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	1.12	--	1.75	0.278	1.52	B	EL	29.20	0.484	1.39	B	EL	5.20	0.80	0.278	1.12	B	EL	29.20	
		HL-93(Opr)	N/A	--	1.85	--	1.35	0.278	1.97	B	EL	29.20	0.484	1.85	B	EL	5.20	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.43	51.48	1.75	0.278	1.93	B	EL	29.20	0.594	1.73	B	EL	5.20	0.80	0.278	1.43	B	EL	29.20	
		HS-20(Opr)	36.000	--	2.29	82.44	1.35	0.278	2.51	B	EL	29.20	0.594	2.29	B	EL	5.20	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.15	42.52	1.4	0.278	5.32	B	EL	29.20	0.594	5.33	B	EL	5.20	0.80	0.278	3.15	B	EL	29.20	
		SNGARBS2	20.000	--	2.38	47.60	1.4	0.278	4.01	B	EL	29.20	0.594	3.78	B	EL	5.20	0.80	0.278	2.38	B	EL	29.20	
		SNAGRIS2	22.000	--	2.25	49.50	1.4	0.278	3.80	B	EL	29.20	0.594	3.52	B	EL	5.20	0.80	0.278	2.25	B	EL	29.20	
		SNCOTTS3	27.250	--	1.55	42.23	1.4	0.278	2.62	B	EL	29.20	0.594	2.59	B	EL	5.20	0.80	0.278	1.55	B	EL	29.20	
		SNAGGRS4	34.925	--	1.31	45.75	1.4	0.278	2.21	B	EL	29.20	0.594	2.15	B	EL	5.20	0.80	0.278	1.31	B	EL	29.20	
		SNS5A	35.550	--	1.28	45.50	1.4	0.278	2.17	B	EL	29.20	0.594	2.19	B	EL	5.20	0.80	0.278	1.28	B	EL	29.20	
		SNS6A	39.950	--	1.19	47.54	1.4	0.278	2.01	B	EL	29.20	0.594	2.00	B	EL	5.20	0.80	0.278	1.19	B	EL	29.20	
		SNS7B	42.000	--	1.13	47.46	1.4	0.278	1.91	B	EL	29.20	0.594	1.98	B	EL	5.20	0.80	0.278	1.13	B	EL	29.20	
	TTST	TNAGRIT3	33.000	--	1.46	48.18	1.4	0.278	2.46	B	EL	29.20	0.594	2.40	B	EL	5.20	0.80	0.278	1.46	B	EL	29.20	
		TNT4A	33.075	--	1.46	48.28	1.4	0.278	2.47	B	EL	29.20	0.594	2.32	B	EL	5.20	0.80	0.278	1.46	B	EL	29.20	
		TNT6A	41.600	--	1.20	49.92	1.4	0.278	2.02	B	EL	29.20	0.594	2.15	B	EL	5.20	0.80	0.278	1.20	B	EL	29.20	
		TNT7A	42.000	--	1.21	50.82	1.4	0.278	2.04	B	EL	29.20	0.594	2.05	B	EL	5.20	0.80	0.278	1.21	B	EL	29.20	
		TNT7B	42.000	--	1.26	52.92	1.4	0.278	2.12	B	EL	29.20	0.594	1.92	B	EL	5.20	0.80	0.278	1.26	B	EL	29.20	
		TNAGRIT4	43.000	--	1.19	51.17	1.4	0.278	2.01	B	EL	29.20	0.594	1.85	B	EL	5.20	0.80	0.278	1.19	B	EL	29.20	
		TNAGT5A	45.000	--	1.12	50.40	1.4	0.278	1.89	B	EL	29.20	0.594	1.85	B	EL	5.20	0.80	0.278	1.12	B	EL	29.20	
		TNAGT5B	45.000	3	1.10	49.50	1.4	0.278	1.86	B	EL	29.20	0.594	1.75	B	EL	5.20	0.80	0.278	1.10	B	EL	29.20	

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. ALL RATINGS BASED UPON 0 PSI TENSION IN THE PRE-COMPRESSED TENSILE ZONE.
2. LOSSES WERE CALCULATED USING THE AASHTO REFINED METHOD FOR CALCULATING TIME DEPENDENT LOSSES. LOSSES ARE AS FOLLOWS:
   INITIAL LOSSES - 9.09 KSI (4.49%)
   TOTAL LOSSES - 27.72 KSI (13.69%)

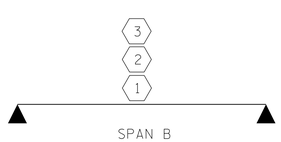
CONTROLLING LOAD RATING

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.5.R.56
WARREN COUNTY
STATION: 15+60.00 -L-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 60' BOX BEAM UNIT 75° SKEW & 105° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			21

DRAWN BY: H.ASSFOURA DATE: 11/14
CHECKED BY: P.JACOB DATE: 11/14
DESIGN ENGINEER OF RECORD: D.RUGGLES DATE: 11/15

3/8/2016
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USER:jloftus