SECTION 221423 - STORM DRAINAGE PIPING SPECIALTIES

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
	* + 1. RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

* + - * 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
			1. SUMMARY
				1. Section Includes:

Metal roof drains.

Plastic roof drains.

Miscellaneous storm drainage piping specialties.

Cleanouts.

Backwater valves.

Trench drains.

Channel drainage systems.

* + - * 1. Related Requirements:

Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

Section 076200 "Sheet Metal Flashing and Trim" for penetrations of roofs.

Section 078413 "Penetration Firestopping" for firestopping roof penetrations.

Section 221413 “Facility Storm Drainage Piping”.

* + - 1. SUBMITTALS
				1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer's installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Product Data: For each type of product.
			2. QUALITY ASSURANCE
				1. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.
1. PRODUCTS

Manufacturers and products listed in SpecAgent and MasterWorks Paragraph Builder are neither recommended nor endorsed by the AIA or Deltek. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications.

* + - 1. METAL ROOF DRAINS

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product. Not all manufacturers offer all options and not all options are available in each combination. Consult manufacturers.

Roof drains in first paragraph below are available in NPS 2 to NPS 10 (DN 50 to DN 250).

* + - * 1. Cast-Iron, Large-Sump, General-Purpose Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2280) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170261).

[WATTS](http://www.specagent.com/Lookup?uid=123457170266).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170267).

Approved equivalent.

Standard: ASME A112.6.4.

Body Material: [**Cast iron**] <**Insert material**>.

Dimension of Body: Nominal [**14-to 16-inch**] <**Insert dimension**> diameter.

Combination Flashing Ring and Gravel Stop: [**Not required**] [**Required**].

Flow-Control Weirs: [**Not required**] [**Required**].

Side outlets are only available in limited number of outlet types. Consult manufacturers.

Outlet: [**Bottom**] [**Side**] <**Insert location**>.

Outlet Type: [**No hub**] [**Inside caulk**] [**Threaded**] <**Insert type**>.

Extension Collars: [**Not required**] [**Required**].

Underdeck Clamp: [**Not required**] [**Required**].

Expansion Joint: [**Not required**] [**Required**].

Sump Receiver Plate: [**Not required**] [**Required**].

Dome Material: [**Aluminum**] [**Cast iron**] [**PE**] [**Bronze**] <**Insert material**>.

Perforated Gravel Guard: [**Stainless steel**] [**Not required**].

Vandal-Proof Dome: [**Not required**] [**Required**].

Water Dam: [**Not required**] [**2 inches high**] <**Insert height**>.

<**Insert options**>.

Roof drains in first paragraph below are available in at least NPS 2 to NPS 6 (DN 50 to DN 150).

* + - * 1. Cast-Iron, Medium-Sump, General-Purpose Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2281) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170360).

[WATTS](http://www.specagent.com/Lookup?uid=123457170365).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170367).

Approved equivalent.

Standard: ASME A112.6.4.

Body Material: [**Cast iron**] <**Insert material**>.

Dimension of Body: [**8- to 12-inch**] <**Insert dimension**> diameter.

Combination Flashing Ring and Gravel Stop: [**Not required**] [**Required**].

Flow-Control Weirs: [**Not required**] [**Required**].

Side outlets are only available in limited number of outlet types. Consult manufacturers.

Outlet: [**Bottom**] [**Side**] <**Insert location**>.

Outlet Type: [**No hub**] [**Inside caulk**] [**Threaded**] <**Insert type**>.

Extension Collars: [**Not required**] [**Required**].

Underdeck Clamp: [**Not required**] [**Required**].

Expansion Joint: [**Not required**] [**Required**].

Sump Receiver Plate: [**Not required**] [**Required**].

Dome Material: [**Aluminum**] [**Cast iron**] [**PE**] [**Bronze**] <**Insert material**>.

Wire Mesh: [**Stainless steel or brass over dome**] [**Not required**].

Perforated Gravel Guard: [**Stainless steel**] [**Not required**].

Vandal-Proof Dome: [**Not required**] [**Required**].

Water Dam: [**Not required**] [**2 inches high**] <**Insert height**>.

<**Insert options**>.

Roof drains in first paragraph below are available in at least NPS 2 to NPS 6 (DN 50 to DN 150).

* + - * 1. Copper, Medium-Sump, General-Purpose Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2283) Subject to compliance with requirements, provide products by one of the following:

[Marathon Roofing Products](http://www.specagent.com/Lookup?uid=123457170271).

[Thaler Metal Industries Ltd](http://www.specagent.com/Lookup?uid=123457170273).

[Thunderbird Products](http://www.specagent.com/Lookup?uid=123457170274).

Approved equivalent.

Standard: ASME A112.6.4.

Drain Body and Flange Material: Copper.

Dimension of Body: [**8- to 12-inch**] <**Insert dimension**> diameter.

