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Initial Approval
January, 2019

Re-Approved

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

Report Owner

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

Approved Manufacturing Locations

USG Interiors, LLC - Plant No. 601
1000 Crocker Road
Westlake, OH 44145

USG Interiors, LLC - Plant No. 603
2575 East Loomis Road
Stockton, CA 95205

Product

Wall to Wall Drywall Suspension System

Evaluation Report Information

usg4you@usg.com

USG Support: 800.USG4YOU

General Details

The **Wall to Wall Drywall Suspension System** is manufactured by **USG Interiors, LLC**. The plant locations listed above have an approved Quality Control Manual to manufacture the product. **USG Interiors, LLC** has a Product Evaluation Service Agreement with **Pei Evaluation Service** and Follow-up Inspection Service Agreement with **Progressive Engineering Inc. (Pei)**. The plant locations listed above will be audited Quarterly by **Pei**.

Product Description

The **USG Interiors, LLC** ceiling framing system described in this report is an assembly for general use areas, using interior gypsum panel ceilings for non-fire resistance rated construction. The system consists of steel main tee framing members that span wall to wall and are attached to a steel wall channel or angle molding. For longer spans, the tees can be supported with the Indexed Support Bar (ISB109). The system is meant to receive screw attached gypsum panels.

Wall to Wall Main Tees - The main tees are manufactured from 0.0185-in thick steel, complying with ASTM A653, a minimum yield strength of 33 ksi and a minimum G40 hot-dipped galvanized coating. The Wall to Wall main tees have an inverted "T" shape, double web rotary stitched body with a knurled, hemmed lower flange with ridges to prevent fastener sideslip.

Indexed Support Bar (ISB109) - The support bar is manufactured from steel complying with ASTM A653, a minimum yield strength of 30 ksi and a minimum G40 hot-dipped galvanized coating. The Indexed Support Bar measures 109-in length x 2-1/8-in height and has attachment gates on the bottom edge spaced every 8-in o.c. that secure over the main tee bulb. The top edge has hole punches spaced 4-in o.c. for hanger wire attachments.

Wall Moldings - The system utilizes either the DGWM24 Angle Molding or DGCM27 Channel Molding. The DGWM24 Angle Molding is 1-in x 1-1/2-in and is knurled with hemmed edges. The DGCM27 Channel Molding is 1-5/8-in with 1-in top and bottom legs, which have a knurled surface. Both wall moldings are manufactured from steel complying with ASTM A653, a minimum yield strength of 33 ksi and a minimum G40 hot-dipped galvanized coating. An alternative Wall Moulding would be the 1-1/2" X 1-1/2" 25 ga. minimum G40 angle by others.

Gypsum Panels - Gypsum panels used with this assembly system must comply with ASTM C1396 and/or ASTM C1177, with a maximum thickness of 5/8-in. Gypsum panels shall be installed in accordance with ASTM C840. See Table 3 for properties in regards to gypsum panel weight and system spans. The gypsum panels must be screw attached to the main tees and perimeter molding.

General Product Use

1. The **Wall to Wall Drywall Suspension System** shall be installed in accordance with the manufacturer's Installation Instructions and the application conditions outlined in this **PER**. A copy of the installation guide shall be made easily available to the installer.
2. All construction, wood or steel framing, beams, joist, stringers and associated connections needed to support the **Wall to Wall Drywall Suspension System** are outside the scope of this **PER**. All construction shall follow applicable building codes or be designed by a licensed Engineer. Light fixtures and other services used with the ceiling suspension system must be independently supported.
3. This system assemblies in this report are designed and tested to meet ASCE 7, Seismic Categories A, B, C, D, E & F.
4. The Wall to Wall (DGW) main tees shall be installed at a maximum 24-in o.c. spacing. The main tees shall be attached at each end of the wall molding using #7 x 1-7/16" pan head framing screws. The maximum unsupported span is 8-ft at 16-in o.c. spacing.
5. The support bar is used as an intermediate support on installations that exceed the maximum unsupported main tee span. The ISB109 is suspended by hanger wires spaced 4-ft (48-in) o.c. or alternative methods approved by the authority having jurisdiction. The main tees are attached to the support bar by opening one side of the notch tabs, inserting the main tee bulb, and closing the tab securely over the bulb.
6. The wall moldings shall be attached to minimum 25ga. steel framing at a maximum 24-in o.c. span with #8 x 1-1/4" wafer head screws.
7. The gypsum panels shall be attached using screws in accordance with ASTM C840 and/or the IBC Section 2508.

