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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE											SERVICE II 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	1.14	--	1.75		1.28	B	ER	98.3		1.14	B	ER	133.3	1.30		1.85	B	ER	98.3	
		HL-93 (OPERATING)	N/A		1.47	--	1.35		1.66	B	ER	98.3		1.47	B	ER	133.3	1.00		2.40	B	ER	98.3	
		HS-20 (INVENTORY)	36.00	2	1.64	59.0	1.75		1.92	B	ER	98.3		1.64	B	ER	133.3	1.30		2.78	B	ER	98.3	
		HS-20 (OPERATING)	36.00		2.12	76.3	1.35		2.49	B	ER	98.3		2.12	B	ER	133.3	1.00		3.61	B	ER	98.3	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		5.03	67.9	1.40		5.91	B	ER	98.3		5.03	A	ER	0	1.30		6.84	B	ER	98.3	
		SNGARBS2	20.000		3.57	71.4	1.40		4.16	B	ER	98.3		3.57	A	ER	0	1.30		4.81	B	ER	98.3	
		SNAGRIS2	22.000		3.29	72.4	1.40		3.84	B	ER	98.3		3.29	B	ER	133.3	1.30		4.45	B	ER	98.3	
		SNCOTTS3	27.250		2.51	68.4	1.40		2.95	B	ER	98.3		2.51	A	ER	0	1.30		3.40	B	ER	98.3	
		SNAGGRS4	34.925		2.07	72.3	1.40		2.38	B	ER	98.3		2.07	B	ER	133.3	1.30		2.75	B	ER	98.3	
		SNS5A	35.550		2.06	73.2	1.40		2.34	B	ER	98.3		2.06	B	ER	133.3	1.30		2.70	B	ER	98.3	
		SNS6A	39.950		1.85	73.9	1.40		2.11	B	ER	98.3		1.85	B	ER	133.3	1.30		2.44	B	ER	98.3	
		SNS7B	42.000		1.77	74.3	1.40		2.01	B	ER	98.3		1.77	B	ER	133.3	1.30		2.32	B	ER	98.3	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.22	73.3	1.40		2.58	B	ER	98.3		2.22	B	ER	133.3	1.30		2.96	B	ER	98.3	
		TNT4A	33.075		2.20	72.8	1.40		2.55	B	ER	98.3		2.20	B	ER	133.3	1.30		2.95	B	ER	98.3	
		TNT6A	41.600		1.72	71.6	1.40		2.07	B	ER	98.3		1.72	B	ER	133.3	1.30		2.32	B	ER	98.3	
		TNT7A	42.000		1.66	69.7	1.40		2.06	B	ER	98.3		1.66	B	ER	133.3	1.30		2.22	B	ER	98.3	
		TNT7B	42.000	3	1.63	68.5	1.40		2.07	B	ER	98.3		1.63	B	ER	133.3	1.30		2.20	B	ER	98.3	
		TNAGRIT4	43.000		1.82	78.3	1.40		2.00	B	ER	98.3		1.82	B	ER	133.3	1.30		2.39	B	ER	98.3	
		TNAGT5A	45.000		1.80	81.0	1.40		1.92	B	ER	98.3		1.80	B	ER	133.3	1.30		2.38	B	ER	98.3	
		TNAGT5B	45.000		1.78	80.1	1.40		1.90	B	ER	98.3		1.78	B	ER	133.3	1.30		2.40	B	ER	98.3	
FATIGUE		HL-93 (INVENTORY)	γ_{LL}=0.75																					

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 LIMIT STATE.

COMMENTS:

1. GIRDER ANALYSIS PERFORMED WITH AN INFLUENCE SURFACE. THEREFORE, DISTRIBUTION FACTORS DO NOT APPLY AND ARE NOT PROVIDED.
2. GIRDER DESIGNED FOR FATIGUE I LOAD COMBINATION AND INFINITE LIFE. THEREFORE, FATIGUE LOAD RATING IS NOT GIVEN.
3. GIRDER 4 (ER) LENGTHS GIVEN.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93) **

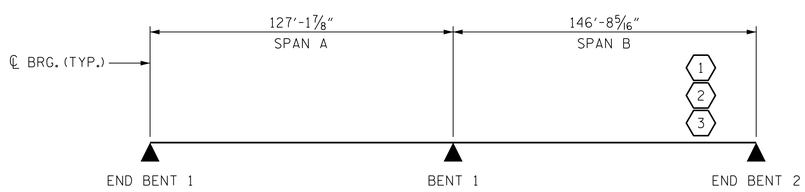
(2) DESIGN LOAD RATING (HS-20) **

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. U-2579B
FORSYTH COUNTY
STATION: 44+08.64 -Y4RPBD-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR STEEL GIRDERS
(NON-INTERSTATE TRAFFIC)

DESIGNED BY: B. LOFLIN	DATE : APR 2014		
DRAWN BY: K. WHITE	DATE : APR 2014	DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY: J. DOUGHTY	DATE : APR 2014	CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
DESIGN ENGINEER OF RECORD: J. DOUGHTY	DATE : MAY 2014		

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

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
7/2/2014
DocuSigned by: Jason Doughty
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-548
1			3			TOTAL SHEETS
2			4			707

STR. #15

STD. NO. LRFR3

7/2/2014
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