

THE FORT MILLER COMPANY

Sht _____ of _____

By: PJR

Ck: _____

8/11/2023 1:12:54 PM

p. 1 of 3

Project : VT 110 Br 115

Task : Precast Rigid Frame Design

Client: VAOT

Job No. :

File: Washington VT.etcx

Spec.: LRFD 9th ed.
Type of Culvert: Precast

Physical Dimensions

Clear Span:	32'-0"
Clear Height:	9'-3"
Top Slab:	1'-10"
Ext. Wall:	1'-0"
Fill Depth Range	
Maximum:	2.58 ft
Minimum:	2.02 ft
Increment:	0.56 ft
Length:	4'-11 1/2"
Skew Angle:	30.00 deg
Bottom Slab Support:	Pinned
Top Haunch, Width:	8"
Top Haunch, Height:	8"

Material Properties

Concrete	
Strength, f _c :	7.500 ksi
Density:	0.150 kcf
Elasticity, E _c :	5250 ksi
Type:	Normal wt
Steel	
Yield, f _y :	75 ksi
Allow Stress:	45 ksi
Elasticity, E _s :	29000 ksi
Soil	
Density:	0.120 kcf
Exposure Factor	
Class 2 Exposure	
Reinforcement Covers	
Ext. Cover Top Slab:	2"
Ext. Cover Walls:	2"
Int. Cover Walls:	1 1/2"
Int. Cover Top Slab:	1 1/2"

Controlling Ratings

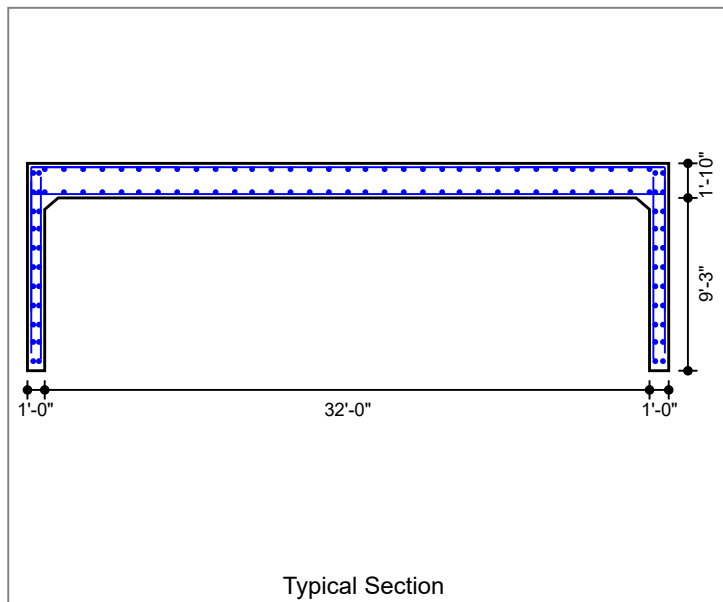
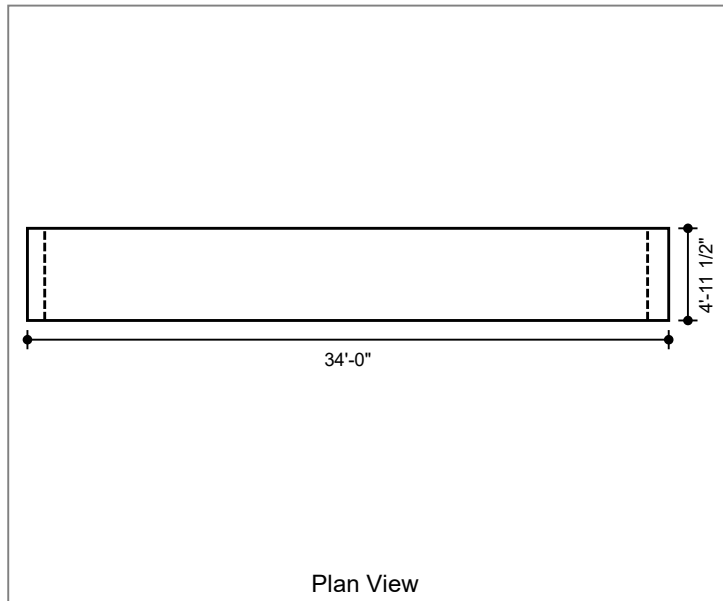
Inventory Rating: 1.20
Operating Rating: 1.55

Loads

Live Load	
Vehicle Names:	HL-93
Traffic Direction:	Perpendicular
Eq. Height of Soil:	Calculated
Max No. of Lanes:	2

Dead Load	
Future Wearing Surface:	0.025 klf
Additional Dead Load:	0.000 klf
Concentrated Loads:	none

Interior Water Pressure: no
Exterior Water Pressure: no



Lateral Soil Loads	
Eq. Fluid Press. Max:	60.00 pcf
Eq. Fluid Press. Min:	30.00 pcf

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8/11/2023 1:12:54 PM

p. 2 of 3

Project : VT 110 Br 115

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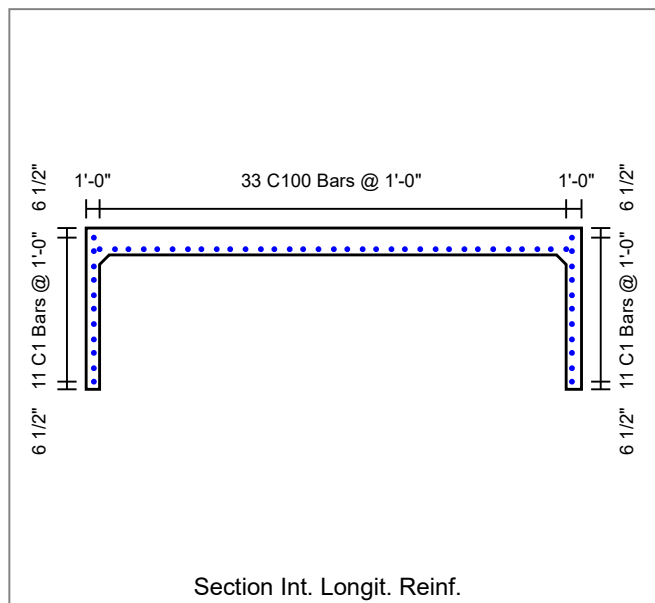
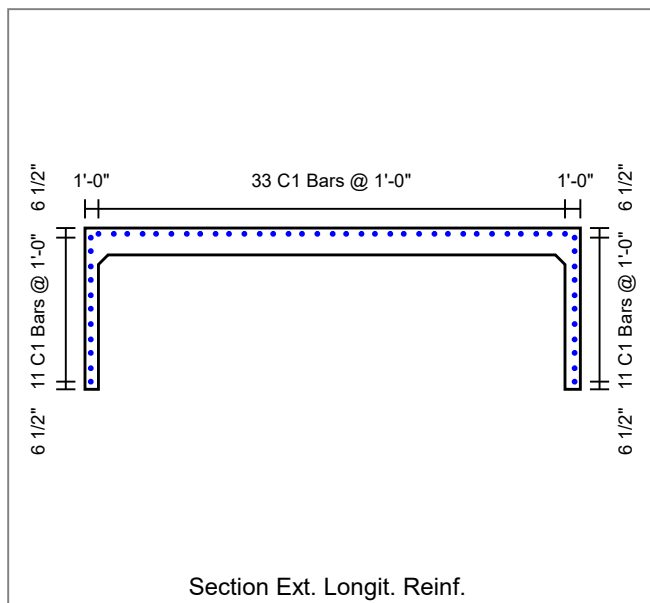
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Concrete Summary

Volume of Concrete: 3.010 cy/ft Total Volume of Concrete: 14.931 cy

Reinforcing Steel Bar Schedule (lb)

