

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

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

LEVEL	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 (FF)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FF)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FF)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.22	--	1.75	0.80	1.77	A	E	45.51	0.93	1.24	A	I	6.17	0.80	0.80	1.22	A	E	45.51		
	HL-93 (OPERATING)	N/A		1.65	--	1.35	0.80	2.29	A	E	45.51	0.93	1.65	A	I	6.17	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.67	60.12	1.75	0.80	2.42	A	E	45.51	0.93	1.68	A	I	6.17	0.80	0.80	1.67	A	E	45.51		
	HS-20 (OPERATING)	36.000		2.23	80.28	1.35	0.80	3.13	A	E	45.51	0.93	2.23	A	I	6.17	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13,500		2.63	35.51	1.40	0.80	3.81	A	E	45.51	0.93	2.82	A	I	6.17	0.80	0.80	2.63	A	E	45.51	
		SNGARBS2	20,000		2.19	43.80	1.40	0.80	3.17	A	E	45.51	0.93	2.28	A	I	6.17	0.80	0.80	2.19	A	E	45.51	
		SNAGRIS2	22,000		2.11	46.42	1.40	0.80	3.05	A	E	45.51	0.93	2.16	A	I	6.17	0.80	0.80	2.11	A	E	45.51	
		SNCOTTS3	27,250		1.71	46.60	1.40	0.80	2.47	A	E	45.51	0.93	1.80	A	I	6.17	0.80	0.80	1.71	A	E	45.51	
		SNAGGRS4	34,925		1.48	51.69	1.40	0.80	2.14	A	E	45.51	0.93	1.55	A	I	6.17	0.80	0.80	1.48	A	E	45.51	
		SNS5A	35,550		1.46	51.90	1.40	0.80	2.11	A	E	45.51	0.93	1.56	A	I	6.17	0.80	0.80	1.46	A	E	45.51	
		SNS6A	39,950		1.36	54.33	1.40	0.80	1.97	A	E	45.51	0.93	1.38	A	I	6.17	0.80	0.80	1.36	A	E	45.51	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33,000		1.57	51.81	1.40	0.80	2.28	A	E	45.51	0.93	1.66	A	I	6.17	0.80	0.80	1.57	A	E	45.51	
		TNT4A	33,075		1.48	48.95	1.40	0.80	2.28	A	E	45.51	0.93	1.63	A	I	6.17	0.80	0.80	1.48	A	E	45.51	
		TNT6A	41,600		1.35	56.16	1.40	0.80	1.96	A	E	45.51	0.93	1.47	A	I	6.17	0.80	0.80	1.35	A	E	45.51	
		TNT7A	42,000		1.35	56.70	1.40	0.80	1.96	A	E	45.51	0.93	1.45	A	I	6.17	0.80	0.80	1.35	A	E	45.51	
		TNT7B	42,000		1.36	57.12	1.40	0.80	2.00	A	E	45.51	0.93	1.36	A	I	6.17	0.80	0.80	1.38	A	E	45.51	
		TNAGRIT4	43,000		1.34	57.62	1.40	0.80	1.93	A	E	45.51	0.93	1.36	A	I	6.17	0.80	0.80	1.34	A	E	45.51	
		TNAGT5A	45,000		1.28	57.60	1.40	0.80	1.85	A	E	45.51	0.93	1.35	A	I	6.17	0.80	0.80	1.28	A	E	45.51	
TNAGT5B	45,000		③	1.27	57.15	1.40	0.80	1.84	A	E	45.51	0.93	1.31	A	I	6.17	0.80	0.80	1.27	A	E	45.51		

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:

- GIRDERS DESIGNED AS SIMPLE SPAN FOR FLEXURE AND SHEAR.
- FACTORED SHEAR AND MOMENT CAPACITIES PROVIDED FOR STRENGTH I LIMIT STATE. SECTION PROPERTIES PROVIDED FOR SERVICE III LIMIT STATE.
- GIRDERS LOAD RATED AS SIMPLE SPANS.
- MINIMUM RATING FACTOR FOR EACH VEHICLE IS EQUAL FOR SPANS A AND B.