Code Compliance

The **Wall to Wall Drywall Suspension System** meets the requirements for suspended ceilings in accordance with the 2012 & 2015 International Building Code® and International Residential Code®.

2012 & 2015 International Residential Code	2012 & 2015 International Building Code	
Section R302.9	Section 803.1.1 Section 808.1 Section 1613 - In Compliance with Requirements	Section 803.11 Section 2506.2.1

Standard Compliance

ASTM A653 - Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Alloy, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability, General Requirements.

ASTM C645 - Standard Specification for Nonstructural Steel Framing Members. Minimum 25ga. And G40 coating.

ASTM C635 - Standard Specification for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

ASCE 7 - Minimum Design Loads for Buildings and Structures.

Seismic Classification

USG Wall to Wall Drywall Suspension System is Heavy Duty and may be used in Seismic Design Category A through F. According to ASCE 7-10, Section 13.5.6, Wall to Wall Drywall Suspension System "on one level that are surrounded by and connected to walls or soffits that are laterally braced to the structure above are exempt from (seismic requirements).

Table 1 - Seismic Design Classification

Seismic Design Classifications for Acoustical Ceilings in ASTM E 580 and CISCA Seismic Handbook		
Seismic Design Category A, B	Seismic Design Category C	Seismic Design Category D, E, F
No Requirement	Intermediate Duty	Heavy Duty

Notes:

1. The seismic duty requirements for acoustical ceiling panel suspension systems are given below for reference purposes.

Load Ratings

Table 2 - Load Rating Classification

Load Rating Classifications in ASTM C 635		
Light Duty	Intermediate Duty	Heavy Duty
5 lbs. / LF	12 lbs. / LF	16 lbs. / LF

Notes:

1. **USG Wall to Wall Drywall Suspension System** is classified as Heavy Duty, as defined by ASTM C 635

Properties Evaluated

USG Wall to Wall Drywall Suspension main tees have been evaluated for load performance in accordance with ASTM C635, with the apparatus modified to exceed the prescribed 4-ft length. The system also complies with portions of the Acceptance Criteria, AC368-15 for Ceiling Framing Systems. Also tested to ASTM E330 for uniform load.

Table 3 - Wall to Wall Framing System Description

Description	Item No.	Base Metal Thickness (in)	Length (ft)
Wall to Wall Main Tees	DGW-26s6	0.0185	6
	DGW-26s8	0.0185	8
	DGW-26s10	0.0185	10
	DGW-26s12	0.0185	12
	DGW-26s14	0.0185	14
Wall Angle	DGWM24	0.0185	12
Wall Channel	DGCM27	0.0210	12
Indexed Support Bar	ISB109	0.0360	9

Table 4 - Wall-to-Wall (DGW) System Membrane Load Ratings

DGW System SPAN (ft)	Height	Face Width	Item No.	O.C. Spacing (inches)	Max Load Rating (psf)	Rated Load $\ell / 240$ (plf)
4'	1-5/8"	1-1/2"	DGW26	16	22.38	29.84
	1-5/8"	1-1/2"	DGW26	24	14.92	
5'	1-5/8"	1-1/2"	DGW26	16	11.46	15.28
	1-5/8"	1-1/2"	DGW26	24	7.64	
6'	1-5/8"	1-1/2"	DGW26	16	6.63	8.84
	1-5/8"	1-1/2"	DGW26	24	4.42	
7'	1-5/8"	1-1/2"	DGW26	16	4.18	5.57
	1-5/8"	1-1/2"	DGW26	24	2.78	
7'-6"	1-5/8"	1-1/2"	DGW26	16	3.40	4.53
	1-5/8"	1-1/2"	DGW26	24	2.26	
8'	1-5/8"	1-1/2"	DGW26	16	2.80	3.73
	1-5/8"	1-1/2"	DGW26	24	1.86	

