

**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	1.05	--	1.75	1.05	1	TOP SLAB	4.33	1.17	1	TOP SLAB	0.81		
	HL-93 (OPERATING)	N/A		1.36	--	1.35	1.36	1	TOP SLAB	4.33	1.51	1	TOP SLAB	0.81		
	HS-20 (INVENTORY)	36.000	②	1.07	38.43	1.75	1.07	1	TOP SLAB	4.33	1.22	1	TOP SLAB	0.81		
	HS-20 (OPERATING)	36.000		1.38	49.82	1.35	1.38	1	TOP SLAB	4.33	1.58	1	TOP SLAB	0.81		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		1.94	26.14	1.40	1.94	1	TOP SLAB	4.33	2.22	1	TOP SLAB	0.81	
		SNGARBS2	20.000		1.81	36.23	1.40	1.81	1	TOP SLAB	4.33	2.07	1	TOP SLAB	0.81	
		SNAGRIS2	22.000		1.94	42.60	1.40	1.94	1	TOP SLAB	4.33	2.22	1	TOP SLAB	0.81	
		SNCOTTS3	27.250	③	1.31	35.65	1.40	1.31	1	TOP SLAB	4.33	1.46	1	TOP SLAB	7.85	
		SNAGGRS4	34.925		1.70	59.30	1.40	1.70	1	TOP SLAB	4.33	1.90	1	BOTTOM SLAB	0.87	
		SNS5A	35.550		1.56	55.37	1.40	1.56	1	TOP SLAB	4.33	1.74	1	TOP SLAB	7.85	
		SNS6A	39.950		1.56	62.22	1.40	1.56	1	TOP SLAB	4.33	1.74	1	TOP SLAB	7.85	
		SNS7B	42.000		1.56	65.41	1.40	1.56	1	TOP SLAB	4.33	1.74	1	TOP SLAB	7.85	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.94	63.91	1.40	1.94	1	TOP SLAB	4.33	2.22	1	TOP SLAB	0.81	
		TNT4A	33.075		1.56	51.51	1.40	1.56	1	TOP SLAB	4.33	1.73	1	TOP SLAB	7.85	
		TNT6A	41.600		1.56	64.79	1.40	1.56	1	TOP SLAB	4.33	1.74	1	TOP SLAB	0.81	
		TNT7A	42.000		1.56	65.42	1.40	1.56	1	TOP SLAB	4.33	1.74	1	TOP SLAB	0.81	
		TNT7B	42.000		1.56	65.41	1.40	1.56	1	TOP SLAB	4.33	1.73	1	TOP SLAB	7.85	
		TNAGRIT4	43.000		1.49	63.92	1.40	1.49	1	TOP SLAB	4.33	1.65	1	TOP SLAB	7.85	
		TNAGT5A	45.000		1.52	68.19	1.40	1.52	1	TOP SLAB	4.33	1.67	1	TOP SLAB	7.85	
		TNAGT5B	45.000		1.56	70.09	1.40	1.56	1	TOP SLAB	4.33	1.73	1	TOP SLAB	7.85	

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	--

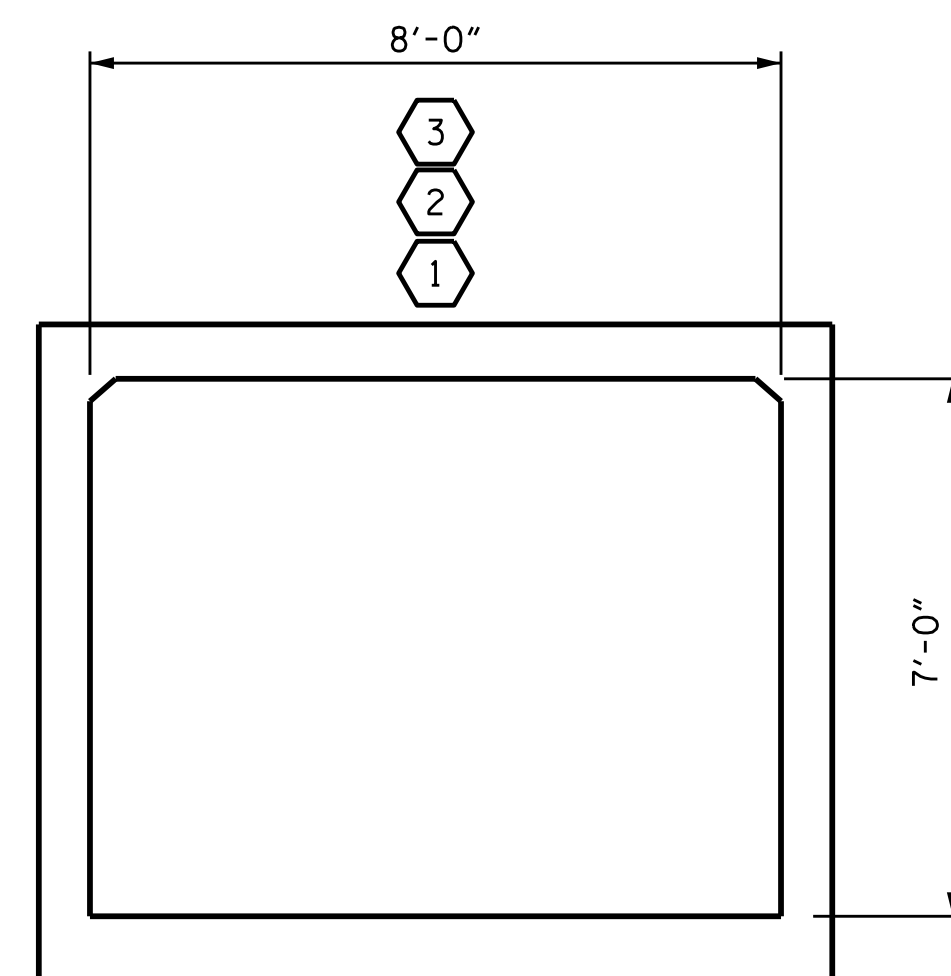
NOTE:

RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

COMMENTS:

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

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



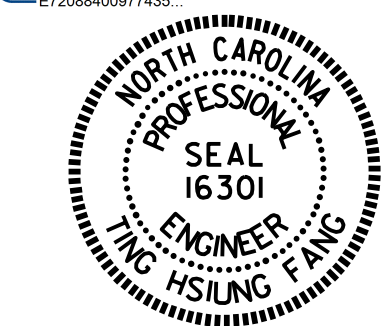
LRFR SUMMARY

(LOOKING DOWNSTREAM)

PROJECT NO. U-2524D
GUILFORD COUNTY
 STATION: 478+64.40 -L-

SHEET 6 OF 6

DocuSigned by:
 Ting Fang
 672088409977436 7/14/2016



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

ASSEMBLED BY : CHECKED BY :	A. SORSENGINH T. H. FANG	DATE : DATE :	1/2016 5/15/16
DRAWN BY : CHECKED BY :	WMC GM	REV. 10/1/11	MAA/GM

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO. C-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
①			③			TOTAL SHEETS 34
②			④			