Set Your Design Apart

USG

Drywall

Suspension System

- Offices
- Lobbies
- Conference Rooms
- Schools
- Retail
- Hospitality
- Entertainment

Drywall ceilings take a dramatic new shape with the USG Drywall Suspension System. This advanced system is pre-engineered to simplify planning and construction, ensuring that your concepts look as good in real life as in your design drawings.

One System, Endless Possibilities

User's Guide

The USG Drywall Suspension System allows you to create unique curved, domed, and conventional flat drywall ceilings. The system assembles quickly and easily for faster installation, reducing labor costs. System accessories and integrated straight and curved components offer easy transitions to vertical, horizontal, or curved surfaces. Plus, the USG Drywall Suspension System has a lifetime limited warranty when used with SHEETROCK® Brand Gypsum Panels.

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Design Your System	**8**	**System Applications**
Specify Your System	**38**	**Application Guide Specifications**
For More Information		**Technical Service** **800 USG.4YOU** **Web Site** **www.usg.com**

Drywall Suspension System

Simplicity	The USG Drywall Suspension System is a pre-engineered drywall ceiling system specifically created to simplify the design and construction of flat and curved drywall ceilings. Custom curved main tees combine with our family of straight tees to give you the ability to design breathtaking drywall ceilings simply.
Savings	This unique, pre-engineered system can reduce installed costs up to 40%* versus conventional cold-rolled channel or steel stud drywall ceiling installations.
Flexibility	Using standard parts, drywall barrel vaults, archways, valleys, waves, serpentines, and domes easily transition to flat ceilings, soffits, and acoustical ceiling suspension systems. All main tees (straight and curved) can be field cut to specific lengths. The system is fully compatible with most USG DONN® Brand acoustical suspension systems. More than 30 UL fire-rated designs are available for flat ceilings. The system accepts type “F” light fixtures and type “G” lay-in fixtures.
Quality	USG Drywall Suspension System components come with a 10-year warranty and a lifetime limited warranty when you use SHEETROCK Brand Gypsum Panels.
Innovation	The new USG Drywall Suspension System Estimating Wizard is available to help you estimate domes, vaults, and other curved surface designs electronically. This intuitive, on-line tool can instantly generate a complete bill of materials and detailed installation instructions based on the dimensions you input. For more information, go to www.usg.com and select Online Tools.

System Benefits

The USG Drywall Suspension System gives you distinct advantages over conventional drywall ceiling installation by providing integral system components that allow you to design unique drywall ceilings.

Main tees	Heavy-duty, fire-rated systems for all applications increase flexibility; available in 15/16″ and 1-1/2″ face width.
Main tee splices	Integral reversible end detail for fast, locked-in connections.
Cross tees	QUICK-RELEASE™ clip for faster installation; eliminates wire tying; removes without tools; speeds rework.
Knurled-faced components	Easier screw penetration on all components.
Galvanized steel	Suitable for interior and exterior applications.
System flexibility	Easily transitions from soffits, flat and curved surfaces; also transitions to acoustical ceilings.
UL designs	More than 30 UL-listed fire-resistant designs (the most designs in the industry) are available.
Lifetime limited warranty	Lifetime limited warranty (30 year; see SC2102) on suspension system when used with SHEETROCK Brand Gypsum Panels.
Standard 10-year warranty	10-year on suspension system.
Accepts type F or G fixtures	Lower cost G fixtures can be used in a drywall installation.

Design Tools

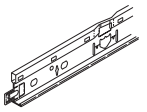
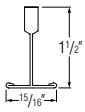
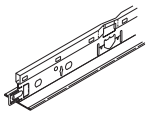
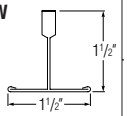
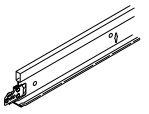
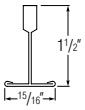
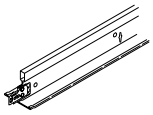
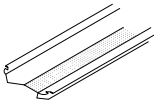
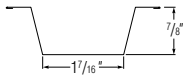
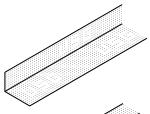
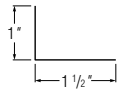
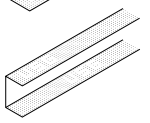
The USG Drywall Suspension System is the first pre-engineered grillage system designed for creating domed ceilings. Now vaults and domes are easier to specify and build—and installation time is cut almost in half. The new on-line USG Drywall Suspension System Estimating Wizard helps you create perfect domed and vaulted ceilings of almost any size.

Estimating Wizard

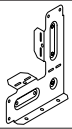
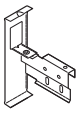
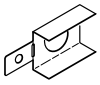
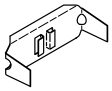
Because we've eliminated the guesswork of field bending, you are assured a precisely curved finished product that meets your exact design requirements. With the USG Drywall Suspension System Estimating Wizard, all curved parts are to your specifications and fasten together quickly and easily.

How it works: Go to the Online Tools section at www.usg.com. Simply enter the information required—type of ceiling, dimensions, and other construction details. The estimating wizard quickly generates drawings, a complete bill of materials needed for the job, plus step-by-step, illustrated installation instructions. See page 24 for more information on how to create domed ceilings.

System Components

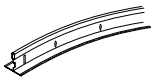
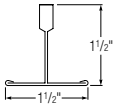
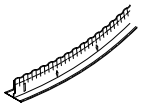
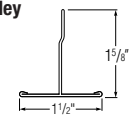
System Components			ASTM Class	Length	Height	Item No.	Class	Rated Load[1,2] 4′ Hanger Spacing
	**Straight Main Tees**	**DGL** 	Heavy Duty	12′	1-1/2″	**DGL-26**		16.0 lbs./LF
			Heavy Duty	7′ to 14′	1-1/2″	**DGL-26s** WALL-TO-WALL™		16.0 lbs./LF
		**DGLW** 	Heavy Duty	12′	1-1/2″	**DGLW-26**		16.0 lbs./LF
			Heavy Duty	7′ to 14′	1-1/2″	**DGLW-26s** WALL-TO-WALL		16.0 lbs./LF
	**Cross Tees**	**DGL** 	—	2′	1-1/2″	**DGL-224**		—
			—	3′	1-1/2″	**DGL-324**		—
			—	4′	1-1/2″	**DGL-424**		—
			—	8′	1-1/2″	**DG-824**	Class A	—
		**DGLW**	—	2′	1-1/2″	**DGLW-224**		—
			—	4′	1-1/2″	**DGLW-424**		—
	**Cross Channel** 		—	4′	7/8″	**DGCL-4**		7.4 lbs./LF
	**Moldings** 		—	12′	1″	**DGWM-24**	—	—
			—	12′	1-9/16″	**DGCM-25**	—	—

Accessories

DGSC-180—Splice Clip	**DGTC-90—Transition Clip**	**DGC4, DGC6, DGC8—COMPÄSSO™ Drywall Clip**
		
DGWC—Wall Attachment Clip	**DGSP-180—Splice Plate**	**DGHUB—Dome Hub**
		

Custom Curves

All curved main tees are custom-made to meet design requirements and to dramatically simplify the process of building curved drywall ceilings. Whether designing barrel vaults, domes, archways, valleys, waves, or serpentines, the curved grid allows for smooth transitions to flat ceilings, soffits, or acoustical ceiling suspension systems. Below, in the item number nomenclature, "xx" is a placeholder for a custom radius in inches. For example, DGW6VT36 has a radius of 36 inches.

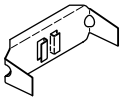
System Components			ASTM Class per C635	Radius	Arc Length	Height	Item No.	Class	Rated Load 2′ Hanger Spacing	Rated Load 4′ Hanger Spacing
	Curved Main Tees	Vault 	16 lbs.[1]	31″-44″	6′	1-1/2″	**DGW6VTxx**	Class A	—	16.0 lbs./LF
			16 lbs.[1]	45″-60″	8′	1-1/2″	**DGW8VTxx**	Class A	—	16.0 lbs./LF
			16 lbs.[1]	61″-72″	10′	1-1/2″	**DGW10VTxx**	Class A	—	16.0 lbs./LF
			16 lbs.[1]	73″-91″	10′	1-1/2″	**DGW10VTxx**	Class A	—	16.0 lbs./LF
			16 lbs.[1]	92″-239″	10′	1-1/2″	**DGW10VTxx**	Class A	—	16.0 lbs./LF
			16 lbs.[1]	240″+	12′	1-1/2″	**DGW12VTxx**	Class A	—	16.0 lbs./LF
		Valley 	16 lbs.[2]	31″-44″	6′	1-1/2″	**DGW6VYxx**	Class A	16.0 lbs./LF	—
			16 lbs.[2]	45″-60″	8′	1-1/2″	**DGW8VYxx**	Class A	16.0 lbs./LF	—
			16 lbs.[2]	61″-72″	10′	1-1/2″	**DGW10VYxx**	Class A	16.0 lbs./LF	—
			16 lbs.[2]	73″-91″	10′	1-1/2″	**DGW10VYxx**	Class A	16.0 lbs./LF	—
			16 lbs.[2]	92″-239″	10′	1-1/2″	**DGW10VYxx**	Class A	16.0 lbs./LF	—
			16 lbs.[2]	240″+	12′	1-1/2″	**DGW12VYxx**	Class A	16.0 lbs./LF	—

[1] As tested per independent testing agency, both vault and valley main tees can carry 16 pounds per lineal foot.
[2] As tested per independent testing agency, valleys require hanger wire spacing of 2′ on center.

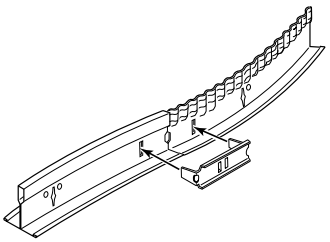
System Accessories

These are the accessories for the USG Drywall Suspension System. Many of the accessories are multi-functional. Transitions from soffits, curved, or flat surfaces can be easier with the use of these accessories.

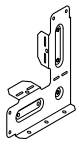
Splice Plate
DGSP-180



The Splice Plate connects factory cut ends of all curved main tees, both vaults and valleys. It also connects primary main tee to Dome Hub.

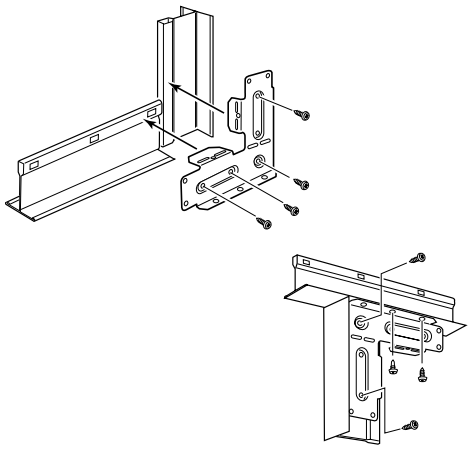


Transition Clip
DGTC-90



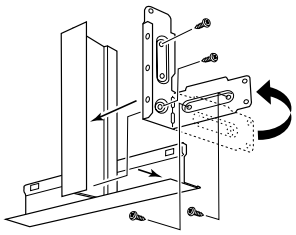
Application A

The Transition Clip securely joins two intersecting grid components, regardless of face width, at a 90° angle. Bend down tabs secure the clip to the grid. Screws are required to provide a structural connection.



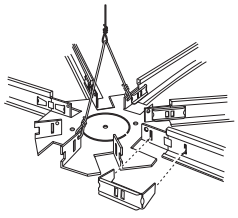
Application B
Field Modified

The Transition Clip has a slotted bend line to facilitate connecting grid members that are not in a line.



Dome Hub
DGHUB

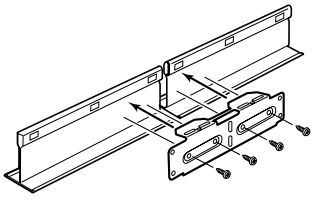
The Dome Hub serves as a base from which primary spokes are connected.



Splice Clip
DGSC-180

Application A

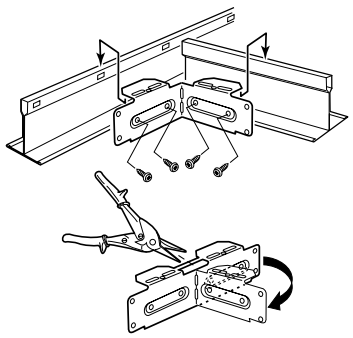
The primary purpose of the Splice Clip is to join two field cut to length in-line main tees, either straight or curved.