Combination Flashing Ring and Gravel Stop: [**Not required**] [**Required**].

Side outlets are only available in limited number of outlet types. Consult manufacturers.

Outlet: [**Bottom**] [**Side**] <**Insert location**>.

Outlet Type: [**Threaded**] <**Insert type**>.

Extension Collars: [**Not required**] [**Required**].

Underdeck Clamp: [**Not required**] [**Required**].

Expansion Joint: [**Not required**] [**Required**].

Sump Receiver Plate: [**Not required**] [**Required**].

Dome Material: [**Aluminum**] <**Insert material**>.

Wire Mesh: [**Stainless steel or brass over dome**] [**Not required**].

Perforated Gravel Guard: [**Stainless steel**] [**Not required**].

Vandal-Proof Dome: [**Not required**] [**Required**].

Water Dam: [**Not required**] [**2 inches high**] <**Insert height**>.

<**Insert options**>.

Roof drains in first paragraph below are available in NPS 2 to NPS 4 (DN 50 to DN 100).

* + - * 1. Cast-Iron, Small-Sump, General-Purpose Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2284) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170278).

[WATTS](http://www.specagent.com/Lookup?uid=123457170280).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170282).

Approved equivalent.

Standard: ASME A112.6.4.

Body Material: Cast iron.

Dimension of Body: Nominal [**8-inch**] <**Insert dimension**> diameter.

Combination Flashing Ring and Gravel Stop: [**Not required**] [**Required**].

Side outlets are only available in limited number of outlet types. Consult manufacturers.

Outlet: [**Bottom**] [**Side**] <**Insert location**>.

Outlet Type: [**No hub**] [**Inside caulk**] [**Threaded**] <**Insert type**>.

Extension Collars: [**Not required**] [**Required**].

Underdeck Clamp: [**Not required**] [**Required**].

Expansion Joint: [**Not required**] [**Required**].

Sump Receiver Plate: [**Not required**] [**Required**].

Dome Material: [**Cast iron**] <**Insert material**>.

Wire Mesh: [**Stainless steel or brass over dome**] [**Not required**].

Vandal-Proof Dome: [**Not required**] [**Required**].

<**Insert options**>.

Roof drains in first paragraph below are available in NPS 2 to NPS 4 (DN 50 to DN 100).

* + - * 1. Copper, Small-Sump, General-Purpose Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2286) Subject to compliance with requirements, provide products by the following or:

[Menzies Metal Products](http://www.specagent.com/Lookup?uid=123457170289).

Approved equivalent.

Standard: ASME A112.6.4, for general-purpose roof drains.

Body Material: Copper.

Dimension of Body: Nominal [**8-inch**] <**Insert dimension**> diameter.

Outlet: [**Bottom**] <**Insert location**>.

Outlet Type: [**O-ring**] <**Insert type**>.

Dome Material: [**Aluminum**] <**Insert material**>.

Vandal-Proof Dome: [**Not required**] [**Required**].

<**Insert options**>.

Roof drains in first paragraph below are available in NPS 3 and NSP 4 (DN 75 and DN 100). Some manufacturers also offer NPS 2, NPS 5, and NPS 6 (DN 50, DN 125, and DN 150).

* + - * 1. Aluminum, Small-Sump, General-Purpose Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=13829) Subject to compliance with requirements, provide products by one of the following:

[Menzies Metal Products](http://www.specagent.com/Lookup?uid=123457170358).

[OMG, Inc](http://www.specagent.com/Lookup?uid=123457170359).

Approved equivalent.

Standard: ASME A112.6.4, for general-purpose roof drains.

Body Material: Aluminum.

Dimension of Body: Nominal [**6-inch**] <**Insert dimension**> diameter.

Outlet: [**Bottom**] <**Insert location**>.

Outlet Type: [**O-ring or mechanical seal**] <**Insert type**>.

Dome Material: Aluminum.

Vandal-Proof Dome: [**Not required**] [**Required**].

<**Insert options**>.

Roof drains in first paragraph below are available in at least NPS 2 to NPS 3 (DN 50 to DN 75). If only one type is required, drawing designation may be omitted.

* + - * 1. Metal [**Cornice**] [**and**] [**Gutter**] Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2288) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170371).

[WATTS](http://www.specagent.com/Lookup?uid=123457170374).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170375).

Approved equivalent.

Standard: ASME A112.6.4.

Body Material: [**Cast iron**] <**Insert material**>.

Dimension of Body: Nominal 6-inch diameter.

Outlet: [**Bottom**] [**Side**] [**45-degree angle**].

Outlet Type: [**Threaded**] <**Insert type**>.

Dome Material: [**Bronze**] <**Insert material and finish**>.

Wire Mesh: [**Stainless steel or brass over dome**] [**Not required**].

