRUCTURE

FRAMING PLAN
SPAN A

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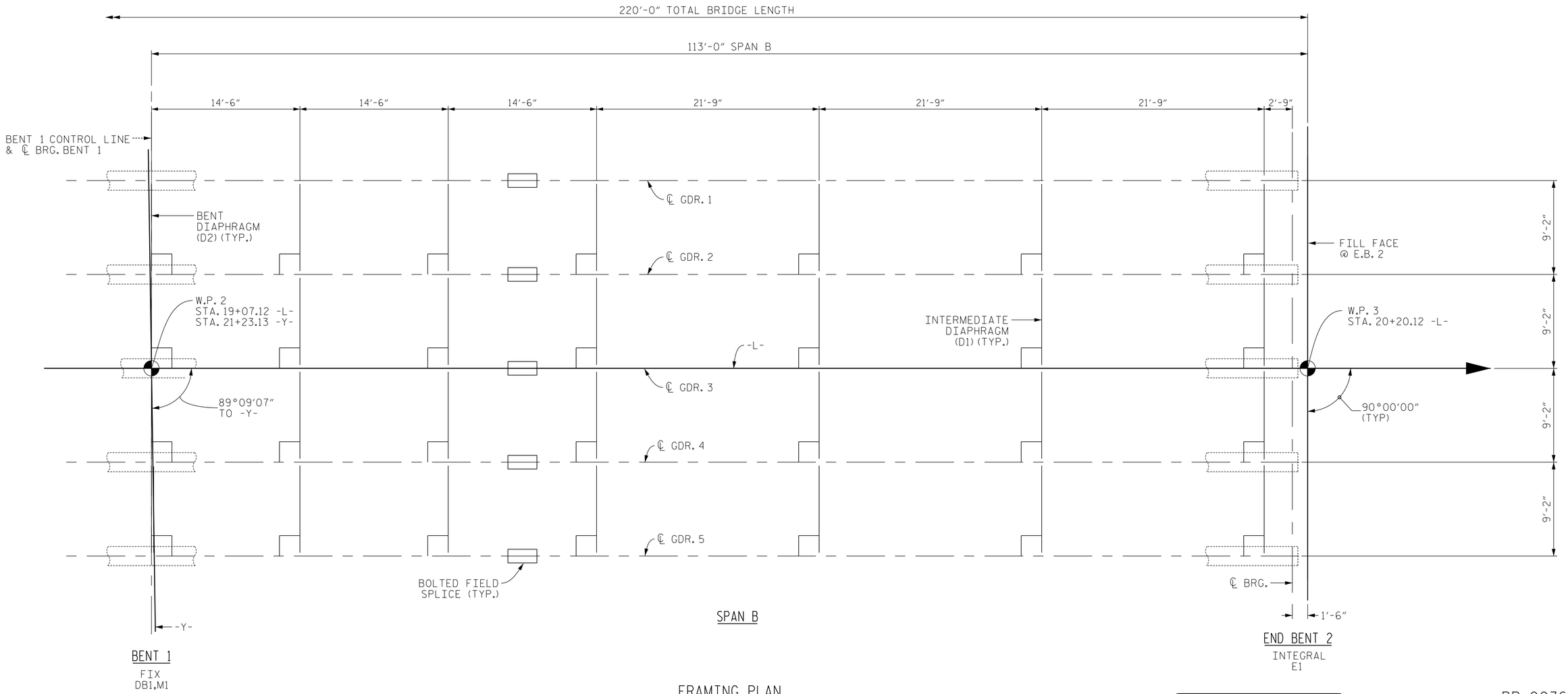

FRAMING PLAN

FOR DIMENSION ALONG GIRDERS, SEE STRUCTURAL STEEL DETAILS

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SUPERSTRUCTURE

FRAMING PLAN
SPAN B

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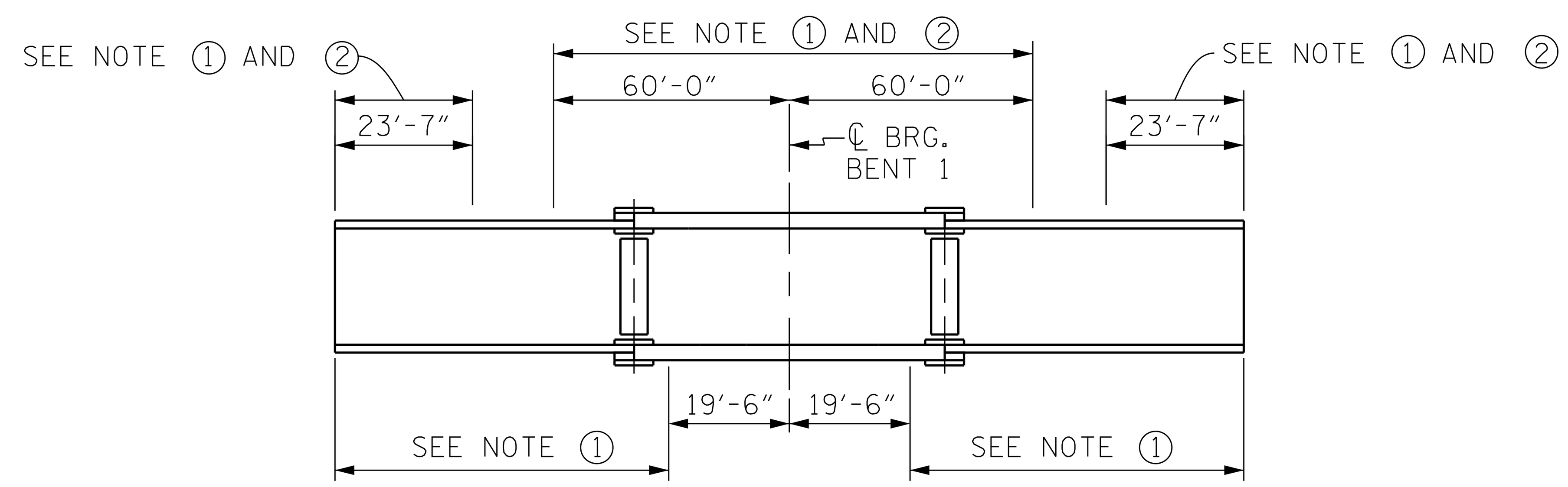
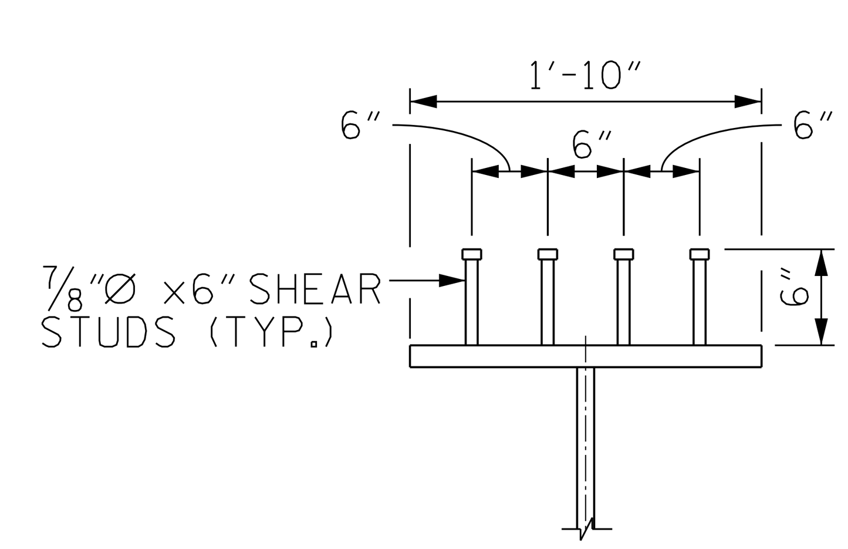
GIRDER ELEVATION

DIAPHRAGM CONNECTOR PLATES NOT SHOWN

PLAN OF BOTTOM FLANGE



GIRDER MAKE UP



22" GIRDER ℙ

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

SHEAR STUD DETAILS

NOTE 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. FOR CHARPY V-NOTCH TESTS, SEE ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

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

CHARPY V-NOTCH TESTS FOR CONTINUOUS PLATE GIRDERS

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STATE OF NORTH CAROLINA
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RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

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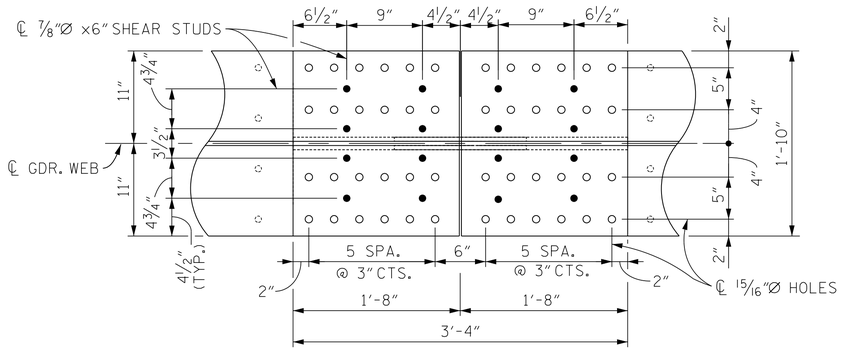
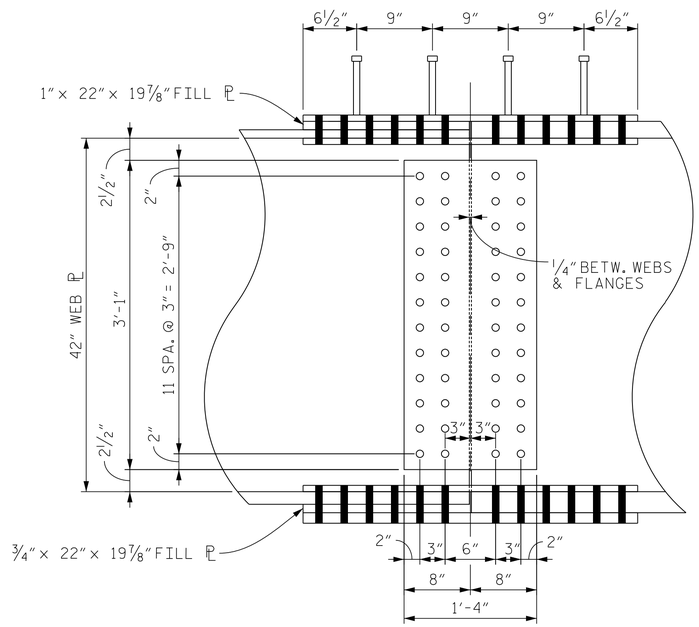
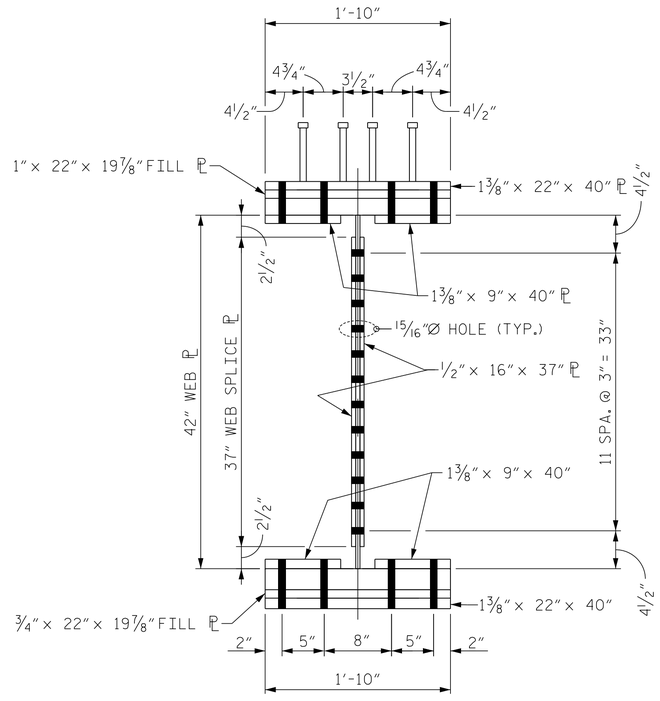


PLAN (TOP OF TOP FLANGE)



ELEVATION

SPLICE #1 SHOWN,
SPLICE #2 SIMILAR BY MIRROR



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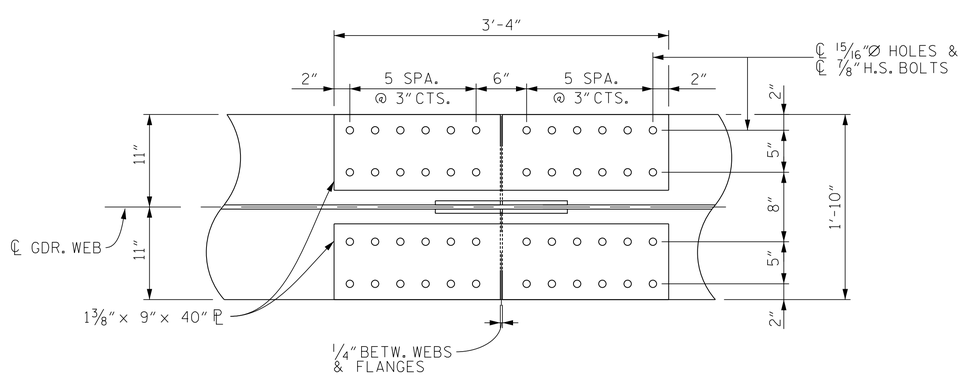

PLAN (TOP OF BOTTOM FLANGE)

NOTES:

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

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

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 INCHES MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR FULL DEAD LOAD FIT UP. GIRDERS SHALL BE PLUMB AFTER THE FULL AMOUNT OF DEAD LOAD IS APPLIED.

ALL FIELD CONNECTIONS SHALL BE 7/8"Ø HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

TENSION ON THE ASTM F3125 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.

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

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

BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANES.

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DocuSigned by: Patrick R. Gallagher
4/3/2020

PROJECT NO. BR-0036
NASH COUNTY
STATION: STA. 19+07.12 -L-
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SHEET 2 OF 3

STATE OF NORTH CAROLINA
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SUPERSTRUCTURE

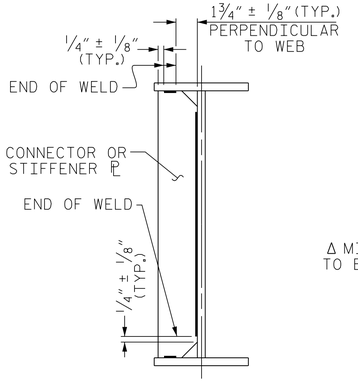
STRUCTURAL STEEL DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DSG. ENG. OF RECORD.: PRG
DWN. BY: FRJ DATE: 07/19
CHKD. BY: PRG DATE: 12/19

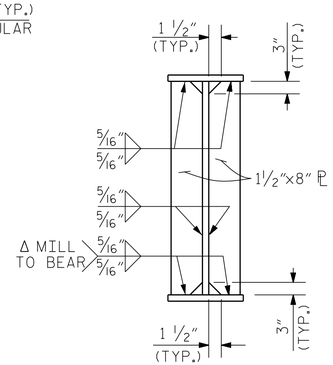
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-13
1			3			TOTAL SHEETS
2			4			29

V & M PROJECT NO.: 31748-41



TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS

WELD TERMINATION DETAIL

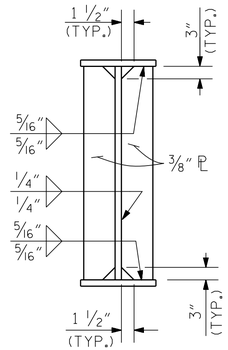


BEARING STIFFENER

(AT BENT 1 & END BENTS)

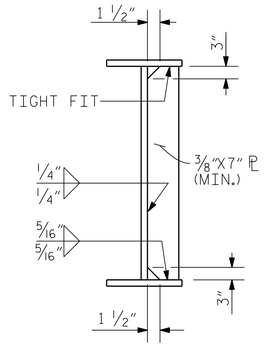
Δ WELD ONLY WHEN USED AS CONNECTOR PLATE

BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

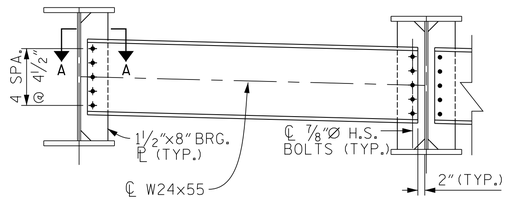


CONNECTOR PLATE

(AT INTERMEDIATE DIAPHRAGMS)

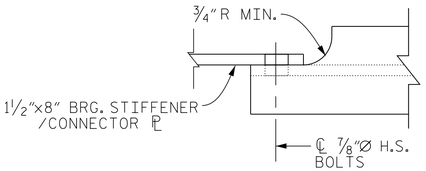


INTERMEDIATE STIFFENER

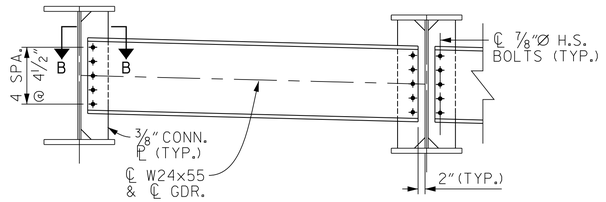


TYPICAL BENT DIAPHRAGM (D2)

