

ASME A112.6.3-2019
(Revision of ASME A112.6.3-2016)

Floor and Trench Drains

AN AMERICAN NATIONAL STANDARD



**The American Society of
Mechanical Engineers**

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(Revision of ASME A112.6.3-2016)

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**The American Society of
Mechanical Engineers**

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FOREWORD

The American National Standards Committee A112 was established on July 27, 1955 for the purpose of standardizing plumbing materials and equipment. Its first organizational meeting was held on July 22, 1958, and Panel No. 21 was created on May 1, 1964 to establish standards for roof drains, floor drains, backwater valves, and other drainage specialties. Its scope was the recommendation of suitable existing standards in cooperation with interested sponsors or the development of adequate new standards as needed for roof drains, floor drains, and other drains as used or installed in plumbing systems. The Committee has since been reorganized as an ASME Standards Committee.

The ASME A112 Committee was restructured in 1998 in accordance with the ASME Redesign Process, and Panel 21 Working Group 1 became Project Team 6.3. The revision now includes criteria from the International Association of Plumbing and Mechanical Officials (IAPMO), PS 4 and PS 16.

This revision is the result of a request for interpretation. The requirements for determining the area of the grate openings are revised in ASME A112.6.3-2018. In addition, requirements for perimeter drains and aluminum sand castings have been added, and the requirements for coatings have been harmonized with CSA B79. Finally, body thicknesses have been specified for each drain material of manufacture.

This Standard is available for public review on a continuing basis. This provides an opportunity for additional public review input from industry, academia, regulatory agencies, and the public-at-large.

ASME A112.6.3-2018 was approved as an American National Standard on January 31, 2019.

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Standardization of Plumbing Materials and Equipment

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Proposing Revisions. Revisions are made periodically to the Standard to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Standard. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

Proposing a Case. Cases may be issued to provide alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee web page.

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Interpretations. Upon request, the A112 Standards Committee will render an interpretation of any requirement of the Standard. Interpretations can only be rendered in response to a written request sent to the Secretary of the A112 Standards Committee.

Requests for interpretation should preferably be submitted through the online Interpretation Submittal Form. The form is accessible at <http://go.asme.org/InterpretationRequest>. Upon submittal of the form, the Inquirer will receive an automatic e-mail confirming receipt.

If the Inquirer is unable to use the online form, he/she may mail the request to the Secretary of the A112 Standards Committee at the above address. The request for an interpretation should be clear and unambiguous. It is further recommended that the Inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry in one or two words.
Edition:	Cite the applicable edition of the Standard for which the interpretation is being requested.
Question:	Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. Please provide a condensed and precise question, composed in such a way that a "yes" or "no" reply is acceptable.
Proposed Reply(ies):	Provide a proposed reply(ies) in the form of "Yes" or "No," with explanation as needed. If entering replies to more than one question, please number the questions and replies.
Background Information:	Provide the Committee with any background information that will assist the Committee in understanding the inquiry. The Inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in the format described above may be rewritten in the appropriate format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

Moreover, ASME does not act as a consultant for specific engineering problems or for the general application or understanding of the Standard requirements. If, based on the inquiry information submitted, it is the opinion of the Committee that the Inquirer should seek assistance, the inquiry will be returned with the recommendation that such assistance be obtained.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME Committee or Subcommittee. ASME does not “approve,” “certify,” “rate,” or “endorse” any item, construction, proprietary device, or activity.

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FLOOR AND TRENCH DRAINS

1 GENERAL

1.1 Scope

This Standard covers floor, area, adjustable floor, and trench drains that are used inside of, or outside and immediately adjacent to, building structures. This Standard specifies design requirements, definitions, nomenclature, outlet types and connections, grate-opening areas, top-loading classifications, materials, and finishes.

1.2 Stainless Steel Fabricated Drains

Seam-welded, socket-type, stainless steel fabricated drains are covered in ASME A112.3.1. All other stainless steel fabricated drains are covered by this Standard.

1.3 Alternatives

The requirements of this Standard are not intended to prevent the use of alternative designs, materials, or methods of construction, provided such alternatives meet the intent and requirements of this Standard.

1.4 Units of Measure

The values stated in either SI (metric) or U.S. Customary units of measure are equivalent in application; however, each system is to be used independently of the other. In this Standard, U.S. Customary units are shown in parentheses. Combining values from the two systems can result in nonconformance with the Standard.

1.5 Illustrations

The illustrations included in this Standard are intended only to describe and portray typical drains and are not intended to restrict design or to specify requirements.

1.6 Reference Standards

This Standard refers to the following publications, and where such reference is made, it shall be to the latest edition of the publication, including all amendments published thereto:

- ASME A112.3.1, Stainless Steel Drainage Systems for Sanitary DWV, Storm, and Vacuum Applications, Above- and Below-Ground
- ASME A112.14.1, Backwater Valves
- ASME A112.18.1/CSA B125.1, Plumbing Supply Fittings
- ASME B16.25, Buttwelding Ends
- Publisher: The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016-5990 (www.asme.org)
- ASTM A48, Standard Specification for Gray Iron Castings
- ASTM A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
- ASTM A74, Standard Specification for Cast Iron Soil Pipe and Fittings
- ASTM A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- ASTM A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- ASTM A307, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
- ASTM A312/A312M, Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipe
- ASTM A536, Standard Specification for Ductile Iron Castings
- ASTM A563, Standard Specification for Carbon and Alloy Steel Nuts
- ASTM A888, Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications
- ASTM B26, Standard Specification for Aluminum-Alloy Sand Castings
- ASTM B85, Standard Specification for Aluminum-Alloy Die Castings

ASTM B117, Standard Practice for Operating Salt Spray (Fog) Apparatus
 ASTM B209, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
 ASTM B221, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wires, Profiles, and Tubes
 ASTM B584, Standard Specification for Copper Alloy Sand Castings for General Applications
 ASTM B633, Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel
 ASTM B766, Standard Specification for Electrodeposited Coatings of Cadmium
 ASTM C564, Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings
 ASTM C1440, Standard Specification for Thermoplastic Elastomeric (TPE) Gasket Materials for Drain, Waste, and Vent (DWV), Sewer, Sanitary and Storm Plumbing Systems
 ASTM D1784, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
 ASTM D2661, Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings
 ASTM D2665, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings
 ASTM D3350, Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
 ASTM D3965, Standard Classification System and Basis for Specifications for Rigid Acrylonitrile-Butadiene-Styrene (ABS) Materials for Pipe and Fittings
 ASTM D4101, Standard Classification System and Basis for Specification for Polypropylene Injection and Extrusion Materials
 ASTM D4329, Standard Practice for Fluorescent Ultraviolet (UV) Lamp Apparatus Exposure of Plastics
 ASTM G152, Standard Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
 ASTM G153, Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
 Publisher: American Society for Testing and Materials (ASTM International), 100 Barr Harbor Drive, P. O. Box C700, West Conshohocken, PA 19428-2959 (www.astm.org)

CISPI 301, Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications
 Publisher: Cast Iron Soil Pipe Institute (CISPI), 2401 Fieldcrest Drive, Mundelein, IL 60060 (www.cispi.org)

CSA B602, Mechanical couplings for drain, waste, and vent pipe and sewer pipe
 Publisher: Canadian Standards Association (CSA Group), 178 Rexdale Boulevard, Toronto, ON, M9W 1R3, Canada (www.csagroup.org)

1.7 Definitions

blowhole: a hole in casting caused by air or gas in the metal or mold.

cold shut: casting defect formed when two streams of metal become so cold that they do not fuse upon meeting, creating an incomplete casting.

drain, adjustable floor: a floor drain designed for use in finished floor areas that has an adjustable strainer and grate and a seepage flange on the body.

drain, area: a receptor intended to receive runoff water or other liquid from the areas immediately adjacent to the building structure and convey it to the drainage system (see [Figure 1.7-1](#)).

drain, floor: a receptor intended to receive runoff water or other liquid from building floors and convey it to the drainage system (see [Figures 1.7-2](#) and [1.7-3](#)).

drain, trench: a long, narrow receptor intended to receive and convey runoff water or other liquid to the drainage system (see [Figure 1.7-4](#)).

fin: projection on castings due to imperfect joints.

heel-resistant grate: a grate designed to resist entry of high-heeled shoes.

perimeter grate: a grate that has openings along its outer edge, between the grate and the drain body (see [Figure 1.7-5](#)).

weep hole: a perforation (opening) above the seepage (flashing) flange intended to receive leakage from around the drain and direct it into the sump.

