



**Summary of Substantive Changes  
between the 2019 edition of ASME A112.6.3,  
2008 edition of CSA B79 and the  
2022 edition of ASME A112.6.3/CSA B79.3 “Floor Drains”  
(New Harmonized Standard)**

**Presented to the IAPMO Standards Review Committee on January 9, 2023**

**General:** The changes to this standard may have an impact on currently listed products. The substantive changes are:

- Inclusion of 400 series stainless steel, Section 4
- New requirement for Backwater valve, Section 5
- New limits for loading test, Section 6

**Revised from ASME**

**1 Scope**

**1.1 ~~Scope~~ Inclusions**

*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.*

**~~ASME 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.*

*This Standard specifies design and performance requirements for floor drains, adjustable floor drains, and area drains that are used inside of, or adjacent to, building structures. Drains of outlet NPS-2 and smaller, intended only for installation in shower areas, are covered in this Standard and in ASME A112.18.2/CSA B125.2 as well.*

**1.2 Exclusions**

*This Standard does not apply to*

*a) seam-welded, socket type, stainless steel fabricated drains which are covered by ASME A112.3.1; and*

*b) trench drains, which are covered by ASME A112.6.8/CSA B79.8.*

**~~ASME 1.5, CSA 1.3~~ 1.3 Illustrations**

*The illustrations included in this Standard are intended only to Figures .1 through 8 describe and portray typical drains and are not intended to restrict design or to specify requirements.*

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**~~1 Scope~~**

**~~1.1~~**

*This Standard specifies requirements for commercial and residential*

*(a) area drains;*

*(b) balcony drains;*

*(c) deck drains;*



- (d) floor drains;*
- (e) roof drains;*
- (f) shower drains;*
- (g) trench drains; and*
- (h) cleanouts.*

## **1.2**

*This Standard covers the following subjects:*

- (a) materials;*
- (b) design requirements for*
  - (i) connections;*
  - (ii) fasteners;*
  - (iii) grates;*
  - (iv) cleanout covers;*
  - (v) backwater valves; and*
  - (vi) integral traps;*
- (c) tests for*
  - (i) loading;*
  - (ii) backwater valve tightness;*
  - (iii) sealing; and*
  - (iv) corrosion; and*
  - (d) markings.*

**2 Reference publications:** *Publications referenced in this standard will be to the editions listed in Section 2.*

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### **~~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*

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### **~~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.*



ASME Section 2.1.7 did not include 400 Series.

**4.2.6 Stainless steel**

Stainless steel alloys shall be ~~Type 304, 316, or 316L~~ of the 300 or 400 series.

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**4.9 Elastomers**

~~Elastomeric components shall comply with the applicable requirements of CAN/CSA-B602.~~

**4.10 Adhesives**

~~Adhesives used to secure elastomeric components in place shall be water resistant.~~

**5.1.5 Cross-sectional area**

~~The minimum cross-sectional area of the drain body shall be not less than the cross-sectional area of the pipe to which the drain body is connected.~~

**5.3 Grates and cleanout covers**

**5.3.1**

~~Grates shall be assembled to the drain in such a manner that the minimum cross-sectional area of the drain shall be not less than the cross-sectional area of the pipe to which the drain is connected. Any horizontal ledge that is formed below the grate seat shall have a minimum 4° slope downward toward the interior of the drain.~~

**5.3.2**

~~Grates and covers shall be mechanically secured and shall be removable without the use of special tools.~~

**5.3.4**

~~Grates shall have at least the following grate-free areas:~~

- ~~(a) 1600 mm<sup>2</sup> (2.48 in<sup>2</sup>) for shower drains; and~~
- ~~(b) 2500 mm<sup>2</sup> (3.88 in<sup>2</sup>) for floor and area drains.~~

**5.4 Hinged grates**

~~Hinged grates shall be adequately supported to prevent misalignment between the grate and drain body when the grate is either open or closed.~~

**5.5 Shower drain grates**

**5.5.1**

~~Shower drain grates shall be smooth and free of sharp edges.~~

**5.5.2**

~~Shower drain grates shall not be chrome-plated.~~

**5.6.4 Watertightness**

~~The following leakage volumes shall not be exceeded when tested in accordance with Clause 6.2.2:~~

