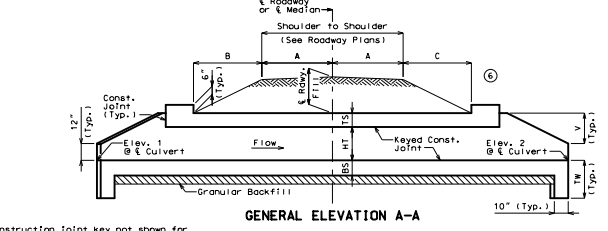
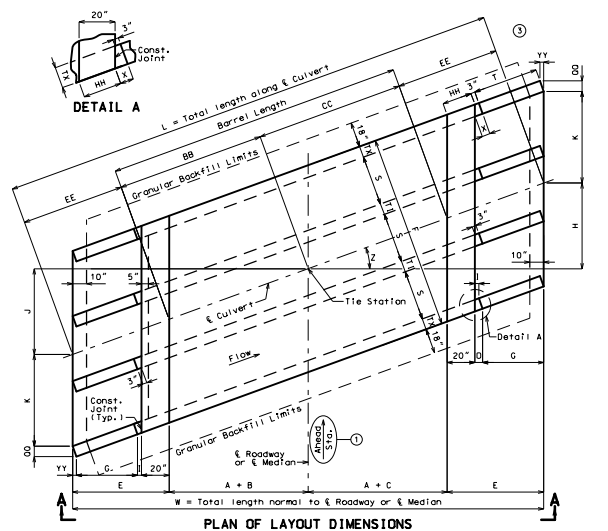


3('x') CONCRETE BOX CULVERT



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.



Note: This drawing is not to scale. Follow dimensions.

Layout Dimensions			
Var.	Equation	Dim.	Var.
S	35 + 21X + 211	①	W
HT	2V	x	Z
TS	H(A + C + E)tan Z	x	BB
BS	I 3°cos Z	x	CC
TI	J(A + B + E)tan Z	x	EE
A	L 2ZE + BB + CC	x	HH
B	I + YY	x	DD
C	Gsec Z	x	YY
E	G + 0 + 20"	x	TW

Hydrologic Data		Elevations		Fill Heights	
Drainage Area	= ... mi ²	Upstream E (Elev. 1) =	ft	Row at E Culvert =	ft
Design Flood Frequency	= ... years	Downstream E (Elev. 2) =	ft	Design (All units) =	ft
Design Flood Discharge	= ... cfs	Pr. Cr. at Tie Sta. =	ft		
Base Flood (100-year)	= ...				
Base Flood Elevation	= ...				
Base Flood Discharge	= ... cfs				
Estimated Backwater	= ... ft				
Outlet Velocity	= ... ft/s				

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

Dimensions are based on end units. Fill heights are measured from the top of slab to the top of earth fill or roadway.

General Notes:
 Design Specifications: 2010 AASHTO LRFD Bridge Design Specifications and 2010 Interim Revisions
 Design Loadings: 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) f_y = 60,000 psi
 Miscellaneous: MDDT 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 roadway during construction. See roadway plans for traffic control.
 B.M.

CULVERT-BRIDGE: ROUTE #

OVER #

ROUTE # FROM # TO #

ABOUT # MILES # OF #

TIE STA. #

STD. 703.37	①
STD. 703.84	
STD. 703.86	
STD. 706.35	

DATE PREPARED: 5/15/2015

DRAWN BY: MO

CHECKED BY: MO

JOB NO.:

CONTRACT TO:

PROJECT NO.:

BRIDGE NO. BOX 9

DESCRIPTION:

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

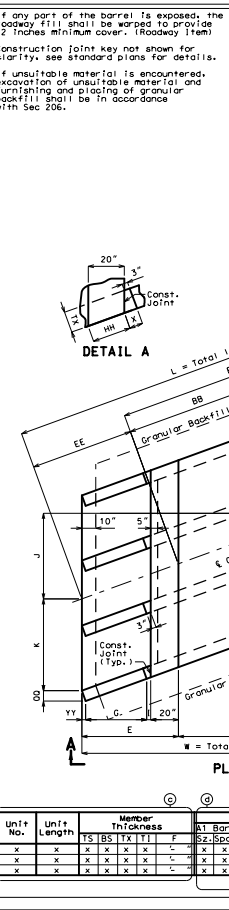
MODOT

TELEPHONE: 800-443-4533

WEBSITE: www.mohdot.com

Sheet No. 1 of

Standard Drawing Guidance
 Do not show on plans. Turn off the Bridge Construction level to hide details. Some details have been grouped together to allow easy substitution with alternate details. To add 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.
 ① 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.
 ② Add any required transverse joints proportionally spaced along the barrel. Leave units and add actual lengths of units along the barrel.
 ③ 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.
 ④ For nonstandard culverts with only one design fill height, add supplemental reinforcement table.
 ⑤ No need to revise general Elevation A-A for dual roadways. In fill heights table add a lone designation after E Row and insert another row for the other lane.
 *** VARIABLE DESIGN FILL HEIGHTS ***
 ⑥ Select and delete the details grouped with the Fill Heights table. Select and move the alternate grouped details to drawing.
 ⑦ 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.
 ⑧ Remove blank rows. End units may have different design fill heights but both units need to have the same member thicknesses.
 ⑨ 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. Dim F if not required.



Unit No.	Unit Length	Member Thickness	Top Slab Reinforcement										Bottom Slab Reinforcement			Wall Reinforcement			
			A1 Bars	J3 Bars	H1 Bars	H2 Bars	A2 Bars	A4 Bars	H3 Bars	B1 Bars	B2 Bars	B3 Bars	B4 Bars	B5 Bars	B6 Bars	B7 Bars	B8 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

Substitute table for tables shown on Standard Plan 703.87

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

Pipes With Different Diameters

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

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	A4 Bars	H3 Bars	B1 Bars	B2 Bars	B3 Bars	B4 Bars	B5 Bars	B6 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

Substitute table for tables shown on Standard Plan 703.87

Fill Heights

Row at E Culvert	ft
Design (Units 1 &)	ft
Design (Units &)	ft
Design (Units &)	ft

Estimated Quantities

Class	Quantity	Final
Class 4 Excavation	cu. yard	x
Temporary Shoring	lump sum	1
Partial Removal of Culvert-Bridge Concrete	lump 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 standard drawing for ease in moving alternate details (Snap to corner)

Alternate Plan of Transverse Joints

Remove if not applicable.