

Index 430-021

Cross Drain Mitered End Section

ORIGINATION

Date: May 7, 2018

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COMMENTARY

Index Reorganized. General Notes and Slope And Ditch Transitions moved to Sheet 1. Design Notes Deleted, can be found in the Drainage Manual. Sod requirements and information moved to Specifications.

Sheet 2: Combined details for Round and Elliptical Concrete Pipe.

Sheet 3: Combined Tables of Quantities for Round and Elliptical Concrete Pipe.

Sheet 4: Combined details for Arched and Round Corrugated Metal Pipe.

Sheet 5: Combined Tables of Quantities for Arched and Round Corrugated Metal Pipe.

COMMENTS AND RESPONSES

BLACK = Industry Review Comments **RED** = Standard Plans Response

Name: Erin Yao

Date: August 8, 2019

COMMENT:

May need more clarification

7. Saddle Slope:
 1:4 Miter - Slope to centerline pipe for round pipes less than or equal to 18" diameter and 1:2 for round pipes greater than or equal to 24" diameter. Slope to the major axis for elliptical pipes 24" x 38" or smaller and 1:2 for pipes 29" x 45" or larger. Slope to 1:2 for pipe arch all sizes.
 1:2 Miter - Slope to centerline pipe for round pipes less than or equal to 18" diameter and 1:1 for round pipes greater than or equal to 24" diameter. Slope to the major axis for elliptical pipes 29" x 45" or smaller and 1:1 for pipes 34" x 53" or larger. Slope to 1:1 for pipe arch all sizes.

DESIGN NOTES

1. Mitered end sections for pipe sizes 15", 18" and 24" round or equal slope intersection permits, the mitered end section may be located.

2. Include slope and ditch transitions when the normal roadway slope transitions detail.

DETAIL "D"

CORRUGATED METAL PIPE (CMP) ANCHOR NOTES

Anchor, washer and nuts to be galvanized steel.
 Bend anchor where required to center in concrete slab. Damaged surfaces to be repaired after bending. Anchors are to be spaced a distance equal to four (4) corrugations. Place the anchors in the outside crest of corrugation.
 Flat washers to be placed on inside wall of pipe.
 Holes in the mitered end pipe are to be drilled or punched; burning not permitted.

ANCHOR DETAIL

CORRUGATED METAL PIPE ANCHOR DETAILS

2018-19 ROAD PLANS **CROSS DRAIN MITERED END SECTION** INDEX 430-021 SHEET 1 of 6

Delete; in Drainage Manual

Enlarged for clarity

Numbered, Reworded, and Added Notes

Changed to Sheet 1 of 6

GENERAL NOTES:

should these say cross drain pipe since this is the cross drain mes index?

1. Unless otherwise designated in the plans, concrete pipe mitered end sections may be used with any type of side drain pipe; corrugated steel pipe mitered end sections may be used with any type of side drain pipe except aluminum pipe; and, corrugated aluminum mitered end sections may be used with any type of side drain pipe except steel pipe. When bituminous coated metal pipe is specified for side drain pipe, construct the mitered end sections with like pipe or concrete pipe. When the mitered end section pipe is dissimilar to the side drain pipe, construct a concrete jacket in accordance with Index 430-001.
6. When existing multiple side drain pipes are spaced other than the dimensions shown in this Index, have nonparallel axes, or non-uniform sections, either construct the mitered end sections separately as single pipe or collectively as multiple pipe end sections as directed by the Engineer.

RESPONSE:

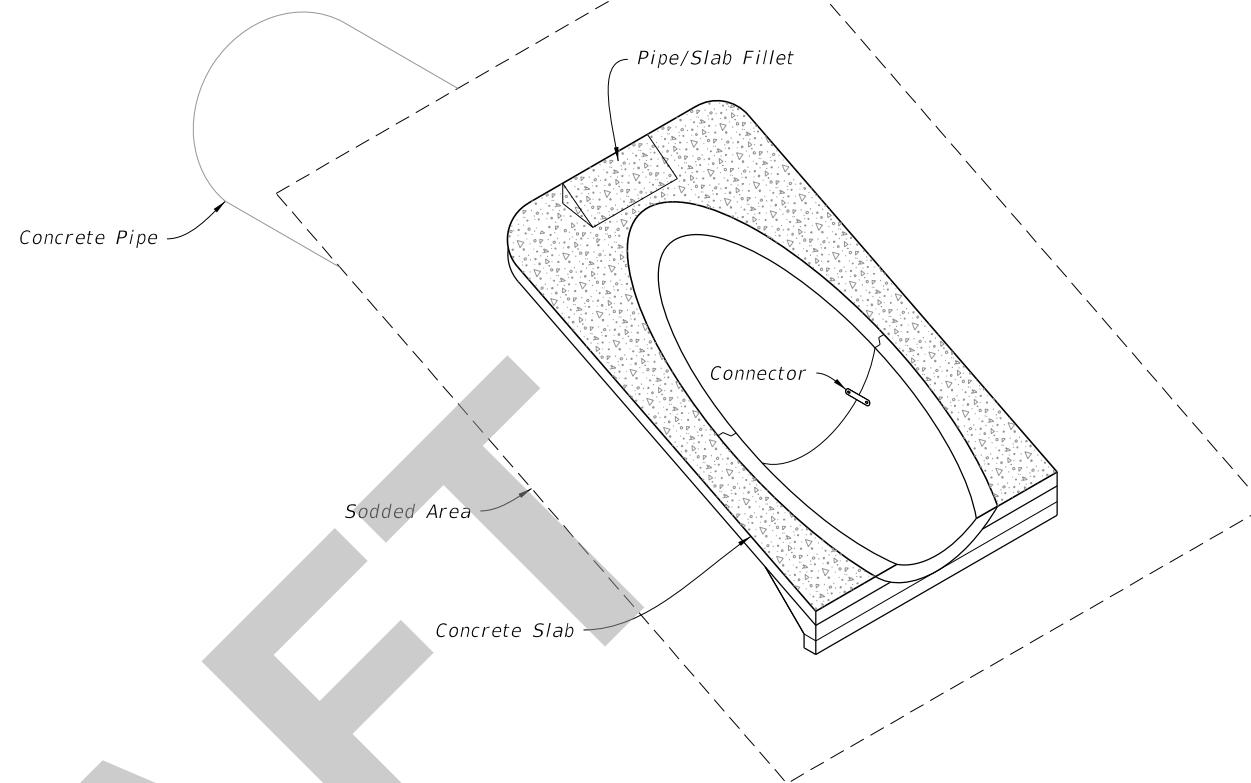
Date: August 8, 2019

These notes were developed based on the notes from multiple sheets in the original indexes. We combined the notes and made it a general note since it applied throughout the index. The General Note is still referenced in each detail where the saddle slope is actually depicted. See sheet 2 and sheet 4.

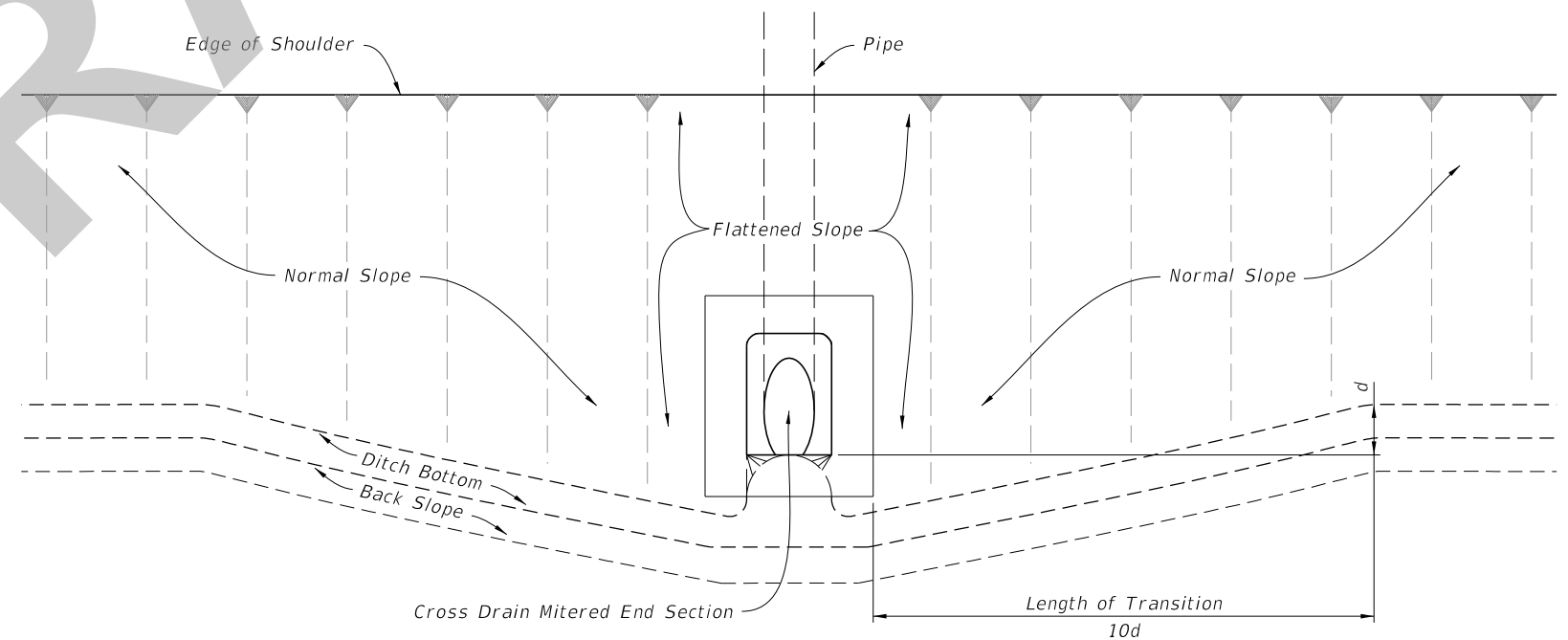
All references to side drains were changed to cross drain.