Location	Mark	Qty	Size	Spacing	Type	Length	Hor.Leg	Ver.Leg	Tot.Weight
Top Slab(Int)	A100 (AS2)	15	9	4"	S	33'-7"	--	--	1713.0
Top Slab(Ext)	A300 (AS7)	5	5	1'-0"	S	33'-7"	--	--	175.0
Corner(Top)	A1 (AS1)	24	9	5"	L	15'-6"	7'-10"	7'-8"	1265.0
Wall(Int)	B1 (AS4)	18	5	7"	S	9'-9"	--	--	183.0
Wall(Ext)	B2 (AS1)	24	9	5"	S	9'-3"	--	--	755.0
Longit. Top (Int)	C100 (AS5)	33	5	1'-0"	S	4'-11"	--	--	169.0
Longit. Top (Ext)	C1 (AS6)	33	5	1'-0"	S	4'-11"	--	--	169.3
Longit. Wall (Ext)	C1 (AS6)	22	5	1'-0"	S	4'-11"	--	--	112.9
Longit. Wall (Int)	C1 (AS6)	22	5	1'-0"	S	4'-11"	--	--	112.9
									4655



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8/11/2023 1:12:54 PM

p. 3 of 3

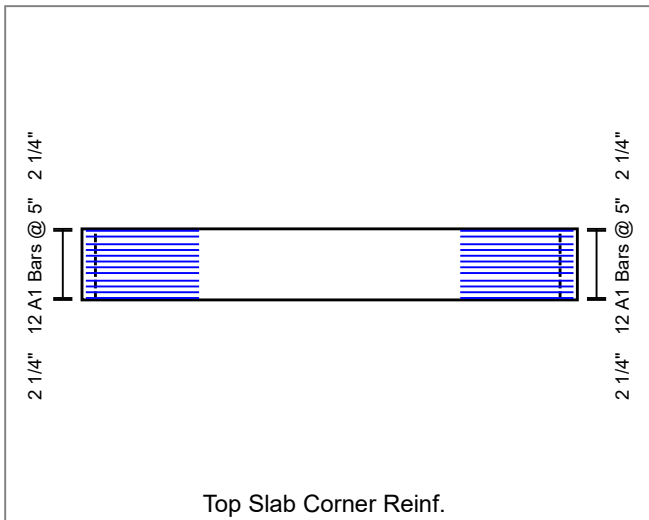
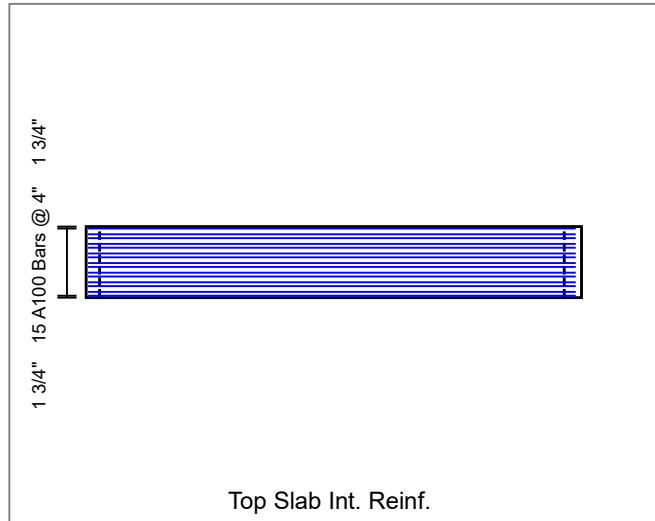
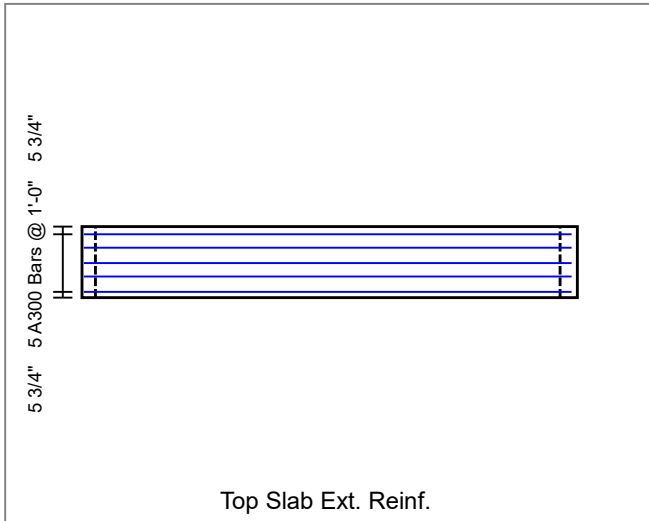
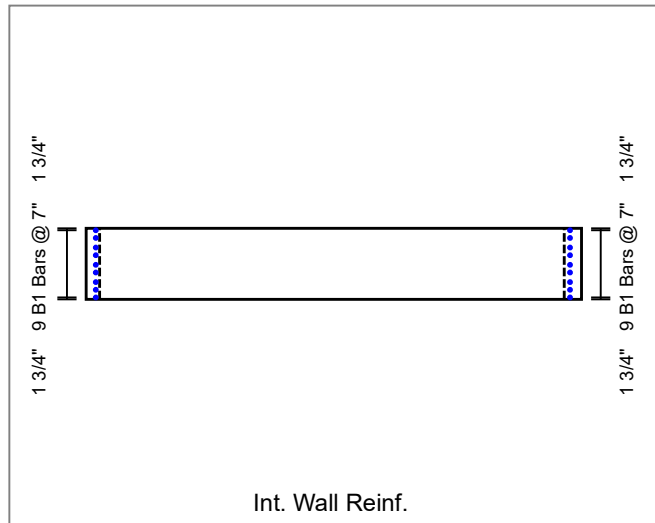
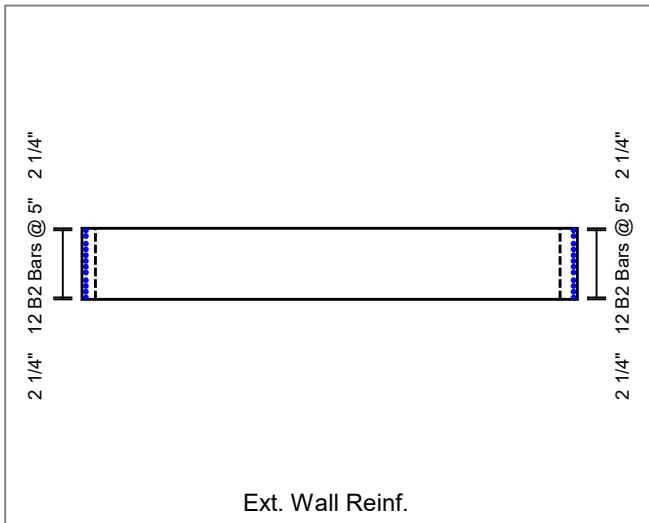
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CULVERT PROPERTIES

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Type of Culvert: Precast Specification : LRFD 9th Edition
Operating Mode : Analysis

Physical Dimensions

No. of Boxes: 1 Name: ThreesidedCulvert
Clear Span : 32.0000 ft
Clear Height: 9.2500 ft Skew Angle : 30.00 deg
Length : 4.9600 ft Bottom Slab Support: No Bottom Slab, Pinned Supports
Fill Depth Range: Maximum : 2.58 ft Minimum : 2.02 ft Increment : 0.56 ft
Haunches: Top, Length: 8.0000 in Height: 8.0000 in
Member Thicknesses: Top Slab: 22.0000 in Bot Slab: 0.0000 in
Ext wall: 12.0000 in
Wall Joint: None

Material Properties

Concrete: Strength, f'c : 7.500 ksi Density : 0.150 kcf Elasticity, Ec: 5250 ksi
Type : Normal Weight Density Modification Factor : 1.00
Fr Factor : 0.24 Gamma1 : 1.60 Gamma3 : 0.75 (ASTM A615, Grade 75)
Steel: Yield, fy : 75.00 ksi fss Limit : 0.60fy Elasticity, Es: 29000 ksi
Yield, fyv : 75.00 ksi Diameter : 1.125 in Type : Rebar
Soil: Density : 0.120 kcf Slope Factor: 1.150
Poisson's : 0.5
Fe Factor : 1.150 (Maximum for Compacted Fill)
Serviceability, Gamma-e: 0.75