Splice Clip
DGSC-180

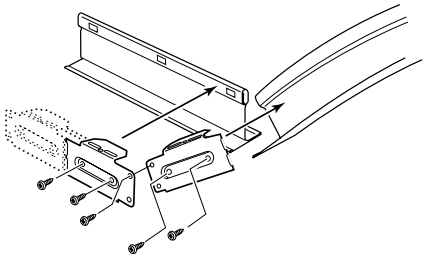
Application B

Another common use of the Splice Clip is joining two grid tees that are intersecting off module, such as a utility opening. The link joining the bend down tabs on the clip is cut allowing it to be folded on the slotted bend line.

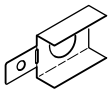


Application C
Field Modified

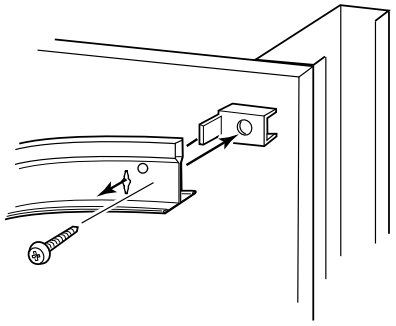
The Splice Clip also is used to connect two main tees that are in line but intersecting at an angle x, such as a flat ceiling transitioning to a vault. This application requires not only cutting the connecting link but also separating the clip at the slotted bend line. The two halves are then rejoined with a pop-rivet or screw through the holes on the clip ends. Use top hole in clip for straight to vaults. Use bottom hole in clip for straight to valleys.



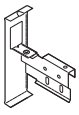
Wall Attachment Clip
DGWC



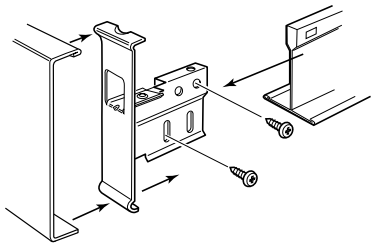
The Wall Attachment Clip acts as a spacer between the wall surface and the web of the grid when curved main tees need to be secured to the wall. This prevents twisting of the grid and insures a good installation.



COMPÄSSO Clips
DGC4
DGC6
DGC8

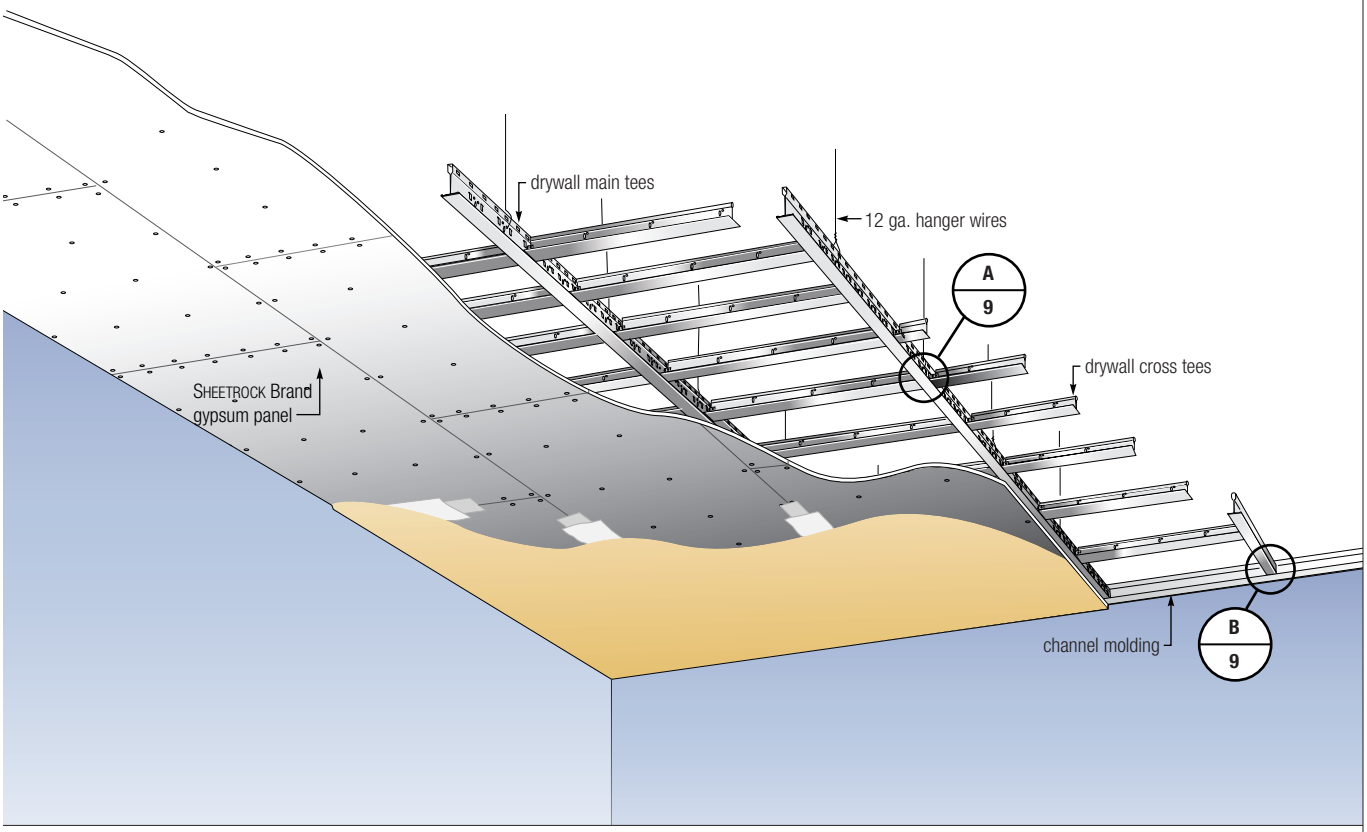


Three COMPÄSSO Suspension Trim Clips are available for drywall to match 4″, 6″, or 8″ COMPÄSSO trim. These clips are adjustable for both 1/2″ and 5/8″ drywall. The two portions of the clip are pivoted to accommodate COMPÄSSO trim at any angle in relation to the grid.



Flat Drywall Ceilings

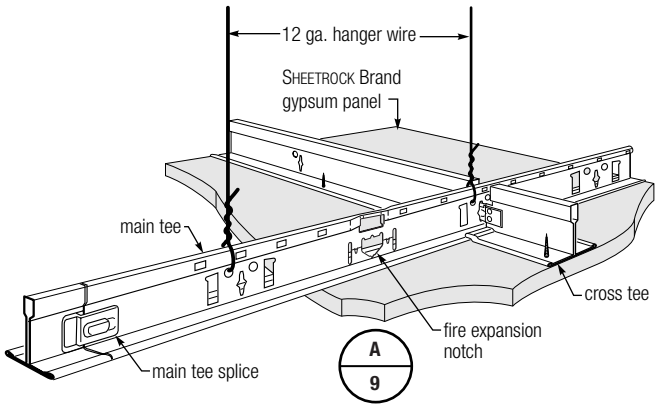
Drywall ceiling installation using the USG Drywall Suspension System is up to 50% faster than cold-rolled channel and hat channel installation. Pre-engineered components are designed for maximum installation speed. Pre-indexed main tee holes make measuring, aligning, and squaring the system much easier.



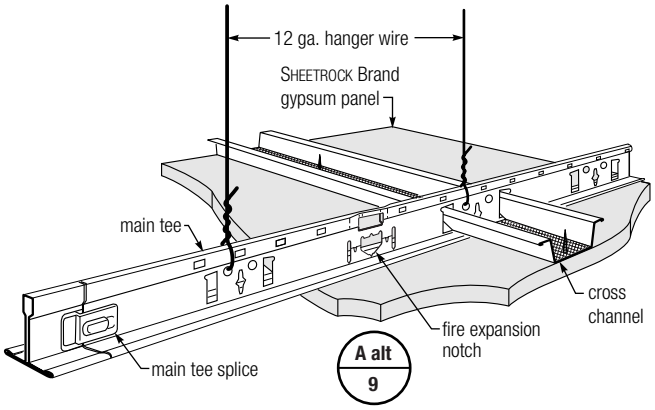
– Main tee and cross tee spacing is provided in the table on page 30.
– See pages 32-33 for special requirements for fire rated assemblies.

Note: These renderings and details are provided for illustrative purposes only and are not a substitute for certified architectural and engineering drawings, nor do they necessarily reflect national and local building code requirements. For additional information, see specifications on page 38 or call Technical Services at 1-800-USG-4YOU.

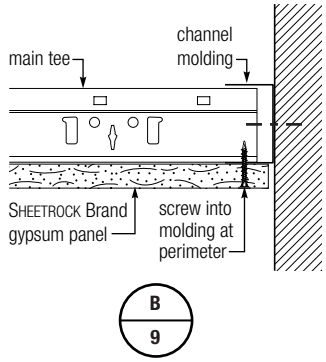
Cross tee/main tee intersection



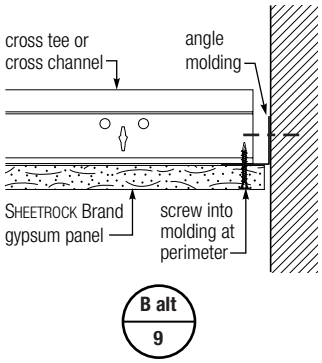
Cross channel detail



Perimeter detail—channel molding

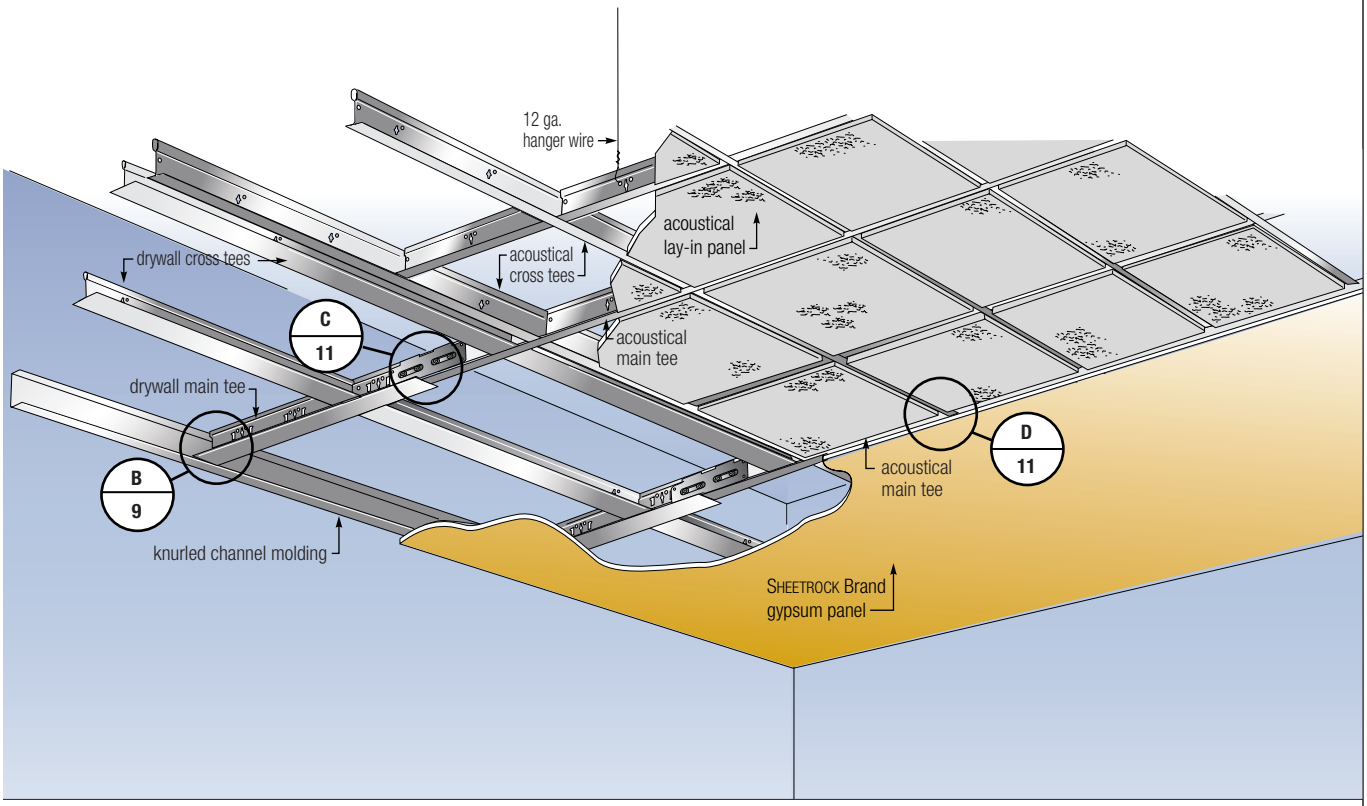


Perimeter detail—angle molding



Transitions

Drywall to Acoustical Ceilings



The new USG Drywall Suspension System is totally compatible with our DONN® Brand DX®, DXSS, DXW, and CENTRICITEE™ acoustical suspension systems, making it easy to transition between flat drywall and acoustical ceilings. Flush or offset transitions are possible. Additional cross tees are necessary at drywall edge to provide adequate support (as shown below).

