



Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
Bonifacio Drive, Port Area Manila



097.13 DPWH

02.06.2025

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DEPARTMENT ORDER)

NO. 28)

Series of 2025)

a 2/6/2025

**SUBJECT: DPWH Standard Specification for
Item 502 – Manholes, Inlets and
Catch Basins**

To support the Department's commitment to updating its standard specifications and adopting effective/appropriate solutions for specific project needs, the attached revised Standard Specification for **Item 502 – Manholes, Inlets, and Catch Basins** is hereby prescribed for adoption in DPWH infrastructure projects.

This revised standard specification shall form part of the DPWH Standard Specifications for Highways, Bridges and Airports, Volume II. Likewise, the additional pay item subscripts are now included in the Standard Pay Item List and Project and Contract Management Application (PCMA).

This Order shall take effect immediately.


MANUEL M. BONOAN
Secretary

Department of Public Works and Highways
Office of the Secretary



WIN5U02105

Encl.: DPWH Standard Specification for Item 502 – Manholes, Inlets and Catch Basins

14.1 JDV/AGC

Website: <https://www.dpwh.gov.ph>

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**DPWH Standard Specification for
Item 502 – Manholes, Inlets and Catch Basins**

502.1 Description

This item shall consist of the construction, reconstruction or adjustment of manholes, inlets and catch basins in accordance with this Specification and in reasonably close conformity with the lines and grades shown on the Plans or as established by the Engineer.

502.2 Material Requirements

Concrete for these structures shall meet the requirements of Item 405, Structural Concrete.

Other materials shall meet the following specifications:

Corrugated Metal Units shall conform to Plan dimensions and the metal to AASHTO M 36, Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains. Bituminous coating, when specified, shall conform to ASTM D 1187, Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.

Sewer and manhole brick (Made from clay or shale) shall conform to the requirements of AASHTO M 91, Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale).

Building brick (Solid masonry units made from clay or shale) shall conform to the requirements of AASHTO M 114, Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale).

Unless otherwise indicated on the Plans, joints mortar shall be composed of one part Portland Cement and two parts fine aggregate by volume to which hydrated lime has been added in an amount equal to 10 percent of the cement by weight. All materials for mortar shall meet the requirements of Item 405, Structural Concrete.

Metal units for Frames, Gratings, Covers and Ladder Rungs shall conform to the Plan dimensions and to the following specification requirements for the designated materials.

Metal gratings and covers which are to rest on frames shall bear on them evenly. They shall be assembled before shipment and so marked that the same pieces may be reassembled readily in the same position when installed. Inaccuracy of bearings shall be corrected by machining, if necessary. A frame and a grating or cover to be used with it shall constitute one pair.

All castings shall be uniformly coated with asphalt-based emulsion meeting the requirements of ASTM D 1187.

Samples of the material in casting shall be taken during the casting of the units and shall be separate casting poured from the same material as the casting they represent.

Gray iron casting shall conform to the requirements of AASHTO M 105, Standard Specification for Gray Iron Castings.

Mild to medium-strength carbon steel castings or general application shall conform to the requirements of AASHTO M 103.

Structural Steel shall conform to shall conform to the requirements of AASHTO M 183, Standard Specification for Structural Steel.

Galvanizing, where specified for these units, shall conform to the requirements of AASHTO M 111, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

Reinforcing Steel shall conform to the requirements of AASHTO M 31, Standard Specification for Deformed and Plain Carbon and Low-Alloy Steel Bars for Concrete Reinforcement.

Pre-cast Concrete Units shall be cast in substantial permanent steel forms. Structural concrete used shall attain a minimum 28-day compressive strength of 20.682 MPa. The pre-cast units shall be cured in accordance with AASHTO M 171, Standard Specification for Sheet Materials for Curing Concrete. Water absorption of individual cores taken from such units shall not exceed 7 percent. Additional reinforcement shall be provided as necessary to provide for handling of the pre-cast units.

A sufficient number of cylinders shall be cast from the concrete of each unit for compression tests at 7, 14 and 28 days, and to allow for at least 3 cylinders for each test. If the strength requirement is met at 7 or 14 days, the units shall be certified for use 14 days from the date of casting. If the strength is not met at 28 days, all units made from that batch or load will be rejected.

Cracks in units, honeycombed or patched areas in excess of 2,000 square millimeters, excessive water absorption and failure to meet strength requirements shall be the causes for rejection. Pre-cast reinforced concrete manhole risers and tops shall conform to the requirements of AASHTO M 199, Standard Specification for Precast Reinforced Concrete Manhole Sections.

The plants will be inspected periodically for compliance with specified manufacturing methods, and material samples will be obtained for laboratory testing for compliance with material quality requirements. This may be the basis for acceptance of manufacturing lots as to quality.

All materials shall be subjected to inspection for acceptance as to condition at the latest practicable time the Engineer has the opportunity to check for compliance prior to or during incorporation of materials into the work.

502.3 Construction Requirements

Concrete construction shall conform to the requirements for Item 405, Structural Concrete.

Metal frames shall be set in full mortar bed. Pipe sections shall be flushed on the inside of the structure wall and projected outside sufficiently for proper connection with next pipe section. Masonry shall fit neatly and tightly around the pipe.

