

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		
						MOMENT				SHEAR						
						LIVE-LOAD FACTORS (LL)	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	1.09	--	1.75	1.09	1	TOP SLAB	5.74	1.46	1	TOP SLAB	11.61		
	HL-93 (OPERATING)	N/A		1.41	--	1.35	1.41	1	TOP SLAB	5.74	1.90	1	TOP SLAB	11.61		
	HS-20 (INVENTORY)	36.000	②	1.41	50.90	1.75	1.41	1	TOP CORNER WALL	0.66	1.84	1	TOP SLAB	11.61		
	HS-20 (OPERATING)	36.000		1.83	65.98	1.35	1.83	1	TOP CORNER WALL	0.66	2.39	1	TOP SLAB	11.61		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		1.96	26.40	1.40	1.96	1	TOP CORNER WALL	0.66	2.64	1	EXTERIOR WALL	11.94	
		SNGARBS2	20.000		1.92	38.47	1.40	1.92	1	TOP CORNER WALL	0.66	2.64	1	EXTERIOR WALL	11.94	
		SNAGRIS2	22.000		1.96	43.03	1.40	1.96	1	TOP CORNER WALL	0.66	2.64	1	EXTERIOR WALL	11.94	
		SNCOTTS3	27.250	③	1.36	36.97	1.40	1.36	1	TOP SLAB	5.74	1.82	1	TOP SLAB	11.61	
		SNAGGRS4	34.925		1.41	49.30	1.40	1.41	1	TOP SLAB	5.74	1.95	1	TOP SLAB	11.61	
		SNS5A	35.550		1.38	48.90	1.40	1.38	1	TOP SLAB	5.74	1.78	1	TOP SLAB	11.61	
		SNS6A	39.950		1.38	54.95	1.40	1.38	1	TOP SLAB	5.74	1.78	1	TOP SLAB	11.61	
		SNS7B	42.000		1.40	58.90	1.40	1.40	1	TOP SLAB	5.74	1.69	1	TOP SLAB	11.61	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.84	60.68	1.40	1.84	1	TOP CORNER WALL	0.66	2.55	1	TOP SLAB	11.61	
		TNT4A	33.075		1.61	53.30	1.40	1.61	1	TOP CORNER WALL	0.66	2.16	1	TOP SLAB	11.61	
		TNT6A	41.600		1.51	62.83	1.40	1.51	1	TOP SLAB	5.74	1.82	1	TOP SLAB	11.61	
		TNT7A	42.000		1.69	70.91	1.40	1.69	1	TOP SLAB	5.74	1.94	1	TOP SLAB	11.61	
		TNT7B	42.000		1.45	61.07	1.40	1.45	1	TOP SLAB	5.74	1.94	1	TOP SLAB	11.61	
		TNAGRIT4	43.000		1.54	66.09	1.40	1.54	1	TOP SLAB	5.74	1.99	1	BOTTOM SLAB	11.61	
		TNAGT5A	45.000		1.57	70.74	1.40	1.57	1	TOP SLAB	5.74	1.89	1	BOTTOM SLAB	11.61	
		TNAGT5B	45.000		1.61	72.51	1.40	1.61	1	TOP CORNER WALL	0.66	1.89	1	BOTTOM SLAB	11.61	

LOAD FACTORS:

