Engineering Policy Ballot

Effective: April 1, 2026

Level 2

Level two revisions require the approval of the **Assistant Chief Engineer** and the **Federal Highway Administration** only. The Senior Management Team is encouraged to review the content and provide comment to the appropriate director. For all other parties, these revisions are posted for information only.

ENGINEERING POLICY BALLOT

Effective: April 1, 2026

Issue 1: Update for Polyethylene (PE) and Steel Reinforced Polyethylene (SRPE) Pipe

Approval: **Level 2 – Assistant Chief Engineer**

Sponsor: Willie Johnson – CM, Matthew Jansson – CM

Summary: Allows up to 60" SRPE in Group A Flexible Polyethylene category and updates corrugated polyethylene pipe to "double wall polyethylene" pipe. Provides details for QPL application and requirements.

Fiscal Impact: Potential for increased competition in Group A Pipe Culverts on contract projects, resulting in possible lower prices.

Publication: Missouri Standard Specifications: 724,730,1047
Missouri Standard Plans: 730.00
Engineering Policy Guide: 750.7.2, 941.9.8.4

SECTION 724

PIPE CULVERTS

UNCHANGED SPECS – INTENTIONALLY NOT SHOWN

724.1.1 The contract will specify either the type of pipe or the group of permissible types of pipe. If a group of permissible types is specified, the contractor may use any of the types listed within the specified group and size range as follows:

		Group A[b]	Group B[b]	Group C
Rigid Pipe		**Size**	**Size**	**Size**
Reinforced Concrete Culvert Pipe		ALL	ALL	ALL
Vitrified Clay Pipe		ALL	ALL	ALL
Flexible Pipe – Metal[a]		**Size**	**Size**	**Size**
Aluminum Coated Steel Pipe		ALL	ALL	ALL
Polymer Coated Steel Pipe		ALL	ALL	ALL
Aluminum Alloy Pipe		ALL	ALL	ALL
Bituminous Coated Steel Pipe		NA	NA	ALL
Zinc Coated Steel Pipe		NA	NA	ALL
Flexible Pipe - Thermoplastic		**Size**	**Size**	**Size**
Polypropylene Pipe	Double Wall	≤ 30”	≤ 60”	≤ 60”
	Triple Wall	30” – 60”	30” – 60”	30” – 60”
Polyethylene Pipe	Double Wall~~Corrugated~~	≤ 24”	≤ 60”	≤ 60”
	Steel Reinforced	≤ 60~~24~~”	≤ 60”	≤ 60”
Polyvinyl Chloride Pipe (PVC)		≤ 36”	≤ 36”	≤ 36”

[a] Metal Pipe used for storm sewer applications shall be Type IA or Type IR

[b] Pipe used for storm sewers under the influence of a pavement section or future anticipated influence of a pavement section which has a 3,500 ADT or greater shall be Group A pipe. Pipe used in other storm sewer applications shall be Group B. No other substitutions will be allowed.

UNCHANGED SPECS – INTENTIONALLY NOT SHOWN

SECTION 730

THERMOPLASTIC PIPE CULVERT

UNCHANGED SPECS – INTENTIONALLY NOT SHOWN

730.3.2.2 Joints shall be soiltight and shall be installed such that the connection of pipe sections will form a continuous line free from appreciable irregularities in the flow line. Field joints may be corrugated bands, double bell couplings, bell and spigot pipe ends with a rubber O-ring gasket in accordance with ASTM F 477, or an alternative connection approved by the engineer. All joints shall comply with the soiltight joint performance criteria of AASHTO R~~PP~~-82~~63~~.

UNCHANGED SPECS – INTENTIONALLY NOT SHOWN

SECTION 1047

POLYETHYLENE CULVERT PIPE

UNCHANGED SPECS – INTENTIONALLY NOT SHOWN

1047.3 Material. Polyethylene culvert pipe, couplings and fittings shall be in accordance with AASHTO M 294 for double wall~~corrugated~~ or AASHTO M 335 for steel reinforced. In case of conflict with AASHTO M 294 or AASHTO M 335, these specifications shall govern.

