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# Outdoor Enclosures for Fluid Conveying Components

# Section I

## 1.0 General

### 1.1 Application

This standard details the requirements of outdoor enclosures for fluid conveying components (herein referred to as the "enclosure"). It includes enclosure types for freezing and non-freezing locations.

These enclosures are designed to protect backflow prevention assemblies and devices, water/gas meters, control valves, pressure reducing valves, air release valves, pumps, and other components installed outdoors requiring protection from freezing and/or for system security.

### 1.2 Scope

#### 1.2.1 Description

The enclosures incorporate features to provide for positive drainage, security, and accessibility for monitoring, testing, repairing and replacing of the components. The enclosures shall provide freeze protection, freeze retardant or non-freeze protection of the components.

#### 1.2.2 Classes

##### 1.2.2.1 Freeze Protection Enclosures (Heated)

Freeze protection enclosures (Class I and I-V) shall have a minimum thermal resistance value of eight (R8), and a positive means of heat. These enclosures shall be designed and constructed to maintain a minimum internal temperature of 40.0 °F (4.4 °C) using the empirical data obtained in Section 3.6 which is based on an external temperature of -30.0 °F (-34.4 °C). Class I enclosures are designed for components that do not generate positive and/or negative air pressures. Class I-V enclosures are designed for components that generate positive and/or negative air pressures, and include an air inlet and/or outlet.

##### 1.2.2.2 Freeze Retardant Enclosures (Non-Heated)

Freeze retardant enclosures (Class II and II-V) shall have a minimum thermal resistance value of eight (R8). These enclosures shall be designed and constructed to be installed in minimum external temperatures of 33.0 °F (0.6 °C). Class II enclosures are designed for components that do not generate positive and/or negative air pressures. Class II-V enclosures are designed for components that generate positive and/or negative air pressures, and include an air inlet and/or outlet.

##### 1.2.2.3 Non-Freeze Protection Enclosures

Non-freeze protection enclosures (Class III and III-V) are designed and constructed to provide system security for components when freezing temperatures are not a consideration. Class III enclosures are designed for components that do not generate positive and/or negative air pressures.

Class III-V enclosures are designed for components that generate positive and/or negative air pressures, and include an air inlet and/or outlet.

#### 1.2.3 Heat Sources (Class I and I-V)

Heat sources provided by the enclosure manufacturers shall be constructed and installed so that water or other liquids do not enter and or accumulate in or on the live wired sections or electrical components or wiring. Electric heat sources and electrical components which are associated with the heat source and supplied by the manufacturer shall be listed by an independent product safety listing and certification agency for use in damp locations.

#### 1.2.4 Drains

Enclosures shall have a means of draining per Section 3.5.

#### 1.2.5 Access Design

Enclosures shall have a means for accessing the components contained within the enclosures for monitoring, testing, repairing and/or replacing per Sections 3.3 and 3.4.

#### 1.2.6 Air Inlets and Outlets

Class I-V, II-V and III-V enclosures shall have air inlets and/or outlets per Section 3.1.

#### 1.2.7 Security

Enclosures shall be lockable.

## 1.3 Free Span Structural Design

The free span structural design of enclosures shall include, but are not limited to, the following:

#### 1.3.1 Structural Design 1 (SD1)

These enclosures consist of an approved exterior surface with insulation.

#### 1.3.2 Structural Design 2 (SD2)

These enclosures consist of an approved exterior surface with insulation and structural members that are integral to the exterior surface material.

#### 1.3.3 Structural Design 3 (SD3)

These enclosures consist of an approved exterior surface with structural members that are integral to the exterior surface material.

#### 1.3.4 Structural Design 4 (SD4)

These enclosures consist of an approved exterior surface with insulation and independent structural members that are separately attached to the exterior surface.

#### 1.3.5 Structural Design 5 (SD5)

These enclosures consist of an approved exterior surface with independent structural members that are separately attached to the exterior surface.

#### 1.3.6 Structural Design 6 (SD6)

These enclosures consist of an approved exterior surface only.

**NOTE:** Enclosures requiring a free-standing vertical support column shall be designated as such by the manufacturer, and considered a separate structural design type.

## 1.4 Reference Standards

Reference to industry standards shall mean the latest edition.