Figure 1.7-1 Area Drain Nomenclature

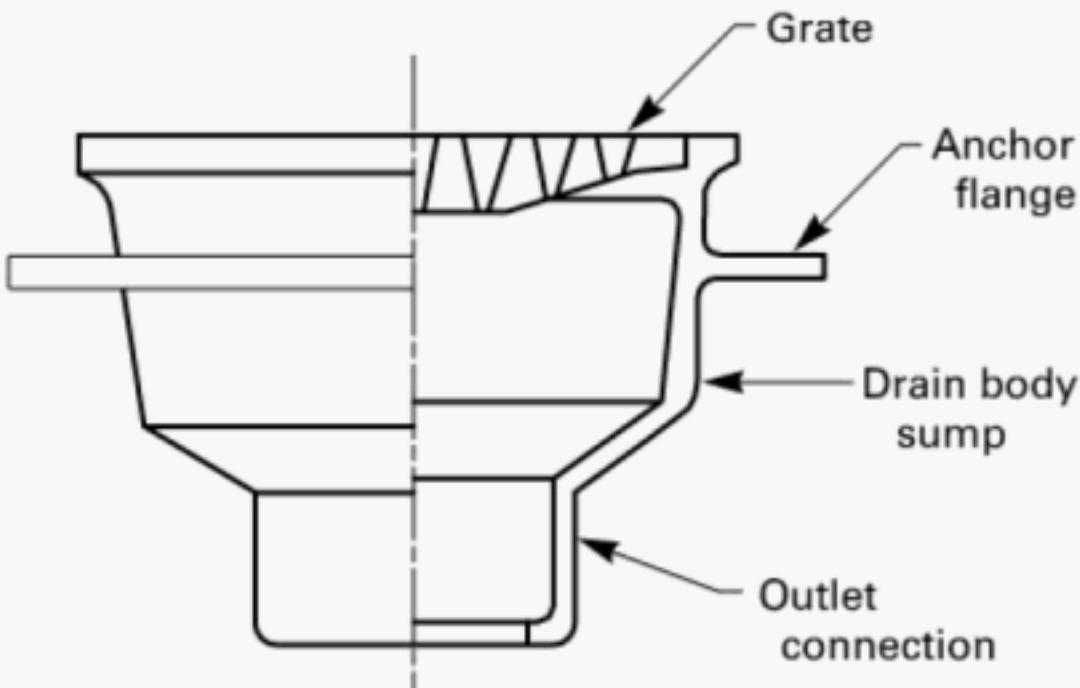


Figure 1.7-2 Floor Drain Nomenclature

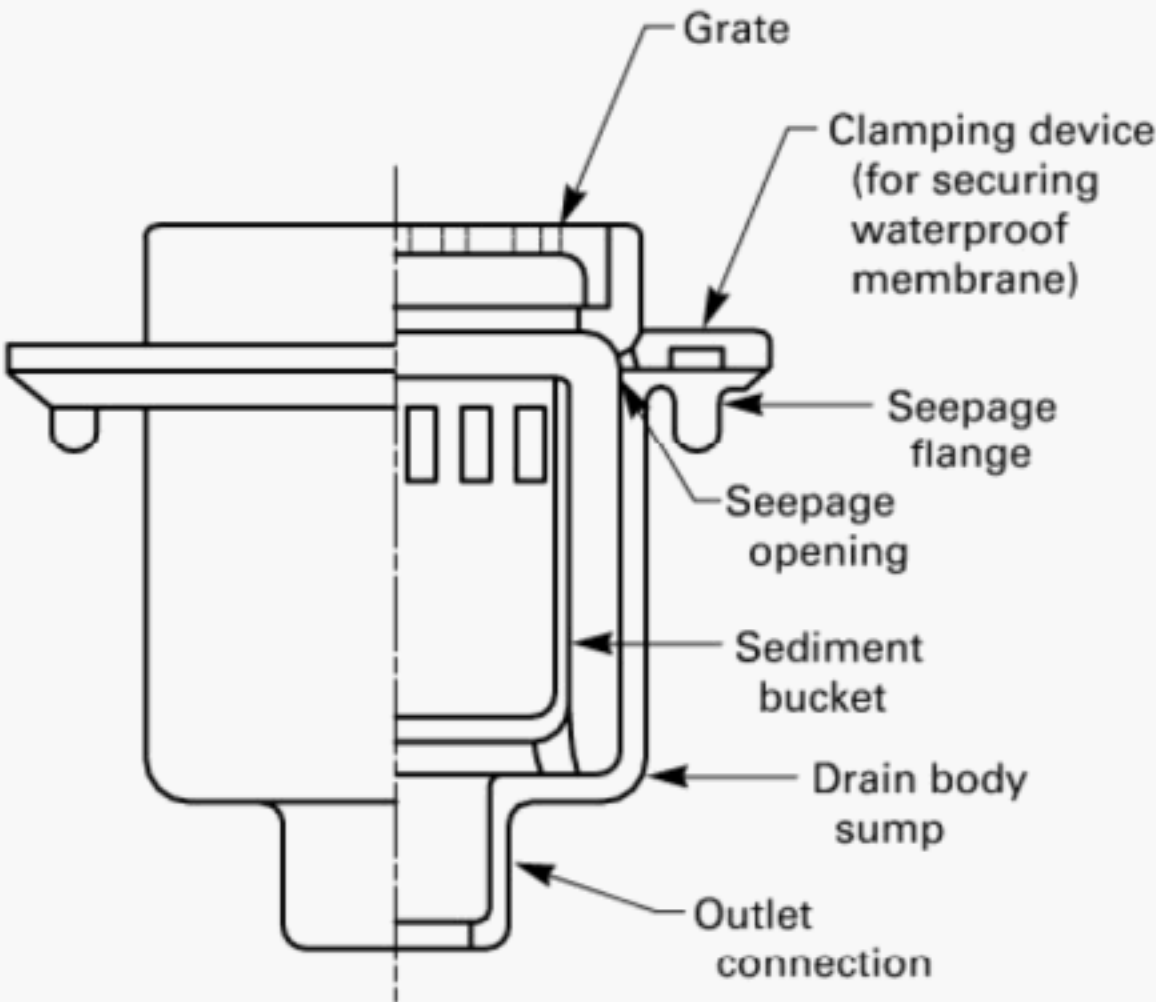


Figure 1.7-3 Adjustable Top Floor Drain Nomenclature

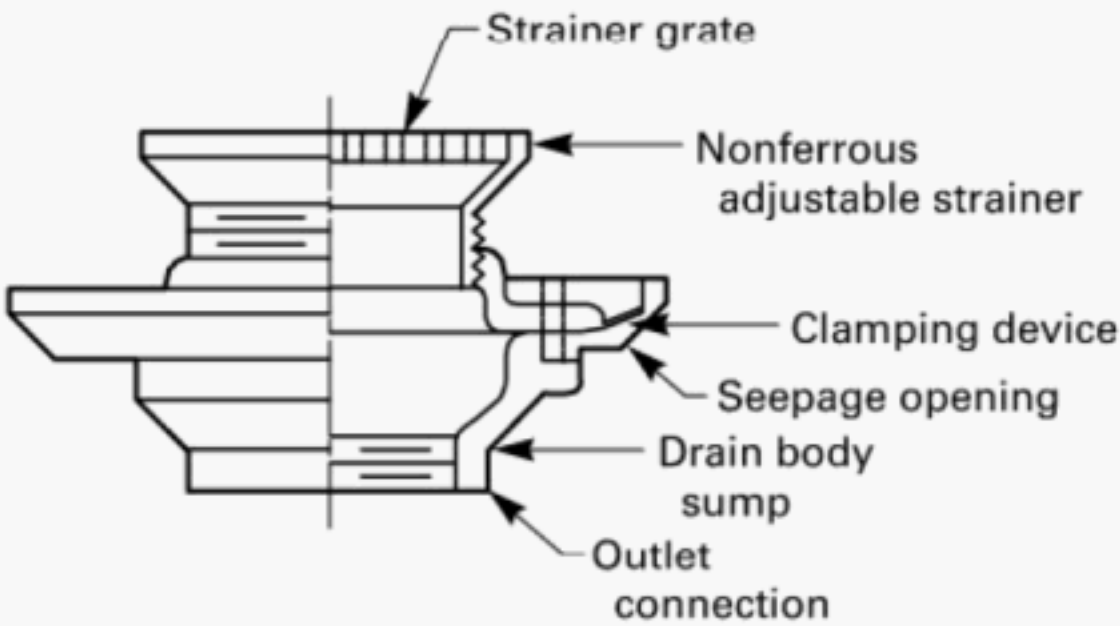
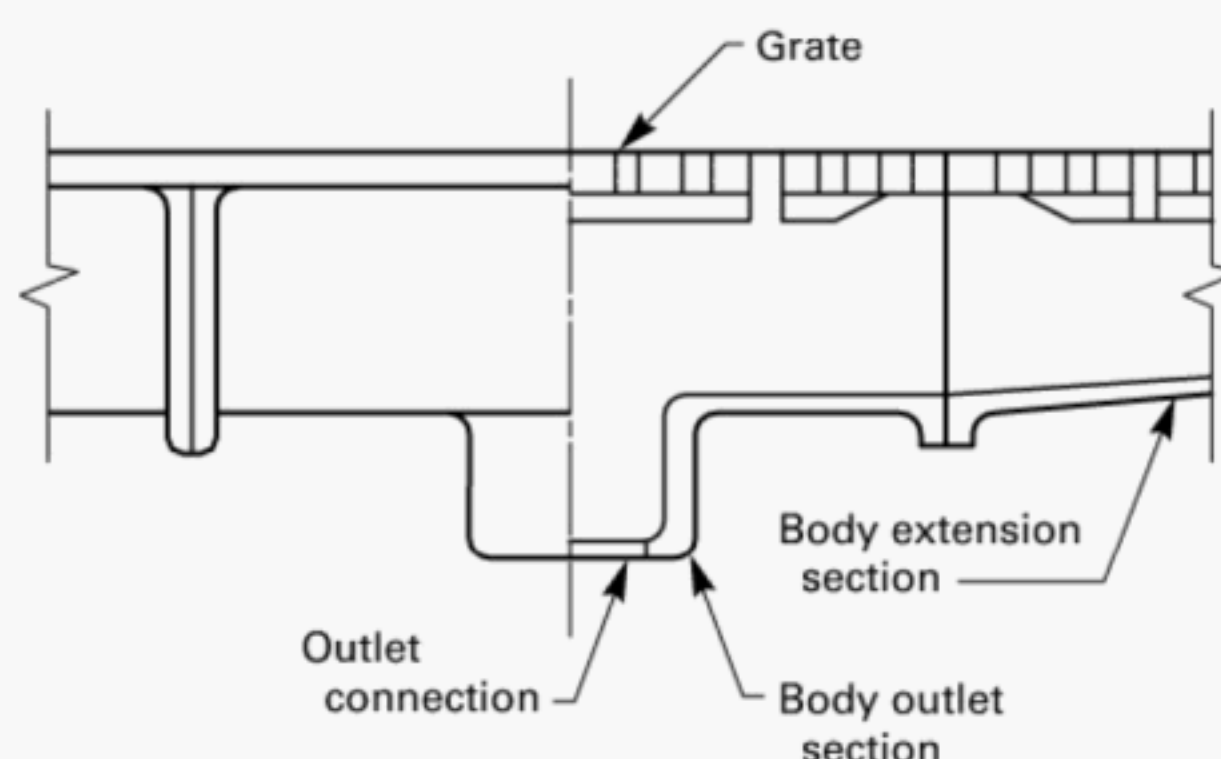


Figure 1.7-4 Trench Drain Nomenclature



2 GENERAL REQUIREMENTS

2.1 Materials

2.1.1 Castings. Castings shall be sound and free of blowholes, cold shuts, fins, and other imperfections; they shall be of uniform thickness and true to pattern.

2.1.2 Aluminum. Aluminum sand castings shall comply with ASTM B26. Aluminum die castings shall comply with ASTM B85. Aluminum sheet and plate shall comply with ASTM B209. Aluminum extruded bars, rods, wire, profiles, and tubes shall comply with ASTM B221.

2.1.3 Bronze. Bronze shall comply with the requirements for copper alloy UNS No. C83600, C83800, or C84400 specified in ASTM B584.

2.1.4 Nickel-Bronze. Nickel-bronze shall comply with the requirements for copper alloy UNS No. C97300, C97600, or C99700 specified in ASTM B584.

2.1.5 Cast Iron. Cast iron shall comply with Class 25 specified in ASTM A48.

2.1.6 Ductile Iron. Ductile iron shall comply with or exceed the requirements of Grade 60-40-18, 60-42-10, 60-45-12, or 80-55-06 specified in ASTM A536.

2.1.7 Stainless Steel. Stainless steel alloys shall be Type 304, 316, or 316L.

2.1.8 Acrylonitrile–Butadiene–Styrene. Acrylonitrile–butadiene–styrene (ABS) shall comply with or exceed the properties of cell classification 32222 specified in ASTM D3965.

2.1.9 Polyethylene. Polyethylene (PE) shall comply with ASTM D3350.

2.1.10 Polypropylene. Polypropylene (PP) shall comply with ASTM D4101.

2.1.11 Polyvinylchloride. Polyvinylchloride (PVC) shall comply with or exceed the properties of cell classification 12454 or 14333 specified in ASTM D1784.

2.1.12 Bolting Materials. Materials used for studs, nuts, cap screws, and other steel fasteners shall comply with or exceed the requirements of Grade A steel specified in ASTM A307 or ASTM A563.