1047.3.1 Section properties shall be within the following limits:

	Double Wall~~Corrugated~~						
	Minimum						Maximum
Nominal Size S (in.)	Effective Pipe Wall Area A_{eff} (in.^{2}/in.)	Pipe Wall Centroid to Inside Face y_c (in.)	Pipe Wall Moment of Inertia I (in.^{4}/in.)	Area Ratio[a] A_{eff} / A_g	Extreme Fiber Ratio[b] y_c / c	Inside Diameter D_i (in.)	Outside Diameter D_o (in.)
12	0.163	0.382	0.0313	0.699	0.494	12.02	14.60
15	0.202	0.413	0.0465	0.768	0.447	14.83	17.82
18	0.209	0.569	0.0653	0.749	0.554	17.83	21.42
24	0.233	0.669	0.1317	0.667	0.552	23.71	27.98
30	0.2330	0.757	0.2415	0.816	0.448	29.46	34.98
36	0.294	1.058	0.3153	0.683	0.588	35.44	41.92
42	0.331	1.140	0.5395	0.693	0.564	40.98	48.18
48	0.323	1.095	0.4682	0.681	0.543	47.12	54.34
60	0.438	1.477	0.8150	0.751	0.766	58.90	66.97

[a] A_g equals gross area of pipe wall per unit length of pipe (in^2/in.).
[b] c equals the distance from the pipe wall centroid to the outermost fiber (in.).

	Steel Reinforced			
	Minimum			Maximum
Nominal Size S (in.)	Wall Steel Area A (in.^{2}/ft)	Wall Steel Moment of Inertia I (in.^{4}/in.)	Rib Radius of Gyration r (in.)	Rib Width/ Thickness Ratio b/t
24	0.348	0.00063	0.144	8.97
30	0.344	0.00086	0.170	10.03
36	0.404	0.00122	0.187	10.36
42	0.461	0.00152	0.195	9.91
48	0.379	0.00218	0.257	11.90
60	0482	0.00352	0.290	11.88

UNCHANGED SPECS – INTENTIONALLY NOT SHOWN

1047.4.1 Application for Placement on Qualified List.

1047.4.1.1 To become qualified to furnish pipe meeting AASHTO M 294, a written request shall be sent by the manufacturer to Construction and Materials, and shall include the following information:

a) A copy of the manufacturer's current AASHTO Product Evaluation and Audit Solutions audit compliance.

b) The pipe manufacturer's certified analysis certificate setting forth the name or brand of pipe to be furnished, the specified type, category, grade and class of polyethylene compounds. The certificate shall be sworn for the manufacturer by a person having legal authority to bind the company. The certificate shall have attached a certified test report from an approved independent testing laboratory showing specific results of tests performed on each diameter pipe to be furnished, conforming to all requirements of these specifications. Pipes shall be randomly selected for test by the independent testing laboratory and shall be representative of that manufacturer's pipe.

c) A guarantee that all pipe furnished shall be in accordance with the specification requirements, shall bear a suitable identification brand or mark and shall be replaced without cost to the Commission when not in accordance with the specified requirements. The guarantee shall be worded such that the guarantee will remain in effect as long as the manufacturer continues to furnish material. The manufacturer shall conduct tests and measurements as necessary to ensure the material produced complies with all specification requirements. These tests and measurements shall be identified by the identification symbols or code used on the pipe in a manner that will permit the manufacturer to produce specific reports showing test results representative of specific lots of polyethylene pipe. Copies of reports of these tests shall be kept on file and shall be submitted to the engineer upon request. The brand shall be removed or obliterated by the manufacturer on all material where control tests, as outlined herein, are not in accordance with this specification.

d) Units of measurement, English or metric, used to fabricate the pipe.

1047.4.1.2 To become qualified to furnish pipe meeting AASHTO M 335, a written request shall be sent by the manufacturer to Construction and Materials with the following:

a) A QC plan for each plant from which pipe is to be fabricated for use on MoDOT projects. The QC plan shall be in accordance with Sec 1047.4.3 and shall provide that pipes be randomly selected for test by an independent testing laboratory, and that randomly selected pipes are representative of that manufacturer's pipe.

b) A statement certifying that the quality control procedures at the plant, at a minimum, meet the requirements set forth in the manufacturer's QC plan.

c) Sources for each material to be used in the fabrication of pipe.

d) A guarantee that all pipe furnished shall be in accordance with the specification requirements, shall bear a suitable identification brand or mark

and shall be replaced without cost to the Commission when not in accordance with the specified requirements. The guarantee shall be worded such that the guarantee will remain in effect as long as the manufacturer continues to furnish material. The manufacturer shall conduct tests and measurements as necessary to ensure the material produced complies with all specification requirements. These tests and measurements shall be identified by the identification symbols or code used on the pipe in a manner that will permit the manufacturer to produce specific reports showing test results representative of specific lots of pipes. Copies of reports of these tests shall be kept on file and shall be submitted to the engineer upon request. The brand shall be removed or obliterated by the manufacturer on all material where control tests, as outlined herein, are not in accordance with this specification.

e) Units of measurement, English or metric, used to fabricate the pipe.