Vandal-Proof Dome: [**Not required**] [**Required**].

<**Insert options**>.

Roof drains in first paragraph below are available in at least NPS 2 to NPS 4 (DN 50 to DN 100).

* + - * 1. Metal Parapet Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2289) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170290).

[WATTS](http://www.specagent.com/Lookup?uid=123457170294).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170295).

Approved equivalent.

Standard: ASME A112.6.4.

Body Material: [**Cast iron**] <**Insert material**>.

Outlet: [**Back**] [**Angle**] <**Insert location**>.

Outlet Type: [**Threaded**] <**Insert type**>.

Grate Material: [**Bronze**] [**Cast iron**] [**Nickel-bronze alloy**] <**Insert material**>.

Wire Mesh: [**Stainless steel or brass over grate**] [**Not required**].

Vandal-Proof Grate: [**Not required**] [**Required**].

<**Insert options**>.

Roof drains in first paragraph below are available in NPS 2 to NPS 6 (DN 50 to DN 150).

* + - * 1. Metal, Large-Sump, Promenade Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2291) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170377).

[WATTS](http://www.specagent.com/Lookup?uid=123457170380).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170381).

Approved equivalent.

Standard: ASME A112.6.4.

Body Material: [**Cast iron**] <**Insert material**>.

Dimension of Body: Nominal [**12- to 14-inch**] <**Insert dimension**> diameter.

Dimension of Frame and Grate: Nominal [**12 to 14 inches**] <**Insert dimension**> square.

Side outlets are available in a limited number of outlet types. Consult manufacturers.

Outlet: [**Bottom**] [**Side**].

Outlet Type: [**No hub**] [**Inside caulk**] [**Threaded**] <**Insert type**>.

Grate Material: [**Bronze**] [**Cast iron**] [**Nickel-bronze alloy**] <**Insert material**>.

Vandal-Proof Grate: [**Not required**] [**Required**].

Extension Collars: [**Not required**] [**Required**].

Underdeck Clamp: [**Not required**] [**Required**].

Expansion Joint: [**Not required**] [**Required**].

Sump Receiver Plate: [**Not required**] [**Required**].

<**Insert options**>.

Roof drains in first paragraph below are available in NPS 2 to NPS 6 (DN 50 to DN 150).

* + - * 1. Metal, Medium-Sump, Promenade Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2293) Subject to compliance with requirements, provide products by one of the following:

[MIFAB, Inc](http://www.specagent.com/Lookup?uid=123457170382).

[Wade; a subsidiary of McWane Inc](http://www.specagent.com/Lookup?uid=123457170386).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170385).

Approved equivalent.

Standard: ASME A112.6.4.

Body Material: [**Cast iron**] <**Insert material**>.

Dimension of Body: [**11- to 12-inch**] <**Insert dimension**> diameter.

Dimension of Frame and Grate: Nominal [**12 inches**] <**Insert dimension**> square.

Side outlets are available in a limited number of outlet types. Consult manufacturers.

Outlet: [**Bottom**] [**Side**].

Outlet Type: [**No hub**] [**Inside caulk**] [**Threaded**] <**Insert type**>.

Grate Material: [**Bronze**] [**Cast iron**] [**Nickel-bronze alloy**] <**Insert material**>.

Vandal-Proof Grate: [**Not required**] [**Required**].

Extension Collars: [**Not required**] [**Required**].

Underdeck Clamp: [**Not required**] [**Required**].

Expansion Joint: [**Not required**] [**Required**].

Sump Receiver Plate: [**Not required**] [**Required**].

<**Insert options**>.

Roof drains in first paragraph below are available in NPS 2 to NPS 4 (DN 50 to DN 100).

* + - * 1. Metal, Small-Sump, Promenade Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2295) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170387).

[WATTS](http://www.specagent.com/Lookup?uid=123457170390).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170391).

Approved equivalent.

Standard: ASME A112.6.4.

Body Material: [**Cast iron**] <**Insert material**>.

Dimension of Body: Nominal [**8-inch**] <**Insert dimension**> diameter.

Dimension of Frame and Grate: Nominal [**8 inches**] <**Insert dimension**> square.

Outlet: Bottom.

Outlet Type: [**No hub**] [**Inside caulk**] [**Threaded**] <**Insert type**>

Grate Material: [**Bronze**] [**Cast iron**] [**Nickel-bronze alloy**] <**Insert material**>.

Vandal-Proof Grate: [**Not required**] [**Required**].

Extension Collars: [**Not required**] [**Required**].

Underdeck Clamp: [**Not required**] [**Required**].

Expansion Joint: [**Not required**] [**Required**].

Sump Receiver Plate: [**Not required**] [**Required**].

<**Insert options**>.

Roof drains in first paragraph below are available in NPS 2 to NPS 6 (DN 50 to DN 150).