2.2 Finishes

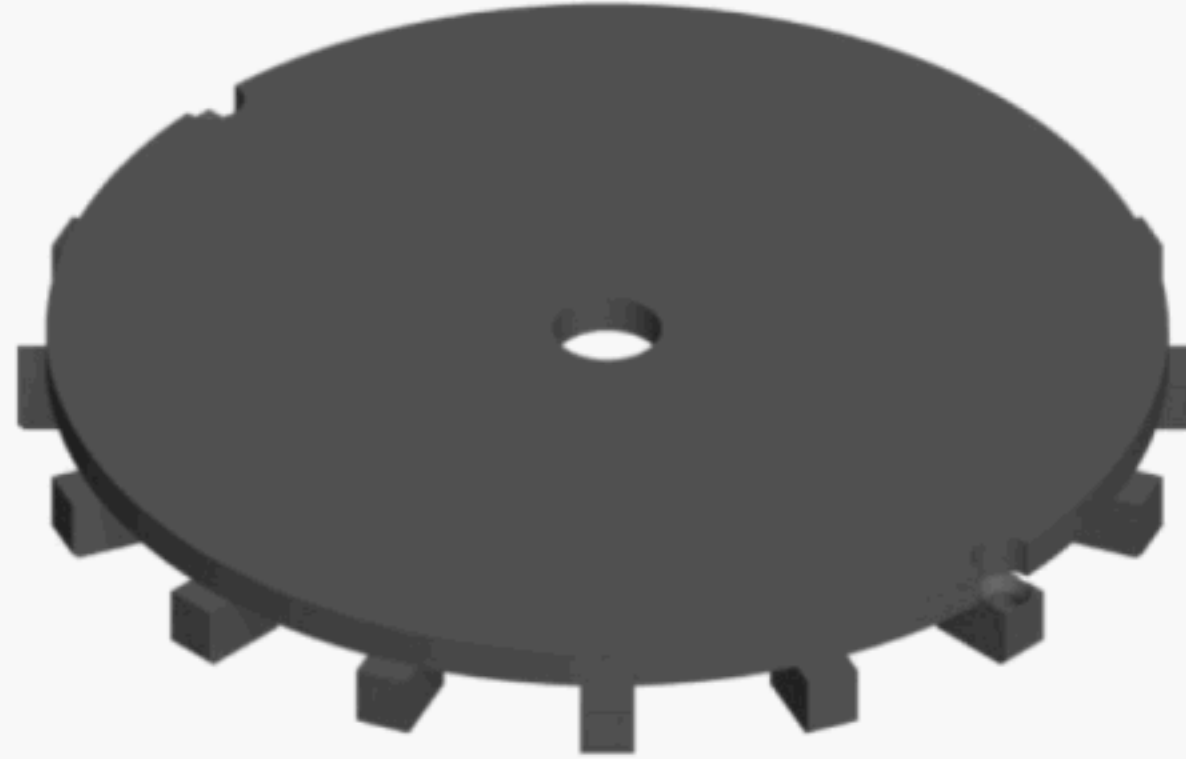
2.2.1 General. Coated or plated components shall be prepared in such a way that a suitable surface for proper bonding of the finish is provided.

2.2.2 Nonorganic Finishes

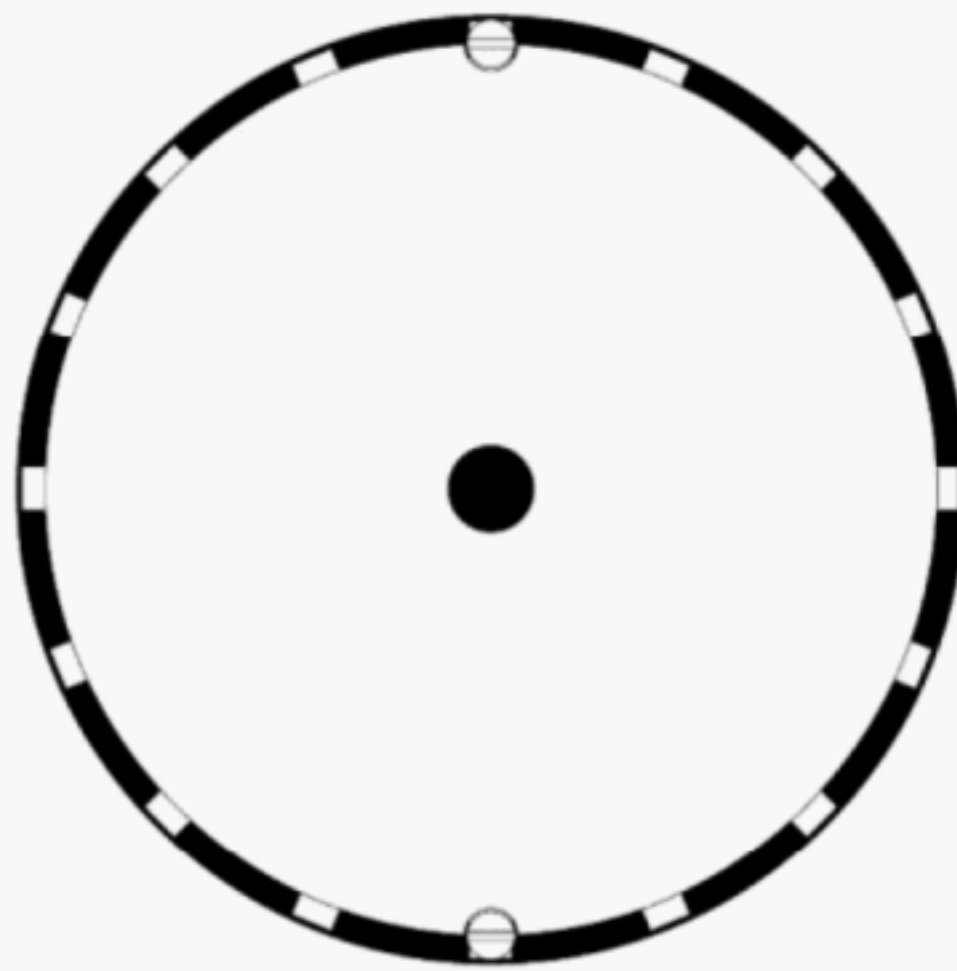
2.2.2.1 Preparation. Parts to be covered with nonorganic finishes shall be prepared as follows:

(a) Parts to be cadmium-plated shall be prepared and plated in accordance with ASTM B766.

Figure 1.7-5 Perimeter Grate



(a) Isometric View



(b) Top View of Perimeter Grate Installed on a Drain Body

Table 2.4-1 Minimum Thicknesses for Drain Body Sumps

Material	Minimum Thickness, mm (in.)
Aluminum (sand cast)	3.96 (0.156)
Aluminum (die cast)	3.96 (0.156)
Aluminum (extruded)	3.05 (0.120)
Bronze	3.96 (0.156)
Nickel-bronze	3.96 (0.156)
Cast iron	3.96 (0.156)
Ductile iron	3.96 (0.156)
Stainless steel (cast)	3.96 (0.156)
Stainless steel (plate, sheet or strip)	3.96 (0.156)
Horizontal surface [Note (1)]	0.635 (0.025)
Vertical surface [Note (2)]	0.559 (0.022)
Corners [Note (3)]	0.508 (0.020)
Acrylonitrile-butadiene-styrene	3.96 (0.156)
Polyethylene	3.96 (0.156)
Polypropylene	3.96 (0.156)
Polyvinylchloride	3.96 (0.156)

NOTES:

- (1) The thickness of horizontal surfaces shall be determined by taking the average of three measurements from the bottom of the drain.
(2) The thickness of vertical surfaces shall be determined by taking the average of measurements.
(3) The thickness at corners shall be determined by taking the average of six measurements.

(b) Parts to be chrome-plated shall be polished before plating and subsequently given a commercial-grade copper-nickel-chromium plating.

(c) Parts to be given a commercial-grade bronze chromate treatment shall first be given a commercial-grade cadmium-plate treatment.

(d) Parts to be zinc-plated shall be prepared in accordance with ASTM B633.

(e) Parts to be hot-dip galvanized shall be coated in accordance with ASTM A123/A123M or ASTM A153/A153M.

2.2.2.2 Corrosion Resistance. The specimens with nonorganic finishes selected for testing shall be as received from the manufacturer and shall not have been subjected to any other test. Coated areas visible after installation shall be free of defects and uncoated areas and shall not be stained.

