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Initial Approval
October, 2016

Re-Approved
October, 2017

See all **Pei ES** Listings at: www.p-e-i.com

Report Owner

USG Interiors, LLC
550 West Adams Street
Chicago, Illinois 60661

Product

TSB-24 USG CEILING CLOUD SUSPENSION BRACE

Approved Manufacturing Locations

USG Interiors, LLC Plant # 603 2575 East Loomis Rd. Stockton, CA 95205	USG Interiors, LLC Plant # 605 1000 Donn Dr. Cartersville, GA 30120	USG Interiors, LLC Plant # 601 1000 Crocker Rd. Westlake, OH 44145-1089
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CGC Interiors, Inc. Plant # 091 735 Fourth Line Rd. Oakville, Ontario, Canada L6L 5B7
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Evaluation Report Information

usg4you@usg.com

[USG Support: 800.USG4YOU](tel:800.USG4YOU)

General Details

TSB-24 USG Ceiling Cloud Suspension Brace is manufactured by **USG Interiors, LLC** which has an Evaluation Service Agreement with **Pei Evaluation Service (Pei ES)** and Inspection Agreement with **Progressive Engineering, Inc. (Pei)**. Each approved manufacturing location operates under an approved Quality Control Manual and is audited quarterly by **Pei**.

Product Description

The **TSB-24 USG Ceiling Cloud Suspension Brace** is an element compatible with the USG Donn® Brand suspension system cross tees and intended to allow placement of vertical supports so they are not visible at the ceiling cloud perimeter. Braces are manufactured using 18ga G60 hot-dipped galvanized ASTM A653 Grade CS Type B steel and fastened to cross tees using four (4) #6x1/2" long pan head screws.

General Product Use

1. **TSB-24 USG Ceiling Cloud Suspension Brace** is limited to interior use only.
2. Cross tee cantilever distance shall not exceed 24-inches.
4. **TSB-24** is limited to a maximum spacing of 4-feet on center (every other cross tee) and shall be installed within 2-feet of any ceiling corner. Load ratings based on 4-foot brace spacing require a constant full uniform load on the entire cloud assembly. A brace spacing of 2-feet on center is required for all cases where elements of the cloud suspension system remain unloaded or additions such as light fixtures result in uneven load distribution.
5. The suspension brace is limited to use with the following cross tees: DX®/DXL™ (DX224, DXL224, DX/DXL424), Centricitee™ DXT™/DXLT™ (DXT424, DXLT424), DXI Identitee™ (DXI224, DXI424), Fineline® DXF/DXLF (DXF229, DXF429), Fineline DXFF (DXFF229, DXFF429), ZXLA™ (ZXLA224, ZXLA424), and USG Drywall Suspension System (DGLW224, DGLW424).
6. Each brace shall support no more than 4 square feet of ceiling area when spaced at 4-feet on center nor more than 2 square feet of ceiling area when spaced at 2-feet on center. See Table 1 for maximum allowable loading on cantilevered cross tee. Maximum cantilevered load shall include the weight of anything in the cantilevered section such as lighting, HVAC, fire protection, ceiling tile, drywall trim, etc.
7. When TSB-24 braces are installed at 4-feet on center with a maximum cantilever of 2-feet, the Compasso Trim shall be limited to a weight of 0.668 lb./ft. (depths of 6-inches or less).
8. Excessive point loads shall not be placed at the perimeter of the ceiling cloud. A licensed engineer shall be consulted in the event that an atypical load distribution occurs in the cantilevered area.

Code & Standard Compliance

2012 / 2015 International Residential Code	2012 / 2015 International Building Code	
Section R104.11	Section 104.11	Section 808

This **PER** addresses the structural limitations of the **TSB-24 USG Ceiling Cloud Suspension Brace** only. Code compliance of the actual suspension main tee and cross tee system shall be verified on a case-by-case basis by the governing code official. The **TSB-24 USG Ceiling Cloud Suspension Brace** has not been classified for seismic resistance. Seismic code compliance is outside the scope of this **PER**.