* + - * 1. Metal, Medium-Sump, Deck Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2296) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170298).

[WATTS](http://www.specagent.com/Lookup?uid=123457170302).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170303).

Approved equivalent.

Standard: ASME A112.6.4.

Body Material: [**Cast iron**] <**Insert material**>.

Flange: [**Anchor**] [**Anchor with weep holes**] [**Not required**].

Clamping Device: [**Not required**] [**Required**].

Integral Backwater Valve: [**Not required**] [**Required**].

Side outlets are only available in limited number of outlet types. Consult manufacturers.

Outlet: [**Bottom**] [**Side**] <**Insert location**>.

Outlet Type: [**No hub**] [**Inside caulk**] [**Threaded**] <**Insert type**>.

Grate Material: [**Cast or ductile iron**] <**Insert material**>.

Grate Finish: [**Not required**] <**Insert finish**>.

Overall Dimension of Frame and Grate: Nominal [**12 to 14 inches**] <**Insert dimension**> [**round**] [**square**].

Top-Loading Classification: [**Heavy Duty**] <**Insert duty**>.

Vandal-Proof Frame and Grate: [**Not required**] [**Required**].

<**Insert options**>.

Roof drains in paragraph below are available in NPS 2 to NPS 4 (DN 50 to DN 100).

* + - * 1. Metal, Small-Sump, Deck Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2298) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170310).

[WATTS](http://www.specagent.com/Lookup?uid=123457170309).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170312).

Approved equivalent.

Standard: ASME A112.6.4.

Body Material: Metal.

Flange: [**Anchor**] [**Anchor with weep holes**] [**Not required**].

Clamping Device: [**Not required**] [**Required**].

Integral Backwater Valve: [**Not required**] [**Required**].

Side outlets are only available in limited number of outlet types. Consult manufacturers.

Outlet: [**Bottom**] [**Side**] <**Insert location**>.

Outlet Type: [**No hub**] [**Inside caulk**] [**Threaded**] <**Insert type**>.

Grate Material: [**Cast or ductile iron**] <**Insert material**>.

Grate Finish: [**Not required**] <**Insert finish**>.

Overall Dimension of Frame and Grate: Nominal [**8 inches**] <**Insert dimension**> [**round**] [**square**].

Top-Loading Classification: <**Insert duty**>.

Vandal-Proof Frame and Grate: [**Not required**] [**Required**].

<**Insert options**>.

* + - 1. PLASTIC ROOF DRAINS

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

Roof drains in paragraph below are available in at least NPS 2 to NPS 4 (DN 50 to DN 100).

* + - * 1. Plastic Roof Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2299) Subject to compliance with requirements, provide products by one of the following:

[Marathon Roofing Products](http://www.specagent.com/Lookup?uid=123457170316).

[Town & Country Plastics, Inc](http://www.specagent.com/Lookup?uid=123457170319).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170322).

Approved equivalent.

Standard: ASME A112.6.4.

Body Material: [**ABS**] [**or**] [**PVC**] <**Insert material**>.

Sump Diameter: <**Insert nominal dimension**>.

Combination Flashing Ring and Gravel Stop: [**Not required**] [**Required**].

Outlet: [**Bottom**] <**Insert location**>.

Outlet Type: <**Insert type**>.

Extension Collars: [**Not required**] [**Required**].

Underdeck Clamp: [**Not required**] [**Required**].

Expansion Joint: [**Not required**] [**Required**].

Sump Receiver Plate: [**Not required**] [**Required**].

Dome Material: [**Aluminum**] [**Cast iron**] [**Plastic**] <**Insert material**>.

Vandal-Proof Dome: [**Not required**] [**Required**].

<**Insert options**>.

* + - 1. MISCELLANEOUS STORM DRAINAGE PIPING SPECIALTIES

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

In "Downspout Adapters" paragraph below, adapters are available with NPS 2 to NPS 6 (DN 50 to DN 150) inlets and several downspout connection sizes.

* + - * 1. Downspout Adapters <**Insert drawing designation if any**>:

Description: Manufactured, gray-iron casting, for attaching to horizontal-outlet, parapet roof drain and to exterior sheet metal downspout.

Size: Inlet size to match parapet drain outlet.

In "Downspout Boots" paragraph below, boots are generally available with inlet dimensions of 4 by 3 and 5 by 4 inches, respectively, and of 4 inches in diameter. Outlet is NPS 4 (DN 100).

* + - * 1. Downspout Boots <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=12974) Subject to compliance with requirements, provide products by one of the following:

[J.R. Hoe & Sons Inc](http://www.specagent.com/Lookup?uid=123457170259).

[Neenah Foundry Company](http://www.specagent.com/Lookup?uid=123457170258).

[WATTS](http://www.specagent.com/Lookup?uid=123457178339).

Approved equivalent.