Table 5 - Wall-to-Wall (DGW) System Membrane Load Ratings using one support wire

DGW System SPAN (ft)	Height	Face Width	Item No.	O.C. Spacing (inches)	Max Load Rating (psf)	Rated Load $\ell / 240$ (plf)
8'	1-5/8"	1-1/2"	DGW26	24	14.92*	3.73
10'	1-5/8"	1-1/2"	DGW26	16	11.46*	----
	1-5/8"	1-1/2"	DGW26	24	7.64*	----
12'	1-5/8"	1-1/2"	DGW26	16	6.63*	----
	1-5/8"	1-1/2"	DGW26	24	4.42*	----
14'	1-5/8"	1-1/2"	DGW26	16	4.20*	----
	1-5/8"	1-1/2"	DGW26	24	2.80*	----

The support wire shall be placed so the largest span does not exceed 8 ft.

Table 6 - Panel Weight

Product	Weight lbs ft ²
1/2" USG Sheetrock Ultralight	1.3
1/2" Sheetrock (regular)	1.6
1/2" Sheetrock Glass-Mat Mold Tough	2
5/8" Sheetrock Firecode X	2.2
5/8" Sheetrock EcoSmart Firecode 30	1.7
5/8" Sheetrock Ultralight Firecode X	1.9
1/2" Sheetrock Firecode C	2
5/8" Sheetrock EcoSmart Firecode X	1.8
5/8" Sheetrock Firecode C	2.5
5/8" Sheetrock Glass-Mat Mold Tough Firecode X	2.4
1/2" Sheetrock Glass-Mat Sheathing	1.7
5/8" Sheetrock Glass-Mat Sheathing	2.2

Table 7 - Shake Table Qualified Assemblies with Indexed Support Bar - ISB109

Framing System ¹	System 1	System 2
Ceiling Weight	4.0 psf	2.7 psf
Wall to Wall Main Tee	DGW-26s14	DGW26s-14
Main Tee Length	14-ft	14-ft
Main Tee Spacing	16-in	24-in
Perimeter Framing - Wall Molding	1-1/2" x 1-1/2" - 20 gauge angle	1-1/2" x 1-1/2" - 20 gauge angle
Indexed Support Bar ²	ISB109 at midspan	ISB109 at midspan
Hanger Wire Attachment to ISB109 Support	12 gauge at 36-in o.c.	12 gauge at 48-in o.c.
Perimeter Relief	None	None
Perimeter Main Tee Connection	#7 x 1-7/16" Screws	#7 x 1-7/16" Screws
Horizontal Restraint	None	None
Compression Posts	None	None

Notes:

1. Gypsum panels must be installed in accordance with ASTM C840.
2. Indexed Support Bar (ISB109) end terminations must be attached to wall angle and must be overlapped. See Figure 4 and Figure 6 below.