<b>Nominal valve size</b>	<b>Maximum leakage, L (U.S. fl oz)</b>
1-1/2	0.16 (5.5)
2	0.28 (9.5)
3	0.64 (21.5)
4	1.14 (38.5)
6	2.56 (86.5)
8	4.56 (154.0)

**5.9 Seepage openings**

~~When clamping collars are used (see Figure 1(a)), a minimum of three seepage openings shall be supplied, each with a 3 mm (0.118 in) diameter hole.~~

**5.10 Plastic siphonic roof drains**



*Information on the design of plastic siphonic roof drains is provided in Annex A.*

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**5.2 Sizing**

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

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**ASME 2.3 5.5 Weep holes (seepage openings)**

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 **not less than 24 21** mm<sup>2</sup> (0.03**72** in<sup>2</sup>), and the smallest dimension shall be **at least not less than 3.2 3.0** mm (0.**125 118** in).

**ASME 5.1.1 5.7.3 Minimum areas of grate openings**

The **minimum** areas of the grate openings **of floor and trench drains** shall be as specified in Table 5.**1-1**

**ASME 5.1.3 5.7.4 Perimeter grates**

The area of the grate openings for perimeter grates (see Figure 4) shall include the minimum projected area of the openings between the grate and the **drain body, as viewed top rim when viewing** from above, perpendicular to its top surface.

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

**CSA 5.6 5.8 Backwater valves integral to drains**

**5.6.1 Sealing elements**

*The sealing elements of backwater valves integral to drains shall comply with the following requirements:*

*(a) Moving parts used for sealing shall*

*(i) be hinged or otherwise secured in a manner that will prevent misalignment of the parts during normal use;*

*(ii) be installed by a means that will not loosen or allow the parts to become detached during normal use; and*

*(iii) not offer resistance to movement exceeding that required for the valve to perform its intended function.*

*(b) Valve seating elements and other stationary sealing elements shall be installed in proper alignment and be prevented from movement and detachment during normal shipping, handling, and operation.*

*(c) To ensure their efficient operation, moving parts shall have adequate clearance from the internal valve body and all internal components, with the exception of sealing elements and stops.*

**5.6.2 Protrusions**

*Except for protrusions of sealing elements, the waterway of a backwater valve shall have no protrusions that result in the formation of a dam.*

**5.6.3 Operation**

*Backwater valves shall*

*(a) not create excessive turbulence;*

*(b) not reduce the hydraulic capacity of the interconnecting piping system; and*

*(c) present an unobstructed interior surface that permits the proper flow of all matter normally expected to flow through the system.*



Backwater valves integral to drains shall comply with the applicable requirements of ASME A112.14.1 or CSA B181.0.

**CSA 5.7.2 5.9.2 Integral traps**

Integral traps shall

- a) have a trap seal depth of not less than 50 mm (2 in); and
- ~~b) be designed so that failure of the walls will cause exterior leakage; and~~
- ~~e)b) have a liquid seal that does not depend on the action of moving parts.~~

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**6 LOADING TEST -~~CLASSIFICATION AND TEST PROCEDURE~~**

**CSA 6.1.1 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~~ Clauses 6.5 and 6.6:

- ~~(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 3375 kg (7,500 lb) but less than 4500 kg (10,000 lb)~~
- ~~(e) Special duty: when the safe live load is equal to or greater than 4500 kg (10,000 lb) 10~~

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**6 Test methods and performance requirements**

**6.1 Loading test for grates, cleanout covers, and top rims**

**6.1.1 Load classifications**

~~For loading test purposes, the grate, cleanout cover, or top rim shall be assigned one of the following load classifications in accordance with the type of traffic that the grate, cleanout cover, or top rim will be subjected to under typical conditions of use:~~

<b>Load classification</b>	<b>Design load, kN (lbf)</b>	<b>Test load, kN (lbf)</b>
<del>Light duty (L): foot traffic only</del>	<del>1.96 (440.6)</del>	<del>3.92 (881.3)</del>
<del>Medium duty (M): light vehicular traffic, e.g., automobiles</del>	<del>8.83 (1 985.1)</del>	<del>17.65 (3 967.9)</del>
<del>Heavy duty (H): light trucks</del>	<del>16.18 (3 637.4)</del>	<del>32.37 (7 277.1)</del>
<del>Extra heavy duty (X): heavy trucks</del>	<del>33.84 (7 607.5)</del>	<del>67.68 (15 215.1)</del>