1047.4.1.2.1 Manufacturer's QC Plans. The QC plan for each plant furnishing AASHTO M 335 pipe shall include the following:

a) A list of personnel with corresponding authority and responsibility.

b) Qualifications of QC personnel, to include training received or to be given.

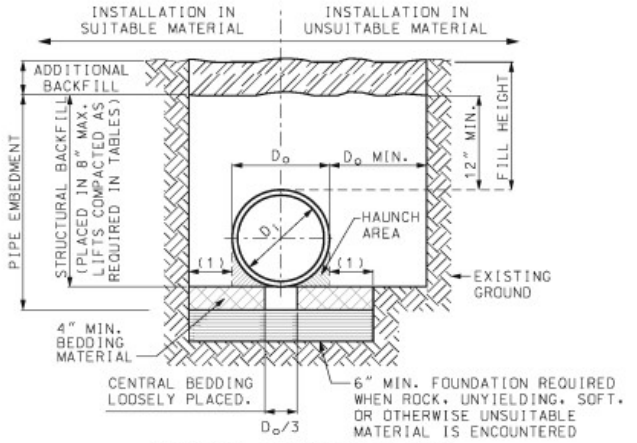
c) A description of how the manufacturer proposes to control production in order to assure all material and workmanship incorporated into the fabrication of pipe meets the applicable specification requirements.

d) The specific tests to be performed during or after production, frequency of these tests, the point where samples or inspections will be obtained or performed, and the format for recording test data.

UNCHANGED SPECS – INTENTIONALLY NOT SHOWN

1047.4.4 Reinstatement of a Manufacturer. Consideration of reinstatement of a manufacturer once disqualified will be no sooner than specified in Sec 1047.4.3, will require a written document from the manufacturer stating the reasons for disqualification and the action taken to correct those deficiencies, written concurrence from Construction and Materials that the problem has been suitably addressed, followed by a new application in accordance with Sec 1047.4.1.1 or 1047.4.1.2.

UNCHANGED SPECS – INTENTIONALLY NOT SHOWN

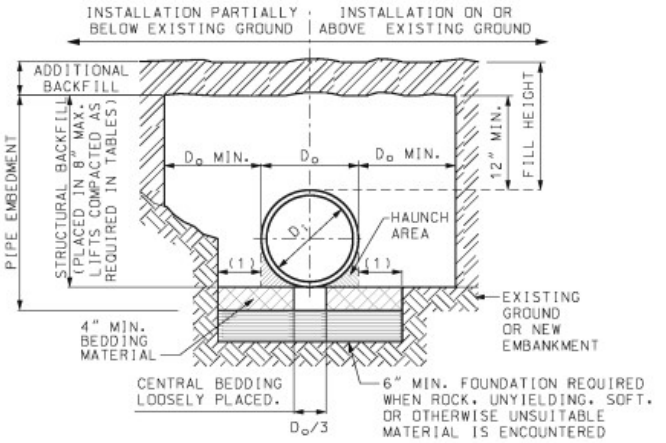


TRENCH INSTALLATION

LEGEND

D_i = INSIDE DIAMETER OF PIPE.
D_o = OUTSIDE DIAMETER OF PIPE.
(1) = $(D_o/4)+6"$ (MIN.)

NOTE:
MULTIPLE PIPE SHALL BE INSTALLED WITH A MINIMUM CLEARANCE BETWEEN PIPES OF $\frac{1}{4}$ D_o OR 12", WHICHEVER IS GREATER, BUT NOT TO EXCEED 36".



EMBANKMENT INSTALLATION

CONSTRUCTION SEQUENCE

1. PLACE BEDDING MATERIAL TO GRADE.
2. COMPACT BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
3. INSTALL PIPE TO GRADE.
4. COMPLETE STRUCTURAL BACKFILL ACCORDING TO SPECIFICATIONS.