2.2.2.3 Test Procedure. Coated parts shall be tested in accordance with ASTM B117 for 24 h.

2.2.2.4 Pass/Fail Criteria. Coatings shall not show more than one surface defect in any 650-mm² (1.0-in.²) area that is visible after installation, or up to three surface defects on a 25-mm (1.0-in.) length of parting line. Surface defects shall be not larger than 0.8 mm (0.03 in.) in any dimension.

If widely scattered surface defects are observed after testing (as occasionally occurs), such defects shall not significantly deface or adversely affect the function of the coated part.

Coated and uncoated parts may be polished or cleaned with a common household or metal cleaner before evaluation.

2.2.3 Organic Finishes. Organic finishes shall comply with the applicable requirements of ASME A112.18.1/CSA B125.1.

2.3 Weep Holes

Weep holes may be provided at the option of the manufacturer. When provided, weep holes shall have a minimum combined (i.e., total) area of 24 mm² (0.037 in.²) and the smallest dimension shall be at least 3.2 mm (0.125 in.).

2.4 Drain Body Thickness

The minimum thickness for drain body sumps, after fabrication, shall be as specified in [Table 2.4-1](#).

2.5 Mating Surfaces

Drain bodies and clamping ring shall have smooth mating surfaces to provide a watertight joint with membranes.

2.6 Caulking Areas

There shall be no obstructions in the drain caulking area.

2.7 Trap Primers

Floor drains should have a means of attaching a trap primer to it.

3 BOLTS AND FASTENERS

3.1 Drains

Connections between clamp collars and drain bodies shall have at least three bolts.

3.2 Inserts for Fasteners

Inserts for fasteners in plastic drains shall be molded into the plastic material.

4 OUTLETS — TYPES AND CONNECTIONS

4.1 Outlet Centerlines

Bottom outlets shall have vertical centerlines. Side outlets and side outlets with integral traps shall have horizontal centerlines (see [Figures 4.1-1, 4.1-2, and 4.1-3](#)).

4.2 Outlet Connections

4.2.1 Bottom Outlets. Connections for bottom outlets shall be threaded, inside caulk, spigot (no-hub), gasketed, butt-welded, or solvent-cement welded.

4.2.2 Side Outlets. Connections for side outlets and side outlets with integral traps shall be threaded, hub (outside caulk), spigot (no-hub), gasketed, butt-welded, or solvent-cement welded.

4.3 Outlet Connection Types

4.3.1 Threaded. Threaded outlet connections shall have American NPT threads and shall comply with the dimensions specified in [Table 4.3.1-1](#).

4.3.2 Inside Caulk. Outlet connections intended to be caulked on the inside shall comply with the dimensions specified in [Table 4.3.2-1](#).

4.3.3 Hub (Outside Caulk). Hub connections (i.e., intended to be caulked on the outside) shall comply with the dimensions specified in [Table 4.3.3-1](#).

4.3.4 Spigot (No-Hub)

4.3.4.1 Outlet Connections. Spigot (i.e., no-hub or hubless) outlet connections shall comply with the outside diameters specified in ASTM A53, ASTM A74, ASTM A312/A312M, ASTM A888, ASTM D2661, ASTM D2665, or CISPI 301.

4.3.4.2 Wall Thickness. The wall thickness of the spigot (i.e., no-hub or hubless) connection shall comply with the minimum wall thickness specified in ASTM A53, ASTM A74, ASTM A312/A312M, ASTM A888, ASTM D2661, ASTM D2665, or [para. 2.4](#).

4.3.5 Solvent Cement. Outlet connections intended to be solvent-cemented shall comply with

(a) ASTM D2661 for ABS drains

(b) ASTM D2665 for PVC drains

4.3.6 Gasketed Joints. O-rings, rubber bushings, and rubber couplings for gasketed joints shall comply with the applicable requirements of ASME A112.3.1, ASTM C564, ASTM C1440, or CSA B602.

