

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	1.03	--	1.75	0.78	1.28	E	EL	49.13	0.88	1.62	A	I	38.61	0.80	0.73	1.03	B	I	49.13		
	HL-93 (OPERATING)	N/A		1.67	--	1.35	0.78	1.67	E	EL	49.13	0.88	3.01	A	I	28.78	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.44	51.840	1.75	0.78	1.79	E	EL	49.13	0.88	2.86	B	I	59.09	0.80	0.73	1.44	B	I	49.13		
	HS-20 (OPERATING)	36.000		2.32	83.520	1.35	0.78	2.32	E	EL	49.13	0.88	3.86	A	I	28.78	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13,500		3.41	46.035	1.40	0.78	5.32	E	EL	49.13	0.88	9.20	A	I	28.78	0.80	0.73	3.41	B	I	49.13	
		SNGARBS2	20,000		2.47	49.400	1.40	0.78	3.85	E	EL	49.13	0.88	6.46	A	I	28.78	0.80	0.73	2.47	B	I	49.13	
		SNAGRIS2	22,000		2.31	50.820	1.40	0.78	3.60	E	EL	49.13	0.88	5.97	A	I	28.78	0.80	0.73	2.31	B	I	49.13	
		SNCOTTS3	27,250		1.70	46.325	1.40	0.78	2.65	E	EL	49.13	0.88	4.48	A	I	28.78	0.80	0.73	1.70	B	I	49.13	
		SNAGGRS4	34,925		1.39	48.546	1.40	0.78	2.17	E	EL	49.13	0.88	3.67	A	I	28.78	0.80	0.73	1.39	B	I	49.13	
		SNS5A	35,550		1.36	48.348	1.40	0.78	2.12	E	EL	49.13	0.88	3.71	A	I	28.78	0.80	0.73	1.36	B	I	49.13	
		SNS6A	39,950		1.24	49.538	1.40	0.78	1.93	E	EL	49.13	0.88	3.36	A	I	28.78	0.80	0.73	1.24	B	I	49.13	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33,000		1.50	49.500	1.40	0.78	2.35	E	EL	49.13	0.88	4.05	A	I	28.78	0.80	0.73	1.50	B	I	49.13	
		TNT4A	33,075		1.51	49.943	1.40	0.78	2.35	E	EL	49.13	0.88	3.94	A	I	28.78	0.80	0.73	1.51	B	I	49.13	
		TNT6A	41,600		1.22	50.752	1.40	0.78	1.91	E	EL	49.13	0.88	3.51	A	I	28.78	0.80	0.73	1.22	B	I	49.13	
		TNT7A	42,000		1.22	51,240	1.40	0.78	1.91	E	EL	49.13	0.88	3.44	A	I	28.78	0.80	0.73	1.22	B	I	49.13	
		TNT7B	42,000		1.25	52,500	1.40	0.78	1.95	E	EL	49.13	0.88	3.22	A	I	28.78	0.80	0.73	1.25	B	I	49.13	
		TNAGRIT4	43,000		1.20	51,600	1.40	0.78	1.87	E	EL	49.13	0.88	3.11	A	I	28.78	0.80	0.73	1.20	B	I	49.13	
		TNAGT5A	45,000		1.14	51,300	1.40	0.78	1.77	E	EL	49.13	0.88	3.08	C	I	59.09	0.80	0.73	1.14	B	I	49.13	
TNAGT5B	45,000		③	1.13	50.850	1.40	0.78	1.76	E	EL	49.13	0.88	2.95	A	I	28.78	0.80	0.73	1.13	B	I	49.13		

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:
- MINIMUM RATING FACTOR FOR EACH VEHICLE IS EQUAL FOR SPANS B, C, D, AND E.
 - TRANSFORMING ALL PRESTRESSING TENDONS.
 - GIRDERS DESIGNED AS SIMPLE SPANS FOR FLEXURE.
 - GIRDERS DESIGNED AS SIMPLE-MADE-CONTINUOUS (FOR LIVE AND SUPERIMPOSED DEAD LOAD) FOR 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.

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

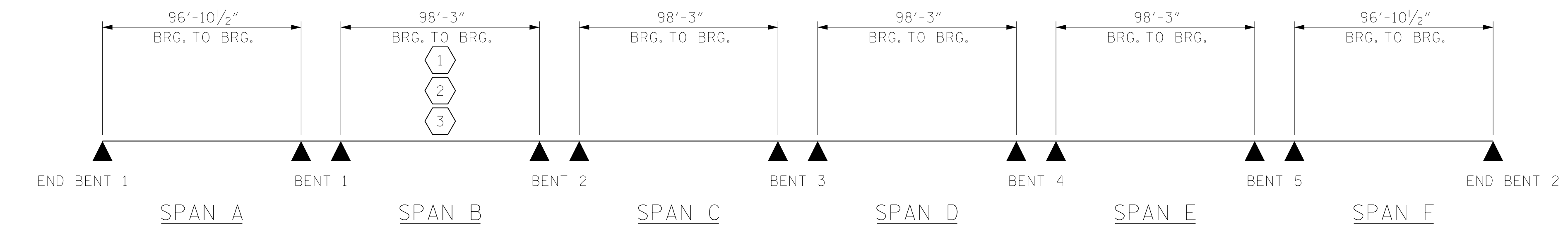
I - INTERIOR GIRDER
 EL - EXTERIOR LEFT GIRDER
 ER - EXTERIOR RIGHT GIRDER

	CL BRG.	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	CL BRG.
EXTERIOR LEFT GIRDER (EL) SPAN E	ϕV_n (KIPS)	613	561	536	224	194	196	194	224	536	613
	ϕM_n (KIP-FT)	---	7101.6	8360.1	8513.5	8519.2	8521.4	8519.2	8513.5	8360.1	7101.6
INTERIOR GIRDER (I) SPAN A	ϕV_n (KIPS)	614	564	541	285	198	207	202	289	542	614
	ϕM_n (KIP-FT)	---	7085.9	8487.3	8669.8	8669.8	8669.8	8669.8	8669.8	8487.3	7085.9

SPAN B - INTERIOR			
	UNITS	NON-COMPOSITE	COMPOSITE
HEIGHT	IN	54.0	62.5
AREA	IN ²	829.4	1524.5
I _{xx}	IN ⁴	270652	716403
Y _{cg}	IN	23.95	39.77
SELF WT.	PLF	822	1778
EFF. WIDTH	IN	---	107.9

SECTION PROPERTIES PROVIDED AT MIDSPAN

PROJECT NO. B-4484
 CRAVEN COUNTY
 STATION: 25+06.00 -L1-



LRFR SUMMARY

DRAWN BY : NSC DATE : 06/2019
 CHECKED BY : PDS DATE : 06/2019
 DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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:	
1			3			S1-6
2			4			TOTAL SHEETS 37

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