L-68-33

ANSI A112.21.2M-1983
21 September 1983
SUPERSEDING
ANSI A112.21.2-1971
14 December 1982

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Title of Document:	American National Standard Roof Drains
Date of Specific Issue Adopted:	July 31, 1983
Releasing Industry Group:	American Society of Mechanical Engineers

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Military Coordinating Activity:

Navy - YD

Project No. 4510-0214

Review activity:

DLA - CS

User activity:

Army - CE
Navy - MC

FSC 4510

THIS DOCUMENT CONTAINS 1 PAGES.

AMERICAN NATIONAL STANDARD

Roof Drains

ANSI A112.21.2M - 1983

(REVISION OF ANSI A112.21.2-1971)

PUBLISHED BY

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

United Engineering Center 345 East 47th Street New York, N.Y. 10017

Date of Issuance: July 31, 1983

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FOREWORD

(This Foreword is not part of American National Standard, Roof Drains, ANSI A112.21.2M-1983.)

Rainwater was prevented from accumulating on the roofs of the first buildings by pitching the roof to allow the water to flow off. The first means to collect and control rain runoff was to provide a gutter that ran the length of the low roof section. All of the water drained to the gutter, which in turn sloped to an outside downspout pipe. This was followed by the development of inside downspouts because of the unsightly appearance of the outside downspouts on many buildings.

The first inside downspout consisted of a sheet metal sump below the roof surface covered by a wire screen to keep out debris. Later, the screen was replaced by a flange and dome-basket arrangement.

The first development in a roof drain, as we know it today, was a cast metal downspout head consisting of an increaser that was screwed onto the downspout pipe with a cast iron dome bolted to this increaser. The problem of leakage around the downspout head between the head and the roofing material prompted the development of a clamp device to secure the roof flashing to the head, creating the first modern roof drain.

There followed a series of designs of roof drains incorporating the beehive or mushroom dome, non-puncturing flashing clamp device with integral gravel stop, promenade tops, deep sump drain bodies, expansion joints, and other variations in design to facilitate installation and to control the rainwater runoff.

USA Standards Committee A112 was organized July 27, 1955, for the standardization of plumbing materials and equipment. The first organizational meeting was held on July 22, 1958. At a meeting on May 1, 1964, Panel No. 21 was created to establish standards on roof drains and floor drains. Its scope was as follows: The recommendation of suitable existing standards in cooperation with interested sponsors or the development of adequate new standards as are needed for roof drains and floor drains as used or installed in plumbing systems.

Prior to the establishment of this Panel, the Plumbing and Drainage Institute started a standardization study on September 15, 1961. The PDI is an organization of manufacturers of drainage products. They realized the need for roof drain standards and therefore conducted the study.

The Institute's Executive Secretary acted as Chairman and the Engineers from the participating member companies were a part of the committee. During the period from September 15, 1961 to September 1963, the group formulated some basic drain standards and specifications. Though this information was never published, it is used as a basis for this Standard.

Engineer members of the Plumbing and Drainage Institute were appointed to the Task Force on Panel No. 21. The first meeting was held on February 2, 1966. A rough draft of this Standard was submitted on May 18, 1966 to the Task Force members. The Task Force met again on July 21, 1966 to review the second draft. Revisions were made and the proposed standard was submitted to members of Panel No. 21.

Following approval of the proposal by the Panel, the American National Standards Committee A112 and the sponsor, the American National Standards Institute approved it on July 27, 1971.

This Standard was revised and approved by Panel 21, the A112 Standards Committee and Secretariat. Subsequently this modified version was adopted by the American National Standards Institute on March 7, 1983.

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Standardization of Plumbing Materials and Equipment

(The following is the roster of the Committee at the time of approval of this Standard.)

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ANSI A112.21.2M-1983

AMERICAN NATIONAL STANDARD

ROOF DRAINS

1 SCOPE AND PURPOSE

1.1 Scope

1.1.1 Development of standards for roof drains including general purpose, gutter and cornice, parapet and promenade or deck types, which convey rainwater from the roof area of building structures.

1.1.2 This Standard covers:

(*a*) Definitions
(*b*) Nomenclature
(*c*) Outlet Types and Connections
(*d*) Top Size – Dome or Grate Free Area
(*e*) Materials and Finishes
(*f*) Accessories

1.2 Purpose

The purpose of this Standard is to supply plumbing code authorities and others with full knowledge of the minimum design and quality criteria for roof drains. It is not intended for use as a specification guide.

CAUTION: Illustrations included in this Standard are intended only to describe and portray typical roof drain types and are not intended to restrict design or to be used for specification purposes.

