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STATE	STATE	SHEET NO.	TOTAL SHEETS				
N.C.	B	B-5772					
STAT	E PROJ. NO.	F. A. PROJ. NO.	DESCRI	PTION			
45	728.1.2	_	P.	E.			
45	728.2.1	1724002	RO	N			
45	728.2.2	1724002	UTILITIES				
45	728.3.1	1724002	CONSTRU	JCTION			





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	PLA	Ν	_
NOT		EOP	

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"					



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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 125 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 208 TONS PER PILE.

STEEL H-PILE PONTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.1 AND END BENT NO.2.FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO.1 TO A MINIMUM ELEVATION 822.1 WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 14".FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO.2 TO A DEPTH OF 10 FEET BELOW OF PILE CAP WITH EQUPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 14". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

SPECIAL NOTES

AT END BENT NOS.1 AND 2, DRIVE PILES FROM LEFT TO RIGHT TO AID IN IDENTIFING PILE LOCATIONS THAT MIGHT REQUIRE PREDRILLING. IT IS ANTICIPATED THAT THE RIGHT 2 PILES WILL REQUIRE PREDRILLING.

FOUNDATION CONSTRUCTION FOR BRIDGE NO.66 SHALL NOT BEGIN UNTIL BLASTING FOR THE ROADWAY ALIGNMENT,UTILITIES,AND ANY OTHER SUBSURFACE STRUCTURES IS COMPLETED.FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE ARTICLE 410-9 OF THE STANDARD SPECIFICATIONS.

	PROJEC	CT NO. ROW/ DN: 2	<u>E</u> AN 0+91	<u>8-5772</u> cc .04 -[2 OUNTY EL -
03/25/2022 WHICH CARO HICH CARO SEAL 03I583 SEAL 03I583 PRASAD NONEFR Southing Docusigned by Krishna P. Sedai EA6F794150BF4B7	DEPA C	STATES	E OF NORTH CA OF TRA RALEIGH DGE OI RFOLK OAD B VILLE ILLS F	ROLINA NSPORTA N SR 17 SOUTHE ETWEEN BLVD. 8 ORD RD.	TION G 24 RN
		REVIS	SIONS		SHEET NO.
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	NO. BY: 1 2	DATE:	NO. BY: 3 4	DATE:	S-2 TOTAL SHEETS 25



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PERFORMING ANY WORK IN THE RAILROAD RIGHT-OF-WAY. ADDITIONAL EROSION CONTROL MEASURES FOR PROTECTION OF RAILROAD DITCHES MAY BE REQUIRED AS DIRECTED BY THE ENGINEER. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED NO SEPARATE PAYMENT WILL BE MADE FOR RAILROAD EROSION CONTROL MEASURES.

TOTAL E	BILL OF M	ATERIAL -								
BRIDGE APPROACH SLABS	REINFORCING STEEL	APPROXIMATE 139,700 LBS. STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 14x73 STEEL PILES	HP STEE	14×73 L PILES	STEEL PILE POINTS	PREDRILLING FOR PILES	VERTICAL CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS	
LUMP SUM	LBS.	LUMP SUM	EA.	NO.	LIN.FT.	EA.	LIN.FT.	LIN.FT.	LUMP SUM	L
LUMP SUM		LUMP SUM						296.5	LUMP SUM	L
	4,453		7	7	125.0	7	20			
	4,453		7	7	125.0	7	20			
LUMP SUM	8,906	LUMP SUM	14	14	250.0	14	40	296.5	LUMP SUM	L

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 20+91.04 -EL-."

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

THE MATERIAL SHOWN IN THE HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF $20'-1\frac{1}{2}$ "EACH SIDE OF Q 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 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 BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

THE RAILROAD TRACK TOP OF RAIL ELEVATION SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT AN VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM

RAILROAD EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO

LIMITS OF SILT FENCE AND FILTER FABRIC PARALLEL TO RAILROAD SHALL EXTEND A MINIMUM OF 25'-O"OUTSIDE EDGE OF SUPERSTRUCTURE OR TOE OF SLOPE ON CONSTRUCTION. A GREATER LENGTH OF SILT FENCE OR FILTER FABRIC MAY BE REQUIRED IF SO DIRECTED BY THE ENGINEER.

FILTER FABRIC TO BE NAILED TO TIMBER RAIL TIES WITH PRIME SOURCE "GRIP CAP" OR EQUIVALENT. FILTER FABRIC ON SHOULDER TO BE SECURED AS DIRECTED BY THE ENGINEER AND RAILROAD.

FOR FOUNDATION NOTES, SEE "FOUNDATION LAYOUT" SHEET.

		PROJECT NO. <u>B-5772</u> ROWAN COUNTY
FOAM JOINT SEALS		STATION: 20+91.04 -EL-
.UMP SUM .UMP SUM	03/25/2022 WHICH CARO OFESSION SEAL 03I583 OSI583 Docusigned by Krishna P. Sedai	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH GENERAL DRAWING FOR BRIDGE ON SR 1724 OVER NORFOLK SOUTHERN RAILROAD BETWEEN STATESVILLE BLVD. & SHERRILLS FORD RD
.UMP SUM	EA6F794150BF4B7	REVISIONS SHEET NO.
DOC	CUMENT NOT CONSIDERED FINAL UNLESS ALL IGNATURES COMPLETED	NO.BY:DATE:NO.BY:DATE:S-313TOTAL SHEETSTOTAL SHEETS25

