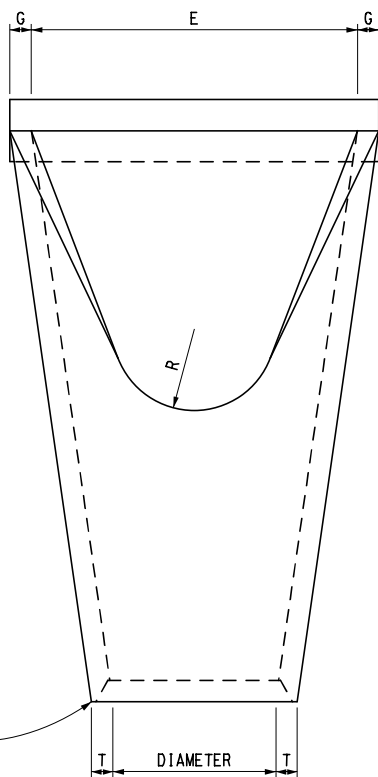
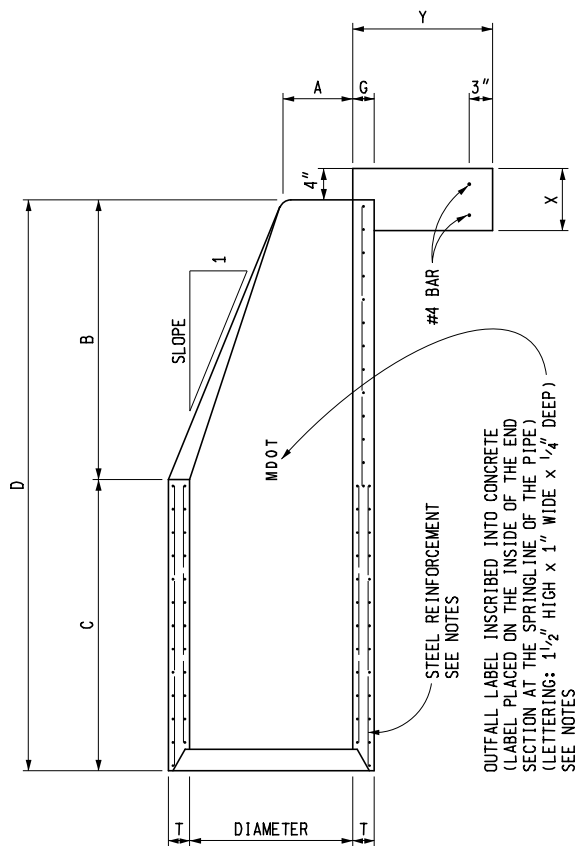


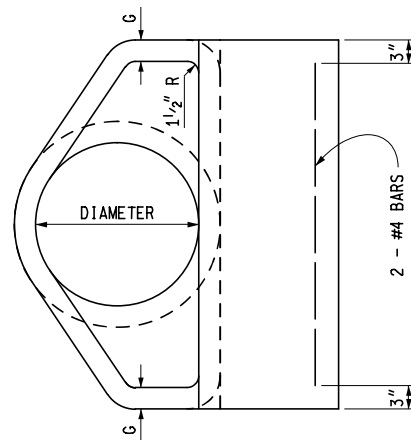
GROOVED END ON OUTLET END SECTION
TONGUE END ON INLET END SECTION
GROOVE OR TONGUE TO BE THE SAME AS
ON STANDARD REINFORCED CONCRETE
PIPE A.S.T.M. DESIGNATION C 76.



PLAN VIEW



LONGITUDINAL SECTION



END ELEVATION



PREPARED
BY
DESIGN DIVISION

DRAWN BY: B.L.T.

CHECKED BY: W.K.P.

DEPARTMENT DIRECTOR
Paul C. Ajegba

Gregg Brunner, P.E. Gregg Brunner
Jul 24 2019 11:25 AM

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

Bradley C. Wiefelrich Bradley C. Wiefelrich
Jul 3 2019 9:08 AM

APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

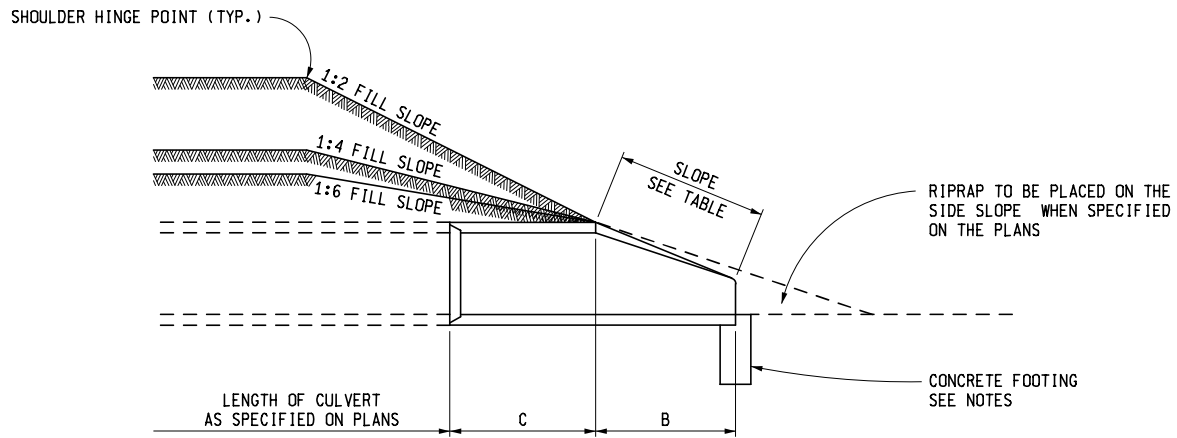
PRECAST CONCRETE END SECTION FOR PIPE CULVERT

