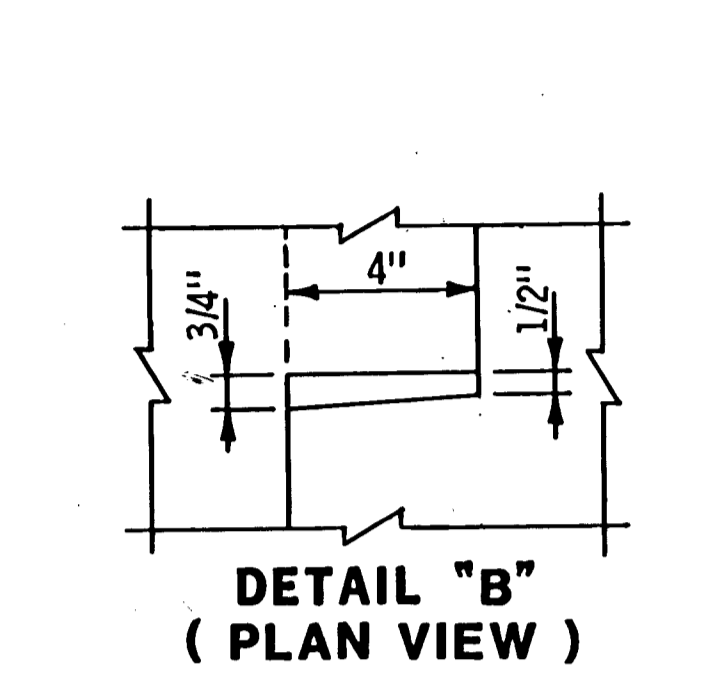
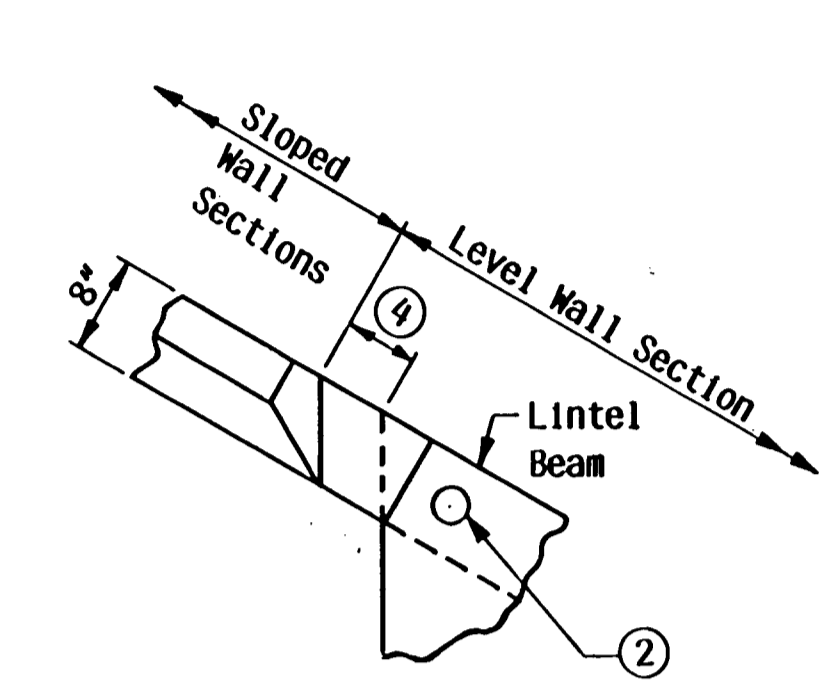


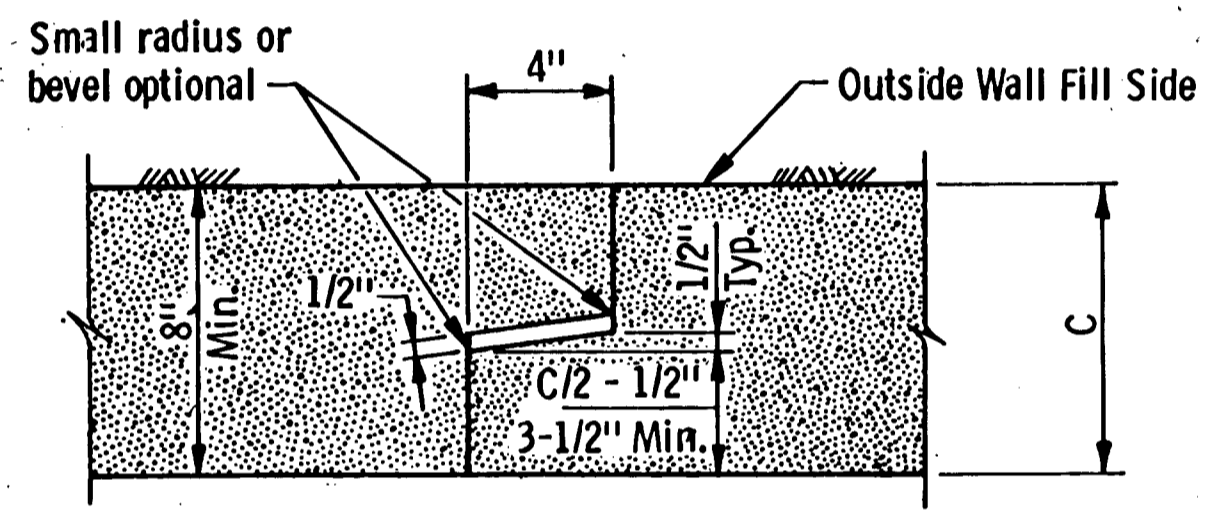
SECTION A-A



DETAIL B (PLAN VIEW)

