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

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 $\gamma_{(LL)}$	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	BEAM LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	BEAM LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS $\gamma_{(LL)}$	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	BEAM LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.01	--	1.75	0.738	1.65	A	8	49.80	0.973	1.11	A	8	19.50	1.00	0.738	1.01	A	8	49.80	1,2
		HL-93 (OPERATING)	N/A		1.48	--	1.35	0.738	2.14	A	8	49.80	0.973	1.48	A	8	19.50	N/A	-	-	-	-	-	2
		HS-20 (INVENTORY)	36.000	2	1.41	50.76	1.75	0.738	2.31	A	8	49.80	0.973	1.49	A	8	19.50	1.00	0.738	1.41	A	8	49.80	1,2
		HS-20 (OPERATING)	36.000		1.98	71.28	1.35	0.738	2.99	A	8	49.80	0.973	1.98	A	8	19.50	N/A	-	-	-	-	-	2
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH	12.500		3.62	45.25	1.40	0.738	7.42	A	8	49.80	0.973	5.27	A	8	19.50	1.00	0.738	3.62	A	8	49.80	1,2
		S3C	21.500		2.12	45.58	1.40	0.738	4.34	A	8	49.80	0.973	3.02	A	8	19.50	1.00	0.738	2.12	A	8	49.80	1,2
		S3A	22.750		2.00	45.50	1.40	0.738	4.11	A	8	49.80	0.973	2.86	A	8	19.50	1.00	0.738	2.00	A	8	49.80	1,2
		S4A	26.750		1.76	47.08	1.40	0.738	3.60	A	8	49.80	0.973	2.47	A	8	19.50	1.00	0.738	1.76	A	8	49.80	1,2
		S5A	30.500		1.55	47.28	1.40	0.738	3.17	A	8	49.80	0.973	2.25	A	8	19.50	1.00	0.738	1.55	A	8	49.80	1,2
		S6A	34.500		1.40	48.30	1.40	0.738	2.87	A	8	49.80	0.973	2.01	A	8	19.50	1.00	0.738	1.40	A	8	49.80	1,2
		S7B	38.500		1.27	48.90	1.40	0.738	2.60	A	8	49.80	0.973	1.86	A	8	19.50	1.00	0.738	1.27	A	8	49.80	1,2
		S7A	40.000	3	1.25	50.00	1.40	0.738	2.56	A	8	49.80	0.973	1.90	A	8	19.50	1.00	0.738	1.25	A	8	49.80	1,2
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A	28.250		1.72	48.59	1.40	0.738	3.53	A	8	49.80	0.973	2.39	A	8	19.50	1.00	0.738	1.72	A	8	49.80	1,2
		T5B	32.000		1.51	48.32	1.40	0.738	3.10	A	8	49.80	0.973	2.25	A	8	19.50	1.00	0.738	1.51	A	8	49.80	1,2
		T6A	36.000		1.38	49.68	1.40	0.738	2.83	A	8	49.80	0.973	2.05	A	8	19.50	1.00	0.738	1.38	A	8	49.80	1,2
		T7A	40.000		1.27	50.80	1.40	0.738	2.61	A	8	49.80	0.973	1.90	A	8	19.50	1.00	0.738	1.27	A	8	49.80	1,2
		T7B	40.000		1.35	54.00	1.40	0.738	2.76	A	8	49.80	0.973	1.79	A	8	19.50	1.00	0.738	1.35	A	8	49.80	1,2

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. A SERVICE III LIVE LOAD FACTOR OF 1.0 WAS USED TO BE CONSISTENT WITH THE VALUE USED DURING DESIGN.
2. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO THE CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING BEAM.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

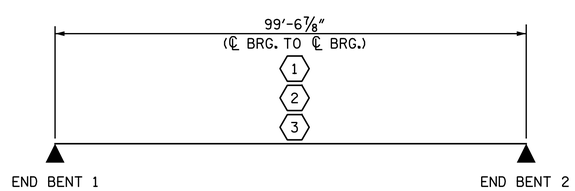
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

BEAM LOCATION

BEAM LOCATION PROVIDED UTILIZES BEAM NUMBER, WHERE BEAM 1 IS THE LEFT EXTERIOR BEAM LOOKING AHEAD STATION. SEE "BEAM LAYOUT" SHEET FOR ALL BEAM LOCATIONS.



LRFR SUMMARY

PROJECT NO. I-5878

HARNETT COUNTY

STATION: 1002+79.68 -LREV-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

DocuSigned by: C41A3FBECA3C434...

4/22/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR PRESTRESSED CONCRETE BEAMS
(INTERSTATE TRAFFIC)

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

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

STD. NO. LRFR2

ASSEMBLED BY : N. B. SPEAKS	DATE : 8-7-19
CHECKED BY : B. J. BELL	DATE : 8-23-19
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