⊕ 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

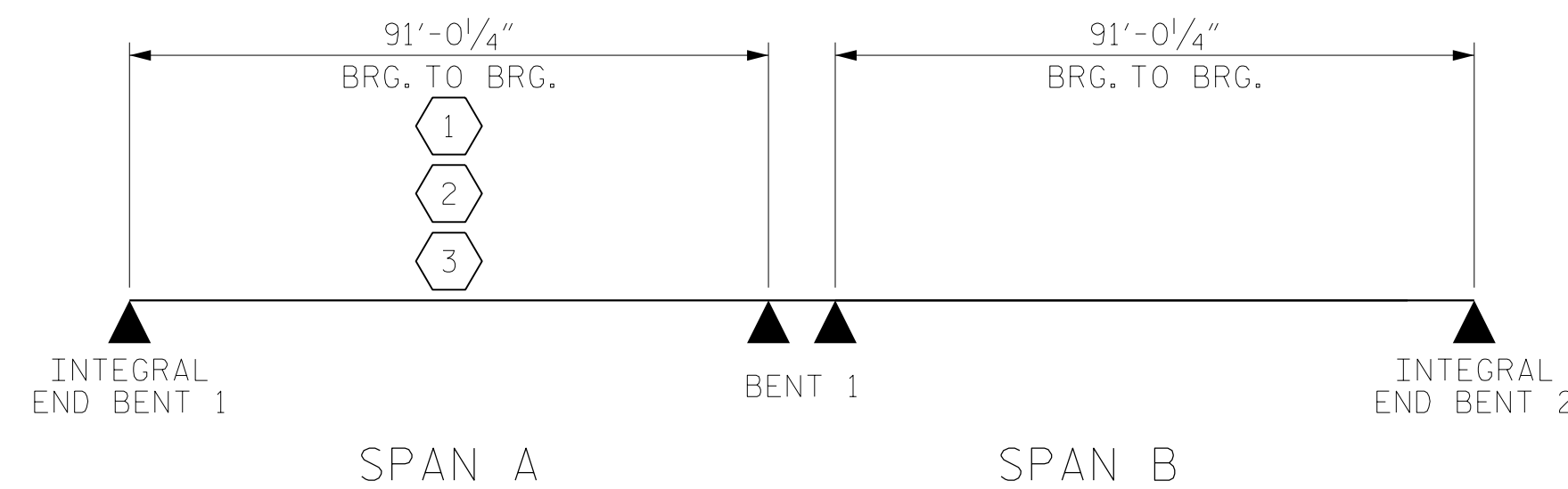
		CL BRG.	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	CL BRG.
EXTERIOR GIRDER (E) SPAN A	ϕV_n (KIPS)	506	301	282	214	178	177	178	214	282	301	506
	ϕM_n (KIP-FT)	---	7752	8831	8900	8901	8901	8901	8900	8831	7752	---
INTERIOR GIRDER (I) SPAN A	ϕV_n (KIPS)	507	302	285	236	194	194	194	236	285	302	507
	ϕM_n (KIP-FT)	---	7780	8898	8970	8970	8970	8970	8970	8898	7780	---

	UNITS	NON-COMPOSITE	COMPOSITE
HEIGHT	IN	54.00	62.25
AREA	IN ²	789.00	1,652.00
I _{xx}	IN ⁴	260,741	671,035
Y _{cg}	IN	24.73	42.00
SELF WT.	PLF	821.88	1,720.83
EFF. WIDTH	IN	---	97.50

SECTION PROPERTIES PROVIDED AT MIDSPAN

	UNITS	NON-COMPOSITE	COMPOSITE
HEIGHT	IN	54.00	62.25
AREA	IN ²	789.00	1,680.00
I _{xx}	IN ⁴	260,741	732,349
Y _{cg}	IN	24.73	42.44
SELF WT.	PLF	821.88	1,750.00
EFF. WIDTH	IN	---	108.00

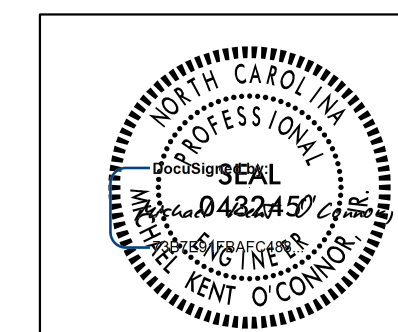
SECTION PROPERTIES PROVIDED AT MIDSPAN



LRFR SUMMARY

DRAWN BY : TWL DATE : 10/2021
 CHECKED BY : MRA DATE : 10/2021
 DESIGN ENGINEER OF RECORD: MKO DATE : 10/2022

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



RS&H

RS&H Architects-Engineers-Planners, Inc.
 8521 Six Forks Road, Suite 400
 Raleigh, NC 27615
 919-926-4100 FAX 919-846-9080
 www.rsandh.com
 North Carolina License No. 00737-0403-C&E

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			28