

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS

LOAD TYPE	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE								COMMENT NUMBER		
						MOMENT				SHEAR						
						LIVE-LOAD FACTORS (%L)	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	HL-93 (INVENTORY)	N/A	1	1.33	--	1.75	1.33	1	EXTERIOR WALL	1.00	1.57	3	TOP SLAB	36.00		
	HL-93 (OPERATING)	N/A		1.72	--	1.35	1.72	1	EXTERIOR WALL	1.00	2.04	3	TOP SLAB	36.00		
	HS-20 (INVENTORY)	36.000	2	1.34	48.24	1.75	1.34	1	EXTERIOR WALL	1.00	1.95	3	TOP SLAB	36.00		
	HS-20 (OPERATING)	36.000		1.73	62.28	1.35	1.73	1	EXTERIOR WALL	1.00	2.53	3	TOP SLAB	36.00		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH		1.69	22.82	1.40	1.69	1	EXTERIOR WALL	1.00	5.56	1	EXTERIOR WALL	0.50		
		SNGARBS2	20.000		1.69	33.80	1.40	1.69	1	EXTERIOR WALL	1.00	4.52	3	TOP SLAB	36.00	
		SNAGRIS2	22.000		1.69	37.18	1.40	1.69	1	EXTERIOR WALL	1.00	4.29	3	TOP SLAB	36.00	
		SNCOTTS3	27.250	3	1.67	45.51	1.40	1.67	1	EXTERIOR WALL	1.00	2.80	3	TOP SLAB	36.00	
		SNAGGRS4	34.925		1.67	58.32	1.40	1.67	1	EXTERIOR WALL	1.00	2.62	3	TOP SLAB	36.00	
		SNS5A	35.550		1.67	59.37	1.40	1.67	1	EXTERIOR WALL	1.00	2.47	3	TOP SLAB	36.00	
		SNS6A	39.950		1.67	66.72	1.40	1.67	1	EXTERIOR WALL	1.00	2.34	3	TOP SLAB	36.00	
		SNS7B	42.000		1.67	70.14	1.40	1.67	1	EXTERIOR WALL	1.00	2.27	3	TOP SLAB	36.00	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.68	55.44	1.40	1.68	1	EXTERIOR WALL	1.00	3.17	3	TOP SLAB	36.00	
		TNT4A	33.075		1.67	55.24	1.40	1.67	1	EXTERIOR WALL	1.00	2.90	3	TOP SLAB	36.00	
		TNT6A	41.600		1.67	69.47	1.40	1.67	1	EXTERIOR WALL	1.00	2.68	3	TOP SLAB	36.00	
		TNT7A	42.000		1.67	70.14	1.40	1.67	1	EXTERIOR WALL	1.00	2.71	3	TOP SLAB	36.00	
		TNT7B	42.000		1.67	70.14	1.40	1.67	1	EXTERIOR WALL	1.00	2.49	3	TOP SLAB	36.00	
		TNAGRIT4	43.000		1.67	71.81	1.40	1.67	1	EXTERIOR WALL	1.00	2.48	3	TOP SLAB	36.00	
		TNAGT5A	45.000		1.67	75.15	1.40	1.67	1	EXTERIOR WALL	1.00	2.45	3	TOP SLAB	36.00	
		TNAGT5B	45.000		1.67	75.15	1.40	1.67	1	EXTERIOR WALL	1.00	2.23	3	TOP SLAB	36.00	
EMERGENCY VEHICLE (EV)	EV2	28.750		1.81	52.04	1.30	1.81	1	EXTERIOR WALL	1.00	3.71	3	TOP SLAB	36.00		
	EV3	43.000	4	1.79	76.97	1.30	1.79	1	EXTERIOR WALL	1.00	2.41	3	TOP SLAB	36.00		

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.