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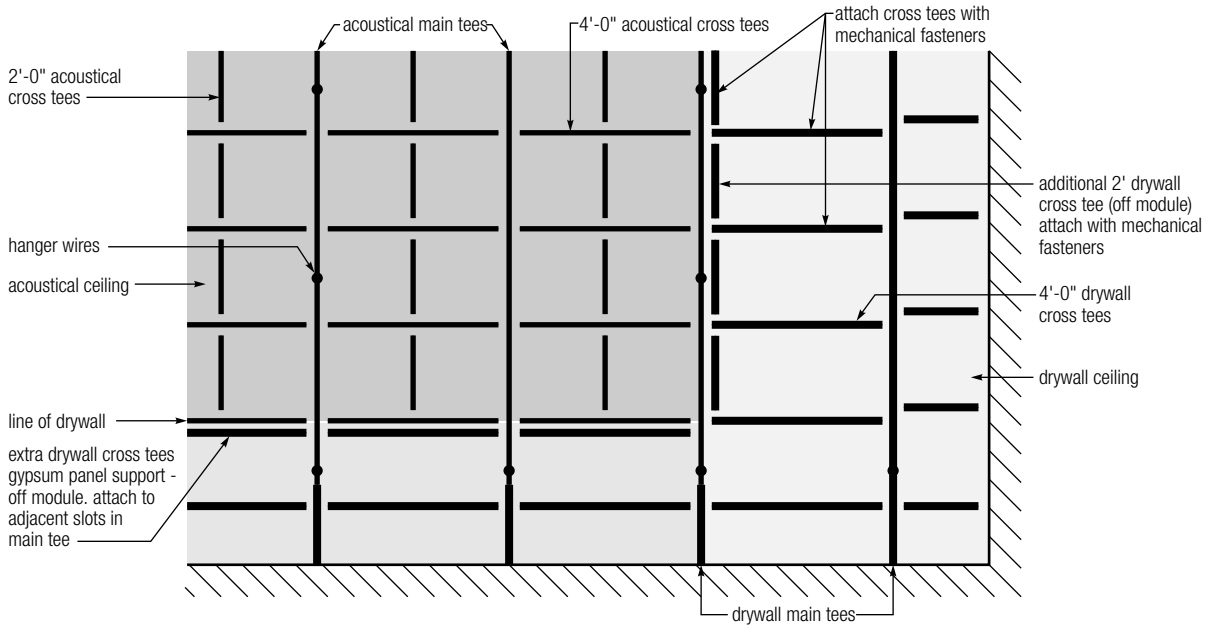
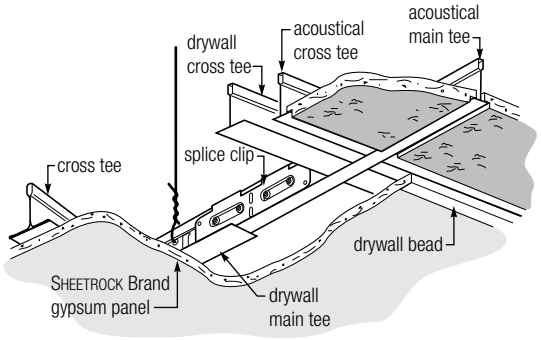
Plan view

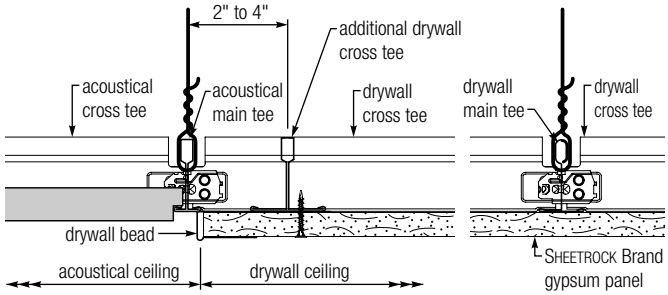


Drywall to acoustical transition—field cut connection



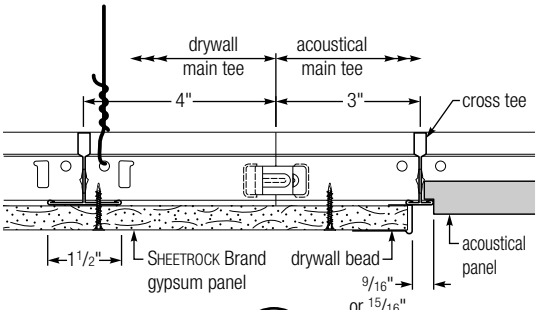
C / 11

Drywall to acoustical transition



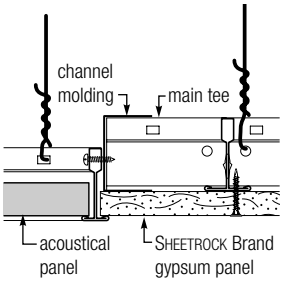
D / 11

Drywall to acoustical transition—factory end connection



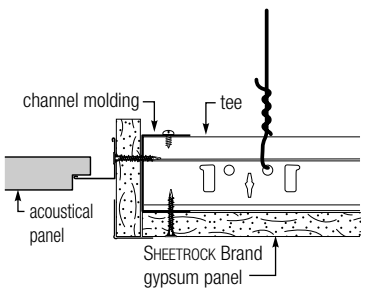
C alt / 11

Flush transition



D alt / 11

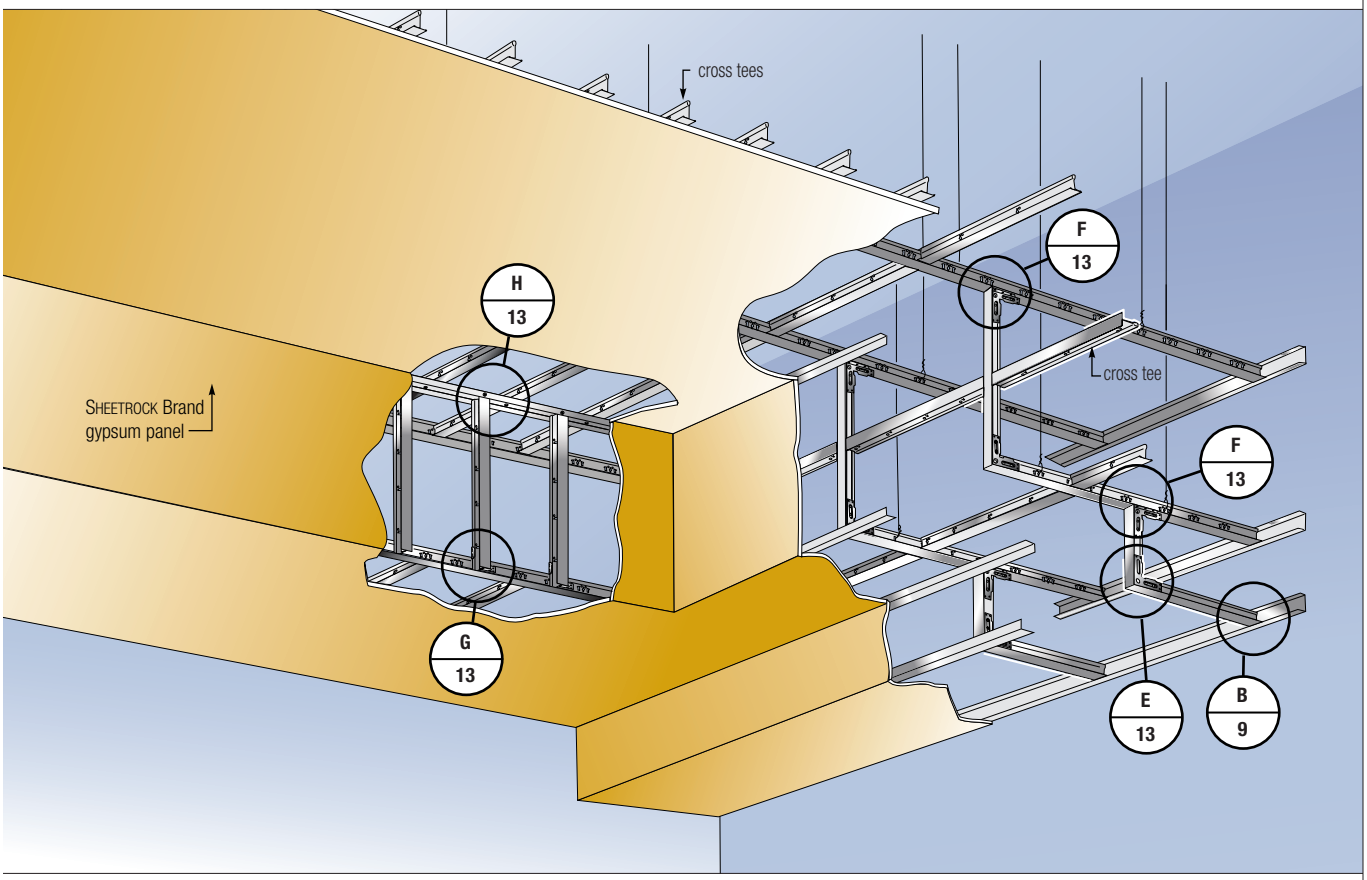
Standard offset



D alt / 11

Boxed Soffits

Flat Drywall Ceilings



The USG Drywall Suspension System is the best choice for designing and building soffits. Soffits can now be built with a much lower cost than with metal stud construction.

Soffit suspension system components are identical to the components used in flat surface areas.

- In some instances, hanger wires, bracing, and grid components have been omitted or truncated for clarity. For additional information, please contact technical services.
- When constructing soffits, bracing of the drywall suspension and/or additional hanger wires may be necessary to ensure stability and structural performance during and after drywall attachment.
- The maximum vertical soffit height is 48″ with cross tees spaced 24″ on center. (Maximum unsupported drywall area 48″ x 24″). Intermediate cross tees are not necessary when soffit dimensions do not exceed 24″.
- When used in soffit construction, all Transition Clips are to have a minimum of 4 screws for attachment.

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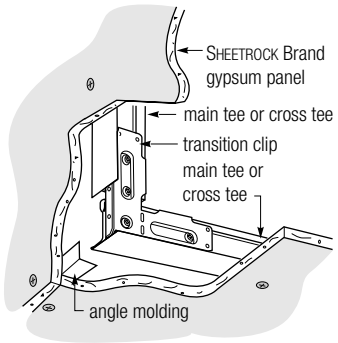
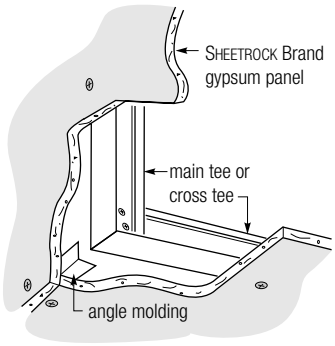
90° outside corner using transition clip