Description: Manufactured, ASTM A48, gray-iron casting, with strap or ears for attaching to building; 4 inch outlet; and shop-applied bituminous coating.

Size: Inlet size to match downspout and 4 inch outlet.

In "Metal Downspout Nozzles" paragraph below, nozzles are generally available in NPS 2 to NPS 10 (DN 50 to DN 250).

* + - * 1. Metal Downspout Nozzles <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=13938) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170442).

[WATTS](http://www.specagent.com/Lookup?uid=123457170443).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170444).

Approved equivalent.

Description: Nozzle with wall flange and mounting holes to cover rough opening and serve as anchor.

Size: Same as connected downspout.

Material: Cast bronze or nickel bronze nozzle and flange.

In "Piping Connection" subparagraph below, not all manufacturers offer each connection type. Consult manufacturers.

Piping Connection Type: [**Threaded**] [**No-hub**] [**or**] [**Slip on**].

Finish: <**Insert type**>.

Opening Protection: [**Birdscreen**] [**None**].

* + - * 1. Metal Downspout Nozzles with PVC Insert <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=13939) Subject to compliance with requirements, provide products by the following:

[RectorSeal Plumbing; A CSW Industrials Company](http://www.specagent.com/Lookup?uid=123457170445).

Approved equivalent.

Description: Nozzle with wall flange and mounting holes to cover rough opening and serve as anchor.

Size: Same as connected downspout.

Material: Cast nickel brass, with integral PVC insert.

Piping Connection Type: Solvent welded.

Finish: Nickel brass.

Opening Protection: [**Birdscreen**] [**None**].

In “Polymer Downspout Nozzles” paragraph below, nozzles are generally available in NPS 3, NPS 4, and NPS 6 (DN 75, DN 100, and DN 150).

* + - * 1. Polymer Downspout Nozzles <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=13940) Subject to compliance with requirements, provide products by the following:

[RectorSeal Plumbing; A CSW Industrials Company](http://www.specagent.com/Lookup?uid=123457170446).

Approved equivalent.

Description: Nozzle and wall flange and mounting holes to cover rough opening and serve as anchor.

Size: Same as connected downspout.

Material: High impact, marine grade polymer.

Piping Connection Type: Solvent welded.

Finish: Simulated oil-rubbed bronze.

* + - 1. CLEANOUTS

Copy this article and re-edit for each product.

If more than one configuration of each cleanout is required, insert drawing designation. Use these designations on Drawings to identify each product. Not all manufacturers offer all options and not all options are available in each combination. Consult manufacturers.

* + - * 1. Cast-Iron Exposed Cleanouts <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=13000) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170343).

[WATTS](http://www.specagent.com/Lookup?uid=123457170347).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170348).

Approved equivalent.

Standard: ASME A112.36.2.

Size: Same as connected branch.

Body Material: [**Hub-and-spigot, cast-iron soil pipe T-branch**] [**No-hub, cast-iron soil pipe test tee**] as required to match connected piping.

Closure: [**Countersunk**] [**Countersunk or raised-head**] [**Raised head**], [**brass**] [**cast-iron**] [**plastic**] plug.

Closure Plug Size: Same as, or not more than, one size smaller than cleanout size.

* + - * 1. Cast-Iron Exposed Floor Cleanouts <**Insert drawings designation, if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=13001) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170350).

[WATTS](http://www.specagent.com/Lookup?uid=123457170355).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170356).

Approved equivalent.

Standard: ASME A112.36.2.

Size: Same as connected branch.

Type: [**Adjustable housing**] [**Cast-iron soil pipe with cast-iron ferrule**] [**Heavy-duty, adjustable housing**] [**Threaded, adjustable housing**].

Body or Ferrule: Cast iron.

Clamping Device: [**Not required**] [**Required**].

Outlet Connection: [**No hub**] [**Hub with inside caulk**] [**Hub with gasket**] [**Threaded**].

Closure: [**Brass plug with straight threads and gasket**] [**Brass plug with tapered threads**] [**Cast-iron plug**] [**Plastic plug**].

Adjustable Housing Material: [**Cast iron**] [**Plastic**] <**Insert material**> with [**threads**] [**setscrews or other device**].

Frame and Cover Material and Finish: [**Nickel-bronze, copper alloy**] [**Painted cast iron**] [**Polished bronze**] [**Rough bronze**] <**Insert material and finish**>.

Frame and Cover Shape: [**Round**] [**Square**] <**Insert shape**>.

Top Loading Classification: [**Extra-Heavy**] [**Heavy**] [**Light**] [**Medium**] Duty.

Riser: ASTM A74, [**Extra-Heavy**] [**Service**] class, cast-iron drainage pipe fitting and riser to cleanout.