SEE WELD TERMINATION DETAIL
SEE STIFFENER PLATE DETAIL

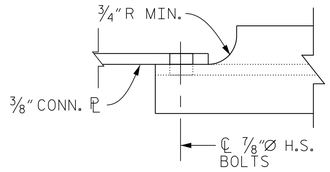


SECTION A-A

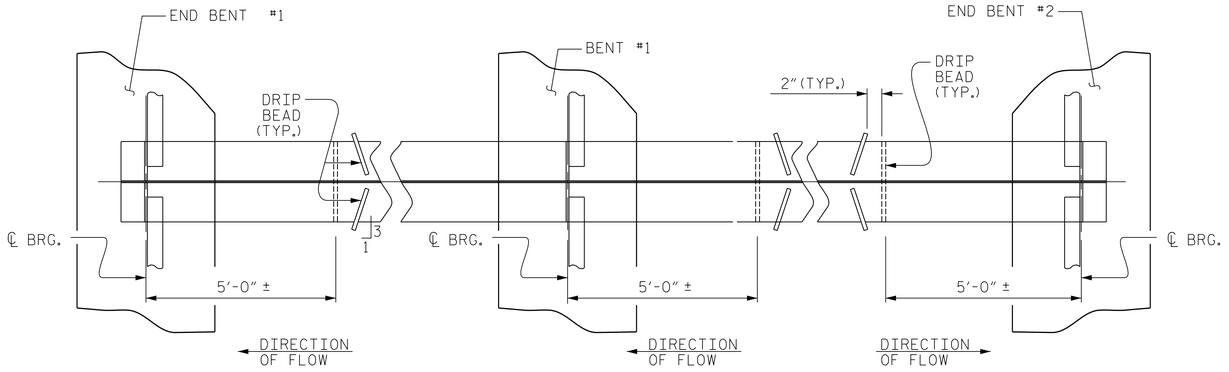


TYPICAL INTERMEDIATE DIAPHRAGM (D1)

SEE WELD TERMINATION DETAIL
SEE CONNECTOR PLATE DETAIL

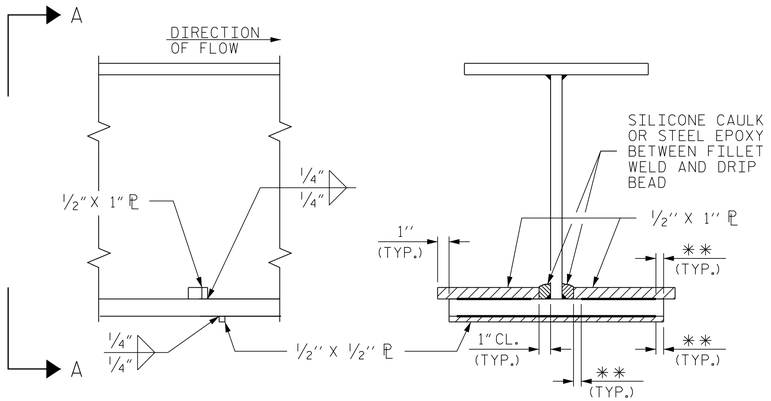


SECTION B-B



PART PLAN - BOTTOM FLANGE

✳ GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS

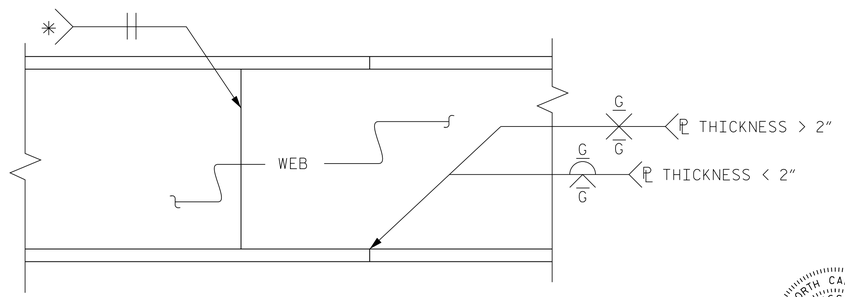


SECTION

VIEW A-A

** SEE "WELD TERMINATION DETAILS"

DRIP BEAD DETAILS



ELEVATION

TYPICAL FLANGE AND WEB BUTT JOINT

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Patrick R. Gallagher
4/3/2020

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

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

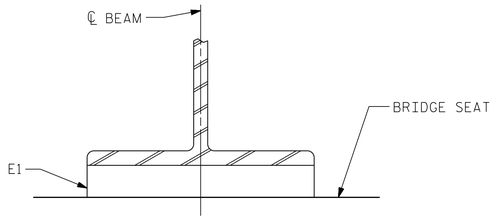
STRUCTURAL STEEL DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

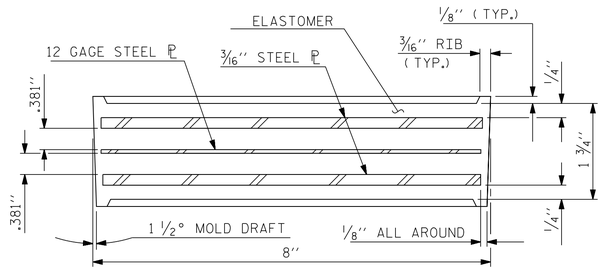
DSG. ENG. OF RECORD.: PRG
DWN. BY: FRJ DATE: 07/19
CHKD. BY: PRG DATE: 12/19

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-14
1			3			TOTAL SHEETS
2			4			29

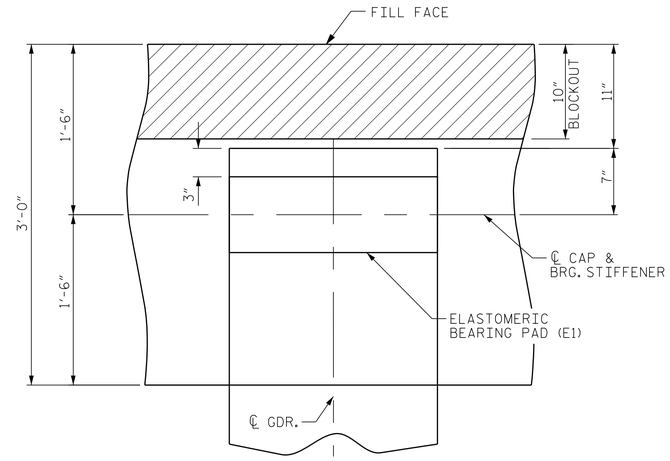
V & M PROJECT NO.: 31748-41



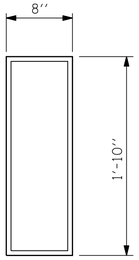
END VIEW
(AT INTEGRAL END BENT)



TYPICAL SECTION OF ELASTOMERIC BEARINGS (E1)



PLAN VIEW AT END BENTS
(SHOWING INTEGRAL END BENT)



E1 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE I

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

NOTES

ALL BEARING PLATES SHAL BE AASHTO M270 GRADE 50W.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

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

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Patrick R. Gallagher
Document not considered final unless sealed
4/3/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

ELASTOMERIC BEARING DETAILS

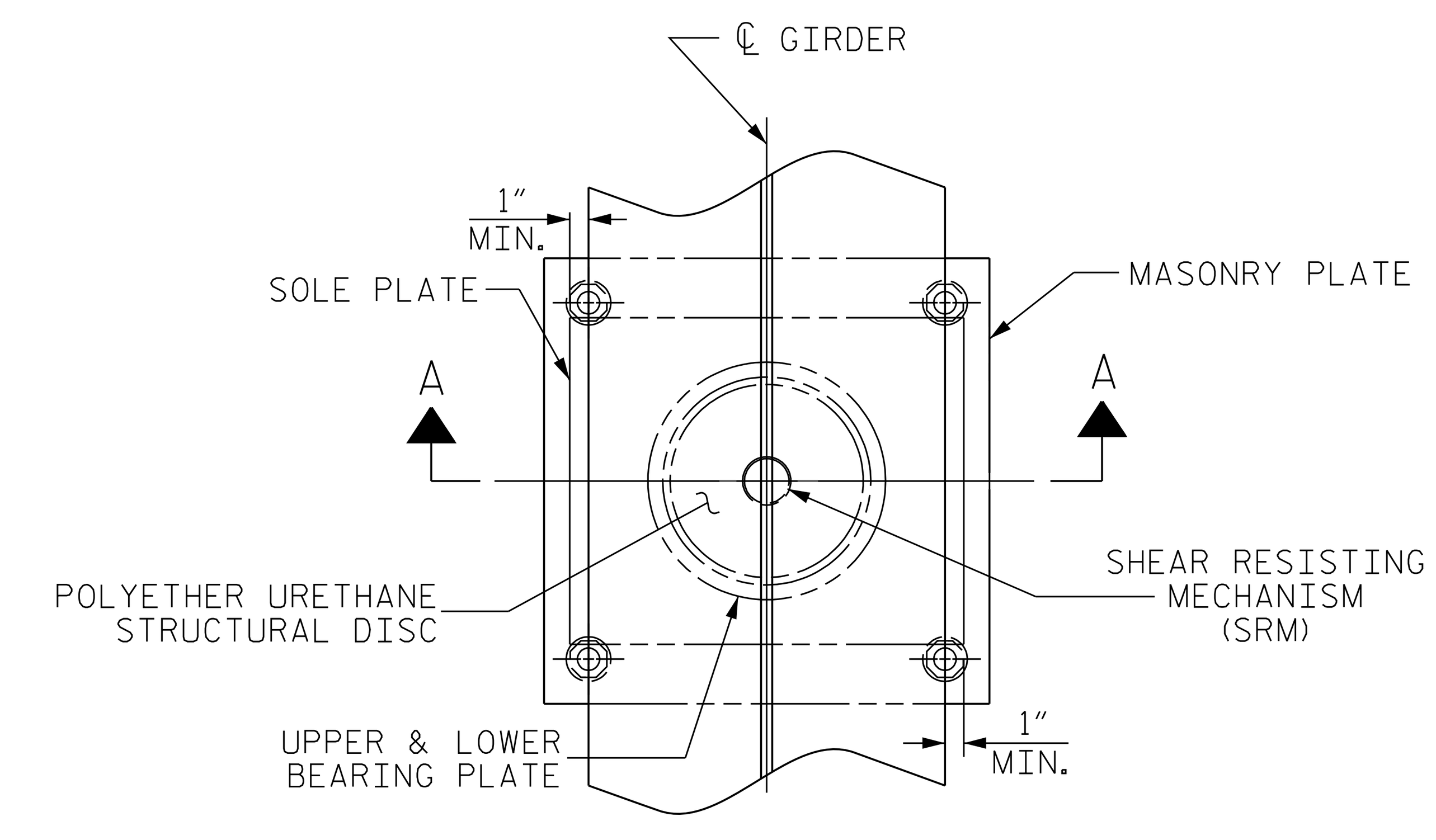
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DSG. ENG. OF RECORD.: PRG
DWN. BY: WDC DATE: 10/19
CHKD. BY: PRG DATE: 12/19

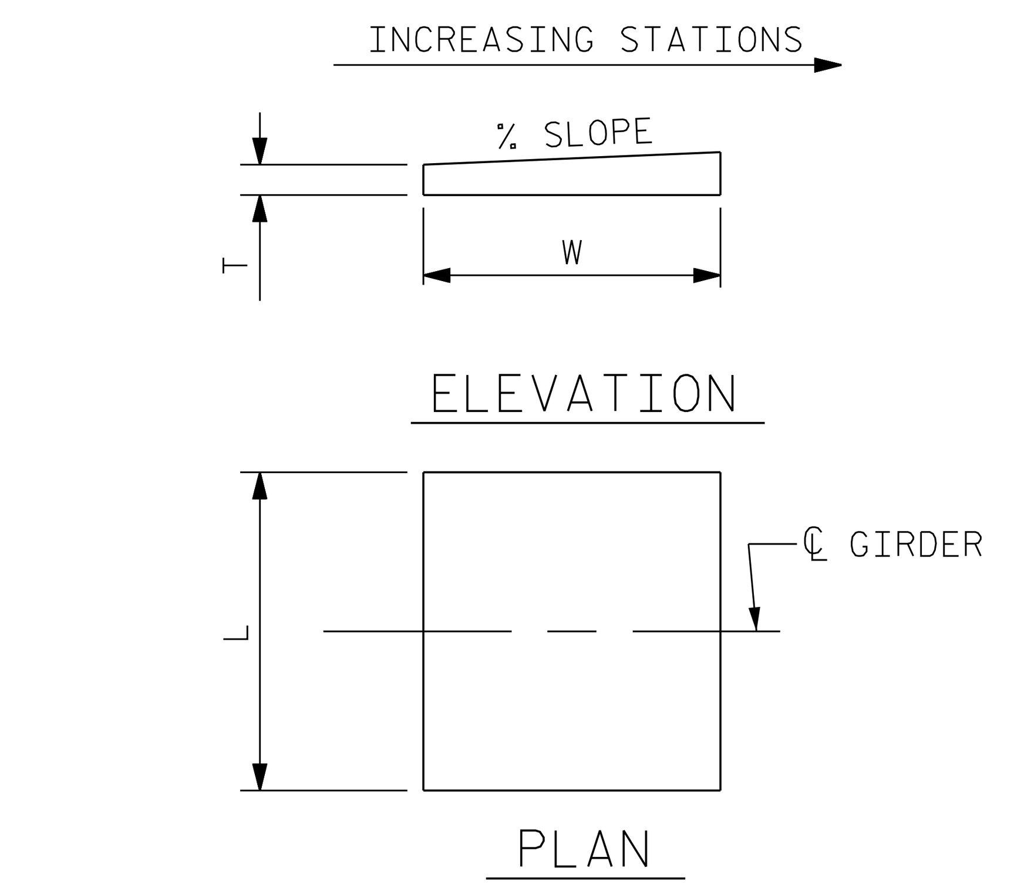
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S1-15
TOTAL SHEETS 29

V & M PROJECT NO.: 31748-41



PLAN



NOTE:
DIMENSIONS "W" AND "T" SHALL BE DETERMINED BY THE BEARING MANUFACTURER.

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.

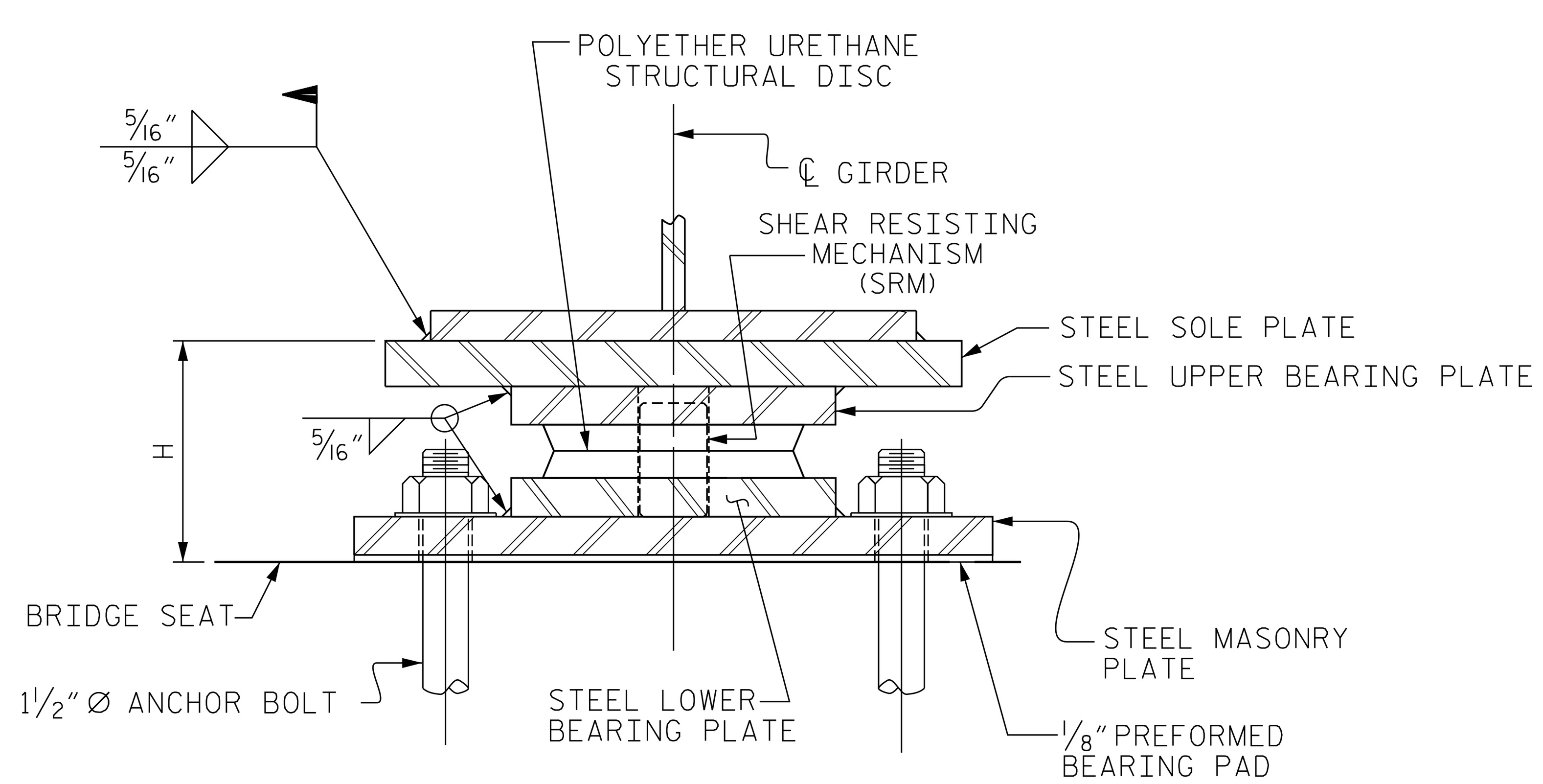
SOLE PLATES SHOULD BE WELDED TO GIRDER FLANGES AND ANCHOR BOLTS SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

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.