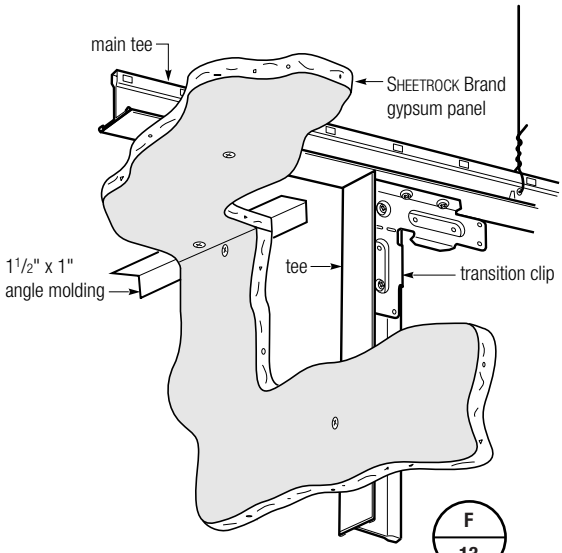
E
13

90° outside corner with field cut tee



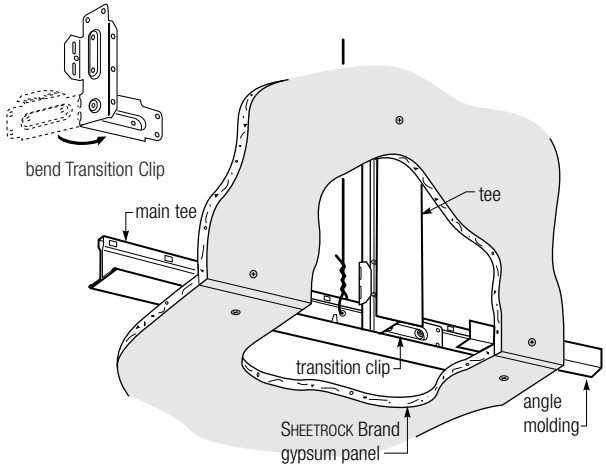
E alt
13

90° inside corner



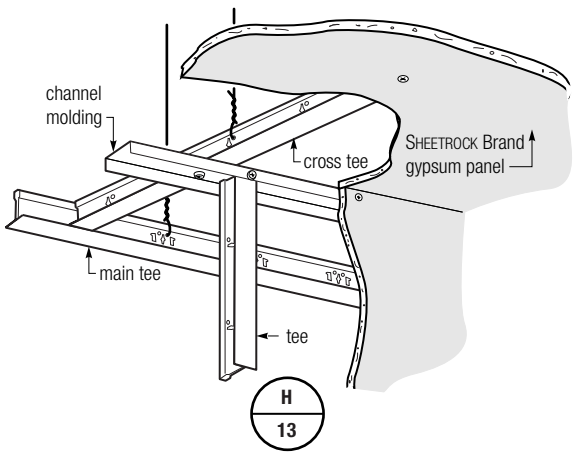
F
13

90° outside corner with main tee at bottom edge



G
13

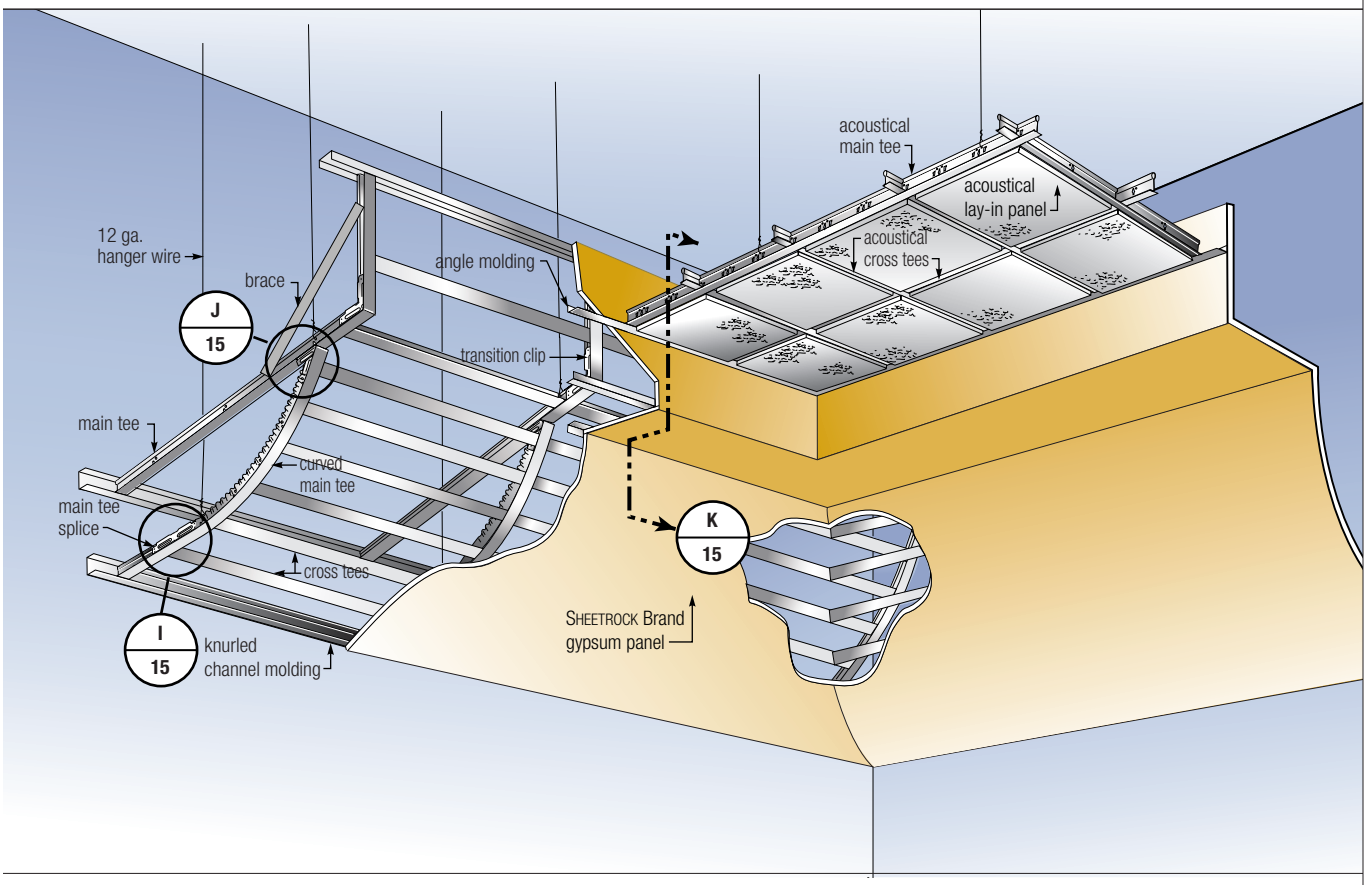
90° inside corner with channel molding at top edge



H
13

Curved Soffits

Curved Drywall Ceilings



Design and build soffits easier, quicker and more economically using the USG Drywall Suspension System.

Construct curved soffits with curved main tees. Create vaults, valleys, and combinations, and shift from horizontal or vertical straight areas with ease. For added flexibility, grid members can be field cut and joined.

- In some instances, hanger wires and bracing have been omitted and components truncated for clarity. or additional information, please contact technical services.
- When constructing curved soffits, bracing of the drywall suspension and/or additional hanger wires may be necessary to ensure stability and structural performance during and after drywall attachment. See page 19 for hanger wire spacing requirements.
- The maximum vertical soffit is 48″ with cross tees spaced 24″ on center. (Maximum unsupported drywall area 48″ x 24″). Intermediate cross tees are not necessary when soffit dimensions do not exceed 24″.
- All Transition or Splice Clips are to have a minimum of 4 screws for attachment.

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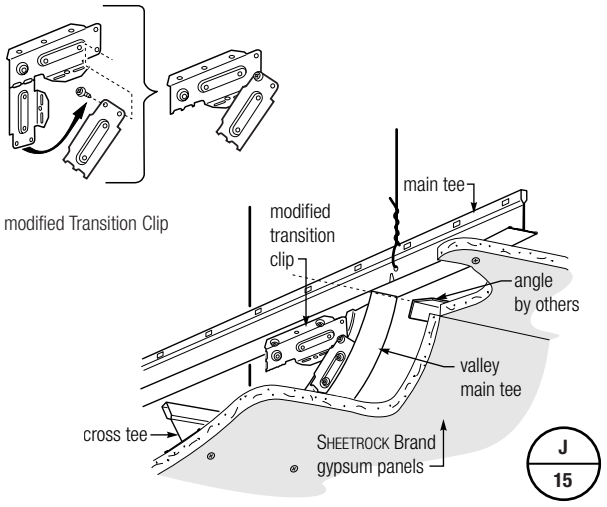
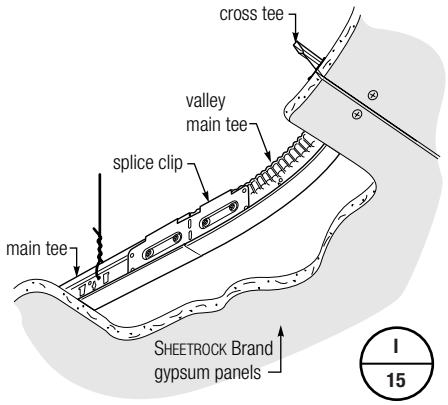
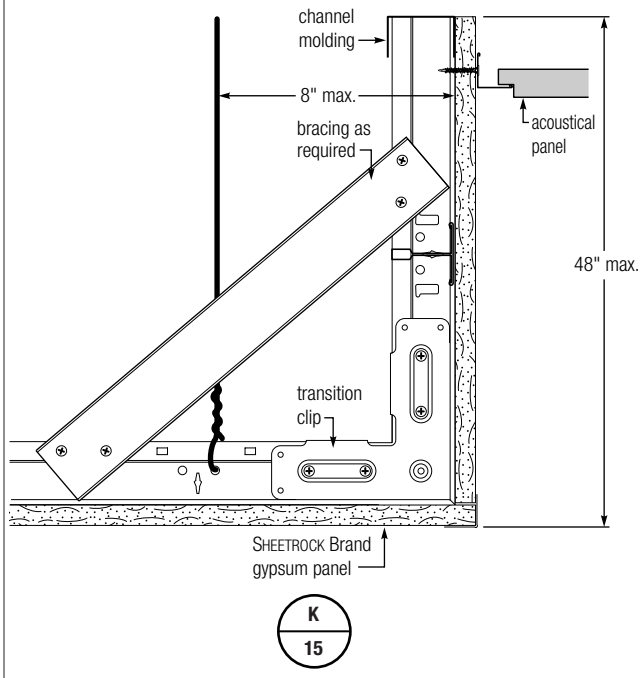
Curved soffit to boxed soffit—valley to flat



Curved soffit—flat to valley

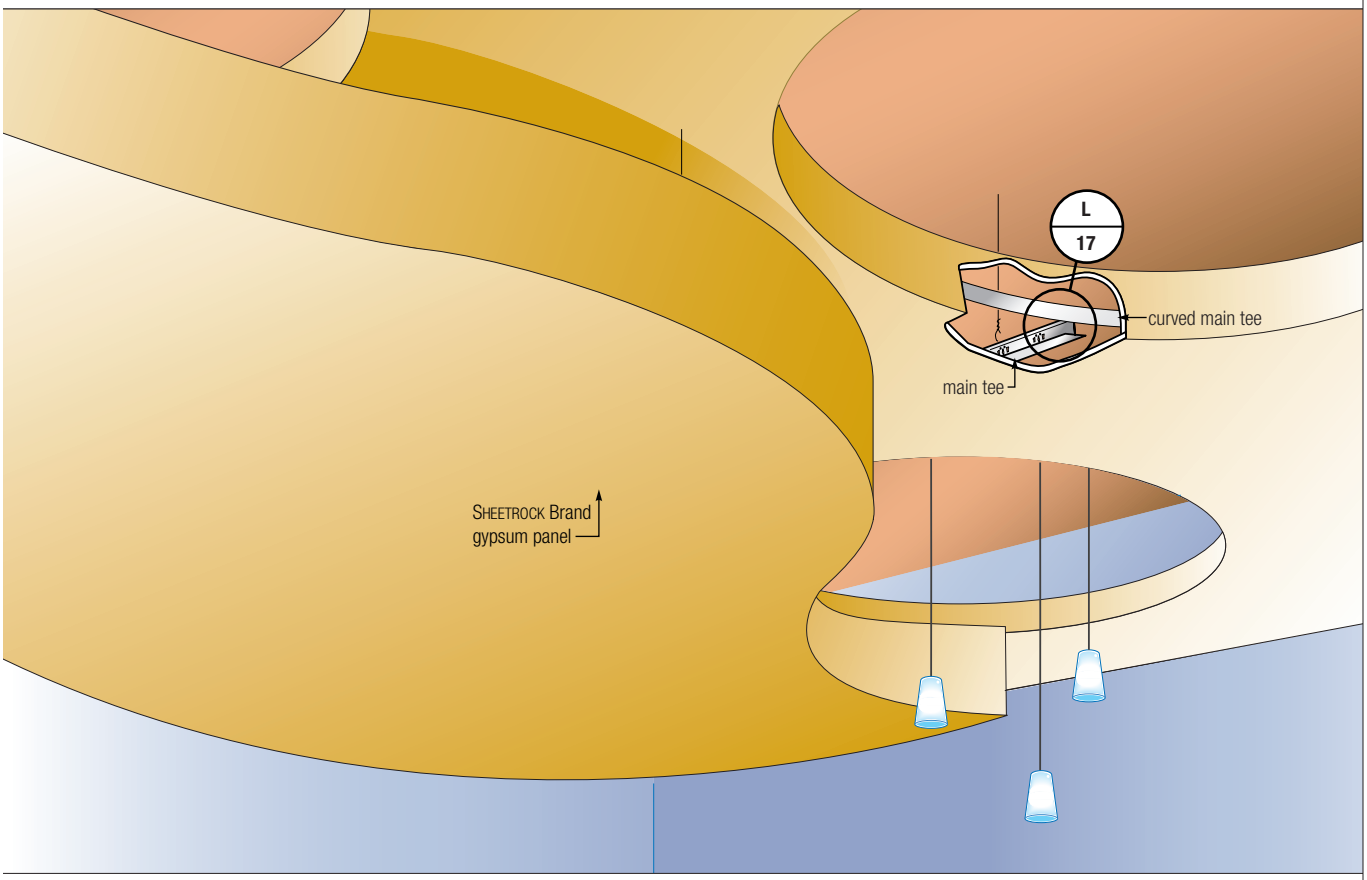


Section through soffit and acoustical transition



Fascias

Flat Drywall Ceilings

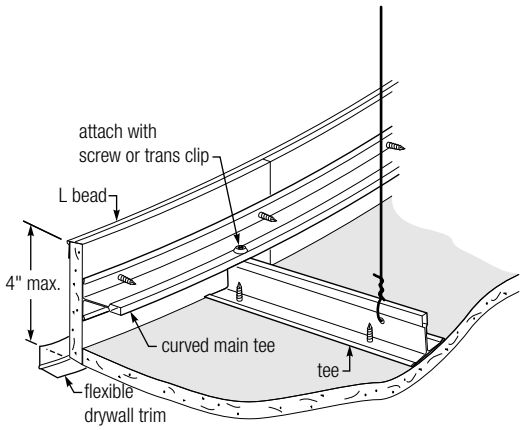


Curved drywall fascias can be easily designed and built with the USG Drywall Suspension System.