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										STRE	NGTH	I LIM	IT ST	ΑΤΕ				S	ERVIC	E II	LIMIT	STA	ΓE
							MOMENT SHEAR					MOMENT											
LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING #	MINIMUM RATING FACTORS (RF)	TONS = W × RF	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (f†)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (f†)	LIVE-LOAD FACTORS (Y _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (f†)
		HL-93 (INVENTORY)	N⁄A	$\langle 1 \rangle$	1.09		1.75	0.880	1.47	А	EL	73.17	0.878	1.09	А	Ι	139.01	1.30	0.880	1.57	А	EL	73.17
DESIGN		HL-93 (OPERATING)	N/A		1.41		1.35	0.880	1.91	А	EL	73.17	0.878	1.41	А	I	139.01	1.00	0.880	2.04	А	EL	73.17
RATING		HS-20 (INVENTORY)	36.00	2	1.63	58.68	1.75	0.880	2.28	А	EL	73.17	0.878	1.63	А	Ι	7.32	1.30	0.880	2.43	А	EL	73.17
		HS-20 (OPERATING)	36.00		2.12	76.32	1.35	0.880	2.96	А	EL	73.17	0.878	2.12	А	Ι	7.32	1.00	0.880	3.16	А	EL	73.17
		SNSH	13.500		5.18	69.93	1.40	0.880	7.04	А	EL	73.17	0.878	5.18	А	I	139.01	1.30	0.880	6.00	А	EL	73.17
		SNGARBS2	20.000		3.58	71.60	1.40	0.880	4.97	А	EL	73.17	0.878	3.58	А	Ι	139.01	1.30	0.880	4.24	А	EL	73.17
	ICLE	SNAGRIS2	22.000		3.28	72.16	1.40	0.880	4.60	А	EL	73.17	0.878	3.28	А	Ι	139.01	1.30	0.880	3.92	А	EL	73.17
	VEH V)	SNCOTTS3	27.250		2.57	70.03	1.40	0.880	3.49	А	EL	73.17	0.878	2.57	А	Ι	7.32	1.30	0.880	2.98	А	EL	73.17
	S) (S	SNAGGRS4	34.925		2.07	72.29	1.40	0.880	2.82	А	EL	73.17	0.878	2.07	А	Ι	139.01	1.30	0.880	2.40	А	EL	73.17
	INC	SNS5A	35.550		2.06	73.23	1.40	0.880	2.76	А	EL	73.17	0.878	2.06	А	Ι	139.01	1.30	0.880	2.35	А	EL	73.17
		SNS6A	39.950		1.85	73 . 91	1.40	0.880	2.49	А	EL	73.17	0.878	1.85	А	Ι	7.32	1.30	0.880	2.12	А	EL	73.17
		SNS7B	42.000		1.78	74.76	1.40	0.880	2.37	А	EL	73.17	0.878	1.78	А	Ι	7.32	1.30	0.880	2.02	А	EL	73.17
RATING	ER	TNAGRIT3	33.000		2.22	73.26	1.40	0.880	3.03	А	EL	73.17	0.878	2.22	А	Ι	139.01	1.30	0.880	2.58	А	EL	73.17
	RAII	TNT4A	33.075		2.20	72.77	1.40	0.880	3.03	А	EL	73.17	0.878	2.20	А	Ι	7.32	1.30	0.880	2.58	А	EL	73.17
	I-IN	TNT6A	41.600		1.84	76.54	1.40	0.880	2.44	А	EL	73.17	0.878	1.84	А	Ι	139.01	1.30	0.880	2.08	А	EL	73.17
	SEN ST)	TNT7A	42.000		1.82	76.44	1.40	0.880	2.43	А	EL	73.17	0.878	1.82	А	Ι	139.01	1.30	0.880	2.07	А	EL	73.17
	CTOR (TT	TNT7B	42.000		1.77	74.34	1.40	0.880	2.47	А	EL	73.17	0.878	1.77	А	Ι	139.01	1.30	0.880	2.10	А	EL	73.17
	TRA(TNAGRIT4	43.000		1.72	73.96	1.40	0.880	2.38	А	EL	73.17	0.878	1.72	А	Ι	139.01	1.30	0.880	2.03	А	EL	73.17
	JCK	TNAGT5A	45.000		1.67	75.15	1.40	0.880	2.26	А	EL	73.17	0.878	1.67	А	Ι	139.01	1.30	0.880	1.93	А	EL	73.17
	TRL	TNAGT5B	45.000	3	1.64	73.80	1.40	0.880	2.25	А	EL	73.17	0.878	1.64	А	Ι	139.01	1.30	0.880	1.92	А	EL	73.17
		EV2	45.000		2.50	112.50	1.40	0.880	3.49	А	EL	73.17	0.878	2.50	А	Ι	139.01	1.30	0.880	2.97	А	EL	73.17
		EV3	45.000		1.68	75.60	1.40	0.880	2.31	А	EL	73.17	0.878	1.68	А	Ι	139.01	1.30	0.880	1.97	А	EL	73.17
FATIGUE		HL-93 (INVENTORY)	γ _{LL} =0.75																				



LRFR SUMMARY

DRAWN BY :	M. G. S	SHAIKH	DATE : <u>02/2021</u>
CHECKED BY :	A. SOR	SENGINH	DATE : <u>02/2021</u>
DESIGN ENGINEER	OF RECORD:_	A. SORSENGINH	DATE : <u>02/2021</u>

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

 $\langle 3 \rangle$ $\left<1\right>$ END BENT 2

LOAD FACTORS:

DESIGN	LIMIT STATE	γ_{DC}	$\gamma_{D\mathbf{W}}$
LOAD RATING	STRENGTH I	1.25	1.50
FACTORS	SERVICE II	1.00	1.00

NOTES:

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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.

