

715-R-764 PIPE CULVERTS, AND STORM AND SANITARY SEWERS

(Revised 11-22-24)

The Standard Specifications are revised as follows:

SECTION 715, BEGIN LINE 41, DELETE AND INSERT AS FOLLOWS:

(a) Type 1 Pipe

Type 1 pipe shall be used for culverts under mainline pavement and public road approaches and shall be in accordance with the following:

Clay Pipe, Extra Strength.....	907.08
Corrugated Aluminum Alloy Pipe and Pipe-Arches.....	908.04 ^B
Corrugated Polyethylene Pipe, Type S	* ^A
Corrugated Polypropylene Pipe	* ^A
Corrugated Steel Pipe and Pipe-Arches	908.02 ^B
Non-Reinforced Concrete Pipe, Class 3.....	907.01
Polymer Precoated Galvanized Corrugated Steel Pipe and Pipe-Arches.....	908.08 ^B
Profile Wall Polyethylene Pipe, Closed	* ^A
Profile Wall Polyethylene Pipe, Ribbed.....	* ^A
Profile Wall PVC Pipe	* ^A
Reinforced Concrete Horizontal Elliptical Pipe.....	907.03
Reinforced Concrete Pipe	907.02
Smooth Wall Polyethylene Pipe.....	* ^A
Smooth Wall PVC Pipe.....	* ^A
Spiral Rib Steel Pipe	908.02 ^B
Structural Plate Pipe and Pipe-Arches	908.09

~~*~~^A All thermoplastic pipes shall be from the QPL of Thermoplastic Pipe and Liner Pipe Sources in accordance with 907.16.

^B Metal pipes shall be from the QPL of Metal Pipe Sources in accordance with 908.01.

(b) Type 2 Pipe

Type 2 pipe shall be used for storm sewers and shall be in accordance with the following:

Clay Pipe, Extra Strength.....	907.08
Corrugated Polyethylene Pipe, Type S	* ^A
Corrugated Polypropylene Pipe	* ^A
Fully Bituminous Coated and Lined Corrugated Steel Pipe and Pipe-Arches.....	908.07 ^B
Non-Reinforced Concrete Pipe, Class 3.....	907.01
Polymer Precoated Galvanized Corrugated Steel Pipe and Pipe-Arches Type IA and Type IIA.....	908.08 ^B
Profile Wall Polyethylene Pipe, Closed	* ^A
Profile Wall Polyethylene Pipe, Ribbed.....	* ^A
Profile Wall PVC Pipe	* ^A
Reinforced Concrete Horizontal Elliptical Pipe.....	907.03
Reinforced Concrete Pipe	907.02

Smooth Wall Polyethylene Pipe.....	* ^A
Smooth Wall PVC Pipe.....	* ^A
^A All thermoplastic pipes shall be from the QPL of Thermoplastic Pipe and Liner Pipe Sources in accordance with 907.16.	
^B Metal pipes shall be from the QPL of Metal Pipe Sources in accordance with 908.01.	

(c) Type 3 Pipe

Type 3 pipe shall be used for culverts under all drives and field entrances. All Type 1 pipe materials are acceptable.

(d) Type 4 Pipe

Type 4 pipe shall be used for drain tile and longitudinal underdrains and shall be in accordance with the following:

Clay Pipe* *	907.08
Corrugated Polyethylene Drainage Tubing.....	* ^A
Corrugated Polyethylene Pipe, Type S* *	* ^A
Corrugated Polyethylene Pipe, Type SP.....	* ^A
Drain Tile* *	907.10
Non-Reinforced Concrete Pipe.....	907.01
Perforated Clay Pipe* *	907.09
Perforated PVC Semicircular Pipe.....	* ^A
Profile Wall PVC Pipe.....	* ^A
^A All thermoplastic pipes shall be from the QPL of Thermoplastic Pipe and Liner Pipe Sources in accordance with 907.16.	
* * These materials shall be used for drain tiles only.	

(e) Type 5 Pipe

Type 5 pipe shall be used for broken-back pipe runs where coupled or jointed pipe is desirable and shall be in accordance with the following:

Corrugated Aluminum Alloy Pipe and Pipe-Arches.....	908.04 ^B
Corrugated Polyethylene Pipe, Type S.....	* ^A
Corrugated Polypropylene Pipe.....	* ^A
Corrugated Steel Pipe and Pipe-Arches.....	908.02 ^B
Fully Bituminous Coated and Lined Corrugated Steel Pipe and Pipe-Arches.....	908.07 ^B
Polymer Precoated Galvanized Corrugated Steel Pipe and Pipe-Arches.....	908.08 ^B
Profile Wall Polyethylene Pipe, Closed.....	* ^A
Profile Wall Polyethylene Pipe, Ribbed.....	* ^A
Profile Wall PVC Pipe.....	* ^A
Smooth Wall Polyethylene Pipe.....	* ^A
Smooth Wall PVC Pipe.....	* ^A
Spiral Rib Steel Pipe.....	908.02 ^B
^A All thermoplastic pipes shall be from the QPL of Thermoplastic Pipe and Liner Pipe Sources in accordance with 907.16.	
^B Metal pipes shall be from the QPL of Metal Pipe Sources in accordance with 908.01.	