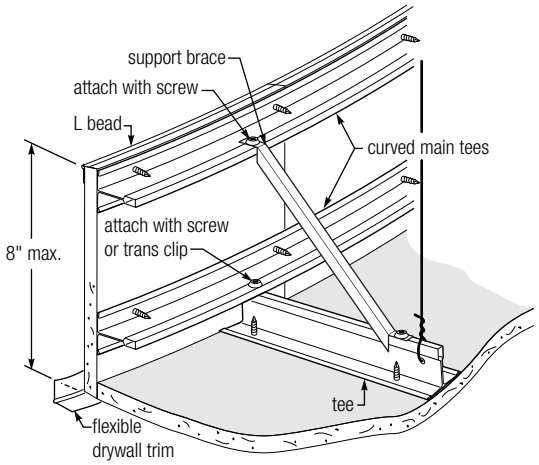
- Main tee and cross tee spacing is provided in the table on page 30.
- Hanger wires must be placed within 12″ of the fascia where main tees and cross tees intersect the fascia.
- Extra hanger wires may be required at the perimeter of fascia applications to ensure adequate support and stability, such as cross tees less than 12″ in length.

Note: These renderings and details are provided for illustrative purposes only and are not a substitute for certified architectural and engineering drawings, nor do they necessarily reflect national and local building code requirements. For additional information, see specifications on page 38 or call Technical Services at 1-800-USG-4YOU.

Curved drywall fascia (up to 8″ max.) for flat ceilings



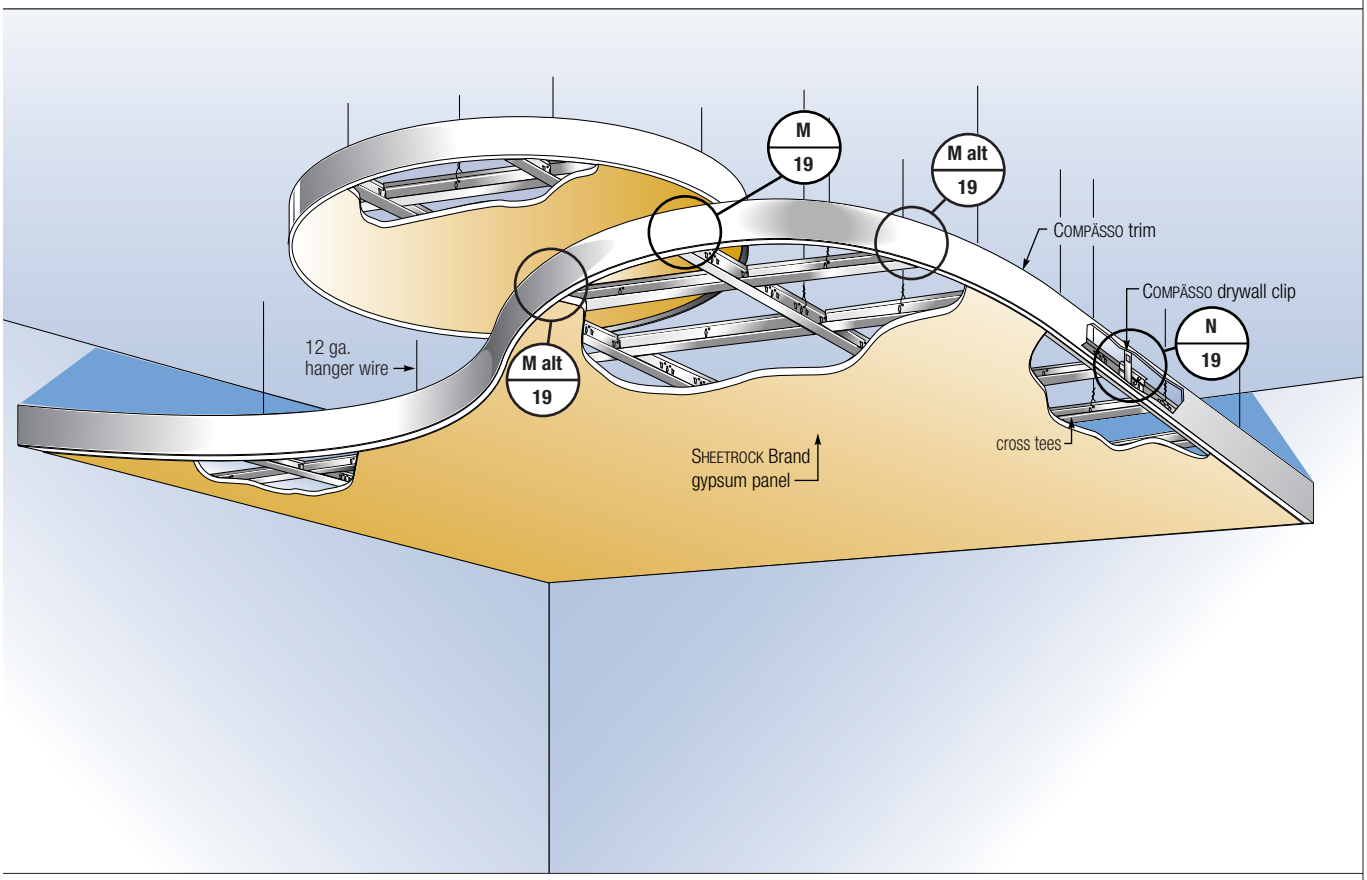
L
17



L alt
17

Fascias

Flat Drywall Ceilings

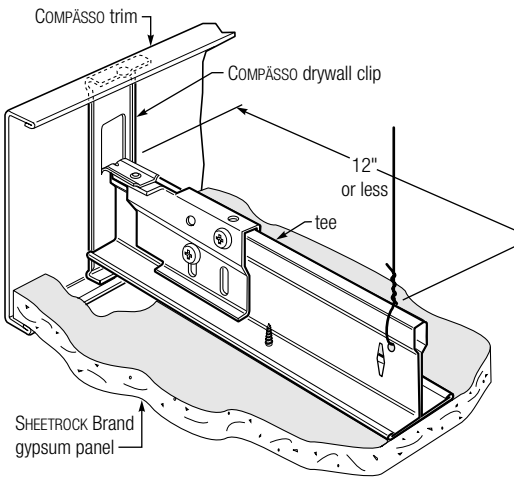


Use USG's COMPÄSSO Suspension Trim to finish USG Drywall Suspension System ceilings.

- Main tee and cross tee spacing is provided in the table on page 30.
- Hanger wires must be placed within 12″ of the fascia where main tees and cross tees intersect the fascia.
- Extra hanger wires may be required at the perimeter of fascia applications to ensure adequate support and stability, such as cross tees less than 12″ in length.

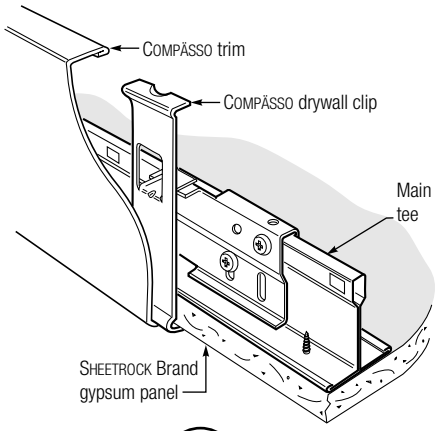
Note: These renderings and details are provided for illustrative purposes only and are not a substitute for certified architectural and engineering drawings, nor do they necessarily reflect national and local building code requirements. For additional information, see specifications on page 38 or call Technical Services at 1-800-USG-4YOU.

COMPÄSSO Trim perpendicular to main or cross tee

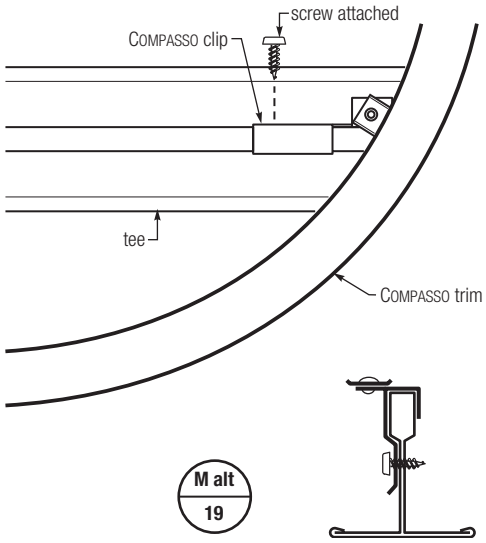


M
19

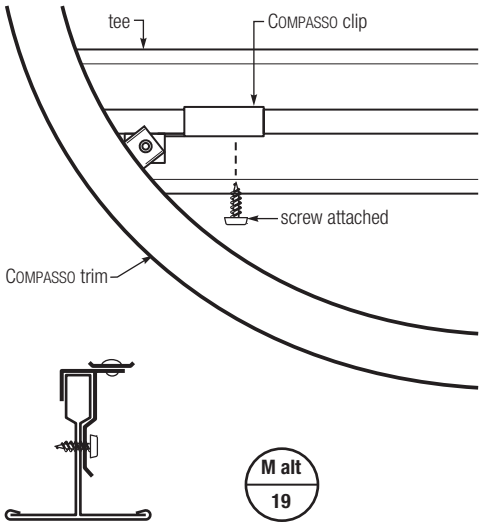
COMPÄSSO Trim parallel to main or cross tee



