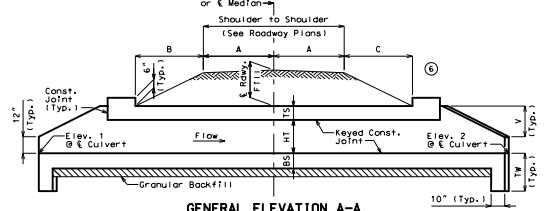


3('x') CONCRETE BOX CULVERT

SEC/SUR * TWP * RGE *



GENERAL ELEVATION A-A

Construction joint key not shown for clarity. See standard plans for details.
If any part of the barrel is exposed, the roadway fill shall be warped to provide 12 inches minimum cover. (Roadway Item)
If unsuitable material is encountered, excavation of unsuitable material and furnishing and placing of granular backfill shall be in accordance with Sec 206.

Layout Dimensions					
Var.	Equation	Dim.	Var.	Equation	Dim.
S	--	x	F	3S + 2TX + 2TI	(b)
HT	--	x	G	2V	x
TS	--	x	H	(A + C + E1tan Z)	x
BS	--	x	I	3"(cos Z)	x
TX	--	x	J	(A + B + E1tan Z)	x
TI	--	x	K	(3S/2 + TI)sec Z	x
A	--	x	L	2EE + BB + CC	x
B	--	x	O	I + YY	x
C	--	x	T	G1sec Z	x
E	G + 0 + 20"	x	V	HT + TS - 12"	x
			W	Max{3*4" or (BS + 12")}	x

Hydrologic Data		Elevations		Fill Heights	
Drainage Area =	--- mi ²	Upstream (Elev. 1) =	ft	Ray at & Culvert =	ft
Design Flood Frequency =	--- years	Downstream (Elev. 2) =	ft	Design (All units) =	ft
Design Flood Discharge =	--- cfs	Pr. Gr. at Tie Sta. =			
Design Flood (D.F.) Elevation =	---				
Base Flood Elevation =	---				
Base Flood Discharge =	--- cfs				
Estimated Backwater =	--- ft				
Outlet Velocity =	--- ft/s				
Roadway Overlapping					
Overlapping Flood Discharge =	--- cfs				
Overlapping Flood Frequency =	--- years				
Flood Elevation =	---				

Estimated Quantities		
Class	Quantity	Final
Class 4 Excavation	cu. yard	x
Removal of Bridges	lum. sum	1
Class B-1 Concrete (Culverts-Bridge)	cu. yard	x
Reinforcing Steel (Culverts-Bridge)	pound	x

General Notes:
 Design Specifications: 2010 AASHTO LRFD Bridge Design Specifications and 2010 Interim Revisions
 Design Loading: Vehicular = HL-93 minus lane load, Earth = 120 lb/cf, Equivalent Fluid Pressure = 30 lb/cf (min.), 60 lb/cf (max.)
 Design Unit Stresses: Class B-1 Concrete (Box Culvert) f'c = 4,000 psi, Reinforcing Steel (Grade 60) fy = 60,000 psi
 Material Notes: MDOT construction personnel will indicate the type of box culvert constructed: Precast Concrete Box used, Cast-In-Place Concrete Box used
 When alternate precast concrete box sections are used, the minimum distance from inside face of headwall to precast sections measured along the shortest wall shall be 3 feet. Reinforcement and dimensions for wings and headwalls shall be in accordance with Missouri Standard Plans.
 Channel bottom shall be graded within the right of way for transition of channel bed to culvert openings. Channel banks shall be tapered to match culvert openings. (Roadway Item)
 Traffic Handling: Structure to be closed during construction. Traffic to be maintained on _____ during construction. See roadway plans for traffic control.
 B.M.

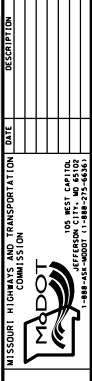
CULVERT-BRIDGE: ROUTE * OVER *

ROUTE * FROM * TO *	STD. 703.37
ABOUT * MILES * OF *	STD. 703.82
TIE STA. -----	STD. 703.86
	STD. 703.87
	STD. 706.35

Note: This drawing is not to scale. Follow dimensions. Sheet No. 1 of _____

THIS AREA SHOULD NOT BE CONSIDERED A SEPARATE DOCUMENT.

