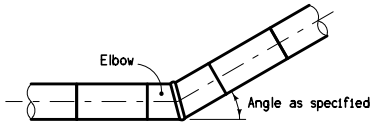
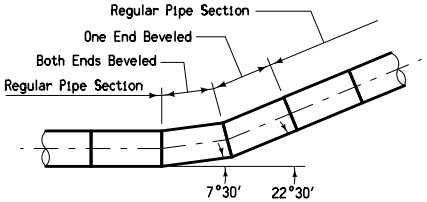
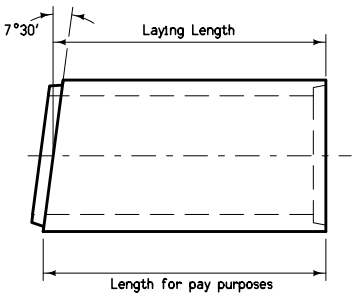


TYPICAL PLAN WITH ELBOW

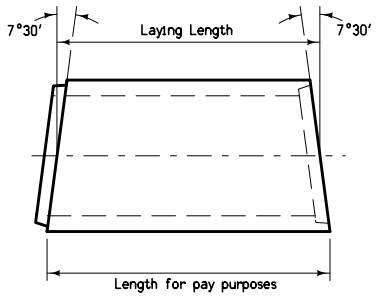


TYPICAL PLAN WITH "D" SECTIONS

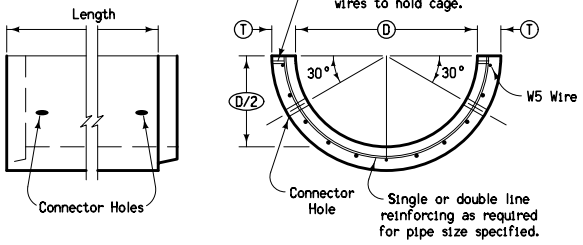
REINFORCING BARS		
Size "D"	Bar Size	Number Required
12" - 21"	⅜"	4
24" - 42"	⅜"	8
48" - 60"	½"	8
66" - 84"	⅝"	8



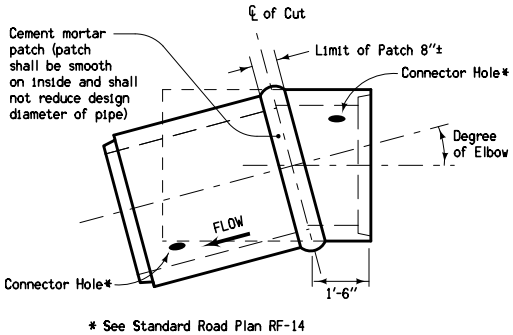
TYPE "D" SECTION (SINGLE BEVEL)

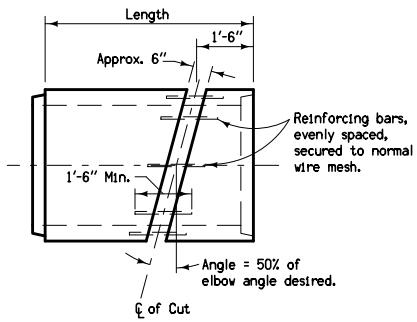


TYPE "D" SECTION (DOUBLE BEVEL)



DETAILS OF HALF PIPE SECTION





TYPICAL CONCRETE PIPE ELBOW

Fabricate concrete pipe elbows and Type "D" pipe sections in conformance with AASHTO M 170 for the size and class of pipe specified.

Meet the requirements of AASHTO M 32 for wire reinforcing.

Refer to plans for degree of elbow required for each individual installation.

Minimum length of elbow to be 5'-6" measured along centerline of pipe. Design length of pipe to be considered 6'-0".

Fabricate elbows by a method approved by the Engineer and resulting in a finished product essentially as indicated hereon. The typical method for fabricating elbows is as follows: Steel rods, as specified, to be attached to the normal wire reinforcing cage as indicated hereon. After pipe is cast, make a cut 50% of the degree of elbow desired as indicated, and cut the reinforcing rods and mesh on centerline of the cut. Rotate the severed section of pipe 180 degrees and reweld the reinforcing to the opposite rods. Patch the remaining opening with cement mortar to effect a satisfactorily completed elbow as shown.

Unless specified otherwise, bevel the Type "D" section on a 7.5 degree miter. The bevel may be provided on either the tongue end or groove end of the pipe. In certain cases, both ends of the pipe section may require the beveled end.

Include Type "D" pipe sections in measurement for pipe culvert. No payment to be made specifically for the Type "D" section bevel. This is considered incidental to the price bid.

Half pipe to conform to the requirements for 2000D for the size specified, unless otherwise noted. Maximum "D" size for Half Pipe is 48 inches. Unless specified otherwise, Half Pipe is to be fabricated with connector holes as indicated.

Minimum length of Half Pipe section is 4'-0". The minimum number of 4'-0" sections are to be used to make up the necessary length of Half Pipe Flume as indicated on detail plans. Normal length is 6'-0".

Price bid for Half Pipe, per foot, is considered full compensation for furnishing and installing Half Pipe in accordance with plan requirements.

For pipe sizes up through 48" in diameter, bends may be accomplished in increments of 7.5 degrees by using standard "D" sections in appropriate combinations.

For pipe sizes from 54" to 72" in diameter, limit the "D" section to a maximum of 5 degree miter on any one end of pipe section.

For pipe sizes through 48" in diameter, bends from 15 to 45 degrees may be accomplished using a single elbow. Bends more than 45 degrees require two elbows unless approved otherwise by the Engineer.

The Contractor may substitute an approved elbow for "D" section bends of 15 degrees or less. Such elbows will not be measured for payment but will be considered incidental to price bid for culvert pipe.

Iowa Department of Transportation

REVISION
6 | 10-18-11

STANDARD ROAD PLAN

RF-13

SHEET 1 of 1

REVISIONS: Removed references to RF-1. Modified language.

Deanna Maifield
APPROVED BY DESIGN METHODS ENGINEER

PIPE BENDS AND HALF PIPE