<pre>CONTROLLING LOAD RATING</pre>
1 DESIGN LOAD RATING (HL-93) **
2 DESIGN LOAD RATING (HS-20) **
<pre>3 LEGAL LOAD RATING **</pre>
* * SEE CHART FOR VEHICLE TYPE
GIRDER LOCATION
I - INTERIOR GIRDER EL - EXTERIOR LEFT GIRDER ER - EXTERIOR RIGHT GIRDER

	PROJEC STATIC	t no ROWAN DN:20+	B-57 91.04	72 COUNTY -EL-
03/25/2022 TH CARO FESSION SEAL 031583 PRASHO Docusigned by Docusigned by	DEPAI LR (NON	STATE OF N RTMENT OF STAI STAI STEEL - INTERS	IORTH CAROLINA TRANSPO ALEIGH NDARD MMARY GIRDE TATE TR	FOR RS AFFIC)
EA6F794150BF4B7				
		REVISIONS	> 	SHEET NO.
DOCUMENT NOT CONSTDERED	NO. BY:	DATE: NO.	BY: DAT	E: 5-4
FINAL UNLESS ALL	1	3		TOTAL SHEETS
SIGNATURES COMPLETED	2	A		25
		STD	.NO.LRF	-R3



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<u>1/2"</u>	NOTES: PROVIDE 1 ¹ /4" H THE METAL STA MAT OF "A" BA CONTINUOUS H CTS. WITH A H BARS A CLEAR REMOVABLE FOR PREVIOUSLY CA ATTAINED A M BEFORE ADDIT: THE CONTRACTOR FOR AVOIDING PLACE FORM SU STIFFENERS OF	IGH BEAM AY-IN-PLAC ARS.WHEN I IGH CHAIR EIGHT TO DISTANCE RM. AST CONCR INIMUM CO IONAL CON OR MAY,WH INTERFER UPPORTS O R CONNECT	BOLSTERS CE FORMS T JSING REMO S FOR META SUPPORT T OF 2 ¹ /2" AB ETE IN A S OMPRESSIVE CRETE IS O EN NECESSA ENCE BETWE R FORMS A OR PLATES	UPPER A O SUPPO DVABLE F AL DECK HE BOTTO SOVE THE SPAN SHA STRENG CAST IN ARY, PROF EN META ND BEAM THE PRO	T 4'-O"CT RT THE BO ORMS, PRO (C.H.C.M.) O OM MAT O TOP OF 1 ALL HAVE TH OF 300 THE SPAN POSE A SC AL STAY-I /GIRDER	S.ATOP OTTOM VIDE @ 4'-O" F ``A'' THE DO PSI HEME N-
-#4 B1	INDICATED, AS DRAWINGS OR DRAWINGS. VERTICAL CONO UNTIL ALL SLA	APPROPRI THE METAL CRETE BAR AB CONCRE	ATE, ON EI STAY-IN-F RIER RAIL TE HAS BEE	THER THE PLACE FO SHALL N N CAST	STEEL W RM WORKI OT BE CAS	ORKING NG
-#5 B2 @ 8 ¹ /2"CTS. BOTT.OF OVERHANG) (TYP.EA.SIDE)	REACHED MININ THE CONTRACTO GIRDER WEB DO SUPPORT SYSTO VERTICAL CONO SUPPORTING FO	MUM COMPF OR SHALL I URING CON EM USED. CRETE BAR UTURE CHA	RESSIVE ST ENSURE THE STRUCTION RIER RAIL IN LINK FE	ENGTH O STABIL BASED (IS CAPA NCE.	F 3,000 P ITY OF TH ON THE OV	SI. HE ERHEAD
ΓΥΡ. ΕΑ. OVERHANG)	2 ¹ / ₂ " BUILD-UP AT € BRG.	TOP OF S	SLAB TO BO ANGE @ Q E 1/2" TOP OF OF S.I.P. FO	DTTOM BRG. SLAB TO RMS @ Q - Q GIRD	ER	
MERIC		<u>Dt</u>	<u>- I AIL</u>	<u> </u>		
) - _		PROJEC STATIC	t no ROWA Dn:_20	B N +91.0	<u>-5772</u> co 	UNTY
	25/2022 RTH CAROL SEAL 031583 MGNEFR SEAL 031583 MGNEFR STP4150BF4B7	depa T`	SUPERS	OF NORTH CARC DF TRAN RALEIGH STRUC L SE	ISPORTAT	rion N
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	Μ. С. ΣΠΑΤΚΗ	DATE 02/2021
URAWN BY :		UATE :
CHECKED BY :	A. SORSENGINH	DATE : <u>05/2021</u>
DESIGN ENGINEER	OF RECORD: <u>A. SORSENGINH</u>	DATE : <u>05/2021</u>

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EXP. (E8, P1)

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DRAWN BY :	M. G. SHAIKH	DATE : <u>02/2021</u>
CHECKED BY :	A. SORSENGINH	DATE :05/2021
DESIGN ENGINEER	OF RECORD: <u>A.SORSENGINH</u>	DATE : <u>05/2021</u>

	24'-5″	24'-5"	24'-5"
-			
	- 🤤 GDR. 1		
		- € BETWEEN BEARING (TYP.)	INTERMEDIATE DIAPHRAGM (TYP.)
	D2 - & GDR. 2	D2	D2
		-EL-	
	D2 - & GDR. 3	D2	D2
	D2€ GDR. 4	D2	D2

132'-2"

146'-4"(@ BEARING TO @ BEARING)

150'-4"(FILL FACE TO FILL FACE)

SPAN A

FRAMING PLAN





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TYPICAL END BENT DIAPHRAGM (D1)



DRAWN BY :	M. G. S	SHAIKH	DATE : 02/2021
CHECKED BY :	A. SOR	SENGINH	DATE : <u>05/2021</u>
DESIGN ENGINEER	OF RECORD: _	A. SORSENGINH	DATE : <u>05/2021</u>

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DESIGN ENGINEER OF RECORD: _____A.SORSENGINH ___ DATE : _____05/2021