SECTION 715, BEGIN LINE 142, INSERT AS FOLLOWS:

(i) Underdrain Outlet Pipe

Pipe for underdrain outlets and drain tile outlets shall be PSM PVC pipe, profile wall PVC pipe, smooth wall polyethylene pipe, or smooth wall PVC pipe from the QPL of Thermoplastic Pipe and Liner Pipe Sources in accordance with 907.16 and 907.24. Schedule 40 PVC pipe in accordance with 907.24(b) is also allowable.

SECTION 715, BEGIN LINE 165, DELETE AND INSERT AS FOLLOWS:

(l) Roadway Drain Casting Extensions

Pipe used for extending roadway drain castings located in a bridge deck shall be in accordance with ~~907.23~~907.24(b), 907.28, or 908.10. Pipe support brackets and all hardware shall be galvanized in accordance with ASTM A153, class D or ASTM B695, class 40, type I. A Type C certification in accordance with 916 shall be provided for the pipe brackets.

SECTION 907, BEGIN LINE 216, DELETE AND INSERT AS FOLLOWS:

907.16 Thermoplastic Pipe Requirements

A QPL of ~~t~~Thermoplastic ~~p~~Pipe and ~~L~~Liner ~~p~~Pipe Sources will be maintained by the Department. The QPL will specify the manufacturer and thermoplastic pipe designation. All of these materials shall comply with the applicable AASHTO or ASTM requirements listed in the following table and will only be accepted from qualified manufacturers. The manufacturer is defined as the plant which produces the thermoplastic pipe. The manufacturer shall become qualified by establishing a history of satisfactory quality control of these materials as evidenced by the test results performed by the manufacturer's testing laboratory.

Summary of Thermoplastic Pipe Specification Requirements				
Pipe Material	Standard Specification	AASHTO	ASTM	Manufacturer Requirement
Corrugated Polyethylene Drainage Tubing	907.17(a)	M 252		ITM 806, Procedure O
Corrugated Polyethylene Pipe	907.17(b)	M 294*		ITM 806, Procedure O
Corrugated Polypropylene Pipe	907.19	M 330		ITM 806, Procedure O
Perforated PVC Semicircular Pipe	907.18		D3034	ITM 806, Procedure A
Profile Wall HDPE Liner Pipe	907.25(b)		F894	ITM 806, Procedure A or 916, Type A Certification
Profile Wall PVC Liner Pipe	907.25(c)		F949	ITM 806, Procedure A or 916, Type A Certification
Profile Wall PVC Pipe	907.22 907.24(c)	M 304		ITM 806, Procedure O
Profile Wall Polyethylene Pipe	907.20		F894	ITM 806, Procedure A
Schedule 40 PVC Plastic Pipe, <i>Schedule 40</i>	907.24(b)		D1785 or D2665	916, Type C Certification

<i>Slotted Vane Drain Pipe</i>	908.14	M 278	F679	ITM 806, Procedure A
Smooth Wall Polyethylene Pipe	907.21 907.24(d)		F714	ITM 806, Procedure A
Smooth Wall PVC Pipe	907.23 907.24(e)	M 278	F679	ITM 806, Procedure A
Solid Wall HDPE Liner Pipe	907.25(a)		F714	ITM 806, Procedure Q or 916, Type A Certification
Type PSM PVC Pipe and Fittings	907.24(a)		D3034	ITM 806, Procedure A
* Pipe in accordance with AASHTO M 294 shall be manufactured with virgin materials.				

SECTION 907, BEGIN LINE 291, DELETE AND INSERT AS FOLLOWS:

(b) ~~Schedule 40~~ PVC Plastic Pipe, Schedule 40

~~Pipe~~ PVC plastic pipe shall be in accordance with ASTM D1785 *when Schedule 40 is specified or D2665* and shall have a minimum pipe stiffness of 150 psi at 5% deflection when determined in accordance with ASTM D2412. Material furnished under this specification shall reference ASTM D1785 ~~or ASTM D2665~~ in the product print line. A Type C certification in accordance with 916 shall be provided for the ~~s~~Schedule 40 PVC plastic pipe.

