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- Structural attachment of sway braces
- Brace material selection
- Appropriate selection of UL Listed and FM approved sway brace components
- Creating a submittal sheet with all relevant information with the click of a mouse
- Selection of Branch Line Restraint details from NFPA 13 approved methods
- Available in English & Spanish

TOLBrace follows the requirements of:

- Factory Mutual
- International Building Code (IBC)
- Seismic force factor calculations (Fp)
- Zone of influence calculations
- Swash brace orientation and angle selection
- Structural attachment of sway braces
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Phone: 909-427-9773
Email: SeismicQuotes@Eaton.com
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**Wrap-Around U-Hook**

To meet the requirements of NFPA 13 for branch line restraints, the U-Hook option can be used. The following guidelines apply:

- Install within 6 inches (152 mm) of the vertical hanger arranged for restraint against upward movement, provided it is utilized such that l/r does not exceed 400.
- With the vertical hanger arranged for restraint against upward movement, the ‘Ring of Fire’ - locations where earthquakes are prevalent. Our UL Listed Seismic Bracing products are specified worldwide for bracing fire sprinklers systems against damage from earthquakes. A listed sway brace can help you meet this option, TOLCO offers the services of our Seismic Bracing Engineers to supply wet-stamped structural calculations as required.

**Other Approved Means**

For an area authority having jurisdiction, the option while providing some of the best resistance to horizontal loads should be clearly defined by NFPA 13 and if UL Listed, the U-Hook option this sufficiently restrains the pipe and requires no additional calculations. Please note to be careful when selecting this option, TOLCO offers the services of our Seismic Bracing Engineers to supply wet-stamped structural calculations as required.
TOLCO™ Seismic Bracing for Branch Line Restraints

Rely on us for all your seismic and engineering needs

TOLCO Seismic Bracing products are manufactured in California, which is located on the “Ring of Fire” – locations that experience multiple earthquakes a year. This small, but some are significant, and the potential for a major catastrophic earthquake is always present.

Being located in a virtual “living laboratory of seismic activity” has driven our team of engineers to develop some of the best seismic bracing products design in the industry. Our products are known and respected by installers, designers, and the protection authorities worldwide.

For over 45 years, TOLCO Seismic Bracing products have been manufactured and sold worldwide where earthquakes are present. Our UL Listed and FM approved quality seismic bracing products are confidentably relied upon to help prevent lives and property from these devastating forces.

TOLCO Seismic Bracing products are specified worldwide for binging the best resistance to horizontal loads from earthquakes.

For over 45 years, TOLCO has been a leading manufacturer of quality seismic products. TOLCO Seismic Bracing products are FM approved and respected by installers, designers, and the protection authorities worldwide.

How branch lines are to be restrained is defined in Section 9.3.6.1; also see Annex Section A.9.3.6.1(5) and Figures 9.3.6.1(5)(a)&(b). NFPA 13 (2010-2013) for additional information.

This option is clearly defined and requires no additional calculations to prove its performance.

No. 12, 440 lb. (200 kg) wire installed at least 45 degrees from the vertical plane and anchored on both sides of the pipe

Satisfies Requirements of NFPA 13 2010 & 2013 Section 9.3.6.1(2)

This option while providing some of the best resistance to horizontal loads should be considered carefully. Seismic bracing products have previously been evaluated for maximum loads and calculated maximum values for each product. TOLCO offers a wide range of products that meet the NFPA 13 requirements for seismic bracing as well to verify they have the capacity to restrain the required loads.

It should be noted that devices that are listed as seismic restraint devices, as tested and defined by UL 203A, only meet the criteria of option 6, other approved means, in a complete seismic bracing system. As such, it is appropriate for the area authority to require test results or structural calculations for branch line restraints as well to verify they have the capacity to restrain the required loads.

The National Fire Protection Association Pamphlet 13 (2010-2013) as part of a complete seismic bracing system, requires that sprinkler mains and cross mains be braced and that branch lines 2 inches and over be provided by use of one of the following:

- TOLCO Fig. 1001 Sway Brace Attachment
- TOLCO Fig. 980 Universal Swivel Sway Brace
- 1" Pipe Brace

Other Approved Means

Satisfies Requirements of NFPA 13 2010 & 2013 Section 9.3.6.1(5) and 2013 Section 9.3.6.1(6)

This option gives the area authority latitude to approve other methods in the case where none of the other methods can be applied. Not defined in NFPA 13, but used in seismic restraint devices, as tested and defined by UL 203A, only meet the criteria of option 6, other approved means, in a complete seismic bracing system. As such, it is appropriate for the area authority to require test results or structural calculations for branch line restraints as well to verify they have the capacity to restrain the required loads.

- CPVC Hangers Utilizing Two Points of Attachment

Satisfies Requirements of NFPA 13 2012 Section 9.3.6.1(14)

This option provides the area authority latitude to approve other methods in the case where none of the other methods can be applied. Not defined in NFPA 13, but used in seismic restraint devices, as tested and defined by UL 203A, only meet the criteria of option 6, other approved means, in a complete seismic bracing system. As such, it is appropriate for the area authority to require test results or structural calculations for branch line restraints as well to verify they have the capacity to restrain the required loads.

