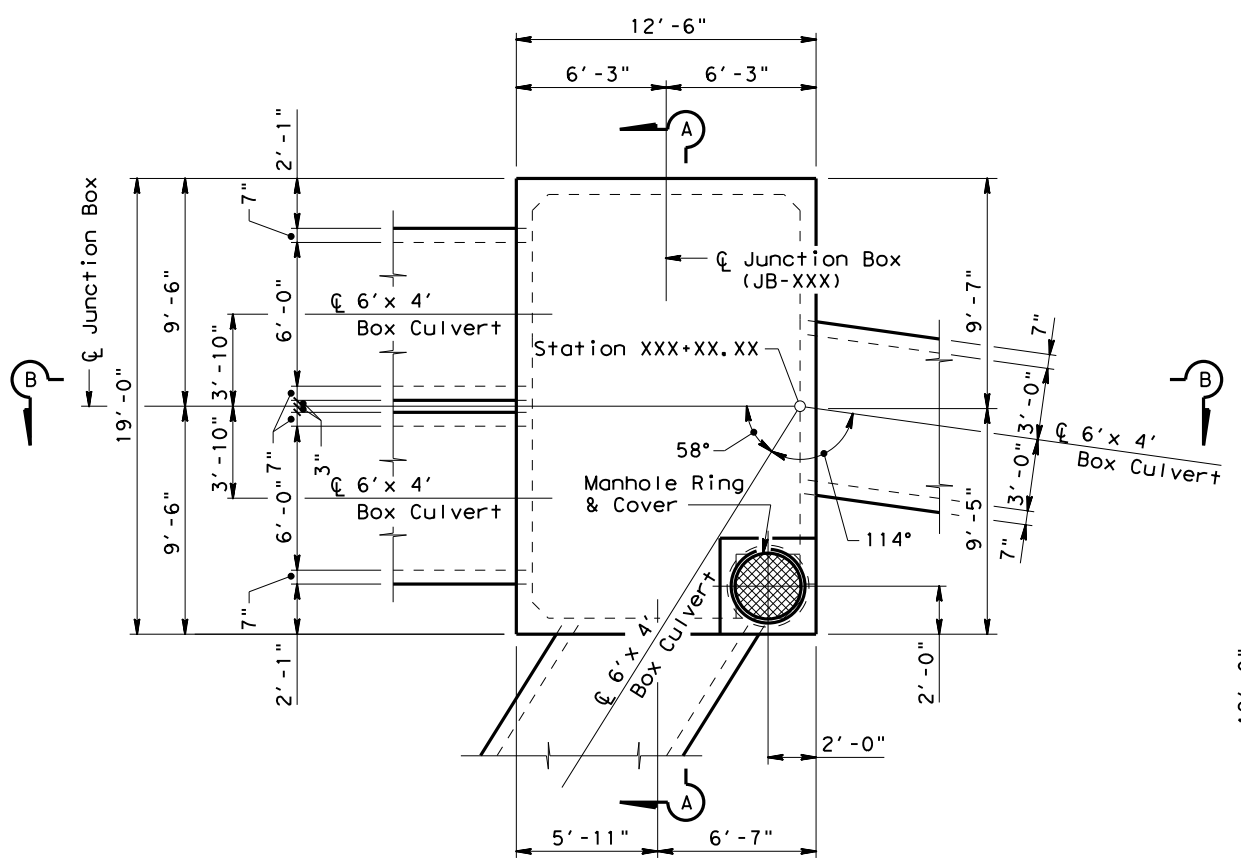
