LOAD AND RESISTANCE FACTOR RATING (LRFD) 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					
							LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.126	--	1.75	0.267	1.49	A	EL	44.224	0.584	1.15	A	EL	8.845	0.80	0.267	**1.13**	A	EL	**44.224**	
		HL-93(Opr)	N/A	--	1.488	--	1.35	0.267	1.94	A	EL	44.224	0.584	1.49	A	EL	8.845	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.491	53.666	1.75	0.267	2.03	A	EL	44.224	0.584	**1.49**	A	EL	**8.845**	0.80	0.267	1.53	A	EL	44.224	
		HS-20(Opr)	36.000	--	1.932	69.567	1.35	0.267	2.63	A	EL	44.224	0.584	1.93	A	EL	8.845	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.573	48.237	1.4	0.267	5.92	A	EL	44.224	0.584	4.53	A	EL	8.845	0.80	0.267	3.57	A	EL	44.224	
		SNGARBS2	20.000	--	2.611	52.229	1.4	0.267	4.33	A	EL	44.224	0.584	3.19	A	EL	8.845	0.80	0.267	2.61	A	EL	44.224	
		SNAGRIS2	22.000	--	2.452	53.948	1.4	0.267	4.07	A	EL	44.224	0.584	2.95	A	EL	8.845	0.80	0.267	2.45	A	EL	44.224	
		SNCOTTS3	27.250	--	1.777	48.412	1.4	0.267	2.95	A	EL	44.224	0.584	2.26	A	EL	8.845	0.80	0.267	1.78	A	EL	44.224	
		SNAGGRS4	34.925	--	1.465	51.163	1.4	0.267	2.43	A	EL	44.224	0.584	1.85	A	EL	8.845	0.80	0.267	1.46	A	EL	44.224	
		SNS5A	35.550	--	1.434	50.974	1.4	0.267	2.38	A	EL	44.224	0.584	1.87	A	EL	8.845	0.80	0.267	1.43	A	EL	44.224	
		SNS6A	39.950	--	1.307	52.234	1.4	0.267	2.17	A	EL	44.224	0.584	1.69	A	EL	8.845	0.80	0.267	1.31	A	EL	44.224	
		SNS7B	42.000	--	1.245	52.283	1.4	0.267	2.06	A	EL	44.224	0.584	1.65	A	EL	8.845	0.80	0.267	1.24	A	EL	44.224	
	TTST	TNAGRIT3	33.000	--	1.592	52.537	1.4	0.267	2.64	A	EL	44.224	0.584	2.02	A	EL	8.845	0.80	0.267	1.59	A	EL	44.224	
		TNT4A	33.075	--	1.597	52.815	1.4	0.267	2.65	A	EL	44.224	0.584	1.98	A	EL	8.845	0.80	0.267	1.60	A	EL	44.224	
		TNT6A	41.600	--	1.298	53.997	1.4	0.267	2.15	A	EL	44.224	0.584	1.74	A	EL	8.845	0.80	0.267	1.30	A	EL	44.224	
		TNT7A	42.000	--	1.3	54.619	1.4	0.267	2.16	A	EL	44.224	0.584	1.71	A	EL	8.845	0.80	0.267	1.30	A	EL	44.224	
		TNT7B	42.000	--	1.335	56.09	1.4	0.267	2.21	A	EL	44.224	0.584	1.62	A	EL	8.845	0.80	0.267	1.34	A	EL	44.224	
		TNAGRIT4	43.000	--	1.278	54.943	1.4	0.267	2.12	A	EL	44.224	0.584	1.57	A	EL	8.845	0.80	0.267	1.28	A	EL	44.224	
		TNAGT5A	45.000	--	1.208	54.37	1.4	0.267	2	A	EL	44.224	0.584	1.55	A	EL	8.845	0.80	0.267	1.21	A	EL	44.224	
		TNAGT5B	45.000	3	1.197	53.852	1.4	0.267	1.98	A	EL	44.224	0.584	1.5	A	EL	8.845	0.80	0.267	**1.20**	A	EL	**44.224**	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	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)

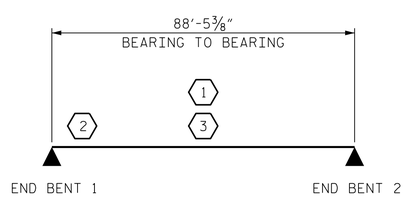
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. 17BP.8.R.125
SCOTLAND COUNTY
STATION: 20+49.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 24939 ENGINEER BYRON E. ATKINSON
4/18/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
90' BOX BEAM UNIT
105° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			15

STD. NO. 33LRFR1_75&105S_90L

ASSEMBLED BY:	J.I. BREWER	DATE: 01/18
CHECKED BY :	B.E. ATKINSON	DATE: 02/18
DESIGN ENGINEER OF RECORD:	B.E. ATKINSON	DATE: 02/18
DRAWN BY : TMC 11/11		
CHECKED BY : AAC 11/11		

4/18/2018
10:47:56 AM
User: blanning
Filename: P:\NC Bridges\M16006_CH Eng_Div. 8 Br. Repl.(5 Bridges)\M16006.02_Scotland 27\17BP8R125\Structures\401_005_17BP8R125_SMU_LRFR1.dgn