* + - * 1. Plastic Floor Cleanouts <**Insert drawing designation, if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2304) Subject to compliance with requirements, provide products by one of the following:

[NDS Inc](http://www.specagent.com/Lookup?uid=123457170416).

[Sioux Chief Manufacturing Company, Inc](http://www.specagent.com/Lookup?uid=123457170417).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170418).

Approved equivalent.

Size: Same as connected branch.

Body Material: PVC.

Closure Plug: PVC.

Riser: Drainage pipe fitting and riser to clean out of same material as drainage piping.

* + - * 1. Cast-Iron Wall Cleanouts <**Insert drawing designation, if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=12999) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170340).

[WATTS](http://www.specagent.com/Lookup?uid=123457170336).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170339).

Approved equivalent.

Standard: ASME A112.36.2. Include wall access.

Size: Same as connected drainage piping.

Body: [**Hub-and-spigot, cast-iron soil pipe T-branch**] [**No-hub, cast-iron soil pipe test tee**] as required to match connected piping.

Closure Plug:

[**Brass**] [**Cast iron**].

[**Countersunk**] [**or**] [**raised**] head.

Drilled and threaded for cover attachment screw.

Size: Same as, or not more than, one size smaller than cleanout size.

Retain "Wall Access, Cover Plate" subparagraph below for cover plate; retain "Wall Access, Frame and Cover" subparagraph for frame and cover to be installed in drywall.

Wall Access, Cover Plate: Round, [**deep, chrome-plated bronze**] [**flat, chrome-plated brass or stainless steel**] cover plate with screw.

Wall Access, Frame and Cover: [**Round**] [**Square**], [**nickel-bronze, copper-alloy, or stainless steel**] <**Insert material**> wall-installation frame and cover.

* + - * 1. Test Tees <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2302) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170403).

[WATTS](http://www.specagent.com/Lookup?uid=123457170405).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170406).

Approved equivalent.

Standard: ASME A112.36.2M and ASTM A74, ASTM A888, or CISPI 301.

Size: Same as connected drainage piping.

Body Material: Hub-and-spigot, cast-iron soil-pipe T-branch or no-hub, cast-iron soil-pipe test tee as required to match connected piping.

Closure Plug: [**Countersunk**] [**or**] [**raised head**], [**brass**] <**Insert material**>.

Closure Plug Size: Same as, or not more than, one size smaller than cleanout size.

* + - 1. BACKWATER VALVES

Copy this article and re-edit for each product.

If more than one configuration of each valve is required, insert drawing designation. Use these designations on Drawings to identify each product.

* + - * 1. Cast-Iron, Horizontal Backwater Valves <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2306) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170421).

[WATTS](http://www.specagent.com/Lookup?uid=123457170424).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170425).

Approved equivalent.

Standard: ASME A112.14.1.

Size: Same as connected piping.

Body Material: Cast iron.

Cover: Cast iron with [**bolted**] [**or**] [**threaded**] access check valve.

End Connections: [**Hub and spigot**] [**or**] [**no hub**].

Check Valve: Removable, bronze, swing check, factory assembled or field modified to hang [**closed**] [**open for airflow unless subject to backflow condition**].

Extension: ASTM A74, Service class; full-size, cast-iron soil-pipe extension to field-installed cleanout at floor; replaces backwater valve cover.

* + - * 1. Cast-Iron, Drain-Outlet Backwater Valves <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2307) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170427).

[WATTS](http://www.specagent.com/Lookup?uid=123457170429).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170430).

Approved equivalent.

Standard: ASME A112.14.1.

Size: Same as floor drain outlet.

Body Material: Cast iron or bronze made for vertical installation in bottom outlet of floor drain.

Check Valve: Removable ball float.

Inlet: Threaded.

Outlet: Threaded or spigot.

Plastic backwater valves in "Plastic, Horizontal Backwater Valves" paragraph below are available in NPS 2 to NPS 6 (DN 50 to DN 150). Most are made of PVC.

* + - * 1. Plastic, Horizontal Backwater Valves <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2308) Subject to compliance with requirements, provide products by one of the following:

[NDS Inc](http://www.specagent.com/Lookup?uid=123457170251).

[RectorSeal Plumbing; A CSW Industrials Company](http://www.specagent.com/Lookup?uid=123457170257).

[Sioux Chief Manufacturing Company, Inc](http://www.specagent.com/Lookup?uid=123457170253).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170255).

Approved equivalent.

Standard: ASME A112.14.1.

Size: Same as connected piping.

Body Material: [**ABS**] [**PVC**].

Cover: Same material as body with threaded access to check valve.

Check Valve: Removable swing check.

End Connections: Socket type.

* + - 1. TRENCH DRAINS

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

* + - * 1. Trench Drains <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2310) Subject to compliance with requirements, provide products by one of the following:

[Josam Company](http://www.specagent.com/Lookup?uid=123457170324).