FILL HEIGHT LIMITS

STRUCTURAL BACKFILL	SPECIFIED NOMINAL DIA OF PIPE (IN.)	DOUBLE WALL POLYETHYLENE				STEEL REINFORCED POLYETHYLENE		POLYVINYL CHLORIDE				DOUBLE WALL POLYPROPYLENE				TRIPLE WALL POLYPROPYLENE			
		COMPACTION 90% SPD		COMPACTION 95% SPD		COMPACTION 90% SPD		COMPACTION 90% SPD		COMPACTION 95% SPD		COMPACTION 90% SPD		COMPACTION 95% SPD		COMPACTION 90% SPD		COMPACTION 95% SPD	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
GRAVEL (AASHTO M145 SOIL TYPE A1 & A3)	12	2'	19'	2'	26'	--	--	2'	32'	2'	61'	2'	21'	2'	29'	--	--	--	--
	15	2'	19'	2'	27'	--	--	2'	32'	2'	55'	2'	22'	2'	31'	--	--	--	--
	18	2'	17'	2'	25'	--	--	2'	31'	2'	60'	2'	19'	2'	27'	--	--	--	--
	24	2'	15'	2'	21'	2'	50'	2'	30'	2'	54'	2'	16'	2'	22'	--	--	--	--
	30	2'	17'	2'	24'	2'	50'	2'	31'	2'	52'	2'	11'	2'	15'	2'	17'	2'	23'
	36	2'	13'	2'	19'	2'	50'	2'	30'	2'	53'	--	--	--	--	2'	15'	2'	21'
	42	2'	13'	2'	19'	2'	50'	--	--	--	--	--	--	--	--	2'	19'	2'	27'
	48	2'	12'	2'	18'	2'	30'	--	--	--	--	--	--	--	--	2'	12'	2'	17'
	60	2'	13'	2'	20'	2'	30'	--	--	--	--	--	--	--	--	2'	16'	2'	23'
COURSE SAND (AASHTO M145 SOIL TYPE A-1-b)	12	2'	17'	2'	23'	--	--	2'	32'	2'	55'	2'	18'	2'	24'	--	--	--	--
	15	2'	16'	2'	22'	--	--	2'	32'	2'	49'	2'	22'	2'	31'	--	--	--	--
	18	2'	15'	2'	21'	--	--	2'	31'	2'	53'	2'	16'	2'	21'	--	--	--	--
	24	2'	14'	2'	20'	2'	50'	2'	30'	2'	48'	2'	13'	2'	17'	--	--	--	--
	30	2'	13'	2'	19'	2'	50'	2'	31'	2'	46'	2'	7'	2'	10'	2'	17'	2'	23'
	36	2'	12'	2'	17'	2'	50'	2'	30'	2'	46'	--	--	--	--	2'	15'	2'	21'
	42	2'	13'	2'	18'	2'	50'	--	--	--	--	--	--	--	--	2'	19'	2'	27'
	48	2'	12'	2'	17'	2'	30'	--	--	--	--	--	--	--	--	2'	12'	2'	17'
	60	2'	13'	2'	20'	2'	30'	--	--	--	--	--	--	--	--	2'	16'	2'	23'
SILTY SAND OR SILTY GRAVEL (AASHTO M145 SOIL TYPES A-2-4 & A-2-5)	12	3.3'	10'	2'	17'	--	--	2.7'	16'	2'	33'	2.8'	11'	2'	19'	--	--	--	--
	15	3.4'	10'	2'	16'	--	--	2.7'	16'	2'	33'	2.8'	11'	2'	23'	--	--	--	--
	18	3.6'	10'	2'	15'	--	--	2.7'	15'	2'	32'	3'	11'	2'	16'	--	--	--	--
	24	3.8'	9'	2'	14'	2'	50'	2.7'	15'	2'	31'	3.3'	10'	2'	13'	--	--	--	--
	30	3.7'	10'	2'	14'	2'	50'	2.8'	15'	2'	31'	3.4'	6'	2'	7'	3'	10'	2'	17'
	36	4.2'	7'	2'	12'	2'	50'	2.8'	14'	2'	31'	--	--	--	--	3.3'	10'	2'	15'
	42	4.2'	7'	2'	13'	2'	50'	--	--	--	--	--	--	--	--	3.2'	11'	2'	20'
	48	4.5'	6'	2'	12'	2'	30'	--	--	--	--	--	--	--	--	3.1'	9'	2'	13'
	60	3.3'	7'	2'	14'	2'	30'	--	--	--	--	--	--	--	--	2'	10'	2'	17'

NOTE:

SPD = STANDARD PROCTOR DENSITY.