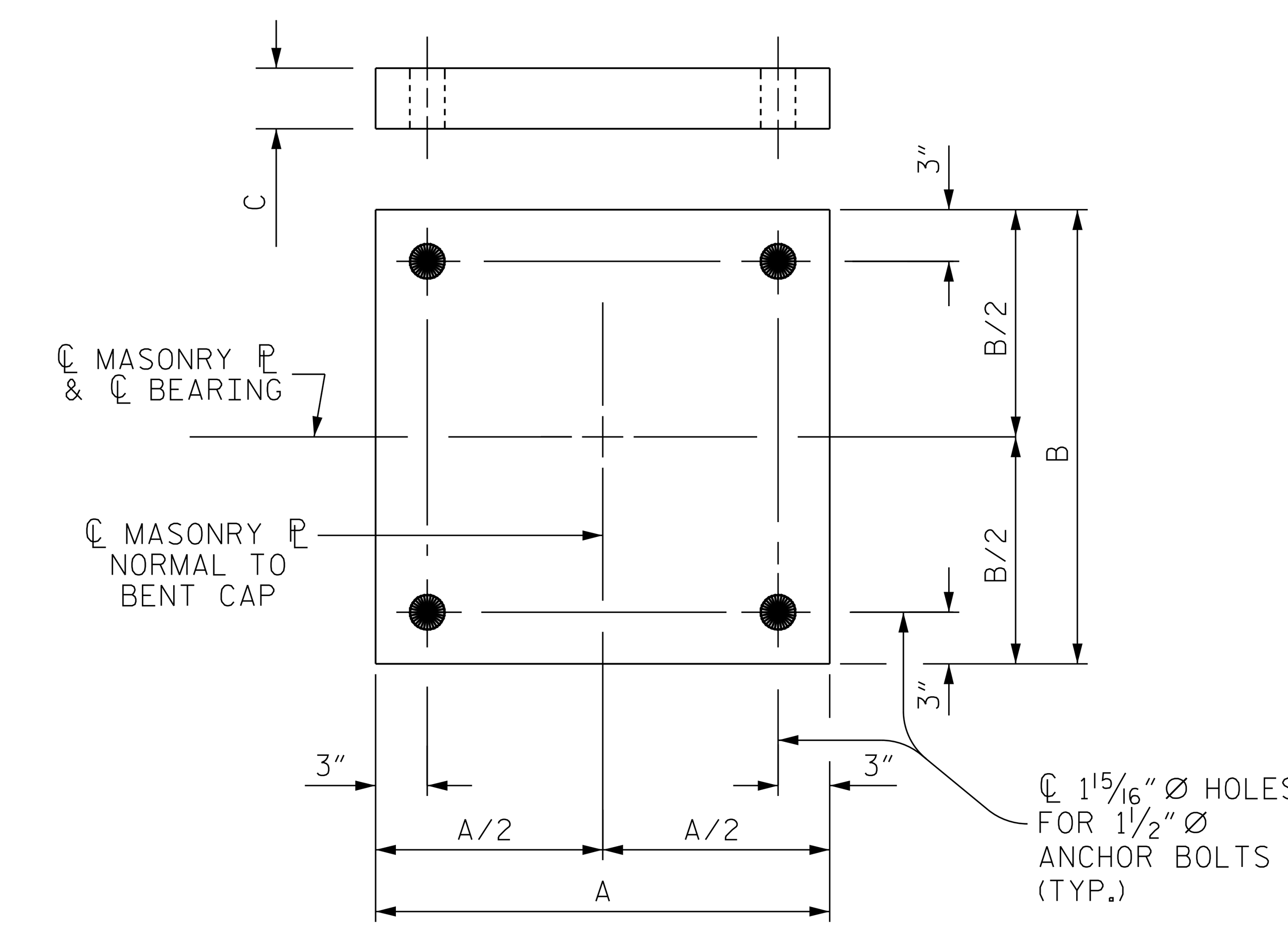
FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

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



SECTION A-A

DB1, FIXED



PLAN

MASONRY PLATE DETAILS

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
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Charlotte, NC 704-357-0488

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

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 (%)	L (IN.)	DC	DW	LL+IM		
DB1 (FIXED)	M1	BENT 1	5	6 1/4"	24 1/2"	24 1/2"	1"	0.1	24"	269	34	204	101	0

4/3/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

DISC BEARING DETAILS

ASSEMBLED BY : WDC	DATE : 08/19
CHECKED BY : RPG	DATE : 08/19
DRAWN BY : TMG 08/13	REV. 12/17 MAA/THC
CHECKED BY : EKP 10/13	

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

SHEET NO. S1-16
TOTAL SHEETS 29

STD. NO. DB1

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

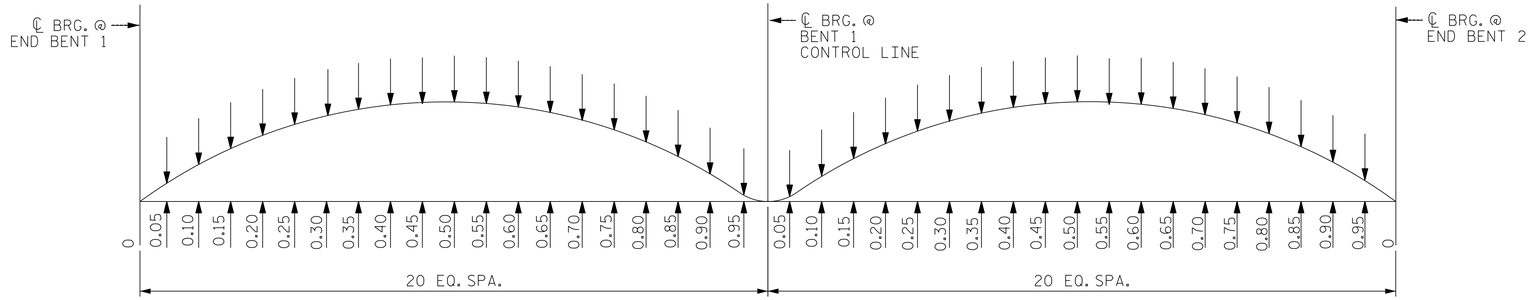
GIRDERS 1 & 5

	SPAN A																					SPAN B																						
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1
DEFLECTION DUE TO WEIGHT OF GIRDER ↓	0.000	0.006	0.013	0.018	0.024	0.027	0.031	0.032	0.033	0.033	0.032	0.029	0.026	0.023	0.019	0.014	0.010	0.007	0.003	0.002	0.000	0.002	0.003	0.007	0.010	0.014	0.019	0.023	0.026	0.029	0.032	0.033	0.033	0.032	0.031	0.027	0.024	0.018	0.013	0.006	0.000
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0.000	0.031	0.063	0.089	0.116	0.133	0.150	0.156	0.163	0.159	0.155	0.141	0.128	0.108	0.089	0.068	0.048	0.031	0.015	0.007	0.000	0.007	0.015	0.031	0.048	0.068	0.089	0.108	0.128	0.141	0.155	0.159	0.163	0.156	0.150	0.133	0.116	0.089	0.063	0.031	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL ↓	0.000	0.003	0.006	0.008	0.010	0.012	0.013	0.014	0.014	0.014	0.014	0.013	0.011	0.010	0.008	0.006	0.004	0.003	0.001	0.001	0.000	0.001	0.001	0.003	0.004	0.006	0.008	0.010	0.011	0.013	0.014	0.014	0.014	0.014	0.013	0.012	0.010	0.008	0.006	0.003	0.000
TOTAL DEAD LOAD DEFLECTION ↓	0.000	0.041	0.081	0.115	0.149	0.171	0.194	0.202	0.211	0.205	0.200	0.183	0.165	0.140	0.115	0.089	0.062	0.041	0.019	0.010	0.000	0.010	0.019	0.041	0.062	0.089	0.115	0.140	0.165	0.183	0.200	0.205	0.211	0.202	0.194	0.171	0.149	0.115	0.081	0.041	0.000
VERTICAL CURVE ORDINATE ↑	0.000	0.026	0.049	0.070	0.087	0.102	0.114	0.124	0.131	0.135	0.136	0.135	0.131	0.124	0.114	0.102	0.087	0.070	0.049	0.026	0.000	0.026	0.049	0.070	0.088	0.103	0.116	0.125	0.132	0.137	0.138	0.137	0.138	0.127	0.117	0.105	0.090	0.073	0.053	0.030	0.000
REQUIRED CAMBER ↑	0	13/16"	1 9/16"	2 3/16"	2 13/16"	3 5/16"	3 11/16"	3 15/16"	4 1/8"	4 1/16"	4 1/16"	3 13/16"	3 9/16"	3 3/16"	2 3/4"	2 5/16"	1 13/16"	1 5/16"	13/16"	7/16"	0	7/16"	13/16"	1 5/16"	1 13/16"	2 5/16"	2 3/4"	3 3/16"	3 9/16"	3 13/16"	4 1/16"	4 1/8"	4 1/8"	3 15/16"	3 3/4"	3 5/16"	2 7/8"	2 1/4"	1 5/8"	13/16"	0		

GIRDERS 2, 3 & 4

	SPAN A																					SPAN B																						
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1
DEFLECTION DUE TO WEIGHT OF GIRDER ↓	0.000	0.007	0.013	0.019	0.024	0.028	0.032	0.033	0.035	0.034	0.033	0.030	0.028	0.023	0.019	0.015	0.010	0.007	0.003	0.002	0.000	0.002	0.003	0.007	0.010	0.015	0.019	0.028	0.028	0.030	0.033	0.034	0.035	0.033	0.032	0.028	0.024	0.019	0.013	0.007	0.000
DEFLECTION DUE TO WEIGHT OF SLAB * ↓	0.000	0.031	0.063	0.089	0.116	0.133	0.150	0.156	0.163	0.159	0.155	0.141	0.128	0.108	0.089	0.068	0.048	0.031	0.015	0.007	0.000	0.007	0.015	0.031	0.048	0.068	0.089	0.108	0.128	0.141	0.155	0.159	0.163	0.156	0.150	0.033	0.116	0.089	0.063	0.031	0.000
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL ↓	0.000	0.003	0.005	0.008	0.010	0.011	0.013	0.013	0.014	0.013	0.013	0.012	0.011	0.009	0.008	0.006	0.004	0.003	0.001	0.001	0.000	0.001	0.001	0.003	0.004	0.006	0.008	0.009	0.011	0.012	0.013	0.013	0.014	0.013	0.013	0.011	0.010	0.008	0.005	0.003	0.000
TOTAL DEAD LOAD DEFLECTION ↓	0.000	0.041	0.081	0.116	0.150	0.172	0.194	0.203	0.211	0.206	0.201	0.183	0.166	0.141	0.116	0.089	0.063	0.041	0.019	0.010	0.000	0.010	0.019	0.041	0.063	0.089	0.116	0.141	1.991	0.183	0.201	0.206	0.211	0.203	0.194	0.172	0.150	0.116	0.081	0.041	0.000
VERTICAL CURVE ORDINATE ↑	0.000	0.026	0.049	0.070	0.087	0.102	0.114	0.124	0.131	0.135	0.136	0.135	0.131	0.124	0.114	0.102	0.087	0.070	0.049	0.026	0.000	0.026	0.049	0.070	0.088	0.103	0.116	0.125	0.132	0.137	0.138	0.137	0.133	0.127	0.117	0.105	0.090	0.073	0.053	0.030	0.000
REQUIRED CAMBER ↑	0	13/16"	1 9/16"	2 1/4"	2 13/16"	3 5/16"	3 11/16"	3 15/16"	4 1/8"	4 1/16"	4 1/16"	3 13/16"	3 9/16"	2 3/16"	2 3/4"	2 5/16"	1 13/16"	1 5/16"	13/16"	7/16"	0	7/16"	13/16"	1 5/16"	1 13/16"	2 5/16"	2 3/4"	3 3/16"	3 9/16"	3 13/16"	4 1/16"	4 1/8"	4 1/8"	3 15/16"	3 3/4"	3 5/16"	2 7/8"	2 1/4"	1 5/8"	7/8"	0		

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.



SCHEMATIC OF CAMBER ORDINATES

FOR CAMBER VALUES AT EACH GIRDER TWENTIETH POINT, SEE TABLE ABOVE.

NOTES:

ORDINATE DUE TO SUPERELEVATION AND CAMBER DISSIPATION DUE TO HEAT CURVING ARE ZERO FOR EACH GIRDER.

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

SLOPE FOR THE ZERO CAMBER BASE LINE VARIES.

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

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Patrick R. Gallagher
4/3/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

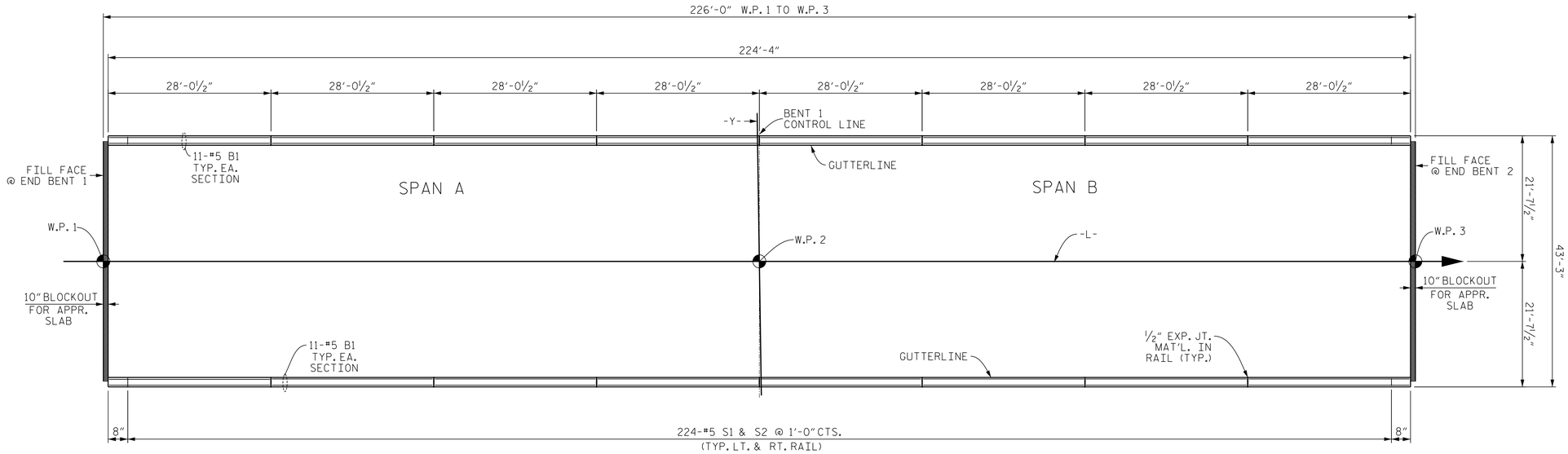
DEAD LOAD DEFLECTION TABLES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DSG. ENG. OF RECORD.: PRG
DWN. BY: FRJ DATE: 07/19
CHKD. BY: PRG DATE: 12/19

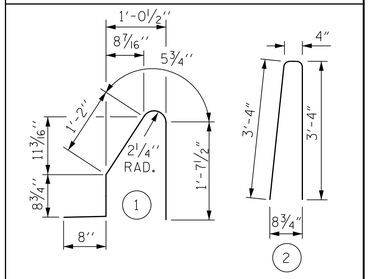
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			29

V & M PROJECT NO.: 31748-41



PLAN OF RAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER ONLY (BOTH RAILS)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	176	#5	STR	27'-7"	5063
* S1	448	#5	1	4'-8"	2103
* S2	448	#5	2	7'-0"	3271

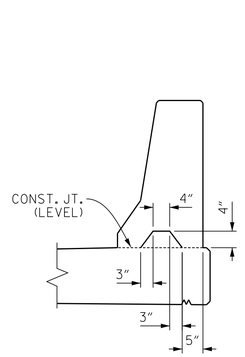
* EPOXY COATED REINFORCING STEEL	(LBS.)	10,515
CLASS AA CONCRETE	(CU.YD.)	60.9
CONCRETE BARRIER RAIL	(LF)	448.7

NOTES

THE BARRIER RAIL IN A CONTINUOUS 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.

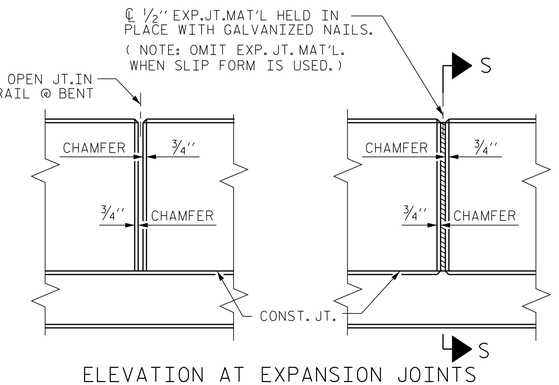
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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.



