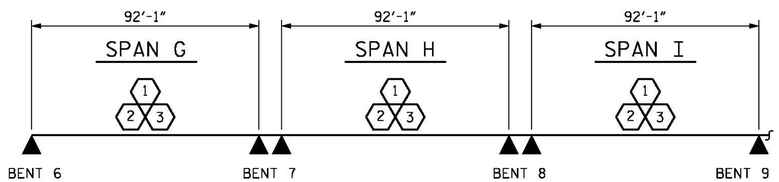
LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	(#) CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	(1)	1.18	--	1.75	0.946	1.56	G/H/I	I	46.0	1.044	1.97	G	I	55.39	0.80	0.946	1.18	G/H/I	I	46.0	1,2,3
		HL-93 (OPERATING)	N/A		2.03	--	1.35	0.946	2.03	G/H/I	I	46.0	1.044	2.76	G	I	64.74	N/A	--	--	--	--	--	1,2,3
		HS-20 (INVENTORY)	36.000	(2)	1.62	58.3	1.75	0.946	2.14	G/H/I	I	46.0	1.044	2.80	G	I	64.74	0.80	0.946	1.62	G/H/I	I	46.0	1,2,3
		HS-20 (OPERATING)	36.000		2.78	100.1	1.35	0.946	2.78	G/H/I	I	46.0	1.044	3.66	G	I	64.74	N/A	--	--	--	--	--	1,2,3
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.80	51.3	1.40	0.946	6.29	G/H/I	I	46.0	1.044	9.27	G	I	64.74	0.80	0.946	3.80	G/H/I	I	46.0	1,2,3
		SNGARBS2	20.000		2.76	55.2	1.40	0.946	4.58	G/H/I	I	46.0	1.044	6.53	G	I	64.74	0.80	0.946	2.76	G/H/I	I	46.0	1,2,3
		SNAGRIS2	22.000		2.59	57.0	1.40	0.946	4.29	G/H/I	I	46.0	1.044	6.04	G	I	64.74	0.80	0.946	2.59	G/H/I	I	46.0	1,2,3
		SNCOTTS3	27.250		1.89	51.5	1.40	0.946	3.13	G/H/I	I	46.0	1.044	4.49	G	I	64.74	0.80	0.946	1.89	G/H/I	I	46.0	1,2,3
		SNAGGRS4	34.925		1.55	54.1	1.40	0.946	2.57	G/H/I	I	46.0	1.044	3.55	G	I	64.74	0.80	0.946	1.55	G/H/I	I	46.0	1,2,3
		SNS5A	35.550		1.52	54.0	1.40	0.946	2.52	G/H/I	I	46.0	1.044	3.58	G	I	64.74	0.80	0.946	1.52	G/H/I	I	46.0	1,2,3
		SNS6A	39.950		1.38	55.1	1.40	0.946	2.29	G/H/I	I	46.0	1.044	3.25	G	I	64.74	0.80	0.946	1.38	G/H/I	I	46.0	1,2,3
		SNS7B	42.000		1.32	55.4	1.40	0.946	2.18	G/H/I	I	46.0	1.044	3.18	G	I	64.74	0.80	0.946	1.32	G/H/I	I	46.0	1,2,3
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.68	55.4	1.40	0.946	2.79	G/H/I	I	46.0	1.044	3.84	G	I	64.74	0.80	0.946	1.68	G/H/I	I	46.0	1,2,3
		TNT4A	33.075		1.69	55.9	1.40	0.946	2.80	G/H/I	I	46.0	1.044	4.07	G	I	64.74	0.80	0.946	1.69	G/H/I	I	46.0	1,2,3
		TNT6A	41.600		1.37	57.0	1.40	0.946	2.27	G/H/I	I	46.0	1.044	3.38	G	I	64.74	0.80	0.946	1.37	G/H/I	I	46.0	1,2,3
		TNT7A	42.000		1.37	57.5	1.40	0.946	2.28	G/H/I	I	46.0	1.044	3.31	G	I	64.74	0.80	0.946	1.37	G/H/I	I	46.0	1,2,3
		TNT7B	42.000		1.41	59.2	1.40	0.946	2.33	G/H/I	I	46.0	1.044	3.12	G	I	64.74	0.80	0.946	1.41	G/H/I	I	46.0	1,2,3
		TNAGRIT4	43.000		1.35	58.1	1.40	0.946	2.24	G/H/I	I	46.0	1.044	3.07	G	I	64.74	0.80	0.946	1.35	G/H/I	I	46.0	1,2,3
		TNAGT5A	45.000		1.28	57.6	1.40	0.946	2.11	G/H/I	I	46.0	1.044	2.93	G	I	64.74	0.80	0.946	1.28	G/H/I	I	46.0	1,2,3
		TNAGT5B	45.000	(3)	1.26	56.7	1.40	0.946	2.10	G/H/I	I	46.0	1.044	2.88	G	I	64.74	0.80	0.946	1.26	G/H/I	I	46.0	1,2,3

TABLE OF SECTION RESISTANCES (SPAN G)												
		CL BRG.	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	CL BRG.
INTERIOR GIRDER (I)	ΦVn (KIPS)	1180	992	981	413	352	351	352	420	995	994	1183
	ΦMn (KIP-FT)	--	7602	10923	10582	10582	10582	10582	10582	10923	7602	--
EXTERIOR GIRDER (ER)	ΦVn (KIPS)	1202	991	977	412	351	351	352	419	409	995	1183
	ΦMn (KIP-FT)	--	7582	10853	10510	10510	10510	10510	10510	10853	7582	--



LRFR SUMMARY

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1. GIRDERS DESIGNED AS SIMPLE SPANS FOR FLEXURE. GIRDERS DESIGNED AS SIMPLE-MADE-CONTINUOUS (FOR LIVE LOAD AND SUPERIMPOSED DEAD LOAD) FOR SHEAR.
2. 3" AVERAGE HAUNCH ASSUMED FOR ALL SPANS. HAUNCH CONCRETE IS NOT INCLUDED IN SECTION PROPERTIES.
3. Ec, GIRDER = 6,062 Ksi (FINAL, ALL SPANS)
   Ec, DECK = 3,834 Ksi
   Eps = 28,500 Ksi

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

SECTION DATA (ALL SPANS):

INTERIOR COMPOSITE Ixx = 1,586,384 IN^4
INTERIOR COMPOSITE y_b = 49.88 IN.
RIGHT EXTERIOR COMPOSITE Ixx = 1,491,072 IN^4
RIGHT EXTERIOR COMPOSITE y_b = 47.87 IN.
COMPOSITE SECTION PROPERTIES ARE TRANSFORMED TO EQUIVALENT GIRDER CONCRETE USING Ec = 6062 KSI
STRAND AREA NOT INCLUDED IN SECTION PROPERTIES.
y_b MEASURED FROM BOTTOM OF GIRDER

PROJECT NO. B-4929
PENDER COUNTY
STATION: 38+13.81 -L2-

PARSONS BRINCKERHOFF
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
LICENSE NO. F-0165

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
5/12/16
DocuSigned by: Jason R Doughty 00F1C86448274F7...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

F.I.B. 72" FOR SPANS G, H AND I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			278

STD. NO. LRFR1

DESIGNED BY: E. DAVIS DATE: MAR 2016
DRAWN BY: M. HOBBS DATE: MAR 2016
CHECKED BY: B. LOFLIN DATE: MAR 2016
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: MAY 2016

DRAWN BY: MAA 1/08
CHECKED BY: GM/DI 2/08

REV. 11/12/08RR MAA/GM
REV. 10/1/11 MAA/GM

5/9/2016
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