FILL HEIGHT MEASURED FROM THE TOP OF PIPE TO SURFACE.

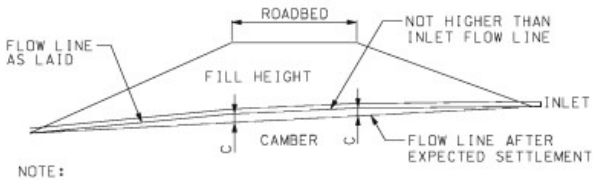
LIMITS ACCOUNT FOR SHORT-TERM TEMPORARY WATER TABLE DEPTHS OF FIVE FEET ABOVE SPRINGLINE. TABLES ARE NOT APPLICABLE FOR LONG-TERM PERMANENT WATER TABLE DEPTHS ABOVE SPRINGLINE.

WHEN PIPES ARE USED AS GROUP A, FILL HEIGHTS ARE LIMITED TO SHADED VALUES.

MINIMUM COVER FOR CONSTRUCTION LOADS

NOMINAL PIPE DIA. (IN.)	MINIMUM COVER (FT) FOR INDICATED AXLE LOADS (THOUSANDS OF POUNDS)			
	18-50	50-75	75-110	110-150
12-36	2.0	2.5	3.0	3.0
42-60	3.0	3.0	3.5	4.0

MINIMUM COVER LIMITS ARE NOT SUFFICIENT FOR SILTY SAND OR SILTY GRAVEL STRUCTURAL BACKFILL COMPACTED TO 90% STANDARD PROCTOR DENSITY. THE CONTRACTOR SHALL PROVIDE MINIMUM COVER PLUS ANY ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. IN UNPAVED SITUATIONS, THE SURFACE MUST BE MAINTAINED TO A LEVEL AND NON-RUTTED CONDITION.



NOTE:
ON YIELDING SOIL, PIPE CULVERTS SHALL BE PLACED ON A CAMBERED FLOW LINE. THE AMOUNT OF CAMBER WILL VARY WITH SOIL CONDITION AND WILL BE SPECIFIED ON THE DESIGN PLANS.

TYPICAL CAMBERED FLOW LINE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
ERIC E. SCHROETER
NUMBER PE-2004?
PROFESSIONAL ENGINEER
THIS SHEET WAS SIGNED, SEALED AND DATED ELECTRONICALLY.

THERMOPLASTIC PIPE INSTALLATION METHODS

DATE EFFECTIVE: 04/01/2015
DATE PREPARED: 2/27/2015

730.00E

SHEET NO. 1 OF 1

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

750.7.2 Types

Permissible culvert pipe types are separated into the following groups.

Permissible Pipe Types by Group		
Group A (ADT>3500)	**Group B (ADT≤3500)**	**Group C (~~Other Applications~~Temporary or ADT<1700)**
Reinforced Concrete	Group A Pipe	Group A Pipe
Vitrified Clay		Group B Pipe
Aluminum Coated Steel	Double Wall Polypropylene ≤60 in.	
Polymer Coated Steel	~~High Density~~Double Wall Polyethylene~~, Corrugated~~ ≤60 in.	Zinc-Coated Steel
Aluminum Alloy	~~Steel Reinforced Polyethylene ≤60 in.~~	Bituminous-Coated Steel
Triple Wall Polypropylene ≤60 in.		
Double Wall Polypropylene ≤30 in.		
~~High Density~~ Double Wall Polyethylene~~, Corrugated~~ ≤24 in.		
Steel Reinforced Polyethylene ≤~~24~~ 60 in.		

Polyvinyl chloride ≤36 in.	

In general, there are two methods of specifying the permissible culvert types dependent upon the design ADT. For most applications, a group of culvert types is specified as described in succeeding sections. For special situations, a qualified pipe group may be specified, as described in Installations for Special Situations. The final selection of the structure type is based on requirements in the standard specifications, on good engineering judgment, and economy with consideration of service and maintenance costs.

The hydraulic design computations for ~~Group B~~ pipe should be performed for both corrugated and smooth wall pipe. The pay item for the corrugated pipe size should be used. At each pipe location on the plans, both the corrugated and equivalent smooth wall diameters should be shown as in the following examples:

36" Group ~~B~~A Pipe (30")

36" Group B Pipe (36")

The equivalent smooth wall diameter must be shown whether the size is equal to or less than the corrugated size. The standard specifications for pipe and end sections describe the nomenclature for this procedure.

