PVC PIPE ASSOCIATION
TECHNICAL BRIEF

MAKING SENSE OF DIAMETER TYPES FOR PVC PIPE

There are many different outside-diameter (OD) types for PVC pipe. Some OD types are used solely for pressure pipe, some solely for gravity sewer pipe, and some for both applications. Each OD type has one or more descriptive acronyms. Although at first the combination of OD types, acronyms, and applications may seem daunting, the topic can be addressed in a logical way.

AWWA PRESSURE PIPE

The AWWA C900, C905, and C909 pipe standards all use Cast-Iron Pipe Size outside diameters. This diameter regimen is compatible with both cast-iron pipe and ductile-iron pipe. There are four acronyms used for this OD type:

1. CIOD – cast-iron outside diameter
2. CIPS – cast-iron pipe size
3. DIOD – ductile-iron outside diameter
4. DIPS – ductile-iron pipe size

The AWWA C905 standard also includes Iron Pipe Size (IPS) outside diameters. In this case, "iron" is a misnomer – IPS pipe sizes are actually compatible with steel pipe sizes.

ASTM PRESSURE PIPE

The earliest PVC pressure-pipe standards were ASTM D1785 for Schedule pipe and ASTM D2241 for SDR pipe. Both of these standards use the IPS outside diameters discussed above.

Over the years, two other PVC pipe OD types were added to an annex of ASTM D2241. Included are:

1. CTS – Copper Tube Size, in sizes ½- through 2-inch
2. PIP – Plastic Irrigation Pipe, in sizes 6- through 27-inch

ASTM SOLID-WALL GRAVITY SEWER PIPE

In the early days of PVC sewer pipe, there were two solid-wall pipe OD types (and two different standards) at ASTM.

- PSP – "Plastic Sewer Pipe" – ASTM D3033 – this pipe type no longer exists and the standard was withdrawn in 1987.
- PSM – "Plastic Sewer Main" – ASTM D3034 – this pipe became the product of choice for sewer utilities throughout North America. Included are sizes from 3- through 15-inch.

As extrusion technology improved, larger sizes of PVC sewer pipe became available. The ASTM F679 standard for large-diameter PVC sewer pipe was first published in 1980. Currently, 18- through 27-inch sizes conform to PIP ODs, while 30- through 60-inch sizes match CIODs.

ASTM PROFILE-WALL GRAVITY SEWER PIPE

In later years, several PVC sewer-pipe ASTM standards for profile-wall pipe were published. The pipe in these standards is ID-controlled, so there is no OD type (or OD acronym) involved.

DIMENSIONS

Dimensions for all of these OD types are found in the Appendix to Uni-Bell's *Handbook of PVC Pipe*. Included are average ODs, minimum wall thicknesses, and approximate IDs for the full size range of each OD type.

References: ASTM D1785 "Specification for Polyvinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120"; ASTM D2241 "Specification for Polyvinyl Chloride (PVC) Pressure-Rated Pipe (SDR Series)"; ASTM D3033 "Specification for Type PSP Polyvinyl Chloride (PVC) Sewer Pipe and Fittings"; ASTM D3034 "Specification for Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings"; ASTM F679 "Specification for Polyvinyl Chloride (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings"; AWWA C900 "Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 in. through 12 in."; AWWA C905 "Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 in. through 48 in."; AWWA C909 "Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe, 4 in. through 24 in."; *Handbook of PVC Pipe*, Uni-Bell 2013.

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