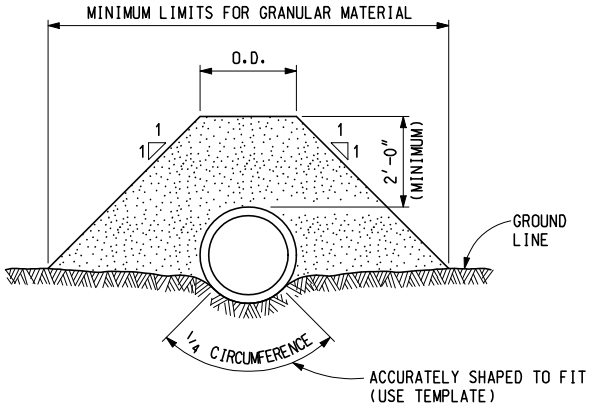
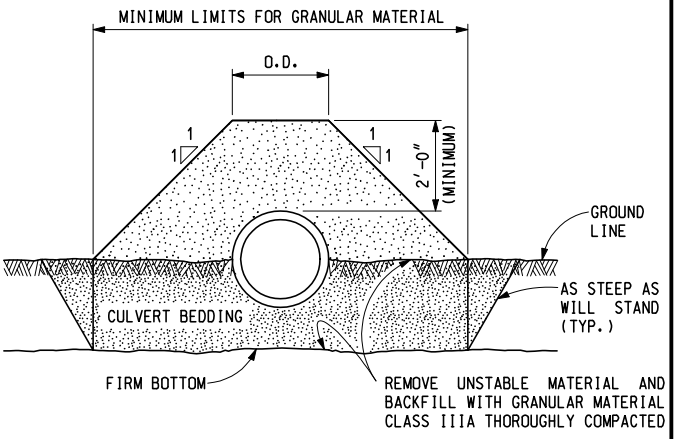
EMBANKMENT BETWEEN GROUND LINE AND 2′-0″ MINIMUM ABOVE TOP OF PIPE CULVERT SHALL CONSIST OF GRANULAR MATERIAL CLASS IIIA COMPACTED TO 95% OF ITS MAXIMUM UNIT WEIGHT. THE MATERIAL SHALL BE DEPOSITED AND COMPACTED IN LAYERS NOT MORE THAN 10″ IN THICKNESS.



NOTE:
TRENCH MAY BE UNDERCUT BELOW CULVERT AND THE UNDERCUT MATERIAL REPLACED WITH GRANULAR MATERIAL.

CROSS-SECTION SHOWING CULVERT INSTALLATION IN STABLE SOIL

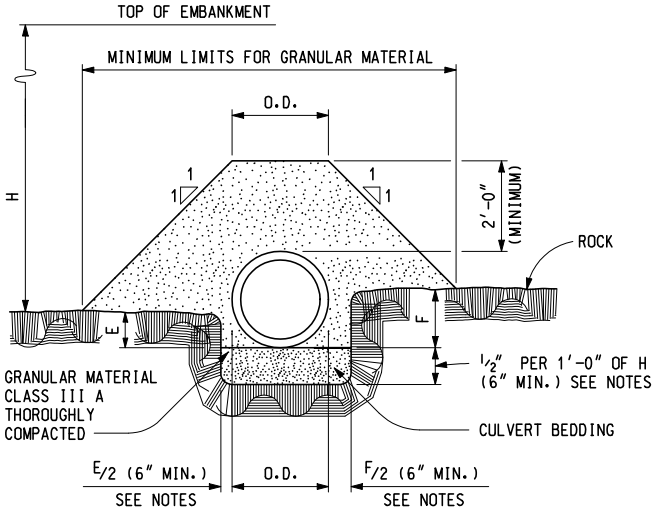
EMBANKMENT BETWEEN GROUND LINE AND 2′-0″ MINIMUM ABOVE TOP OF PIPE CULVERT SHALL CONSIST OF GRANULAR MATERIAL CLASS IIIA COMPACTED TO 95% OF ITS MAXIMUM UNIT WEIGHT. THE MATERIAL SHALL BE DEPOSITED AND COMPACTED IN LAYERS NOT MORE THAN 10″ IN THICKNESS.



NOTE:
PLACE AND COMPACT CULVERT BEDDING TO THE LEVEL OF 1/4 THE DIAMETER OF THE PIPE CULVERT AND THEN EXCAVATE AND SHAPE A TRENCH TO FIT THE PIPE. AFTER PLACING CULVERT, CONTINUE FILLING WITH CULVERT BEDDING TO GROUND LINE.