4.3.7 Butt Weld. Ends intended for butt-welding shall comply with ASME B16.25.

Figure 4.1-1 Bottom Outlet

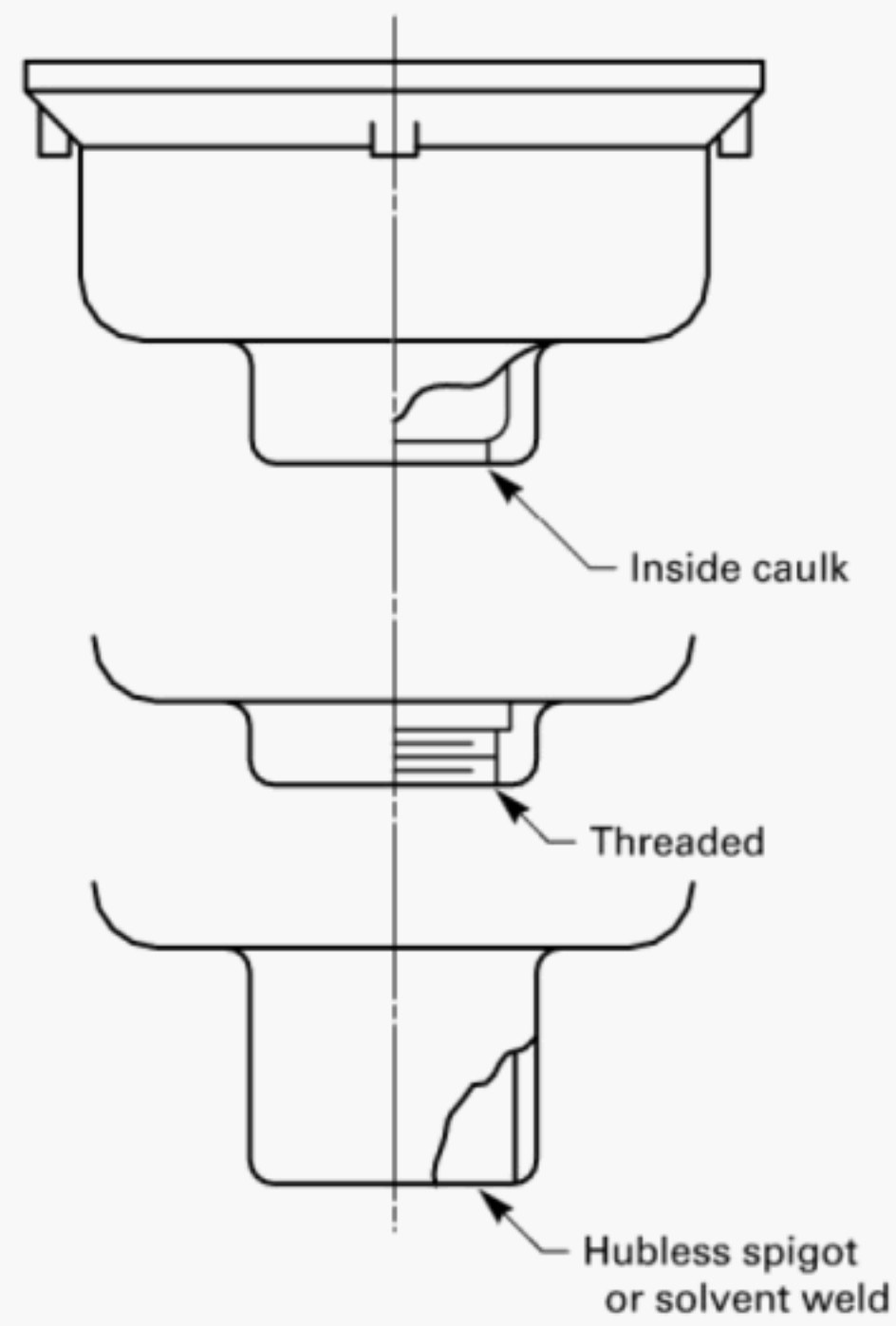


Figure 4.1-2 Side Outlet

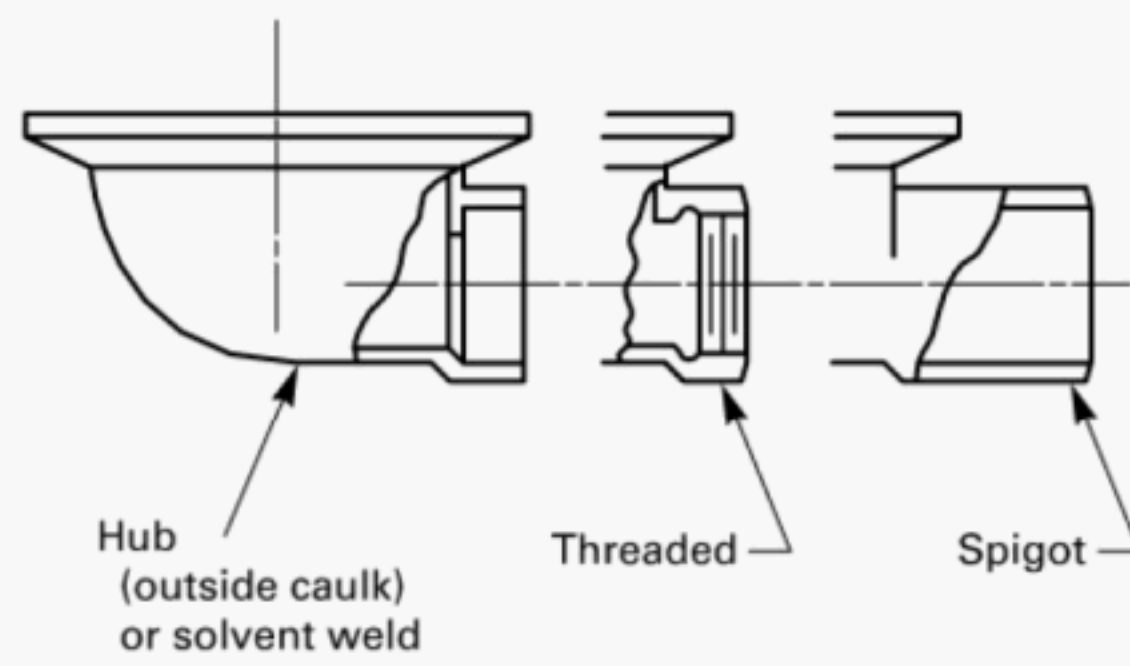


Figure 4.1-3 Side Outlet Integral Trap

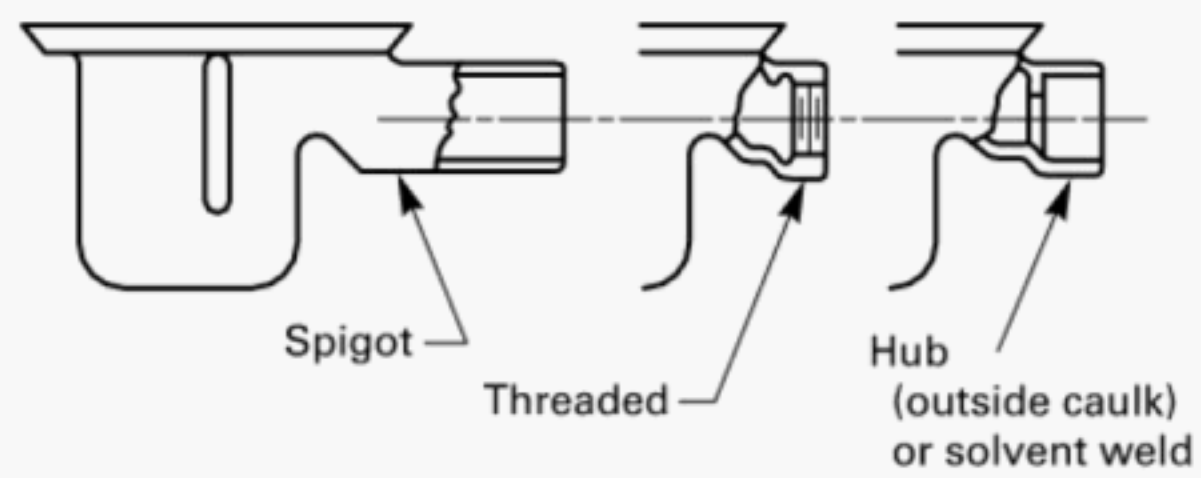
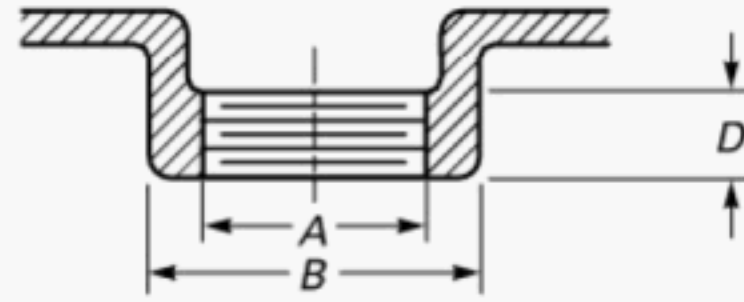
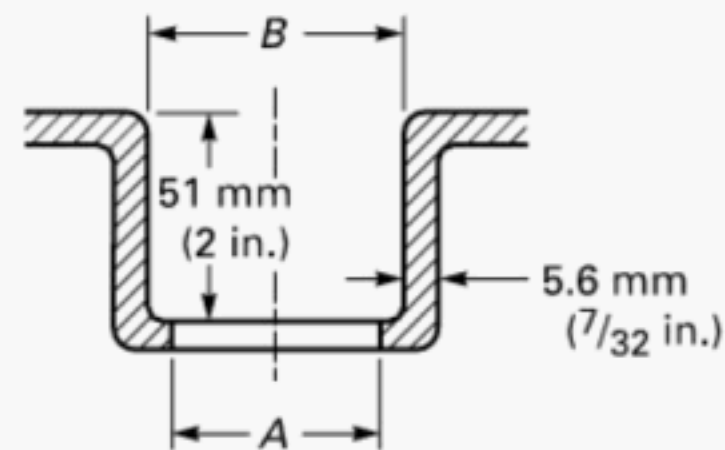
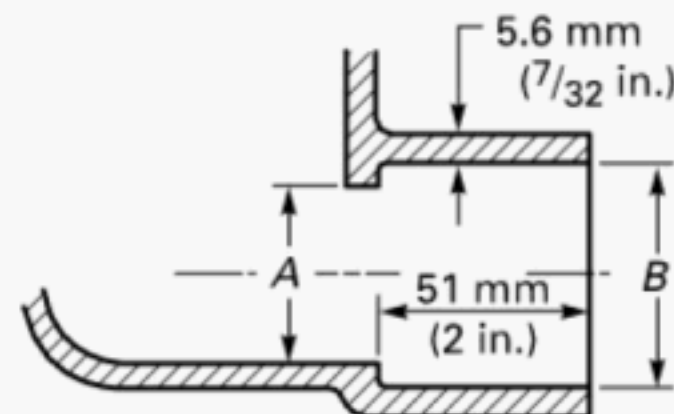


Table 4.3.1-1 Minimum Dimensions for Threaded Outlet Connections

Nominal Size	NPT, A, in.	B, mm (in.)	D, mm (in.)
1½	1½	59 (2 ⁵ / ₁₆)	11 (7 ₁₆)
2	2	73 (2 ⁷ / ₈)	11 (7 ₁₆)
2½	2½	86 (3 ³ / ₈)	16 (5 ₈)
3	3	105 (4 ¹ / ₈)	19 (3 ₄)
4	4	130 (5 ¹ / ₈)	21 (1 ³ / ₁₆)
5	5	159 (6 ¹ / ₄)	22 (7 ₈)
6	6	184 (7 ¹ / ₄)	25 (1)