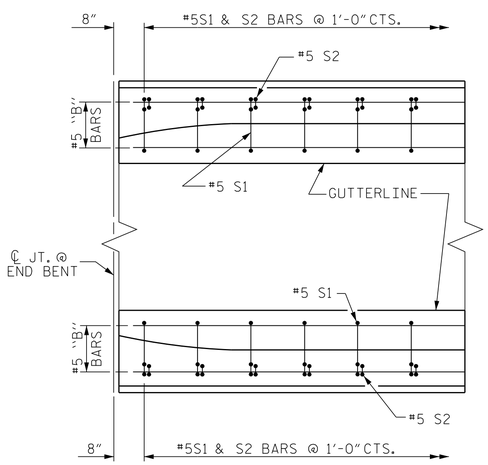
SECTION S-S

AT DAM IN OPEN JOINT
(USE ONLY WHEN SLIP FORM IS USED)

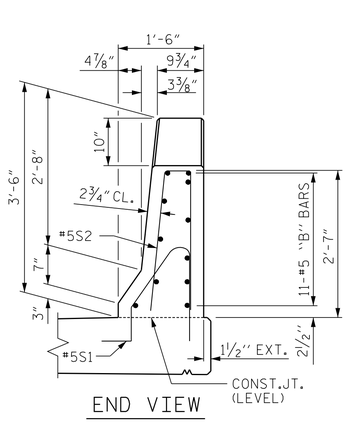


ELEVATION AT EXPANSION JOINTS

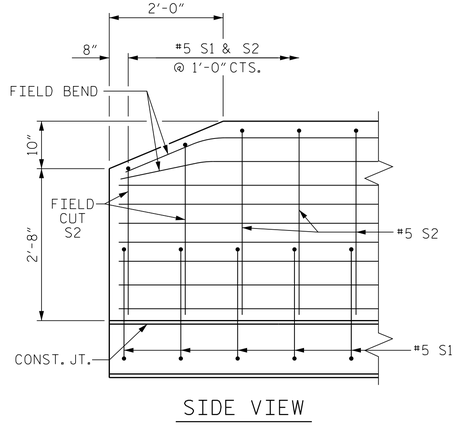
BARRIER RAIL DETAILS



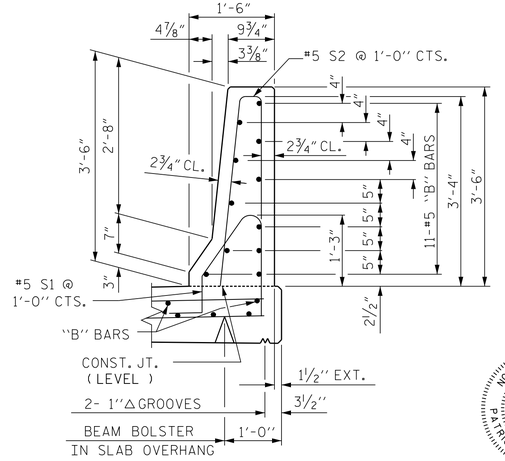
PLAN



END VIEW



SIDE VIEW



SECTION THRU RAIL

END OF RAIL DETAILS

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

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CONCRETE BARRIER RAIL

Digitally signed by Patrick R. Gallagher
042890
ENGINEER
PATRICK R. GALLAGHER
4/3/2020

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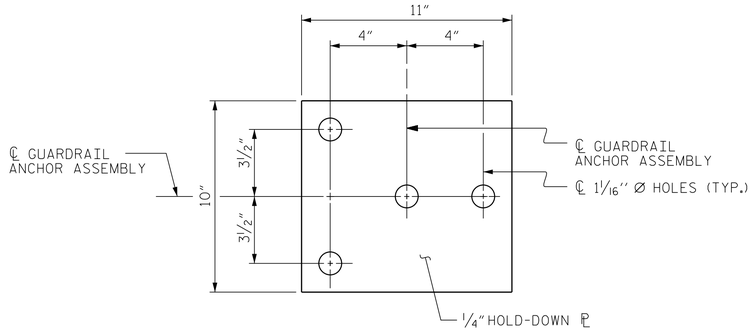
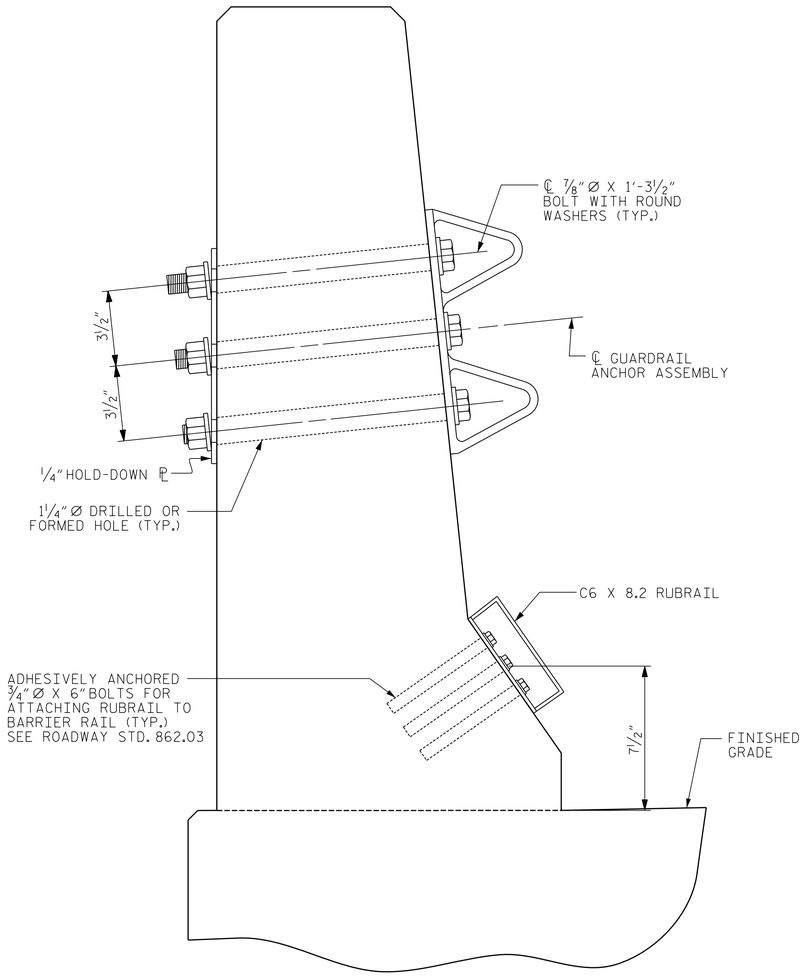
CHECKED BY : PRG	DATE : 12/19
DRAWN BY : ARB 5/87	REV. 7/12 MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13 MAA/GM
	REV. 10/17 MAA/THC

STD. NO. CBR1

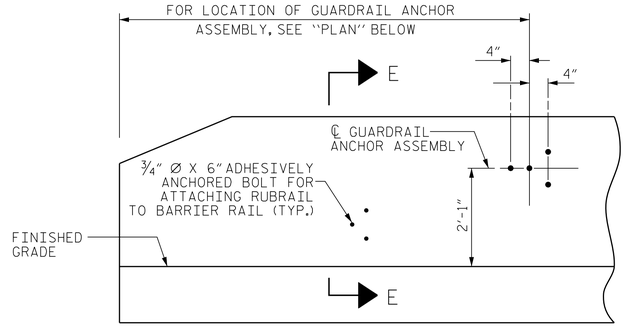


PLAN



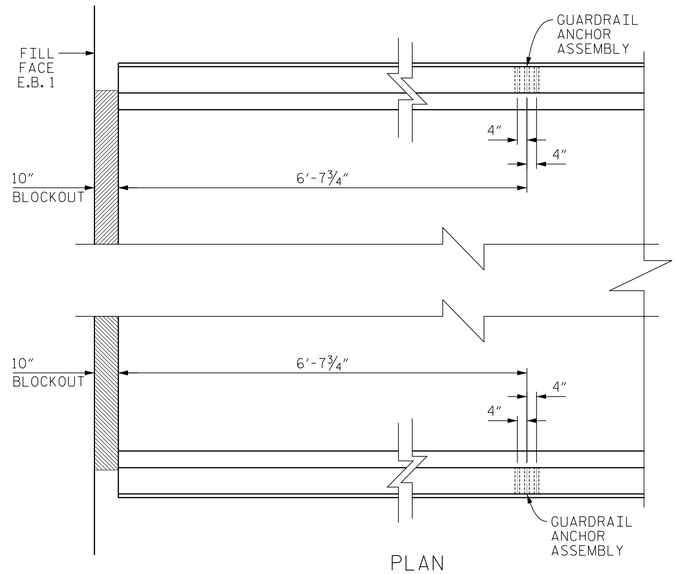
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



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

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

ASSEMBLED BY : FRJ	DATE : 8/19
CHECKED BY : PRG	DATE : 12/19
DRAWN BY : TLA 5/06	REV. 7/12 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

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Atlanta, GA 770-627-3590

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
DocuSigned by: Patrick R. Gallagher
4/3/2020

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-19
1			3			TOTAL SHEETS
2			4			29

STD. NO. GRA2

BILL OF MATERIAL

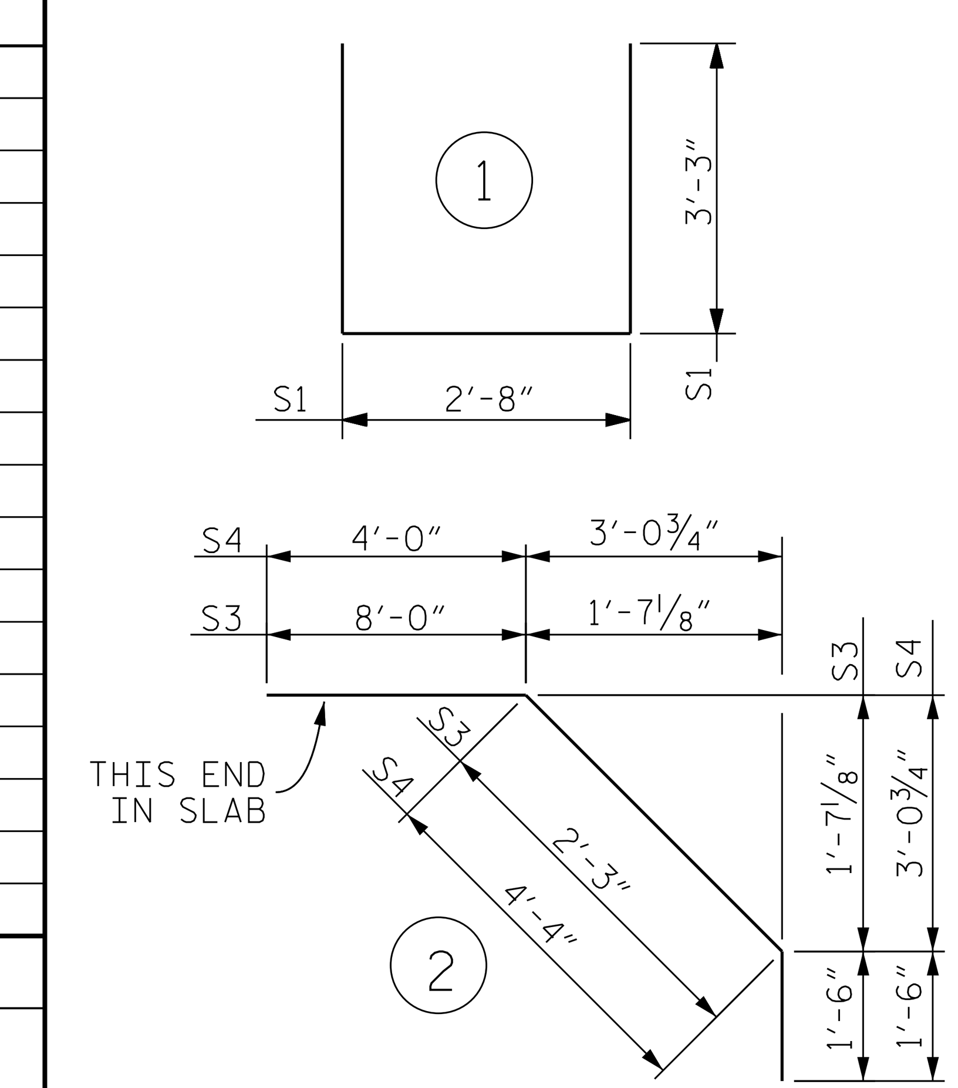
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
∗ A1	414	5	STR.	42′-11″	18,532
A2	414	5	STR.	42′-11″	18,532
B1	192	5	STR.	57′-9″	11,565
∗ B2	14	4	STR.	33′-9″	316
∗ B3	170	6	STR.	22′-0″	5,617
∗ B4	116	4	STR.	28′-0″	2,170
∗ B5	58	6	STR.	42′-1″	3,666
∗ B6	56	6	STR.	34′-0″	2,860
K1	40	4	STR.	22′-4″	597
K2	32	4	STR.	2′-0″	43
S1	72	4	1	9′-2″	441
S3	72	4	2	11′-9″	565
S4	72	4	2	9′-10″	473

BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL ∗
	(CU.YDS.)	(LBS.)	(LBS.)
POUR #1	82.6	---	---
POUR #2	215.9	---	---
POUR #3	55.4	---	---
TOTALS∗∗	353.9	32,216	33,161

QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED∗∗

BAR TYPES

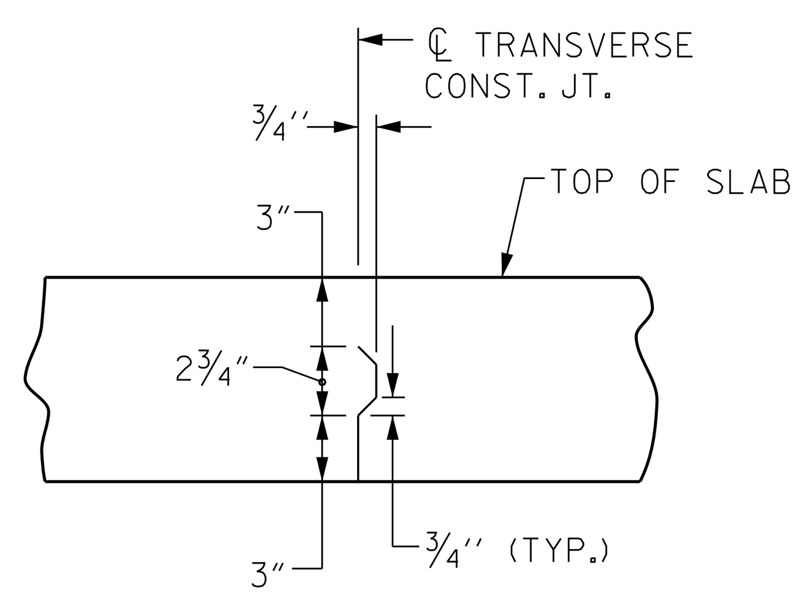


SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER
	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″			

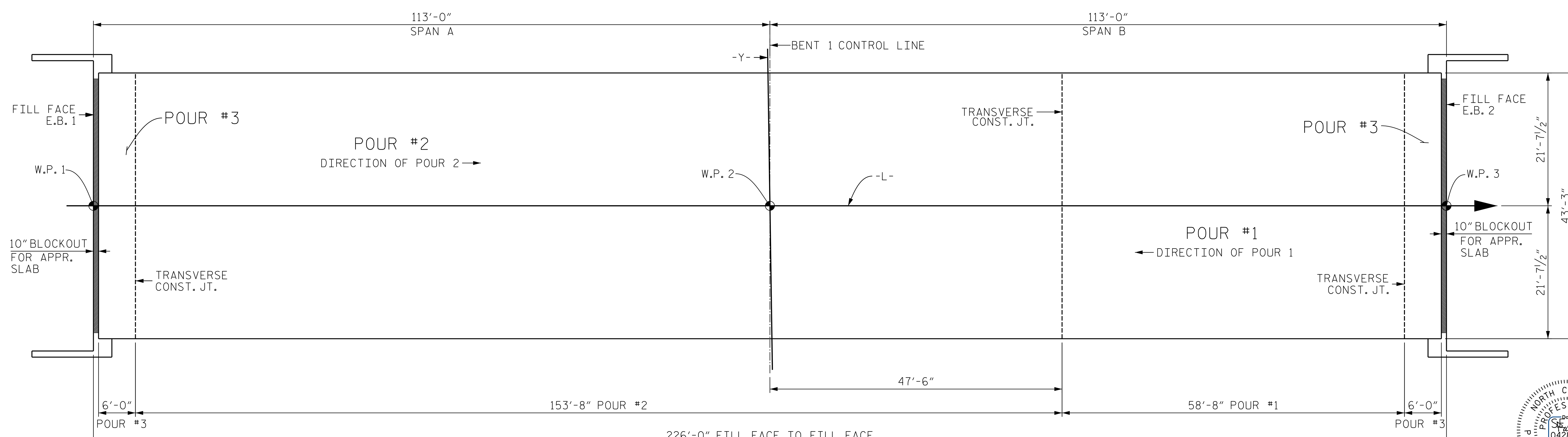
GROOVING BRIDGE FLOORS

APPROACH SLABS	1048	SQ.FT.
BRIDGE DECK	8288	SQ.FT.
TOTAL	9336	SQ.FT.



TRANSVERSE CONSTRUCTION JOINT DETAIL

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



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 9,775)

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

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SUPERSTRUCTURE BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-20
1			3			TOTAL SHEETS
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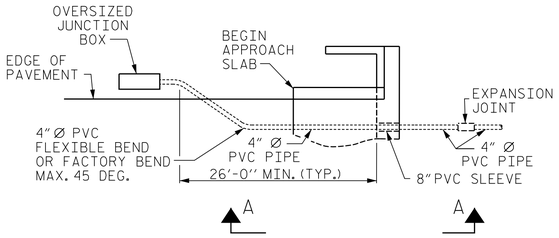
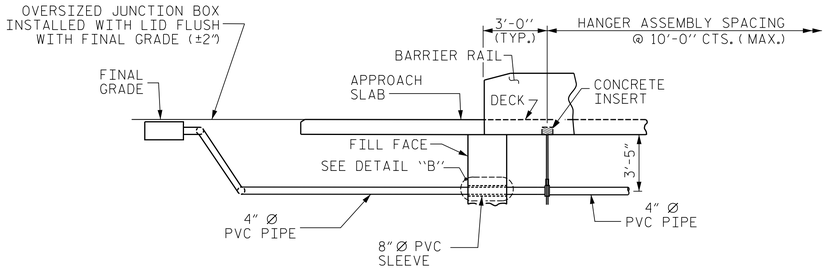
CHECKED BY : SJD 9/87	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

STD. NO. BOM1

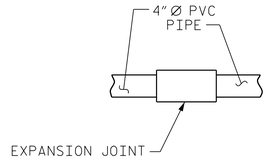


DETAIL "A"

TERMINATION OF CONDUIT AT WING WALL
END BENT 1 SHOWN, END BENT 2 SIMILAR



VIEW A-A



EXPANSION JOINT FITTING

NOTES

THE INSTALLATION OF THE CONDUIT SYSTEM SHALL BE PAID FOR AS LINEAR FEET. THE PRICE SHALL INCLUDE ALL CONDUIT, HANGERS, STABILIZERS, EXPANSION JOINTS, CONCRETE INSERTS, PVC SLEEVES AND ALL NECESSARY HARDWARE TO COMPLETE THE WORK.

