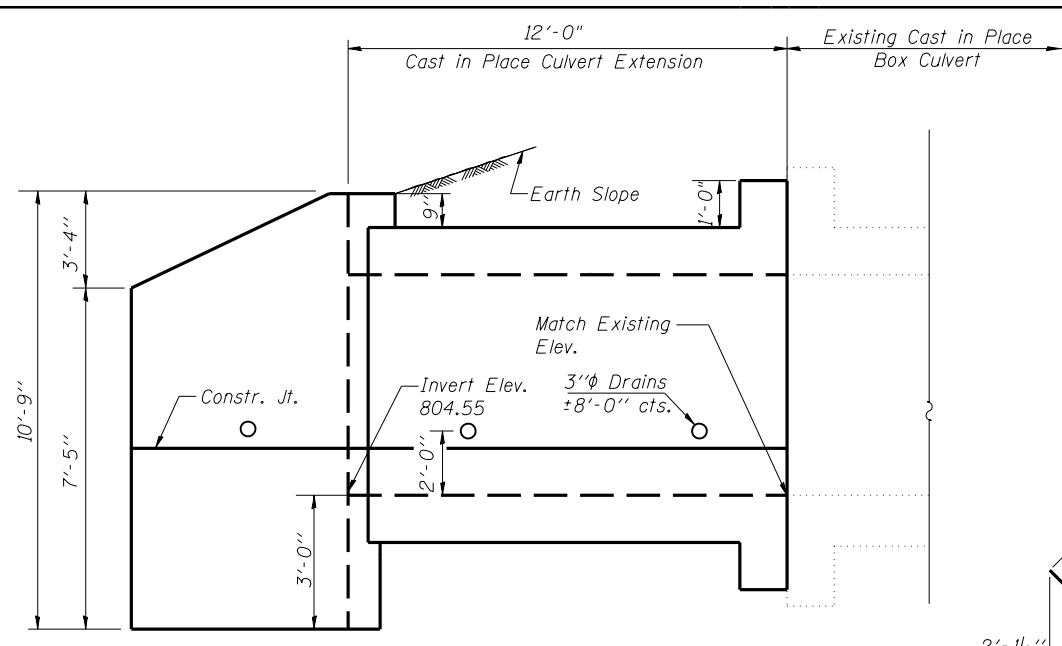
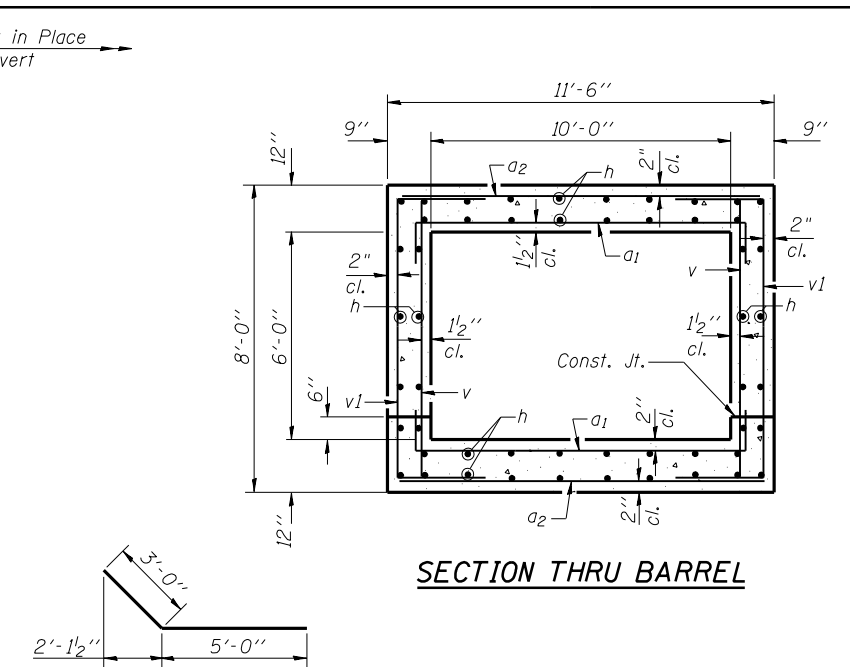