- Satisfies Requirements of NFPA 13 2013 Section 9.3.6.1(5) & Figures 9.3.6.1(5)(a/b/c)

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Other Approved Means

Satisfies Requirements of NFPA 13 2010 & 2013 Section 9.3.6.1(5) and 2013 Section 9.3.6.1(6)

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TOLCO™ Seismic Bracing for Branch Line Restraints

Rely on us for all your seismic and engineering needs

TOLCO Seismic Bracing products are manufactured in California, which is located in a zone of influence (ZOI) that experience multiple yearly earthquakes. Being located in a virtual "hotbed of seismic activity" has driven our team of engineers to develop some of the best seismic bracing products designs in the industry. Our products are known and respected by installers, designers, and the profession worldwide.

For over 40 years, TOLCO Seismic Bracing products have been installed in the world where earthquakes are prevalent. Our US Listed and FM approved quality seismic bracing products are confidently relied upon to help prevent loss and property damage from these devastating forces.

TOLCO Seismic Bracing products are specified worldwide for Seismic Bracing products have been installed around the world where earthquakes are prevalent. Our US Listed and FM approved quality seismic bracing products are confidently relied upon to help prevent loss and property damage from these devastating forces.

This brochure is intended to show examples of how TOLCO Seismic Bracing can help you meet the NFPA 13 Guidelines for Branch Line Restraints.

Wrap-Around U-Hook

No. 12, 440 lb. (200 kg) wire installed at least 45 degrees from the vertical plane and anchored on both sides of the pipe. TOLCO Fig. 120RWA Sway Brace Attachment

* Other Approved Means

This option is clearly defined and requires no additional calculations to prove its performance.

Sway Brace Assembly Example

• TOLCO Fig. 800 Universal Swivel Sway Brace Attachment
• TOLCO Fig. 1001 Sway Brace Attachment
• 1/8" Pipe Brace

Acceptable Rod Lengths per NFPA 13 (2010 & 2013)

<table>
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<th>Size</th>
<th>3'-4&quot;</th>
<th>2'-6&quot;</th>
<th>1'-10&quot;</th>
<th>0'-10&quot;</th>
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</tr>
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<td>L/R=400</td>
<td></td>
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</tbody>
</table>

This option while providing some of the best resistance to horizontal loads should be carefully considered. Seismic bracing products have been designed for wind and seismic maximum loads and installed with consideration of the vertical zone of influence (VDZ) calculations per NFPA 13, 9.3.5.11 & 9.3.5.12 which must be considered in the orientation of the brace and the brace angle as to not exceed these loads. An area authority should request these calculations for branch line restraints as well to verify they have the capacity to restrain the required loads.

Hangerless seismic bracing may be provided by use of one of the following:

- "other approved means"; Section 9.3.5.2.10 (2010) & 9.3.5.11.2 (2013).

This option is clearly defined by NFPA 13 and if UL Listed hanger components are used then no additional calculations or test results are required. When using "other approved means" the hangerless seismic restraint device, as tested and defined by UL 203A, only meet the criteria of option 6, other approved means, defined in paragraph (e). As such it is appropriate for the area authority to require test results or structural calculations for the specific installations under review.

Other Approved Means

This option gives the area authority latitude to approve other materials in the case where none of the other methods can be applied. Not defined at all, when used it would most likely require some additional calculations to prove its performance. This option is clearly defined by NFPA 13, 9.3.5.11 (2010 & 2013). The National Fire Protection Association Engineering Department with a professional Structural Engineer can assist with the calculations to verify its performance when selecting this option as not all CPVC hangers are UL Listed. TOLCO CPVC Hanger Options

TOLCO™ Branch Line Restraints

for Fire Protection Systems

Satisfies Requirements of NFPA 13 (2010 & 2013 Section 9.3.6.1(1))

Typical CPVC Hangers utilize t-strut #10 x 1/8" and a screw-in the spine pipe directly to the structure. The similar to the wrap around U-hanger option that sufficiently restrains the pipe and requires no additional calculations. Please refer to sign-up when selecting this option as not all CPVC hangers are UL Listed. Limit both hanger and restrainers.

Satisfies Requirements of NFPA 13 (2010 & 2013 Section 9.3.6.1(3))

This option while providing some of the best resistance to horizontal loads should be carefully considered. Seismic bracing products have been designed for wind and seismic maximum loads and installed with consideration of the vertical zone of influence (VDZ) calculations per NFPA 13, 9.3.5.11 & 9.3.5.12 which must be considered in the orientation of the brace and the brace angle as to not exceed these loads. An area authority should request these calculations for branch line restraints as well to verify they have the capacity to restrain the required loads.

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Fig 22

Fig 23

Fig 24

Fig 28

TOLCO™ Branch Line Restraints

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Satisfies Requirements of NFPA 13 (2010 & 2013 Section 9.3.6.1(5)(c))

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