THE CONTRACTOR SHALL FIELD VERIFY THAT THE CONDUIT SYSTEM IS NOT IN CONFLICT WITH THE GUARDRAIL POST.

SEE DETAIL "C" FOR HANGER ASSEMBLY INSTALLATION.

INSTALL SLEEVES PARALLEL TO GIRDERS. SEE DETAIL "B" FOR SLEEVE INSTALLATION.

INSTALL STABILIZERS MIDWAY BETWEEN DECK EXPANSIONS JOINTS STABILIZER CAN NOT BE INSTEAD OF A HANGER ASSEMBLY.

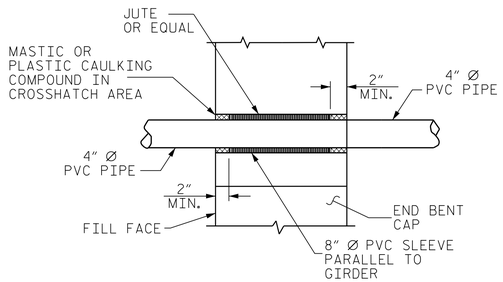
INSTALL EXPANSION JOINTS AT EACH END BENT.

THE CONCRETE SCREW INSERT SHALL HAVE A ROD SIZE OF 5/8" AND A PULL FORCE OF 1260 lbs.

FOR FIBER OPTIC CONDUIT SYSTEM WITH HANGERS, SEE SPECIAL PROVISIONS.

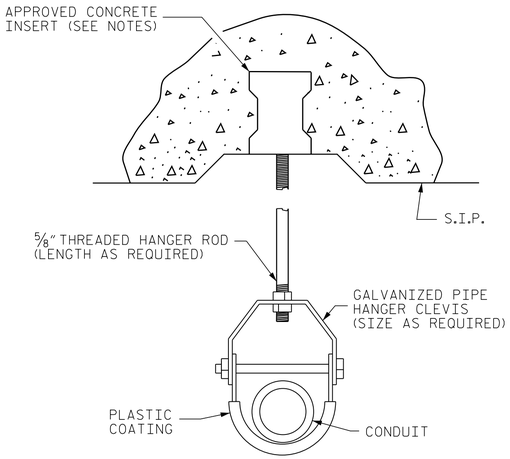
PVC PIPE AND COUPLINGS SHALL BE SCHEDULE 80.

FOR OVERSIZE JUNCTION BOX, SEE STANDARD SPECIFICATION 1098-5.



DETAIL "B"

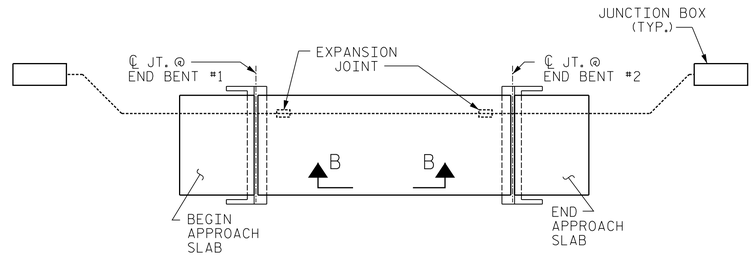
PVC SLEEVE INSTALLATION



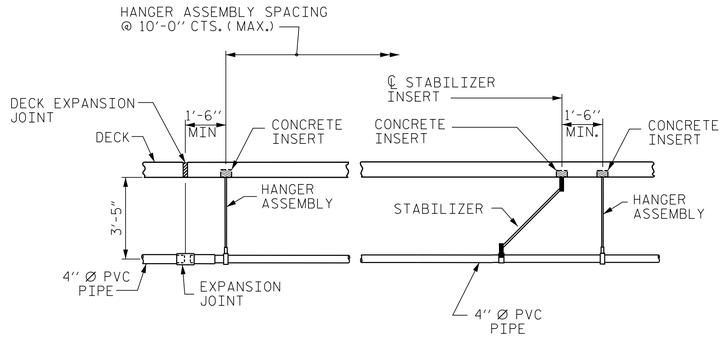
DETAIL "C"

HANGER ASSEMBLY

PAY LENGTH = 254 LINEAR FEET

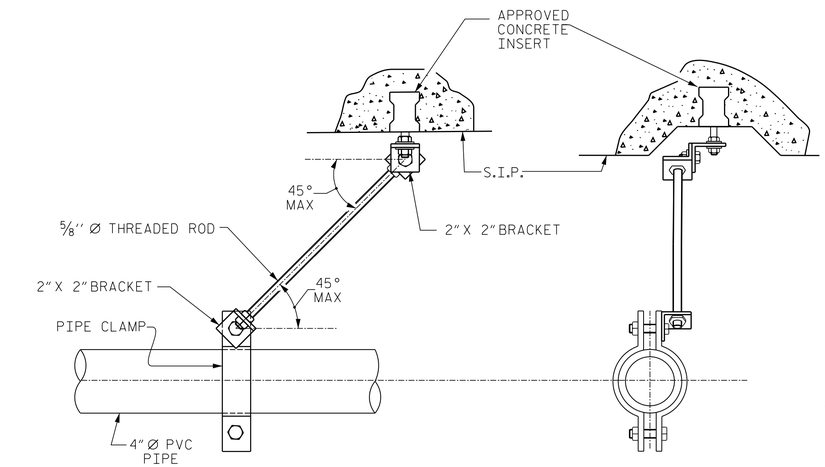


CONDUIT LAYOUT



VIEW B-B

STEEL OR CONCRETE GIRDERS



DETAIL "E"

STABILIZER

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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PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FIBER OPTIC CONDUIT SYSTEM WITH HANGERS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Signature: Patrick R. Gallagher
4/3/2020

DRAWN BY : WDC DATE : 3-20
CHECKED BY : PRG DATE : 3-20
DESIGN ENGINEER OF RECORD: PRG DATE : 3-20

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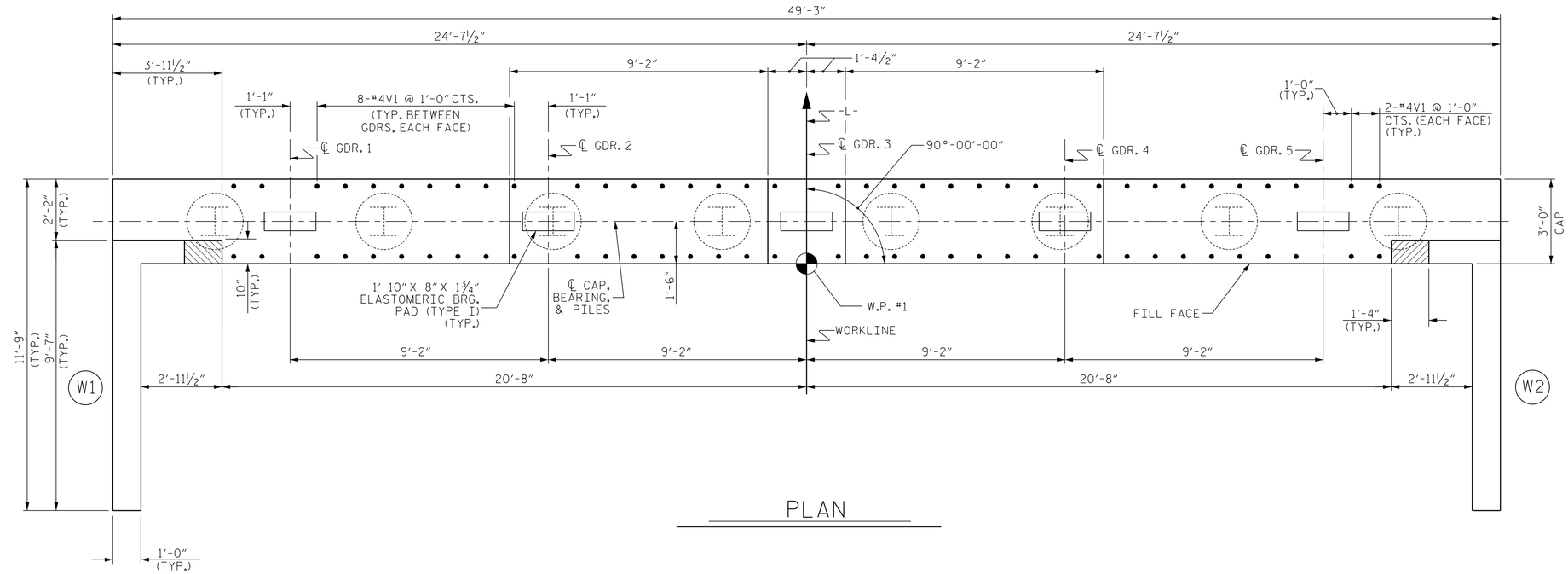
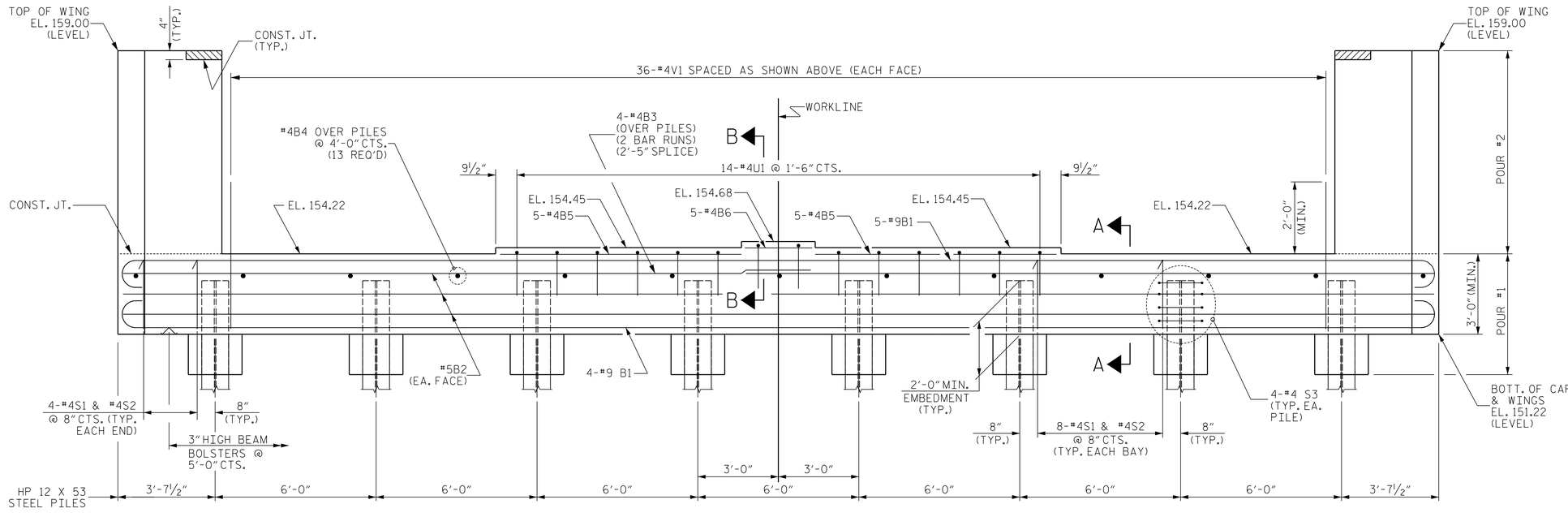


PLAN



ELEVATION

NOTES

THE TOP SURFACE OF THE END BENT CAP, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF ¼".

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

FOR SECTION A-A, SEE SHEET 4 OF 4.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER 4/3/2020
Patrick R. Gallagher
Digitally signed by Patrick R. Gallagher
DN: cn=Patrick R. Gallagher, o=Vaughn & Melton, ou=Asheville, email=pgallagher@vaughnmelton.com, c=US
Date: 2020.04.03 08:48:42 -04'00'

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DWN. BY: FRJ DATE: 07/19
CHKD. BY: PRG DATE: 12/19

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STA. 21+23.13 -Y-

SHEET 1 OF 4

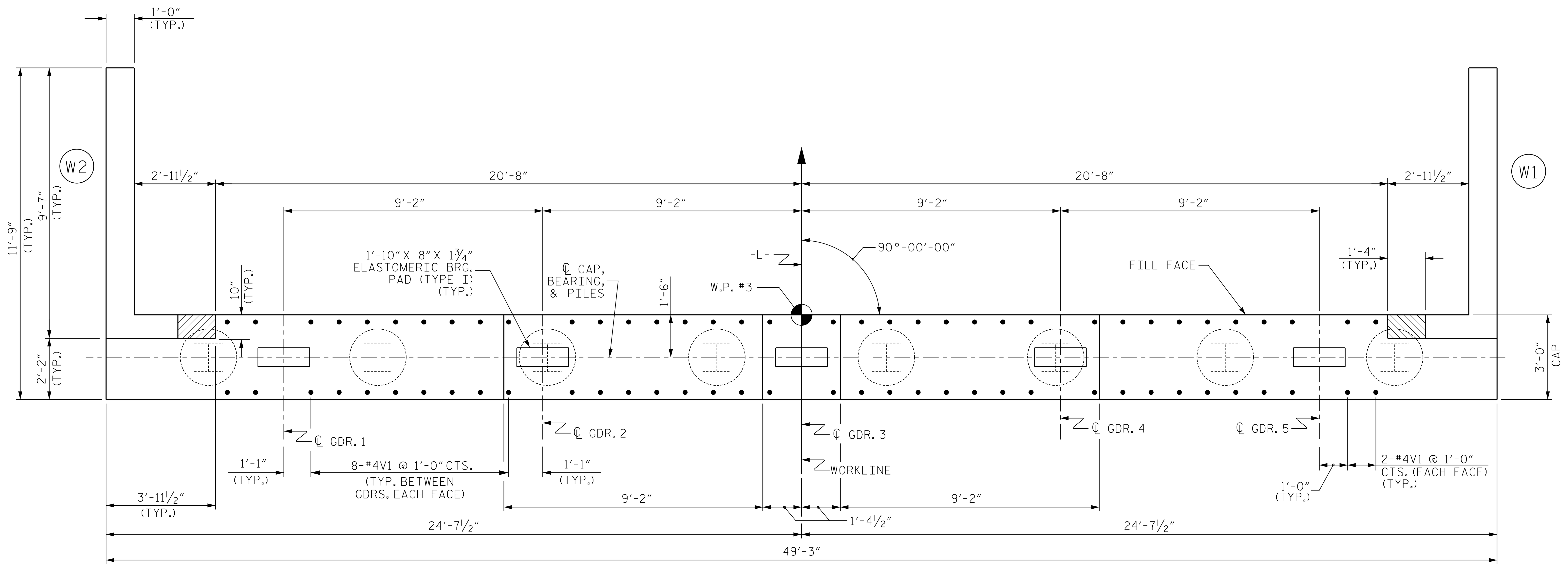
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

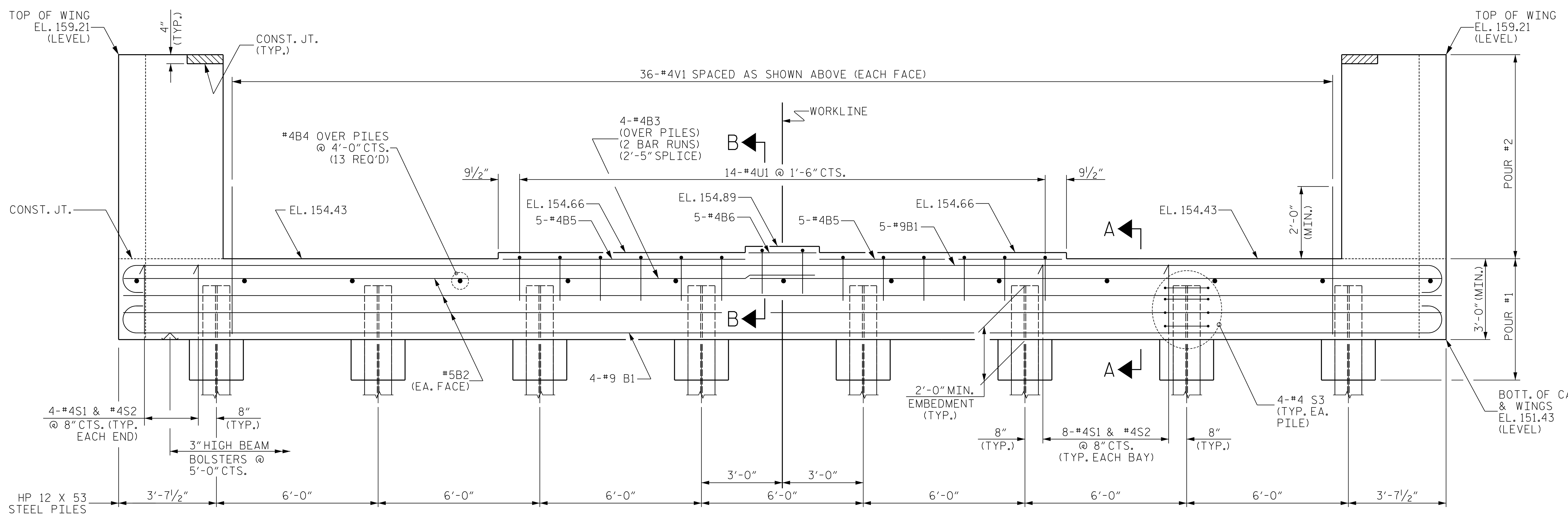
END BENT 1
(INTEGRAL)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-21
1			3			TOTAL SHEETS
2			4			29

V & M PROJECT NO.: 31748-41



PLAN



ELEVATION

NOTES

THE TOP SURFACE OF THE END BENT CAP, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF ¼".

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

FOR SECTION A-A, SEE SHEET 4 OF 4.

