

097.13 DPWH
24.08.2015



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
MANILA

APR 06 2015

DEPARTMENT ORDER)
No. **57**)
Series of 2015)

SUBJECT : Amendments to DPWH Standard Specification for Item 706 – Concrete, Clay, Plastic and Fiber Pipe

In line with the mandate of the Department in providing effective standard specifications in the implementation of various infrastructure projects and in view of the need of setting amendments to standard specification for different strength classes, internal diameters, wall thickness, wall design, spacing, porosity, reinforcement, length of pipe, the attached **Amendments to DPWH Standard Specification for Concrete, Clay, Plastic and Fiber Pipe, Item 706** is hereby prescribed, for the guidance and compliance of all concerned.

This specification shall form part of the revised 2012 edition of the DPWH Standard Specifications (Volume II – Highways, Bridges and Airports).

This Order shall take effect immediately.


ROGELIO L. SINGSON
Secretary

Department of Public Works and Highways
Office of the Secretary

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5.5.2 FET/JFS

DPWH STANDARD SPECIFICATIONS FOR

ITEM 706 – *Amendments to Item 706, Concrete, Clay, Plastic and Fiber Pipe of the DPWH Standard Specifications for Highways, Bridges and Airports, Volume II, 2012 Edition*

706.1 Non-Reinforced Concrete Pipe

This pipe shall conform to the requirements of AASHTO M 86M (ASTM C 14M) for the specified *internal diameters, wall thickness, length, straightness* and strength classes.

706.2 Reinforced Concrete Pipe

This pipe shall conform to the requirements of AASHTO M 170M or AASHTO M 242M (ASTM C 655) for specified *internal diameters, wall thickness, length, reinforcement* and strength classes.

Reinforced elliptically shaped concrete pipe conforming to the requirements of AASHTO M 207M (ASTM C 507) shall be furnished where specified. Unless otherwise specified, pipe wall design and use of elliptical reinforced concrete arch culvert pipe shall meet the requirements of AASHTO M 206M (ASTM C 506).

Precast reinforced concrete and sections shall conform to the requirements of the cited specifications to the extent which they apply. Reinforced concrete D-load pipe shall meet the requirements of AASHTO M 242M (ASTM C 655).

706.3 Perforated Concrete Pipe

This pipe *intended to be used for underdrainage* shall conform to the requirements of AASHTO M 175M (ASTM C 444M) for the specified *types, internal diameters and slot length and spacing*.

706.4 Concrete, Clay Drain and Perforated Clay Drain Tile

The concrete drain tile with internal diameter from 100 mm to 900 mm that are intended to be used for surface and subsurface drainage shall conform to the requirements of AASHTO M 178M (ASTM C 412M) for the specified *internal diameter, wall thickness, length, shape, strength and absorption*.

Clay drain and perforated clay drain tile shall conform to the requirements of ASTM C 4 for the specified *sizes and strengths*.

706.5 Porous Concrete Pipe

This *non-reinforced concrete pipe for use in underdrains* shall conform to the requirements of AASHTO M 176M (ASTM C 654) for the specified *internal diameters, strength and porosity or rate of infiltration tests*.

706.6 Vitrified Clay Lined Reinforced Concrete Pipe

Designs for fully lined or half lined pipes of the specified strength classes shall be submitted by the manufacturer for approval by the Engineer. The applicable requirements of AASHTO *M 170M* shall govern. Liner or liner elements, shall be clay of first class quality, sound, thoroughly and perfectly burned without warps, cracks or other imperfections and fully and smoothly salt glazed.

706.7 Perforated Vitrified Clay Pipe

This pipe *intended to be used for underdrainage* shall conform to the requirements of *ASTM C 700* for pipe with full circular cross-section, for the specified diameters and strength class.

706.8 Vitrified Clay Pipe

This pipe *intended to be used for the conveyance of sewage and storm water* shall conform to the requirements of *ASTM C 700* for pipe with full circular cross-section, for the specified diameters and strength class.

Pipe and fittings for sewers of 150 mm to 600 mm diameter shall be extra strength vitrified clay pipe conforming to the applicable requirements.

706.9 Cradle Invert Clay Pipe

This pipe shall conform to the applicable requirements of *ASTM C 700 and ASTM C 1208M*.

706.10 Asbestos Cement Pipe

This pipe *intended to be used in the conveyance of drainage works* shall conform to the *applicable* requirements of *ASTM C 428 and ASTM C 508* for the specified diameters and strength classes.

706.11 Perforated Asbestos Cement Pipe

This pipe *intended to be used in the conveyance of drainage works* shall conform to the *applicable* requirements of *ASTM C 508 and ASTM C 428* for the specified diameters and strength classes.

706.12 Reinforced Concrete Arch Culvert, Storm Drain and Sewer Pipe

This pipe shall conform to the requirements of *AASHTO M 206M (ASTM C 506M)*.

706.13 Reinforced Concrete Elliptical Culvert, Storm Drain and Sewer Pipe

This pipe shall conform to the requirements of *AASHTO M 207M (ASTM C 507M)*.

706.14 Reinforced Concrete D-load Culvert, Storm Drain and Sewer Pipe

This pipe shall conform to the requirements of *AASHTO M 242M (ASTM C 655M)*.

706.15 Plastic and Polyethylene Corrugated Drainage Pipe or Tubing

This pipe shall conform to the requirements of AASHTO M 252.

706.16 High Density Polyethylene Pipe

This pipe shall conform to the requirements of ASTM F 714 and shall be based upon the DIPS, outside diameter sizing system. The dimensions ratio (DR) of pipe to be installed shall also be either shown on the drawings or as directed by the Engineer.

706.17 Precast Reinforced Concrete Box Sections for Culverts, Storm Drains and Sewers

These sections shall conform to the requirements of *AASHTO M 259M and ASTM C 789M*.

706.18 Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings

This pipe shall conform to the requirements of ASTM D 2751.

706.19 Acrylonitrile-Butadiene-Styrene (ABS) Composite Sewer Pipe

This pipe shall conform to the requirements of AASHTO M 264 (ASTM D 2680).

706.20 Polyvinyl Chloride (PVC) Sewer Pipe and Drain Pipe

This pipe shall conform to the applicable requirements of AASHTO M 278 or AASHTO M 304 (ASTM D 2729) and ISO 4435.

706.20.1 General Requirements

A. Pipes

1. Pipe sizes shall be as shown on the drawings, unless otherwise approved by the Engineer.

a. The designated sizes on the drawings refer to outside diameters.

a.1. For sanitary uPVC pipes and fittings sizes 57mm up to 160 mm shall conform to AASHTO M 278 or AASHTO M 304 or ASTM D 2729.

a.2 For uPVC sizes 160 mm and up shall conform to ISO 4435.

B. Joints

1. All joints shall be elastomeric ring and should be machine installed fixed seal made of EPDM rubber bonded with stiff PP ring unless approved otherwise by the Engineer.

2. Double sockets or slip on sockets may be used adjacent structures or special fittings.

3. Solvent welded joints may be used for buried fittings if assembled in the manufacturer's workshop under the Engineer's supervision.

a. Solvent shall be as per the pipe manufacturer's recommendation.

4. Solvent welded fittings may be used for exposed piping, if approved by the Engineer.

References:

1. DPWH Standard Specifications for Highways, Bridges and Airport, Volume II, 2012 Edition
2. American Society for Testing and Materials (ASTM)
3. American Association of State Highway and Transportation Officials (AASHTO)
4. International Standard Second Edition
5. Internet
 - www.gpsd.dst.il.us/SEC27.pdf