

Figure 5-395.115
Embankment Protection For Box Culverts

Approved, and signed, September 11, 2014. Last date revised: October 9, 2015.

Revised 10-09-2015

Under CONSTRUCTION NOTES:

- Changed second note from “Riprap shall comply with specs. 2511 and 3601.” to “Provide riprap per specs. 2511 and 3601.”
- Changed circled note ① from “For type of geotextile filter material required, see spec. 3733. Geotextile strips should be continuous without overlaps, except for the top strip, which should shingle vertical strips. The top edge should be buried to prevent undermining.” to “For type of geotextile filter material required, see spec. 3733. Provide geotextile strips continuous without overlaps, except for the top strip, which should shingle vertical strips. Bury the top edge to prevent undermining.”

Re-Approved 09-11-2014

Added: RIPRAP CLASS table with option to be selected based on Riprap class type.

Changed the Designer Note to read: “Designer to select either class III or IV riprap using check box above” and moved the designer note under the RIPRAP CLASS table.

At all Plan Views of barrels:

- Changed the look of the riprap at the bottom of the apron to better represent the riprap placement.
- Changed the Class II, Class III and Class IV riprap dimensions *To*: “W” to represent the width.

At the Plan Views of multiple barrels:

- Changed the dimension between the barrels *From*: “Variable” *To*: numbered note “③”.

Changed the detail name at the Elevation *From*:

- DOUBLE BARREL Class III or IV shown (for skews up to 7 ½°) *To*: MULTIPLE BARREL For skews up to 7 ½° Class III or IV Shown, Double Barrel Shown

Changed the detail name at the (skewed) Elevation *From*:

- SKEWS OVER 7 ½° Class III or IV shown (Double Barrel Shown, Single Barrel Similar) *To*: MULTIPLE BARREL For skews up to 7 ½° Class III or IV Shown, Double Barrel Shown, Other Barrel Configurations Similar.

At the skewed Elevation view:

- Changed the look of the riprap at the bottom of the apron to better represent the riprap placement.

At sections A-A, B-B, C-C and E-E:

- Changed the Class II, Class III and Class IV riprap dimensions *To*: “W” to represent the width or to “T” to represent the thickness.
- Also at section B-B, Changed the dimension *From*: “Variable” *To*: numbered note “③”.
- Also at section C-C, Removed the Gabion note.

At section D-D:

- Removed the Class II Riprap in Gabions Option and combined the Class III and Class IV Riprap Options into a new section D-D.

At the CONSTRUCTION NOTES:

- Replaced the 1st note, new note reads: This plan sheet is for culvert embankment protection only. Refer to the grading plans for additional riprap or other scour protection measures.
- Added 2nd note, new note reads: Riprap shall comply with specs. 2511 and 3601.
- Removed the “(Spec.2511.3B)” from the end of the numbered note ①.
- Removed the last sentence “Minimum distance between the barrels is 6’.” From numbered note ②.
- Added numbered note ③ Refer to the general plan and elevation sheet for the distance between barrels of adjacent boxes.

Revised 11-06-2013

At the CONSTRUCTION NOTES:

- Removed the term “Mn/DOT” from all of the locations referencing a Mn/Dot spec.

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REVISION LOG for Figure 5-395.115

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Added: DESIGNER NOTE to the sheet.

Added “CLASS IV RIPRAP OPTION” detail to the sheet.

Renamed detail from “DOUBLE BARREL” (for skews over $7\ 1/2^\circ$) to “SKEWS OVER $7\ 1/2^\circ$ ”. Also changed the sub-title to “CLASS III OR IV SHOWN (DOUBLE BARREL SHOWN, SINGLE BARREL SIMILAR)”.

At the “PLAN VIEW” for SINGLE BARREL, DOUBLE BARREL and SKEWS OVER $7\ 1/2^\circ$ options:

- Added: leader line with riprap options “Class II or III” to the existing dimensions.
- Added a: 4'-0” dimension with leader line to “Class IV” riprap option.

At the SINGLE BARREL and DOUBLE BARREL option subtitles:

- Changed the subtitles to read: “CLASS III OR IV SHOWN”

At sections A-A, B-B, C-C and E-E:

- Added: leader line with riprap options “Class II or III” to the existing dimensions.
- Added a: 4'-0” or 2'-0” dimension with leader line to “Class IV” riprap option.

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

Re-Approved 03-24-2011

At CLASS III RIPRAP OPTION:

- Removed the step ground line note. Replaced the stepped ground line with a sloped ground line.
- Removed the numbered note ③ from the “Geotextile Filter Material” note and adjusted the leader line to the sloped ground line.
- Adjusted the 1'-6” dimension line to line up with the top of the riprap.

At the DOUBLE BARREL PLAN VIEWS:

- Added section arrows E-E, numbered note ②, and the hatched area showing the Approved Grout Seepage Cutoff Core between the barrels.

At the DOUBLE BARREL ELEVATION VIEWS:

- Added a dashed line between the barrels showing the “Approved Grout Seepage Cutoff Core ②”.

Added SECTION E-E detailing the Approved Grout Seepage Cutoff Core, riprap and fills.

At CONSTRUCTION NOTES:

- Changed numbered note ② to read: “If the distance between double barrels is less than 2'-0” use either pea rock or lean mix backfill (Mn/DOT spec. 2520) between the culvert as approved by the Engineer. If pea rock is used provide approved grout seepage cutoff core, minimum 12” thick between the culvert’s two ends and provide class I grouted riprap in lieu of class III riprap. Minimum distance between the two barrels is 6”.
- Removed numbered note ③.

Approved, and signed, December 11, 2000