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2
(INTEGRAL)

SEAL 042890 — NORTH CAROLINA PROFESSIONAL ENGINEER — PATRICK R. GALLAGHER — Patrick R. Gallagher — 4/3/2020

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2			4		

SHEET NO. S1-22
TOTAL SHEETS 29

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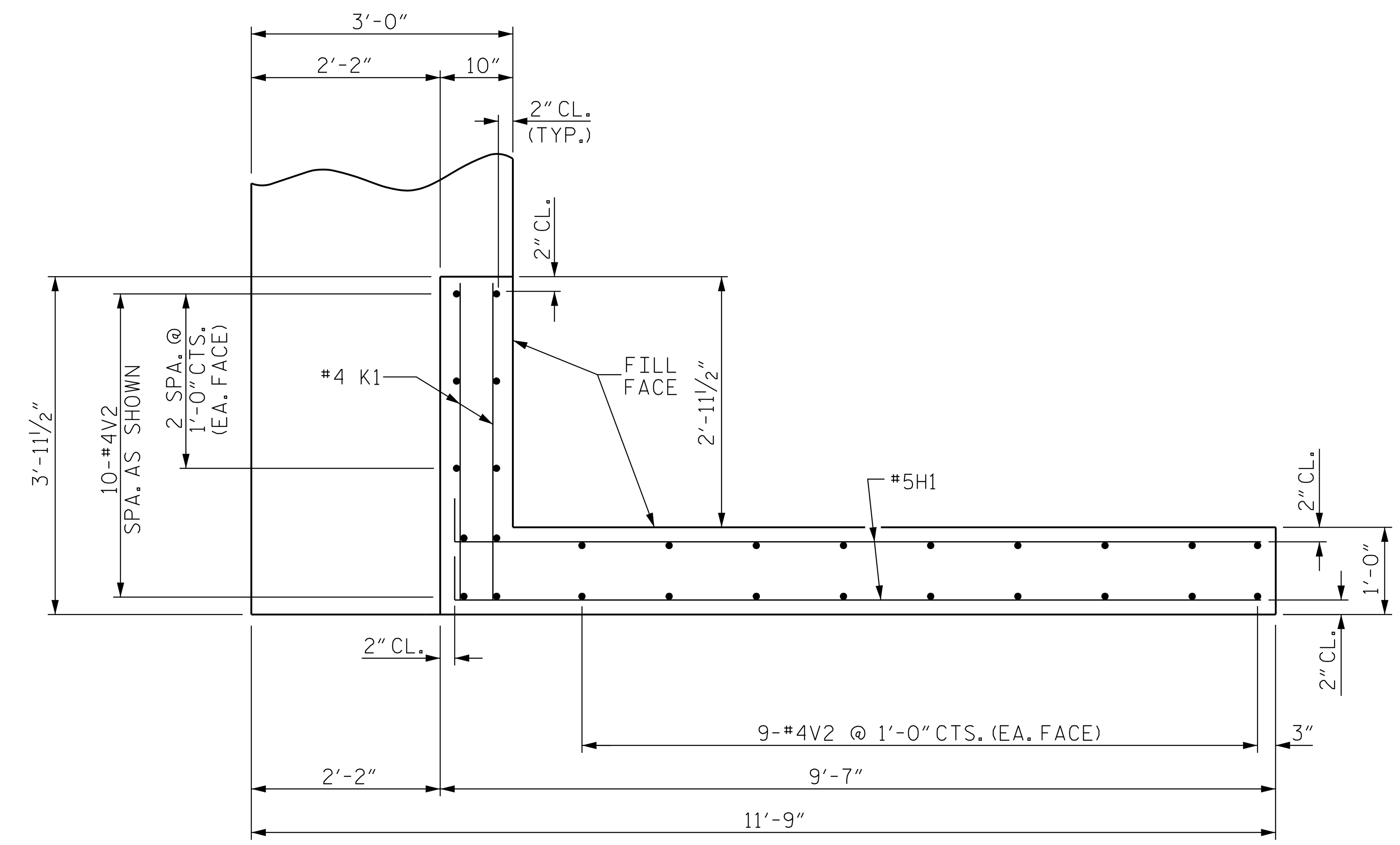
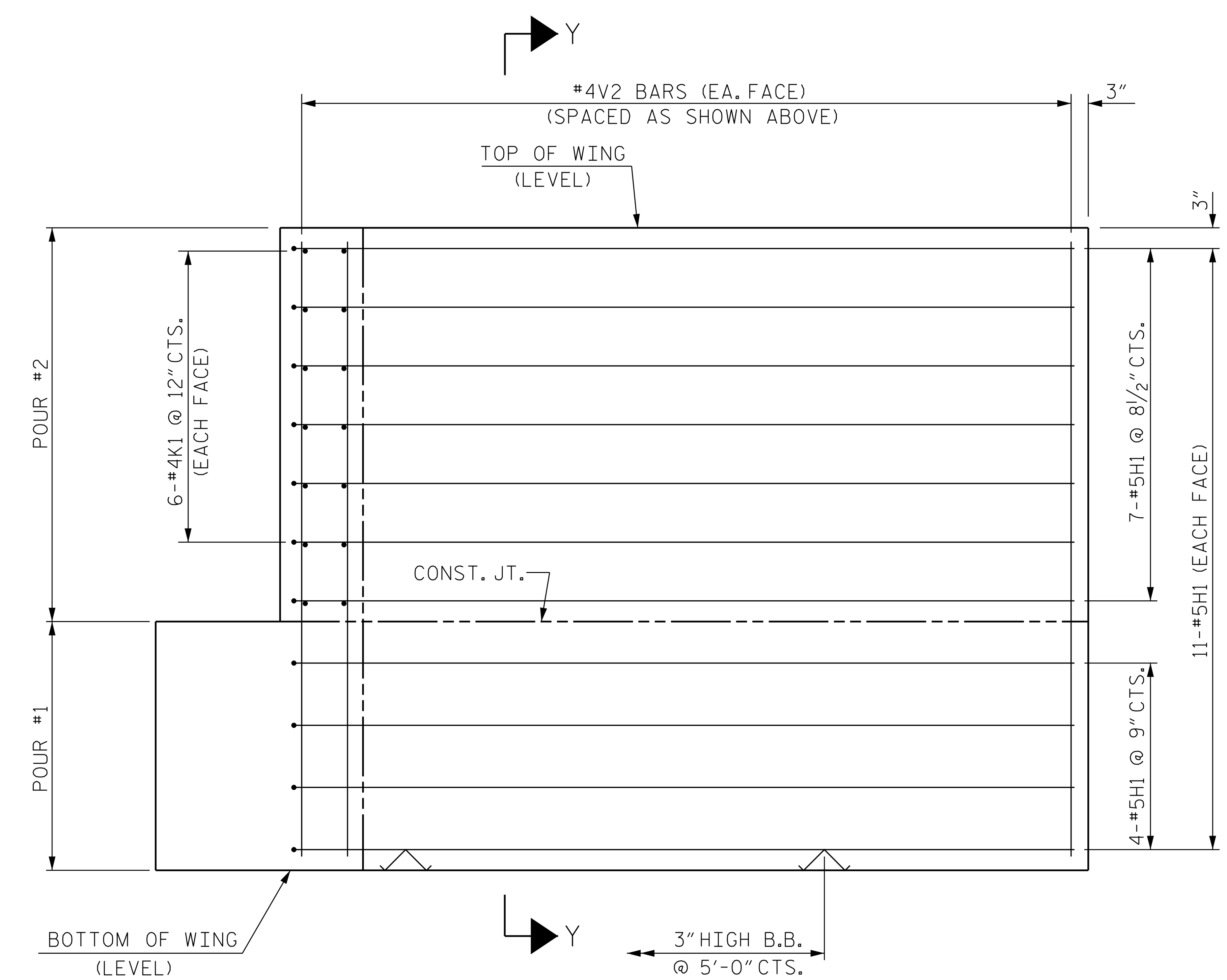


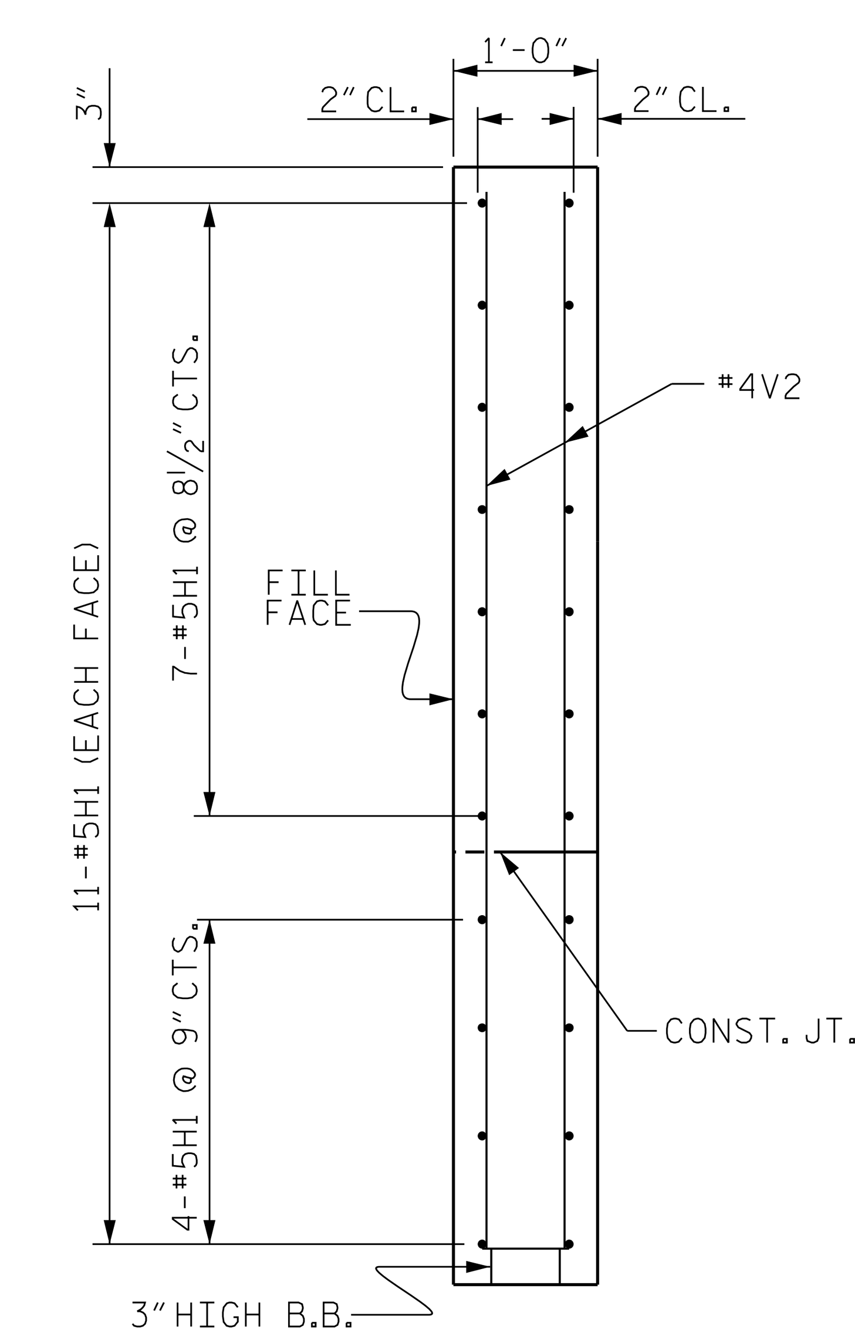
PLAN OF WING (W1)

(WING (W2) SIMILAR)



ELEVATION OF WING (W1)

(WING (W2) SIMILAR)



SECTION Y-Y

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

SHEET 3 OF 4

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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
4/3/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT
WING DETAILS

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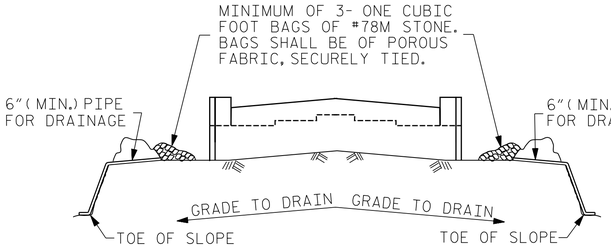
SHEET NO. S1-23
TOTAL SHEETS 29

V & M PROJECT NO.: 31748-41

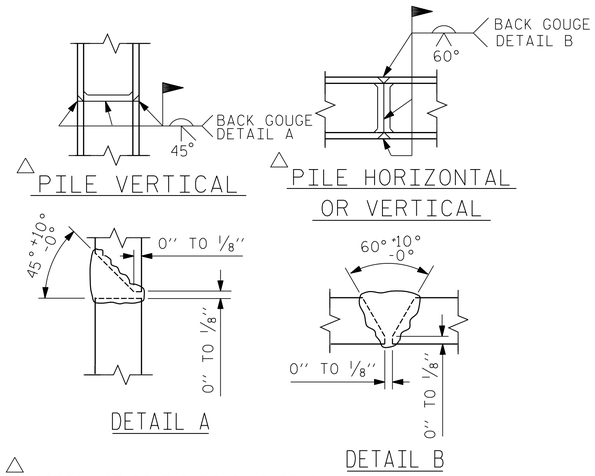


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

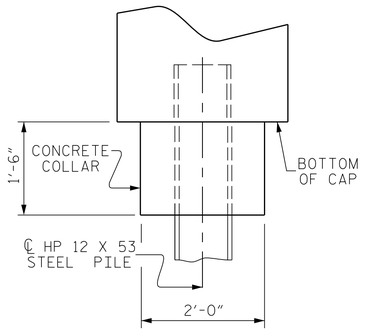
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

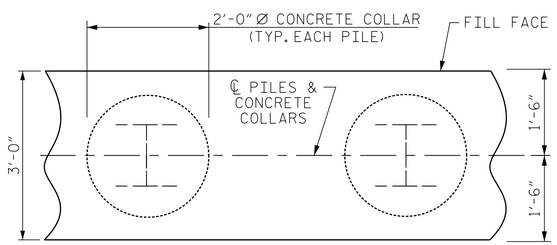


△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

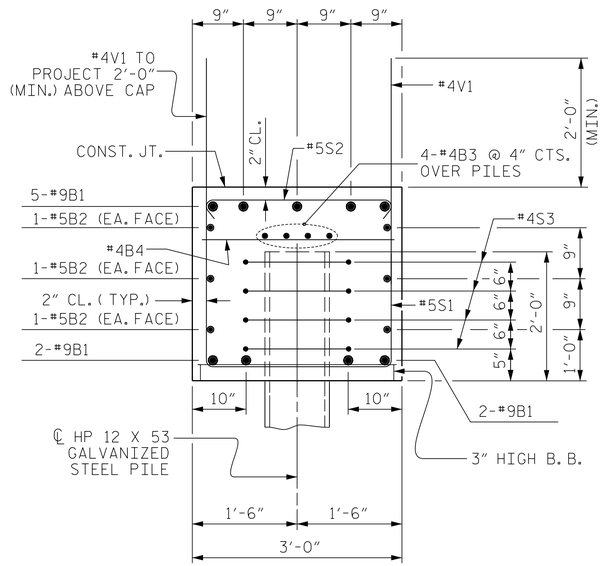


ELEVATION

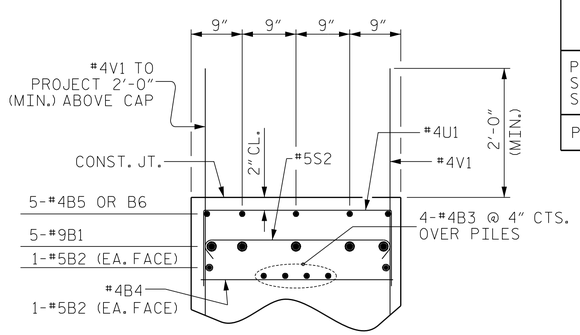


PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL

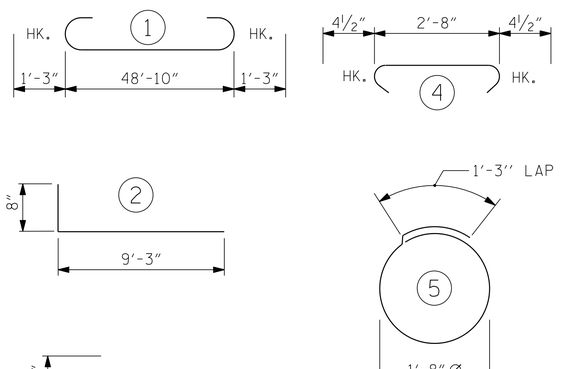


SECTION A-A



PARTIAL SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	#9	1	51'-4"	1,571
B2	6	#5	STR	48'-11"	306
B3	8	#4	STR	25'-8"	137
B4	13	#4	STR	2'-11"	25
B5	10	#4	STR	9'-0"	30
B6	5	#4	STR	2'-5"	8
H1	44	#5	2	9'-11"	455
K1	24	#4	STR	3'-7"	57
S1	64	#4	3	8'-7"	367
S2	64	#4	4	3'-5"	146
S3	32	#4	5	6'-6"	139
U1	14	#4	6	5'-8"	53
V1	72	#4	STR	5'-4"	257
V2	56	#4	STR	7'-4"	274

REINFORCING STEEL 3,825 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP, COLLARS, & LOWER PART OF WINGS 20.4 C.Y.

POUR #2 UPPER PART OF WINGS 4.3 C.Y.

TOTAL CLASS A CONCRETE 24.7 C.Y.