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<u>AR CONECTORS</u>	PROJECT NO. <u>B-5772</u> <u>ROWAN</u> COUNTY STATION: 20+91.04 -EL-
03/25/2022 WINDRTH CAROLINA OGESSION SEAL 031583 TOMEFRI Docusigned by Krishna P. Sedai Ed6F794150BF4B7	DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE STRUCTURAL STEEL DETAILS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	REVISIONSSHEET NO.NO.BY:DATE:NO.BY:DATE:S-10134TOTAL SHEETSSHEETS 25



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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. 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"MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES. STUDS ON GIRDERS MAY BE SHIFTED UP TO 1"IF NECESSARY TO CLEAR FLANGE SPLICE WELD. ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED. ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED. TENSION ON THE ASTM A325 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. AT THE CONTRACTOR'S OPTION, THE DIAPHRAGM WITH THE WELDED GUSSET PLATES MAY BE USED IN LIEU OF THE DIAPHRAGM WITH BOLTED ANGLES AT NO ADDITIONAL COST TO THE DEPARTMENT. AT THE CONTRACTOR'S OPTION, THE OPTIONAL BOLTED FIELD SPLICE MAY BE OMITTED, PROVIDED THE CONTRACTOR OBTAINS ALL PERMITS REQUIRED FOR TRANSPORTING THE LONGER PIECE LENGTHS. 2'-0" $4^{1}/2^{"}$ $7^{1}/2^{"}$ $7^{1}/2^{"}$ $4^{1}/2$ ¾″ØX 5″ SHEAR STUDS -(SEE * NOTE) SECTION B-B SHEAR STUD DETAIL FOR TOP FLANGE SPLICE PLATE * NOTE: SHEAR STUDS ARE TO BE SHOP WELDED ON TOP OF PLATE BEFORE FIELD ASSEMBLY. PROJECT NO. B-5772 ROWAN COUNTY STATION: 20+91.04 -EL-SHEET 4 OF 4 STATE OF NORTH CAROLINA 03/25/2022 DEPARTMENT OF TRANSPORTATION WITH CARO. RALEIGH SEAL 031583 SUPERSTRUCTURE NGINEEP NA PRASAD STRUCTURAL STEEL DETAILS Krishna P. Sedai - EA6F794150BF4B7... SHEET NO REVISIONS NO. S-11 DATE: DATE: BY: BY: DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED total sheets 25





DETAIL ``A''



DRAWN BY :	M.G.SHAIKH	DATE : <u>02/2021</u>
CHECKED BY :	A. SORSENGINH	DATE : <u>05/2021</u>
DESIGN ENGIN	EER OF RECORD: <u>A.SORSEN</u>	NGINH DATE : 05/2021

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NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF $\frac{1}{2}$ TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

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

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

FOR PAINTED STRUCTURAL STEEL (EXCLUDING AASHTO M270 GRADE 50W), SOLE PLATES, ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

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

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FOLLOWING PROCEDURE, WHICH MAY BE REQUIRED BY THE ENGINEER, TO RESET ELASTOMERIC BEARINGS DUE TO GIRDER TRANSLATION AND END ROTATION:

1. ONCE THE DECK HAS CURED, THE GIRDERS SHALL BE JACKED THEN THE ANCHOR BOLTS AND ELASTOMERIC BEARING SLOTS CENTERED AS NEARLY AS PRACTICAL ABOUT THE BEARING STIFFENER. THIS OPERATION SHALL BE PERFORMED AT APPROXIMATELY 60°F.

2. AFTER CENTERING THE ELASTOMERIC BEARING SLOTS AND ANCHOR BOLTS, THE ANCHOR BOLTS SHALL BE GROUTED.

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

	PROJECT NO. <u>B-5772</u> <u>ROWAN</u> COUNTY STATION: <u>20+91.04</u> -EL-
03/25/2022 WWW PTH CARO NOR FESSION SEAL 031583 Docusigned by: Krishna P. Sedai EAGF794150BF4B7	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD ELASTOMERIC BEARING DETAILS — (STEEL SUPERSTRUCTURE)
	REVISIONS SHEET NO.
DOCUMENT NOT CONSTDERED	NO. BY: DATE: NO. BY: DATE: S-12
FINAL UNLESS ALL SIGNATURES COMPLETED	1 3 TOTAL SHEETS 2 4 25
	STD. NO. EB2 (SHT 16)

			DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																					
																		GIF	DER	518	& 4																			
FOURTIETH POINTS	0	0.025	0.050	0.075	5 0.10	0 0.1	125 0.150 0	.175 0	.200 0.225 0.25	0.275	0.30	0.32	25 0.	.350 0	.375 0	.400 C	0.425 0	.450 C	.475 (0.500	0.525	0.550	0.575	0.60	0.62	5 0.65	0 0.67	5 0.70	0.72	0.750	0.775	5 0.800	0.82	5 0.85	50 0.8	75 0.9	00 0.9	25 0.95	0 0.975	, 0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.012	0.024	0.036	6 0.04	0.0	058 0.069 0	.079 0	.088 0.097 0.109	5 0.112	0.119	0.12	5 0.	.131 0	.135 0	.139 C	0.142 0	.144 C	.145 (0.146	0.145	0.144	0.142	2 0.13	39 0.13	5 0.13	31 0.12	5 0.11	9 0.112	2 0.105	0.097	0.088	8 0.07	9 0.06	69 0.0	58 0.0	47 0.0	36 0.02	4 0.012	2 0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.031	0.062	2 0.100	0.13	7 0.1	172 0.206 0	.237 0	.268 0.295 0.32	2 0.345	0.368	8 0.38	37 0.	.405 0	.419 0	.432 C	0.440 0	.448 C	.451 (0.454	0.451	0.448	0.440	0.43	32 0.419	9 0.40	5 0.38	7 0.36	8 0.345	0.322	0.295	0.268	0.23	7 0.20	0.1	72 0.1	37 0.1	00 0.06	2 0.03	· 0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.005	0.011	0.016	0.02	21 0.0	026 0.031 0	.035 0	.039 0.043 0.04	7 0.050	0.05	3 0.05	56 0.	.058 0	.060 0	.062 0	0.063 0	.064 C	.065 (0.065	0.065	0.064	0.063	0.06	52 0.060	0.05	8 0.05	6 0.05	3 0.050	0.047	0.043	3 0.039	0.03	5 0.0	31 0.0	26 0.0	0.0	016 0.0	11 0.005	, 0
TOTAL DEAD LOAD DEFLECTION	0	0.048	0.097	0.152	0.20	0.2	256 0.306 0	.351 0	.395 0.435 0.47	4 0.507	0.540	0.56	58 0.	.594 0	.614 0	.633 C	0.645 0	.656 C	.661 (0.665	0.661	0.656	0.645	0.63	33 0 . 614	4 0.59	4 0.56	8 0.54	0.50	0.474	0.435	0.395	0.35	1 0.30	0.2	56 0.2	05 0.1	52 0.09	0.048	; O
REQUIRED CAMBER	0	9/16 <i>"</i>	1 ³ /16	1 ¹³ /16	″ 27/ie	6″ 3 /	¹ / ₁₆ " 3 ¹¹ / ₁₆ "	4¾ ₆ ″	4 ³ ⁄4″ 5 ¹ ⁄4″ 5 ¹¹ ⁄16	6 ¹ /16	′ 6 ^l /2'	″ 6 ¹³ /16	6″ 7	¹ /8″	73⁄8″	75⁄8″	7¾″	7%"	¹⁵ /16″	8″	7 ¹⁵ ⁄16″	7 <i>7</i> ⁄8″	7 ³ ⁄4″	75/8	," 7 ³ / ₈ "	71/8	″ 6 ¹³ /1	6 ¹ /2	″ 6 ^I /ı6′	5"/16"	51/4″	4 ³ ⁄4″	4 ³ ⁄16′	[,] 3 ¹¹ /1	6″ 3 ^I /	í6" 27/1	6″ 1 ¹³ ⁄	, i6″ 1 ³ / _{i6}	″ ⁹ /16″	0

			DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																						
																			GIRE)ERS	5 2	& 3																			
FOURTIETH POINTS	0	0.025 0.05	50 0.07	⁷ 5 0 . 10	0.1	25 0	0.150 0.	175 0.2	200 0.2	25 0.25	0 0.275	0.300	0.325	5 0.35	0 0.3	375 0.4	400 0.4	425 0.4	450 0.4	175 0.	.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	.700	0.725	0.750	0.775 C	0.800	0.825 0	.850 0	.875 0	.900	0.925	0.950	0.97!	5 0
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.012 0.02	24 0.03	6 0.04	47 0.0	058 C	0.069 0.	079 0.0	0.0 880	0.10	5 0.112	0.119	0.125	0.131	I 0.1	35 0.1	.39 0.1	142 0.1	144 0.1	45 0.	.146	0.145	0.144	0.142	0.139	0.135	0.131	0.125	0.119	0.112	0.105	0.097 (0.088	0.079 0	0.069 0	.058 C	0.047	0.036	0.024	0.01:	2 0
DEFLECTION DUE TO WEIGHT OF SLAB $*\downarrow$	0	0.032 0.00	63 0.10	1 0.13	58 0.1	74 C	0.209 0.	240 0.2	271 0.2	299 0.32	6 0.350	0.373	0.392	2 0.410	0.4	424 0.4	437 0.4	445 0.4	453 0.4	156 0.	.459	0.456	0.453	0.445	0.437	0.424	0.410	0.392	0.373	0.350	0.326	0.299	0.271	0.240	.209 0).174 (0.138	0.101	0.063	0.03	2 0
DEFLECTION DUE TO WEIGHT OF BARRIER RAIL	0	0.005 0.01	0.01	6 0.02	21 0.0	025 C	0.030 0.	034 0.0	338 0.0	0.04	6 0.049	0.052	0.054	4 0.05	7 0.0	0.0	0.0	062 0.0	063 0.0	063 0.	.063	0.063	0.063	0.062	0.060	0.059	0.057	0.054	0.052	0.049	0.046	0.042 (0.038	0 . 034 C	0.030 0	.025 (0.021	0.016	0.011	. 0.00!	5 0
TOTAL DEAD LOAD DEFLECTION	0	0.049 0.09	98 0.15	3 0.20	0.2	257 0	0.308 0.	353 0.3	397 0.4	138 0.47	7 0.511	0.544	0.571	0.59	8 0.0	518 0.6	636 0.0	649 0.6	660 0.6	664 0.	.668	0.664	0.660	0.649	0.636	0.618	0.598	0.571	0.544	0.511	0.477	0.438 (0.397 (0.353 0	.308 0	0.257 0	.206	0.153	0.098	0.04	Э О
REQUIRED CAMBER	0	⁹ / ₁₆ ″ 1 ³ / ₁	6″ 1 ¹ 3⁄10	5″ 2 ^I /;	2″ 31⁄	16"	3 ¹¹ / ₁₆ " 4	l ⁱ / ₄ " 4	¾″ 5 ¹ ∕	/4" 5¾	" 6 ¹ /8"	6 ^l /2″	6 ⁷ ⁄8″	7 ³ /16	," 7	7∕i6″ 7⁵	5/8" 713	3/16" 7"	5/16" 715	/16″	8″	7 ¹⁵ /16″	7 ¹⁵ /16″	7 ¹³ / ₁₆ ″	75⁄8″	77⁄16″	7 ³ ⁄16″	6	6 ^l /2″	6 ¹ /8″	5¾″	5 ¹ /4″	4¾″	4 ¹ /4″ 3	311/16"	31/16"	21/2"	1 ¹³ ⁄16″	1 ³ ⁄16″	9/16″	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS. ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT `` REQUIRED CAMBER '', WHICH IS GIVEN IN INCHES (FRACTION FORM). DEFLECTIONS ARE TAKEN AT FOURTIETH POINTS BETWEEN BEARINGS.

