

**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 (γ _{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	1.30	--	1.75	1.30	1	BOT. CORNER WALL	10.75	2.14	1	TOP SLAB	1.36		
	HL-93 (OPERATING)	N/A		1.69	--	1.35	1.69	1	BOT. CORNER WALL	10.75	2.78	1	TOP SLAB	1.36		
	HS-20 (INVENTORY)	36.00	②	1.39	50.13	1.75	1.39	1	BOT. CORNER WALL	10.75	2.43	1	TOP SLAB	1.36		
	HS-20 (OPERATING)	36.00		1.81	64.99	1.35	1.81	1	BOT. CORNER WALL	10.75	3.15	1	TOP SLAB	1.36		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.50		1.89	25.52	1.40	1.89	1	BOT. CORNER WALL	10.75	6.07	1	TOP SLAB	1.36	
		SNGARBS2	20.00		1.86	37.16	1.40	1.86	1	BOT. CORNER WALL	10.75	4.69	1	TOP SLAB	1.36	
		SNAGRIS2	22.00		1.82	40.10	1.40	1.82	1	BOT. CORNER WALL	10.75	4.39	1	TOP SLAB	1.36	
		SNCOTTS3	27.25		1.57	42.90	1.40	1.57	1	BOT. CORNER WALL	10.75	2.68	1	TOP SLAB	1.36	
		SNAGGRS4	34.93		1.60	55.79	1.40	1.60	1	BOT. CORNER WALL	10.75	2.52	1	TOP SLAB	1.36	
		SNS5A	35.55	③	1.55	55.17	1.40	1.55	1	BOT. CORNER WALL	10.75	2.37	1	TOP SLAB	1.36	
		SNS6A	39.95		1.55	62.02	1.40	1.55	1	BOT. CORNER WALL	10.75	2.40	1	TOP SLAB	1.36	
		SNS7B	42.00		1.55	65.20	1.40	1.55	1	BOT. CORNER WALL	10.75	2.40	1	TOP SLAB	1.36	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.00		1.74	57.34	1.40	1.74	1	BOT. CORNER WALL	10.75	3.17	1	TOP SLAB	1.36	
		TNT4A	33.08		1.65	54.45	1.40	1.65	1	BOT. CORNER WALL	10.75	2.87	1	TOP SLAB	13.47	
		TNT6A	41.60		1.59	66.26	1.40	1.59	1	BOT. CORNER WALL	10.75	2.58	1	TOP SLAB	1.36	
		TNT7A	42.00		1.62	68.23	1.40	1.62	1	BOT. CORNER WALL	10.75	2.91	1	TOP SLAB	1.36	
		TNT7B	42.00		1.58	66.19	1.40	1.58	1	BOT. CORNER WALL	10.75	2.49	1	TOP SLAB	13.47	
		TNAGRIT4	43.00		1.57	67.53	1.40	1.57	1	BOT. CORNER WALL	10.75	2.46	1	TOP SLAB	1.36	
		TNAGT5A	45.00		1.58	71.18	1.40	1.58	1	BOT. CORNER WALL	10.75	2.49	1	TOP SLAB	1.36	
TNAGT5B	45.00		1.59	71.64	1.40	1.59	1	BOT. CORNER WALL	10.75	2.55	1	TOP SLAB	1.36			

LOAD FACTORS:

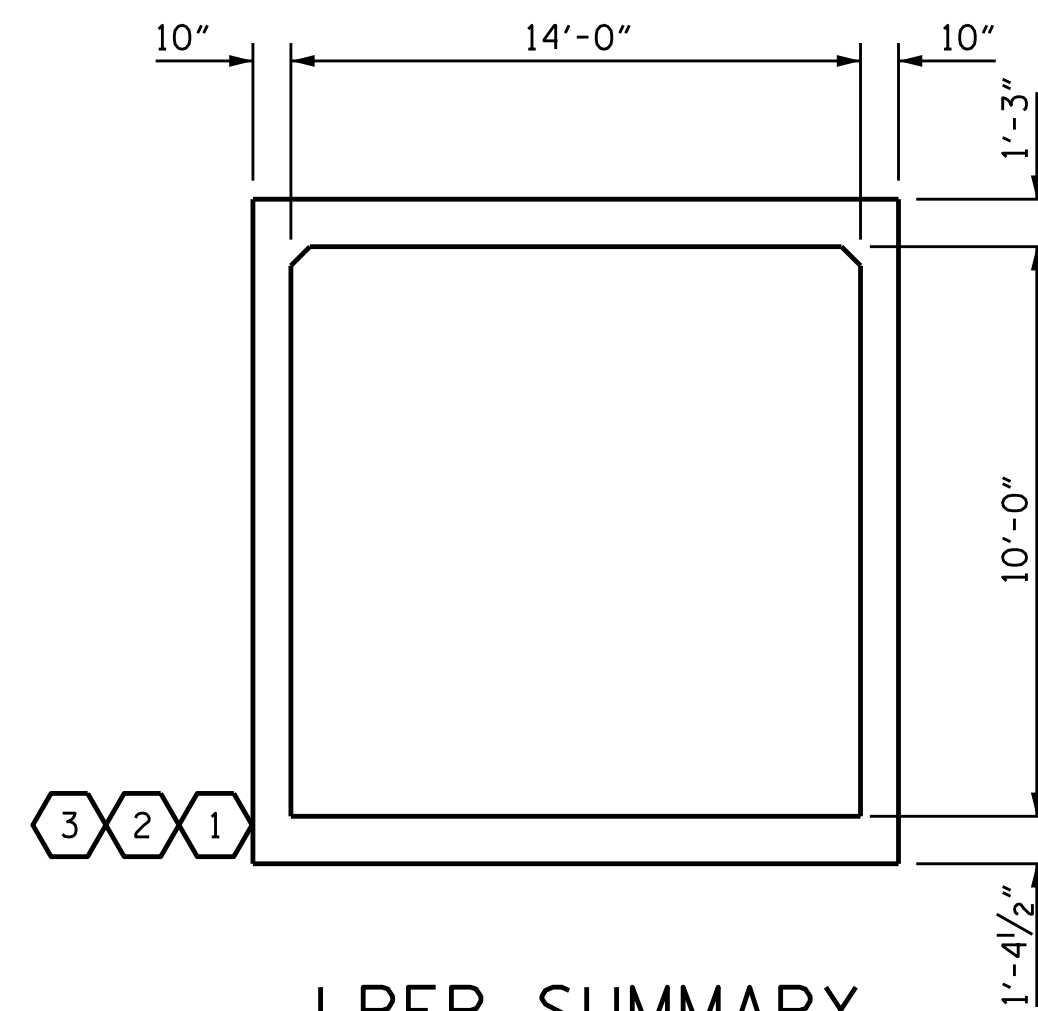
DESIGN LOAD RATING FACTORS

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.

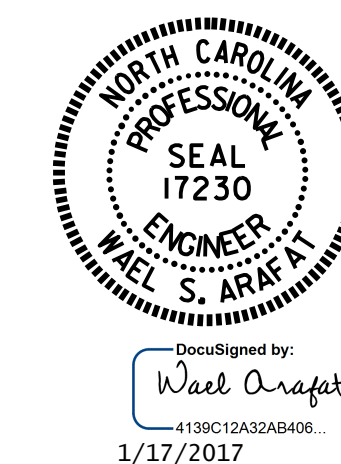
①	CONTROLLING LOAD RATING
①	DESIGN LOAD RATING (HL-93)
②	DESIGN LOAD RATING (HS-20)
③	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	



LRFR SUMMARY
(LOOKING DOWNSTREAM)

PROJECT NO. I-5000
GASTON COUNTY
STATION: 21+83.98 -Y3-

SHEET 2 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
REINFORCED CONCRETE
BOX CULVERTS
(NON-INTERSTATE TRAFFIC)

ASSEMBLED BY : H. T. BARBOUR DATE : 8-15-16
CHECKED BY : A. M. LEE DATE : 9-28-16

DRAWN BY : WMC 7/11
CHECKED BY : GM 7/11

DESIGN ENGINEER OF RECORD:
O. PUIGSERVER DATE : 10-31-16

13-JAN-2017 14:55
E:\TIP\Projects-I\5000\Structures\Final Plans\Culvert *1_PED\I-5000_SD.CU.1.dgn
tbarbour

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-2
1			3			TOTAL SHEETS
2			4			26