

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS																
LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING ⬡	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE								COMMENT NUMBER	
							LIVE-LOAD FACTORS (γ _{LL})	MOMENT				SHEAR				
								RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE		DISTANCE FROM LEFT END OF ELEMENT (ft)
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	⬡1	1.05	--	1.75	1.17	1	BOTT. SLAB	8.00	1.05	1	TOP SLAB	7.67	
		HL-93 (OPERATING)	N/A		1.36	--	1.35	1.51	1	BOTT. SLAB	8.00	1.36	1	TOP SLAB	7.67	
		HS-20 (INVENTORY)	36,000	⬡2	1.09	39.24	1.75	1.15	1	BOTT. SLAB	8.00	1.09	1	TOP SLAB	7.67	
		HS-20 (OPERATING)	36,000		1.41	50.76	1.35	1.49	1	BOTT. SLAB	8.00	1.41	1	TOP SLAB	7.67	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13,500		2.22	29.97	1.40	2.48	1	BOTT. SLAB	4.00	2.22	1	TOP SLAB	7.67	
		SNGARBS2	20,000		2.03	40.60	1.40	2.28	1	BOTT. SLAB	8.00	2.03	1	TOP SLAB	7.67	
		SNAGRIS2	22,000		2.11	46.42	1.40	2.11	1	BOTT. SLAB	8.00	2.22	1	TOP SLAB	7.67	
		SNCOTTS3	27,250	⬡3	1.31	35.70	1.40	1.64	1	BOTT. SLAB	8.00	1.31	1	TOP SLAB	7.67	
		SNAGGRS4	34,925		1.62	56.58	1.40	1.62	1	BOTT. SLAB	8.00	1.64	1	TOP SLAB	7.67	
		SNS5A	35,550		1.52	54.04	1.40	1.59	1	BOTT. SLAB	8.00	1.52	1	TOP SLAB	7.67	
		SNS6A	39,950		1.38	55.13	1.40	1.44	1	BOTT. SLAB	8.00	1.38	1	BOTT. SLAB	8.00	
		SNS7B	42,000		1.38	57.96	1.40	1.43	1	BOTT. SLAB	8.00	1.38	1	BOTT. SLAB	8.00	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33,000		1.85	61.05	1.40	1.85	1	TOP SLAB	5.67	2.04	1	TOP SLAB	7.67	
		TNT4A	33,075		1.53	50.60	1.40	1.68	1	BOTT. SLAB	8.00	1.53	1	TOP SLAB	7.67	
		TNT6A	41,600		1.52	63.23	1.40	1.69	1	BOTT. SLAB	8.00	1.52	1	TOP SLAB	7.67	
		TNT7A	42,000		1.53	64.26	1.40	1.67	1	BOTT. SLAB	8.00	1.53	1	TOP SLAB	7.67	
		TNT7B	42,000		1.50	63.00	1.40	1.56	1	BOTT. SLAB	8.00	1.50	1	TOP SLAB	7.67	
		TNAGRIT4	43,000		1.41	60.63	1.40	1.45	1	BOTT. SLAB	8.00	1.41	1	BOTT. SLAB	8.00	
		TNAGT5A	45,000		1.41	63.45	1.40	1.45	1	BOTT. SLAB	8.00	1.41	1	BOTT. SLAB	8.00	
		TNAGT5B	45,000		1.34	60.30	1.40	1.41	1	BOTT. SLAB	8.00	1.34	1	BOTT. SLAB	6.00	
EMERGENCY VEHICLE (EV)		EV2	28,750		1.52	43.70	1.30	1.76	1	BOTT. SLAB	8.00	1.52	1	TOP SLAB	7.67	
		EV3	43,000	⬡4	1.14	49.02	1.30	1.53	1	BOTT. SLAB	8.00	1.14	1	TOP SLAB	7.67	

LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

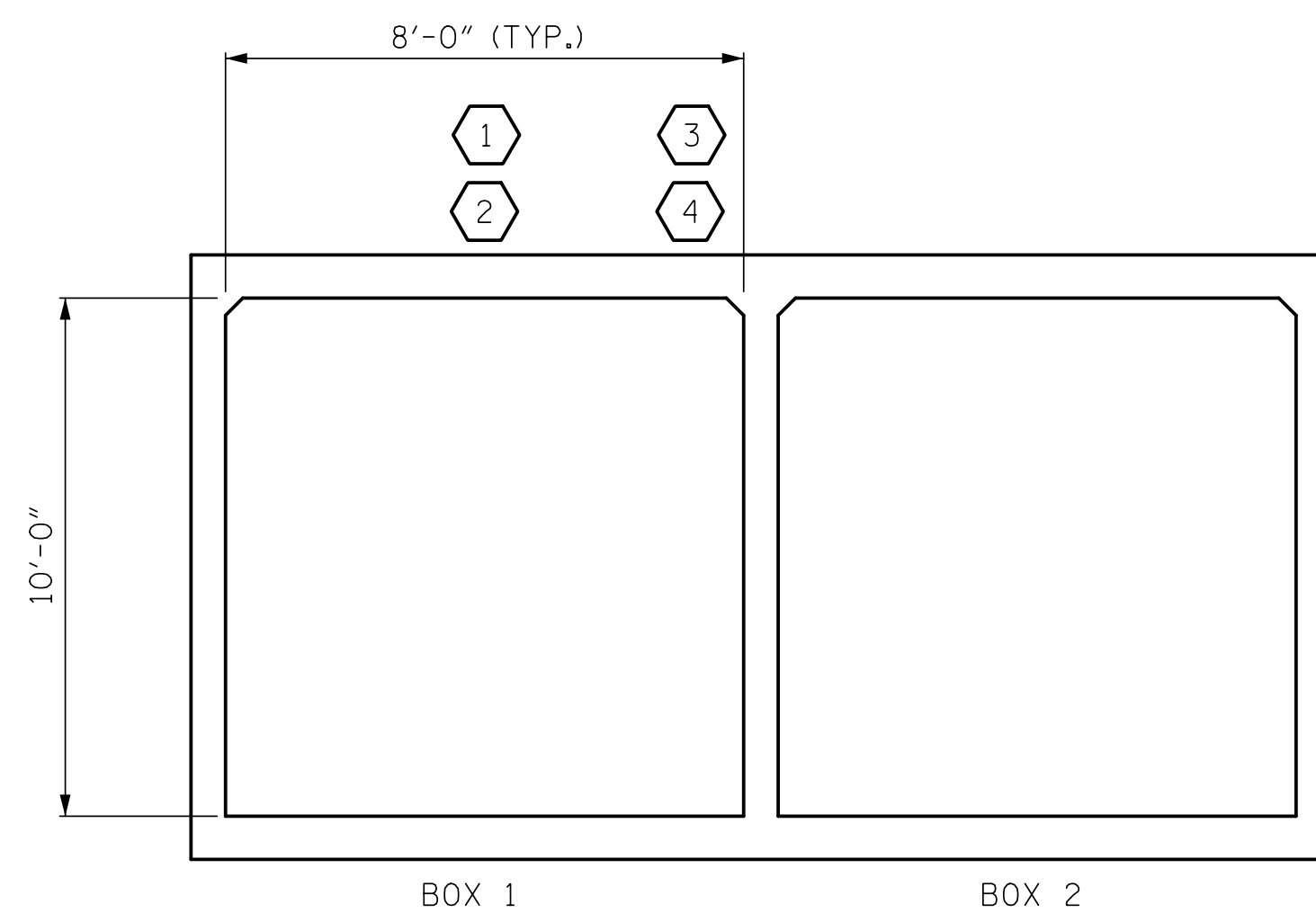
RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

- 1 DESIGN LOAD RATING (HL-93)
- 2 DESIGN LOAD RATING (HS-20)
- 3 LEGAL LOAD RATING **
- 4 EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE



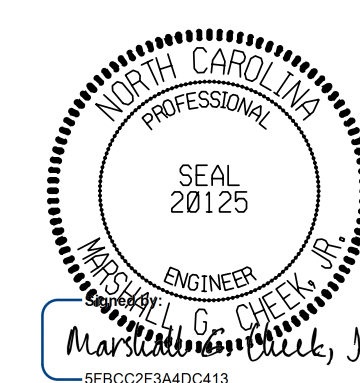
(LOOKING DOWNSTREAM)

ASSEMBLED BY :	STM	DATE :	07/23
CHECKED BY :	MGC	DATE :	11/23
DRAWN BY :	WMC	7/11	REV. 10/1/11 MAA/GM
CHECKED BY :	GM	7/11	REV. 12/17 MAA/THA
			REV. 04/23 BNB/AA

11/29/2023
X:\NCDOT\TR-5739\Structures\Str. #5 (499 + 65.60 -L)\Final Plans\DGNS\R-5739-SMU-CU-STR 5.2.dgn
User:ZSmith

PROJECT NO. R-5739
NORTHAMPTON COUNTY
 STATION: 499+65.60 -L-

SHEET 2 OF 9



7/23/2025

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

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CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS (NON-INTERSTATE TRAFFIC)

ID	REVISIONS						SHEET NO.
	NO.	BY:	DATE:	NO.	BY:	DATE:	C5-2
	1			3			TOTAL SHEETS
2				4			9

STR. #5

STD. NO. LRFR5