~~Note: The test load is the load at failure determined in accordance with Clause 6.1.4.2. The design load is half the load at failure (see Clause 6.1.5). The design load is also called the maximum safe live load because it is the maximum load to be applied safely on the cover, grate, or top rim of the drain.~~

<u>Load classification</u>	<u>Safe live load (minimum design load), kg (lb)</u>	<u>Test load, kg (lb)</u>
<u>LO light duty</u>	<u>200 (441)</u>	<u>400 (882)</u>
<u>MD medium duty</u>	<u>900 (1984)</u>	<u>1800 (3968)</u>
<u>HD heavy duty</u>	<u>1650 (3638)</u>	<u>3300 (7276)</u>
<u>XHD extra Heavy duty</u>	<u>3402 (7500)</u>	<u>6804 (15 000)</u>



<a href="#">SD special duty</a>	<a href="#">4536 (10 000)</a>	<a href="#">9072 (20 000)</a>
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**~~CSA 6.1.2 Test Equipment, ASME 6.2.1 Test Conditions. 6.4 Test platen~~**

The platen shall ~~be~~ have a diameter of

a) 90 mm (3.5 in), ~~in diameter for drains of grates and covers 125 114 mm (4.5 in)~~ or larger in diameter, or in width for rectangular ~~grids grates; and or~~

b) 50 mm (2 in), ~~in diameter for grates and covers smaller drains than 114 mm (4.5 in).~~

**~~CSA 6.1.3 6.5 Test method procedure~~**

The load test shall be conducted ~~on a grate, cleanout cover, or top rim as follows~~ as follows:

a) Mount the test specimen in accordance with the manufacturer's instructions.

b) Using the platen specified in Clause ~~6.1.2 6.4~~, gradually apply a load at the center of the specimen until the test load specified in Clause ~~6.1.1~~ or the load at failure, as specified in Clause 6.2 is reached, whichever is reached first (i.e., whichever load is smaller).

~~(c) Hold the test load for 10 min and then remove the load.~~

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**~~7 Markings~~**

**~~7.1 Residential drains~~**

**~~7.1.1~~**

~~Residential drains and cleanouts shall be permanently marked with the following:~~

~~(a) the manufacturer's name or trademark; and~~

~~(b) the load classification (see Clause 6.1.1).~~

**~~7.1.2~~**

~~The markings specified in Clause 7.1.1 shall appear on the grate, cleanout cover, or top rim (as applicable) and on the drain body.~~

**~~7.2 Commercial drains~~**

~~Commercial drains and cleanouts shall be permanently marked in accordance with the following standards, as applicable:~~

~~(a) floor and trench drains — ASME A112.3.1 or ASME A112.6.3;~~

~~(b) roof, deck, and balcony drains — ASME A112.6.4;~~

~~(c) siphonic roof drains — ASME A112.6.9;~~

~~(d) vacuum and storm drains — ASME A112.3.1; and~~

~~(e) cleanouts — with ASME A112.36.2M.~~

**~~7.3 Elastomeric components~~**

~~Elastomeric components of push-on compression joints shall be permanently marked with the manufacturer's name or trademark.~~

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**8 Markings**

**8.1 Marking requirements**

Drains complying with this Standard shall be marked with the manufacturer's name or trademark. The markings shall be permanent, legible, and ~~visible after installation~~ be made on the grate, cover, or near the top rim of the drain.

**8.2 Permanent markings**

Examples of acceptable means of applying permanent markings shall include; firing on, etching, sand blasting, mechanical stamping, stamping with a permanent (non-water soluble) ink, or casting in.



Adhesive labels that comply with CSA C22.2 No. 0.15 or UL 969 shall also be considered permanent when placed on a surface that is not normally submerged in water. The exposure conditions specified in Clause 7.1 of UL 969 shall apply.

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**7 Weathering test**

**7.1 Test specimens**

*The test specimens shall be cut from the finished product or modeled from the same material used to manufacture the finished product.*

**7.2 Test procedure**

*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 duration shall be not less than 2000 h. Following the completion of the weathering tests, hardness shall be tested in accordance with ASTM D2240, and tensile strength shall be tested in accordance with ASTM D638.*