SECTION 908, BEGIN LINE 3, DELETE AND INSERT AS FOLLOWS:

908.01 ~~Blank~~ Metal Pipe Requirements

A QPL of Metal Pipe Sources for the identified pipe materials specified in the table below will be maintained by the Department. The QPL will specify the manufacturer and pipe designation. The manufacturer is defined as the plant which produces the metal pipe or pipe-arch. The manufacturer shall establish and maintain a history of satisfactory quality control of these materials. This history will be based on achieving and maintaining a "Compliant" status with the AASHTO PEAS program in accordance with ITM 806, Procedure O.

SUMMARY OF METAL PIPE SPECIFICATION REQUIREMENTS				
<i>Pipe Material</i>	<i>Standard Specification</i>	<i>AASHTO</i>	<i>ASTM</i>	<i>Manufacturer Requirement</i>
<i>Required to be furnished from a manufacturer on the QPL include:</i>				
<i>Corrugated Aluminum Alloy Pipe and Pipe-Arches</i>	908.04	M 196		ITM 806, Procedure O
<i>Corrugated Steel Pipe and Pipe-Arches</i>	908.02	M 36		ITM 806, Procedure O
<i>Fully Bituminous Coated Corrugated and Lined Steel Pipe and Pipe-Arches</i>	908.07	M 36		ITM 806, Procedure O
<i>Polymer Precoated Galvanized Corrugated Steel Culvert Pipe and Pipe-Arches</i>	908.08	M 245		ITM 806, Procedure O
<i>Slotted Drain Pipe</i>	908.14	<i>pipe: M 36</i>	<i>grate: A36, Grade 36</i>	ITM 806, Procedure O

<i>Not required to be furnished from the QPL:</i>				
<i>Cast Iron Soil Pipe</i>	<i>908.10</i>		<i>A74</i>	<i>Buy America Certification</i>
<i>Steel Pipe</i>	<i>908.11</i>		<i>A139, grade B or A53 Type E, grade B</i>	<i>Type C Certification; Buy America Certification</i>
<i>Structural Plate Pipe, Pipe-Arches, and Arches; Aluminum Alloy</i>	<i>908.09(b)</i>	<i>M 219</i>		<i>Certified Mill Report; Fabricator Certification-Other; Build America, Buy America Certification^[1]</i>
<i>Structural Plate Pipe, Pipe-Arches, and Arches; Steel</i>	<i>908.09(a)</i>	<i>M 167 and LRFD Bridge Construction Specifications</i>		<i>Certified Mill Report; Fabricator Certification-Other; Buy America Certification</i>
<i>Note: ^[1] Build America, Buy America only required if RSP 106-C-277 is included in the contract.</i>				

For all pipe materials, regardless of whether or not it is required to be furnished from a manufacturer on the QPL, a Buy America or Build America, Buy America Certification, whichever is applicable, shall be provided for the metal in accordance with 916 or as stated herein.

For metal end sections and structural plate pipe, pipe-arches, and arches, aluminum alloy and steel, the fabricator's certification-other shall contain the information listed in 908.05.

908.02 Corrugated Steel Pipe and Pipe-Arches

Corrugated steel pipe and pipe-arches shall be type I, IA, IR, II, or IIA in accordance with AASHTO M 36 and shall be from a source listed on the QPL of Metal Pipes. Pipe will be considered for inclusion on the QPL by completing the requirements of ITM 806, Procedure O.

SECTION 908, BEGIN LINE 36, DELETE AND INSERT AS FOLLOWS:

~~The manufacturer shall furnish to the fabricator a certified mill report for materials shipped to the fabricator. This certified mill report shall list the kind of base metal, actual test results of the chemical analysis and mechanical tests of each heat, the thickness, the weight of coating, and shall certify that the material complies with specified requirements for the type of metal furnished.~~

~~The fabricator shall certify, on furnished forms that:~~

- ~~(a) the fabricated structure has been manufactured in accordance with these Standard Specifications,~~
- ~~(b) based on the sheet manufacturer's certified mill report, the materials~~

~~used in fabricating the structure were tested and the test results are in accordance with the specified requirements, and~~

- ~~(c) copies of the sheet manufacturer's certified mill report shall be on file and available to review for five years.~~

908.03 Blank

908.04 Corrugated Aluminum Alloy Pipe and Pipe-Arches

Pipes, pipe-arches, and coupling bands shall be in accordance with AASHTO M 196 *and shall be from a source listed on the QPL of Metal Pipes. Pipe will be considered for inclusion on the QPL by completing the requirements of ITM 806, Procedure O.* The pipe shall be type I, IA, II, or IIA. If the pipe invert is to be paved, it shall be in accordance with 908.07.

