

## 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						
						MOMENT			SHEAR			MOMENT												
						LIVE-LOAD FACTORS (%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 (%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	1.02	--	1.75	-	1.26	A	4	96.35	-	1.02	B	2	0	1.30	-	1.41	B	1	64.81	1,2,3	
	HL-93 (OPERATING)	N/A		1.33	--	1.35	-	1.64	A	4	96.35	-	1.33	B	2	0	1.00	-	1.84	B	1	64.81	1,2,3	
	HS-20 (INVENTORY)	36.000	2	1.61	57.96	1.75	-	2.03	B	1	64.81	-	1.61	B	3	0	1.30	-	2.56	B	1	64.81	1,2,3	
	HS-20 (OPERATING)	36.000		2.09	75.13	1.35	-	2.63	B	1	64.81	-	2.09	B	3	0	1.00	-	3.33	B	1	64.81	1,2,3	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.62	62.37	1.40	-	6.01	B	1	64.81	-	4.62	B	2	0	1.30	-	6.07	B	1	64.81	1,2,3
		SNGARBS2	20.000		3.28	65.60	1.40	-	4.34	B	1	64.81	-	3.28	B	2	0	1.30	-	4.39	B	1	64.81	1,2,3
		SNAGRIS2	22.000		3.04	66.88	1.40	-	4.05	B	1	64.81	-	3.04	B	2	0	1.30	-	4.09	B	1	64.81	1,2,3
		SNCOTTS3	27.250		2.35	64.04	1.40	-	2.99	B	1	64.81	-	2.35	B	2	0	1.30	-	3.02	B	1	64.81	1,2,3
		SNAGGRS4	34.925		1.95	68.10	1.40	-	2.45	B	1	64.81	-	1.95	B	2	0	1.30	-	2.48	B	1	64.81	1,2,3
		SNS5A	35.550		1.91	67.90	1.40	-	2.43	B	1	64.81	-	1.91	B	2	0	1.30	-	2.46	B	1	64.81	1,2,3
		SNS6A	39.950		1.74	69.51	1.40	-	2.21	B	1	64.81	-	1.74	B	2	0	1.30	-	2.23	B	1	64.81	1,2,3
		SNS7B	42.000		1.69	70.98	1.40	-	2.09	B	1	64.81	-	1.69	B	2	0	1.30	-	2.12	B	1	64.81	1,2,3
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.15	70.95	1.40	-	2.67	B	1	64.81	-	2.15	B	3	0	1.30	-	2.70	B	1	64.81	1,2,3
		TNT4A	33.075		2.10	69.46	1.40	-	2.66	B	1	64.81	-	2.10	B	2	0	1.30	-	2.69	B	1	64.81	1,2,3
		TNT6A	41.600		1.80	74.88	1.40	-	2.17	B	1	64.81	-	1.80	B	3	0	1.30	-	2.19	B	1	64.81	1,2,3
		TNT7A	42.000		1.77	74.34	1.40	-	2.19	B	1	64.81	-	1.77	B	2	0	1.30	-	2.22	B	1	64.81	1,2,3
		TNT7B	42.000		1.73	72.66	1.40	-	2.19	B	1	64.81	-	1.73	B	2	0	1.30	-	2.22	B	1	64.81	1,2,3
		TNAGRIT4	43.000		1.69	72.67	1.40	-	2.13	B	1	64.81	-	1.69	B	2	0	1.30	-	2.15	B	1	64.81	1,2,3
TNAGT5A	45.000		1.63	73.35	1.40	-	2.02	B	1	64.81	-	1.63	B	3	0	1.30	-	2.04	B	1	64.81	1,2,3		
TNAGT5B	45.000		3	1.57	70.65	1.40	-	2.00	B	1	64.81	-	1.57	B	2	0	1.30	-	2.02	B	1	64.81	1,2,3	
FATIGUE	HL-93 (INVENTORY)	$\gamma_{LL}=0.75$		-																				

### LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	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:

- THE ORIGINAL DESIGN AND RATING OF THIS BRIDGE WERE BASED ON AN INFLUENCE SURFACE ANALYSIS. LIVE LOAD DISTRIBUTION FACTORS WERE NOT USED AND ARE NOT PROVIDED.
- THE SOFTWARE PACKAGE MDX VERSION 6.5.2943 WAS USED FOR THE INFLUENCE SURFACE ANALYSIS.
- DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.
- FATIGUE RATING IS NOT REQUIRED OR REPORTED SINCE GIRDERS DO NOT INCLUDE FATIGUE-PRONE DETAILS.

# CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

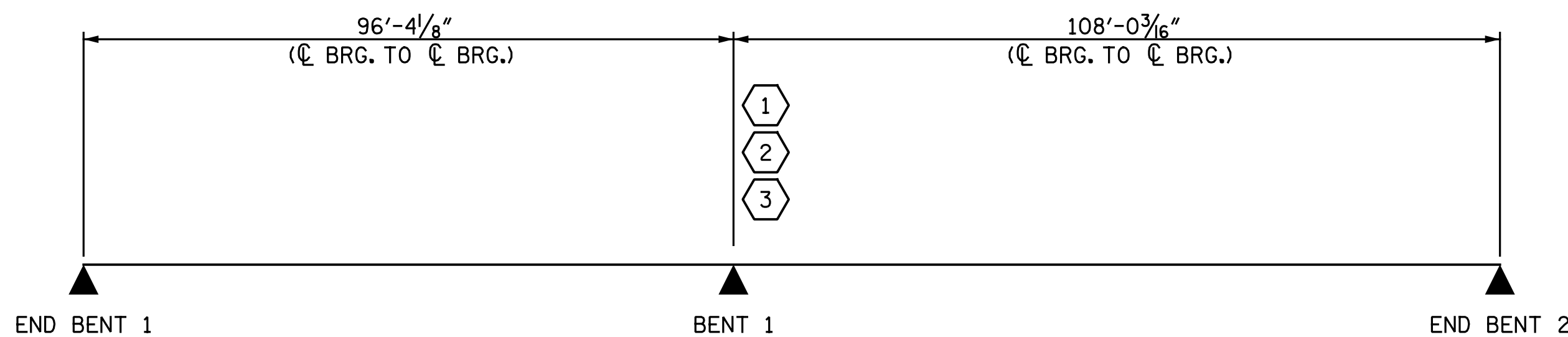
3 LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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GIRDER LOCATION

GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE LEFT EXTERIOR GIRDER LOOKING AHEAD STATION. SEE "FRAMING PLAN" SHEET FOR ALL GIRDER LOCATIONS.

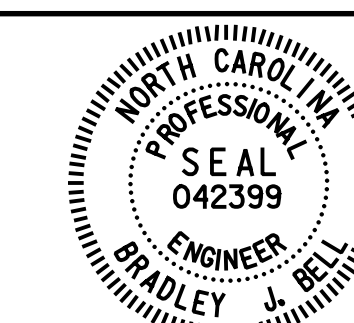


### LRFR SUMMARY

PROJECT NO. U-3330  
NASH COUNTY  
 STATION: 18+22.61 -Y1-  
43+04.76 -L-  
 SHEET 4 OF 4

DRAWN BY : C. E. MAYHEW DATE : 8-24-16  
 CHECKED BY : B. J. BELL DATE : 8-31-16

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



DocuSigned by:  
*Bradley J. Bell*  
C41A3F8E3A30434  
1/27/2017

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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 LRFR SUMMARY  
 FOR STEEL GIRDERS  
 (NON-INTERSTATE TRAFFIC)

#### LEFT LANES

#### REVISIONS

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

SHEET NO.  
**SI-4**  
TOTAL SHEETS  
**38**