CROSS-SECTION SHOWING CULVERT INSTALLATION IN UNSTABLE SOIL

EMBANKMENT BETWEEN GROUND LINE AND 2′-0″ MINIMUM ABOVE TOP OF PIPE CULVERT SHALL CONSIST OF GRANULAR MATERIAL CLASS IIIA COMPACTED TO 95% OF ITS MAXIMUM UNIT WEIGHT. THE MATERIAL SHALL BE DEPOSITED AND COMPACTED IN LAYERS NOT MORE THAN 10″ IN THICKNESS.



NOTE:
PLACE AND COMPACT GRANULAR MATERIAL CLASS IIIA TO THE LEVEL OF 1/4 THE DIAMETER OF THE PIPE CULVERT AND THEN EXCAVATE AND SHAPE A TRENCH TO FIT THE PIPE.

CROSS-SECTION SHOWING CULVERT INSTALLATION IN ROCK

NOTES:

CORRUGATED STEEL PIPE, CORRUGATED POLYETHYLENE, AND ALUMINUM ALLOY PIPE SHALL HAVE A MINIMUM OF 12″ OF GRANULAR MATERIAL CLASS IIIA PLACED COMPLETELY AROUND THE PIPE FOR ITS FULL LENGTH EXCEPT FOR BEDDING.

THE ENGINEER SHALL DESIGNATE THE REQUIRED DETAIL BASED ON SOIL CONDITIONS ENCOUNTERED.

UNSTABLE SOIL IS SOIL TOO SOFT OR SPONGY TO PROVIDE A FIRM BED FOR THE PIPE CULVERT.

NO REDUCTION SHALL BE MADE IN THE REGULAR EMBANKMENT QUANTITY FOR THE SPACE OCCUPIED BY THE CULVERT.

PIPE CULVERTS IN CUT SECTIONS SHALL BE PLACED ACCORDING TO THE DETAILS SPECIFIED ON STANDARD PLAN R-83-SERIES.

WHEN AN END SECTION IS USED IN LIEU OF A HEADWALL, A STABLE FOUNDATION SHALL BE PROVIDED FOR THE END SECTION COMPARABLE TO THAT PROVIDED BY THE CULVERT.

WHEN BELL AND SPIGOT PIPE IS USED IN A ROCK TRENCH, A MINIMUM OF 4″ OF CULVERT BEDDING WILL BE REQUIRED UNDER THE BELL.

MDOT Michigan Department of Transportation

PREPARED BY DESIGN SUPPORT AREA

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DEPARTMENT DIRECTOR
Gloria J. Jeff

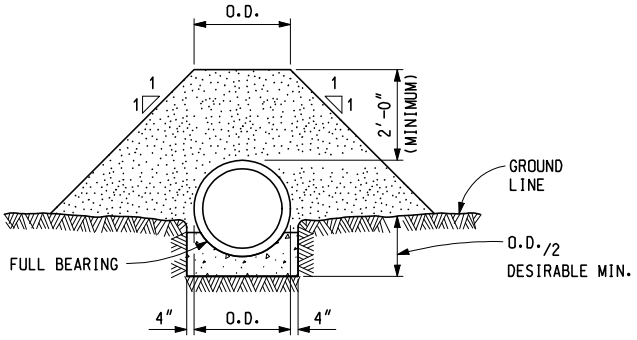
ENGINEER OF DEVELOPMENT

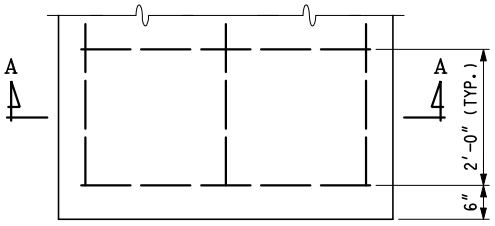
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

BEDDING AND FILLING AROUND PIPE CULVERTS

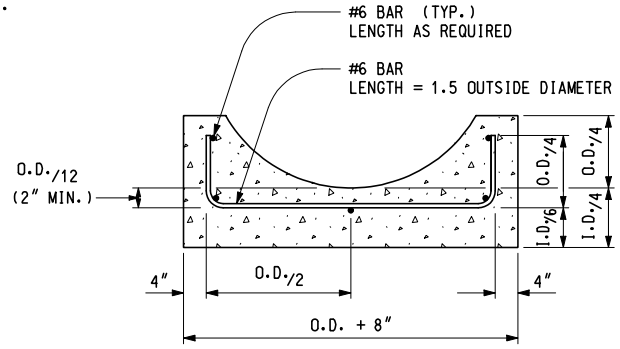
11-14-2003	6-25-2002	R-82-D	SHEET 1 OF 2
F.H.W.A. APPROVAL	PLAN DATE		