Table 4.3.2-1 Minimum Dimensions for Inside Caulk (Gasket) Outlet Connections

Nominal Size	A, mm (in.)	B, mm (in.)
2	64 (2½)	76 (3)
3	92 (3 ⁵ / ₈)	105 (4 ¹ / ₈)
4	117 (4 ⁵ / ₈)	130 (5 ¹ / ₈)
5	143 (5 ⁵ / ₈)	156 (6 ¹ / ₈)
6	168 (6 ⁵ / ₈)	181 (7 ¹ / ₈)

Table 4.3.3-1 Minimum Dimensions for Hubbed (Push-On) Outlet Connections

Nominal Size	A, mm (in.)	B, mm (in.)
2	51 (2)	76 (3)
3	76 (3)	105 (4 ¹ / ₈)
4	102 (4)	130 (5 ¹ / ₈)
5	127 (5)	156 (6 ¹ / ₈)
6	152 (6)	181 (7 ¹ / ₈)

Table 5.1-1 Grate Openings Area Requirements for Drains

Outlet Connection Size	Transverse Area of Connecting Pipe, cm ² (in. ²)	Minimum Grate Openings Area, cm ² (in. ²)
Floor and Trench Drains (Subject to Rainfall)		
2	20.3 (3.14)	41.9 (6.5)
3	45.5 (7.06)	90.3 (14.0)
4	80.6 (12.50)	161.3 (25.0)
5	126.4 (19.60)	258.0 (40.0)
6	182.5 (28.30)	361.2 (56.0)
All Other Drains		
2	20.3 (3.14)	32.3 (5.0)
3	45.5 (7.06)	71.0 (11.0)
4	80.6 (12.50)	116.1 (18.0)
5	126.4 (19.60)	193.5 (30.0)
6	182.5 (28.30)	270.9 (42.0)

5 TOP DIMENSIONS — AREA OF GRATE OPENINGS

5.1 Requirements

5.1.1 General. The areas of the grate openings of floor and trench drains shall be as specified in [Table 5.1-1](#).

5.1.2 Area Calculations. The area of the grate openings shall be the sum of the minimum projected area of each grate opening when viewing the grate from above, perpendicular to its top surface.

For all grates other than perimeter grates, only the grate itself shall be considered in the measurement of the area of the grate openings; no other part of the drain shall be considered.

5.1.3 Perimeter Grates. The area of the grate openings for perimeter grates shall include the minimum projected area of the opening(s) between the grate and the drain body, as viewed from above, perpendicular to its top surface.

NOTE: The frame or drain body constitutes the outer edge of perimeter grate openings.

5.2 Sizing

Grate openings shall be sized to exclude debris and support the anticipated loads.

5.3 Heel-Resistant Grates

The smallest dimension of grate openings for heel-resistant grates shall not exceed 8 mm (0.313 in.).

6 LOADING TEST — CLASSIFICATION AND TEST PROCEDURE

6.1 Loading Classifications

Grates and covers shall be assigned one of the following loading classifications, determined in accordance with the test procedure specified in [para. 6.2](#):

- (a) Light duty: when the safe live load (see [para. 6.2.4](#)) is less than 900 kg (2,000 lb)
- (b) Medium duty: when the safe live load is equal to or greater than 900 kg (2,000 lb) but less than 2 250 kg (5,000 lb)
- (c) Heavy duty: when the safe live load is equal to or greater than 2 250 kg (5,000 lb) but less than 3 375 kg (7,500 lb)
- (d) Extra heavy duty: when the safe live load is equal to or greater than 3 375 kg (7,500 lb) but less than 4 500 kg (10,000 lb)
- (e) Special duty: when the safe live load is equal to or greater than 4 500 kg (10,000 lb)

6.2 Test Procedure for Grate Loading

6.2.1 Test Conditions. The load shall be applied gradually to the center of the test specimen using a platen 90 mm (3.5 in.) in diameter.

6.2.2 Point of Failure. The point of failure shall be the load at which
(a) the first fracture on any part of the test specimen appears, for test specimens made of brittle materials; or
(b) the permanent set (at the point of loading) is greater than 2% of the longest transverse dimension of the test specimen, for test specimens made of ductile materials.

6.2.3 Test Specimen Material Classification. Test specimens made of several materials shall be deemed made of brittle or ductile materials depending on the material of which its structural portion is made.

6.2.4 Safe Live Load. The safe live load shall be the load at the point of failure divided by 2.

7 WEATHERING TEST

7.1 Test Method

Plastic drains and related components intended for exposure to outside elements shall be tested for weathering in accordance with ASTM G152 or ASTM G153, or in accordance with Cycle B specified in ASTM D4329 (i.e., accelerated weathering). The test specimens shall be cut from the finished product or molded from the same material used to manufacture the finished product. The test duration shall be at least 2 000 h.

7.2 Pass/Fail Criteria

Upon completion of the test,

- (a)* Tensile strength shall be at least 90% of its original value.
- (b)* Hardness shall be at least 20% of its original value.

8 MARKINGS

Drains complying with this Standard shall be marked with the manufacturer's name or trademark. Markings shall be permanent, legible, and visible after installation.

NONMANDATORY APPENDIX A OPTIONAL FEATURES AND DRAIN VARIATIONS

A-1 GENERAL

The optional features listed in this [Appendix](#) identify the variations available for different applications (see [Figure A-1](#)).

A-2 ANCHOR FLANGE

An anchor flange is a component that extends from the side of the drain body to enable anchoring of the drain to a concrete slab.

A-3 AUXILIARY INLET

An auxiliary inlet is an opening on the side of the drain body sump that receives discharge from another fixture, appliance, or drain. Backwater valves are covered in ASME A112.14.1.

A-4 BACKWATER VALVE

A backwater valve is a component that prevents backflow of wastewater or storm water into the building.

A-5 CLAMPING DEVICE

A clamping device is a component intended to be installed in floors where a waterproof membrane or a metallic or composition flashing is required.

A-6 DOME GRATE

A dome grate is a convex grate that has available openings above the floor level to enable drainage if debris collects around the base of the grate.

A-7 EXTENSION

An extension is a component used to raise the grate to the floor level.

A-8 FLOOR CLEANOUT

A floor cleanout is a component that permits access to the drain line from finished floor level.

A-9 HINGED GRATE

A hinged grate is a component that enables access to the drain without completely removing the secured grate from the body.

A-10 SECONDARY STRAINER

A secondary strainer is an additional strainer installed in the base of the drain body sump that intercepts debris that might pass through the grate openings.