DATE PREPARED: 5/15/2015
 DATE CHECKED: _____
 PROJECT NO. _____
 BRIDGE NO. BOX 8



LOCATION SKETCH

Standard Drawing Guidance

- Do not show on plans. Turn off the Bridge Construction level to hide.
- Some details have been grouped together to allow easy substitution with alternate details. To edit grouped details, select them and press <Ctrl> U.
- Ahead station is shown for streams flowing left to right. Arrow must be flipped for streams that flow right to left.
- Modify Estimated Quantities as Required. Don't leave blank rows but leave space between Estimated Quantities and General Notes for at least one pay item to be added during construction. See Alternate Details for culvert extensions, or if five items are required.
- Add any required transverse joints proportionally spaced along the barrel. Label units and add actual lengths of units along the barrel.
- Insert STD 703.60 when pipe inlets are required. Add pipe inlets to Plan of Layout Dimensions at appropriate locations and to Elevation A-A. If visible from elevation, add inlet data using notes where space allows or use tables.
- For nonstandard culverts with only one design fill height, add supplemental reinforcement table.
- No need to revise General Elevation A-A for dual roadways. In Fill Heights table add a lone designation after Ray and insert another row for the other lane.

*** VARIABLE DESIGN FILL HEIGHTS ***

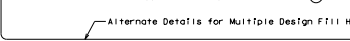
- Select and delete the details grouped with the Fill Heights table. Select and move the alternate grouped details to drawing.
- Place "See Member Thickness table" in the Equation column and place "Varies" in the Dim. column. If dimension F varies, place "Varies" in the Dim. column.
- Remove blank rows. End units may have different design fill heights but both units need to have the same member thickness.
- This portion of table required when design fill height exceeds limits of the standard plans or when culvert cell height or span is not standard. If only a portion of the units are nonstandard, fill out entire table using the values from the standard table where applicable. Omit if not required.

Pipes With Same Diameter

Station	Offset	F.L. Elev.
xxxx.xx	xx.xx" XX	xxx.xx
xxxx.xx	xx.xx" XX	xxx.xx
xxxx.xx	xx.xx" XX	xxx.xx

Station	Offset	Di. F.L. Elev.
xxxx.xx	xx.xx" XX	xxx.xx
xxxx.xx	xx.xx" XX	xxx.xx
xxxx.xx	xx.xx" XX	xxx.xx

Inlets Sized for Elevation A-A (Pipe Diameter/Culvert HT)

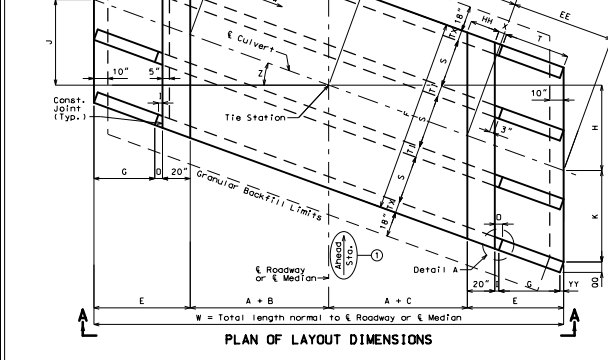


Construction joint key not shown for clarity. See standard plans for details.

If unsuitable material is encountered, excavation of unsuitable material and furnishing and placing of granular backfill shall be in accordance with Sec 206.

Supplemental Pipe Inlet Details

Alternate Details for Multiple Design Fill Heights



Unit No.	Unit Length	Member Thickness	Top Slab Reinforcement				Bottom Slab Reinforcement				Wall Reinforcement		
			H1 Bars	H2 Bars	A2 Bars	H3 Bars	B1 Bars	B2 Bars	B3 Bars	B4 Bars			
x	x	x	x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x	x	x	x	x	x

ALTERNATE AND SUPPLEMENTAL DETAILS

Supplemental Reinforcement Table (Nonstandard culverts with only one design fill height)

Top Slab Reinforcement										Bottom Slab Reinforcement										Wall Reinforcement	
A1 Bars	J3 Bars	H1 Bars	H2 Bars	A2 Bars	J4 Bars	H3 Bars	H3 Bars	H3 Bars	H3 Bars	B1 Bars	B2 Bars	B3 Bars	B4 Bars	B1 Bars	B2 Bars	B3 Bars	B4 Bars	B1 Bars	B2 Bars		
Sz, Spa.	Sz, Spa.	C1	K2	Sz, Spa.	C5	O8	Sz, Spa.	C6	O9	Sz, Spa.	Sz, Spa.	C4	K3	Sz, Spa.	C7	O10	Sz, Spa.	Sz, Spa.	Sz, Spa.	O1	
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	

Substitute table for tables shown on Standard Plan 703.87

Fill Heights

Ray at & Culvert =	ft
Design (Units 1 & 1) =	ft
Design (Units & 1) =	ft
Design (Units & 1) =	ft

Estimated Quantities

Class	Quantity	Final
Class 4 Excavation	cu. yard	x
Temporary Shoring	lum. sum	1
Partial Removal of Culvert-Bridge Concrete	lum. sum	1
Class B-1 Concrete (Culverts-Bridge)	cu. yard	x
Reinforcing Steel (Culverts-Bridge)	pound	x

Alternate Estimated Quantities for Culvert Extensions or when Five Items are Required

Corresponds to the border of the standard drawing for ease in moving alternate details (Snap to corner)

Alternate Plan of Transverse Joints