DRAWN BY :	M. G. S	НАІКН	DATE :	02/2021
CHECKED BY :	A. SOR	SENGINH	DATE :	05/2021
DESIGN ENGINEER	OF RECORD: _	A. SORSENGINH	DATE :	05/2021

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03/25/2022 MARTH CAROL OFESSION SEAL 031583 PRASAD Docusigned by Krishna P. Sedai EA6F794150BF4B7		DEP	artment Supe DE DEF	RS AD	TRA TRA ALEIGH TRUC	NSPORTA TURE DAD IONS	TION
			REVI	SION	S		SHEET NO.
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FINAL UNLESS ALL	1			3			TOTAL SHEETS
SIGNATURES COMPLETED	2			4			25

PROJECT NO. <u>B-5772</u>

STATION: 20+91.04 -EL-

_____ROWAN____COUNTY



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HELD IN ED NAILS. JT.MAT'L. (S USED.)	PROJECT NO. <u>B-5772</u> <u>ROWAN</u> COUNTY STATION: <u>20+91.04</u> -EL-
03/25/2022 WHITH CAROL NOR FESSION SEAL 031583 NONETR SOUTHING PRASAD NONETR SOUTHING Docusigned by Krishna P. Sedai EA6F794150BF4B7	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH VERTICAL CONCRETE BARRIER RAIL
	REVISIONS SHEET NO.
DOCUMENT NOT CONSTDERED	NO. BY: DATE: NO. BY: DATE: S-14
FINAL UNLESS ALL SIGNATURES COMPLETED	1 3 TOTAL SHEETS 2 4 25
	STD. NO. CBR2 (SHT 1)



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

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

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

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

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

THE 1 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.

NOTES

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

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



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. <u>B-5772</u> ROWAN COUNTY STATION: 20+91.04 -EL-STATE OF NORTH CAROLINA 03/25/2022 DEPARTMENT OF TRANSPORTATION WITH CARA RALEIGH STANDARD OFESSION A SEAL 031583 GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE Krishna P. Sedai BARRTER RATI

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DESIGN ENGINEER OF RECORD : A. SORSENGINH DATE: 05/2021

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	BI	LL O	F MA	4 T
BAR	NO.	SIZE	TYPE	L
* A1	296	#5	STR	
Α2	296	#5	STR	
* B1	100	#4	STR	
B2	114	# 5	STR	
* G1	2	#5	STR	
* K1	8	#5	1	
* K2	8	#5	2	
₩ K3	12	#5	STR	
* S1	42	#4	3	
REINF	ORCIN	NG STER	EL	
* EPO REINF	XY CO ORCIN	ATED NG STEE	EL	

—SUP	ERSTRUCT	URE BILL OF	MATERIAL-
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	152.1		
POUR #2	9.7	16,495	13,449
TOTALS	161.8	16,495	13,449

GROOVING	BRIDGE FLOORS
APPROACH SLABS	1,380 SQ.FT.
BRIDGE DECK	4,265 SQ.FT.
TOTAL	5,645 SQ.FT.



PROJECT NO. B-5772 ROWAN ___ COUNTY STATION: 20+91.04 -EL-

> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

> SHEET NO. S-17

> > total sheets 25



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4'-9"

#8

3'-2″

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FINAL UNLESS ALL	1			ଞ		
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DRAWN BY :	A.SORSENGINH	DATE :	3/2021
CHECKED BY :	M.G.SHAIKH	DATE :	5/2021
DESIGN ENGINEE	R OF RECORD: <u>A. SORSENGINH</u>	DATE :	5/2021

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ELEVATION

NOTES

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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.

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%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR SECTION A-A AND PARTIAL SECTION B, SEE SHEET 3 OF 3.

EPOXY COAT THE END BENT CAP AFTER ADJUSTMENTS ARE MADE TO BEARINGS AND ANCHOR BOLTS ARE GROUTED.



PROJEC STATIC	T NO ROWAN DN:20+	<u>B</u> 91.(- <u>5772</u> co <u>54 -E</u>	<u>2</u> OUNTY EL -
DEPA	STATE OF N RTMENT OF RA SUBSTF END	IORTH CARO TRAN ALEIGH RUCT BEN	URE T	TION
	REVISIONS	5		SHEET NO.
) №. ВY: 1 2	DATE: NO. 3 AL	BY:	DATE:	S-18 TOTAL SHEETS 25
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SECTION X-X

ELEVATON OF WING W2

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ALL BAR DIMENSIONS ARE

ABUTMENT RESTRAINTS (STRAPS) ARE REQUIRED ALON SHOWN. THE 1.62 KLF LOAD PROVIDED IS A FACTORE SPACING AND LENGTH OF STRAPS SHALL BE DETERM LICENSED PROFESSIONAL ENGINEER REGISTERED IN AND SUBMITTED TO THE ENGINEER FOR REVIEW PRI INSTALLATION. ANY ADDITIONAL CONSTRUCTION LO APPLY LOAD TO THE STRAPS (INCLUDING BUT NOT CRANE LOADS) SHALL BE INCLUDED IN THE STRAP DE BE SUBMITTED TO THE ENGINEER PRIOR TO PLACIN LOAD ON THE APPROACH FILL.

