Figure 5-395.104(A)
Precast Concrete End Section Type III – Single or Double Barrel For Skews Up To $7^1/_2$°

Approved, and signed, March 24, 2011: Last date revised: October 9, 2015.

Revised 10-09-2015

At TONGUE AND GROOVE JOINT DETAIL:

- Changed "welded wire fabric" to "welded wire reinforcement" in the note below the diagram.

At SECTION A-A:

- Changed note: "1'-0" MAX. RADIUS (TYP.)" to "RADIUS (7" MIN., 1'-0" MAX.) OR CHAMFER (4" MIN., 7" MAX.) (TYP.)"

At FABRIC LAYER DETAIL:

- Changed the title of "FABRIC LAYER DETAIL" to "REINFORCEMENT LAYER DETAIL".
- Changed all cases of "welded wire fabric" to "welded wire reinforcement" in notes and text.

Under CONSTRUCTION NOTES:

- Added second note "Use concrete mix no. 3W82 with no calcium chloride allowed.
- Changed third and fourth sentences of circled note ① from "Limits of excavation for dropwall to be approximately the same as dropwall dimensions. Dropwall to be concrete mix no. 1A43 or mix no. 3Y43." to "Limits of excavation for dropwall are approximately the same as dropwall dimensions. Dropwall concrete mix is 3S52, or 3Y82 if precast." Concrete mix designations changed to match 2016 spec. book.
- Changed circled note ④ from "Fill hole with grout. 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"." to "Fill hole with grout. Grout consists of 1 part cement and 2 parts sand. Use type 1A air entrained Portland cement. Grout mix maximum slump is 4"."
- Changed "welded wire fabric" to "welded wire reinforcement" both times it appears in circled note ⑦.
- Changed "Longitudinal reinforcement perpendicular to the culvert span shall have a minimum . . ." to "Place longitudinal reinforcement perpendicular to the culvert span with a minimum . . ." in circled note ⑨.

Revised 11-06-2013

At PLAN VIEW:

- Added to the tie bar note: "Two ties are required per joint where h is greater than 4'."
- Changed the dimensions "W" *to* "SPAN".

At SECTION A-A and SECTION B-B:

- Changed the haunch bar note to identify the length of the haunch bar based on wall or slab thickness.

At SECTION A-A:

- Changed the dimensions "H" *to* "RISE" and "W" *to* "SPAN".

At the TOUNGE and GROOVE JOINT DETAIL:

- Added "Bottom Slab Only" to the end of the welded wire fabric note.

At SIDE ELEVATION:

- Changed the dimensions "H" *to* "RISE".
- Removed two notes from the detail at the culvert tie locations: (note 1) "Not required if height h is less than 4'-0". (note 2) Two culvert ties are required.

At CONSTRUCTION NOTES:

- Added the word "Standard" to precede the figure number in all instances.
- Changed numbered note ⑥ to read: 3'-6" min. tongue and 3'-7" min. groove for culverts with 6'-0" spans. 5'-0" min. tongue and 5'-1" min. groove for culverts with spans greater than 6'-0". Center tongue and groove on centerline of each apron joint. Tongue and groove joint on all three sides of apron is permissible.
- Changed numbered note ⑧ to read: Apron bottom slab thickness may be 8" for culverts with 6' spans only. Bottom slab thickness may be increased up to 2" max. provided cover is 1 ½" min., 2" max.

At the APRON DIMENSIONS & Ah REINFORCENENT table:

- Added to the table, an option in parenthesis for a 4'-0" end section when spans are 14'-0" and 16'-0".

- Added to the note below the table: Values in ( ) may be used for end sections with spans of 14' and 16' only.

Changed the "WIDTH" column to "SPAN" on the "Abt Reinforcement" table.

Updated the signature block to make it similar to other standards.

Revised 04-17-2013
This standard was updated to convert reinforcing bar marks from metric to U.S. customary bar designations.

Re-Approved 03-24-2011
Under CONSTRUCTION NOTES:

- Numbered note ⑦ was changed: The word "MESH" or "WIRE MESH" was changed to "WELDED WIRE FABRIC"
- Numbered note ⑧ was added: "Apron bottom slab thickness may be 8" for culverts with 6' spans only. The slab may be thickened at contractor/fabricator request".
- The 3rd general note was moved and is now numbered note ⑨. It was changed to read: "Longitudinal reinforcement perpendicular to the culvert span shall have a minimum of 0.06 square inches per peripheral foot on all faces of the barrel."

At the TONGUE AND GROOVE JOINT DETAIL:

- Changed the note from: "0.192 sq. in^2/ft. " To: "Abt"
- Added numbered note ⑧ to the 10" dimension.

At PLAN VIEW:

- Lengthened the culvert ties at the apron to box location to match the other ties in the view.

At the SIDE ELEVATION:

- Added numbered note ⑧ under the 10" bottom of the apron dimension on both ends.
- Changed the note from: "No 13 dowels 1'-0" long" To: "No 19 dowels 1'-0" long" at the apron/drop wall location. Also added the note: "May drill and grout ④" at the apron/drop wall location.
- Lengthened the culvert tie at the apron to box location to represent the actual size.

At the FABRIC LAYER DETAIL:

- Changed the words "MESH" or "STEEL FABRIC" to "WELDED WIRE FABRIC" throughout the detail.

At SECTION A-A:

- Shortened the No. 10 haunch bars in the view to more accurately show the length. Also added a circled leader line at the end of one of the haunch bars with the note, "Haunch bar to extend to, but not past, outside reinforcing (typ.)."
- Added numbered note ⑨ with leader lines circling the longitudinal reinforcement.
- Changed the designation of the bottom/inside transverse reinforcement from: "0.192 in.^{2}/ft." To: "Abt."
- Added the numbered note ⑧ adjacent to the 10" bottom of the apron dimension.

At SECTION B-B:

- Shortened the No. 10 haunch bars in the view to more accurately show the length. Also added a circled leader line at the end of one of the haunch bars with the note, "Haunch bar to extend to, but not past, outside reinforcing (typ.)."
- Added numbered note ⑨ with leader lines circling the longitudinal reinforcement.
- Changed the designation of the bottom/inside transverse reinforcement from: "0.192 in.^{2}/ft." To: "Abt."
- Added numbered note ⑧ adjacent to the 10" bottom of the apron dimension.

Added table labeled "Abt Reinforcement". Reinforcement areas based on fabricator input.

06-30-2003

At SECTION B-B: Drew chamfer at top-outside edges.

Approved, and signed, December 11, 2000