Figure 1. USG Drywall Suspension Main Tee, DGW

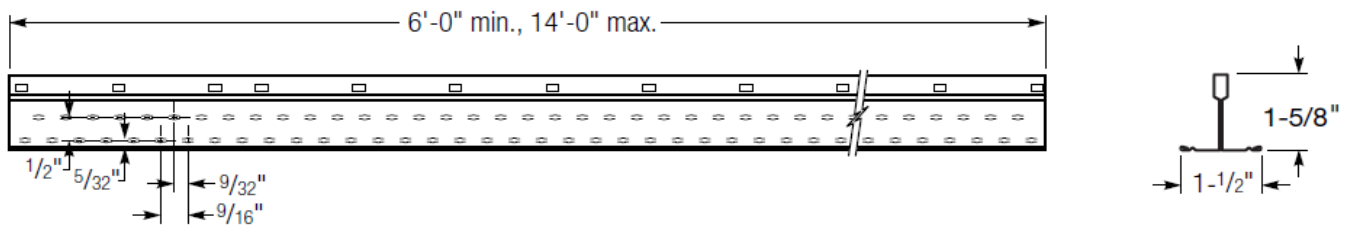


Figure 2. USG Index Support Bar. ISB109

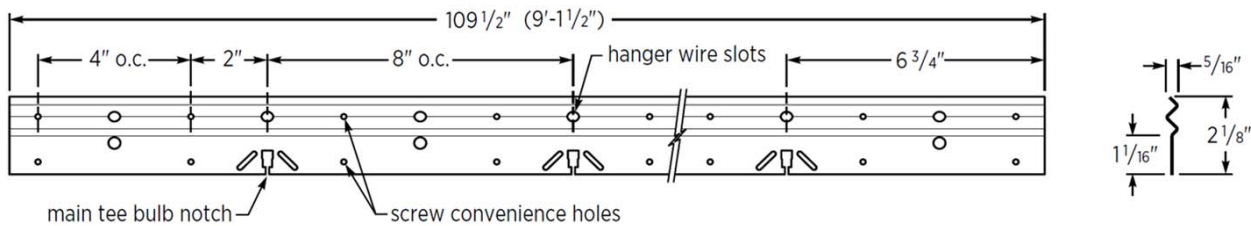
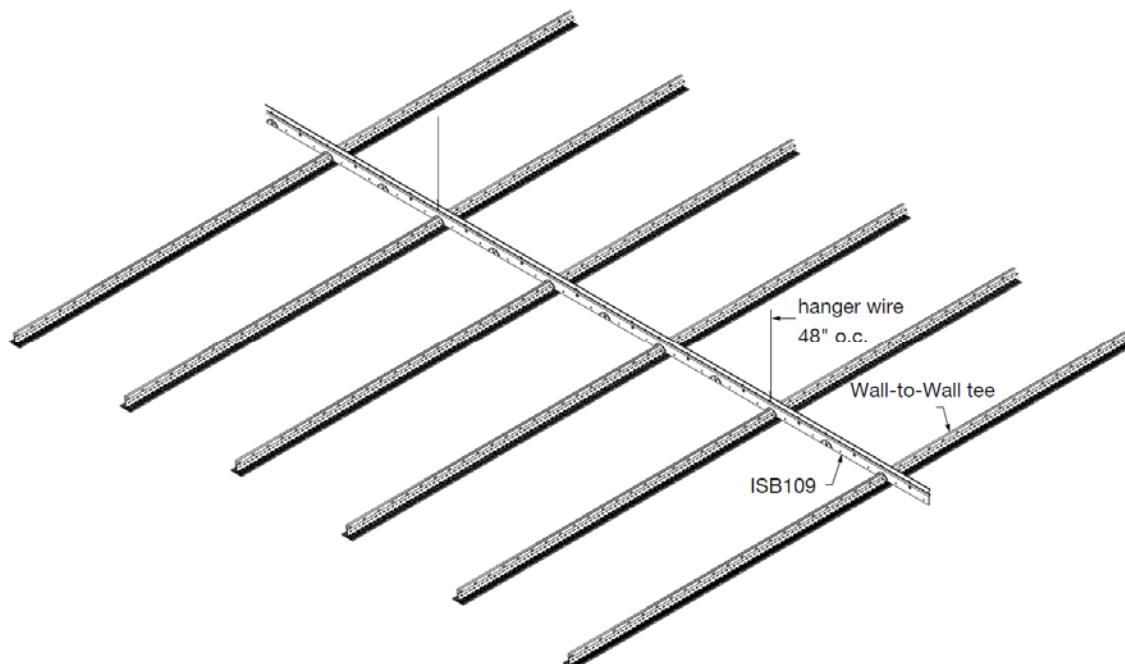