When grade adjustment of existing structures is specified, the frames, covers and gratings shall be removed and the walls reconstructed as required. The cleaned frames shall be reset at the required elevation. Upon completion, each structure shall be cleaned of any

accumulation of silt, debris, or foreign matter of any kind and shall be kept clear of such accumulation until final acceptance of the work.

Excavation and backfill shall be done in accordance with Item 103, Structure Excavation.

502.4 Method of Measurement

Standard manholes, inlets and catch basins, both new and reconstructed as applicable, will be measured by the unit. Any additional concrete, reinforcing steel, or masonry required for authorized increases in heights of structures paid of under this Item and in excess of the standard height shown on the Plans will be measured and paid for under Item 405, Structural Concrete and Item 404, Reinforcing Steel, as applicable. Structures noted on the Plans as "junction boxes" will be measured for payment as manholes.

The number of concrete covers, pairs of metal frames and gratings, and pairs of metal frames and covers shall be measured as acceptably completed.

The number of existing manholes, inlets and catch basins adjusted as directed shall be measured as acceptably completed.

502.5 Basis of Payment

The accepted quantities, determined as provided in Section 502.4, Method of Measurement of the Pay Items in the Bill of Quantities will be paid for at the contract unit price, which shall constitute full compensation for furnishing and placing all materials and for all labor, equipment, tools and incidentals necessary to complete the Item.

Excavation and backfill shall be measured and paid for as provided in Item 103, Structure Excavation.

Payment shall be made under:

Pay Item Number	Description	Unit of Measurement
502 (1)a1	Manholes, 610 mm dia., Concrete	Each
502 (1)a2	Manholes, 760 mm dia., Concrete	Each
502 (1)a3	Manholes, 910 mm dia., Concrete	Each
502 (1)a4	Manholes, 1070 mm dia., Concrete	Each
502 (1)a5	Manholes, 1220 mm dia., Concrete	Each
502 (1)a6	Manholes, 1520 mm dia., Concrete	Each
502 (1)a7	Manholes, 1830 mm dia., Concrete	Each
502 (1)b1	Manholes, 610 mm dia., CHB	Each

Pay Item Number	Description	Unit of Measurement
502 (1)b2	Manholes, 760 mm dia., CHB	Each
502 (1)b3	Manholes, 910 mm dia., CHB	Each
502 (1)b4	Manholes, 1070 mm dia., CHB	Each
502 (1)b5	Manholes, 1220 mm dia., CHB	Each
502 (1)b6	Manholes, 1520 mm dia., CHB	Each
502 (1)b7	Manholes, 1830 mm dia., CHB	Each
502 (2)a1	Inlets, type, 610 mm dia.	Each
502 (2)a2	Inlets, type, 760 mm dia.	Each
502 (2)a3	Inlets, type, 910 mm dia.	Each
502 (2)a4	Inlets, type, 1070 mm dia.	Each
502 (2)a5	Inlets, type, 1220 mm dia.	Each
502 (2)a6	Inlets, type, 1520 mm dia.	Each
502 (2)a7	Inlets, type, 1830 mm dia.	Each
502 (3)a1	Catch basins, 610 mm dia.	Each
502 (3)a2	Catch basins, 760 mm dia.	Each
502 (3)a3	Catch basins, 910 mm dia.	Each
502 (3)a4	Catch basins, 1070 mm dia.	Each
502 (3)a5	Catch basins, 1220 mm dia.	Each
502 (3)a6	Catch basins, 1520 mm dia.	Each
502 (3)a7	Catch basins, 1830 mm dia.	Each
502 (4)a1	Concrete covers, 610 mm dia.	Each
502 (4)a2	Concrete covers, 760 mm dia.	Each
502 (4)a3	Concrete covers, 910 mm dia.	Each
502 (4)a4	Concrete covers, 1070 mm dia.	Each
502 (4)a5	Concrete covers, 1220 mm dia.	Each
502 (4)a6	Concrete covers, 1520 mm dia.	Each
502 (4)a7	Concrete covers, 1830 mm dia.	Each
502 (5)	Metal frames and gratings	Pair
502 (6)	Metal frames and covers	Pair

Pay Item Number	Description	Unit of Measurement
502 (7)	Adjusting manholes	Each
502 (8)	Adjusting catch basin	Each
502 (9)	Berm Ditch Gutter	Linear Meter
502 (10)	U-Type vertical Slope Ditch, Precast	Linear Meter
502 (11)	Splash Pad, Precast	Each
502 (12)a1	Inlets Type with Cover, Concrete, Class A, 1510 mm x 1210 mm x 2120 mm	Each
502 (12)a2	Inlets Type with Cover, Concrete, Class A, 1820 mm x 1210 mm x 2430 mm	Each
502 (13)a1	Catch Basins with Concrete Cover, 700 mm x 700 mm x 700 mm	Each
502 (13)a2	Catch Basins with Concrete Cover, 900 mm x 900 mm x 900 mm	Each
502 (13)a3	Catch Basins with Concrete Cover, 1500 mm x 1500 mm x 1500 mm	Each
502 (13)a4	Catch Basins with Concrete Cover, 1820 mm x 1820 mm x 1820 mm	Each