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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W × 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	1.38	--	1.75	0.782	1.38	A	E	107.1	0.952	1.44	A	I	21.42	1.30	0.782	1.39	A	E	74.99	
		HL-93 (OPERATING)	N/A		1.78	--	1.35	0.782	1.78	A	E	107.1	0.952	1.87	A	I	21.42	1.00	0.782	1.81	A	E	74.99	
		HS-20 (INVENTORY)	36.00	3	2.42	87.12	1.75	0.782	2.44	A	E	107.1	0.952	2.42	A	I	21.42	1.30	0.782	2.46	A	E	74.99	
		HS-20 (OPERATING)	36.00		3.13	112.68	1.35	0.782	3.16	A	E	107.1	0.952	3.13	A	I	21.42	1.00	0.782	3.20	A	E	74.99	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	12.50		6.77	84.63	1.40	0.782	8.08	A	E	107.1	0.952	8.39	A	I	21.42	1.30	0.782	6.77	A	E	74.99	
		SNS3A	22.75		3.74	85.09	1.40	0.782	4.61	A	E	107.1	0.952	4.64	A	I	21.42	1.30	0.782	3.74	A	E	74.99	
		SNS3C	21.50		3.95	84.93	1.40	0.782	4.87	A	E	107.1	0.952	4.90	A	I	21.42	1.30	0.782	3.95	A	E	74.99	
		SNS4A	26.75		3.22	86.14	1.40	0.782	3.97	A	E	107.1	0.952	3.98	A	I	21.42	1.30	0.782	3.22	A	E	74.99	
		SNS5A	30.50		3.10	94.55	1.40	0.782	3.82	A	E	107.1	0.952	3.83	A	I	21.42	1.30	0.782	3.10	A	E	74.99	
		SNS6A	34.50		2.94	101.43	1.40	0.782	3.64	A	E	107.1	0.952	3.65	A	I	21.42	1.30	0.782	2.94	A	E	74.99	
		SNS7A	40.00		2.53	101.20	1.40	0.782	3.10	A	E	107.1	0.952	3.19	A	I	21.42	1.30	0.782	2.53	A	E	74.99	
		SNS7B	38.50		2.61	100.49	1.40	0.782	3.21	A	E	107.1	0.952	3.26	A	I	21.42	1.30	0.782	2.61	A	E	74.99	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNT4A	28.25		3.09	87.29	1.40	0.782	3.82	A	E	107.1	0.952	3.81	A	I	21.42	1.30	0.782	3.09	A	E	74.99	
		TNT5B	32.00		2.74	87.68	1.40	0.782	3.37	A	E	107.1	0.952	3.45	A	I	21.42	1.30	0.782	2.74	A	E	74.99	
		TNT6A	36.00		2.74	98.64	1.40	0.782	3.37	A	E	107.1	0.952	3.46	A	I	21.42	1.30	0.782	2.74	A	E	74.99	
		TNT7A	40.00		2.46	98.40	1.40	0.782	3.03	A	E	107.1	0.952	3.12	A	I	21.42	1.30	0.782	2.46	A	E	74.99	
		TNT7B	40.00	2	2.39	95.60	1.40	0.782	2.99	A	E	107.1	0.952	2.94	A	I	21.42	1.30	0.782	2.39	A	E	74.99	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	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)

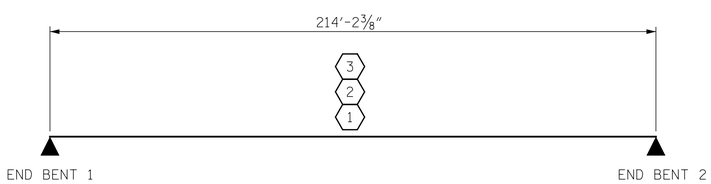
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
E - EXTERIOR GIRDER



LRFR SUMMARY

PROJECT NO. I-0914BA

VANCE COUNTY

STATION: 177+61.31 -NBL-
22+31.77 -Y2SBL-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR STEEL GIRDERS
(INTERSTATE TRAFFIC)

NORTH CAROLINA PROFESSIONAL SEAL 20177 ENGINEER HARDY L. WILLIS

7/14/2014

SHEET 6 OF 37

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

SHEET NO. S-54

TOTAL SHEETS 177

STD. NO. LRFR4

ASSEMBLED BY : MAF	DATE : 5/14
CHECKED BY : HLW	DATE : 5/14
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$