N
19



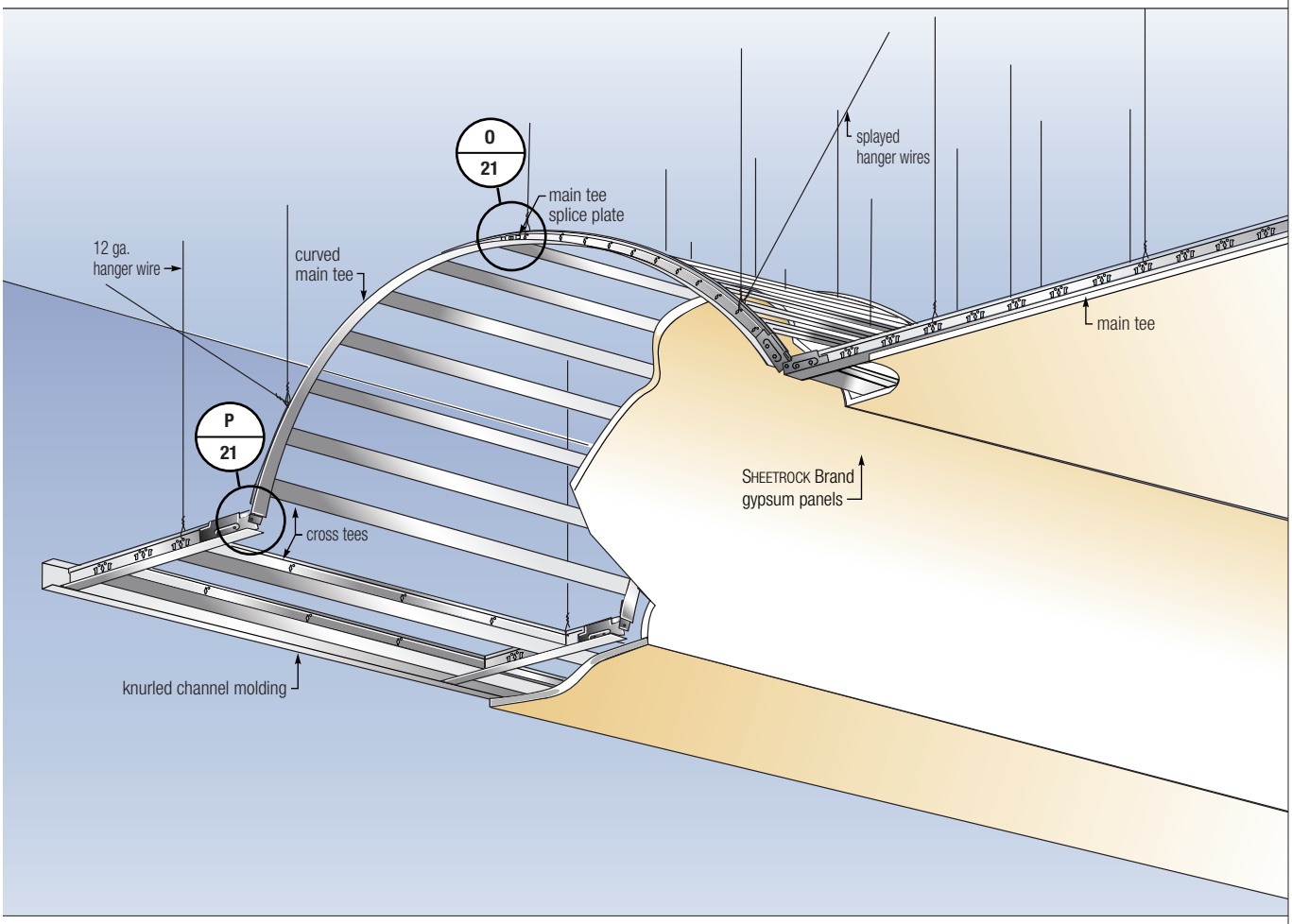
M alt
19



M alt
19

Vaults

Curved Drywall Ceilings

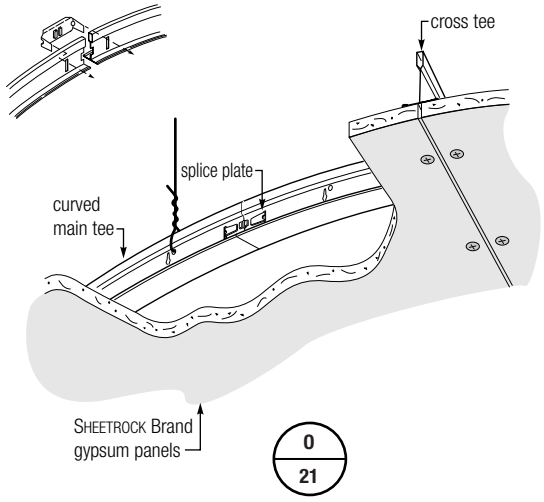


Create barrel vaults, archways, valleys, and waves with ease using the USG Drywall Suspension System. Integral clips allow for a smooth transition to flat ceilings, soffits, or acoustical suspension systems.

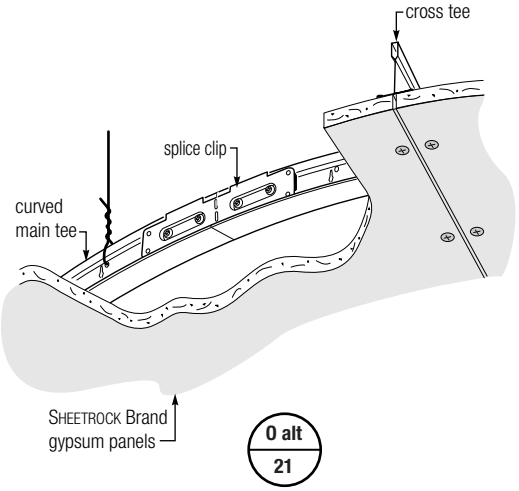
- Hanger wires shall be spaced a maximum 48″ along the arc of Vaults main tees.
- Additional hanger wires or bracing may be necessary to stabilize curved ceilings during and after drywall attachment.
- At least 1 hanger wire is required within 8″ of a standard curved main tee splice.
- Hanger wires are required within 8″ on both sides of a modified Splice Clip attached to the nearest hanger holes.
- At least 1 hanger wire is required within 8″ of a Transition Clip.
- All drywall joints must be a minimum of 12″ from all main tee splices.
- In some instances, hanger wires, bracing and grid components have been omitted or truncated for clarity. For additional information, please contact technical services.

Note: These renderings and details are provided for illustrative purposes only and are not a substitute for certified architectural and engineering drawings, nor do they necessarily reflect national and local building code requirements. For additional information, see specifications on page 46 or call Technical Services at 1-800-USG-4YOU.

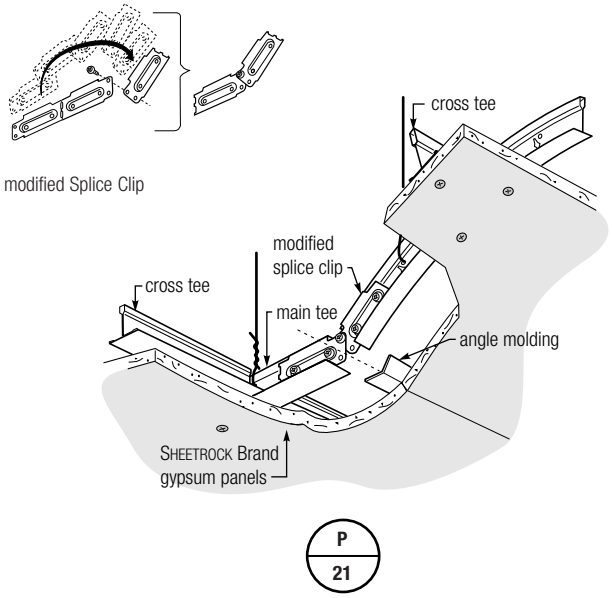
Vault to vault—factory end connection



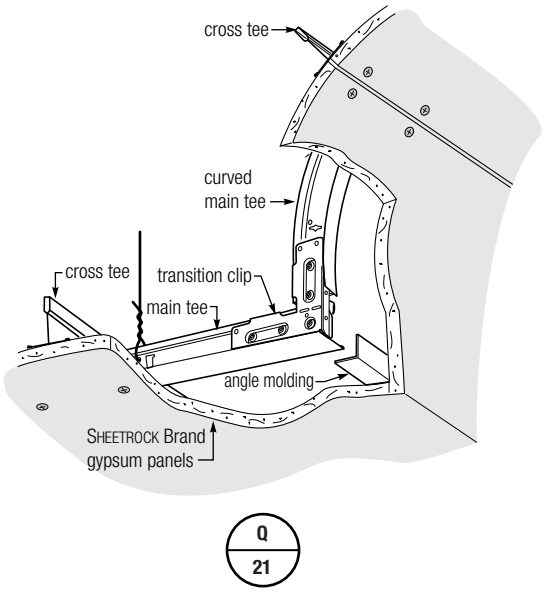
Vault to vault—field cut



Flat to vault with greater than 90˚ angle

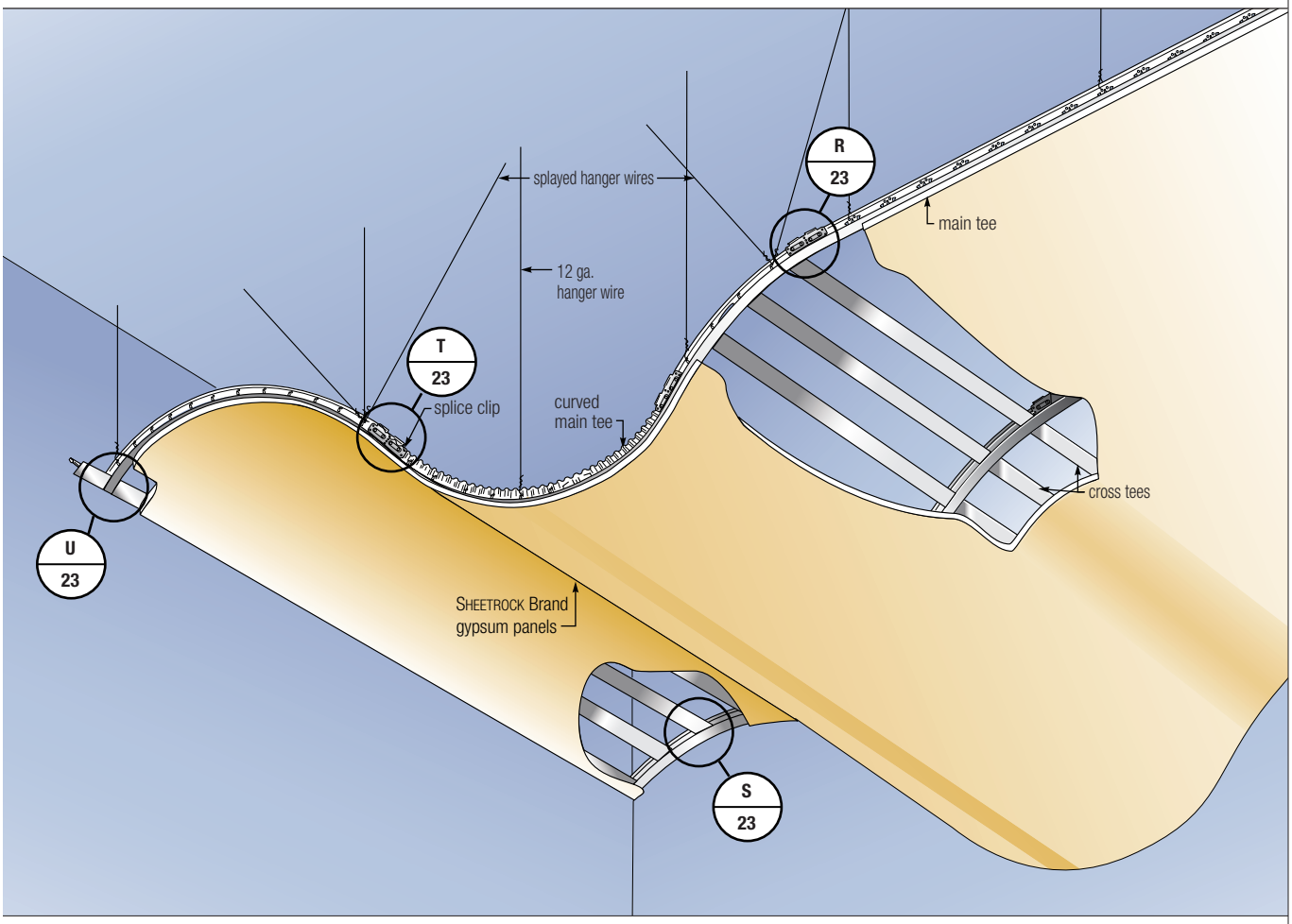


Flat to vault with 90º angle (not shown in preceding perspective)



Vaults and Valleys

Curved Drywall Ceilings



The USG Drywall Suspension System simplifies curved drywall ceiling design. It makes creating vaults and valleys easier.

- Hanger wires shall be spaced a maximum 48″ along the arc Vaults main tees.
- Hanger wires shall be spaced a maximum 24″ along the arc of Valley main tees.
- Additional hanger wires or bracing may be necessary to stabilize curved ceilings during and after drywall attachment.
- At least 1 hanger wire is required within 8″ of a standard curved main tee splice.
- Hanger wires are required within 8″ on both sides of a modified Splice Clip attached to the nearest hanger holes.
- At least 1 hanger wire is required within 8″ of a Transition Clip.
- All drywall joints must be a minimum of 12″ from all main tee splices.
- In some instances, hanger wires, bracing and grid components have been omitted or truncated for clarity. For additional information, please contact technical services.

