

LOAD FACTORS:

DESIGN LOAD RATING FACTORS		
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	--

NOTE: _____

RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

COMMENTS:

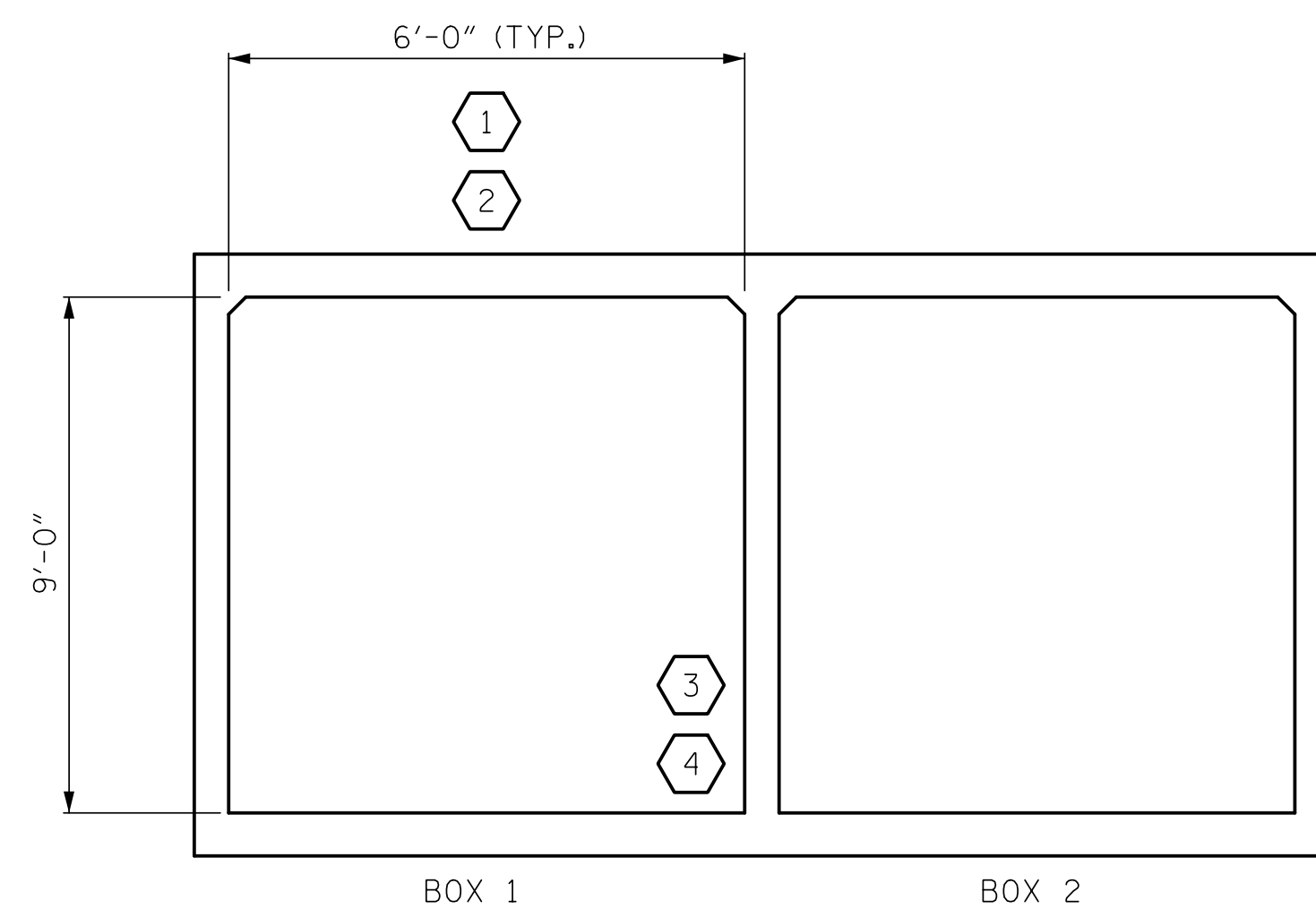
- 1.
- 2.
- 3.
- 4.