GENERAL NOTES:

1. Unless otherwise designated in the plans, concrete pipe mitered end sections may be used with any type of cross drain pipe; corrugated steel pipe mitered end sections may be used with any type of cross drain pipe except aluminum pipe; and, corrugated aluminum mitered end sections may be used with any type of cross drain pipe except steel pipe. When bituminous coated metal pipe is specified for cross drain pipe, construct the mitered end sections with like pipe or concrete pipe. When the mitered end section pipe is dissimilar to the cross drain pipe, construct a concrete jacket in accordance with Index 430-001.
2. Use either corrugated metal or concrete mitered end sections for corrugated polyethylene pipe (HDPE), polyvinyl-chloride pipe (PVC), steel reinforced polyethylene pipe (SRPE), and polypropylene pipe (PP). When used in conjunction with corrugated mitered end sections, make connection using either a formed metal band specifically designated to join HDPE, PVC, SRPE, or PP pipe, with metal pipe. When used in conjunction with a concrete mitered end sections, construct concrete jacket in accordance with Index 430-001.
3. Class NS concrete cast-in-place reinforced slabs are required for all sizes of cross drain pipes. Construct slabs at 5½" thick, unless 3" thickness is called for in the Plans.
4. Select lengths of concrete pipe that avoid excessive connections in the assembly of the mitered end section.
5. Repair corrugated metal pipe galvanizing that is damaged during beveling and perforating.
6. When existing multiple cross drain pipes are spaced other than the dimensions shown in this Index, have nonparallel axes, or non-uniform sections, either construct the mitered end sections separately as single pipe or collectively as multiple pipe end sections as directed by the Engineer.
7. Saddle Slope:
 - 1:4 Miter - Slope to \bar{C} of pipe for round pipes less than or equal to 18" diameter and 1:1 for round pipes greater than or equal to 24" diameter. Slope to the major axis for elliptical pipes 24"x38" or smaller and 1:2 for pipes 29"x45" or larger. Slope to the span line for pipe arch 28"x20" or smaller and 1:2 for pipe arch 35"x24" or larger.
 - 1:2 Miter - Slope to \bar{C} of pipe for round pipes less than or equal to 18" diameter and 1:2 for round pipes greater than or equal to 24" diameter. Slope to the major axis for elliptical pipes 29"x45" or smaller and 1:1 for pipes 34"x53" or larger. Slope 1:1 for all pipe arch sizes.
8. Quantities shown are for estimating purposes only.



CROSS DRAIN MITERED END SECTION
(Concrete Pipe Shown, Corrugated Metal Pipe Similar)



SLOPE AND DITCH TRANSITIONS

TABLE OF CONTENTS:	
Sheet	Description
1	General Notes and Contents
2	Single and Multiple Concrete Pipe
3	Concrete Pipe Dimensions and Quantities
4	Single and Multiple Corrugated Metal Pipe
5	Corrugated Metal Pipe Dimensions and Quantities
6	Concrete Pipe Connections and Corrugated Metal Pipe (CMP) Anchor Detail

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