Loads

Live Load: Vehicle: (AA) HL-93 - Design Vehicle
Axle No. Weight(k) Dist. From Previous(ft)
1 8.00 0.00
2 32.00 14.00
3 32.00 14.00
Gage width: 6.00 ft, Tread width: 20.00 in, Tread Length: 10.00 in
Include Tandem: yes
Tandem: Axle 1: 25.00 k, Axle 2: 25.00 k, Axle Spacing: 4.00 ft
Lane Load: 0.64 klf, P-Moment: 0.00 k, P-Shear: 0.00 k
Combine: Truck + Lane Or Tandem + Lane
Inventory Rating Load Factor: 1.75 Operating Rating Load Factor: 1.35
Design Load Combinations: Strength I
Override MPF: no
Override DLA: no
Include Lane Load : yes Max. No. of Lanes: 2
Traffic Direction** : Lanes Perpendicular to Main Reinforcement
Neglect Live Load for Large Fill Depths: no
Apply Surcharge at Fill Depths > 2 ft : yes
Compute Surcharge Depth: yes
Dead Load: Future wearing Surface : 0.03 klf Add. Dead Load : 0.00 klf
Concentrated Loads : none
Lateral Soil Loads: Max. Equiv. Fluid Press.: 60.00 pcf Min. Equiv. Fluid Press. : 30.00 pcf
Include Additional Uniform Horiz. Load: no
Include Additional Uniform Vert. Load: no
Buoyancy Check : no
Fluid Pressures : Apply Water Press. : no
Foundation Model : Uniform Loads
Seismic Analysis : Do not include

Load and Resistance Factors

Max Min
DC: 1.250 0.900
DW: 1.500 0.650
EV: 1.300 0.900
EH: 1.350 0.900
WA: 1.000
EQ: 1.000
LL I : 1.750 LL II : 1.350 LL Legal : 1.750 LL Extreme : 0.500
Ductility: 1.000 Importance: 1.000 Redundancy, non-earth: 1.000 Redundancy, earth: 1.000
Condition: 1.000 System : 1.000
Phi Shear: 0.900 Phi Moment: 0.950 PM Compression: 0.750 PM Tension : 0.900
Load Factor Multipliers, Design Mode: 1.00 Analysis Mode: 1.00

Reinforcement Covers : Exterior Interior
Top Slab: 2.0000 in 1.5000 in
Walls : 2.0000 in 1.5000 in

Assigned reinforcement:
Location Mark Size Spacing (in)
Top Slab Inside A100 (AS2) 9 4.0000
Top Slab Outside A300 (AS7) 5 12.0000
Top Corner A1 (AS1) 9 5.0000
Ext. wall Inside B1 (AS4) 5 7.0000
Ext. wall Outside B2 (AS1) 9 5.0000
Longitudinal C1 (AS6) 5 12.0000
Top Distribution C100 (AS5) 5 12.0000

Analysis Options

LL Analysis : Automatically Set Traffic Direction to Account for Skew Effects: yes
Limit LL Distribution Width to Culvert Length for: Fills < 2 ft
Combine Longitudinal Axle Distribution Overlaps: Yes, Max of 2 Axles
Combine Transverse Axle Distribution Overlaps: No
Axle Placement Increment for Moving Load Analysis: 20
Always Distribute Wheel Load: no
Deflection Criteria : 1/800
Approach Slab will be Used: no
Reinforcement : Always Include Distribution Steel: yes
Distribution Slab Provided: no
User Defined Longitudinal Steel: yes
Max. As used in Vc Calcs: 2.00 in²/ft
Distribute Minimum Reinforcement per Face: yes
Use individual Member Thicknesses for Min Steel: no
Epoxy coat steel: top bars, if fill < 2'
Use M-dimension for bar length calcs.: no
Slenderness : Checked K Factor: 2.00
Analysis Modeling : Use Haunches in the Structural Analysis Model: yes
Left Node on Rollers for 3-Sided Frames: no
Critical sections : Flexure critical section location: face of support
Shear critical section location: dv beyond support
Use Max. Moment with Max. Shear at the critical section for shear: yes
Include depth of haunch for critical sections: no
Flexure : Ignore Axial Thrust: no
Use Eq. 12.10.4.2.4a-1: no
Shear : Always Check Iterative Beta Method
Environmental : Apply durability factors: no

ANALYSIS RESULTS

Top Slab Thickness = 22.00 in
 Exterior Wall Thickness = 12.00 in

Modular Ratio (N) = 5.52 Max. Steel Ratio = 0.023
 Design Span = 33.00 ft Design Height = 10.17 ft

Volume of Concrete: 3.010 cy/ft weight of Steel: 939 lb/ft

M dimension = 5' 7" (method of equivalent capacity)
 = 8' 4" (method of contraflexure - ASTM)

Reinforcing Steel Schedule

Location	Bar Mark	Qty	Size	Type	Spacing (in)	As,prv (in2/ft)	Length (ft-in)	Wgt (lbs)	H Leg (ft-in)	V Leg (ft-in)
Top slab (int)	A100 (AS2)	15	9	STR	4.00	3.000	33- 7	1713		
Top slab (ext)	A300 (AS7)	5	5	STR	12.00	0.310	33- 7	175		
Corner (Top)	A1 (AS1)	24	9	L-BAR	5.00	2.400	15- 6	1265	7-10	7- 8
Ext wall (int)	B1 (AS4)	18	5	STR	7.00	0.531	9- 9	183		
Ext wall (ext)	B2 (AS1)	24	9	STR	5.00	2.400	9- 3	755		
Top Slab (int- 1)	C100 (AS5)	33	5	STR	12.00	0.310	4-11	169		
Temperature (1)	C1 (AS6)	33	5	STR	12.00	0.310	4-11	169		
Temperature (1)	C1 (AS6)	22	5	STR	12.00	0.310	4-11	113		
Temperature (1)	C1 (AS6)	22	5	STR	12.00	0.310	4-11	113		
Total								4655		

Note: A denotes flexural steel, B denotes vertical steel, C denotes longitudinal steel

AS Bar Marks

Location	As prv in2/ft
Transverse Side Wall - Outside Face (AS1)	2.400
Transverse Top Slab - Inside Face (AS2)	3.000
Transverse Bottom Slab - Inside Face (AS3)	0.000
Transverse Side Wall - Inside Face (AS4)	0.531
Distribution Top Slab - Inside Face (AS5)	0.310
Distribution Top Slab - Outside Face (AS6)	0.310
Transverse Top Slab - Outside Face (AS7)	0.310
Transverse Bottom Slab - Outside Face (AS8)	0.000

Notes: 1.) Final areas of steel provided must be checked in analysis mode

>>>Warning: This is a three sided culvert, therefore foundation has not been design by this program. Engineer should design the foundation. This program output reflects final service load conditions only. Handling, shipping and erection stresses are neither checked nor incorporated into program design and must be analyzed by the producer's engineer. External bracing is an acceptable method to mitigate overstress and possible product damage during the course of handling, shipping and erection.

