Protect your building from critical seismic movement with the Tri-Flex Loop®

Typical bracing using Flex-Hose Co.’s IBC & ASCE Standard 7-05 Compliant Tri-Flex Loop®

Isolating Building Joints
Tri-Flex Loop meets the stringent requirements of the International Building Code and ASCE Standards for seismic applications.

Find out how the IBC & ASCE seismic regulations will impact your next building.

www.flexhose.com • Toll Free 1.877.TRI-FLEX
The Tri-Flex Loop® Seismic Connection System
meet the requirements of Chapter 17.1.2
of ASCE Standard 7-05 code for total displacement.

From coast to coast, the 2009 International Building Code (IBC) & ASCE Standard 7-05 are requiring architects, engineers and building owners to adapt to new building requirements related to seismic regulations. Flex Hose Company’s patented Tri-Flex Loop design meets the displacement requirements as defined by Chapter 17.1.2 of the ASCE 7-05 code. It’s three flexible sections allow it to compensate movement in six degrees of freedom (three coordinates axes, plus rotation about those axes simultaneously from random seismic shift).

2009 International Building Code (IBC) Section 1613-Earthquake Loads 1613.1 Scope. Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7, excluding Chapter 14 and Appendix 11A. The seismic design category for a structure is permitted to be determined in accordance with Section 1613 or ASCE.

ASCE Standard 7-05

Chapter 17 - Seismic Design Requirements for Seismically Isolated Structures

17.1.2 Displacement
Design Displacement. The design earthquake lateral displacement, excluding additional displacement due to actual and accidental torsion, required for design of the isolation system.

Total Displacement Design Displacement excluding additional displacement due to actual and accidental torsion, required for design of the isolation system.

Total Maximum Displacement
The maximum considered earthquake lateral displacement, including additional displacement due to actual and accidental torsion, required for verification of the stability of the isolation system or elements thereof, design of building separation, and vertical load testing of isolator units prototype.

ASCE 7-05 Chapter 11

11.1.2 Scope. Every structure, and portion thereof, including nonstructural components, shall be designed and constructed to resist the effects of earthquake motions as prescribed by the seismic requirements of this standard. Certain non-building structures, as described in Chapter 15, are also within the scope and shall be designed and constructed in accordance with the requirements of Chapter 15. Requirements concerning alterations, additions, and change of use are set forth in Appendix 11B. Existing structures and alterations to existing structures need only comply with the seismic requirements of this standard where required by Appendix 11B.

17.2.6.2 Components Crossing the Isolation Interface: Elements of seismically isolated structures and nonstructural components, or portions thereof, that cross the isolation interface shall be designed to withstand the total maximum displacement.

2009 IBC & ASCE Standard Code Compliance - Seismic Design Requirements

Compliant Tri-Flex Loop® Patented Technology
Meets the stringent requirements of the ASCE standards for displacement requirements

Tri-Flex Loop Specifications:
The Tri-Flex Loop patented design meets the displacement requirements as defined Chapter 17 of ASCE Standard 7-05. Its three flexible sections allow it to compensate movement in six degrees of freedom (three coordinates axes, plus rotation about those axes simultaneously from random seismic movements and displacements).

Tri-Flex Loop meets the most stringent requirements of ASCE Standards and the International Building Code.
Isolate Building Joints

Tri-Flex Loop® Factory Cable Hanger Support Systems
meet the requirements of the ASCE Standard 7-05 Chapter 13.6.5, 13.6.5.1, 13.6.6 for piping systems and component supports.

From coast to coast, the 2009 International Building Code (IBC) and ASCE Standard 705 require architects, engineers and building owners to adapt to new building codes and standards related to seismic regulations. These code standards also apply to the components utilized to support flexible loops at building separations. The Tri-Flex Loop UL Listed Cable Support Hanger System is simple and reliable and is in compliance with ASCE Standard 705, Chapter 13.6.5, 13.6.5.1 and 13.6.8.

Flex-Hose Company’s Tri-Flex Loop is capable of accommodating seismic displacements for vertical piping between floors in buildings, and where piping passes through or bridges building seismic joints or building expansion joints.

ASCE Standard 7-05

- Chapter 13 - Structural Design Requirements for Non-Structural Components
  - 13.6.3 Component Supports. Mechanical and electrical component supports (including those with Ip = 1.0) and the means by which they are attached to the component shall be designed for the forces and displacements determined in Sections 13.3.1 and 13.3.2. Such supports include structural members, braces, frames, skirts, legs, saddles, pedstals, cables, guys, stays, stubbers, and tethers, as well as elements forged or cast as a part of the mechanical or electrical component.

- 13.6.5.1 Design Basis. If standard supports, for example, ASME B31, NFPA 13, or MSS SP-58; or proprietary supports are used, they shall be designed by either load rating (i.e., testing) or for the calculated seismic forces. In addition, the stiffness of the support, where appropriate, shall be designed such that the seismic load path for the component performs its intended function.

