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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	1.42	--	1.75	0.282	1.42	85'	E	41.75	0.501	2.79	85'	E	2.36	0.80	0.282	1.65	85'	E	41.75	
		HL-93(Opr)	N/A	--	1.84	--	1.35	0.282	1.84	85'	E	41.75	0.501	3.61	85'	E	2.36	N/A	--	--	--	--	--	
		HS-20(Inv)	36.00	2	1.90	68.408	1.75	0.282	1.90	85'	E	41.75	0.501	2.77	85'	E	2.36	0.80	0.282	2.21	85'	E	41.75	
		HS-20(Opr)	36.00	--	2.46	88.677	1.35	0.282	2.46	85'	E	41.75	0.501	3.59	85'	E	2.36	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.50	--	4.84	65.404	1.40	0.282	5.22	85'	E	41.75	0.501	6.98	85'	E	2.36	0.80	0.282	4.84	85'	E	41.75	
		SNGARBS2	20.00	--	3.76	75.166	1.40	0.282	4.04	85'	E	41.75	0.501	5.20	85'	E	2.36	0.80	0.282	3.76	85'	E	41.75	
		SNAGRIS2	22.00	--	3.54	77.773	1.40	0.282	3.80	85'	E	41.75	0.501	3.75	85'	E	2.36	0.80	0.282	3.54	85'	E	41.75	
		SNCOTTS3	27.25	--	2.54	69.351	1.40	0.282	2.73	85'	E	41.75	0.501	3.99	85'	E	2.36	0.80	0.282	2.54	85'	E	41.75	
		SNAGGRS4	34.93	--	2.10	73.505	1.40	0.282	2.26	85'	E	41.75	0.501	3.46	85'	E	2.36	0.80	0.282	2.10	85'	E	41.75	
		SNS5A	35.55	--	2.06	73.253	1.40	0.282	2.22	85'	E	41.75	0.501	3.47	85'	E	2.36	0.80	0.282	2.06	85'	E	41.75	
		SNS6A	39.95	--	1.89	75.701	1.40	0.282	2.04	85'	E	41.75	0.501	3.26	85'	E	2.36	0.80	0.282	1.89	85'	E	41.75	
		SNS7B	42.00	--	1.79	75.238	1.40	0.282	1.93	85'	E	41.75	0.501	3.19	85'	E	2.36	0.80	0.282	1.79	85'	E	41.75	
	TTST	TNAGRIT3	33.00	--	2.29	75.646	1.40	0.282	2.47	85'	E	41.75	0.501	3.68	85'	E	2.36	0.80	0.282	2.29	85'	E	41.75	
		TNT4A	33.08	--	2.30	76.049	1.40	0.282	2.47	85'	E	41.75	0.501	3.62	85'	E	2.36	0.80	0.282	2.30	85'	E	41.75	
		TNT6A	41.60	--	1.87	77.914	1.40	0.282	2.02	85'	E	41.75	0.501	3.31	85'	E	2.36	0.80	0.282	1.87	85'	E	41.75	
		TNT7A	42.00	--	1.88	78.859	1.40	0.282	2.02	85'	E	41.75	0.501	3.26	85'	E	2.36	0.80	0.282	1.88	85'	E	41.75	
		TNT7B	42.00	--	1.93	81.149	1.40	0.282	2.08	85'	E	41.75	0.501	3.15	85'	E	2.36	0.80	0.282	1.93	85'	E	41.75	
		TNAGRIT4	43.00	--	1.85	79.345	1.40	0.282	1.99	85'	E	41.75	0.501	3.09	85'	E	2.36	0.80	0.282	1.85	85'	E	41.75	
		TNAGT5A	45.00	--	1.74	78.498	1.40	0.282	1.88	85'	E	41.75	0.501	3.06	85'	E	2.36	0.80	0.282	1.74	85'	E	32.00	
		TNAGT5B	45.00	3	1.73	77.660	1.40	0.282	1.86	85'	E	41.75	0.501	2.99	85'	E	2.36	0.80	0.282	1.73	85'	E	41.75	

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.

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

1
2
3

LRFR SUMMARY

Vaughn & Melton
Consulting Engineers
Raleigh, North Carolina
919-977-9455
Asheville, NC 828-253-2796
Charlotte, NC 704-357-0488
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3509
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NORTH CAROLINA PROFESSIONAL SEAL 18090 ENGINEER THOMAS CHARLES PAUL GRAHAM
Digitally signed by
5/23/2018 8:00:55 AM PDT

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PROJECT NO. 17BP.1.R.78
GATES COUNTY
STATION: 18+41.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR 85' BOX BEAM UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			19

ASSEMBLED BY :	FRJ	DATE :	1/18
CHECKED BY :	RTS	DATE :	1/18
DES ENG OF RECORD :	RTS	DATE :	1/18
DRAWN BY : TMG	II/II		
CHECKED BY : AAC	II/II		

5/21/2018
$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
User:wdcrutcher