Summary of Ratings Table:

Truck	Flexure					Shear				
	Fill	Member	Location	IR	OR	Fill	Member	Location	IR	OR
(AA) HL-93	2.02	1	TOP	1.46	1.89	2.02	2	LT	1.20	1.55

Critical Sections Summary: Flexure

Member 1: (Exterior wall), Thickness = 12.00 in

Loc	Dist. (in)	Design Moment (k-ft)	Corr. A. F. (k)	Mu (k-ft)	ds (in)	Ma (k-ft)	phi	As (in2)	Mcr (k-ft)	Load Ratings		Truck	Fill Depth (ft)
										IR	OR		
BOT	0.00	0.0#	11.66	0.00	9.44	4.20	0.90	0.00	18.93	NC	NC	AA	2.02
MID	48.80	0.00	8.07	31.32	10.19	32.37	0.90	0.53	18.93	NC	NC	AA	2.02
MID-	61.00	-43.10	33.05	117.70	9.44	111.65	0.84	2.40	18.93	3.34	4.33	AA	2.02
TOP	11.00	-86.89	33.05	117.70	9.44	111.65	0.84	2.40	18.93	1.46	1.89	AA	2.02

Member 2: (Top Slab), Thickness = 22.00 in

Loc	Dist. (in)	Design Moment (k-ft)	Corr. A. F. (k)	Mu (k-ft)	ds (in)	Ma (k-ft)	phi	As (in2)	Mcr (k-ft)	Load Ratings		Truck	Fill Depth (ft)
										IR	OR		
LT	6.00	-87.83	13.81	260.20	19.44	254.13	0.90	2.40	63.62	4.05	5.25	AA	2.02
MID	198.00	177.19	4.85	328.92	19.94	314.15	0.90	3.00	63.62	2.16	2.80	AA	2.02
RT	6.00	-87.83	13.81	260.20	19.44	254.13	0.90	2.40	63.62	4.05	5.25	AA	2.02

- a 0.0 design moment indicates no negative moments at this location. Check the 'Load Combination Results'table to determine if a positive moment exists.

Critical Sections Summary: Vertical Shear

Member 1: (Exterior wall), Thickness = 12.00 in

Loc	Dist. (in)	Design Shear (k)	Corr. Moment (k-ft)	Corr. A. F. (k)	Dv (in)	phi*Vn	Beta	Vc (k)	Vs (k)	Av (in2)	Max. Spac (in)	Load Ratings		Truck	Fill Depth (ft)	
												IR	OR			
BOT	0.00	2.44	1.2	11.66	8.64	16.15	2.000	17.94	b	0.00	0.00	0.00	NC	NC	AA	2.02
MID	61.00	3.01	0.0	9.09	9.93	41.22	4.443	45.80	a	0.00	0.00	0.00	NC	NC	AA	2.58
MID-	61.00	3.01	-41.6	31.69	8.64	22.45	2.780	24.94	a	0.00	0.00	0.00	3.60	4.67	AA	2.58
TOP	19.64	-12.84	-86.9	33.05	8.64	16.15	2.000	17.94	b	0.00	0.00	0.00	1.48	1.91	AA	2.02

Member 2: (Top Slab), Thickness = 22.00 in

Loc	Dist. (in)	Design Shear (k)	Corr. Moment (k-ft)	Corr. A. F. (k)	Dv (in)	phi*Vn	Beta	Vc (k)	Vs (k)	Av (in2)	Max. Spac (in)	Load Ratings		Truck	Fill Depth (ft)	
												IR	OR			
LT	23.49	29.73	-87.8	13.81	18.26	33.58	1.967	37.31	a	0.00	0.00	0.00	1.20	1.55	AA	2.02
MID	198.00	6.31	177.2	4.85	18.47	29.04	1.683	32.27	a	0.00	0.00	0.00	4.60	5.97	AA	2.02
RT	23.49	29.73	-87.8	13.81	18.26	33.58	1.967	37.31	a	0.00	0.00	0.00	1.20	1.55	AA	2.02

Vc Calculation By: a - Iterative Beta, b - Constant Beta, c - Box Culvert, d - Standard/Arema

=====
 Analysis Results: Fill Depth = 2.02 ft
 =====

Load Parameters:

Fe = 1.01 Surcharge Depth : 2.69 ft

Applied Horizontal Loads: (k/ft)

Load Description	Bottom of wall	Top of wall
Horizontal Earth Load	0.786	0.176
Live Load Surcharge	0.161	0.161

M-PT	Unfactored Moments due to All Loads: (k-ft)							Unfactored Shears due to All Loads: (k)						
	Mdc	Mev	Mdw	Meh	Mls	Mwa	Mgw	Vdc	Vev	Vdw	Veh	Vls	Vwa	Vgw
Member 1: (Exterior wall)														
Bottom														
1- 0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.30	-1.16	-0.12	2.60	0.69	0.00	0.00
1- 1	-1.32	-1.17	-0.12	2.25	0.62	0.00	0.00	-1.30	-1.16	-0.12	1.83	0.53	0.00	0.00
1- 2	-2.64	-2.35	-0.24	3.75	1.08	0.00	0.00	-1.30	-1.16	-0.12	1.12	0.37	0.00	0.00
1- 3	-3.96	-3.52	-0.36	4.57	1.37	0.00	0.00	-1.30	-1.16	-0.12	0.48	0.20	0.00	0.00
1- 4	-5.27	-4.70	-0.48	4.76	1.49	0.00	0.00	-1.30	-1.16	-0.12	-0.10	0.04	0.00	0.00
1- 5	-6.59	-5.87	-0.60	4.39	1.44	0.00	0.00	-1.30	-1.16	-0.12	-0.62	-0.13	0.00	0.00
1- 6	-7.91	-7.05	-0.72	3.53	1.23	0.00	0.00	-1.30	-1.16	-0.12	-1.08	-0.29	0.00	0.00
1- 7	-9.23	-8.22	-0.84	2.23	0.86	0.00	0.00	-1.30	-1.16	-0.12	-1.48	-0.45	0.00	0.00
1- 8	-10.55	-9.40	-0.96	0.56	0.31	0.00	0.00	-1.30	-1.16	-0.12	-1.81	-0.62	0.00	0.00
1- 9	-11.87	-10.57	-1.08	-1.43	-0.40	0.00	0.00	-1.30	-1.16	-0.12	-2.08	-0.78	0.00	0.00
1-10	-13.19	-11.74	-1.20	-3.65	-1.28	0.00	0.00	-1.30	-1.16	-0.12	-2.29	-0.95	0.00	0.00
Top														

Member 2: (Top Slab)														
Left														
2- 0	-13.19	-11.74	-1.20	-3.70	-1.28	0.00	0.00	4.62	4.05	0.41	0.00	0.00	0.00	0.00
2- 1	0.33	0.28	0.03	-3.70	-1.28	0.00	0.00	3.63	3.24	0.33	0.00	0.00	0.00	0.00
2- 2	10.81	9.62	0.98	-3.70	-1.28	0.00	0.00	2.72	2.43	0.25	0.00	0.00	0.00	0.00
2- 3	18.30	16.30	1.66	-3.70	-1.28	0.00	0.00	1.82	1.62	0.17	0.00	0.00	0.00	0.00
2- 4	22.79	20.31	2.07	-3.70	-1.28	0.00	0.00	0.91	0.81	0.08	0.00	0.00	0.00	0.00
2- 5	24.29	21.64	2.21	-3.70	-1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2- 6	22.79	20.31	2.07	-3.70	-1.28	0.00	0.00	-0.91	-0.81	-0.08	0.00	0.00	0.00	0.00
2- 7	18.30	16.30	1.66	-3.70	-1.28	0.00	0.00	-1.82	-1.62	-0.17	0.00	0.00	0.00	0.00
2- 8	10.81	9.62	0.98	-3.70	-1.28	0.00	0.00	-2.72	-2.43	-0.25	0.00	0.00	0.00	0.00
2- 9	0.33	0.28	0.03	-3.70	-1.28	0.00	0.00	-3.63	-3.24	-0.33	0.00	0.00	0.00	0.00
2-10	-13.19	-11.74	-1.20	-3.70	-1.28	0.00	0.00	-4.62	-4.05	-0.41	0.00	0.00	0.00	0.00
Right														

Unfactored Thrusts due to All Loads: (k) (Fill Depth = 2.02 ft)

Member	Pdc	Pev	Pdw	Peh	Pls	Pwa
1	4.62	4.05	0.41	0.00	0.00	0.00
2	1.30	1.16	0.12	2.29	0.95	0.00