2 DEFINITIONS

2.1 General

A roof drain is a manufactured receptacle designed to receive and convey rainwater from roof areas to the drainage system. Roof drains are available in various designs, shapes, sump depths, and outlet locations. The area to be drained, location of the drain in the building structure, the local rainfall intensity and the drainage systems are factors in determining the type of drain to be used.

2.2 Types

2.2.1 General Purpose Roof Drain. A roof drain for installation in any roof area excluding the parapet of the roof structure.

2.2.2 Gutter or Cornice Roof Drain. A roof drain for installation in gutters, cornices, balconies and other overhanging construction to prevent overflow to areas below.

2.2.3 Parapet Roof Drain. A roof drain for installation in parapets for conveying rainwater from a roof area through the parapet.

2.2.4 Promenade or Deck Roof Drain. A roof drain for installation in roof decks subject to pedestrian or vehicular traffic.

2.3 Dome or Grate Free Area

Total area of drainage openings in the dome or grate.

2.4 Conductor

A pipe inside the building which conveys storm water from the roof to a storm or combined building drain.

2.5 Leader

An exterior drainage pipe for conveying storm water from roof or gutter drains.

3 NOMENCLATURE

Terms used for elements of typical roof drain types are depicted in Figs. 1 through 4.

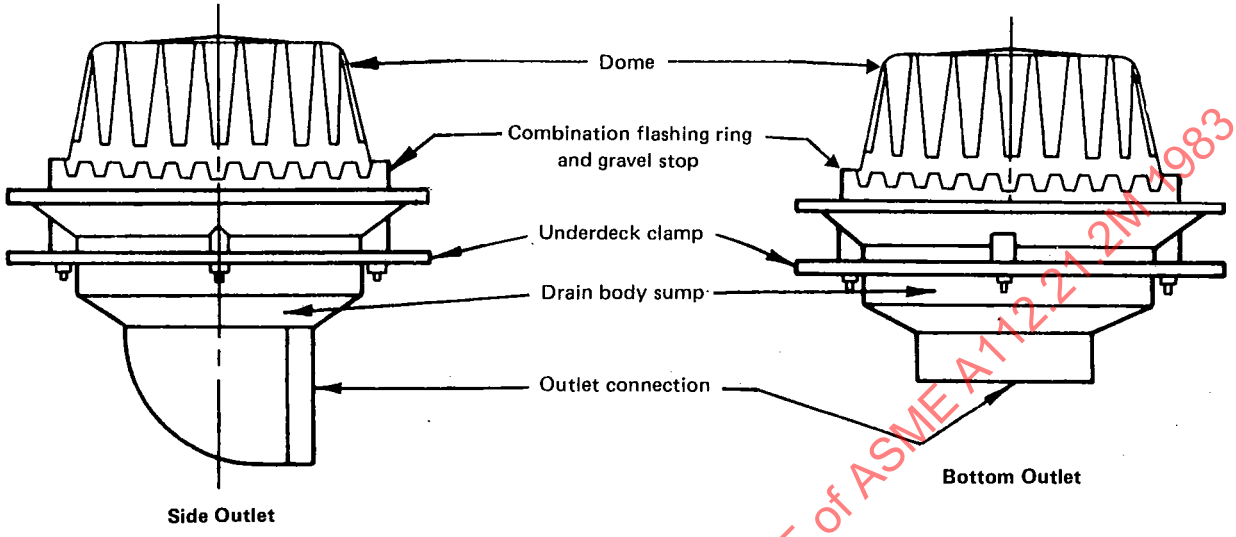

FIG.1 GENERAL PURPOSE ROOF DRAIN

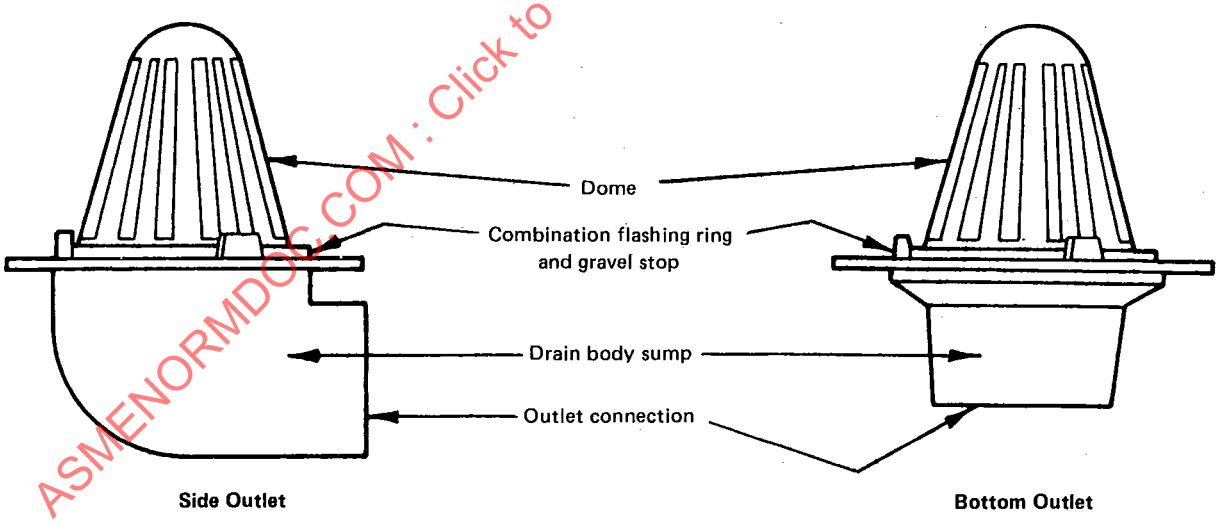

FIG. 2 GUTTER OR CORNICE ROOF DRAIN

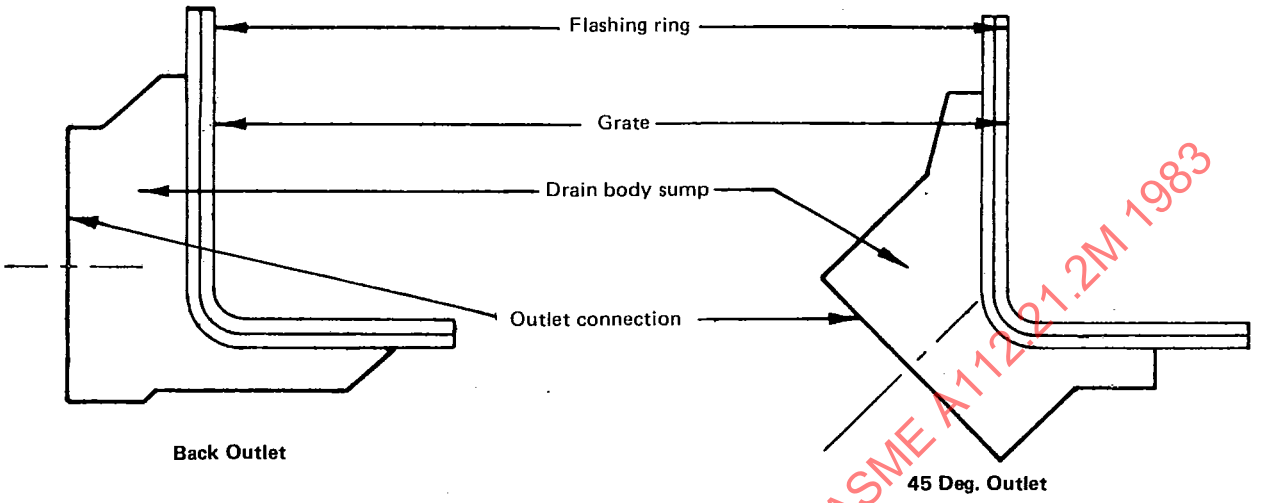

FIG. 3 PARAPET ROOF DRAIN

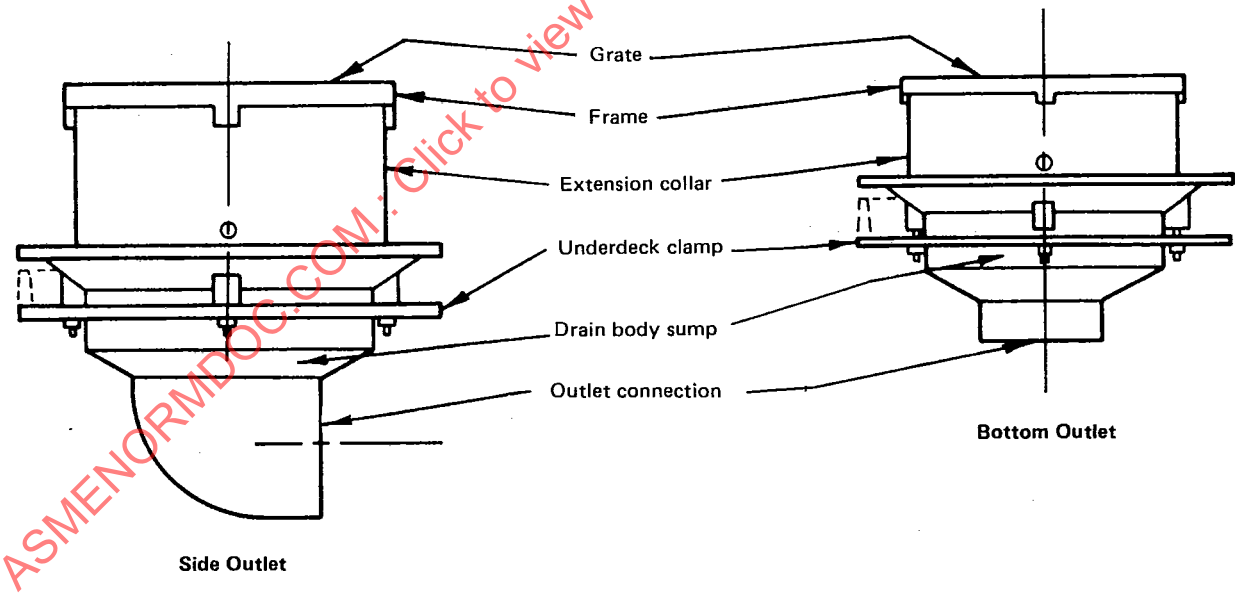

FIG. 4 PROMENADE OR DECK ROOF DRAIN

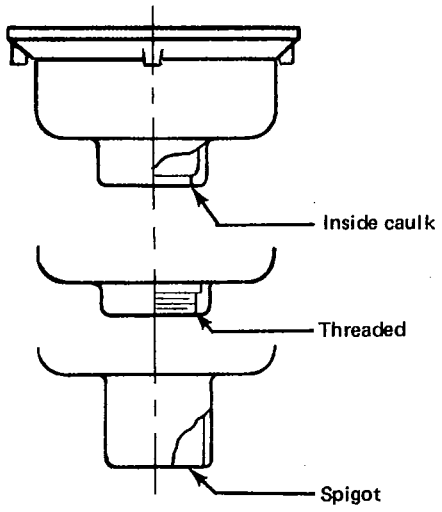

FIG. 5 BOTTOM OUTLET

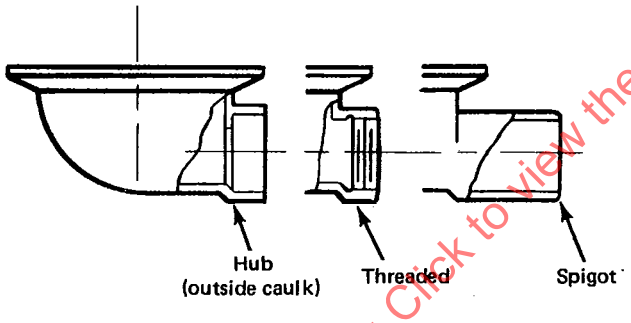

FIG. 6 SIDE OUTLET

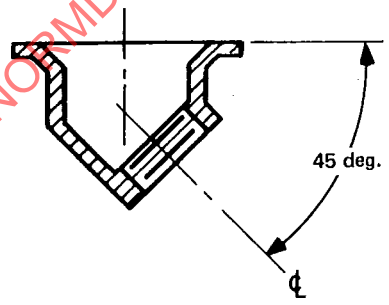

FIG. 7 45 DEG. SIDE OUTLET

4 OUTLET TYPES AND CONNECTIONS

4.1 Outlet Types

4.1.1 Bottom Outlet. Threaded, inside caulk or spigot with centerline of outlet vertical. See Fig. 5.

4.1.2 Side Outlet. Threaded, hub (outside caulk), or spigot with centerline of outlet horizontal. See Fig. 6.

4.1.3 45 Deg. Side Outlet. Threaded with centerline of outlet at a 45 deg. angle. See Fig. 7.

4.2 Outlet Connections

4.2.1 Threaded. All threaded outlet connections shall comply with ANSI B2.1-1968, Pipe Threads (Except Dryseal) and shall conform to the minimum dimensions shown in Table 1.

4.2.2 Inside Caulk. All inside caulk outlet connections shall conform to the minimum dimensions shown in Table 2.

4.2.3 Hub (Outside Caulk). All hub outlet connections shall conform to the minimum dimensions shown in Table 3.

4.2.4 Spigot. All spigot outlet connections shall conform to the spigot end dimensions shown in American National Standard for Cast Iron Soil Pipe and Fittings, ANSI A112.5.1-1973, and the Cast Iron Soil Pipe Institute Standard No. 301-1978, Cast Iron Soil Pipe and Fittings for Hubless Cast Iron Sanitary Systems.

4.2.5 Tolerances. All dimensions given in Tables 1, 2, and 3 and the associated figures are subject to standard commercial tolerances of ± 1/16 in. (± 1.6 mm).

5 TOP SIZE – DOME OR GRATE FREE AREA

The roof drains covered by this Standard shall comply with the minimum requirements in Tables 4 through 7.

6 MATERIALS

The items covered in this Standard are to be of the material specified, suitable for installation and service