750.7.2.1 Roadways with ADT > 3500

For roadways with ADT > 3500, Group A pipe will be specified for crossroad structures using the method for corrugated and smooth wall pipe as explained in EPG 750.7.2 Types, except for the following conditions:

- Reinforced concrete box culverts are specified when it is more economical to build the reinforced box culvert than it is to provide an equivalent pipe culvert.
- Vitrified clay pipe (extra strength) is specified when the purpose of the culvert is a sanitary sewer.
- Group B pipe should be specified for the portion of median outlet pipes outside the edge of pavement where such pipes are located on high fills requiring a break in flowline grade. Details for such installations are illustrated in Pipe Grades For Median Drop Inlets.
- Group B pipe is specified to drain drop inlets into crossroad drainage structures when such installation necessitates a steep flowline grade and when the pipe will not extend under the pavement or in other non-traffic areas, such as behind guardrail at median piers.

Pipes of 12 in. and 15 in. are not used except as outlets from drop inlets and in storm sewer systems.

The requirements for using reinforced concrete pipe or vitrified clay pipe for structures may be waived if conditions warrant, such as poor structure foundation conditions, high fills, simplification of handling traffic, etc.

750.7.2.2 Roadways with ADT ≤ 3500

For roadways with ADT ≤ 3500, Group B pipe should be specified for crossroad structures using the method for corrugated and smooth wall pipe as explained in EPG 750.7.2 Types. ~~The hydraulic design computations for Group B pipe should be performed for both corrugated and smooth wall pipe. The pay item for the corrugated pipe size should be used. At each pipe location on the plans,~~

~~both the corrugated and equivalent smooth wall diameters should be shown as in the following examples:~~

~~36" Group B Pipe (30")~~

~~36" Group B Pipe (36")~~

~~The equivalent smooth wall diameter must be shown whether the size is equal to or less than the corrugated size. The standard specifications for pipe and end sections describe the nomenclature for this procedure.~~ Some exceptions to specifying Group B on the plans are the following:

- Reinforced concrete box culverts should be considered for pipes larger than 60 in. diameter.
- Reinforced concrete pipe, polypropylene pipe, ~~corrugated~~ polyethylene pipe, or polyvinyl chloride pipe should be specified for locations where high acidity or alkalinity of soils or waters or other abrasive or corrosive elements are present.
- Corrugated metallic-coated steel pipe-arch structures in sizes B-5 and larger may be specified where necessary because of limited allowable structure height. A battery of round pipes or a single elliptical reinforced concrete pipe may be considered in lieu of B-1 through B-4 corrugated metallic-coated steel pipe-arch structures.
- Elliptical reinforced concrete pipe may be specified in special cases, usually for storm sewers, where necessary because of limited allowable structure height.

Pipes of 12 in. and 15 in. are not used for crossroad culverts, except where the use of an 18 in. pipe will create an unsightly or impracticable drainage condition.

~~Corrugated~ Polypropylene pipe (Type D) is a triple walled, full circular cross section pipe, with a smooth inner and outer wall, braced with corrugations or ribs. Polypropylene pipe (Type S), polyethylene pipe (Type S), and polyvinyl chloride pipe are double walled, full circular cross section pipes, with an outer corrugated wall and a smooth inner liner. Only 30 to 60 in diameter sizes of triple walled polypropylene, 12 to 30 in. sizes of double walled polypropylene, 12 to 60 in. diameter sizes of ~~corrugated~~ polyethylene, or 12 to 36 in. diameter sizes of PVC pipe, are approved for use on highway projects. Corrugations may be either annular or helical. Headwall protection is provided by means of a beveled pipe end treatment, safety slope end section, or metal or concrete flared end sections. Section 728 of the Standard Specifications require all PVC pipes to have an end section of one of the other Group B pipe materials to protect from ultraviolet degradation where the end of the pipe is exposed.

750.7.2.3 Roadways and Roadside Applications with ADT < 1700

For roadways, side roads, and entrances with ADT < 1700 Group C pipe should be specified using the ~~same~~ method for corrugated and smooth wall ~~Group B~~ pipe as explained in ~~Roadways with ADT ≤ 3500~~EPG 750.7.2 Types. For information regarding replacement of failed driveway drainage pipes see EPG 941.9.8.4 Drainage Structures.