5-18-2020
F.H.W.A. APPROVAL

9-13-2018
PLAN DATE

R-86-F

SHEET
1 OF 2



SLOPE DETAIL

TABLE OF DIMENSIONS

PIPE DIAMETER (INCHES)	APPROX. SLOPE	T (INCHES)	A (INCHES)	B (INCHES)	C (INCHES)	D (INCHES)	E (INCHES)	G (INCHES)	R (INCHES)	X (INCHES)	Y (INCHES)
12	2.4 to 1	2	4	24	49	73	24	2	9	8	18
15	2.4 to 1	2 1/4	6	27	46	73	30	2 1/4	11	8	18
18	2.3 to 1	2 1/2	9	27	46	73	36	2 1/2	12	8	18
21	2.4 to 1	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	13	8	18
24	2.5 to 1	3	9 1/2	43 1/4	30 1/2	73 3/4	48	3	14	8	18
27	2.5 to 1	3 1/4	10 1/2	49 1/4	24 1/2	73 3/4	54	3 1/4	14 1/2	8	18
30	2.5 to 1	3 1/2	12	54	19 3/4	73 3/4	60	3 1/2	15	8	18
36	2.5 to 1	4	15	63	34 3/4	97 3/4	72	4	20	8	18
42	2.5 to 1	4 1/2	21	63	35	98	78	4 1/2	22	10	24
48	2.5 to 1	5	24	72	26	98	84	5	22	10	24
54	2.0 to 1	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	24	10	24
60	1.9 to 1	6	35	60	39	99	96	5	*	12	24
66	1.7 to 1	6 1/2	30	72	27	99	102	5 1/2	*	12	24
72	1.8 to 1	7	36	78	21	99	108	6	*	12	24
78	1.8 to 1	7 1/2	36	90	21	111	114	6 1/2	*	12	24
84	1.6 to 1	8	36	90 1/2	21	111 1/2	120	6 1/2	*	12	24

* AS FURNISHED BY THE MANUFACTURER

NOTES:

CONCRETE IN THESE END SECTIONS SHALL BE THE SAME GRADE AND STRENGTH AS SPECIFIED FOR REINFORCED CONCRETE PIPE, A.S.T.M. DESIGNATION C 76 CLASS II, EXCEPT AS MODIFIED BY THE STANDARD SPECIFICATION.

REINFORCEMENT IN THE "C" PORTION SHALL BE THE SAME AS SPECIFIED FOR REINFORCED CONCRETE, A.S.T.M. DESIGNATION C 76 CLASS II FOR THE SIZE OF CONNECTING PIPE.

REINFORCEMENT IN THE "B" PORTION SHALL HAVE A CROSS-SECTIONAL AREA EQUAL TO THAT OF ONE LAYER OF STEEL IN THE "C" PORTION.

THE END OF THE PIPE CULVERT SHALL BE PLACED IN THE CONCRETE END SECTION SO THAT THE FLOW LINES ARE FLUSH. THE JOINT MUST BE COMPLETELY FILLED WITH MORTAR ON THE INSIDE AND OUTSIDE AND STRUCK FLUSH. THE JOINT MUST BE WRAPPED WITH GEOTEXTILE BLANKET 36" WIDE WITH A 12" OVERLAP.

TO CHANGE THE FILL SLOPE TO THE SLOPE OF THE END SECTION USE A TRANSITION SLOPE OF APPROXIMATELY 10' IN LENGTH TO PROVIDE A PLEASING APPEARANCE.

VARIATIONS IN DIMENSIONS - THE THICKNESS OF CONCRETE, THE POSITION OF STEEL, AND THE INTERNAL DIAMETER OF THE PIPE SHALL CONFORM WITH THE VARIATIONS IN DIMENSIONS AS PROVIDED IN THE SPECIFICATIONS FOR REINFORCED CONCRETE CULVERT, STORM DRAINS, AND SEWER PIPE, A.S.T.M. DESIGNATION C 76.

PLACE CONCRETE FOOTING AS SHOWN.

OUTFALL LABEL TO BE USED ONLY WHERE STORMWATER WILL DISCHARGE DIRECTLY TO THE WATERS OF THE STATE.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

**PRECAST CONCRETE END SECTION
FOR PIPE CULVERT**

5-18-2020
F.H.W.A. APPROVAL

9-13-2018
PLAN DATE

R-86-F

SHEET
2 OF 2