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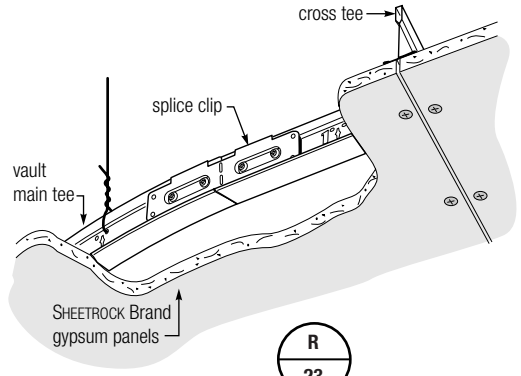
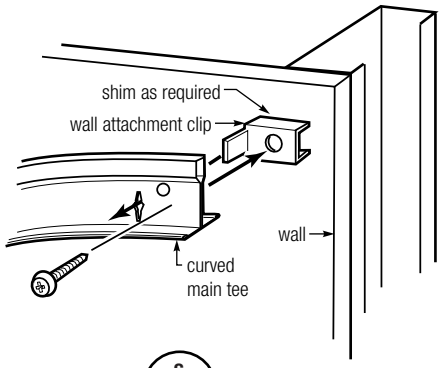
Vault to flat—field cut connection



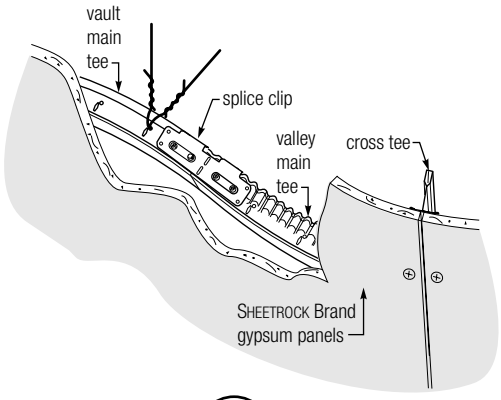
R
23

Curved main tee to parallel wall connection



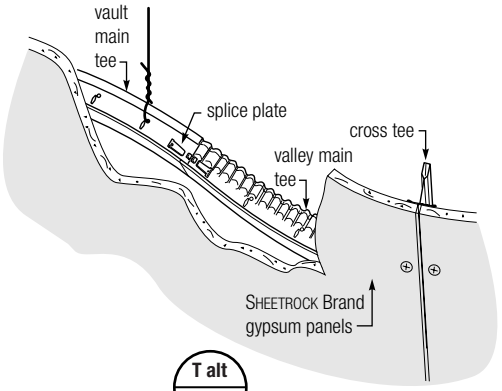
S
23

Vault to valley—field cut connection



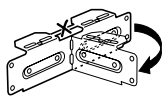
T
23

Vault to valley—factory end connection

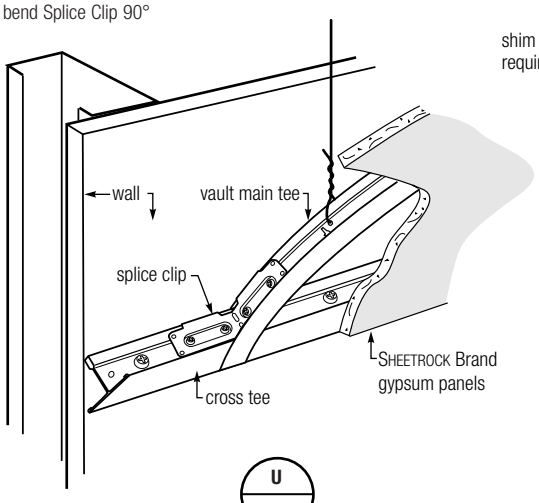


T alt
23

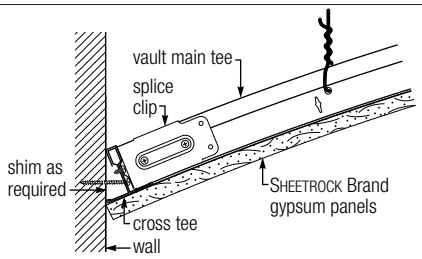
Curved main tee perpendicular to wall connection (section and isometric view)



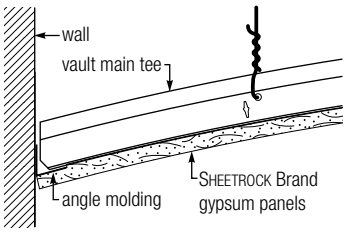
bend Splice Clip 90°



U
23



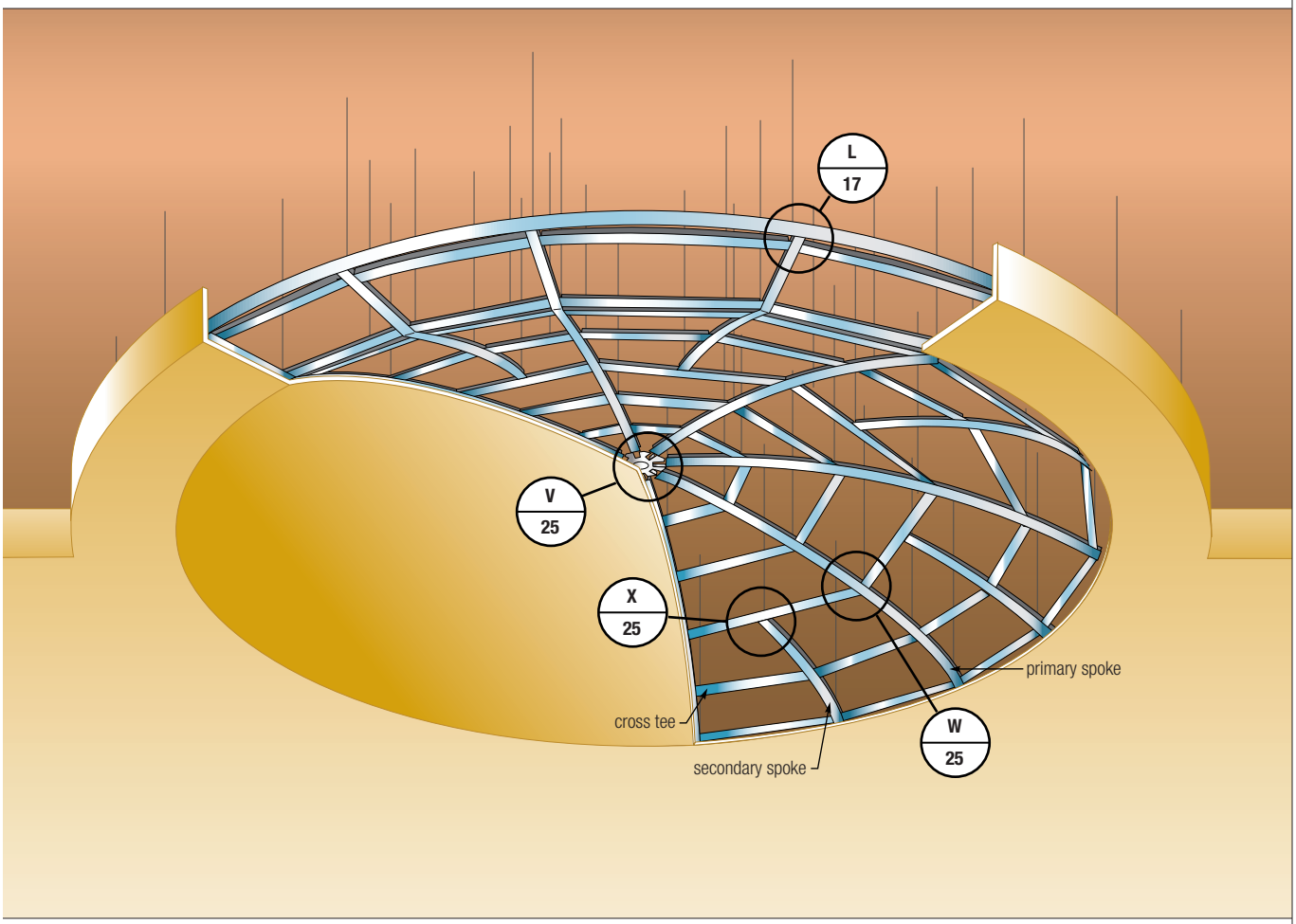
Acute intersection vault tee



U alt
23

Domes

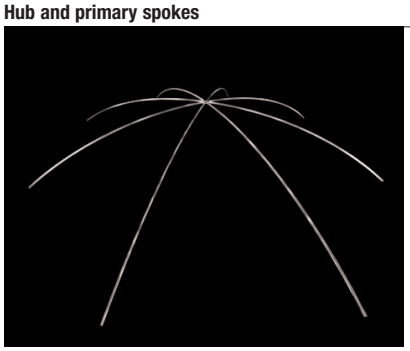
Curved Drywall Ceilings



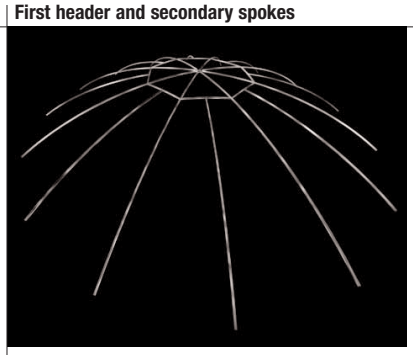
The USG Drywall Suspension System offers pre-engineered solutions for dome ceilings. It provides a low-cost alternative to labor-intensive installation methods such as using conventional field-bent hat channel steel and black iron suspension systems. Using the pre-fabricated hub and pre-formed curved tees, constructing domes has never been easier. The USG Drywall Suspension System Estimating Wizard makes it simpler to build the dome with finishing options ranging from plaster and drywall to pre-engineered GRG panels.

- Hanger wires shall be spaced a maximum of 32″ along each spoke.
- Additional secondary spokes are required when spacing between primary spokes exceeds 48″.
- Hanger wires are required at both ends of all secondary spokes.
- Cross tees are required 16″ o.c. maximum.
- Additional hanger wires or bracing may be necessary to stabilize dome during and after construction.

