



**Summary of Substantive Changes
between the 2019 edition of ASME A112.6.3,
2008 edition of CSA B79 and the
2022 edition of ASME A112.6.8/CSA B79.8 “Trench Drains”
(New Harmonized Standard)**

Presented to the IAPMO Standards Review Committee on March 13, 2023

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

- Addition of minimum material specification for PP and PE.
- Updates to load testing options.
- New encapsulation concrete strength testing.
- New literature requirements.

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 trench drains, utility channels, and grate systems that are used inside of, or adjacent to, building structures that are typically nonresidential.

Note: These channels are not typically subject to high-speed vehicles but can be subjected to concentrated heavy loads such as hard-wheeled forklifts.

1.2 Linear shower drains

Drains with outlet size NPS-2 and smaller, intended only for installation in shower areas, are covered in ASME A112.18.2/CSA B125.2 and can also be covered in this Standard.

~~ASME 1.5, CSA 1.3~~ 1.3 Illustrations

~~The illustrations included in this Standard are intended only to describe and portray typical drains~~ Figures 1 through 7 illustrate typical trench and slot drains and are not intended to restrict design or to specify requirements.

Deleted from CSA

~~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.

Revised from CSA and ASME

4 Material

4.2.4.1 Polyethylene (PE)

PE used for manufacturing trench drains, exclusive of additives, shall comply with ASTM D3350 and shall have a

a) minimum tensile strength at yield of 15 MPa (2200 psi) per ASTM D638; and

b) minimum flexural modulus of 138 MPa (20 000 psi) per ASTM D790.

4.2.4.2 Polypropylene (PP)

PP used for manufacturing trench drains, exclusive of additives, shall comply with ASTM D4101 and shall have a

a) minimum tensile strength at yield of 15 MPa (2200 psi) when tested in accordance with ASTM D638; and

b) minimum flexural modulus of 600 MPa (87 000 psi) when tested in accordance with ASTM D790.

4.2.5 Steel

Steel used for manufacturing trench drains shall comply with ASTM A36, ASTM A653, AISI 1008, or AISI 1010. Steel used for manufacturing fasteners shall comply with Clause 4.3.1.

Section 5, Section 6, Section 7 and Section 8 from ASME A112.6.3 and CSA B79 were revised. (See new language below):



5 Design requirements

5.1 Outlets

Outlets of trench drains shall comply with Clause 5.2 of ASME A112.6.3/CSA B79.3. End outlets of trench drains shall comply with the side outlet requirements.

5.2 Top dimensions - Areas of grate openings

5.2.1 Area calculations

The area of grate openings shall be calculated in accordance with Clauses 5.7.2, Grate open area calculation, and 5.7.4, Perimeter grates, of ASME A112.6.3/CSA B79.3.

5.2.2 Area per unit length

The area of the grate openings per unit length shall be calculated by dividing the area calculated in Clause 5.2.1 by the length of the grate. The results shall be stated in cm²/m or in²/ft.

5.2.3 Heel-resistant grates

Heel-resistant grates shall comply with the applicable requirements of ASME A112.6.3/CSA B79.3.

5.2.4 Grate opening blocking

Opening in the grate for securing devices or that otherwise could be blocked during installation shall not be included in the calculation of the area of the grate openings.

5.3 Channel flow area determination

The channel flow area shall be calculated or measured as the projected area at the deepest section of the channel body (see Figures 4, 4. and 5.).

In addition, the channel flow area shall be calculated for the channel body only and shall not include obstructions from other components that can be present in the drain.

6 Load test procedures

6.1 General

6.1.1 Channel testing options

The load test for channels shall be conducted in accordance with one of the test procedures specified in Clause 6.2 at the option of the manufacturer.

6.1.2 Grate and cover testing options

The load test for grates and covers shall be conducted in accordance with one of the test procedures specified in Clause 6.3 at the option of the manufacturer.

6.1.3 Slot drain testing options

The load test for slot drains shall be conducted in accordance with one of the test procedures specified in Clause 6.4, at the option of the manufacturer.