Figure 2 - USG Indexed Support Bar - ISB109

Figure 3 - Typical Indexed Support Bar and Main Tee Layout



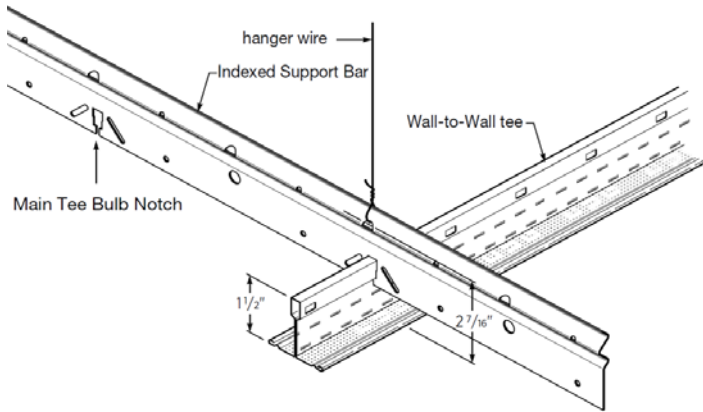


Figure 4 - Indexed Support Bar Attached to Main Tee

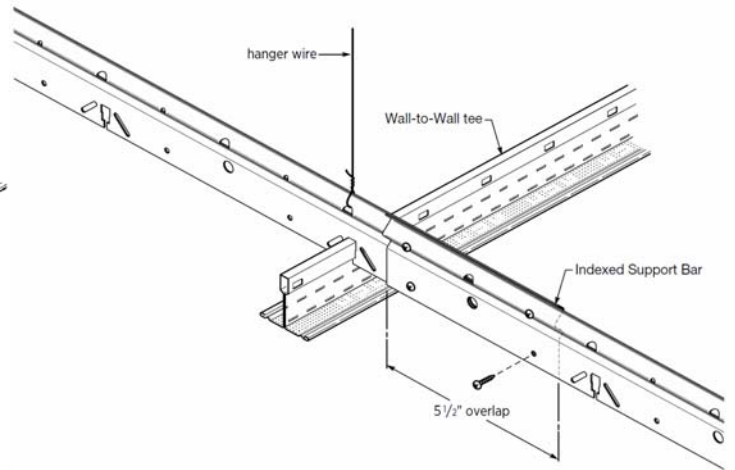


Figure 5 - Indexed Support Bar Overlap

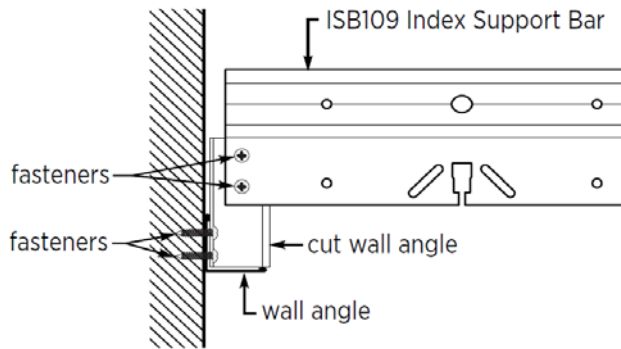
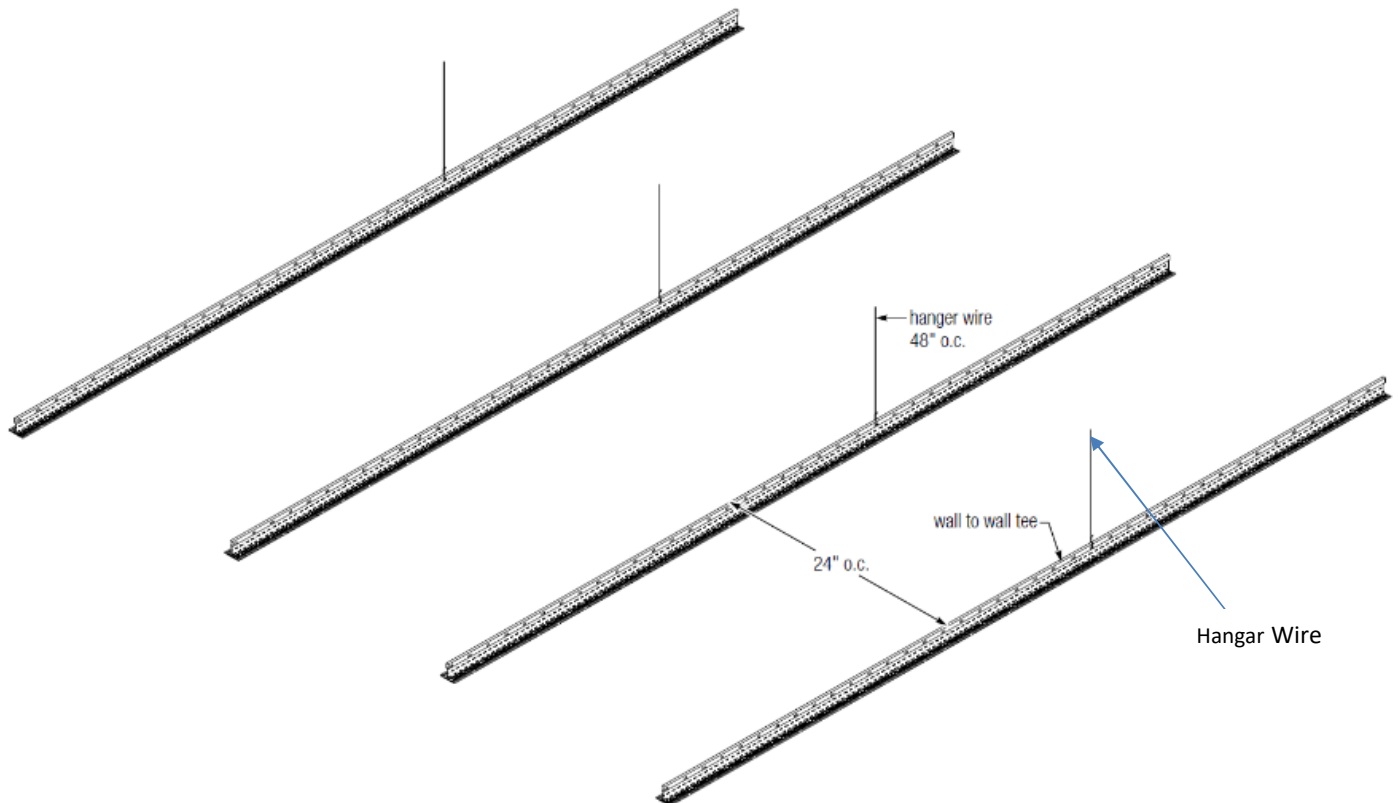