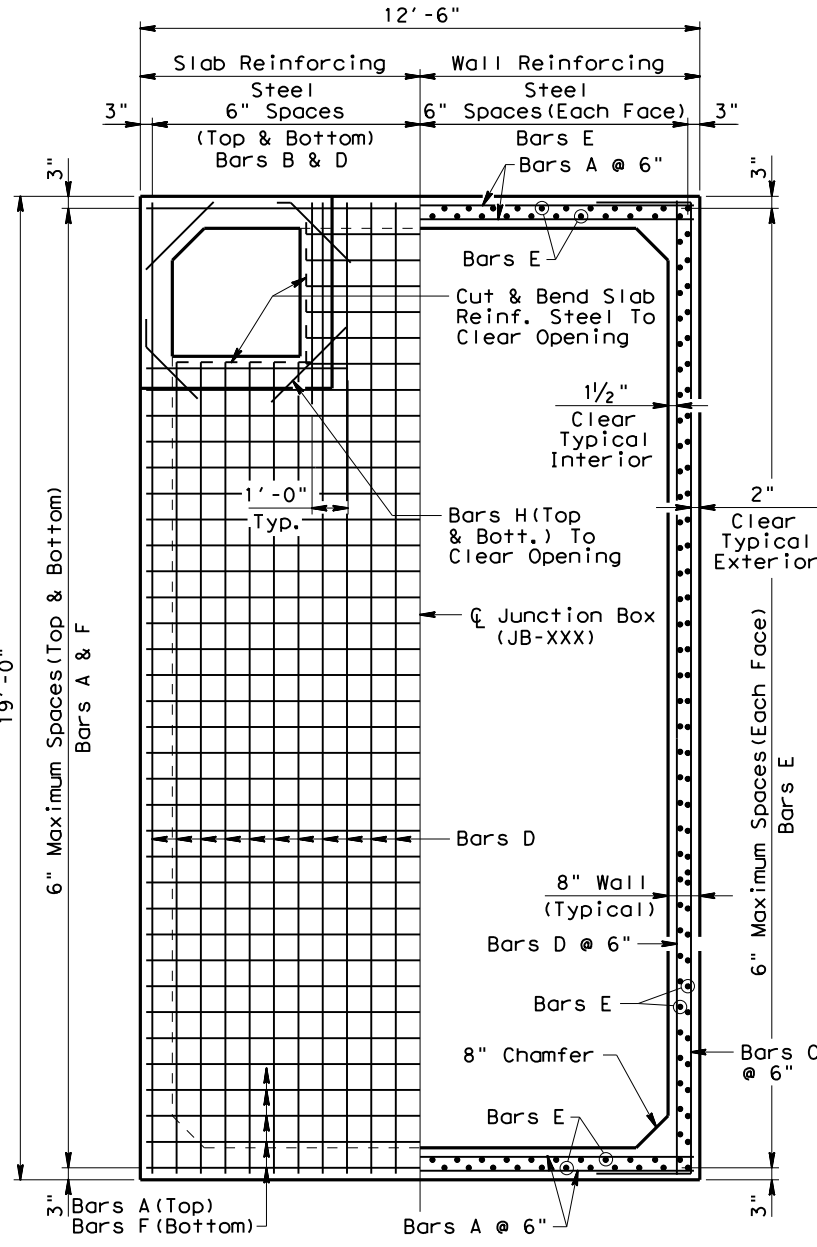