6.2 Channel load test options

6.2.1 AASHTO M306 load test option

6.2.1.1 Procedure

The load test for channels, grates, and covers shall be conducted in accordance with Clause 6 of AASHTO M306, with the following exceptions:

- a) Channels may be provided with the frame assembled if deemed necessary by the manufacturer.
- b) The channel, or the channel and frame, shall be installed in accordance with the manufacturer's installation instructions.
- c) A load plate of 230 mm (9 in) long by the applicable grate width shall be placed in the channel.
- d) A buffer layer of 13 mm (0.5 in) thick oriented strand board (OSB) may be used between the load plate and the channel.
- e) The load plate shall be of suitable strength to transfer the load to the channel without deforming or breaking.



f) The testing location restriction shall not apply.

6.2.1.2 Failure criteria

There shall be no cracks or permanent deformation of the channel or frame detrimental to the loading capacity of the channel.

6.2.2 EN 1433 load test option

The load test for channels or channels and frames shall be conducted in accordance with Clause 9.1 of EN 1433.

6.2.3 ASME A112.6.3/CSA 879.3 load test option

6.2.3.1 Procedure

The load test for channels, grates, and covers shall be conducted in accordance with Clause 6 of ASME A112.6.3/CSA B79.3, with the following exceptions:

a) The channel, or the channel and frame, shall be installed in accordance with the manufacturer's installation instructions.

b) A load plate of 230 mm (9 in) long by the applicable grate width shall be placed in the channel.

c) A buffer layer of 13 mm (0.5 in) OSB may be used between the load plate and the channel. The load plate shall be of suitable strength to transfer the load to the channel without deforming or breaking.

6.2.3.2 Failure criteria

There shall be no cracks or permanent deformation of the channel or frame detrimental to the loading capacity of the channel.

6.2.4 Encapsulation concrete strength test

6.2.4.1 Procedure

The encapsulation concrete strength verification test for channels shall be conducted as follows:

a) Pour four test cylinders in accordance with ASTM C39 using concrete from the same batch used to pour the channel load test specimens.

b) Conduct a concrete load test on two cylinders 28 days or more after pouring. If the average result of the concrete load test does not meet the minimum manufacturer's requirements, the remaining two cylinders may be tested after additional cure time.

6.2.4.2 Testing lab requirements

The load test specified in Item b) of Clause 6.2.4.1 shall be conducted at a facility accredited or specialized in concrete testing and with a testing apparatus calibrated within the previous 12 months.

Note: An acceptable means of demonstrating compliance with this Clause is by conducting the test at a laboratory accredited by the Cement and Concrete Reference Laboratory (www.ccril.us) or an equivalent.

6.2.4.3 Failure criteria

The average compressive strength of the two cylinders shall be within 6.9 MPa (1000 psi) of the manufacturer's requirements for concrete.

6.3 Grate and cover load test options

6.3.1 AASHTO M306 load test option

Grates and covers shall be tested in accordance with Clause 6 of AASHTO M306 with the exception that the testing location restriction shall not apply.

6.3.2 EN 1433 load test option

Grates and covers shall be tested in accordance with Clause 9.1 of EN 1433.

6.3.3 ASME A112.6.3/CSA B79.3 load test option

6.3.3.1 Procedure

Grates and covers shall be tested in accordance with Clause 6 of ASME A112.6.3/CSA B79.3.

6.3.3.2 Failure criteria

The failure



- a) mode for brittle materials shall be as specified in ASME A112.6.3/CSA B79.3; and
- b) load for ductile materials shall be the load at which the permanent set is greater than 3% of the grate width.

7 Markings

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7.2 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.

8 Literature

Manufacturers shall make available

- a) installation instructions;
- b) the grate open area per unit length determined in Clause 5.2.2 in cm^2/m and in^2/ft ;
- c) the flow area at the deepest end of each channel section, expressed in mm^2 (in^2);
- d) the reference standard used for the load test and the load rating of the grate and the channel, measured in accordance with Clause 6;
- e) the channel width and reveal width (see Figure 3);
- f) for slot drains, the channel width, reveal width, and slot width (see Figure 5); and
- g) the concrete compressive strength and thickness used to achieve the channel body load rating.