Figure 6 - Indexed Support Bar Attached to Sidewall

Figure 7. Typical Main Tee Layout with Hanger Wire Intermediate Supports



Product Labeling

Each **Drywall Suspension System** shipment, that is covered by this **Product Evaluation Report**, must have a label attached with at least the following information:

1. [USG Interiors, 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**

A Product Evaluation Service Agreement between **Pei Evaluation Service** and [USG Interiors, LLC](#)

A Follow-up Inspection Service Agreement between [Progressive Engineering Inc.](#) and [USG Interiors, LLC](#)

[USG Interiors, LLC](#) Quality Control Manual for Donn® Brand Suspension Systems, **USG Drywall Suspension Systems**, and USG Specialty Products - Dated: 9/18/2017

Drywall Suspension Systems - Wall-to-Wall Suspension Ceiling - Data Submittal Sheet - Dated: 11/2016

Indexed Support Bar (ISB109) - Data Submittal Sheet - Dated: 11/2016

USG Exterior Ceiling Systems - Systems Guide - Dated: 12/2017

SDS for USG Drywall Suspension System - SDS Number 42000054001 - Dated: 12/13/2013

A **Pei** test report No. 2010-0432 (A) - ASTM E330 Negative Pressure Test on an 8ft. DGW Capless Drywall Grid Wall-to-Wall Extra Duty Suspension Ceiling System - Dated: 4/7/2010

A **Pei** test report No. 2010-0432 (B) - ASTM E330 Negative Pressure Test on an 10ft. DGW Capless Drywall Grid Wall-to-Wall Extra Duty Suspension Ceiling System - Dated: 4/7/2010

A **Pei** test report No. 2010-1053 (A) - ASTM E330 Negative Pressure Test on an 8ft. DGW Capless Drywall Grid Wall-to-Wall Extra Duty Suspension Ceiling System with T-Rails spaced 12" o.c. - Dated: 8/10/2010

A **Pei** test report No. 2010-1053 (B) - ASTM E330 Negative Pressure Test on an 8ft. DGW Capless Drywall Grid Wall-to-Wall Extra Duty Suspension Ceiling System with T-Rails spaced 24" o.c. - Dated: 8/11/2010

A **Pei** test report No. 2010-1053 (C) - ASTM E330 Negative Pressure Test on an 10ft. DGW Capless Drywall Grid Wall-to-Wall Extra Duty Suspension Ceiling System with T-Rails spaced 12" o.c. - Dated: 8/11/2010

Test Report No. PEER - STI/2017-03 - Seismic Evaluation of USG Wall to Wall Drywall Suspended Ceiling Systems: 2017 Test Program - Dated: 10/13/2017