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

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	1.14	--	1.75	1.14	1	BOTT. SLAB	6.00	1.17	1	TOP SLAB	5.67		
	HL-93 (OPERATING)	N/A		1.48	--	1.35	1.48	1	BOTT. SLAB	6.00	1.51	1	TOP SLAB	5.67		
	HS-20 (INVENTORY)	36.000	②	1.09	39.24	1.75	1.19	1	BOTT. SLAB	3.00	1.09	1	TOP SLAB	5.67		
	HS-20 (OPERATING)	36.000		1.41	50.76	1.35	1.54	1	BOTT. SLAB	3.00	1.41	1	TOP SLAB	5.67		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		2.37	32.00	1.40	2.93	1	EXT. WALL	0.33	2.37	1	TOP SLAB	5.67	
		SNGARBS2	20.000		2.17	43.40	1.40	2.79	1	TOP SLAB	3.00	2.17	1	TOP SLAB	5.67	
		SNAGRIS2	22.000		2.37	52.14	1.40	2.93	1	EXT. WALL	0.33	2.37	1	TOP SLAB	5.67	
		SNCOTTS3	27.250		1.43	38.97	1.40	1.43	1	BOTT. SLAB	6.00	1.60	1	TOP SLAB	5.67	
		SNAGGRS4	34.925		1.40	48.90	1.40	1.40	1	BOTT. SLAB	6.00	1.83	1	BOTT. SLAB	5.67	
		SNS5A	35.550		1.37	48.70	1.40	1.37	1	BOTT. SLAB	6.00	1.77	1	BOTT. SLAB	5.67	
		SNS6A	39.950		1.32	52.73	1.40	1.32	1	BOTT. SLAB	6.00	1.76	1	BOTT. SLAB	5.67	
		SNSTB	42.000	③	1.32	55.44	1.40	1.32	1	BOTT. SLAB	6.00	1.76	1	BOTT. SLAB	5.67	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.68	55.44	1.40	1.68	1	BOTT. SLAB	6.00	2.17	1	TOP SLAB	5.67	
		TNT4A	33.075		1.63	53.91	1.40	1.63	1	BOTT. SLAB	6.00	1.92	1	TOP SLAB	5.67	
		TNT6A	41.600		1.46	60.74	1.40	1.46	1	BOTT. SLAB	6.00	1.84	1	TOP SLAB	5.67	
		TNT7A	42.000		1.57	65.94	1.40	1.57	1	BOTT. SLAB	6.00	1.88	1	TOP SLAB	5.67	
		TNT7B	42.000		1.33	55.86	1.40	1.33	1	BOTT. SLAB	6.00	1.77	1	BOTT. SLAB	5.67	
		TNAGRIT4	43.000		1.58	67.94	1.40	1.58	1	BOTT. SLAB	6.00	1.88	1	TOP SLAB	5.67	
TNAGT5A		45.000		1.58	71.10	1.40	1.58	1	BOTT. SLAB	6.00	1.88	1	TOP SLAB	5.67		
TNAGT5B		45.000		1.59	71.55	1.40	1.59	1	BOTT. SLAB	6.00	1.89	1	TOP SLAB	5.67		
EMERGENCY VEHICLE (EV)	EV2	28.750		1.50	43.13	1.30	2.11	1	TOP SLAB	3.00	1.50	1	TOP SLAB	5.67		
	EV3	43.000	④	1.24	53.32	1.30	1.24	1	BOTT. SLAB	6.00	1.39	1	TOP SLAB	5.67		



LRFR SUMMARY

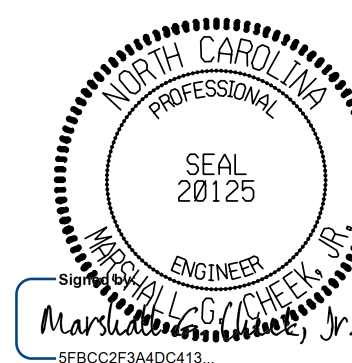
(LOOKING DOWNSTREAM)

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

11/29/2023
X:\NCDDOT\R-5739\Structures\Str. #4 (451 + 96.00 -L-)\Final Plans\DGNS\R-5739-SMU_CU_STR 4.2.dgn
User:ZSmith

PROJECT NO. R-5739
NORTHAMPTON COUNTY
 STATION: 451+96.00 -L-

SHEET 2 OF 9



7/23/2025

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

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CORP. LICENSE NO. C-0277

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO. C4-2
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 9
2			4			

STR. #4

STD. NO. LRFR5