PAYMENT FOR THE ABUTMENT RESTRAINTS (STRAPS) CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR ADDITIONAL NOTES, SEE "FOUNDATION LAYOUT"

YPES ——	B	ĪLL	OF	MA	TERI	AL
		E	ND I	BENT	#1	
4 ¹ /2" 2'-8" 4 ¹ /2"	BAR B1	NO. 8	SIZE #9	TYPE 1	LENGTH	WEIGHT 11⊿9
HK. HK.	B2	14	#4	STR	39'-11"	373
	B3	10	#4 #4	STR	2'-8"	18
	84	8	#4	218	2'-4"	12
	E1	16	# 5	STR	3′-6″	58
	Н1	52	# 5	2	7'-7"	411
	K1	12 8	#4 #∕	STR	39'-11"	320
	NZ	0	T	SIR	3-0	10
	S1	74	#4	3	10'-8"	527
$\left(\begin{array}{c} \overline{5} \end{array}\right)$	<u> </u>	74 28	#4 #4	4 5	3'-5" 7'-7"	169 142
		34 6	#4 #⊿	6	3'-8" 5'-8"	83 23
2'-0"	02	0	<u> </u>	0	5.0	23
•	V1	68	#5 #5	STR	8'-10"	626
	RETNE			JIN	- 10-6	52 U B S
U1 8″				- BRFAK	- 440	JJ LD3
112 2'-8"		#1 CAP				s
	FUUR	AND	COLLA	RS	OF WING	3
				C.`	ſ.	21.6
	POUR	#2 (BAC		& UP	PER PART	
			WINOS	C.Y.		11.5
<u> </u>	τοται	01 ASS				
	TOTAL	. CLAJJ	A CO		- ,	771
OUT TO OUT.				C.I	٩	JJ.I
	HP 14	X 73 S	STEEL	PILES		
	NO	. 7	L	IN.FT.		125.0
ED LOAD. THE	PREDR	ILLING	FOR F	PILES		
NORTH CAROLINA				LIN.F	Τ.	20.0
DADS THAT WILL	STEEL	PILE F	POINTS	5		NO.7
ESIGN AND SHALL						
NG LUNSTRUCTION						
SHALL BE						
SHEET.						
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	PROJEC	T NO	•	<u> </u>	5/ (2	
		ROW	AN		COL	
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	STATION: 20+91.04 -EL-					
	SHEET 3 OF	3				
03/25/2022	DEPAR	sт⊿ RTMENT	TE OF NOF	RTH CAROLI TRANS	SPORTAT	ION
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SEAL ' 031583		SUB	STRI	JCTU	RE	
TO A CINER		FNIC			#1	
Docusigned MINIMUM			י טו	_ N	T	
Krishna P. Sedai EA6F794150BF4B7						

	REVISIONS				SHEET NO.
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FINAL UNLESS ALL	1	(co)	3		TOTAL SHEETS
SIGNATURES COMPLETED	2	4	•		25

DRAWN BY :	A. SORSENGINH	_ DATE :	4/2021
CHECKED BY :	M.G.SHAIKH	_ DATE :	5/2021
DESIGN ENGINEER	OF RECORD: A. SORSENGINH	_ DATE :	5/2021

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PLAN

ELEVATION

NOTES

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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.

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%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR SECTION A-A AND PARTIAL SECTION B, SEE SHEET 3 OF 3.

EPOXY COAT THE END BENT CAP AFTER ADJUSTMENTS ARE MADE TO BEARINGS AND ANCHOR BOLTS ARE GROUTED.

	PROJECT NO. <u>B-57</u> ROWAN STATION: 20+91.04	72 COUNTY -EL-
03/25/2022 WINNETH CAROL OFESSION SEAL 031583 FRASHO PRASHO PRASHO PRASHO MUNIT Docusigned Krishna P. Sedai EA6F794150BF4B7	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPOF RALEIGH SUBSTRUCTURE END BENT 2	RTATION
	REVISIONS	SHEET NO.
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL	NO. BY: DATE: NO. BY: DATE 1 3	E: S-21 TOTAL SHEETS
SIGNATURES COMPLETED	2 4	25

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10°CTS. 13-#5 H1 (EACH FACE)	PROJECT NO. <u>B-5772</u> ROWAN
	STATION: 20+91.04 -EL-
	SHEET 2 OF 3
03/25/2022 TH CARO	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH
© SEAL 031583	SUBSTRUCTURE
Docusigned Marine Krishma P. Sedai EA6F794150BF4B7	END BENT #2
	REVISIONS SHEET NO.
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL) DATE: NO. BY: DATE: 5-22 1 3 3 TOTAL SHEETS
SIGNATURES COMPLETED	2 4 25