Tables & Figures

Table 1 - Maximum Allowable Cantilevered Load Supported by TSB-24 Brace^{1,2,6}

TSB-24 Brace Spacing ³	Cantilever Distance (in)	Maximum Uniform Load ⁵ (psf)
4 ft O.C.	24	2.31 ⁽⁴⁾
	18	2.83
	12	8.25
2 ft O.C.	24	4.01
	18	8.17
	12	20.25

Notes:

1. Cross tees must be spaced at a maximum of 2-ft on center with a cantilever of 24-inches or less.
2. Main tees must be spaced at a maximum of 4-ft on center (i.e. interior cross tee spans shall not exceed 4-ft).
3. TSB-24 spacing of 4-ft on center refers to braces being placed at every other cross tee and within 2-ft of main tee ends. TSB-24 spacing of 2-ft on center refers to braces being placed at all cross tees.
4. For a cantilever distance of 24-inches and 4-ft on center (every other cross tee) TSB-24 spacing, perimeter trim shall not exceed the weight of the 6" Compàsso Trim (0.689-plf). See Table 2 for available perimeter trim options and weights.
5. Maximum uniform loads shall be considered applied uniformly across the entire system when braces are spaced at 4-ft on center. For cases where open (unloaded) areas of grid or non-uniform loads (i.e. light fixtures, air ducts, etc.) are applied across the system, TSB-24 braces shall be spaced at 2-ft on center maximum.
6. Suspensions ceiling cross tees that may be used in a cloud application with the TSB-24 brace are shown in Table 3. Tabulated uniform load ratings are based upon cross tee and brace loading only and may exceed the minimum load rating of the main tee used in the design. Designers shall verify main tee load ratings via published values prior to approval of a proposed cloud system design.

Table 2 - Perimeter Component Weight

Component	Depth (in)	Weight (plf)
Compàsso Elite Trim ¹	2	0.323
	4	0.521
	6	0.689
	8	1.109
	10	1.872
	Slim	1.520
Compàsso Standard Trim ²	2.25	0.258
	4	0.381
	6	0.524
	8	0.667
	10	0.415
	12	0.484

Notes:

1. See Figure 11 for Compàsso Elite cross sections.
2. See Figure 12 for Compàsso Standard cross sections.

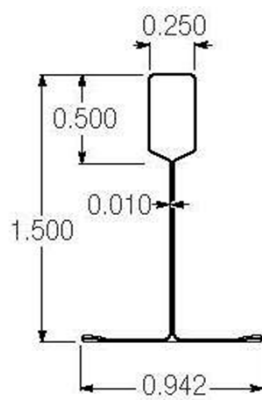
Table 3 - TSB-24 Compatible Cross Tee Systems

USG Grid System Series	Approved Cross Tee ¹
DX@/DXL™	DX224
	DXL224
	DX/DXL 424
	DX/DXL 424HRC
Centricitee™ DXT™/DXLT™	DXT 424
	DXLT 424
DXI Identitee™	DXI 224HRC
	DXI 424HRC
Fineline® DXF/DXLF	DXF 229
	DXF 429
Fineline 1/8 DXFF	DXFF 229
	DXFF 429
ZXLA™	ZXLA 224
	ZXLA 424
USG Drywall Suspension System	DGLW 224
	DGLW 424

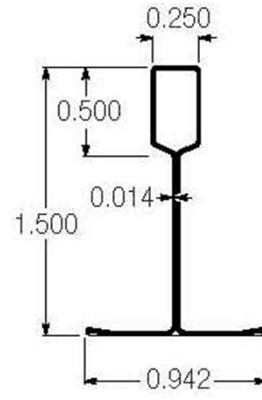
Notes:

1. See Figure 1 through Figure 7 for approved cross tee cross sections.

Profile Details

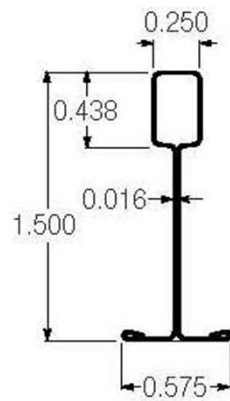


DX 224 - DXL 224



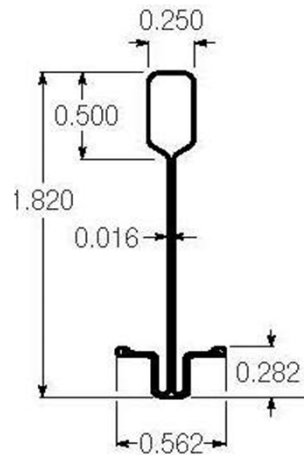
DX/DXL 424 - DX/DXL 424 HRC

Figure 1 - DX® / DXL™ Cross Tee Systems



DXT 424 - DXLT 424

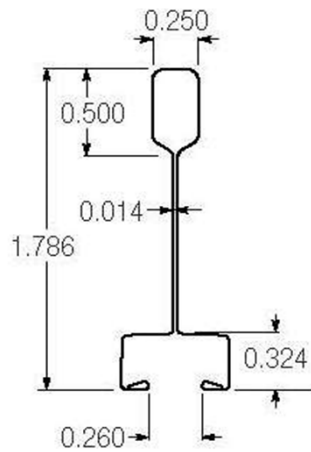
Figure 2 - Centricitee™ DXT™ / DXLT™ Cross Tee Systems



DXI 224 HRC - DXI 424 HRC

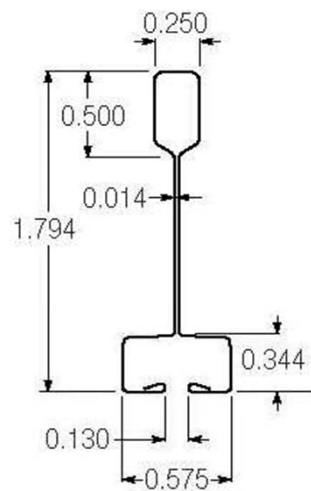
Figure 3 - DXI Identitee™ Cross Tee Systems

