

LOAD FACTORS: _____

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	
						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	2	1.16	--	1.75	2.31	2	Top Slab	5.00	1.16	2	Top Slab	0.83	
	HL-93 (OPERATING)	N/A		1.50	--	1.35	2.95	2	Top Slab	5.00	1.50	2	Top Slab	0.83	
	HS-20 (INVENTORY)	36.000	1	1.16	41.76	1.75	2.17	2	Top Slab	5.00	1.16	2	Top Slab	0.83	
	HS-20 (OPERATING)	36.000		1.50	54.00	1.35	2.81	2	Top Slab	5.00	1.50	2	Top Slab	0.83	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		1.95	26.33	1.40	3.07	2	Top Slab	5.00	1.95	2	Top Slab	0.83	
		SNGARBS2	20.000		3.11	62.20	1.40	3.07	2	Top Slab	5.00	1.70	2	Top Slab	0.83
		SNAGRIS2	22.000		1.74	38.28	1.40	3.12	2	Top Slab	5.00	1.74	2	Top Slab	0.83
		SNCOTTS3	27.250	3	1.40	38.15	1.40	2.83	2	Top Slab	5.00	1.40	2	Top Slab	0.83
		SNAGGRS4	34.925		1.66	57.98	1.40	2.98	2	Top Slab	5.00	1.66	2	Top Slab	0.83
		SNS5A	35.550		1.49	52.97	1.40	2.97	2	Top Slab	5.00	1.49	2	Top Slab	0.83
		SNS6A	39.950		1.48	59.13	1.40	2.95	2	Top Slab	5.00	1.48	2	Top Slab	0.83
	SNS7B	42.000		2.11	88.62	1.40	2.99	2	Top Slab	5.00	1.48	2	Top Slab	0.83	
	TRUCK TRACTOR SEMI- TRAILER (TTST)	TNAGRIT3	33.000		1.64	54.12	1.40	3.13	2	Top Slab	5.00	1.64	2	Top Slab	0.83
		TNT4A	33.075		1.64	54.24	1.40	2.98	2	Top Slab	5.00	1.64	2	Top Slab	0.83
		TNT6A	41.600		1.57	65.31	1.40	2.98	2	Top Slab	5.00	1.57	2	Top Slab	0.83
		TNT7A	42.000		1.60	67.20	1.40	2.95	2	Top Slab	5.00	1.60	2	Top Slab	0.83
		TNT7B	42.000		1.92	80.64	1.40	2.92	2	Top Slab	5.00	1.92	2	Top Slab	0.83
		TNAGRIT4	43.000		1.76	75.68	1.40	3.09	2	Top Slab	5.00	1.76	2	Top Slab	0.83
TNAGT5A		45.000		1.80	81.00	1.40	2.88	2	Top Slab	5.00	1.80	2	Top Slab	0.83	
TNAGT5B	45.000		1.59	71.55	1.40	2.90	2	Top Slab	5.00	1.59	2	Top Slab	0.83		