HP 12 X 53 STEEL PILES
END BENT 1 NO: 8 LIN. FT.= 596
END BENT 2 NO: 8 LIN. FT.= 676

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 8

PILE REDRIVES NO: 4

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

SHEET 4 OF 4

V&M Vaughn & Melton Consulting Engineers
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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Patrick R. Gallagher
4/3/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT DETALS AND BILL OF MATERIAL

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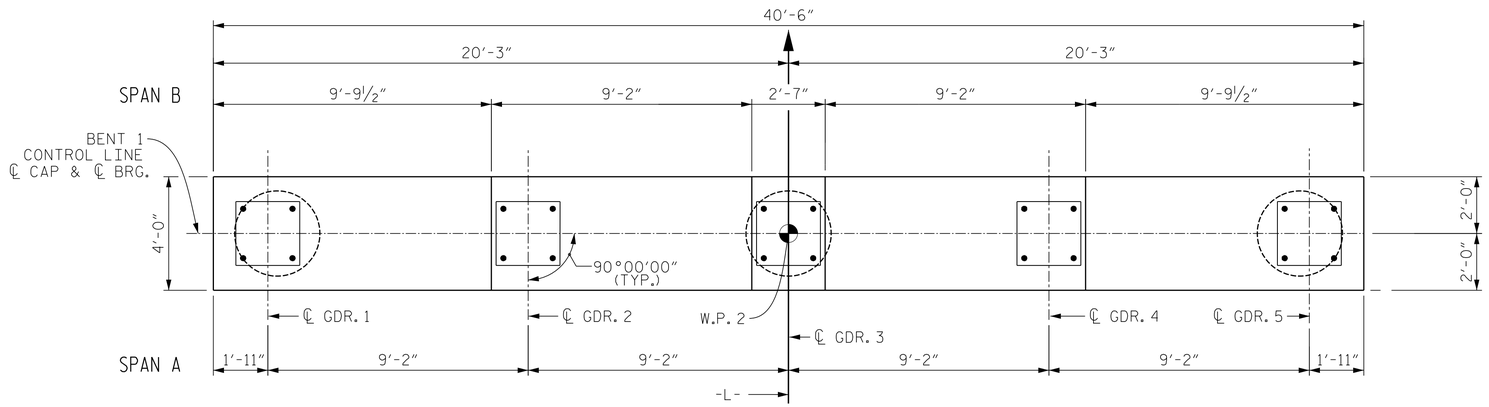
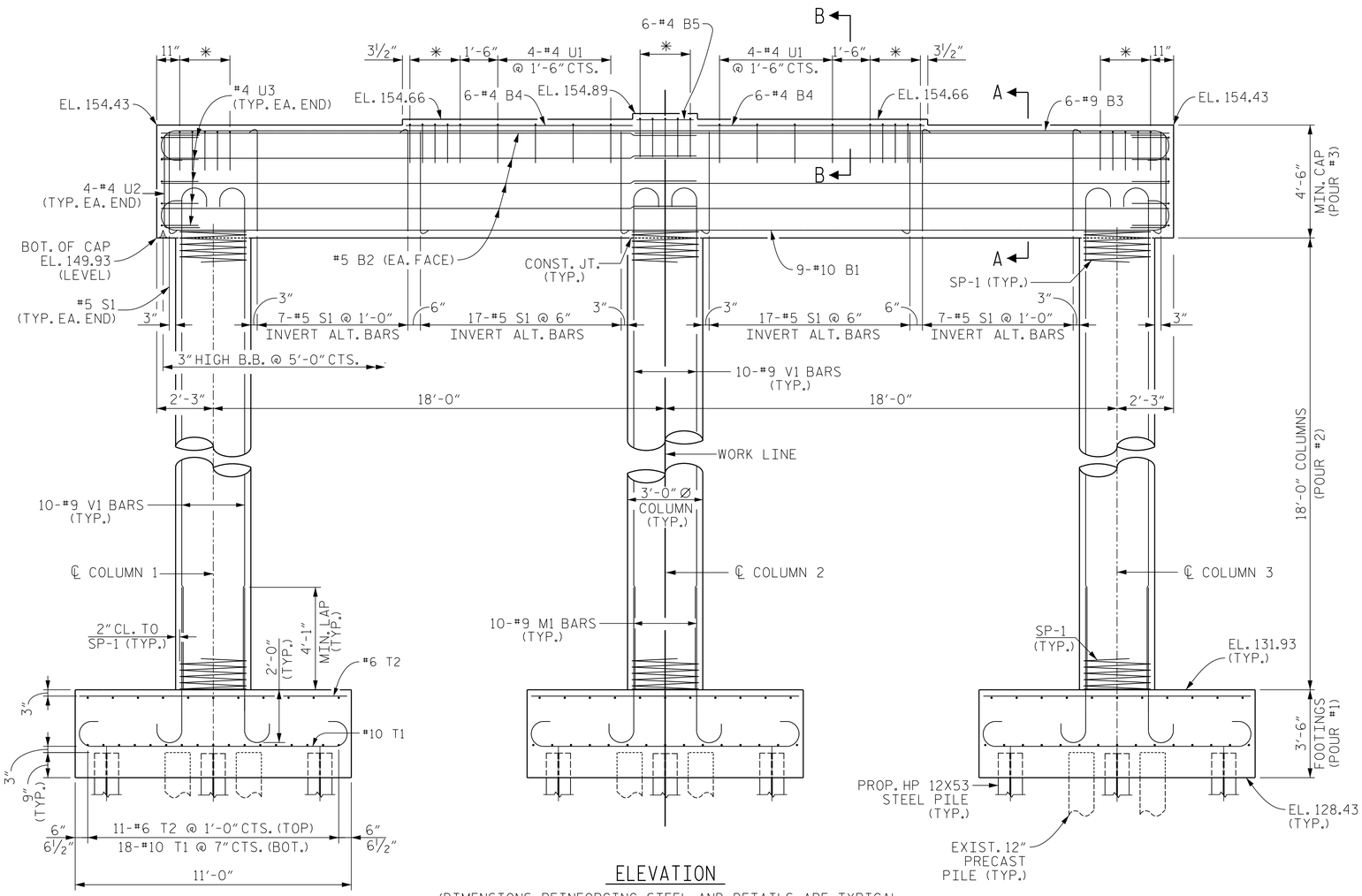
1			3			TOTAL SHEETS
2			4			29

V & M PROJECT NO.: 31748-41



PLAN



ELEVATION

(DIMENSIONS, REINFORCING STEEL AND DETAILS ARE TYPICAL FOR EACH COLUMN AND FOOTING)

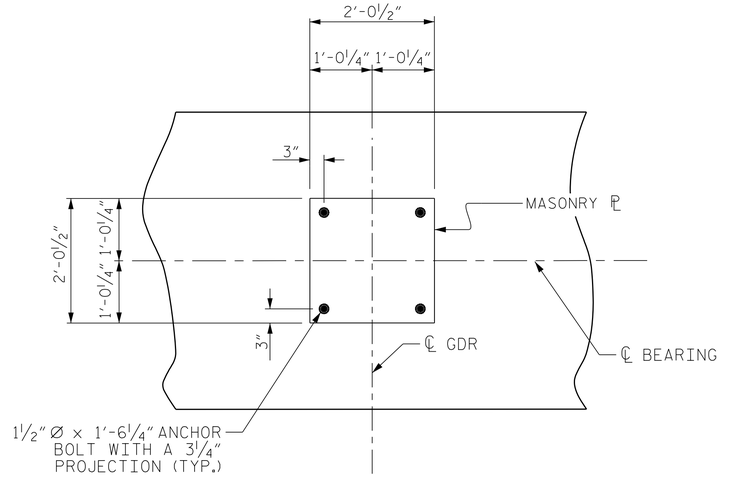
(SEE FOUNDATION LAYOUT FOR ADDITIONAL FOOTING DETAILS)

NOTES

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

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

FOR PILE SPLICE DETAILS, SEE END BENT 1.



DETAIL A

(DIMENSIONS ARE TYPICAL EACH BEARING)

V&M
Vaughn & Melton
Consulting Engineers
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Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
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Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3590

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Digitally signed by Patrick R. Gallagher
DN: cn=Patrick R. Gallagher, o=Vaughn & Melton, ou=Engineering, email=pgallagher@vaughnmelton.com, c=US
4/3/2020

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

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1			3			TOTAL SHEETS
2			4			29

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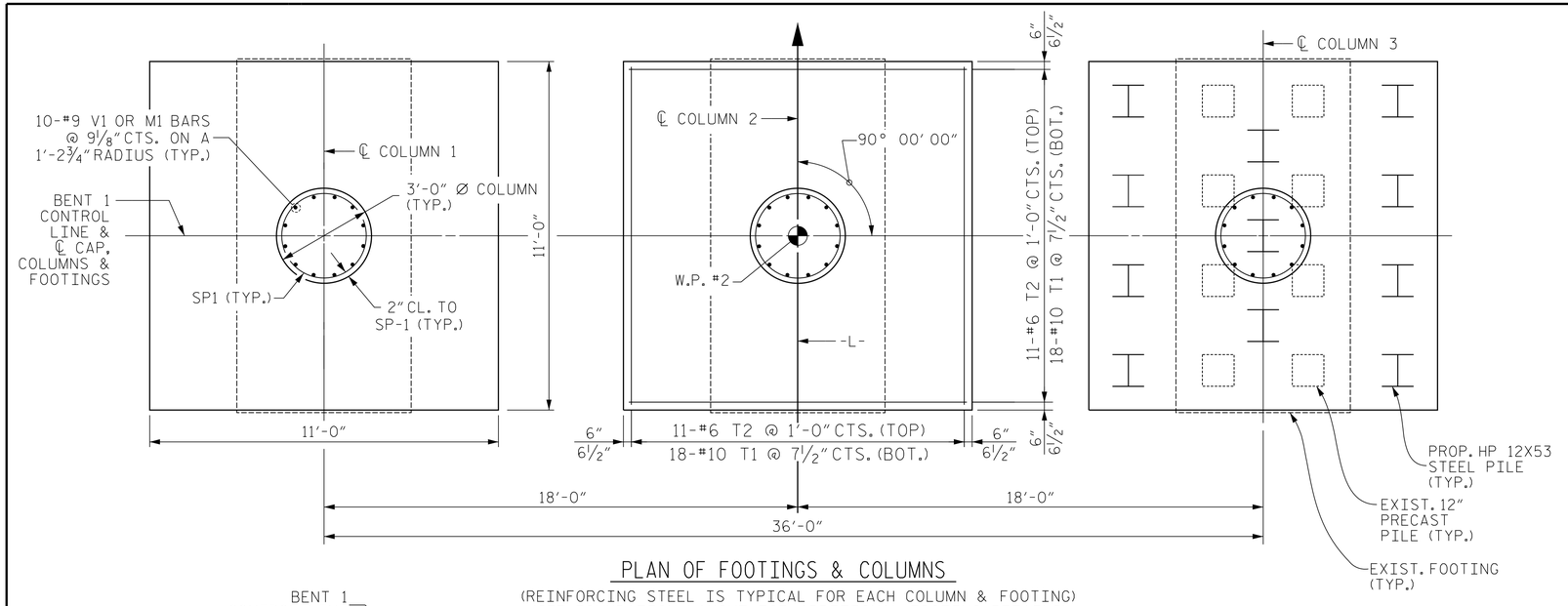
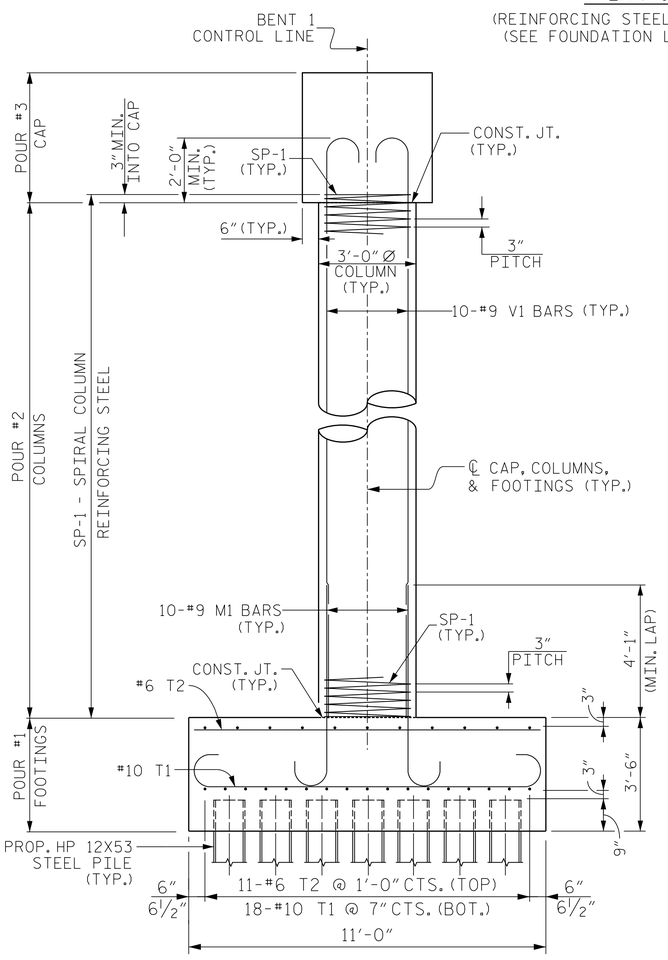
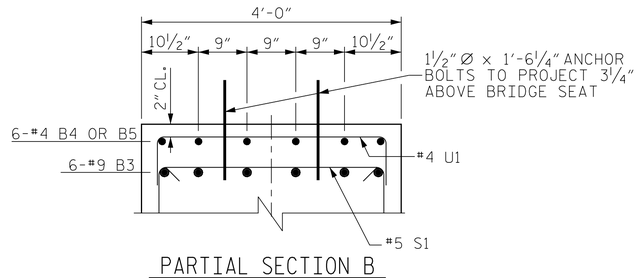


PLAN OF FOOTINGS & COLUMNS

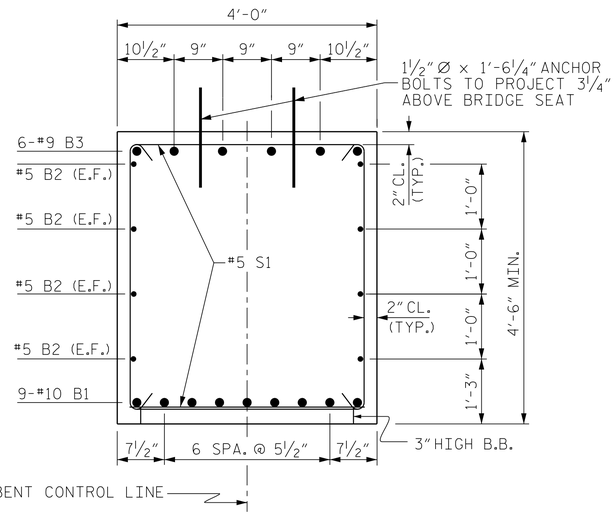
(REINFORCING STEEL IS TYPICAL FOR EACH COLUMN & FOOTING)
(SEE FOUNDATION LAYOUT FOR ADDITIONAL FOOTING DETAILS)



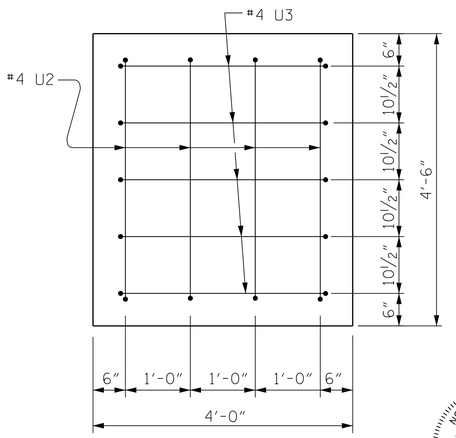
END ELEVATION



PARTIAL SECTION B



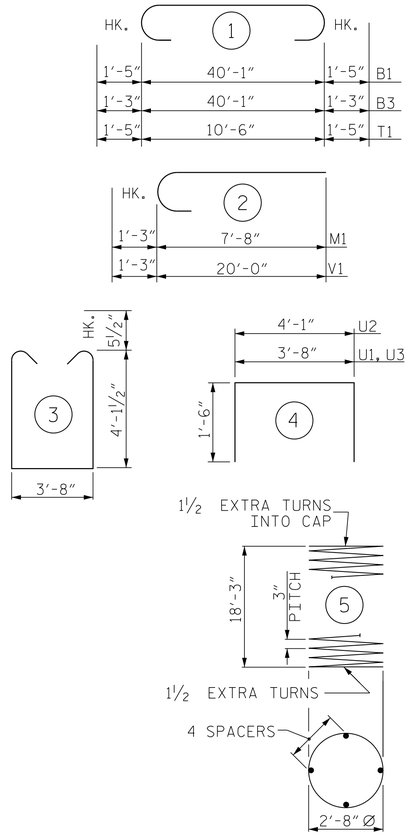
SECTION A-A



END OF CAP VIEW

(TYP. EA. END)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	#10	1	42'-11"	1662
B2	8	#5	STR	40'-2"	335
B3	6	#9	1	42'-7"	869
B4	12	#4	STR	9'-0"	72
B5	6	#4	STR	2'-3"	9
M1	30	#9	2	8'-11"	910
S1	50	#5	3	12'-10"	669
T1	108	#10	1	13'-4"	6196
T2	66	#6	STR	10'-6"	1041
U1	33	#4	4	6'-8"	147
U2	8	#4	4	7'-1"	38
U3	10	#4	4	6'-8"	45
V1	30	#9	2	21'-3"	2168
REINFORCING STEEL (LBS.)					14161
SP-1	3	*	5	637'-6"	1278
SPIRAL COLUMN REINFORCING STEEL (LBS.)					1278

*THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

CLASS A CONCRETE BREAKDOWN	
POUR #3 (CAP)	27.8
POUR #2 (COLUMNS)	14.1
POUR #1 (FOOTINGS)	47.1
TOTAL CLASS A CONCRETE (C.Y.)	89.0

HP 12X53 STEEL PILES
NO.: 33 LIN. FT.: 1785

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 33

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PROJECT NO. BR-0036
NASH COUNTY
STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1 DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Patrick R. Gallagher
DocuSigned by: 4/3/2020