Profile Details



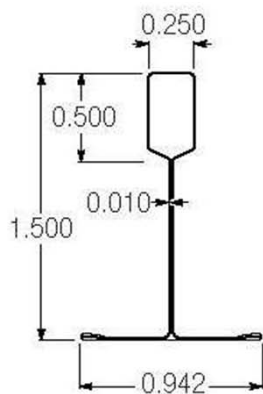
DXF 229 - DXF 429

Figure 4 - Finline® DXF/DXLF Cross Tee Systems

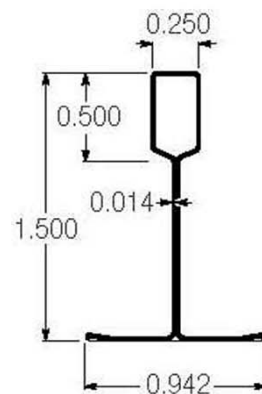


DXFF 229 - DXFF 429

Figure 5 - Finline 1/8 DXFF Cross Tee Systems



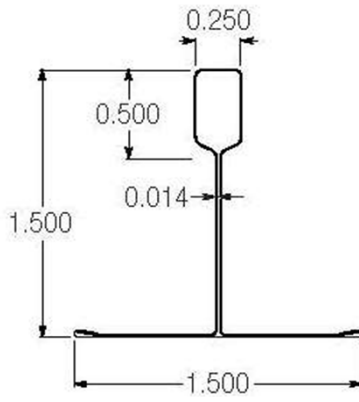
ZXLA 224



ZXLA 424

Figure 6 - ZXLA™ Cross Tee Systems

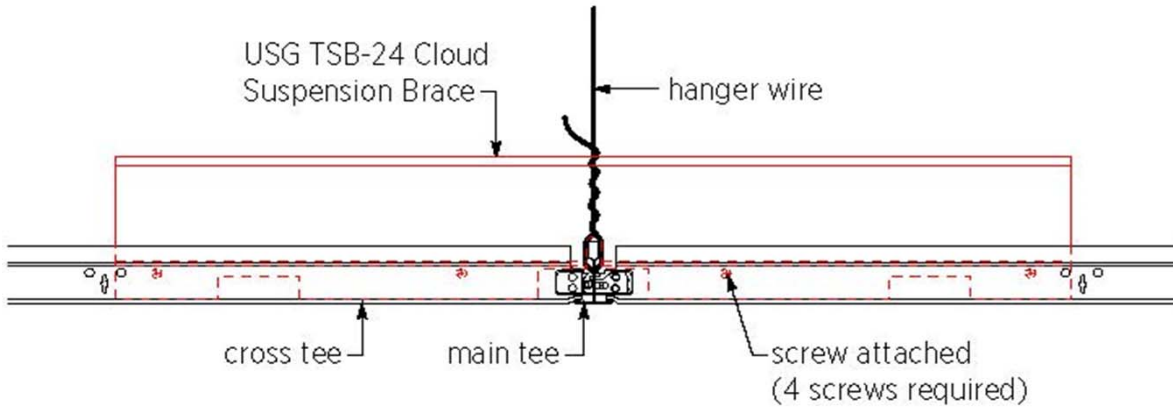
Profile Details



DGLW 22 - DGLW 424