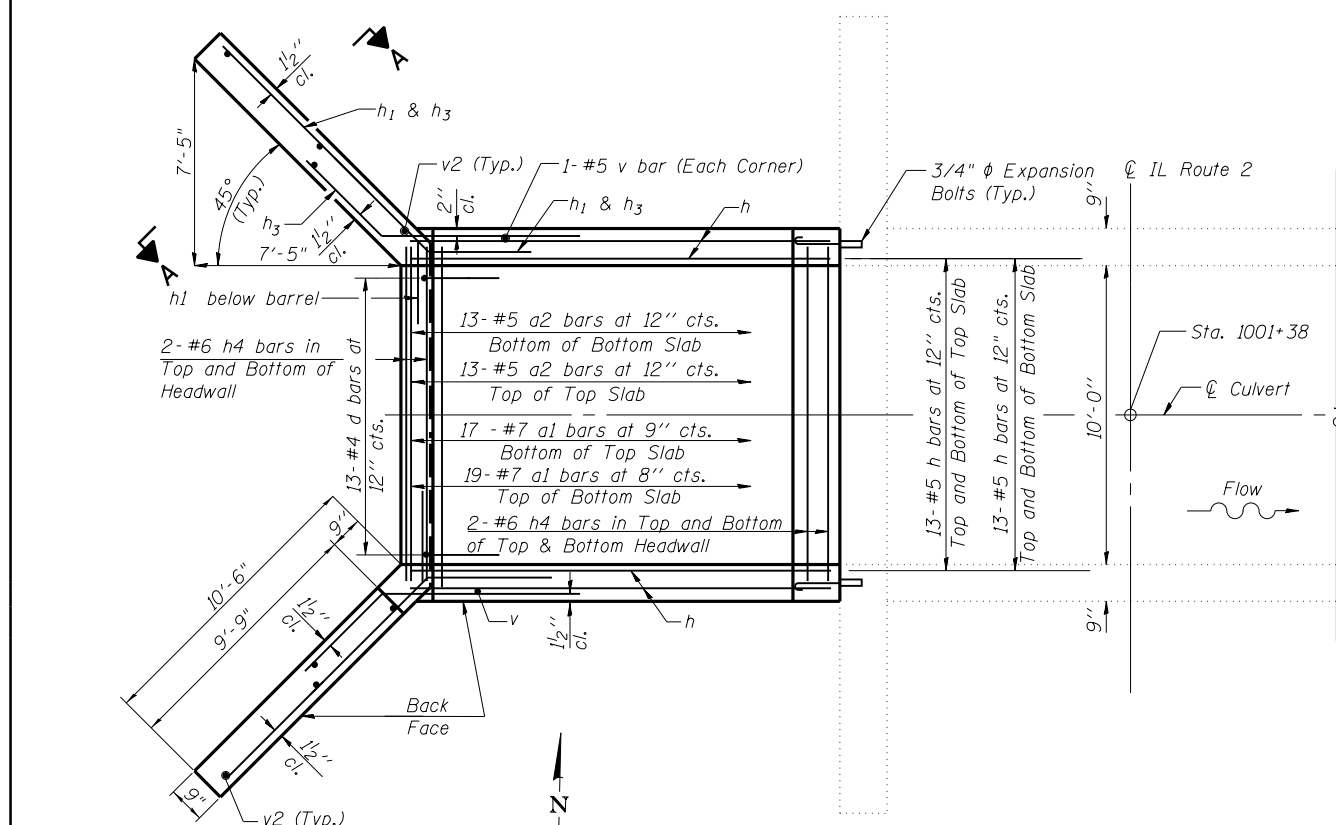
**HALF LONG. SECTION**



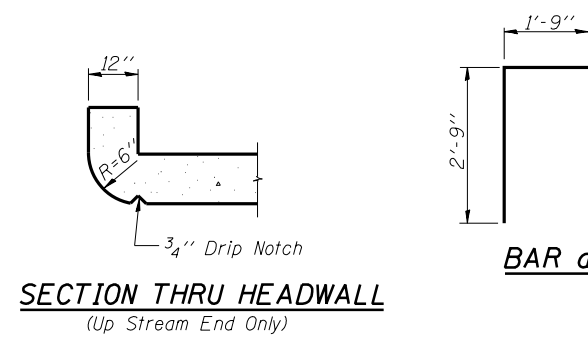
**HALF ELEVATION**



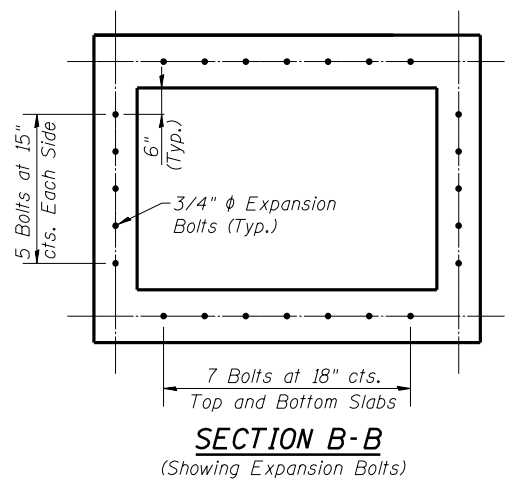
**SECTION THRU BARREL**



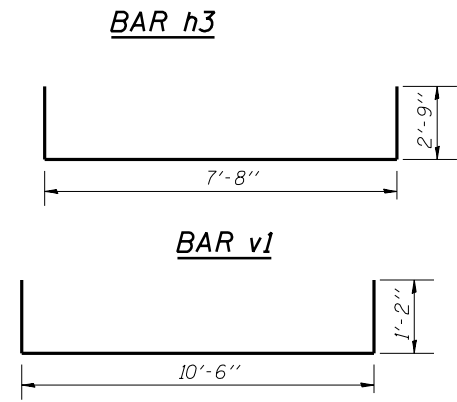
**PLAN**



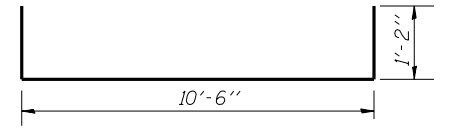
**SECTION THRU HEADWALL (Up Stream End Only)**



**SECTION B-B (Showing Expansion Bolts)**



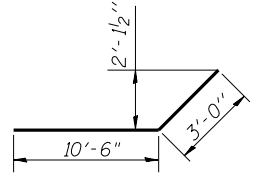
**BAR h3**



**BAR v1**



**BAR a1**



**BAR h1**

**WATERWAY INFORMATION**

Drainage Area = 191 Acres		Low Grade Elev. 816.81 @ Sta. 1001+38				
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist. Prop.	Nat. H.W.E.	Head - Ft. Exist. Prop.	Headwater El. Exist. Prop.
Design	50	247	35.3	808.09	2.43	810.52
Base	100	288	36.9	808.25	3.24	811.49
Overtopping		446.46	42.0	808.76	7.89	816.65
Max. Calc.	500					

**NOTES**

A distance of half the length of the wingwall but not less than six feet of the barrel shall be poured monolithically with the wingwalls.  
 Reinforcement Bars shall conform to the requirements of ASTM A706 Grade 60.  
 All construction joints shall be bonded.  
 Expansion bolts shall be 3/4 inch hooked bolts. Hooked bolts shall extend a minimum of 9 inch into new concrete.

**DESIGN SPECIFICATIONS**

2010 AASHTO LRFD Bridge Design Specifications  
 5th Edition with 2010 Interims

**LOADING HL - 93**

Allow 50psf for Future Wearing Surface

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a1	36	#7	12'-10"	┌
a2	27	#5	11'-2"	┌
d	13	#4	4'-6"	┌
h	80	#5	11'-9"	┌
h1	22	#6	13'-6"	┌
h3	18	#4	8'-0"	┌
h4	12	#6	11'-3"	┌
v	28	#5	7'-9"	┌
v1	26	#6	13'-2"	┌
v2	8	#4	10'-5"	┌
Concrete Box Culverts			Cu. Yd.	21.2
Expansion Bolts 3/4			Each	24
Reinforcement Bars			Pound	3820

**SECTION A-A**