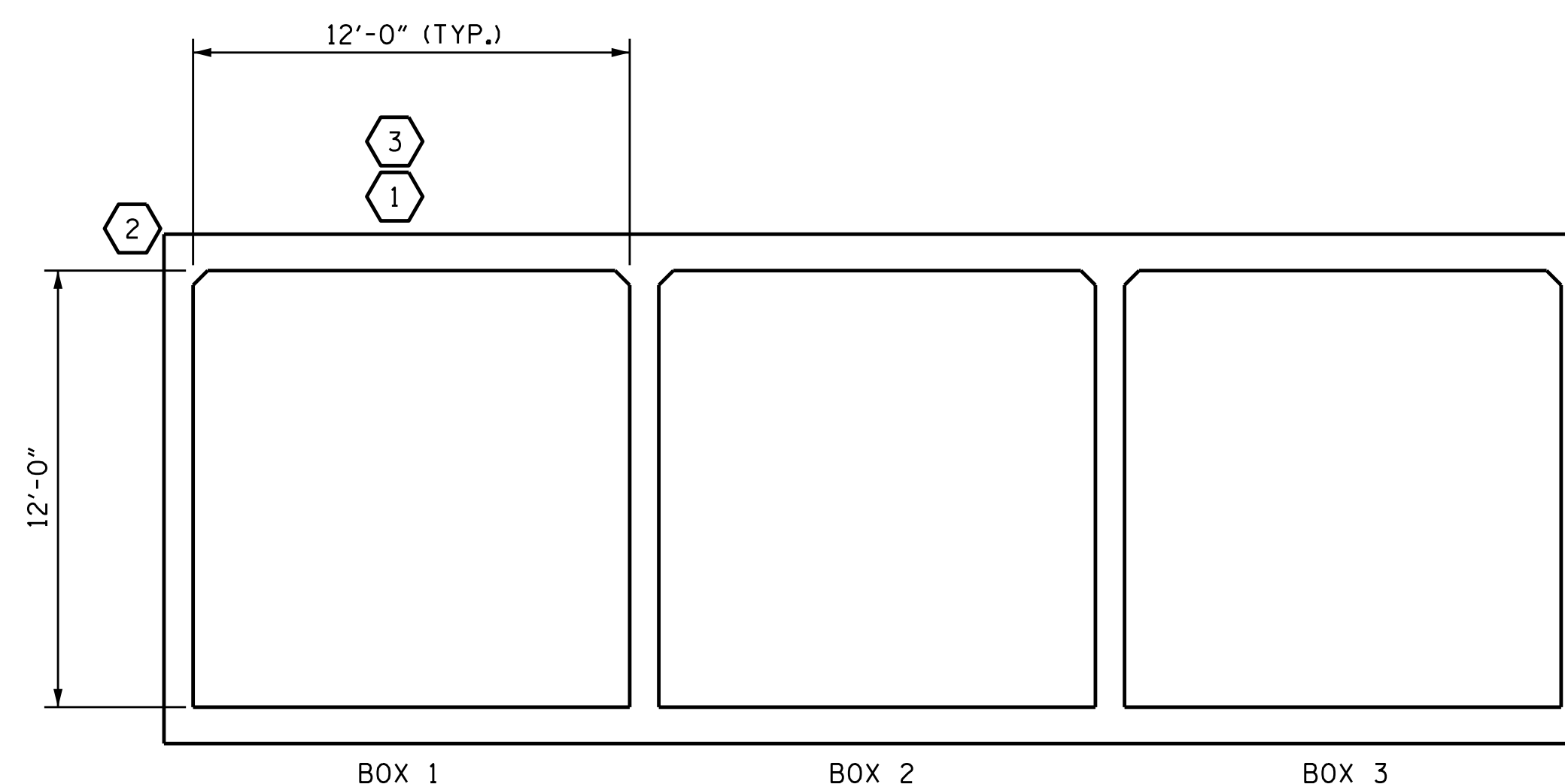
DESIGN LOAD RATING FACTORS

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.

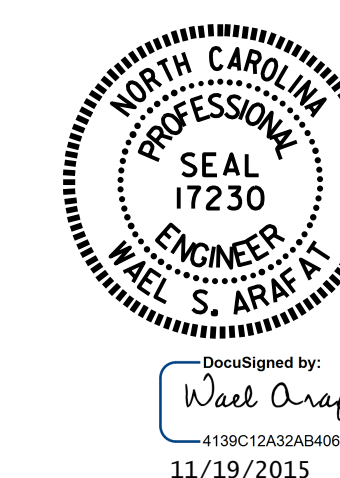
#	CONTROLLING LOAD RATING
①	DESIGN LOAD RATING (HL-93)
②	DESIGN LOAD RATING (HS-20)
③	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	



LRFR SUMMARY
(LOOKING DOWNSTREAM)

PROJECT NO. B-5395
RUTHERFORD COUNTY
 STATION: 21+66.21 -L-

SHEET 7 OF 7



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

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

ASSEMBLED BY : H. T. BARBOUR	DATE : 6-25-15
CHECKED BY : V. X. NGUYEN	DATE : 7-15
DRAWN BY : WMC	7/11
CHECKED BY : CM	7/11
REV. 10/1/11	MAA/GM