----- Analysis Truck, HL-93 -----

Vehicle	Axle No.	Weight (k/ft)	Length (ft)	Dist. From Previous (ft)
Truck	1	0.985	3.99	
	2	0.985	3.99	6.00
	3	0.985	3.99	4.00
	4	0.985	3.99	6.00

Live Load Parameters:

Traffic Direction is Perpendicular to Main Reinforcement
 Distribution Width : 5.08 ft
 Impact Factor : 1.25
 Truck MPF : 1.20 Tandem MPF : 1.20
 Lane Load Distribution Width : 10.00 ft
 Lane Load: 0.077 k/ft

Truck Positions That Cause Maximum Results:

Maximum +Moment in Top Slab					Maximum -Moment in Top Slab				
Vehicle	Axle	Weight	Length	Dist. From	Vehicle	Axle	Weight	Length	Dist. From

Truck	No.	(klf)	(ft)	Left End (ft)
	1	0.985	3.99	24.49
	2	0.985	3.99	18.49
	3	0.985	3.99	14.49
	4	0.985	3.99	8.49
Maximum +Moment : 60.58 k-ft				
Corresponding Moment at End : -29.79 k-ft				

Truck	No.	(klf)	(ft)	Left End (ft)
	1	0.985	3.99	24.49
	2	0.985	3.99	18.49
	3	0.985	3.99	14.49
	4	0.985	3.99	8.49
Maximum -Moment : -29.79 k-ft				
Corresponding Moment at Mid : 60.58 k-ft				

Maximum +Shear in Top Slab				
Truck	1	0.985	3.99	17.99
	2	0.985	3.99	11.99
	3	0.985	3.99	7.99
	4	0.985	3.99	1.99
Maximum +Shear : 10.96 k				
Corresponding Shear at Mid : -1.32 k				

Maximum -Shear in Top Slab				
Truck	1	0.985	3.99	31.01
	2	0.985	3.99	25.01
	3	0.985	3.99	21.01
	4	0.985	3.99	15.01
Maximum -Shear : -10.96 k				
Corresponding Shear at Mid : 1.32 k				

Maximum +Moment in Top Slab				
Tandem	1	0.769	3.99	24.49
	2	0.769	3.99	18.49
	3	0.769	3.99	14.49
	4	0.769	3.99	8.49
Maximum +Moment : 47.33 k-ft				
Corresponding Moment at End : -23.27 k-ft				

Maximum -Moment in Top Slab				
Tandem	1	0.769	3.99	24.49
	2	0.769	3.99	18.49
	3	0.769	3.99	14.49
	4	0.769	3.99	8.49
Maximum -Moment : -23.27 k-ft				
Corresponding Moment at Mid : 47.33 k-ft				

Maximum +Shear in Top Slab				
Tandem	1	0.769	3.99	17.99
	2	0.769	3.99	11.99
	3	0.769	3.99	7.99
	4	0.769	3.99	1.99
Maximum +Shear : 8.56 k				
Corresponding Shear at Mid : -1.03 k				

Maximum -Shear in Top Slab				
Tandem	1	0.769	3.99	31.01
	2	0.769	3.99	25.01
	3	0.769	3.99	21.01
	4	0.769	3.99	15.01
Maximum -Shear : -8.56 k				
Corresponding Shear at Mid : 1.03 k				

Unfactored Moments and Shears due to Truck Loads: (k-ft, k)

M-PT	Truck				Tandem				Lane			
	M11+	M11-	V11+	V11-	M11+	M11-	V11+	V11-	M11+	M11-	V11+	V11-
Member 1: (Exterior wall)												
Bottom												
1- 0	0.00	0.00	0.00	-2.93	0.00	0.00	0.00	-2.29	0.00	0.00	0.00	-0.36
1- 1	0.00	-2.98	0.00	-2.93	0.00	-2.33	0.00	-2.29	0.00	-0.37	0.00	-0.36
1- 2	0.00	-5.96	0.00	-2.93	0.00	-4.65	0.00	-2.29	0.00	-0.74	0.00	-0.36
1- 3	0.00	-8.94	0.00	-2.93	0.00	-6.98	0.00	-2.29	0.00	-1.10	0.00	-0.36
1- 4	0.00	-11.92	0.00	-2.93	0.00	-9.31	0.00	-2.29	0.00	-1.47	0.00	-0.36
1- 5	0.00	-14.90	0.00	-2.93	0.00	-11.64	0.00	-2.29	0.00	-1.84	0.00	-0.36
1- 6	0.00	-17.87	0.00	-2.93	0.00	-13.96	0.00	-2.29	0.00	-2.21	0.00	-0.36
1- 7	0.00	-20.85	0.00	-2.93	0.00	-16.29	0.00	-2.29	0.00	-2.57	0.00	-0.36
1- 8	0.00	-23.83	0.00	-2.93	0.00	-18.62	0.00	-2.29	0.00	-2.94	0.00	-0.36
1- 9	0.00	-26.81	0.00	-2.93	0.00	-20.95	0.00	-2.29	0.00	-3.31	0.00	-0.36
1-10	0.00	-29.79	0.00	-2.93	0.00	-23.27	0.00	-2.29	0.00	-3.68	0.00	-0.36
Top												
Member 2: (Top Slab)												
Left												
2- 0	0.00	-29.79	10.96	0.00	0.00	-23.27	8.56	0.00	0.00	-3.68	1.27	0.00
2- 1	10.93	-8.76	9.39	-0.20	8.54	-6.84	7.33	-0.15	0.96	-0.88	1.03	-0.01
2- 2	29.74	-0.54	7.81	-0.66	23.24	-0.42	6.10	-0.52	3.06	-0.05	0.81	-0.05
2- 3	46.83	0.00	6.24	-1.40	36.59	0.00	4.88	-1.10	5.10	0.00	0.62	-0.11
2- 4	57.15	0.00	4.67	-2.34	44.65	0.00	3.65	-1.83	6.36	0.00	0.46	-0.20
2- 5	60.58	0.00	3.29	-3.29	47.33	0.00	2.57	-2.57	6.78	0.00	0.32	-0.32
2- 6	57.15	0.00	2.34	-4.67	44.65	0.00	1.83	-3.65	6.36	0.00	0.20	-0.46
2- 7	46.83	0.00	1.40	-6.24	36.59	0.00	1.10	-4.88	5.10	0.00	0.11	-0.62
2- 8	29.74	-0.54	0.66	-7.81	23.24	-0.42	0.52	-6.10	3.06	-0.05	0.05	-0.81
2- 9	10.93	-8.76	0.20	-9.39	8.54	-6.84	0.15	-7.33	0.96	-0.88	0.01	-1.03
2-10	0.00	-29.79	0.00	-10.96	0.00	-23.27	0.00	-8.56	0.00	-3.68	0.00	-1.27
Right												

Note: Unfactored live load results computed at 2.02 ft and 0 ft fill depths, per LRFD 3.6.1.2.6

Serviceability Check: Crack Control

Bar Mark	Location	Moment (k-ft)	Thrust (k)	Fss (ksi)	Spacing (in)	Allow (in)
A1	Top Corner Bar	-56.4	21.30	29.61	5.00	7.65
A100	Top Slab (int)	113.7	3.72	24.86	4.00	14.27
B2	Ext wall (ext)	-27.6	21.30	12.26	5.00	25.73

Serviceability Check: Live Load Deflection

Deflection Ratio of Top Slab = 1/2129 (Limit = 1/800)