Figure 7 - USG Drywall Suspension Systems Cross Tee

Front



Side

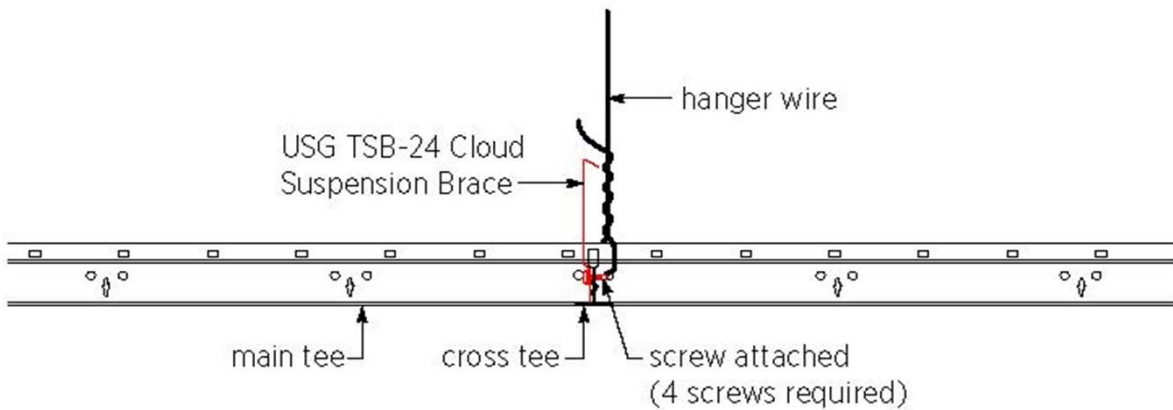


Figure 8 - TSB-24 Typical Installation Detail

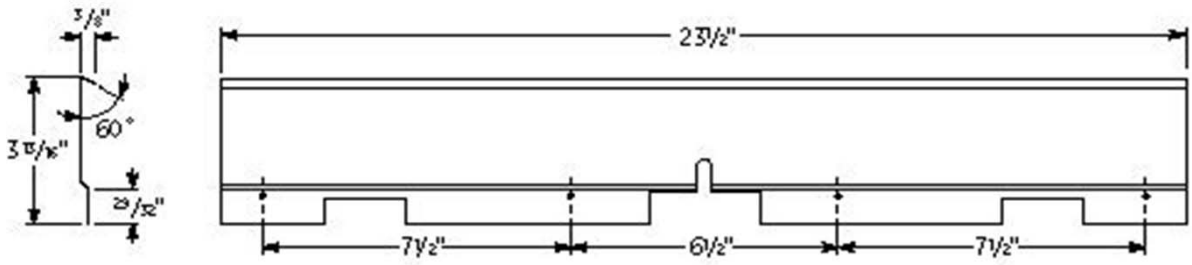
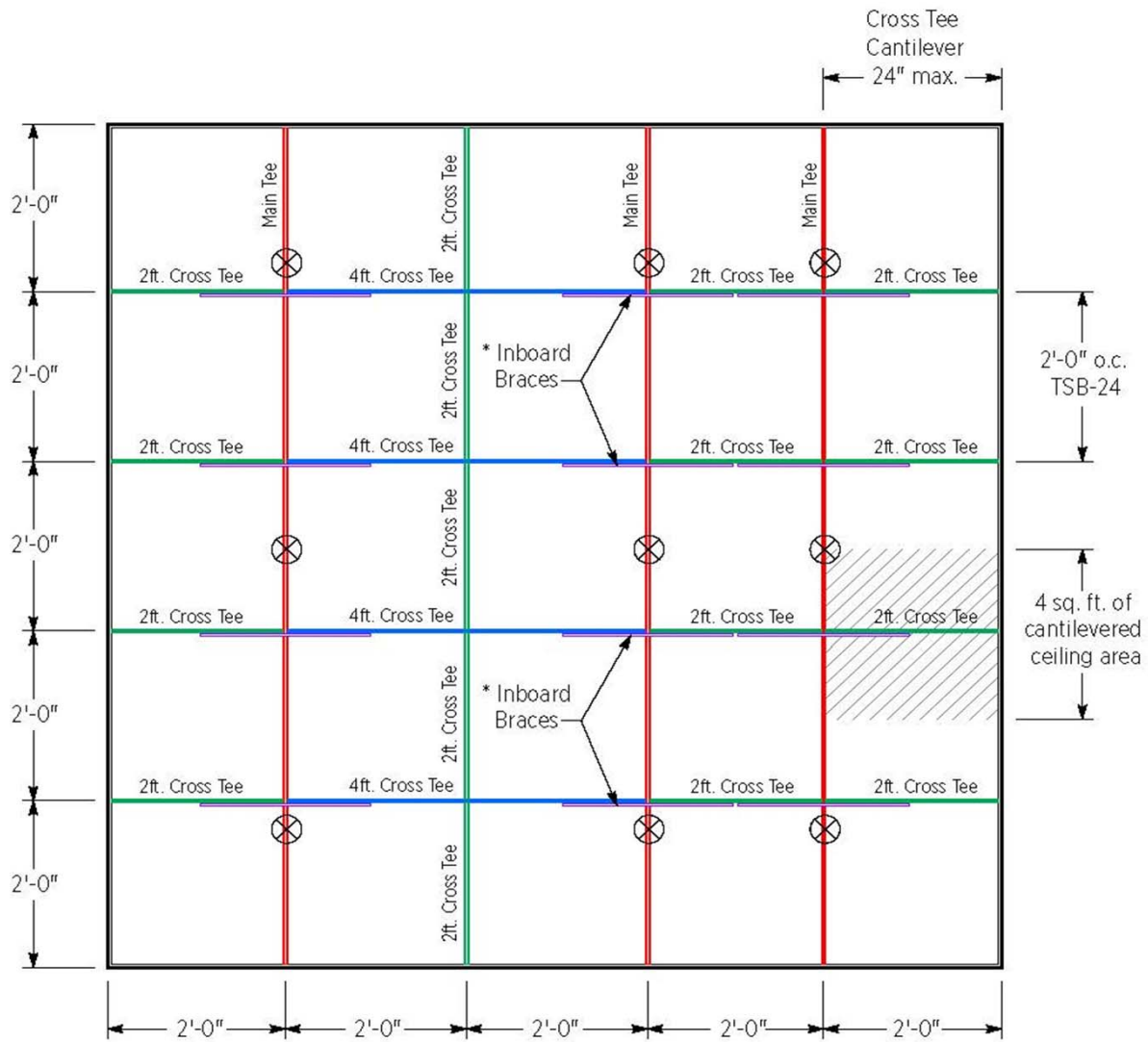


Figure 9 - TSB-24 Brace Dimensions



*For island ceilings with three or more main tees, additional inboard braces should be used to prevent potential ceiling uplift from perimeter cantilever loads.