EMBANKMENT BETWEEN GROUND LINE AND 2′-0″ MINIMUM ABOVE TOP OF PIPE CULVERT SHALL CONSIST OF GRANULAR MATERIAL CLASS IIIA COMPACTED TO 95% OF ITS MAXIMUM UNIT WEIGHT. THE MATERIAL SHALL BE DEPOSITED AND COMPACTED IN LAYERS NOT MORE THAN 10″ IN THICKNESS.





PLAN



SECTION A - A

TABLE OF QUANTITIES BASED ON THE OUTSIDE DIAMETER (O.D.) OF PIPE			
INSIDE DIAMETER OF PIPE	OUTSIDE DIAMETER OF PIPE	CYD CONCRETE PER LFT	LBS STEEL PER LFT
18″	1.916′	0.061	9.7
24″	2.500′	0.096	10.3
30″	3.083′	0.140	11.0
36″	3.667′	0.191	11.6
42″	4.250′	0.250	12.3

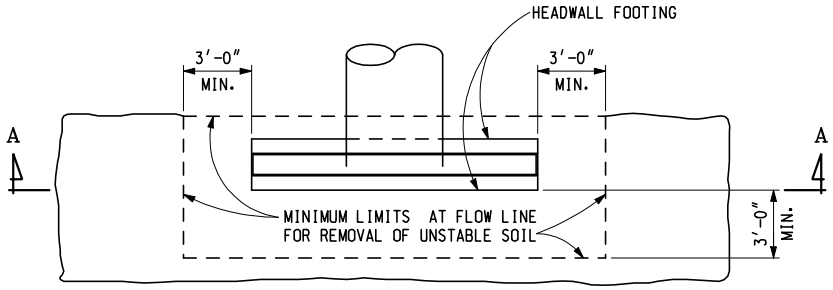
ALL CONCRETE SHALL BE GRADE M.

ALL EXCAVATION AND FORMS NECESSARY TO CONSTRUCT THE CONCRETE CRADLE SHALL BE INCLUDED IN THE UNIT PRICE PER CYD FOR CONCRETE.

THE CONCRETE CRADLE SHALL BE CONTINUOUS THROUGH THE ENTIRE LENGTH OF THE PIPE CULVERT.

LAP LONGITUDINAL BARS 2′-0″ MINIMUM AT ALL SPLICES.

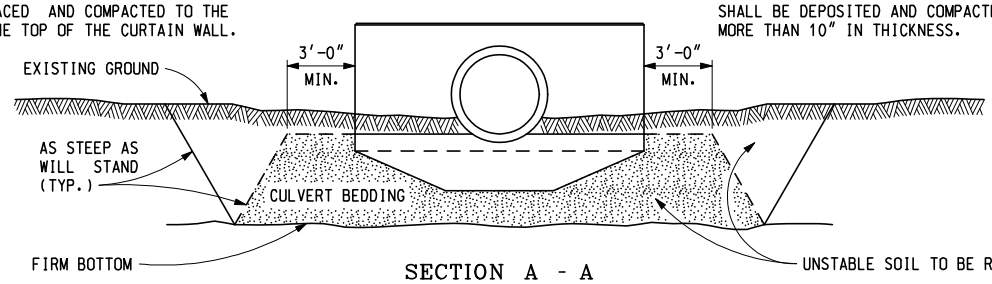
CULVERT INSTALLATION WITH CONCRETE CRADLE



PLAN

NOTE:
THE TRENCH FOR THE CURTAIN WALL SHALL BE EXCAVATED AFTER THE GRANULAR MATERIAL CLASS II IS PLACED AND COMPACTED TO THE ELEVATION OF THE TOP OF THE CURTAIN WALL.

BACKFILL SHALL CONSIST OF GRANULAR MATERIAL CLASS IIIA THOROUGHLY COMPACTED. THE MATERIAL SHALL BE DEPOSITED AND COMPACTED IN LAYERS NOT MORE THAN 10″ IN THICKNESS.



SECTION A - A

CULVERT HEADWALL INSTALLATION IN UNSTABLE SOIL

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR

BEDDING AND FILLING AROUND PIPE CULVERTS

11-14-2003 F.H.W.A. APPROVAL	6-25-2002 PLAN DATE	R-82-D	SHEET 2 OF 2