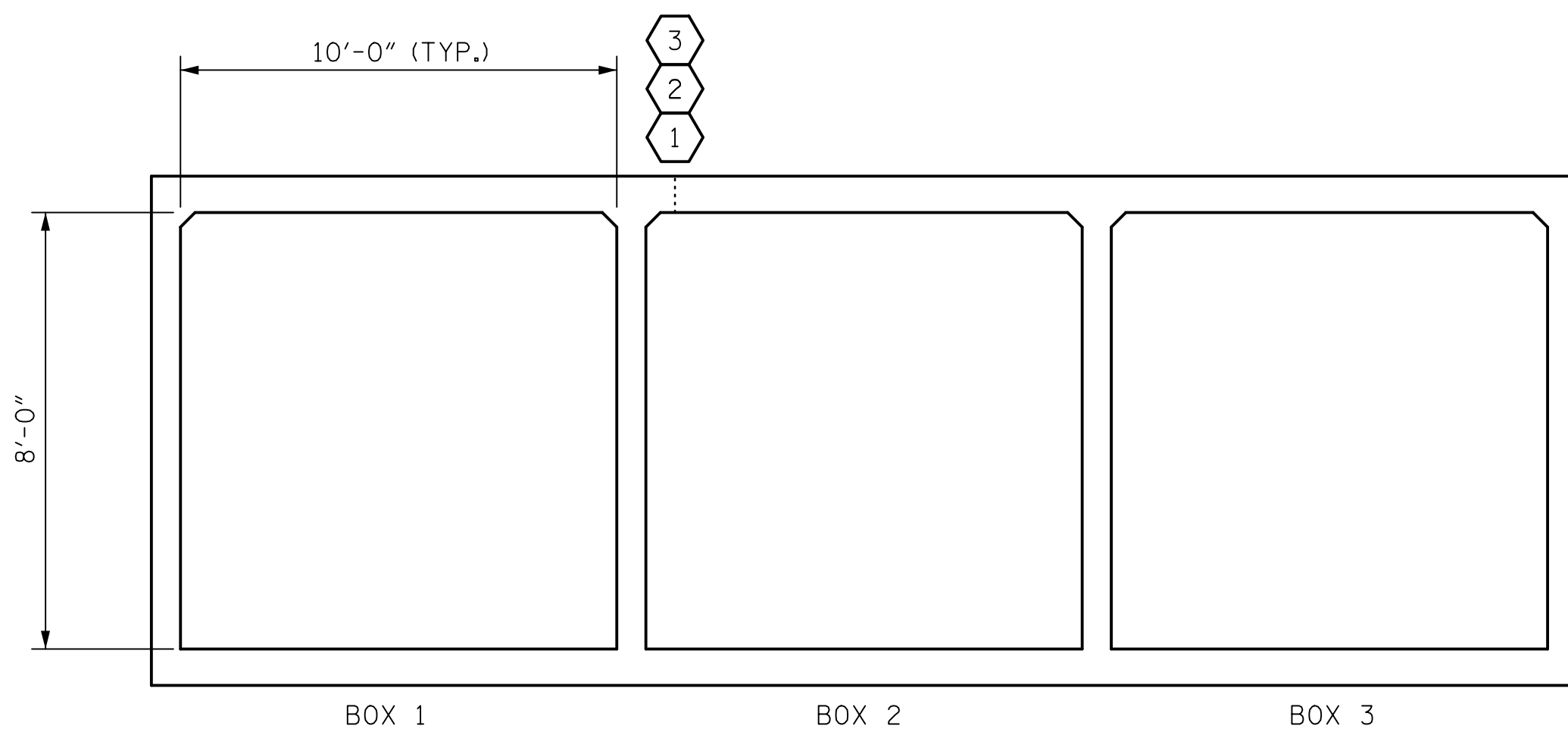
DESIGN LOAD RATING FACTORS

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.

#	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-4910A
CABARRUS COUNTY
STATION: 124+11.00 -L-

ASSEMBLED BY : NKB	DATE : 07/16
CHECKED BY : JCM	DATE : 07/16
DRAWN BY : WMC 7/11	REV. 10/1/11 MAA/GM
CHECKED BY : GM 7/11	

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

 AECOM TECHNICAL SERVICES, INC. 701 CORPORATE CENTER DRIVE, SUITE 475 RALEIGH, NC 27607 (919) 854-4200 www.aecom.com AECOM License No. F-0362	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS (NON-INTERSTATE TRAFFIC)																			
	11/30/2016 NORTH CAROLINA PROFESSIONAL SEAL 030474 JOHN C. MORRISON ENGINEER	REVISIONS <table border="1"> <tr> <th>NO.</th> <th>BY:</th> <th>DATE:</th> <th>NO.</th> <th>BY:</th> <th>DATE:</th> </tr> <tr> <td>1</td> <td></td> <td></td> <td>3</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> </tr> </table>		NO.	BY:	DATE:	NO.	BY:	DATE:	1			3			2			4	
NO.	BY:	DATE:	NO.	BY:	DATE:															
1			3																	
2			4																	
		SHEET NO. C-02 TOTAL SHEETS 7																		

USER: H:\aecom\00... DATE: 11/30/2016 TIME: 9:43:09 AM
 D:\62300\171001_Technical\408_Structural\Comp\Culvert\410_003_U4910A_SML_C02.dgn