Figure 10 - TSB-24 Brace Typical Location Requirements

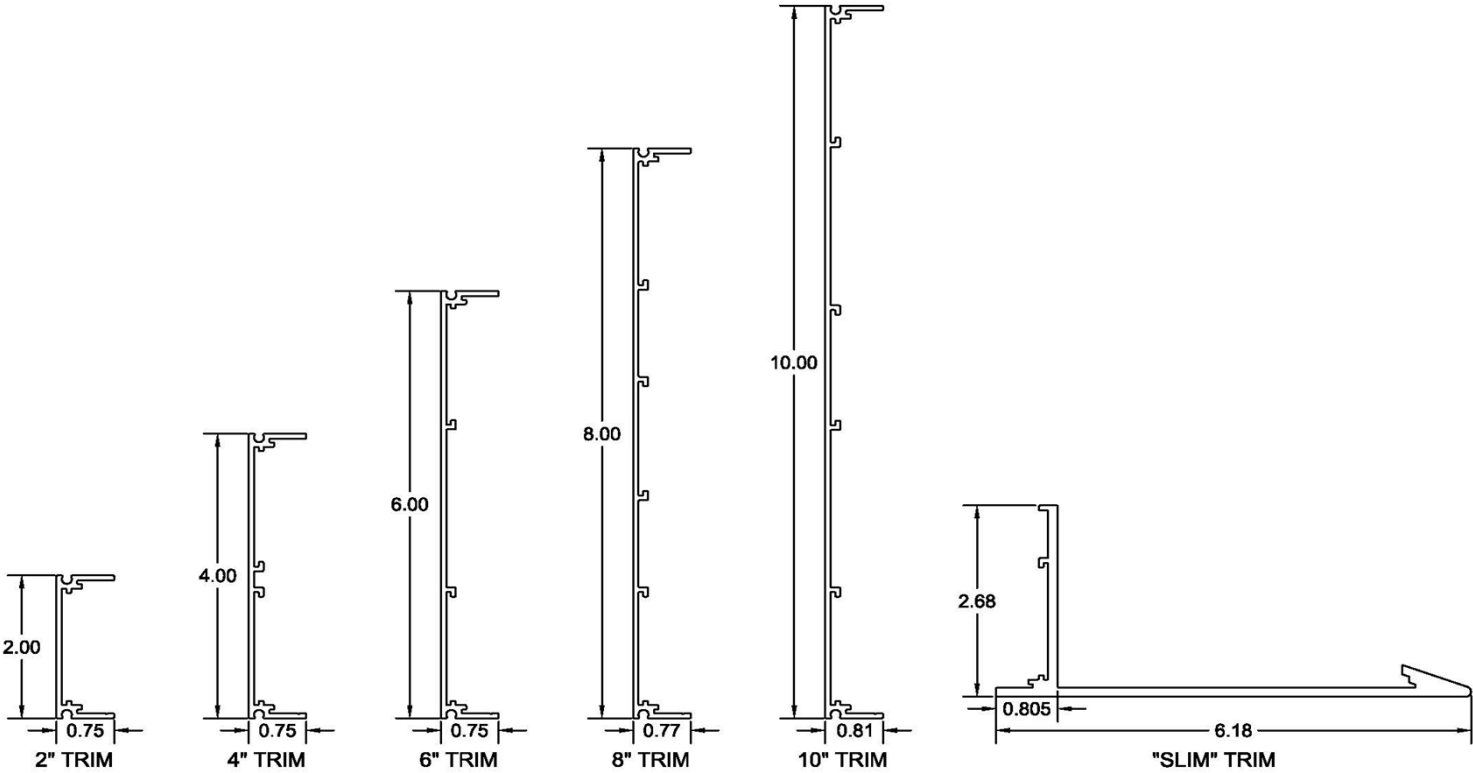


Figure 11 - Approved Compasso Trim Cross Sections

- Notes:
- 1. All Compasso Elite Trim is manufactured using 6063-T5 grade aluminum.