~~The sheet manufacturer's certified mill report and the fabricator's certification shall be in accordance with the applicable requirements of 908.02.~~

Where aluminum alloy pipe culvert is furnished, aluminum alloy end sections shall also be furnished. All component parts shall be aluminum alloy.

908.05 ~~Blank~~ Fabricator's Certification-Other

The manufacturer shall furnish to the fabricator a certified mill report for materials shipped to the fabricator. This certified mill report shall list the kind of base metal, actual test results of the chemical analysis and mechanical tests of each heat, the thickness, the weight of coating, and shall certify that the material complies with specified requirements for the type of metal furnished.

The fabricator shall certify on company letterhead that:

- (a) the fabricated structure has been manufactured in accordance with these Standard Specifications,*
- (b) based on the sheet manufacturer's certified mill report, the materials used in fabricating the structure were tested and the test results are in accordance with the specified requirements, and*
- (c) copies of the sheet manufacturer's certified mill report shall be on file and available to review for five years.*

A suggested form is contained in ITM 804 as Fabricator's Certification-Other for Metal End Sections and Metal Structural Plate Pipes and Arches.

908.06 Metal End Sections

The end section's metal shall be in accordance with AASHTO M 36 or M 196, whichever is applicable. ~~The sheet metal manufacturer's~~ A certified mill report and the fabricator's certification-*other* shall be in accordance with ~~the applicable requirements of 908.02~~ 908.05.

SECTION 908, BEGIN LINE 85, DELETE AND INSERT AS FOLLOWS:

908.07 Fully Bituminous Coated Corrugated and Lined Steel Pipe and Pipe-Arches

~~The material, fabrication, the manufacturer's certified mill report, and the fabricator's certification~~ *pipe shall be in accordance with the applicable requirements of 908.02 from a source listed on the QPL of Metal Pipes. Pipe will be considered for inclusion on the QPL by completing the requirements of ITM 806, Procedure O.* Coupling bands shall be fully bituminous coated.

After fabrication, the pipe or pipe-arch shall be fully bituminous coated.

Connecting or coupling bands shall be of the two-piece type when used with coated pipe of 36 in. diameter or larger.

The asphalt material for coating shall be in accordance with 902.01(e). *A Type A Certification in accordance with 916 shall be provided for the asphalt material.* Samples of the asphalt material will be obtained from the working tank prior to or during coating of the pipe, or from strippings off the pipe after coating. Asphalt materials applied to the pipe shall be free from impurities. The metal shall be free from grease, dust, or moisture. Either process set out below may be used for application.

SECTION 908, BEGIN LINE 121, DELETE AND INSERT AS FOLLOWS:

~~The manufacturer of the asphalt material shall furnish to the pipe fabricator the type of certification specified in the Frequency Manual and in accordance with 916 for each shipment or lot of asphalt material. The pipe fabricator shall keep these certifications on file and available to review for five years. In addition, samples from the working tank will be obtained for verification of requirements.~~

908.08 Polymer Precoated Galvanized Corrugated Steel Culvert Pipe and Pipe-Arches

The pipe or pipe-arch and coupling bands shall be in accordance with AASHTO M 245 ~~with additions in accordance with 908.02.~~ The polymer precoated galvanized steel sheets shall be in accordance with AASHTO M 246, grade 10/10 *and shall be from a source listed on the QPL of Metal Pipes. Pipe will be considered for inclusion on the QPL by completing the requirements of ITM 806, Procedure O.*

SECTION 908, BEGIN LINE 159, DELETE AND INSERT AS FOLLOWS:

3. The sheet manufacturer's certified mill report and the fabricator's certification-*other* shall be furnished in accordance with ~~908.02~~908.05, except the documents shall be in accordance with the applicable requirements of AASHTO M 167.

(b) Aluminum Alloy

Aluminum alloy structural plate pipe, pipe-arches, and arches shall be in accordance with AASHTO M 219. The sheet manufacturer's certified mill report and the fabricator's certification-*other* shall be furnished in accordance with ~~908.02~~908.05.

SECTION 908, BEGIN LINE 195, INSERT AS FOLLOWS:

908.14 Slotted Drain or Slotted Vane Drain Pipe

Slotted drains shall be manufactured from helically corrugated steel pipe in accordance with AASHTO M 36. At the end of the pipe there shall be two annular corrugations to allow the corrugated band to fully mesh with the pipe. *Slotted drain shall be from a source listed on the QPL of Metal Pipes. Pipe will be considered for inclusion on the QPL by completing the requirements of ITM 806, Procedure O.*
