

2/10/2017 9:08:59 AM G:\Projects\2014\U-3109A\Structures\Site 1-Bridge 434 (NBL)\Drawings\Final\401_U3109A_SML_LRFR.dgn

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 (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	1.02	--	1.75	0.781	1.02	A	ER	106.9	0.855	1.57	A	I	90.87	1.30	0.781	1.12	A	ER	106.9		
	HL-93 (OPERATING)	N/A		1.32	--	1.35	0.781	1.32	A	ER	106.9	0.855	2.03	B	I	16.18	1.00	0.781	1.46	A	ER	106.9		
	HS-20 (INVENTORY)	36.00	②	1.93	69.5	1.75	0.781	1.93	B	ER	64.74	0.855	2.15	B	I	107.9	1.30	0.781	2.26	B	ER	64.74		
	HS-20 (OPERATING)	36.00		2.50	90.1	1.35	0.781	2.50	B	ER	64.74	0.855	2.79	B	I	107.9	1.00	0.781	2.93	B	ER	64.74		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.99	53.9	1.40	0.781	3.99	B	ER	64.74	0.855	4.81	B	I	107.9	1.30	0.781	5.32	B	ER	64.74	
		SNGARBS2	20.000		3.06	61.2	1.40	0.781	3.06	B	ER	64.74	0.855	3.53	B	I	107.9	1.30	0.781	3.85	B	ER	64.74	
		SNAGRIS2	22.000		2.90	63.8	1.40	0.781	2.90	B	ER	64.74	0.855	3.28	B	I	107.9	1.30	0.781	3.60	B	ER	64.74	
		SNCOTTS3	27.250		2.22	60.5	1.40	0.781	2.22	B	ER	64.74	0.855	2.58	B	I	107.9	1.30	0.781	2.66	B	ER	64.74	
		SNAGGRS4	34.925		1.86	65.0	1.40	0.781	1.86	B	ER	64.74	0.855	2.14	B	I	107.9	1.30	0.781	2.18	B	ER	64.74	
		SNS5A	35.550		1.84	65.4	1.40	0.781	1.84	B	ER	64.74	0.855	2.15	B	I	107.9	1.30	0.781	2.14	B	ER	64.74	
		SNS6A	39.950		1.68	67.1	1.40	0.781	1.68	B	ER	64.74	0.855	1.96	B	I	107.9	1.30	0.781	1.95	B	ER	64.74	
		SNS7B	42.000		1.62	68.0	1.40	0.781	1.62	B	ER	64.74	0.855	1.91	A	I	90.87	1.30	0.781	1.86	B	ER	64.74	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.02	66.7	1.40	0.781	2.02	B	ER	64.74	0.855	2.32	B	I	107.9	1.30	0.781	2.38	B	ER	64.74	
		TNT4A	33.075		2.01	66.5	1.40	0.781	2.01	B	ER	64.74	0.855	2.28	B	I	107.9	1.30	0.781	2.37	B	ER	64.74	
		TNT6A	41.600		1.67	69.5	1.40	0.781	1.67	B	ER	64.74	0.855	1.97	B	I	16.18	1.30	0.781	1.93	B	ER	64.74	
		TNT7A	42.000		1.67	70.1	1.40	0.781	1.67	B	ER	64.74	0.855	1.95	A	I	90.87	1.30	0.781	1.93	B	ER	64.74	
		TNT7B	42.000		1.69	71.0	1.40	0.781	1.69	B	ER	64.74	0.855	1.88	B	I	107.9	1.30	0.781	1.96	B	ER	64.74	
		TNAGRIT4	43.000		1.64	70.5	1.40	0.781	1.64	B	ER	64.74	0.855	1.83	B	I	107.9	1.30	0.781	1.89	B	ER	64.74	
TNAGT5A	45.000		1.57	70.7	1.40	0.781	1.57	B	ER	64.74	0.855	1.80	A	I	90.87	1.30	0.781	1.80	B	ER	64.74			
TNAGT5B	45.000		③	1.55	69.8	1.40	0.781	1.55	B	ER	64.74	0.855	1.75	B	I	107.9	1.30	0.781	1.78	B	ER	64.74		
FATIGUE	HL-93 (INVENTORY)	γ _{LL} =0.75		1.94																				

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.
 DISTANCE FROM LEFT END OF SPAN IS MEASURED FROM C BEARING.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

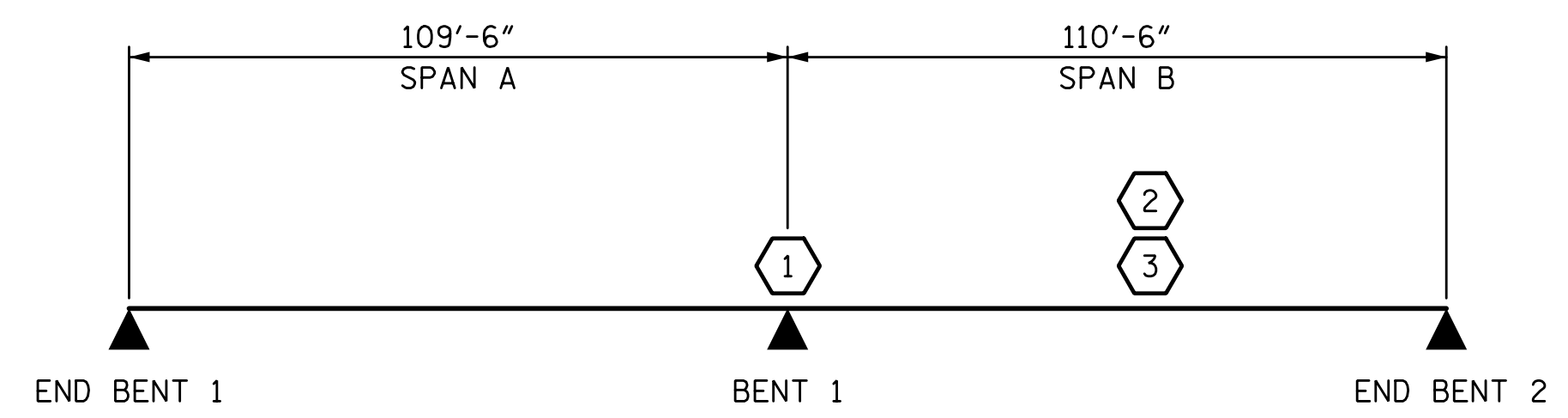
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. U-3109A
ALAMANCE COUNTY
 STATION: 26+54.73 -NBL-

DRAWN BY: S. D. COOPER DATE: 5-15
 CHECKED BY: B.S. COX DATE: 5-15
 DESIGN ENGINEER OF RECORD: T.J. BEACH DATE: 5-15

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

LRFR SUMMARY FOR STEEL GIRDERS

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-4
1			3			TOTAL SHEETS
2			4			S01-49