Strength Limit State at Critical Sections: Flexure

Member 1: (Exterior wall), Thickness = 12.00 in

Loc	Dist. (in)	Design Moment (k-ft)	Corr.		ds (in)	Ma (k-ft)	phi	As (in2)	Mcr (k-ft)	Load Ratings	
			A. F. (k)	Mu (k-ft)						IR	OR
BOT	0.00	0.0#	11.66	0.00	9.44	4.20	0.90	0.00	18.93	NC	NC
MID	48.80	0.00	8.07	31.32	10.19	32.37	0.90	0.53	18.93	NC	NC
MID-	61.00	-43.10	33.05	117.70	9.44	111.65	0.84	2.40	18.93	3.34	4.33
TOP	11.00	-86.89	33.05	117.70	9.44	111.65	0.84	2.40	18.93	1.46	1.89

Member 2: (Top Slab), Thickness = 22.00 in

Loc	Dist. (in)	Design Moment (k-ft)	Corr.		ds (in)	Ma (k-ft)	phi	As (in2)	Mcr (k-ft)	Load Ratings	
			A. F. (k)	Mu (k-ft)						IR	OR
LT	6.00	-87.83	13.81	260.20	19.44	254.13	0.90	2.40	63.62	4.05	5.25
MID	198.00	177.19	4.85	328.92	19.94	314.15	0.90	3.00	63.62	2.16	2.80
RT	6.00	-87.83	13.81	260.20	19.44	254.13	0.90	2.40	63.62	4.05	5.25

Notes: Mu - Resisting moment under pure flexure, Ma - Allowable moment under applied axial load
 # - a 0.0 design moment indicates no negative moments at this location. Check the 'Load Combination Results'table to determine if a positive moment exists.

Strength Limit State at Critical Sections: Vertical Shear

Member 1: (Exterior wall), Thickness = 12.00 in

Loc	Dist. (in)	Design Shear (k)	Corr.		Dv (in)	phi*Vn (k)	Beta	Theta	Vc (k)	Vs (k)	Av (in2)	Max. Spac (in)	Load Ratings		
			A. F. (k)	Moment (k-ft)									IR	OR	
BOT	0.00	2.44	1.2	11.66	8.64	16.15	2.000	45.00	17.94	b	0.00	0.00	0.00	NC	NC
MID	61.00	2.70	0.0	8.07	9.93	41.45	4.468	30.42	46.06	a	0.00	0.00	0.00	NC	NC
MID-	61.00	2.70	-43.1	33.05	8.64	22.23	2.753	35.99	24.70	a	0.00	0.00	0.00	3.21	4.17
TOP	19.64	-12.84	-86.9	33.05	8.64	16.15	2.000	45.00	17.94	b	0.00	0.00	0.00	1.48	1.91

Member 2: (Top Slab), Thickness = 22.00 in

Loc	Dist. (in)	Design Shear (k)	Corr.		Dv (in)	phi*Vn (k)	Beta	Theta	Vc (k)	Vs (k)	Av (in2)	Max. Spac (in)	Load Ratings		
			A. F. (k)	Moment (k-ft)									IR	OR	
LT	23.49	29.73	-87.8	13.81	18.26	33.58	1.967	45.96	37.31	a	0.00	0.00	0.00	1.20	1.55
MID	198.00	6.31	177.2	4.85	18.47	29.04	1.683	48.72	32.27	a	0.00	0.00	0.00	4.60	5.97
RT	23.49	29.73	-87.8	13.81	18.26	33.58	1.967	45.96	37.31	a	0.00	0.00	0.00	1.20	1.55

Vc Calculation By: a - Iterative Beta, b - Constant Beta, c - Box Culvert, d - Standard/Arma

Vertical Reactions Applied to Structure: (service load values, k/unit width, pos. is up)

Wall #	DL	DW	EV	EH	LS	WA	LL	Tot. w/o LL	Tot. w/ LL
1	6.15	0.41	4.05	0.00	0.00	0.00	10.96	10.61	21.56
2	6.15	0.41	4.05	0.00	0.00	0.00	10.96	10.61	21.56

Horizontal Reactions Applied to Structure: (service load values, k/unit width, pos. is right)

Wall #	DL	DW	EV	EH	LS	WA	LL	Tot. w/o LL	Tot. w/ LL
1	1.30	0.12	1.16	-2.60	-0.69	0.00	2.93	-0.72	2.21
2	-1.30	-0.12	-1.16	2.60	0.69	0.00	-2.93	0.72	-2.21

Load Combination Results at Tenth Points: (k-ft, k)(Fill Depth = 2.02 ft)

M-PT	+Moment	-Moment	+Axial	-Axial	+Shear	-Shear
Member 1: (Exterior wall)						
Bottom						
1- 0	0.000	0.000	11.656	8.069	2.440	-7.306
1- 1	1.808	-7.692	8.069	33.049	1.116	-7.825
1- 2	2.311	-15.889	8.069	33.049	-0.125	-8.302
1- 3	1.596	-24.550	8.069	33.049	-1.282	-8.737
1- 4	-0.252	-33.632	8.069	33.049	-2.353	-9.132
1- 5	-3.149	-43.092	8.069	33.049	-2.704	-10.121
1- 6	-7.010	-52.888	8.069	33.049	-3.013	-11.027
1- 7	-11.748	-62.977	8.069	33.049	-3.280	-11.849
1- 8	-17.280	-73.317	8.069	33.049	-3.506	-12.587
1- 9	-21.858	-85.534	8.069	33.049	-3.690	-13.242
1-10	-25.682	-99.289	8.069	33.049	-3.832	-13.813
Top						
Member 2: (Top Slab)						
Left						
2- 0	-25.714	-99.353	3.832	13.813	33.049	8.069
2- 1	19.133	-23.285	4.848	13.813	27.462	6.395
2- 2	82.413	11.793	4.848	7.036	22.024	4.797
2- 3	134.950	24.983	4.848	7.036	16.631	1.968
2- 4	166.635	32.898	4.848	7.036	11.282	-2.148
2- 5	177.192	35.536	4.848	7.036	6.308	-6.308
2- 6	166.635	32.898	4.848	7.036	2.148	-11.282
2- 7	134.950	24.983	4.848	7.036	-1.968	-16.631
2- 8	82.413	11.793	4.848	7.036	-4.797	-22.024
2- 9	19.133	-23.285	4.848	13.813	-6.395	-27.462
2-10	-25.714	-99.353	3.832	13.813	-8.069	-33.049
Right						

=====
 Analysis Results: Fill Depth = 2.58 ft
 =====

Load Parameters:

Fe = 1.02 Surcharge Depth : 2.63 ft

Applied Horizontal Loads: (k/ft)

Load Description	Bottom of wall	Top of wall
Horizontal Earth Load	0.820	0.210
Live Load Surcharge	0.158	0.158

M-PT	Unfactored Moments due to All Loads: (k-ft)							Unfactored Shears due to All Loads: (k)						
	Mdc	Mev	Mdw	Meh	Mls	Mwa	Mgw	Vdc	Vev	Vdw	Veh	Vls	Vwa	Vgw
Member 1: (Exterior wall)														
Bottom														
1- 0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.30	-1.48	-0.12	2.74	0.68	0.00	0.00
1- 1	-1.32	-1.50	-0.12	2.38	0.61	0.00	0.00	-1.30	-1.48	-0.12	1.94	0.52	0.00	0.00
1- 2	-2.64	-3.01	-0.24	3.98	1.06	0.00	0.00	-1.30	-1.48	-0.12	1.20	0.36	0.00	0.00
1- 3	-3.96	-4.51	-0.36	4.85	1.34	0.00	0.00	-1.30	-1.48	-0.12	0.52	0.20	0.00	0.00
1- 4	-5.27	-6.02	-0.48	5.07	1.46	0.00	0.00	-1.30	-1.48	-0.12	-0.09	0.04	0.00	0.00
1- 5	-6.59	-7.52	-0.60	4.69	1.41	0.00	0.00	-1.30	-1.48	-0.12	-0.65	-0.12	0.00	0.00
1- 6	-7.91	-9.03	-0.72	3.78	1.21	0.00	0.00	-1.30	-1.48	-0.12	-1.14	-0.28	0.00	0.00
1- 7	-9.23	-10.53	-0.84	2.40	0.84	0.00	0.00	-1.30	-1.48	-0.12	-1.57	-0.44	0.00	0.00
1- 8	-10.55	-12.04	-0.96	0.62	0.30	0.00	0.00	-1.30	-1.48	-0.12	-1.94	-0.61	0.00	0.00
1- 9	-11.87	-13.54	-1.08	-1.51	-0.39	0.00	0.00	-1.30	-1.48	-0.12	-2.25	-0.77	0.00	0.00
1-10	-13.19	-15.05	-1.20	-3.92	-1.25	0.00	0.00	-1.30	-1.48	-0.12	-2.49	-0.93	0.00	0.00
Top														

