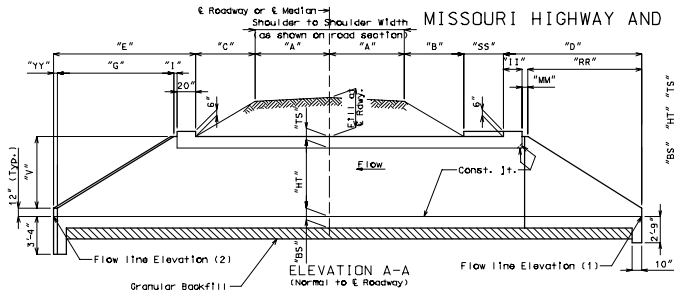
box12_trl_ra_flg Effective: June 2004 BDX-05/24/04 Supersedes: April 23, 2004

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

State	Proj. No.	Sheet No.
MO		
SEC/SUR	TWP	RGE



ELEVATION A-A
(Normal to ℄ Roadway)

Note: Slope of bottom slab shall be placed at natural stream gradient.

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

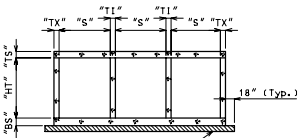
GENERAL DATA TABLE

VARIABLE	EQUATION	DIM.	VARIABLE	EQUATION	DIM.
"S"	- - -		"Q"	TX(cos 20°)	
"HT"	- - -		"R"	P(cos 20°)	
"TS"	- - -		"T"	G(sec Z)	
"BS"	- - -		"U"	(R + M)(tan 20°)	
"TX"	- - -		"V"	HT + TS - 12"	
"TI"	- - -		"W"	2A + B + C + D + E + SS	
"A"	- - -		"X"	3" + TX(tan Z)	
"B"	- - -		"Y"	TX(sin 20°)	
"C"	- - -		"Z"	Skew Angle	
"D"	II + MM + RR		"AA"	(F/2)(tan Z)	
"E"	G + D + 20"		"BB"	(A + B)(sec Z)	
"F"	3S + 2TX + 2TI		"CC"	(A + C)(sec Z)	
"G"	2V		"DD"	R + M + N + 20"	
"H"	(A + C + E)(tan Z)		"EE"	E(sec Z)	
"I"	3"(cos Z)		"HH"	20"(sec Z)	
"J"	(AA + BB + DD)(sin Z)		"II"	20"(cos Z)	
"K"	[(3/2)S + TI](sec Z)		"KK"	(3/2)S + TI + U	
"L"	AA + BB + CC + DD + EE		"LL"	(AA + BB + DD)(cos Z)	
"M"	N(cos 20°)		"MM"	3"[cos Z + cos(Z - 20°)]	
"N"	3" + TX(tan 10°)		"RR"	P[cos (Z - 20°)]	
"O"	I + YY		"SS"	F(sin Z)	
"P"	2V[sec(Z + 20°)]		"YY"	TX(sin Z)	

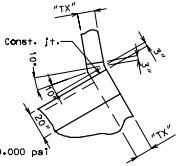
℄ Sta.=
Pr. Gr. Elev. at ℄ Sta.=
Fill at ℄ Rdwy. at ℄ Station =

Design Fill (*)	
Elev. (1)	feet
Elev. (2)	feet

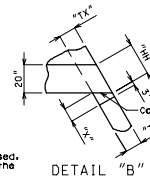
* Design fill height is the distance from top of earth fill or roadway to the top of the top slab.



SECTION THRU BOX
(Normal to ℄ Structure)



DETAIL "A"



DETAIL "B"

GENERAL NOTES:

Design Specifications:
2002 - AASHTO 17th Edition
Load Factor Design

Design Unit Stresses:
Class B-1 concrete f'c = 4,000 psi
Reinforcing steel (Grade 60), fy = 60,000 psi

Design Loading:
HS20-44 HS20 Modified

Earth 120 #/ft.³
Equivalent fluid pressure
30 #/ft.³ (Min.) - 60 #/ft.³ (Max.)

All elevations shown are in feet unless otherwise noted.

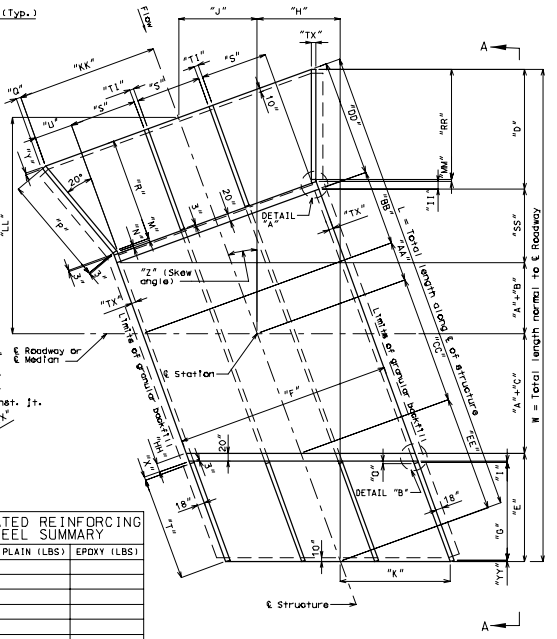
The box shown below indicating whether a precast or cip box was used should be checked by MoDOT Construction personnel:

☐ Precast Box used
☐ Cast-in-Place Box used

When alternate precast box sections are used, the minimum barrel length measured along the shortest wall from the first joint to the outside of the headwall, shall be 3'-2". Reinforcement and dimensions for the wings and headwalls shall be in accordance with Missouri Standard Plans drawing.

Minimum clearance to reinforcing steel shall be 1-1/2", unless otherwise shown.

"Sec" refers to the sections in the standard and supplemental specifications unless specified otherwise.



PLAN SHOWING LAYOUT DIMENSIONS

ESTIMATED REINFORCING STEEL SUMMARY

BAR SIZE	PLAIN (LBS)	EPOXY (LBS)
4		
5		
6		
7		
8		
9		
10		
11		
TOTAL		

Note to detailer: This table is used for design discharge of 100 years. For other design discharge, see Bridge Manual Section 2-4 page 3-1 (REMOVE THIS NOTE)

HYDROLOGIC DATA

Drainage Area	=	sq. miles ( )
Design Discharge	=	cu. ft./sec. (100 years)
Design H.W. Elev.	=	feet (100 years)
Estimated Backwater	=	feet

OVERTOPPING FLOOD DATA

Discharge	=	cu. ft./sec. (years)

ESTIMATED QUANTITIES

			FINAL QUANTITIES
Class 4 Excavation	cu. yard		
Removal of Bridges	lump sum		
Class B-1 Concrete (Culverts-Bridge)	cu. yard		
Reinforcing Steel (Culverts-Bridge)	pound		

B.M.

BRIDGE

STATE ROAD
ABOUT
PROJECT NO. STA.
JOB NO. RTE.

LOCATION SKETCH

Designed
Detailed
Checked

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

Sheet No. of

COUNTY
Date: / /

STD.
STD.
STD.
STD.
BOX12