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ABUTMENT RESTRAINTS (STRAPS) ARE REQUIRED ALO

PAYMENT FOR THE ABUTMENT RESTRAINTS (STRAPS) S CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

YPES ——	B	ILL	OF	MA	TERI	AL
		E	ND E	BENT	# 2	
Al/-" 2'-9" Al/-"	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
	BI B2	8 14	#9 #4	I STR	42'-3" 39'-11"	373
	B3	10	#4	STR	2'-8"	18
	B4	8	#4	STR	2'-4"	12
	E1	16	# 5	STR	3′-6″	58
	111		+ -		7/ 7//	A11
	HI	52	*5	2	(- ("	411
1'-3" LAP	К1	12	#4	STR	39'-11"	320
	K2	8	#4	STR	3'-0"	16
	S1	74	#4	3	10'-8"	527
	S2	74	#4	4	3'-5"	169
		28	*4	5	(* - (**	142
	U1	34	#4	6	3'-8"	83
2'-0"	U2	6	#4	6	5'-8"	23
	V1	68	* 5	STR	8'-10"	626
	V2	48	# 5	STR	10'-6"	526
LI 1 0″	REINF	ORCING	STEEL	_	= 445	53 LBS
	CLASS	A CON	CRETE	BREAK	DOWN	
U2 2'-8"	POUR	#1 CAP AND	LOWER	PART RS	OF WING	S
				C.`	ſ.	21.6
	POUR	#2 (BAC	KWALL	& UP	PER PART	
		OF	WINGS	,) 		11 5
				L.Y.		11.5
	TOTAL	. CLASS	A CO	NCRETE	_	
OUT TO OUT.				C.Y	•	33 . 1
	HP 14	X 73 S	TEEL	PILES		
	NO	. 7	L	IN.FT.		125.0
NG THE CAP AS	PREDR	TI I TNG	FOR F	PTLES		
INED BY A		100		I TN. F	Τ.	20.0
IOR TO	СТЕГ	סדור ו				
LIMITED TO	SIEEL	PILE F	OINTS	>		NU. 1
ESIGN AND SHALL NG CONSTRUCTION						
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				R-	5772	
	PRUJEC	I NU	•			
		ROW	AN		COL	JNTY
	CTATTO	NI. 2	$^{0}+0$	91.C	4 -FI	_
	SHEET 3 OF 3					
03/25/2022		STA		TH CAROL		
AND RTH CAROLAND		IMENI			STURIAI.	LON
SEAL						
031583		SUB	STRI	JCTU	RE	
FILL VA PRASADUNIN		END	BE	ENT	#2	
Krishna P. Sedai						

	REVISIONS					SHEET NO.	
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FOR BRIDGE APPROACH FILL INCLUDING AND SELECT MATERIAL BACKFILL, SEE RC GEOTEXTILE SHALL BE TYPE 1 IN ACCORD SPECIFICATIONS SECTION 1056. SELECT MATERIAL BACKFILL (CLASS V O ACCORDANCE WITH STANDARD SPECIFICA SELECT MATERIAL BACKFILL IS TO BE O BACKWALL FROM OUTSIDE EDGE TO OUTS APPROACH SLAB SHALL NOT BE CONSTRUC BRIDGE DECK. THE JOINT SHALL BE SAWED PRIOR TO T FOR THE 6"Ø DRAINAGE PIPE OUTLET(S), AREA BETWEEN THE WINGWALL AND APPRO DRAIN THE WATER AWAY FROM THE FILL BE PAVED. SEE ROADWAY PLANS.

WITH FOAM

FOR FOAM JOINT SEALS, SEE SPECIAL THE NOMINAL UNCOMPRESSED SEAL WI SHALL BE 2".

FOR ELASTOMERIC CONCRETE, SEE SPE

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

тгс	BILL OF MATERIAL							
		APPROACH SLAB AT BENT 1						
GEOTEXTILE, 6″Ø DRAINAGE PIPE,	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
	* A1	25	#4	STR	33'-0"	551		
RDANCE WITH THE STANDARD	Α2	26	#4	STR	33'-0"	573		
OR CLASS VI) SHALL BE IN	米 B1	67	# 5	STR	23'-9"	1660		
ATIONS SECTION IOIN.	B2	67	# 6	STR	24'-8"	2482		
CONTINUOUS ALONG FILL FACE OF								
SIDE EDGE OF APPROACH SLAB.	REINFORCING STEEL LBS.							
ICTED PRIOR TO COMPLETION OF THE	* EPO REI	XY CC NFORC	DATED SING S	TEEL	LBS.	2211		
THE CASTING OF THE BARRIER RATE.								
	CLASS	5 AA (CONCRE	TE	C.Y.	36.2		
, SEE ROADWAY STANDARD DRAWINGS.	APF	PROA	ACH S	SLAB	AT BE	NT 2		
ROACH SLAB SHALL BE GRADED TO	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT		
LIACE OF THE DIVIDUE AND SHALL	* A1	25	#4	STR	33'-0"	551		
	Α2	26	#4	STR	33'-0″	573		
JOINT SEAL	* B1	67	# 5	STR	23'-9″	1660		
	B2	67	#6	STR	24'-8"	2482		
L PROVISIONS.								
IDTH OF THE FOAM JOINT SEAL	REINF	ORCIN	NG STE	EL	LBS.	3055		
	* EPO REI	XY CO NFORO	DATED	TEEL	LBS.	2211		
LOTAL TINOVISIONS.								
	CLASS	5 AA (CONCRE	TE	C.Y.	36.2		

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

	PROJECT NO. <u>B-5772</u> <u>ROWAN</u> COUNTY STATION: 20+91.04 -EL- SHEET 1 OF 2
O3/25/2022 O3/25/2022 OR FESSION SEAL O3I583 O3I583 Docusigned by Krishna P. Sedai EA6F794150BF4B7	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT
	REVISIONS SHEET NO.
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	NO. BY: DATE: NO. BY: DATE: S-24 1 3
	STD. NO. BAS2 (SHT 2)

ELAST	OMERIC CONCRETE		
END BENT NO.	ELASTOMERIC CONCRETE * (CU.FT.)		
1	5.5		
2	5.5		
TOTAL	11.0		

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

DRAWN BY :	M.G.SHAIKH	DATE :	02/2021
CHECKED BY :	A. SORSENGINH	DATE :	05/2021
DESIGN ENGINEE	OF RECORD: <u>A. SORSENGINH</u>	DATE :	05/2021

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DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

STANDARD NOTES

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 $\frac{7}{8}$ " Ø SHEAR STUDS FOR THE ¾″Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{1}{8}$ " Ø STUDS FOR 4 - $\frac{3}{4}$ " Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$ " Ø STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " Ø STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$ " Ø STUDS FOR 4 - $\frac{3}{4}$ " Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-O".

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 VIGINCH 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