750.7.2.4 Outer Roadway Drainage Structures

Outer roadway drainage structures shall be selected by ADT as described above. Continuous drainage structures extending under outer roadways are designed to the same standard as required for the portion of the structure under the main roadway. Since a continuous drainage structure usually increases the standard for the portion under the outer roadway, it is usually more economical to use independent structures. Where continuous structures are used, the runoff between the outer roadway and the main roadway is usually carried into the crossroad structure by drop inlets and pipe. Where the crossroad structure is a relatively small pipe, the drop inlet is constructed in the crossroad structure.

For drainage applications other than crossroad pipes, such as entrances, side roads and median drainage, Group C pipe may be specified. In special cases where low clearance exists and the structure is essentially at right angles on roads with less than 400 ADT, pipe arches with flared end sections may be specified.

750.7.2.5 Installations for Special Situations

For installations on a project which normally would require a pipe group option, special conditions may exist which would justify the specifying of a qualified pipe group type. Justification for the selection of a qualified group pipe type include, but are not limited to, unstable foundation, high embankments, high erosive forces, highly abrasive or corrosive conditions, high fire hazard or other pertinent reasons. When any one or a combination of these factors exist, the culvert pipe type(s) best suited to resist such destructive forces is selected and specified by excluding pipe types from a specified group with a note on the plans or Job Special Provision. When a qualified pipe group is specified, the reasons for such selection are included in the letter of transmittal of the plans.

750.7.2.6 Storm Sewers

The permissible storm sewer type under the paved portion and any planned widening of roadways with ADT greater than 3500 is Group A pipe. All other applications of storm sewer are Group B pipe. The standard specifications require that corrugated metal culvert pipes used for storm sewer be smooth interior pipe types, so that consistent hydraulic characteristics may be assumed during design of the entire interconnected system.

750.7.2.7 Multiple Opening Installations

Multiple opening structures, either boxes or pipes, are used only as required where the allowable structure height is restricted. Where multiple pipes are constructed, the pipes are separated by a distance of 1/2 their outside diameter, or a minimum of 1 ft., whichever is greater.

750.7.2.8 Temporary Installations

For bypasses, crossovers or other temporary installations, regardless of design ADT, Group C pipe should be specified using the ~~same~~ method ~~as~~ for corrugated and smooth wall ~~Group B~~ pipe as explained in ~~Roadways with ADT ≤ 3500~~EPG 750.7.2 Types.

941.9.8.4 Culvert Pipe

Corrugated metallic-coated steel culvert pipe shall be a commercially available new pipe so long as the pipe is fabricated by riveting, continuous welding, resistance spot welding or lock seam, and so long as the metal carries a brand designating a 2-ounce (600 g/m^2) zinc coating or 1 ounce (300 g/m^2) aluminum coating and the name of the sheet manufacturer. The metal thickness shall not be less than 16 gage (0.064 in., 1.63 mm). MoDOT's representative may accept corrugated steel culvert pipe on the basis of visual inspection, or on the basis of a certification by the supplier stating the pipe complies with MoDOT requirements. MoDOT's representative reserves the right to require any testing deemed necessary to ensure compliance with these requirements. Reinforced concrete culvert pipe shall be a commercially available new pipe from a source that has furnished pipe for MoDOT work. MoDOT's representative may accept the pipe on the basis of visual inspection, or on the basis of a certification by the supplier stating the pipe conforms to MoDOT requirements. MoDOT's representative reserves the right to require any testing deemed necessary to ensure compliance with these requirements.

~~Corrugated polyethylene~~ Thermoplastic culvert pipe shall be a commercially available new pipe which is marked with the manufacturer's name or trademark, nominal size, the appropriate AASHTO ~~M 294~~ designation, plant designation code, the date of manufacture or an appropriate code, and meets all requirements specified in the latest edition of the MoDOT standard specifications. MoDOT's representative may accept ~~corrugated polyethylene~~thermoplastic culvert pipe on the basis of visual inspection, or on the basis of a certification by the supplier stating the pipe complies with all requirements of MoDOT Standard Specification 730. ~~AASHTO M 294.~~ MoDOT's representative reserves the right to require any testing deemed necessary to ensure compliance with these requirements. ~~Polyethylene culvert pipe is not to be used under side roads, streets or crossroad installations.~~