JUNCTION BOX DESIGN PROCEDURE
(Do not show on the plans)

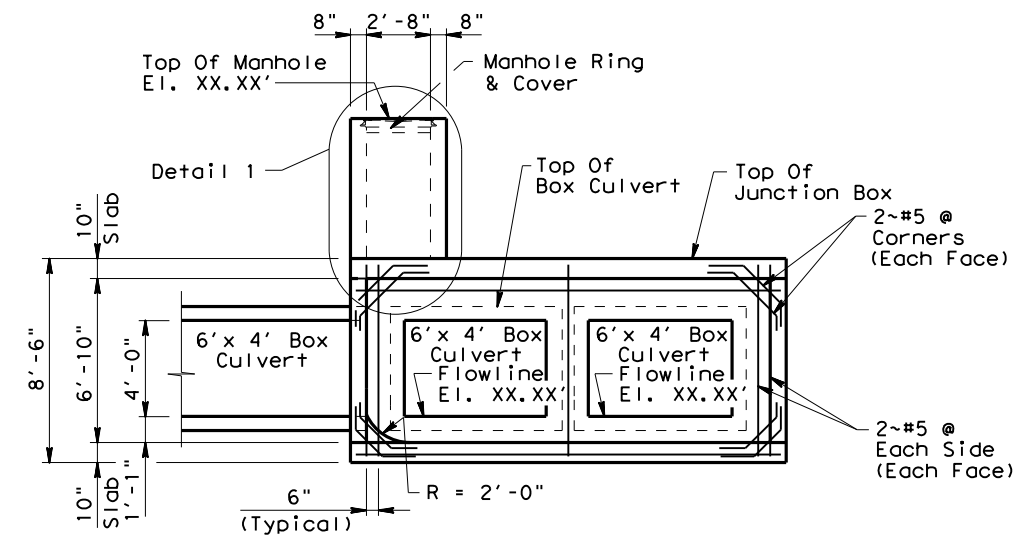
- 1.) Sketch centerlines of storm sewers, points of intersection and angular orientation.
- 2.) Determine junction box plan view dimensions and wall positions with respect to centerline storm sewer intersection point. Minimum wall thickness should be 8". Junction boxes do not have to be centered on intersection point of skewed culverts. Adjust junction box location and orientation with respect to storm sewer centerline intersection point so as to minimize overall size.
- 3.) Junction box walls should extend laterally, far enough beyond culverts, so that culvert walls clear the vertical corner chamfers. Round up exterior junction box dimensions to the nearest 6".
- 4.) Determine interior junction box wall height so as to provide a minimum of 6" of wall below and 12" above all culvert exterior surfaces. Minimum top and bottom slab thicknesses should be 10". Do not provide chamfers between walls and slabs due to the complexity of forming chamfer intersections.
- 5.) Analyze junction box as a continuous single box culvert oriented along the long axis of the junction box in plan view. Utilize TxDOT culvert design software CULV5, which is available for download at http://www.txdot.gov/business/resources/engineering_software.html.
- 6.) Perform two CULV5 analyses. The first problem should include the actual junction box dimensions as to model exterior wall conditions with no intersecting culverts. The second problem should be exactly the same, except the exterior walls should be modeled as 1" thick to conservatively determine the top slab positive moments with reduced sidewall stiffness (roughly simply supported at exterior walls).
- 7.) Design reinforcing based on moments, shears and axial forces from both CULV5 problems. Iteration of analyses may be required if slab or wall thicknesses are revised.
- 8.) Slab shear resistance should be provided by concrete only without shear reinforcing steel. Thicken slab if necessary and reanalyze with CULV5.
- 9.) Other rational methods of analysis are acceptable at the Engineer's discretion.
- 10.) Detail risers and manholes as required. Analysis of riser perforations through junction box top slabs is not usually required due to the stiffening characteristics of the reinforced concrete riser.
- 11.) Direct inlet openings, without risers, in top slabs will require additional analysis and reinforcing.
- 12.) Detail circular unreinforced concrete chamfers with 2' radiuses at the bottom slab of each box culvert to minimize accumulation of silt and debris.



PLAN~JUNCTION BOX

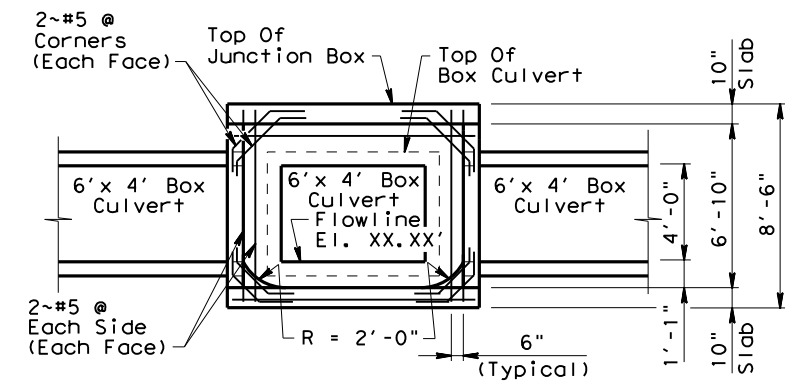


TYPICAL TOP SLAB/WALL SECTION



SECTION A-A

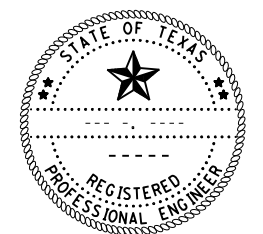
NOTE: Cut And Bend Wall Reinforcing Steel To Clear Openings



SECTION B-B

NOTE: Cut And Bend Wall Reinforcing Steel To Clear Openings

EXAMPLE ONLY
(NOT TO BE USED AS A STANDARD)



HS 20 LOADING SHEET 1 OF 2



JUNCTION BOX DETAILS

JB-XXX
(STATION XXX+XX.XX)

FILE:	jbd.dgn	DN:	CK:	DW:	CK:
© TxDOT SEPT., 2005	DISTRICT	FED REG	PROJECT NUMBER	SHEET	
REVISIONS	HOU	6			
3/2015 2014 SPECS	COUNTY	CONTROL	SECT	JOB	HIGHWAY