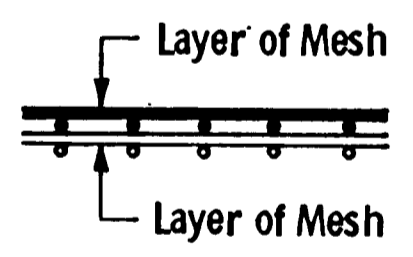


DETAIL C



TONGUE AND GROOVE JOINT

Make dimension of tongue or groove on adjacent precast barrel sections so inside walls are flush.



FABRIC LAYER DETAIL

When more than one layer of steel fabric is used to obtain the required reinforcement areas, the wire of the steel fabric shall be placed as shown in the Fabric Layer Detail.

**"L" TABLE (14)**

CULVERT HEIGHT "H"	END SECTIONS "L"
4 ft.	4 ft.
5 ft.	6 ft.
6 ft.	8 ft.
7 ft.	10 ft.
8 ft.	12 ft.
9 ft.	14 ft.
10 ft.	16 ft.
12 ft.	20 ft.

**"LL" TABLE**

WIDTH "W"	SKEW ANGLE	
	15°	30°
8 ft.	3' 9"	5' 2-5/16"
10 ft.	4' 0-1/4"	5' 9-1/4"
12 ft.	4' 3-7/16"	6' 4-3/16"

- NOTES:**  
 The steel reinforcement shall conform to the applicable requirements of AASHTO M259. The reinforcement shall be Grade 60 or better.  
 The maximum size of reinforcing bars shall be No. 6. The maximum mesh size shall be 1/2" dia. (1 or 2 layers).  
 Finish all vertical edges of concrete with 3/4" chamfer or radius unless otherwise noted.  
 Dropwall shall be concrete Mix 1A43, 3Y43 or 3W36.  
 Precast Concrete Sections shall be Mix 3W36 with no calcium chloride allowed.  
 Limits for excavation for dropwall to be approximately the same as dropwall dimensions.  
 1-1/2" minimum and 2" maximum concrete cover on all reinforcement (Typical for inside and outside walls).  
 Culverts to be constructed as per Spec. 2411 except as noted.  
 See "Precast Concrete Box Culvert" Standard Sheet No. 5-397.701 for additional reinforcement requirements such as laps and splice requirements.  
 One of the following combinations of steel reinforcement may be used:  
 (a) 1 or 2 layers of mesh or  
 (b) 1 layer of mesh and 1 layer of reinforcement bars or  
 (c) 1 layer of reinforcement bars.  
 If (b) or (c) are used, service load stresses shall be used in culvert design. The reinforcement shall be developed in accordance with applicable parts of 8.21 to 8.33.6.2 of 1983 AASHTO "Standard Specifications for Highway Bridges".
- Longitudinal reinforcement parallel to side walls of end sections shall have a minimum of 0.06 sq. in. per ft. on all faces.
  - 1" dia. x 1' 0" long steel dowel. 2" dia. hole in the top of the level wall section. Fill hole to top of lintel beam with an approved grout, see Note 11.
  - See Embankment Protection for Box Culverts, sheet \_\_\_\_\_.
  - Variable. 6" minimum to 2' 0" maximum.
  - Number of sections varies with "H" dimensions.
  - Check the location to determine whether a tongue or a groove is used.
  - For a  $\frac{1}{2}$  of culvert skew angle of 22-1/2° to 37-1/2°, use a 30° skew end section. For 7-1/2° to 22-1/2°, use a 15° skew end section.
  - See sheet 2 of 2 for  $A_h$  and  $A_w$  reinforcement tables.
  - See Section A-A for additional reinforcement.
  - Culvert ties are to be 1" dia. rods. See Standard Plate No. 3145 for details.
  - Grout shall consist of 1 part cement and 2 parts sand. Use Type 1A air entrained Portland Cement. Grout mix shall have a maximum slump of 4".
  - Two ties are required at angled wall joint connections. Bend ties to fit angle. No tongue or groove required.
  - Apron widths up to 12 ft. = 5' 0" tongue & 5' 1" groove. Apron widths over 12 ft. = 8' 0" tongue & 8' 1" groove. Center tongue & groove on  $\frac{1}{2}$  of each apron joint. Use same size tongue & groove in each apron assembly.
  - Based on 2' 0" height at end of wingwall sections.
  - Slope ground from center of barrel towards sides.

FIG. 5-397.710 (1 of 2)

DES: _____		DR: _____		APPROVED: _____	
CHK: _____		CHK: _____		Bridge No. _____	
PRECAST CONC. END SECTIONS - TYPE III				Sheet No. 18 of 22 Sheets	
SKEWED SINGLE OR MULTI-BARREL					