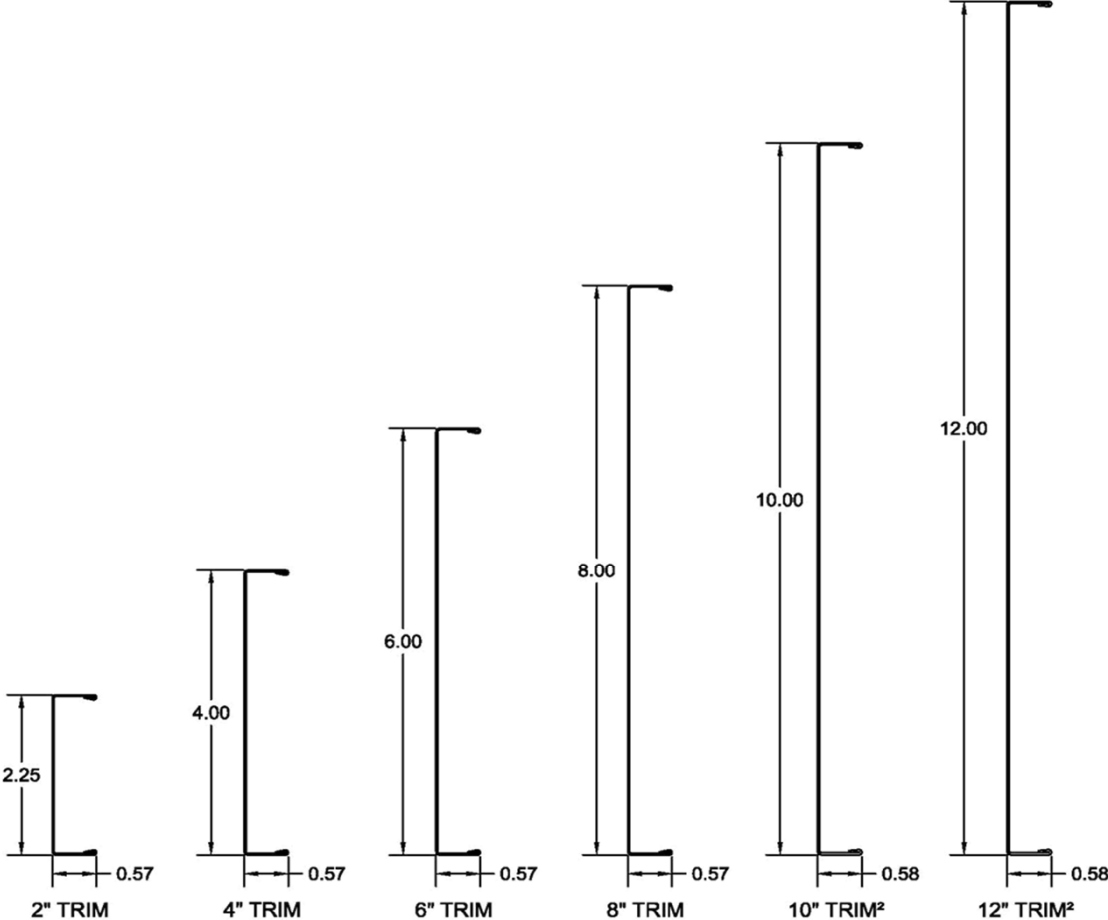


Figure 12 - Approved Compasso Standard Trim Cross Sections¹

- Notes:
- 1. All Compasso Standard Trim is manufactured using ASTM A653 CS Grade B Steel unless noted otherwise.
 - 2. Compasso Standard 10\" and 12\" Trim are manufactured using 3003-H14 grade aluminum.

Product Labeling

Each **TSB-24 USG Ceiling Cloud Suspension Brace** shipment, that is covered by this **Product Evaluation Report**, must have a label attached with at least the following information:

1. [USG Interior, LLC](#) Name and Address
2. Product Name
3. Plant Identifier & Date Code
4. **Pei ES** Information: [See Pei Evaluation Report at p-e-i.com](#)

Acceptable Evaluation Marks



Product Documentation

An Evaluation and Follow-up Service Agreement between **Pei Evaluation Service** and [USG Interiors, LLC](#)

An Inspection Agreement between [Progressive Engineering Inc.](#) and [USG Interiors, LLC](#)

[USG Interiors, Inc.](#) & [CGC Interiors, Inc.](#) Quality Control Manual for DONN® Brand Suspension Systems & USG Drywall Suspension Systems - Dated: September 18, 2017

SDS for [USG Donn® DX®/DXL™](#) Acoustical Suspension Systems - Version #3 - Dated: September 15, 2016

USG Ceiling Cloud Suspension Brace TSB-24 Technical Document IC625 - Dated: October, 2016

Various Test Reports and Engineering Calculations