Member 2: (Top Slab)														
Left														
2- 0	-13.19	-15.05	-1.20	-3.97	-1.25	0.00	0.00	4.62	5.19	0.41	0.00	0.00	0.00	0.00
2- 1	0.33	0.35	0.03	-3.97	-1.25	0.00	0.00	3.63	4.15	0.33	0.00	0.00	0.00	0.00
2- 2	10.81	12.33	0.98	-3.97	-1.25	0.00	0.00	2.72	3.11	0.25	0.00	0.00	0.00	0.00
2- 3	18.30	20.89	1.66	-3.97	-1.25	0.00	0.00	1.82	2.07	0.17	0.00	0.00	0.00	0.00
2- 4	22.79	26.02	2.07	-3.97	-1.25	0.00	0.00	0.91	1.04	0.08	0.00	0.00	0.00	0.00
2- 5	24.29	27.73	2.21	-3.97	-1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2- 6	22.79	26.02	2.07	-3.97	-1.25	0.00	0.00	-0.91	-1.04	-0.08	0.00	0.00	0.00	0.00
2- 7	18.30	20.89	1.66	-3.97	-1.25	0.00	0.00	-1.82	-2.07	-0.17	0.00	0.00	0.00	0.00
2- 8	10.81	12.33	0.98	-3.97	-1.25	0.00	0.00	-2.72	-3.11	-0.25	0.00	0.00	0.00	0.00
2- 9	0.33	0.35	0.03	-3.97	-1.25	0.00	0.00	-3.63	-4.15	-0.33	0.00	0.00	0.00	0.00
2-10	-13.19	-15.05	-1.20	-3.97	-1.25	0.00	0.00	-4.62	-5.19	-0.41	0.00	0.00	0.00	0.00
Right														

Unfactored Thrusts due to All Loads: (k) (Fill Depth = 2.58 ft)

Member	Pdc	Pev	Pdw	Peh	Pls	Pwa
1	4.62	5.19	0.41	0.00	0.00	0.00
2	1.30	1.48	0.12	2.49	0.93	0.00

----- Analysis Truck, HL-93 -----

Vehicle	Axle No.	Weight (k/ft)	Length (ft)	Dist. From Previous (ft)
Truck	1	0.644	10.63	
	2	0.644	10.63	10.00

Live Load Parameters:

Traffic Direction is Perpendicular to Main Reinforcement
 Distribution Width : 5.72 ft
 Impact Factor : 1.22
 Truck MPF : 1.20 Tandem MPF : 1.20
 Lane Load Distribution Width : 10.63 ft
 Lane Load: 0.072 k/ft

Truck Positions That Cause Maximum Results:

Maximum +Moment in Top Slab					Maximum -Moment in Top Slab				
Vehicle	Axle No.	Weight (klf)	Length (ft)	Dist. From Left End (ft)	Vehicle	Axle No.	Weight (klf)	Length (ft)	Dist. From Left End (ft)
Truck	1	0.644	10.63	21.55	Truck	1	0.644	10.63	21.55

Maximum +Moment : 52.60 k-ft
 Corresponding Moment at End : -26.05 k-ft

Maximum -Moment : -26.05 k-ft
 Corresponding Moment at Mid : 52.60 k-ft

Maximum +Shear in Top Slab
 Truck 1 0.644 10.63 15.32
 2 0.644 10.63 5.32
 Maximum +Shear : 9.41 k
 Corresponding Shear at Mid : -1.62 k

Maximum -Shear in Top Slab
 Truck 1 0.644 10.63 27.68
 2 0.644 10.63 17.68
 Maximum -Shear : -9.41 k
 Corresponding Shear at Mid : 1.62 k

Maximum +Moment in Top Slab
 Tandem 1 0.503 10.63 21.55
 2 0.503 10.63 11.55
 Maximum +Moment : 41.10 k-ft
 Corresponding Moment at End : -20.35 k-ft

Maximum -Moment in Top Slab
 Tandem 1 0.503 10.63 21.55
 2 0.503 10.63 11.55
 Maximum -Moment : -20.35 k-ft
 Corresponding Moment at Mid : 41.10 k-ft

Maximum +Shear in Top Slab
 Tandem 1 0.503 10.63 15.32
 2 0.503 10.63 5.32
 Maximum +Shear : 7.35 k
 Corresponding Shear at Mid : -1.26 k

Maximum -Shear in Top Slab
 Tandem 1 0.503 10.63 27.68
 2 0.503 10.63 17.68
 Maximum -Shear : -7.35 k
 Corresponding Shear at Mid : 1.26 k

Unfactored Moments and Shears due to Truck Loads: (k-ft, k)

M-PT	Truck				Tandem				Lane			
	M11+	M11-	V11+	V11-	M11+	M11-	V11+	V11-	M11+	M11-	V11+	V11-
Member 1: (Exterior wall)												
Bottom												
1- 0	0.00	0.00	0.00	-2.56	0.00	0.00	0.00	-2.00	0.00	0.00	0.00	-0.34
1- 1	0.00	-2.60	0.00	-2.56	0.00	-2.03	0.00	-2.00	0.00	-0.35	0.00	-0.34
1- 2	0.00	-5.21	0.00	-2.56	0.00	-4.07	0.00	-2.00	0.00	-0.69	0.00	-0.34
1- 3	0.00	-7.81	0.00	-2.56	0.00	-6.10	0.00	-2.00	0.00	-1.04	0.00	-0.34
1- 4	0.00	-10.42	0.00	-2.56	0.00	-8.14	0.00	-2.00	0.00	-1.38	0.00	-0.34
1- 5	0.00	-13.02	0.00	-2.56	0.00	-10.17	0.00	-2.00	0.00	-1.73	0.00	-0.34
1- 6	0.00	-15.63	0.00	-2.56	0.00	-12.21	0.00	-2.00	0.00	-2.07	0.00	-0.34
1- 7	0.00	-18.23	0.00	-2.56	0.00	-14.24	0.00	-2.00	0.00	-2.42	0.00	-0.34
1- 8	0.00	-20.84	0.00	-2.56	0.00	-16.28	0.00	-2.00	0.00	-2.77	0.00	-0.34
1- 9	0.00	-23.44	0.00	-2.56	0.00	-18.31	0.00	-2.00	0.00	-3.11	0.00	-0.34
1-10	0.00	-26.05	0.00	-2.56	0.00	-20.35	0.00	-2.00	0.00	-3.46	0.00	-0.34
Top												
Member 2: (Top Slab)												
Left												
2- 0	0.00	-26.05	9.41	0.00	0.00	-20.35	7.35	0.00	0.00	-3.46	1.19	0.00
2- 1	9.50	-7.73	8.04	-0.13	7.42	-6.04	6.28	-0.10	0.91	-0.83	0.97	-0.01
2- 2	26.24	-0.51	6.67	-0.51	20.50	-0.40	5.21	-0.40	2.88	-0.05	0.76	-0.05
2- 3	40.71	0.00	5.30	-1.15	31.81	0.00	4.14	-0.90	4.80	0.00	0.58	-0.11
2- 4	49.54	0.00	3.94	-1.96	38.70	0.00	3.08	-1.53	5.98	0.00	0.43	-0.19
2- 5	52.60	0.00	2.78	-2.78	41.10	0.00	2.17	-2.17	6.37	0.00	0.30	-0.30
2- 6	49.54	0.00	1.96	-3.94	38.70	0.00	1.53	-3.08	5.98	0.00	0.19	-0.43
2- 7	40.71	0.00	1.15	-5.30	31.81	0.00	0.90	-4.14	4.80	0.00	0.11	-0.58
2- 8	26.24	-0.51	0.51	-6.67	20.50	-0.40	0.40	-5.21	2.88	-0.05	0.05	-0.76
2- 9	9.50	-7.73	0.13	-8.04	7.42	-6.04	0.10	-6.28	0.91	-0.83	0.01	-0.97
2-10	0.00	-26.05	0.00	-9.41	0.00	-20.35	0.00	-7.35	0.00	-3.46	0.00	-1.19
Right												