[WATTS](http://www.specagent.com/Lookup?uid=123457170328).

[Zurn Industries, LLC](http://www.specagent.com/Lookup?uid=123457170329).

Approved equivalent.

Standard: ASME A112.6.3.

Body Material: [**Cast iron**] <**Insert material**>.

Flange: [**Anchor**] [**Seepage**] [**Not required**].

Clamping Device: [**Not required**] [**Required**].

Outlet: [**Bottom**] [**End**] [**Side**] <**Insert location**>.

Outlet Type: [**Inside caulk**] <**Insert type**>.

Grate Material: [**Ductile iron**] [**cast iron**] [**or**] [**stainless steel**] <**Insert material**>.

Grate Finish: [**Painted**] [**Not required**] <**Insert finish**>.

Dimensions of Frame and Grate: <**Insert dimensions: include those for body, sump, and grate if required**>.

Top-Loading Classification: [**Extra-Heavy**] [**Heavy**] [**Light**] [**Medium**] Duty.

* + - 1. CHANNEL DRAINAGE SYSTEMS

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

* + - * 1. Narrow, Sloped-Invert, Polymer-Concrete, Channel Drainage Systems <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2311) Subject to compliance with requirements, [**provide products by the following**] [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:

[ACO USA](http://www.specagent.com/Lookup?uid=123457170434).

[Hubbell Utility Solutions; Hubbell Incorporated](http://www.specagent.com/Lookup?uid=123457170432).

[MultiDrain Systems, Inc](http://www.specagent.com/Lookup?uid=123457170431).

Approved equivalent.

Description: Modular system of channel sections, grates, and appurtenances; designed so grates fit into channel recesses without rocking or rattling.

Channel Sections: Narrow, interlocking-joint, sloped-invert, polymer-concrete modular units with end caps.

Include rounded bottom, with built-in invert slope of 0.6 percent and with outlets in number, sizes, and locations indicated.

Include extension sections necessary for required depth.

Dimensions: [**5-inch**] <**Insert dimension**> inside width and [**9-3/4-inch**] <**Insert dimension**> inside depth. Include number of units required to form total lengths indicated.

Frame: [**Galvanized steel or cast iron for grates**] [**Not required**] <**Insert material**>.

Grates: Manufacturer's designation "[**heavy**] [**medium**] duty," with slots or perforations, and of width and thickness that fit recesses in channel sections.

Material: [**Ductile iron**] [**Fiberglass**] [**Galvanized steel**] [**Cast iron**] [**Stainless steel**] <**Insert material**>.

Locking Mechanism: [**Manufacturer's standard device for securing grates to channel sections**] [**Not required**].

Indicate locations and lengths of covers on Drawings.

Covers: Solid [**ductile or cast iron**] <**Insert material**>, of width and thickness that fit recesses in channel sections, and of lengths indicated.

Supports, Anchors, and Setting Devices: Manufacturer's standard unless otherwise indicated.

Channel-Section Joining and Fastening Materials: As recommended by system manufacturer.

* + - * 1. Narrow, Level-Invert, Polymer-Concrete, Channel Drainage Systems <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2312) Subject to compliance with requirements, provide products by one of the following:

[ABT, Inc](http://www.specagent.com/Lookup?uid=123457170333).

[ACO USA](http://www.specagent.com/Lookup?uid=123457170332).

[Hubbell Utility Solutions; Hubbell Incorporated](http://www.specagent.com/Lookup?uid=123457170335).

Approved equivalent.

Description: Modular system of channel sections, grates, and appurtenances; designed so grates fit into channel recesses without rocking or rattling.

Channel Sections: Narrow, interlocking-joint, precast, polymer-concrete modular units with end caps.

Include rounded bottom, with level invert and with outlets in number, sizes, and locations indicated.

Dimensions: [**5-inch**] <**Insert dimension**> inside width and [**9-3/4-inch**] <**Insert dimension**> inside depth. Include number of units required to form total lengths indicated.

Frame: [**Galvanized steel or cast iron for grates**] [**Not required**] <**Insert material**>.

Grates: Manufacturer's designation "[**heavy**] [**medium**] duty," with slots or perforations, and of width and thickness that fit recesses in channel sections.

Material: [**Ductile iron**] [**Fiberglass**] [**Galvanized steel**] [**Cast iron**] [**Stainless steel**] <**Insert material**>.

Locking Mechanism: [**Manufacturer's standard device for securing grates to channel sections**] [**Not required**].

Indicate locations and lengths of covers on Drawings.

Covers: Solid [**ductile or cast iron**] <**Insert material**>, of width and thickness that fit recesses in channel sections, and of lengths indicated.

Supports, Anchors, and Setting Devices: Manufacturer's standard unless otherwise indicated.

Channel-Section Joining and Fastening Materials: As recommended by system manufacturer.

