Docusign Envelope ID: 6EB0A136-41FC-8933-808B-013E80A18744

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

LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III 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		HL-93 (INVENTORY)	N/A	⟨1⟩	1.109	--	1.75	0.272	1.47	90'	EL	44.250	0.493	1.26	90'	EL	4.425	0.80	0.272	1.11	90'	EL	44.250	
		HL-93 (OPERATING)	N/A		1.633	--	1.35	0.272	1.90	90'	EL	44.250	0.493	1.63	90'	EL	4.425	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.507	54.255	1.75	0.272	1.99	90'	EL	44.250	0.493	1.65	90'	EL	4.425	0.80	0.272	1.51	90'	EL	44.250	
		HS-20 (OPERATING)	36.000		2.140	77.039	1.35	0.272	2.59	90'	EL	44.250	0.493	2.14	90'	EL	4.425	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		3.519	47.501	1.4	0.272	5.82	90'	EL	44.250	0.493	5.05	90'	EL	4.425	0.80	0.272	3.52	90'	EL	44.250	
		SNGARBS2	20.000		2.572	51.43	1.4	0.272	4.25	90'	EL	44.250	0.493	3.55	90'	EL	4.425	0.80	0.272	2.57	90'	EL	44.250	
		SNAGRIS2	22.000		2.415	53.122	1.4	0.272	4.00	90'	EL	44.250	0.493	3.27	90'	EL	4.425	0.80	0.272	2.41	90'	EL	44.250	
		SNCOTTS3	27.250		1.749	47.674	1.4	0.272	2.89	90'	EL	44.250	0.493	2.52	90'	EL	4.425	0.80	0.272	1.75	90'	EL	44.250	
		SNAGGRS4	34.925		1.443	50.381	1.4	0.272	2.39	90'	EL	44.250	0.493	2.06	90'	EL	4.425	0.80	0.272	1.44	90'	EL	44.250	
		SNS5A	35.550		1.412	50.195	1.4	0.272	2.34	90'	EL	44.250	0.493	2.07	90'	EL	4.425	0.80	0.272	1.41	90'	EL	44.250	
		SNS6A	39.950		1.287	51.435	1.4	0.272	2.13	90'	EL	44.250	0.493	1.88	90'	EL	4.425	0.80	0.272	1.29	90'	EL	44.250	
		SNS7B	42.000		1.226	51.483	1.4	0.272	2.03	90'	EL	44.250	0.493	1.83	90'	EL	4.425	0.80	0.272	1.23	90'	EL	44.250	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.568	51.733	1.4	0.272	2.59	90'	EL	44.250	0.493	2.24	90'	EL	4.425	0.80	0.272	1.57	90'	EL	44.250	
		TNT4A	33.075		1.572	52.007	1.4	0.272	2.60	90'	EL	44.250	0.493	2.20	90'	EL	4.425	0.80	0.272	1.57	90'	EL	44.250	
		TNT6A	41.600		1.278	53.170	1.4	0.272	2.11	90'	EL	44.250	0.493	1.92	90'	EL	4.425	0.80	0.272	1.28	90'	EL	44.250	
		TNT7A	42.000		1.281	53.782	1.4	0.272	2.12	90'	EL	44.250	0.493	1.89	90'	EL	4.425	0.80	0.272	1.28	90'	EL	44.250	
		TNT7B	42.000		1.315	55.229	1.4	0.272	2.18	90'	EL	44.250	0.493	1.79	90'	EL	4.425	0.80	0.272	1.31	90'	EL	44.250	
		TNAGRIT4	43.000		1.258	54.101	1.4	0.272	2.08	90'	EL	44.250	0.493	1.74	90'	EL	4.425	0.80	0.272	1.26	90'	EL	44.250	
		TNAGT5A	45.000		1.190	53.537	1.4	0.272	1.97	90'	EL	44.250	0.493	1.71	90'	EL	4.425	0.80	0.272	1.19	90'	EL	44.250	
		TNAGT5B	45.000	⟨3⟩	1.178	53.027	1.4	0.272	1.95	90'	EL	44.250	0.493	1.66	90'	EL	4.425	0.80	0.272	1.18	90'	EL	44.250	
EMERGENCY VEHICLE (EV)		EV2	28.750		2.296	66.005	1.3	0.272	3.25	90'	EL	44.250	0.493	2.49	90'	EL	4.425	0.80	0.272	2.30	90'	EL	44.250	
		EV3	43.000	⟨4⟩	1.510	64.924	1.3	0.272	2.14	90'	EL	44.250	0.493	1.67	90'	EL	4.425	0.80	0.272	1.51	90'	EL	44.250	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	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.

2.

3.

4.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING * *

⟨4⟩ EMERGENCY VEHICLE LOAD RATING **

* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER - EXTERIOR RIGHT GIRDER

⟨1⟩
⟨2⟩
⟨3⟩
⟨4⟩

LRFR SUMMARY

FOR SPAN A

PROJECT NO. **BP14-R014**

SWAIN COUNTY

STATION: **12+45.82 -L-**

DESIGNED BY: E. LAWES DATE : SEPT 2024
DRAWN BY: M. HOBBS DATE : SEPT 2024
CHECKED BY: P. GALLAGHER DATE : APR 2026
DESIGN ENGINEER OF RECORD: E. LAWES DATE : APR 2026

DRAWN BY : TMG II/II
CHECKED BY : AAC II/II

REV. 06/23 AKP/AAI

7/20/2026
SSSSSSSSSSSSSSSSSSSSSSSDGNSSSSSSSSSSSSSSSSSSSSSSS
USEL722989

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040

LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 044167 7/20/2026 ENGINEER ELIZABETH F. LAWES

DocuSigned by: Elizabeth F. Lawes 935E64223CD547C...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 90' BOX BEAM UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			25

STD. NO. 33LRFR1_90S_90L