Note: Unfactored live load results computed at 2.58 ft and 0 ft fill depths, per LRFD 3.6.1.2.6

Serviceability Check: Crack Control

Bar Mark	Location	Moment (k-ft)	Thrust (k)	Fss (ksi)	Spacing (in)	Allow (in)
A1	Top Corner Bar	-55.8	20.82	29.40	5.00	7.73
A100	Top Slab (int)	111.2	4.14	24.26	4.00	14.73
B2	Ext wall (ext)	-27.1	20.82	12.07	5.00	26.22

Serviceability Check: Live Load Deflection

Deflection Ratio of Top Slab = 1/2434 (Limit = 1/800)

Strength Limit State at Critical Sections: Flexure

Member 1: (Exterior wall), Thickness = 12.00 in

Loc	Dist. (in)	Design Moment (k-ft)	Corr. A. F. (k)	Mu (k-ft)	ds (in)	Ma (k-ft)	phi	As (in2)	Mcr (k-ft)	Load Ratings	
										IR	OR
BOT	0.00	0.0#	13.14	0.00	9.44	4.73	0.90	0.00	18.93	NC	NC
MID	48.80	0.00	9.09	31.32	10.19	32.71	0.90	0.53	18.93	NC	NC
MID-	61.00	-41.57	31.69	117.70	9.44	111.69	0.84	2.40	18.93	3.72	4.82
TOP	11.00	-84.61	31.69	117.70	9.44	111.69	0.84	2.40	18.93	1.57	2.03

Member 2: (Top Slab), Thickness = 22.00 in

Loc	Dist. (in)	Design Moment (k-ft)	Corr. A. F. (k)	Mu (k-ft)	ds (in)	Ma (k-ft)	phi	As (in2)	Mcr (k-ft)	Load Ratings	
										IR	OR
LT	6.00	-85.60	13.78	260.20	19.44	254.12	0.90	2.40	63.62	4.49	5.82
MID	198.00	170.25	5.40	328.92	19.94	314.44	0.90	3.00	63.62	2.40	3.11
RT	6.00	-85.60	13.78	260.20	19.44	254.12	0.90	2.40	63.62	4.49	5.82

Notes: Mu - Resisting moment under pure flexure, Ma - Allowable moment under applied axial load
 # - a 0.0 design moment indicates no negative moments at this location. Check the 'Load Combination Results'table to determine if a positive moment exists.

Strength Limit State at Critical Sections: Vertical Shear

Member 1: (Exterior wall), Thickness = 12.00 in

Loc	Dist. (in)	Design Shear (k)	Corr. Moment (k-ft)	Corr. A. F. (k)	Dv (in)	phi*Vn (k)	Beta	Theta	Vc (k)	Vs (k)	Av (in2)	Max. Spac (in)	Load Ratings		
													IR	OR	
BOT	0.00	2.32	1.3	13.14	8.64	16.15	2.000	45.00	17.94	b	0.00	0.00	0.00	NC	NC
MID	61.00	3.01	0.0	9.09	9.93	41.22	4.443	30.49	45.80	a	0.00	0.00	0.00	NC	NC
MID-	61.00	3.01	-41.6	31.69	8.64	22.45	2.780	35.85	24.94	a	0.00	0.00	0.00	3.60	4.67
TOP	19.64	-12.75	-84.6	31.69	8.64	16.15	2.000	45.00	17.94	b	0.00	0.00	0.00	1.54	2.00

Member 2: (Top Slab), Thickness = 22.00 in

Loc	Dist. (in)	Design Shear (k)	Corr. Moment (k-ft)	Corr. A. F. (k)	Dv (in)	phi*Vn (k)	Beta	Theta	Vc (k)	Vs (k)	Av (in2)	Max. Spac (in)	Load Ratings		
													IR	OR	
LT	23.49	28.42	-85.6	13.78	18.26	34.04	1.994	45.73	37.82	a	0.00	0.00	0.00	1.33	1.73
MID	198.00	5.39	170.3	5.40	18.47	29.72	1.722	48.34	33.02	a	0.00	0.00	0.00	5.51	7.14
RT	23.49	28.42	-85.6	13.78	18.26	34.04	1.994	45.73	37.82	a	0.00	0.00	0.00	1.33	1.73

Vc Calculation By: a - Iterative Beta, b - Constant Beta, c - Box Culvert, d - Standard/Arrema

Vertical Reactions Applied to Structure: (service load values, k/unit width, pos. is up)

Wall #	DL	DW	EV	EH	LS	WA	LL	Tot. w/o LL	Tot. w/ LL
1	6.15	0.41	5.19	0.00	0.00	0.00	9.41	11.74	21.15
2	6.15	0.41	5.19	0.00	0.00	0.00	9.41	11.74	21.15

Horizontal Reactions Applied to Structure: (service load values, k/unit width, pos. is right)

Wall #	DL	DW	EV	EH	LS	WA	LL	Tot. w/o LL	Tot. w/ LL
1	1.30	0.12	1.48	-2.74	-0.68	0.00	2.56	-0.53	2.03
2	-1.30	-0.12	-1.48	2.74	0.68	0.00	-2.56	0.53	-2.03

Load Combination Results at Tenth Points: (k-ft, k)(Fill Depth = 2.58 ft)

M-PT	+Moment	-Moment	+Axial	-Axial	+Shear	-Shear
Member 1: (Exterior wall)						
Bottom						
1- 0	0.000	0.000	13.136	9.094	2.317	-6.949
1- 1	1.662	-7.340	9.094	31.689	0.953	-7.491
1- 2	1.980	-15.210	9.094	31.689	-0.328	-7.990
1- 3	1.039	-23.566	9.094	31.689	-1.525	-8.448
1- 4	-1.077	-32.367	9.094	31.689	-2.638	-8.864
1- 5	-4.283	-41.569	9.094	31.689	-3.014	-9.892
1- 6	-8.492	-51.131	9.094	31.689	-3.346	-10.838
1- 7	-13.621	-61.009	9.094	31.689	-3.637	-11.700
1- 8	-19.584	-71.161	9.094	31.689	-3.885	-12.479
1- 9	-24.591	-83.256	9.094	31.689	-4.092	-13.173
1-10	-28.837	-96.961	9.094	31.689	-4.257	-13.784
Top						
Member 2: (Top Slab)						
Left						
2- 0	-28.868	-97.025	4.257	13.784	31.689	9.094
2- 1	16.439	-21.604	5.403	13.784	26.187	7.215
2- 2	79.295	13.917	5.403	7.560	20.830	5.412
2- 3	129.493	28.799	5.403	7.560	15.515	3.018
2- 4	159.897	37.728	5.403	7.560	10.253	-1.161
2- 5	170.254	40.704	5.403	7.560	5.392	-5.392
2- 6	159.897	37.728	5.403	7.560	1.161	-10.253
2- 7	129.493	28.799	5.403	7.560	-3.018	-15.515
2- 8	79.295	13.917	5.403	7.560	-5.412	-20.830
2- 9	16.439	-21.604	5.403	13.784	-7.215	-26.187
2-10	-28.868	-97.025	4.257	13.784	-9.094	-31.689
Right						