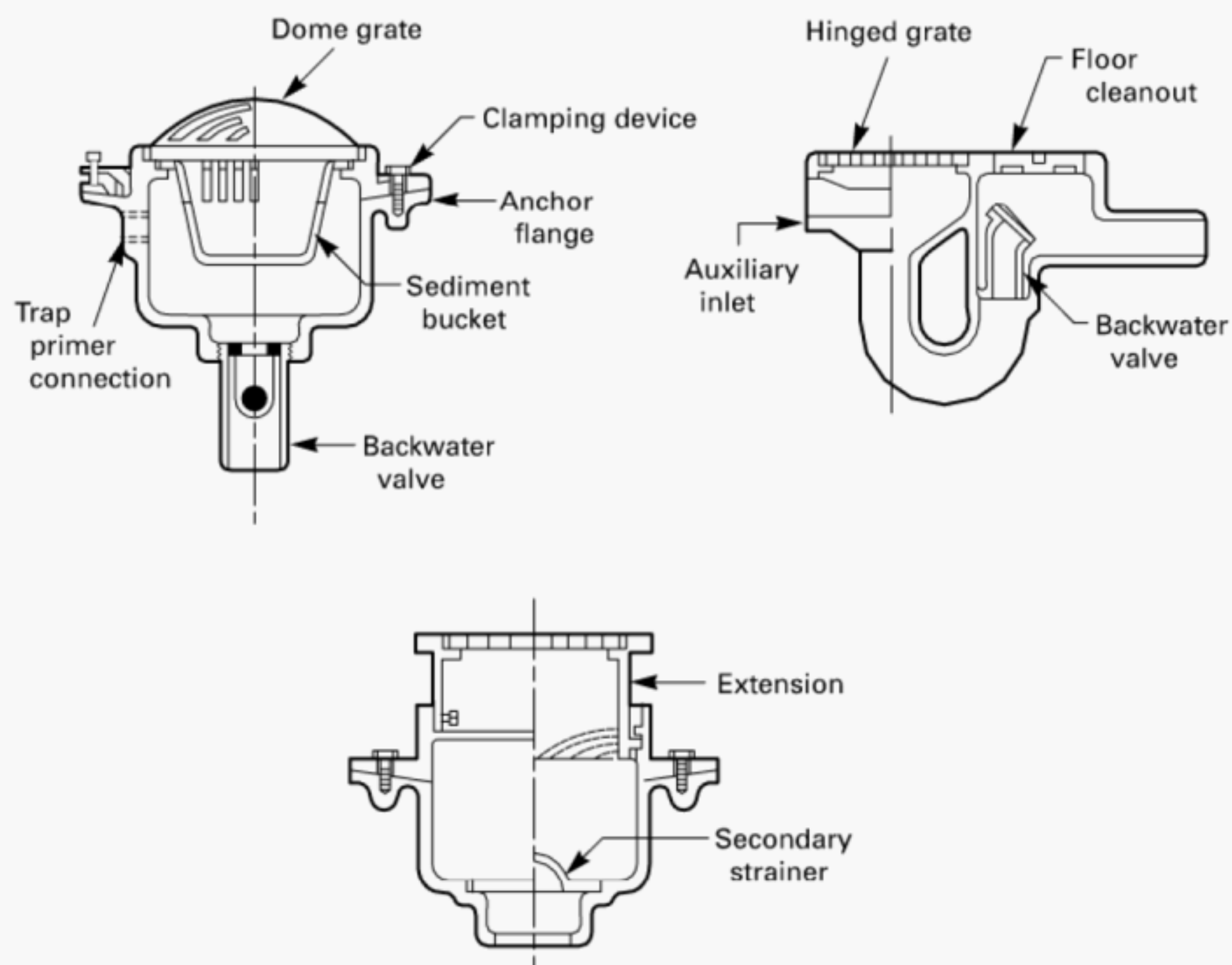
A-11 SEDIMENT BUCKET

A sediment bucket is a device that intercepts debris before it enters the drainage piping. Sediment buckets are typically installed in the drain body when drainage requirements dictate openings that allow entrance of debris.

A-12 TRAP PRIMER CONNECTION

A trap primer connection is a tapped boss on the drain body used to receive discharge from the trap primer valve.

Figure A-1 Optional Features Available for Use With Drains



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A112 ASME STANDARDS RELATED TO PLUMBING

A112.1.2-2012 (R2017)	Air Gaps in Plumbing Systems (For Plumbing Fixtures and Water-Connected Receptors)
A112.1.3-2000 (R2015)	Air Gap Fittings for Use With Plumbing Fixtures, Appliances, and Appurtenances
A112.3.1-2007 (R2017)	Stainless Steel Drainage Systems for Sanitary, DWV, Storm, and Vacuum Applications, Above- and Below-Ground
A112.3.4-2000 (R2004)	Macerating Toilet Systems and Related Components
A112.4.1-2009 (R2014)	Water Heater Relief Valve Drain Tubes
A112.4.2-2009 (R2014)	Water Closet Personal Hygiene Devices
A112.4.3-1999 (R2015)	Plastic Fittings for Connecting Water Closets to the Sanitary Drainage System
A112.4.4-2017	Plastic Push-Fit Drain, Waste, and Vent (DWV) Fittings
A112.4.7-2002 (R2008)	Point of Use and Branch Water Submetering Systems
A112.4.14-2004 (R2010)	Manually Operated, Quarter-Turn Shutoff Valves for Use in Plumbing Systems
A112.6.1M-1997 (R2017)	Floor-Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use
A112.6.2-2017	Framing-Affixed Supports (Carriers) for Off-the-Floor Plumbing Fixtures
A112.6.3-2019	Floor and Trench Drains
A112.6.4-2003 (R2008)	Roof, Deck, and Balcony Drains
A112.6.7-2011 (R2015)	Sanitary Floor Sinks
A112.6.9-2010 (R2015)	Siphonic Roof Drains
A112.14.1-2003 (R2017)	Backwater Valves
A112.14.3-2018	Hydromechanical Grease Interceptors
A112.14.4-2001 (R2017)	Grease Removal Devices
A112.14.6-2010 (R2015)	FOG (Fats, Oils, and Greases) Disposal Systems
A112.18.1-2011/CSA B125.1-11 (R2017)	Plumbing Supply Fittings
A112.18.2-2011/CSA B125.2-11	Plumbing Waste Fittings
A112.18.3-2002 (R2017)	Performance Requirements for Backflow Protection Devices and Systems in Plumbing Fixture Fittings
A112.18.6-2009/CSA B125.6-09 (R2014)	Flexible Water Connectors
A112.18.8-2009 (R2014)	In-Line Sanitary Waste Valves for Plumbing Drainage Systems
A112.18.9-2011 (R2017)	Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures
A112.19.1-2008/CSA B45.2-08	Enamelled Cast Iron and Enamelled Steel Plumbing Fixtures
A112.19.2-2008/CSA B45.1-08	Ceramic Plumbing Fixtures
A112.19.3-2008/CSA B45.4-08	Stainless Steel Plumbing Fixtures
A112.19.4M-1994 (R2004)	Porcelain Enameled Formed Steel Plumbing Fixtures
A112.19.5/CSA B45.15-2011 (R2016)	Flush Valves and Spuds for Water Closets, Urinals, and Tanks
A112.19.6-1995	Hydraulic Performance Requirements for Water Closets and Urinals
A112.19.7/CSA B45.10-2012 (R2017)	Hydromassage Bathtub Appliances
A112.19.9M-1991 (R2008)	Non-Vitreous Ceramic Plumbing Fixtures
A112.19.10-2017	Retrofit Dual Flush Devices for Water Closets
A112.19.12-2014	Wall Mounted, Pedestal Mounted, Adjustable, Elevating, Tilting, and Pivoting Lavatory, Sink, and Shampoo Bowl Carrier Systems and Drain Waste Systems
A112.19.13-2001 (R2007)	Electrohydraulic Water Closets
A112.19.14-2013 (R2018)	Six-Liter Water Closets Equipped With a Dual Flushing Device
A112.19.15-2012 (R2017)	Bathtubs/Whirlpool Bathtubs With Pressure Sealed Doors
A112.19.17-2010 (R2018)	Manufactured Safety Vacuum Release Systems (SVRS) for Residential and Commercial Swimming Pool, Spa, Hot Tub, and Wading Pool Suction Systems
A112.19.19-2006 (R2011)	Vitreous China Nonwater Urinals
A112.20.1-2004	Qualification of Installers of High Purity Piping Systems
A112.20.2-2004	Qualification of Installers of Firestop Systems and Devices for Piping Systems

A112.21.3M-1985 (R2017)	Hydrants for Utility and Maintenance Use
A112.36.2M-1991 (R2017)	Cleanouts

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