

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 x 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	1.34	--	1.75	1.34	1	TOP SLAB	5.40	1.79	1	TOP SLAB	11.80		
	HL-93 (OPERATING)	N/A		1.74	--	1.35	1.74	1	TOP SLAB	5.40	2.31	1	TOP SLAB	11.80		
	HS-20 (INVENTORY)	36.000	②	1.40	50.4	1.75	1.40	1	TOP SLAB	5.40	1.86	1	TOP SLAB	11.80		
	HS-20 (OPERATING)	36.000		1.81	65.2	1.35	1.81	1	TOP SLAB	5.40	2.41	1	TOP SLAB	11.80		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		2.86	38.6	1.40	2.86	1	TOP SLAB	5.40	3.79	1	TOP SLAB	11.80	
		SNGARBS2	20.000		2.68	53.6	1.40	2.68	1	TOP SLAB	5.40	3.55	1	TOP SLAB	11.80	
		SNAGRIS2	22.000		2.86	62.9	1.40	2.86	1	TOP SLAB	5.40	3.79	1	TOP SLAB	11.80	
		SNCOTTS3	27.250	③	1.67	45.5	1.40	1.67	1	TOP SLAB	5.40	2.23	1	TOP SLAB	11.80	
		SNAGGRS4	34.925		2.41	84.2	1.40	2.41	1	TOP SLAB	5.40	3.19	1	TOP SLAB	11.80	
		SNS5A	35.550		2.84	101.0	1.40	2.84	1	TOP SLAB	5.40	3.77	1	TOP SLAB	11.80	
		SNS6A	39.950		1.99	79.5	1.40	1.99	1	TOP SLAB	5.40	2.65	1	TOP SLAB	11.80	
		SNS7B	42.000		1.99	83.6	1.40	1.99	1	TOP SLAB	5.40	2.65	1	TOP SLAB	11.80	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.50	82.5	1.40	2.50	1	TOP SLAB	5.40	3.32	1	TOP SLAB	11.80	
		TNT4A	33.075		1.99	65.8	1.40	1.99	1	TOP SLAB	5.40	2.65	1	TOP SLAB	11.80	
		TNT6A	41.600		2.87	119.4	1.40	2.87	1	TOP SLAB	5.40	3.81	1	TOP SLAB	11.80	
		TNT7A	42.000		3.00	126.0	1.40	3.00	1	TOP SLAB	5.40	3.97	1	TOP SLAB	11.80	
		TNT7B	42.000		1.99	83.6	1.40	1.99	1	TOP SLAB	5.40	2.65	1	TOP SLAB	11.80	
		TNAGRIT4	43.000		1.99	85.6	1.40	1.99	1	TOP SLAB	5.40	2.65	1	TOP SLAB	11.80	
TNAGT5A	45.000		1.99	89.6	1.40	1.99	1	TOP SLAB	5.40	2.65	1	TOP SLAB	11.80			
TNAGT5B	45.000		1.99	89.6	1.40	1.99	1	TOP SLAB	5.40	2.65	1	TOP SLAB	11.80			

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	--

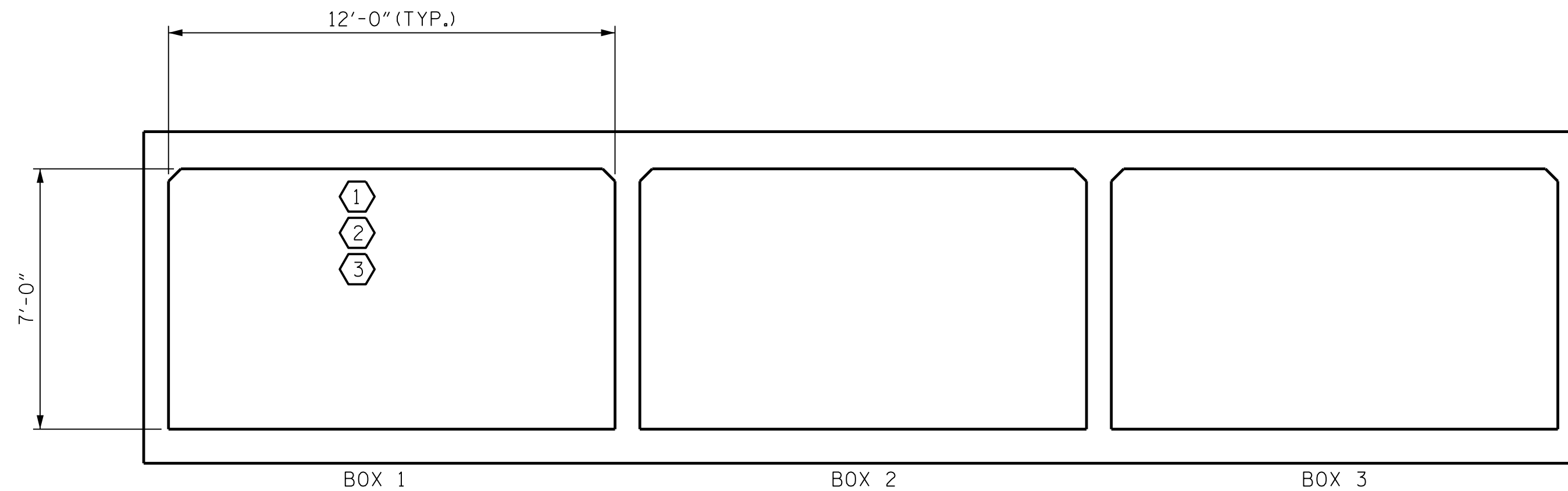
NOTES:

RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

LL SURCHARGE DEPTH = 2.15 FT.

WHERE ELEMENT TYPE EQUALS "WALL", DISTANCE MEASURED FROM BOTTOM OF BOTTOM SLAB.

#	CONTROLLING LOAD RATING
①	DESIGN LOAD RATING (HL-93)
②	DESIGN LOAD RATING (HS-20)
③	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	



LRFR SUMMARY
(LOOKING DOWN STREAM)

PROJECT NO. U-2579AB

FORSYTH COUNTY

STATION: 18+22.67 -Y5B-

SHEET 9 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

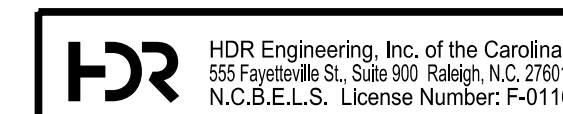
REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
C5-9
TOTAL SHEETS
9



10/11/2021
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DES BY: <u>T. MCALEENAN</u>	DATE: <u>07/19</u>	DWG BY: <u>T. MCALEENAN</u>	DATE: <u>07/19</u>
DES CHK: <u>R. TURNAGE</u>	DATE: <u>07/19</u>	CHK BY: <u>R. TURNAGE</u>	DATE: <u>07/19</u>

PLOT DRIVER: NCDOT STRUCTURES DEFAULT PLOTTER.plt PENTABLE: NCDOT STRUCTURES DEFAULT PEN.tbl
 USER: PETERSO DATE: 5/20/2021 TIME: 10:30:05 AM
 FILE: ...RATING SUMMARY