- 13.6.8 Piping Systems. Piping systems shall satisfy the requirements of this section except that elevator systems piping shall satisfy the requirements of Section 13.6.10. Except for piping designed and constructed in accordance with NFPA 13, seismic supports shall not be required for other piping systems where one of the following conditions is met: 1. Piping is supported by rod hangers; hangers in the pipe run are 12 in. (305 mm) or less in length from the top of the pipe to the supporting structure; hangers are detailed to avoid bending of the hangers and their attachments; and provisions are made for piping to accommodate expected deflections.

Tri-Flex Loop Factoy Cable Hanger Support System
Complies with the stringent requirements of the ASCE Standard 7-05 Chapter 13.6.5, 13.6.5.1, 13.6.8 for piping systems and component supports.

Compliant Tri-Flex Loop® Cable Hanger Support System
Meets the stringent requirements of the ASCE Standard 7-05 Chapter 13.6.5, 13.6.5.1, 13.6.8 for piping systems and component supports

Tri-Flex Loop Factory Cable Hanger Assembly Kits meet the requirements of the ASCE 705 Chapters 13.6.5, 13.6.5.1 and 13.6.8 for component supports that are designed for load rating and third party tested. The UL Listed Seismic Wire/Cable used in our hanger assemblies conforms to the requirement of ASCE (American Society of Civil Engineers) guidelines for structural application of wire rope in that the cable is pre-stretched and permanent end fittings maintain the strongest angle of the cable with a safety factor of two.

ASCE Standard 7-05 Compliance - Component Support Requirements

Listed Cable Hanger Assembly

Color Coded • Pre-stretched • Breakstrength Certified

Simple and Reliable

Use RED CABLE kit for installing all Tri-Flex Loops up to 8" in diameter.

Use BLUE CABLE kit for installing all Tri-Flex Loops of 10" or larger in diameter.

Contents of kits:
• 2 URC universal restraint clips for attaching to structure
• 4 zinc-plated copper oval sleeves
• 2 red or blue cables, 13 ft. long

Tri-Flex Loop meets the most stringent requirements of ASCE Standards and the International Building Code.
The Tri-Flex Loop®’s superior capabilities for withstanding large and irregular movements caused by seismic activities in a piping system were tested and confirmed by independent, third party testing at The New York State Center for Advanced Technology (CAT) at Rensselaer Polytechnic Institute.

UL listed and labeled Tri-Flex Loop products are tested, labeled and regularly inspected by Underwriters Laboratories to ensure they meet or exceed industry performance standards.

Tri-Flex Loop is a reliable means of absorbing movement resulting from random seismic shifts and displacement in a piping system. The Tri-Flex Loop meets the most stringent requirements of the ASCE and the International Building Code!

Seismic Loop Sizing Program
It’s FREE!

PROGRAM FEATURES
• Building seismic joints
• Automatically selects UL® listed hanger assemblies
• Calculates nesting of expansion seismic loops
• Calculates spring rates of expansion seismic loops
• Creates detailed schedule or submittals
• Allows saving of projects, opening new projects, and editing of projects
• Industry terminology
• Application examples
• Specifications

And best of all it saves design time! Compatible with all Auto CAD programs allowing input directly into your piping drawings!

Save Labor Costs
with Tri-Flex Loop Accessories

The complete seismic system solution.

Tri-Flex Loop® Hanger Assembly Kit and Accessories

The UL Listed Seismic Wire Rope/Cable™ used in our hanger assemblies conform to the requirements of the ASCE (American Society of Civil Engineers) guidelines for structural applications of wire rope, in that the cable is pre-stretched and the permanent end fittings maintain the breaking strength of the cable with a safety factor of two.

Color coded, factory cable cutter & crimper to meet cable specifications

Color coded for Tri-Flex Loop installations of 10” and larger in diameter

Color coded for Tri-Flex Loop installations of up to 4” diameter

Listed • Color Coded • Pre-stretched • Breakstrength Certified

Tri-Flex Loop® Factory Cable Anchor Kit
It’s simple, reliable & it reduces pipe anchoring costs!

The Tri-Flex Loop Factory Cable Anchor Kit saves valuable time on Tri-Flex Loop installation, making it easy to anchor the piping system when using the revolutionary Tri-Flex Loop.

The UL Listed Seismic Wire Rope/Cable™ used in our hanger assemblies conform to the requirements of the ASCE (American Society of Civil Engineers) guidelines for structural applications of wire rope, in that the cable is pre-stretched and the permanent end fittings maintain the breaking strength of the cable with a safety factor of two.

Listed • Factory Assembled • Simply install over pipe & fasten to above structure
• Color Coded • Pre-stretched • Breakstrength Certified

Tri-Flex Loop® meets the most stringent requirements of ASCE Standards and the International Building Code.
Tri-Flex Loop®
A World of Difference...
IN CRITICAL PIPING CONNECTIONS SINCE 1968

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Tri-Flex Loop
for combustible gases and
flammable liquids
33NB

ASME
Setting the Standard

FM
APPROVED
For Fire Protection Systems

CSA standard B51
certified. Inspected
and tested by the
Technical Standards
and Safety Authority
of Canada.