

**MSS SP-127-2014a**

# **Bracing for Piping Systems: Seismic – Wind – Dynamic Design, Selection, and Application**

Note: This 2014a Edition Replaces  
the Original 2014 Edition.

**Standard Practice**  
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Originally Approved: February 2001  
Originally Published: May 2001  
Current Edition Approved: July 2013  
Current Edition Published: February 2014

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## **FOREWORD**

This Standard Practice was developed by representatives from pipe hanger manufacturers that are MSS member companies in good standing. It is constructed based on analysis, the current practice at the time, and on the collective feedback and experience of the industry. This Standard Practice is intended for use with non-critical, standard commercial and industrial systems. There is a companion Standard Practice, ANSI/MSS SP-58, which relates to the materials, design, manufacture, selection, application, and installation of pipe hangers and supports.

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## BRACING FOR PIPING SYSTEMS: SEISMIC – WIND – DYNAMIC DESIGN, SELECTION, AND APPLICATION

### 1. SCOPE

1.1 This Standard Practice establishes the material, design, fabrication, and inspection criteria to be used in the manufacture, selection, and application of standard types of bracing assemblies.

1.2 This Standard Practice presents recommended guidelines for providing stability in piping systems for protection against seismic, wind, and other dynamic forces.

1.3 This Standard Practice is intended for use on piping systems where formal engineered bracing design may not have been performed. Note that local and/or national building codes or regulations may supersede or augment these requirements.

1.4 This Standard Practice applies to rigidly connected metallic pipe only (welded, flanged, mechanical-jointed, etc.). For other types of pipe and pipe connections, contact the applicable pipe manufacturer for information.

### 2. OBJECTIVE

2.1 To serve as a bracing standard, that includes selection and application, for seismic, wind, and other dynamic forces. This Standard Practice can be referenced in whole or in part if so designated.

2.2 To serve as a guide to proven industry practice during engineering design and writing of job specifications covering seismic, wind, and other dynamic bracing of piping systems.

2.3 To provide the erector with information on types of seismic, wind, and other dynamic bracing to be used for specific applications and installations, where such information is not already provided.

2.4 To serve as a companion document to ANSI/MSS SP-58. ANSI/MSS SP-58 also provides definitions used in this Standard Practice.

### 3. APPLICATION

3.1 All piping systems subjected to seismic loading shall be braced for seismic forces in accordance with the requirements of this Standard Practice, unless otherwise defined in local and/or national building codes or regulations.

3.1.1 The charts below identify which size pipes require bracing for designated seismic design categories and importance factors.

**Pipe Bracing**

<b>Seismic Design Category (SDC)</b>			
<i>I<sub>p</sub></i>	<b>A, B</b>	<b>C</b>	<b>D, E, F</b>
<b>1.0</b>	Not Required	Not Required	NPS 3½ and Larger
<b>1.5</b>	Not Required	NPS 2½ and Larger	NPS 1¼ and Larger

(Source: ASCE 7, Section 13.6.8; with additional exemptions from Section 13.1.4)

**Trapeze Supported Pipe Bracing**

<b>Seismic Design Category (SDC)</b>			
<i>I<sub>p</sub></i>	<b>A, B</b>	<b>C</b>	<b>D, E, F</b>
<b>1.0</b>	Not Required	Not Required	**10 lbs./ft. and Greater
<b>1.5</b>	Not Required	*10 lbs./ft. and Greater	***10 lbs./ft. and Greater

(Source: ASCE 7, Section 13.6.8; with additional exemptions from Section 13.1.4)

**NOTES:**

- \* Required if any pipe is NPS 2½ and larger.
- \*\* Required if any pipe is NPS 3½ and larger.
- \*\*\* Required if any pipe is NPS 1¼ and larger.

3.1.2 The Seismic Design Category (SDC) and Component Importance Factor (*I<sub>p</sub>*) are typically found on the project structural drawings or the project specifications. In general, the Engineer of Record determines these parameters.

3.1.3 Seismic Design Category (SDC) is a classification assigned to a structure based on its Occupancy Category and the severity of the design earthquake ground motion at the site, as defined in Chapter 11 of ASCE 7.