* + - * 1. Wide, Level-Invert, Polymer-Concrete, Channel Drainage Systems <**Insert drawing designation if any**>:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=2313) Subject to compliance with requirements, provide products by one of the following:

[ABT, Inc](http://www.specagent.com/Lookup?uid=123457170437).

[ACO USA](http://www.specagent.com/Lookup?uid=123457170438).

[Hubbell Utility Solutions; Hubbell Incorporated](http://www.specagent.com/Lookup?uid=123457170439).

Approved equivalent.

Description: Modular system of channel sections, grates, and appurtenances; designed so grates fit into channel recesses without rocking or rattling.

Channel Sections: Wide, interlocking-joint, precast, polymer-concrete modular units with end caps.

Include flat or rounded bottom, with level invert and with outlets in number, sizes, and locations indicated.

Dimensions: [**8-inch**] <**Insert dimension**> inside width and [**13-3/4-inch**] <**Insert dimension**> inside depth. Include number of units required to form total lengths indicated.

Frame: [**Galvanized steel or cast iron for grates**] [**Not required**] <**Insert material**>.

Grates: Manufacturer's designation "[**heavy**] [**medium**] duty," with slots or perforations, and of width and thickness that fit recesses in channel sections.

Material: [**Ductile iron**] [**Fiberglass**] [**Galvanized steel**] [**Cast iron**] [**Stainless steel**] <**Insert material**>.

Locking Mechanism: [**Manufacturer's standard device for securing grates to channel sections**] [**Not required**].

Indicate locations and lengths of covers on Drawings.

Covers: Solid [**ductile or cast iron**] <**Insert material**>, of width and thickness that fit recesses in channel sections, and of lengths indicated.

Supports, Anchors, and Setting Devices: Manufacturer's standard unless otherwise indicated.

Channel-Section Joining and Fastening Materials: As recommended by system manufacturer.

1. EXECUTION
	* + 1. INSTALLATION

Additional instructions may be required for special applications. Indicate locations of specialties in plans, details, and schematics on Drawings.

* + - * 1. Install roof drains at low points of roof areas in accordance with roof membrane manufacturer's written installation instructions.

Install flashing collar or flange of roof drain to prevent leakage between drain and adjoining roofing. Maintain integrity of waterproof membranes where penetrated.

Install expansion joints, if indicated, in roof drain outlets.

Position roof drains for easy access and maintenance.

* + - * 1. Install downspout adapters on outlet of back-outlet parapet roof drains and connect to sheet metal downspouts.
				2. Install downspout boots at grade with top [**6 inches**] [**12 inches**] [**18 inches**] <**Insert dimension**> above grade. Secure to building wall.
				3. Install downspout nozzles at exposed bottom of conductors where they spill onto grade.
				4. Install cleanouts in aboveground piping and building drain piping in accordance with the following instructions unless otherwise indicated:

Use cleanouts the same size as drainage piping up to 4 inch. Use 4 inch for larger drainage piping unless larger cleanout is indicated.

Locate cleanouts at each change in direction of piping greater than 45 degrees.

Locate cleanouts at minimum intervals of [**50 feet**] <**Insert dimension**> for piping 4 inch and smaller and 100 feet for larger piping.

Locate cleanouts at base of each vertical storm piping conductor.

* + - * 1. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.
				2. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.
				3. Install horizontal backwater valves in floor with cover flush with floor.
				4. Install drain-outlet backwater valves in outlet of drains.
				5. Install test tees in vertical conductors and near floor.
				6. Install wall cleanouts in vertical conductors. Install access door in wall if indicated.
				7. Install trench drains at low points of surface areas to be drained. Set grates of drains flush with finished surface unless otherwise indicated.
				8. Assemble channel drainage system components in accordance with manufacturer's written instructions. Install on support devices so that top will be flush with adjacent surface.
				9. Install through-penetration firestop assemblies for penetrations of fire- and smoke-rated assemblies.

Comply with requirements in Section 078413 "Penetration Firestopping."

* + - 1. CONNECTIONS

Coordinate piping installations and specialty arrangements with Drawings and with requirements specified in piping systems. If Drawings are explicit enough, these requirements may be reduced or omitted.

* + - * 1. Comply with requirements for piping specified in Section 221413 "Facility Storm Drainage Piping." Drawings indicate general arrangement of piping, fittings, and specialties.
			1. INSTALLATION OF FLASHING
				1. Fabricate flashing from single piece of metal unless large pans, sumps, or other drainage shapes are required.
				2. Install sheet flashing on pipes, sleeves, and specialties passing through or embedded in floors and roofs with waterproof membrane.
				3. Set flashing on floors and roofs in solid coating of bituminous cement.
				4. Secure flashing into sleeve and specialty clamping ring or device.
			2. PROTECTION
				1. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
				2. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 221423