

LOAD FACTORS:

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

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 (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	1.15	--	1.75	0.609	1.31	B	ER	57.30	0.719	1.36	B	ER	34.40	0.80	0.609	1.15	B	ER	57.30		
	HL-93 (OPERATING)	N/A		1.70	--	1.35	0.609	1.70	B	ER	57.30	0.789	1.91	B	ER	22.90	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.67	60.1	1.75	0.609	1.90	B	ER	57.30	0.789	1.99	B	ER	22.90	0.80	0.609	1.67	B	ER	57.30		
	HS-20 (OPERATING)	36.000		2.46	88.6	1.35	0.609	2.46	B	ER	57.30	0.789	2.66	B	ER	22.90	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13,500		4.03	54.4	1.40	0.609	5.75	B	ER	57.30	0.789	6.68	B	ER	22.90	0.80	0.609	4.03	B	ER	57.30	
		SNGARBS2	20,000		1.63	32.6	1.40	0.609	2.32	B	ER	57.30	0.789	2.55	B	ER	22.90	0.80	0.609	1.63	B	ER	57.30	
		SNAGRIS2	22,000		1.44	31.7	1.40	0.609	2.06	B	ER	57.30	0.789	2.29	B	ER	22.90	0.80	0.609	1.44	B	ER	57.30	
		SNCOTTS3	27,250		1.59	43.3	1.40	0.609	2.27	B	ER	57.30	0.789	2.56	B	ER	22.90	0.80	0.609	1.59	B	ER	57.30	
		SNAGGRS4	34,925		1.37	47.8	1.40	0.609	1.96	B	ER	57.30	0.789	2.22	B	ER	22.90	0.80	0.609	1.37	B	ER	57.30	
		SNS5A	35,550		2.00	71.1	1.40	0.609	2.86	B	ER	57.30	0.789	3.20	B	ER	22.90	0.80	0.609	2.00	B	ER	57.30	
		SNS6A	39,950		2.68	107.1	1.40	0.609	3.83	B	ER	57.30	0.789	4.21	B	ER	22.90	0.80	0.609	2.68	B	ER	57.30	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33,000		1.76	58.1	1.40	0.609	2.50	B	ER	57.30	0.789	2.79	B	ER	22.90	0.80	0.609	1.76	B	ER	57.30	
		TNT4A	33,075		1.45	48.0	1.40	0.609	2.06	B	ER	57.30	0.789	2.18	B	ER	22.90	0.80	0.609	1.45	B	ER	57.30	
		TNT6A	41,600		1.39	57.8	1.40	0.609	1.98	B	ER	57.30	0.789	2.11	B	ER	22.90	0.80	0.609	1.39	B	ER	57.30	
		TNT7A	42,000		1.32	55.4	1.40	0.609	1.88	B	ER	57.30	0.789	2.07	B	ER	22.90	0.80	0.609	1.32	B	ER	57.30	
		TNT7B	42,000	③	1.31	55.0	1.40	0.609	1.87	B	ER	57.30	0.789	2.00	B	ER	22.90	0.80	0.609	1.31	B	ER	57.30	
		TNAGRIT4	43,000		1.76	75.7	1.40	0.609	2.51	B	ER	57.30	0.789	2.74	B	ER	22.90	0.80	0.609	1.76	B	ER	57.30	
		TNAGT5A	45,000		1.42	63.9	1.40	0.609	2.03	B	ER	57.30	0.789	2.33	B	ER	22.90	0.80	0.609	1.42	B	ER	57.30	
TNAGT5B	45,000		1.42	63.9	1.40	0.609	2.02	B	ER	57.30	0.789	2.29	B	ER	22.90	0.80	0.609	1.42	B	ER	57.30			

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.
 LOAD RATING BASED ON SIMPLY SUPPORTED SPAN ANALYSIS.
 SPAN LENGTHS IN LRFR SUMMARY SKETCH BELOW ARE THOSE USED IN ANALYSIS MODEL AND REPRESENT PLAN VIEW SPAN LENGTHS FROM CL BEARING TO CL BEARING.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

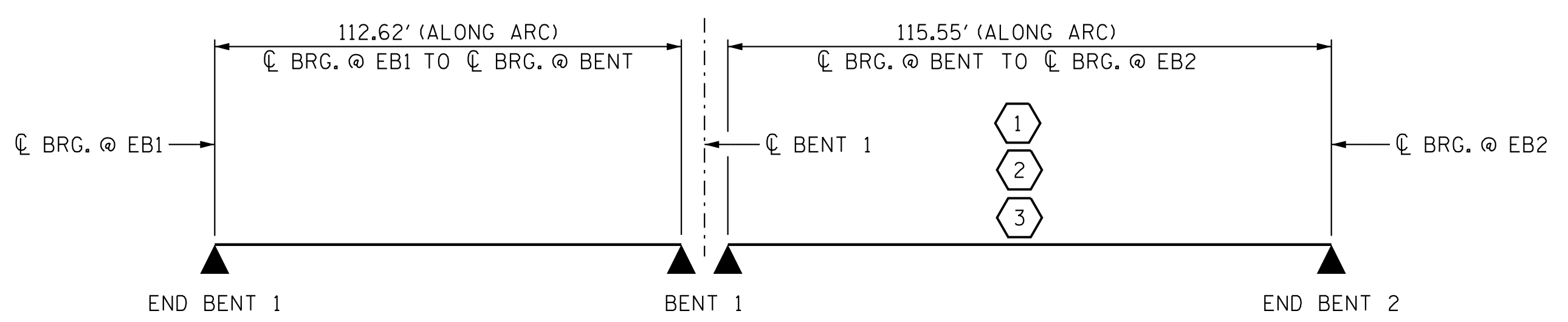
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



GIRDER	
54" PRESTRESSED CONCRETE FLORIDA I-BEAM GIRDER	
AREA =	933 SQ. IN.
WEIGHT =	972 LB/FT.
Y_{CENTRO} =	24.04 IN.
Y_{TOP} =	29.96 IN.
I_{xx} =	359,929 IN. ⁴
I_{yy} =	81,584 IN. ⁴
V/S =	3.84 IN.

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

PROJECT NO. R-2707D
 CLEVELAND COUNTY
 STATION: 36+78.38 -RAMP A-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

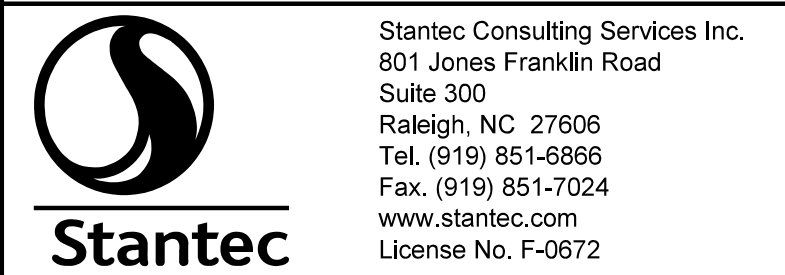
STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)



REVISIONS						SHEET NO. S4-06
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 43
2			4			

DocuSigned by:
 Victor E. Fraga
 DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

LRFR SUMMARY



ASSEMBLED BY: V. E. FRAGA DATE: 6/2/18
 CHECKED BY: T. N. ENNIS DATE: 8/14/18

DRAWN BY: MAA 1/08 REV. 10/1/11 MAA/GM DESIGN ENGINEER OF RECORD: V. E. FRAGA DATE: 05/09/23
 CHECKED BY: GM/DI 2/08 REV. 12/17 MAA/THC