

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM FACTORS	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	1.53	--	1.75	1.53	1	TOP SLAB	5.67	2.63	1	BOTT. SLAB	0.67		
	HL-93 (OPERATING)	N/A		1.99	--	1.35	1.99	1	TOP SLAB	5.67	3.42	1	BOTT. SLAB	0.67		
	HS-20 (INVENTORY)	36.000	②	1.65	59.4	1.75	1.65	1	TOP SLAB	5.67	2.32	1	BOTT. SLAB	0.67		
	HS-20 (OPERATING)	36.000		2.14	77.0	1.35	2.14	1	TOP SLAB	5.67	3.01	1	BOTT. SLAB	0.67		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		2.23	30.04	1.40	2.23	1	TOP SLAB	5.67	3.83	1	BOTT. SLAB	0.67	1	
		SNGARBS2	20.000		2.08	41.67	1.40	2.08	1	TOP SLAB	5.67	3.58	1	BOTT. SLAB	0.67	1
		SNAGRIS2	22.000		2.23	48.96	1.40	2.23	1	TOP SLAB	5.67	3.83	1	BOTT. SLAB	0.67	1
		SNCOTTS3	27.250	③	1.53	41.69	1.40	1.53	1	TOP SLAB	5.67	2.63	1	BOTT. SLAB	0.67	1
		SNAGGRS4	34.925		2.01	70.3	1.40	2.01	1	TOP SLAB	5.67	3.46	1	BOTT. SLAB	0.67	1
		SNS5A	35.550		1.82	64.8	1.40	1.82	1	TOP SLAB	5.67	3.13	1	BOTT. SLAB	0.67	1
		SNS6A	39.950		1.82	72.8	1.40	1.82	1	TOP SLAB	5.67	3.13	1	BOTT. SLAB	0.67	1
		SNS7B	42.000		1.82	76.5	1.40	1.82	1	TOP SLAB	5.67	3.13	1	BOTT. SLAB	0.67	1
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.23	73.44	1.40	2.23	1	TOP SLAB	5.67	3.83	1	BOTT. SLAB	0.67	1
		TNT4A	33.075		1.82	60.2	1.40	1.82	1	TOP SLAB	5.67	3.13	1	BOTT. SLAB	0.67	1
		TNT6A	41.600		1.82	75.8	1.40	1.82	1	TOP SLAB	5.67	3.13	1	BOTT. SLAB	0.67	1
		TNT7A	42.000		1.82	76.5	1.40	1.82	1	TOP SLAB	5.67	3.13	1	BOTT. SLAB	0.67	1
		TNT7B	42.000		1.82	76.5	1.40	1.82	1	TOP SLAB	5.67	3.13	1	BOTT. SLAB	0.67	1
		TNAGRIT4	43.000		1.82	78.3	1.40	1.82	1	TOP SLAB	5.67	3.13	1	BOTT. SLAB	0.67	1
TNAGT5A	45.000		1.82	82.0	1.40	1.82	1	TOP SLAB	5.67	3.13	1	BOTT. SLAB	0.67	1		
TNAGT5B	45.000		1.82	82.0	1.40	1.82	1	TOP SLAB	5.67	3.13	1	BOTT. SLAB	0.67	1		

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:

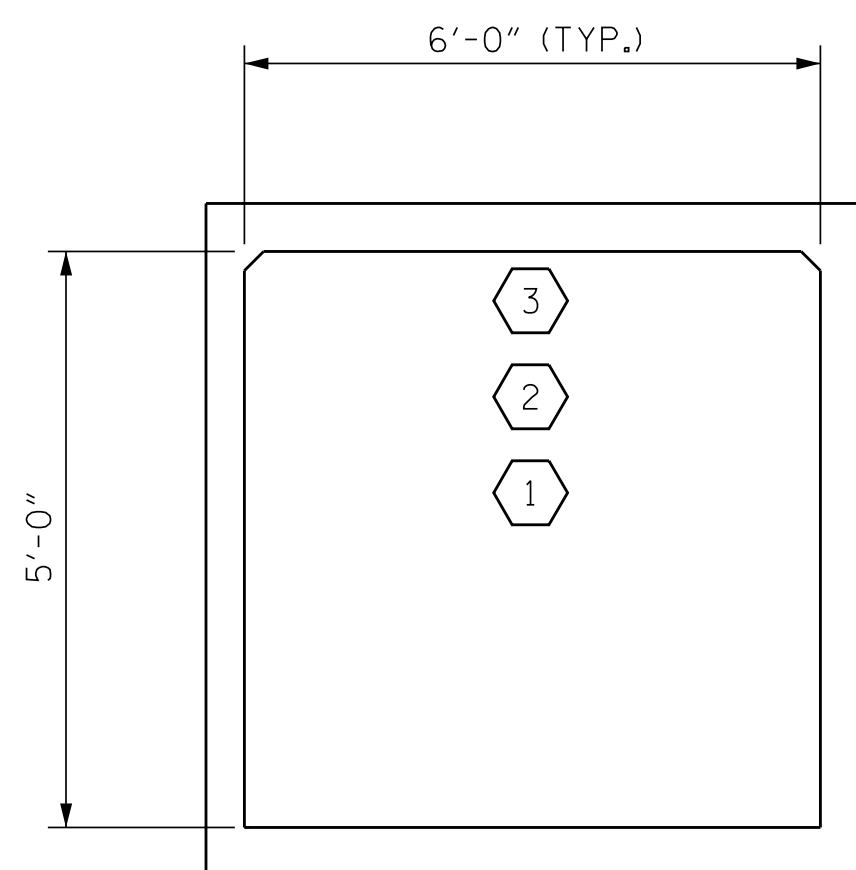
RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

COMMENTS:

1. FILL DEPTH IS SUCH THAT, PER LRFD 3.6.1.2.6, LIVE LOAD IS NOT CONSIDERED TO CONTRIBUTE. THEREFORE, LEGAL LOAD RATING CORRESPONDS TO HL-93 DESIGN LOAD RATING.

- 2.
- 3.
- 4.

#	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. R-5516

CRAVEN COUNTY

STATION: 78+08.84 -L-

SHEET 2 OF 7

ASSEMBLED BY : NKB	DATE : 03/16
CHECKED BY : JCM	DATE : 03/16
DRAWN BY : DST 02/15	REV.
CHECKED BY : JCM 02/15	

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

AECOM

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4/12/2017

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ENGINEER
JOHN C. MORRISON

John C. Morrison
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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:	
1			3			C1-2 TOTAL SHEETS 7
2			4			

DATE: 4/7/2017
TIME: 2:27:08 PM

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