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
							LIVE-LOAD FACTORS (γ_{LL})	MOMENT					SHEAR					LIVE-LOAD FACTORS (γ_{LL})	MOMENT					
								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)		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	0.860	1.38	A	E	62.5	1.015	**1.18**	A	I	6.3	0.80	0.772	1.19	A	I	62.5	
		HL-93 (OPERATING)	N/A		1.56	--	1.35	0.860	1.79	A	E	62.5	1.015	1.56	A	I	6.3	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	2	1.73	62.28	1.75	0.860	2.04	A	E	62.5	1.015	**1.73**	A	I	6.3	0.80	0.772	1.76	A	I	62.5	
		HS-20 (OPERATING)	36.000		2.27	81.72	1.35	0.860	2.65	A	E	62.5	1.015	2.27	A	I	6.3	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.29	57.92	1.40	0.860	6.22	A	E	62.5	1.015	5.65	A	I	6.3	0.80	0.772	4.29	A	I	62.5	
		SNGARBS2	20.000		3.06	61.20	1.40	0.860	4.43	A	E	62.5	1.015	3.89	A	I	6.3	0.80	0.772	3.06	A	I	62.5	
		SNAGRIS2	22.000		2.84	62.48	1.40	0.860	4.12	A	E	62.5	1.015	3.57	A	I	6.3	0.80	0.772	2.84	A	I	62.5	
		SNCOTTS3	27.250		2.13	58.04	1.40	0.860	3.09	A	E	62.5	1.015	2.76	A	I	6.3	0.80	0.772	2.13	A	I	62.5	
		SNAGGRS4	34.925		1.73	60.42	1.40	0.860	2.50	A	E	62.5	1.015	2.21	A	I	6.3	0.80	0.772	1.73	A	I	62.5	
		SNS5A	35.550		1.69	60.08	1.40	0.860	2.45	A	E	62.5	1.015	2.20	A	I	6.3	0.80	0.772	1.69	A	I	62.5	
		SNS6A	39.950		1.53	61.12	1.40	0.860	2.22	A	E	62.5	1.015	1.97	A	I	6.3	0.80	0.772	1.53	A	I	62.5	
		SNS7B	42.000		1.46	61.32	1.40	0.860	2.11	A	E	62.5	1.015	1.91	A	I	6.3	0.80	0.772	1.46	A	I	62.5	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.86	61.38	1.40	0.860	2.70	A	E	62.5	1.015	2.39	A	I	6.3	0.80	0.772	1.86	A	I	62.5	
		TNT4A	33.075		1.86	61.52	1.40	0.860	2.70	A	E	62.5	1.015	2.35	A	I	6.3	0.80	0.772	1.86	A	I	62.5	
		TNT6A	41.600		1.50	62.40	1.40	0.860	2.18	A	E	62.5	1.015	1.97	A	I	6.3	0.80	0.772	1.50	A	I	62.5	
		TNT7A	42.000		1.50	63.00	1.40	0.860	2.18	A	E	62.5	1.015	1.95	A	I	6.3	0.80	0.772	1.50	A	I	62.5	
		TNT7B	42.000		1.53	64.26	1.40	0.860	2.21	A	E	62.5	1.015	1.88	A	I	6.3	0.80	0.772	1.53	A	I	62.5	
		TNAGRIT4	43.000		1.47	63.21	1.40	0.860	2.13	A	E	62.5	1.015	1.82	A	I	6.3	0.80	0.772	1.47	A	I	62.5	
		TNAGT5A	45.000		1.40	63.00	1.40	0.860	2.02	A	E	62.5	1.015	1.77	A	I	6.3	0.80	0.772	1.40	A	I	62.5	
		TNAGT5B	45.000	3	1.39	62.55	1.40	0.860	2.01	A	E	62.5	1.015	1.73	A	I	6.3	0.80	0.772	**1.39**	A	I	62.5	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

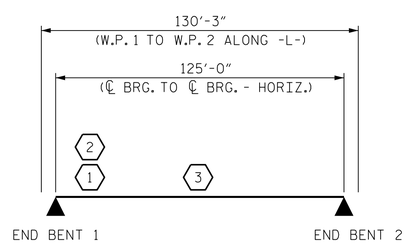
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
E - EXTERIOR GIRDER



SPAN A

LRFR SUMMARY

PROJECT NO. R-5771
HENDERSON COUNTY
STATION: 20+77.50 -L-

NORTH CAROLINA PROFESSIONAL SEAL 027799 ENGINEER ALLYSON K. ORR
3/27/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)

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

DRAWN BY : B.E. ATKINSON DATE : 03/17
CHECKED BY : A.K. ORR DATE : 03/17
DESIGN ENGINEER OF RECORD : A.K. ORR DATE : 03/17

3/27/2017
2:13:51 PM
User: blanning
Filename: P:\NC Bridges\MI6002_MA_R-5771 Br. Repl. (Div. 14)\R-5771\Structures\401_007_R5771_SMU_LRFR1.dgn