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2			4			29

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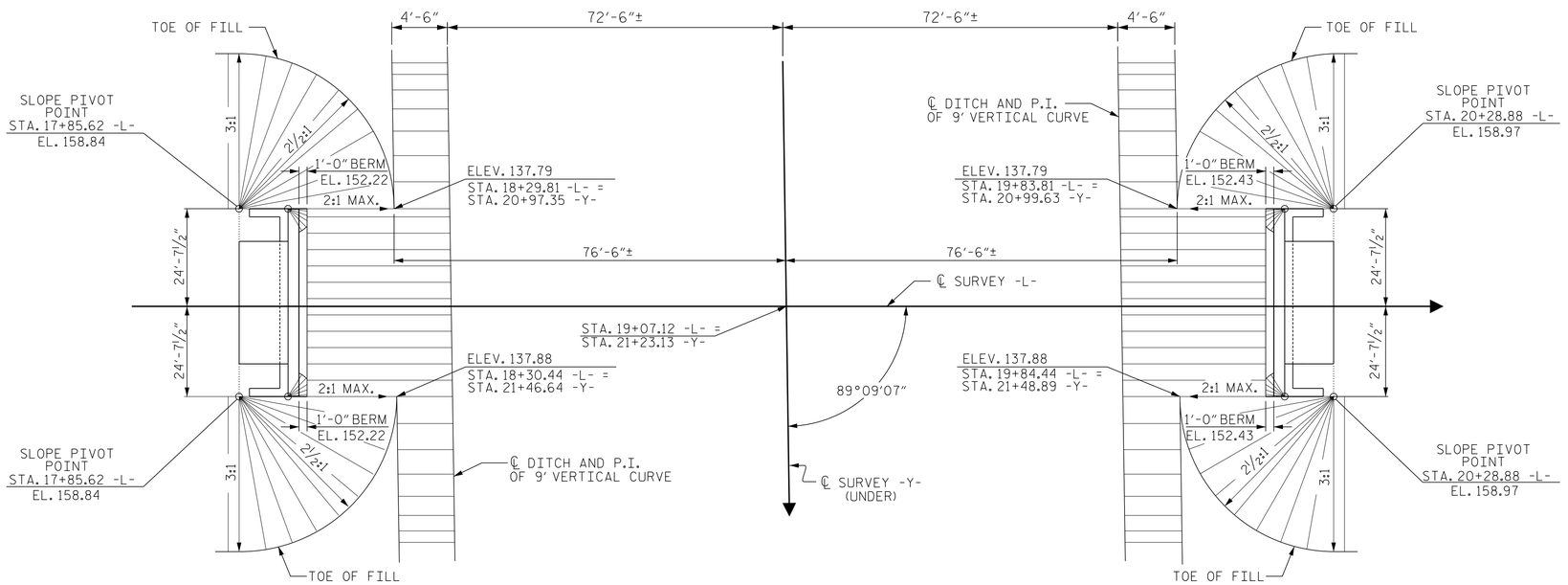
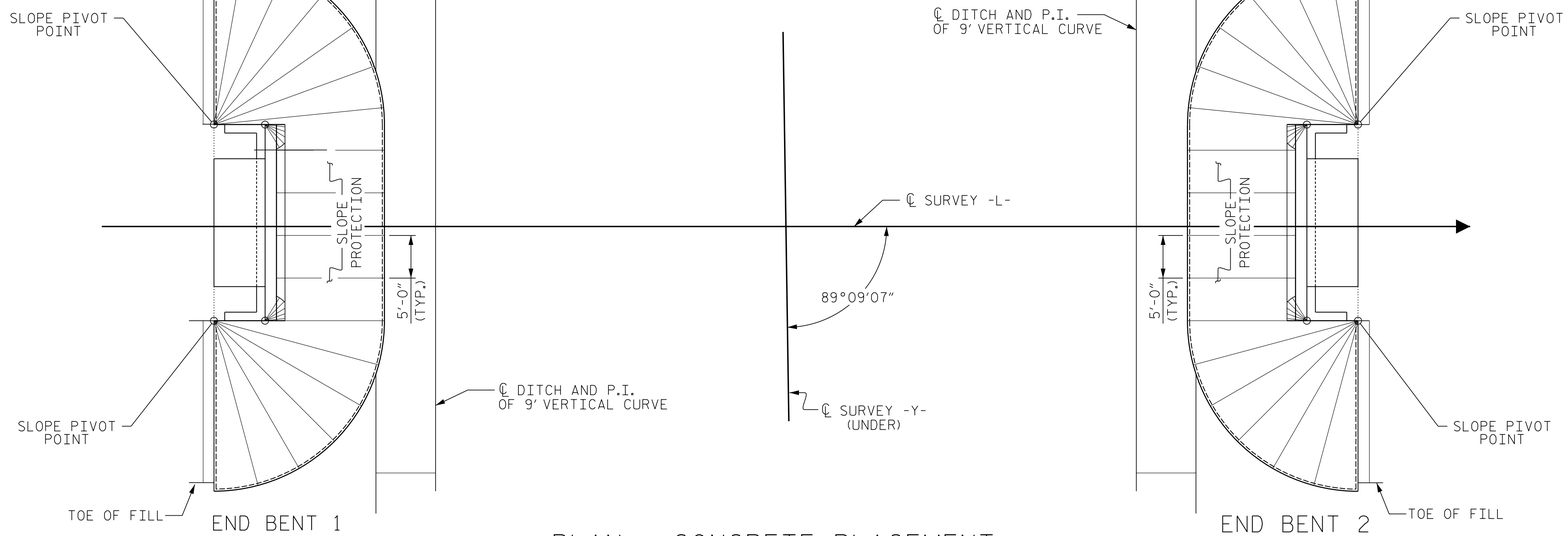


END BENT 1

PLAN - GRADING

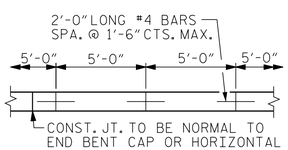
END BENT 2



END BENT 1

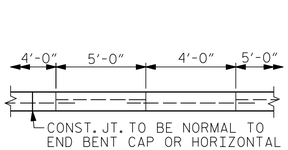
PLAN - CONCRETE PLACEMENT

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

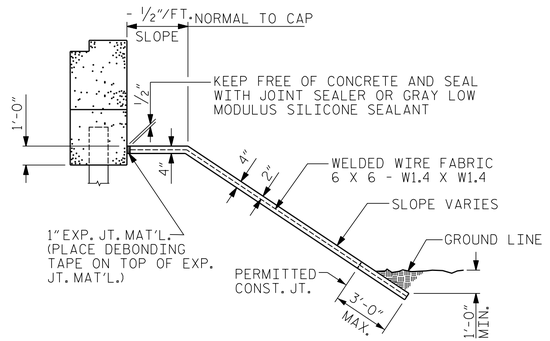
BRIDGE @ STA. 19+07.12 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	774	2662
END BENT 2	780	2676

* QUANTITY SHOWN IS BASED ON 5' POURS.

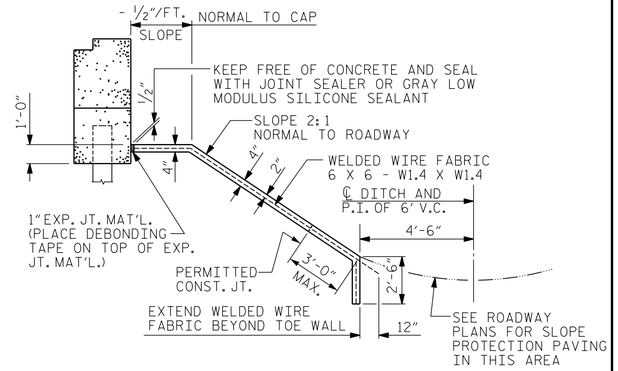
GENERAL NOTES

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 WHERE FILL CATCHES EXISTING GROUND



SECTION WHERE FILL CATCHES IN DITCH

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PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Signature
Date: 4/3/2020

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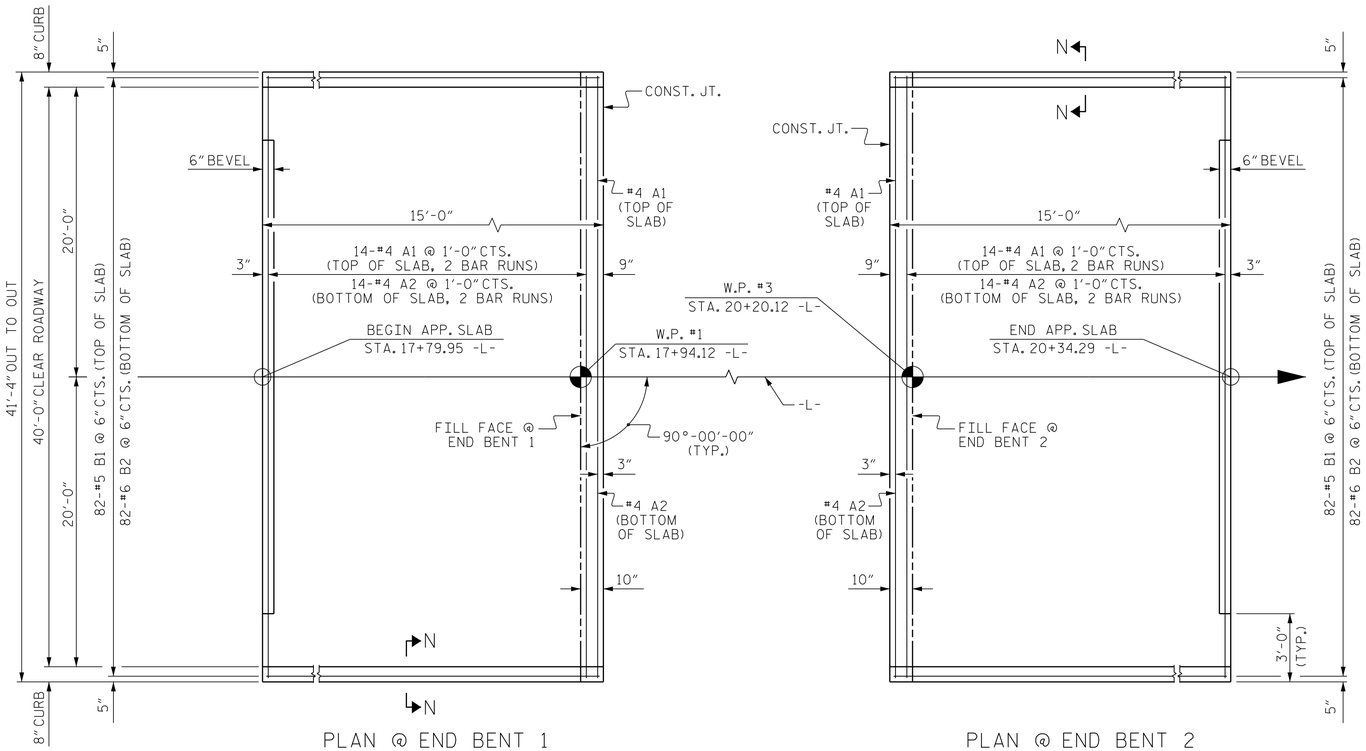
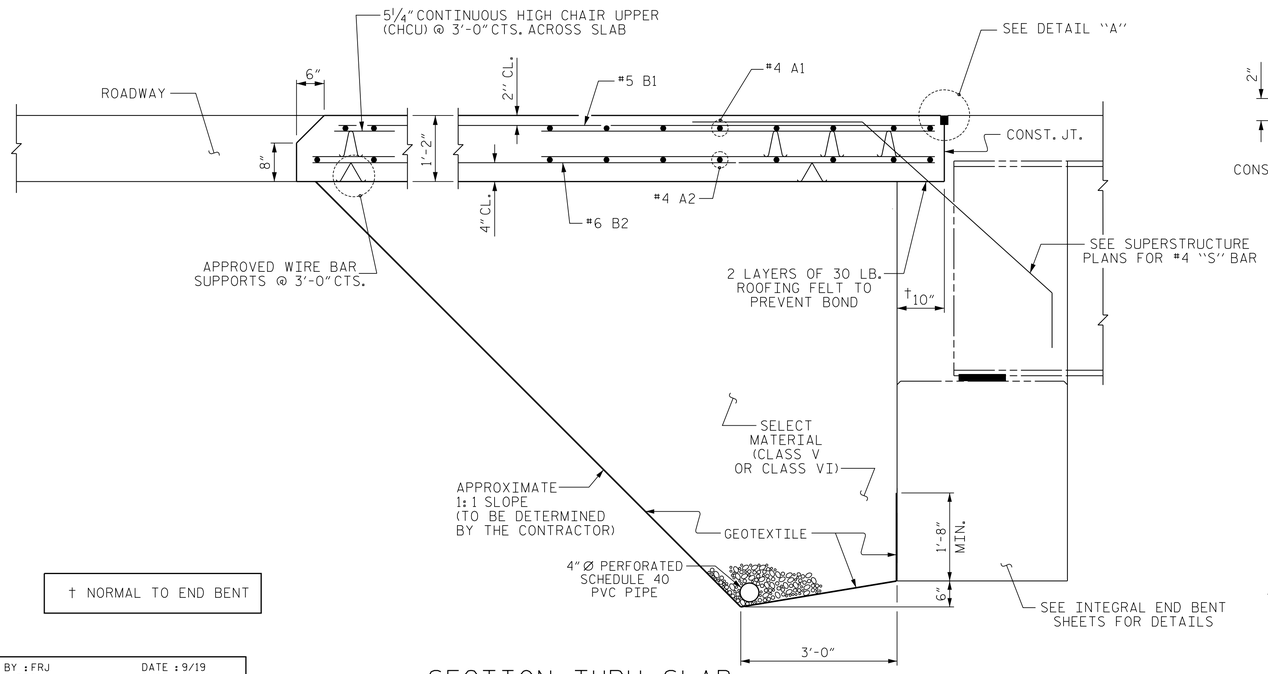
1			3			TOTAL SHEETS
2			4			29

V & M PROJECT NO.: 31748-41



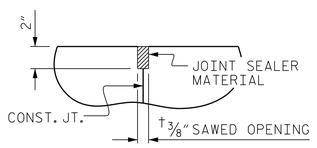
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



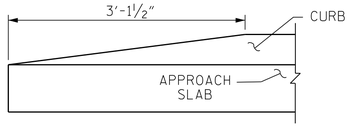
SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH FILL)

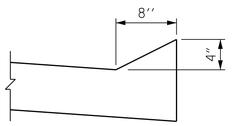
† NORMAL TO END BENT



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N

NOTES

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

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

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

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

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

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

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.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	32	#4	STR	21'-6"	431
A2	32	#4	STR	21'-4"	428
✳ B1	82	#5	STR	14'-2"	1212
B2	82	#6	STR	14'-8"	1806

REINFORCING STEEL 2234 LBS.

✳ EPOXY COATED REINFORCING STEEL 1643 LBS.

CLASS AA CONCRETE 26.7 C.Y.

SPLICE LENGTHS

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

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

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT

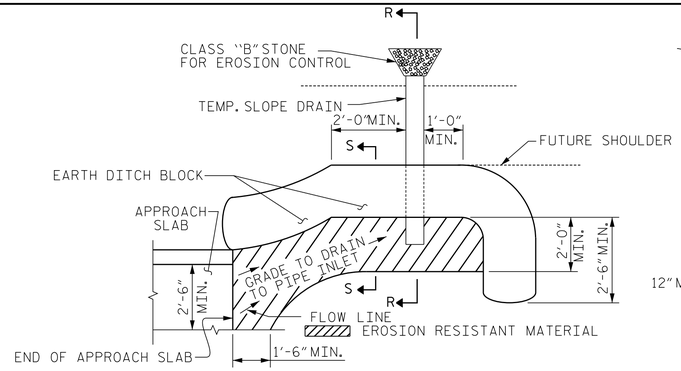
NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
Documented by: Patrick R. Gallagher
4/3/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-28
1			3			TOTAL SHEETS
2			4			29

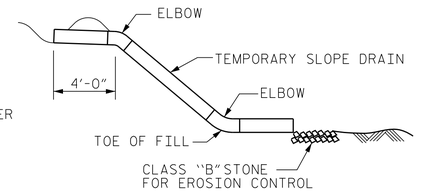
ASSEMBLED BY : FRJ	DATE : 9/19
CHECKED BY : PRG	DATE : 12/19
DRAWN BY : TLA 10/05	REV. 6/13 MAA/GM
CHECKED BY : GM 5/06	REV. 12/17 MAA/THC
	REV. 06/19 BNB/THC

STD. NO. BAS5 (SHT 4)

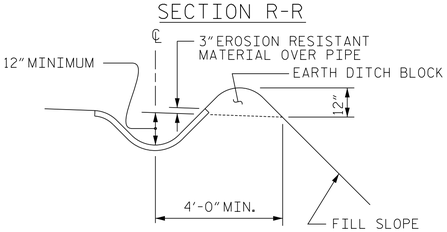


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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



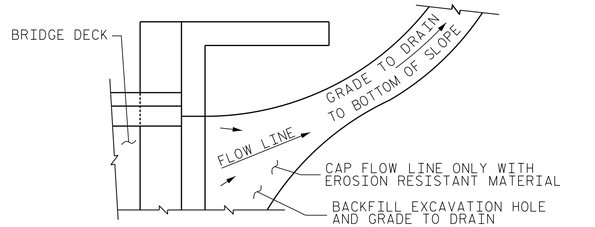
SECTION R-R



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

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

PROJECT NO. BR-0036

NASH COUNTY

STATION: STA. 19+07.12 -L-
STA. 21+23.13 -Y-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
Digitally signed by Patrick R. Gallagher
DocuSigned by: Patrick R. Gallagher
4/3/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SHEET NO. S1-29

TOTAL SHEETS 29

ASSEMBLED BY : FRJ	DATE : 9/19
CHECKED BY : PRG	DATE : 9/19
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

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