CONTROLLING LOAD RATING

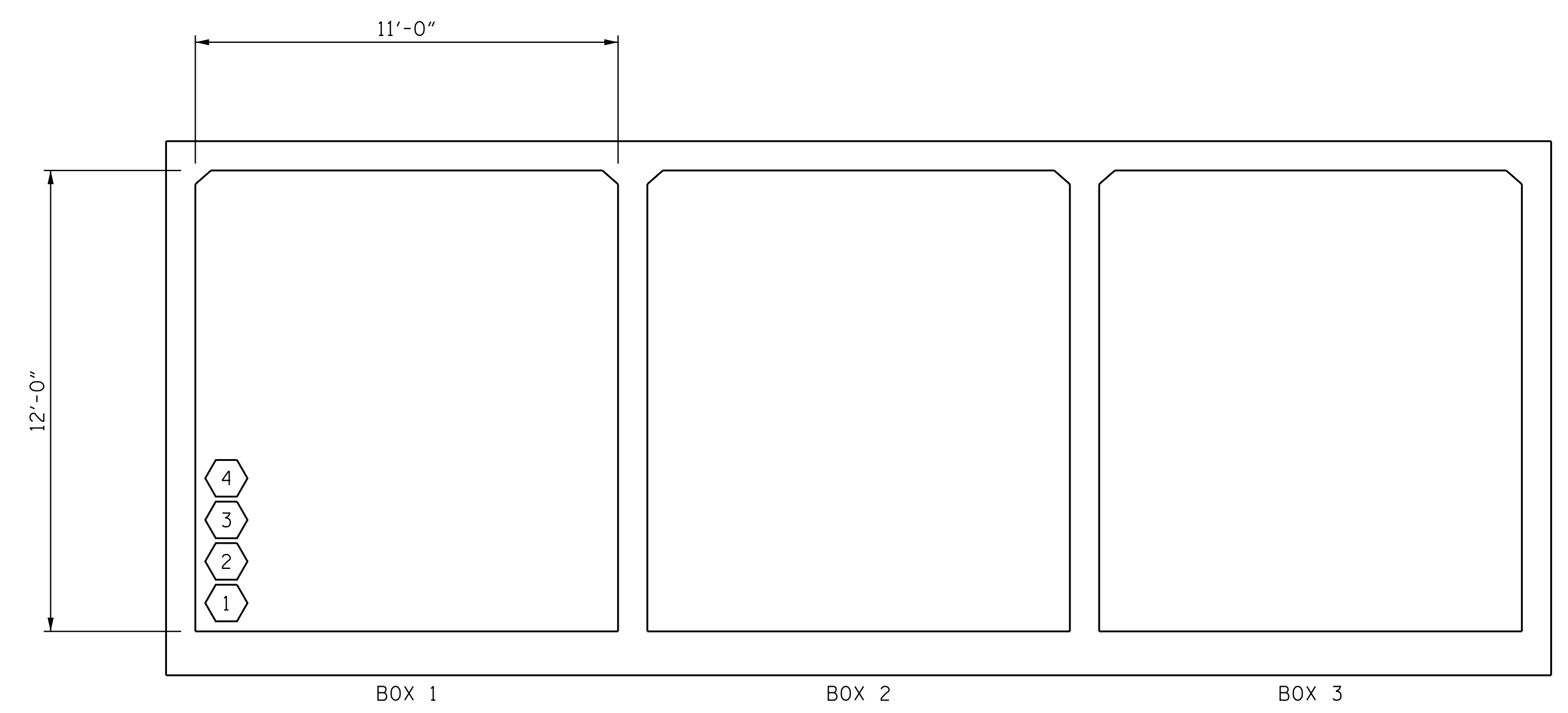
1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

4 EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE



LRFR SUMMARY (LOOKING DOWNSTREAM)

90% PLANS
DO NOT USE FOR CONSTRUCTION

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

PROJECT NO. R-5930B
CHATHAM COUNTY
STATION: 124+63.87 -L-

SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C4-2
1			3			TOTAL SHEETS
2			4			7

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

10/23/2024 K:\BIDI_Structures\Culvert\NC\01036532 - R-5930_Nor-th_CPM\Con\Dgn\A-R-5930B-413-002_R5930B_SMU_C002.dgn

ASSEMBLED BY : D. D. LOWERY	DATE : 10/2023	MAA/GM
CHECKED BY : C. T. POOLE	DATE : 03/2024	MAA/THC
DRAWN BY : WMC 7/11	REV. 10/1/11	BNB/AAI
CHECKED BY : GM 7/11	REV. 12/17	
	REV. 04/23	