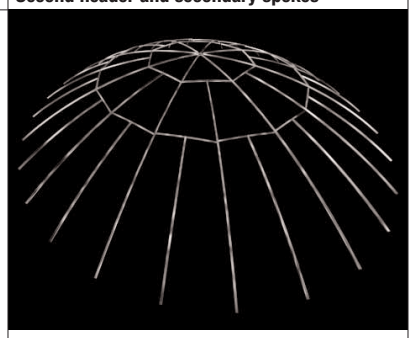
Hub and primary spokes



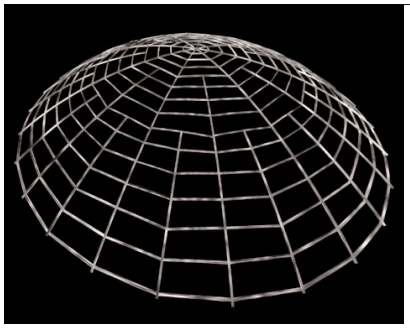
First header and secondary spokes



Second header and secondary spokes

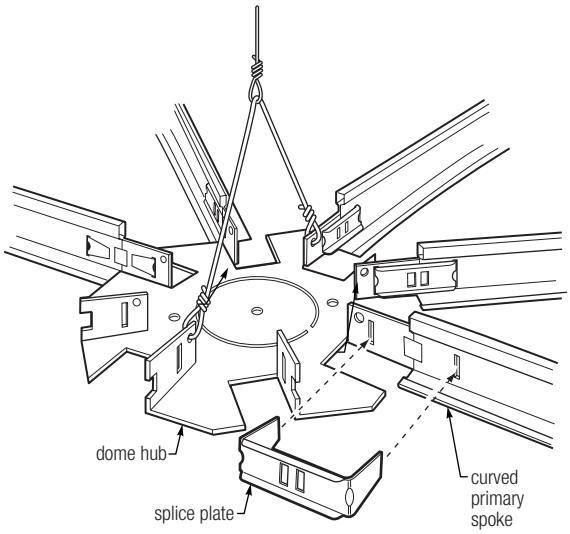


Cross tees

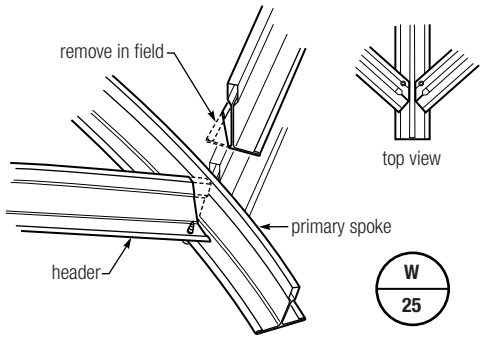


Lath and plaster finish

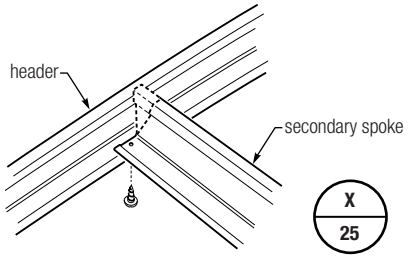
Detail 1: Top connector spoke hub



Detail 2: Header to spoke connection

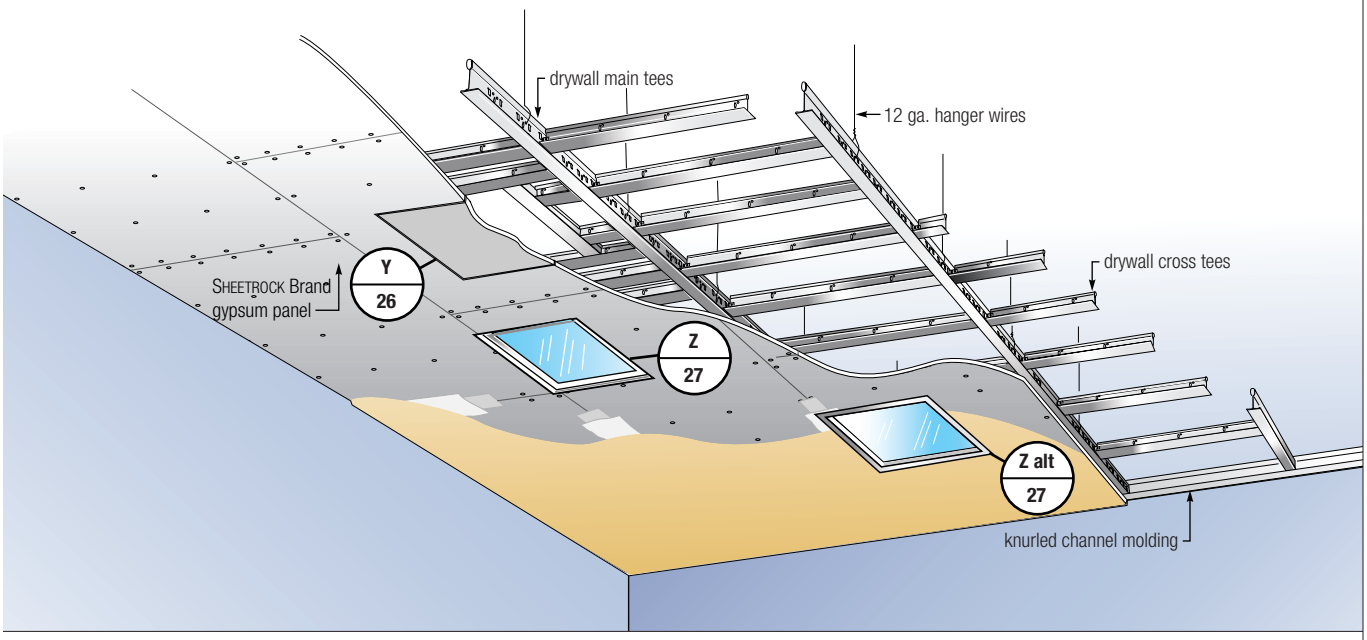


Detail 3: Secondary spoke connection



Utility Interfaces

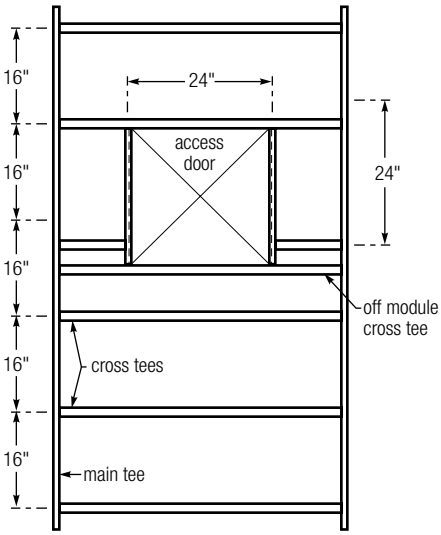
Flat Drywall Ceilings



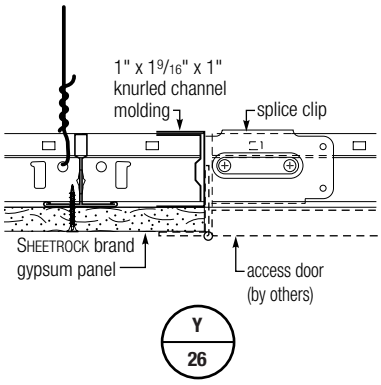
The USG Drywall Suspension System easily accommodates conventional light fixtures, access doors, or HVAC ceiling diffusers.

Note: These renderings and details are provided for illustrative purposes only and are not a substitute for certified architectural and engineering drawings, nor do they necessarily reflect national and local building code requirements. For additional information, see specifications on page 40 or call Technical Services at 1-800-USG-4YOU.

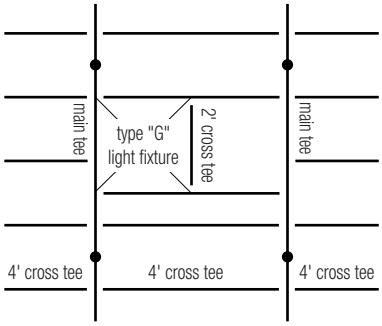
Access door



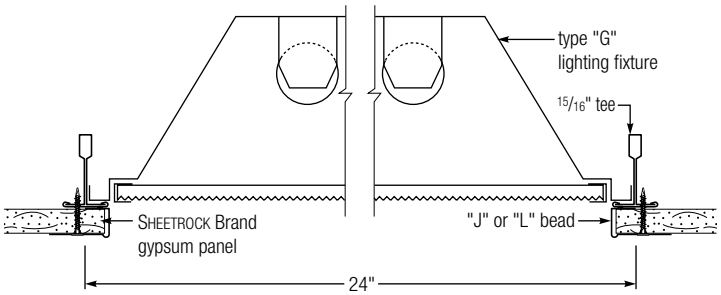
Access door



Type “G” light fixture



A type “G” fixture, commonly used in suspended acoustical suspension ceilings, requires 15/16″ faced main or cross tees to be located on either 24″ or 48″ centers. Drywall is cut even with the grid flanges and trimmed with “J” or “L” bead. The fixture is passed through the opening and lowered to rest on the grid flanges.



Z
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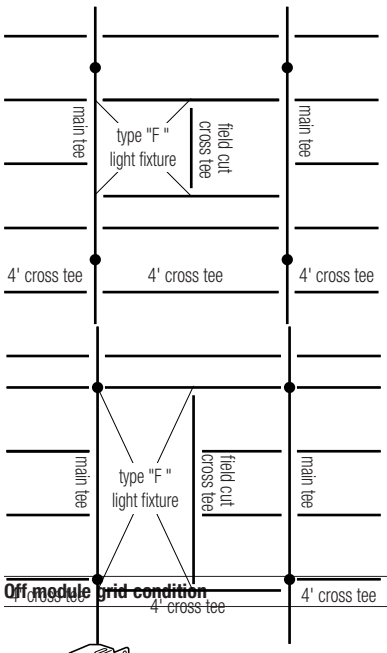
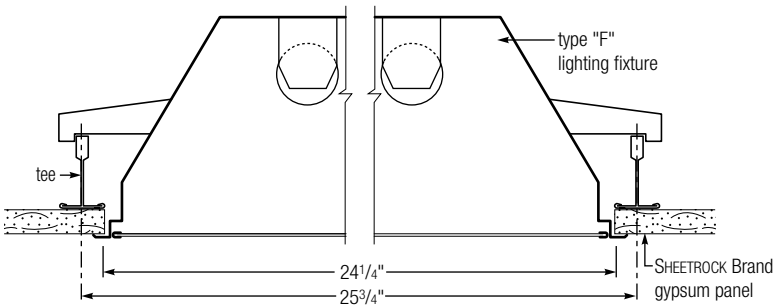
Type “F” light fixture



A type “F” light fixture has lower flanges that cap the cut edges of the drywall. This fixture typically requires a full 24″ or 48″ opening, and therefore requires grid members to be installed “off-module.” The Splice Clip is utilized for this condition with either 15/16″ or 1-1/2″ faced grid. Type “F” light fixtures are raised into the opening until the flanges contact the ceiling. Securing devices on the fixture are adjusted to suspend the fixture from the grid and pull it tight to the ceiling surface.



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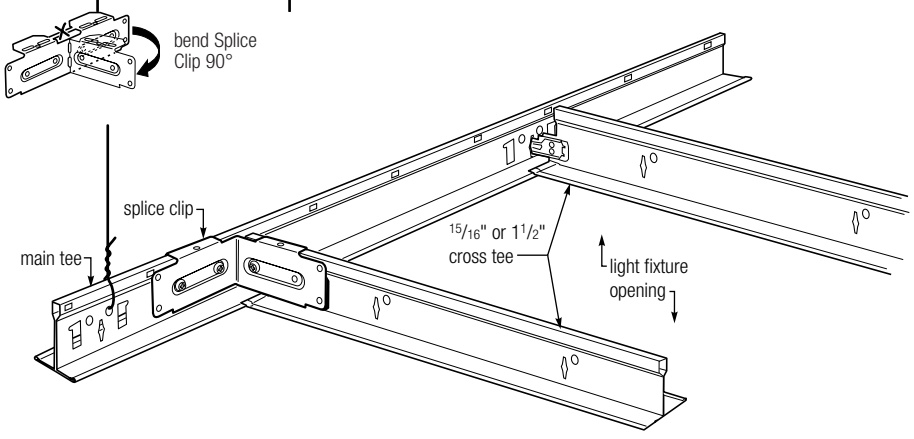
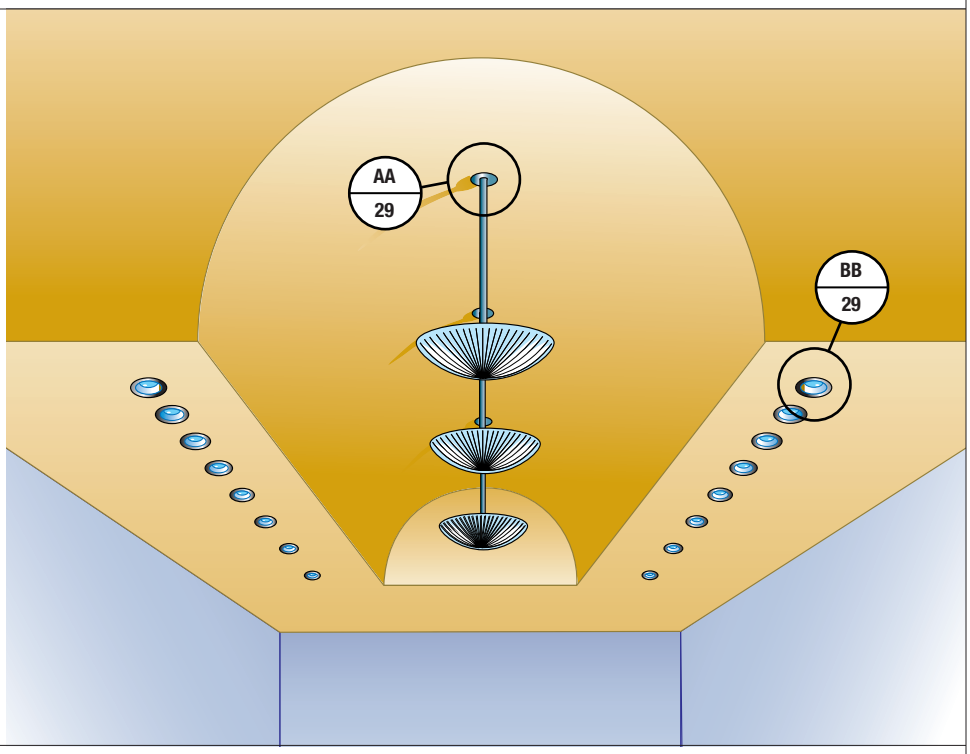
Off module grid condition



Utility Interfaces

Curved Drywall Ceilings

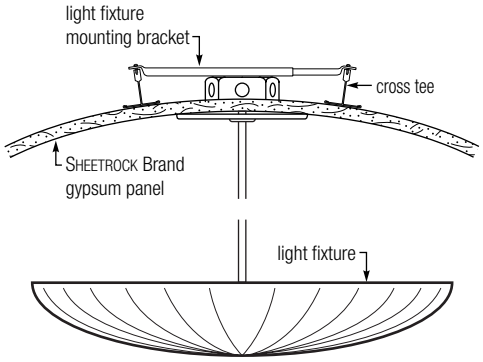


Curved drywall ceilings create exciting lighting design opportunities. The interface of light fixtures with curved ceiling surfaces requires design consideration. Stem or cable indirect or direct light choices are possible solutions. Recessed flat sections can also be built into curved sections to accommodate light fixtures. Sconces are also very effective with a vaulted ceiling.

When installing downlights in concave or convex ceilings, the application on a flat trim ring will cause a gap. This gap will vary depending on the ceiling radius, trim ring diameter and installation tolerances. For more information, consult with Technical Services.

Note: These renderings and details are provided for illustrative purposes only and are not a substitute for certified architectural and engineering drawings, nor do they necessarily reflect national and local building code requirements. For additional information, see specifications on page 48 or call Technical Services at 1-800-USG-4YOU.

Pendant fixture—vault



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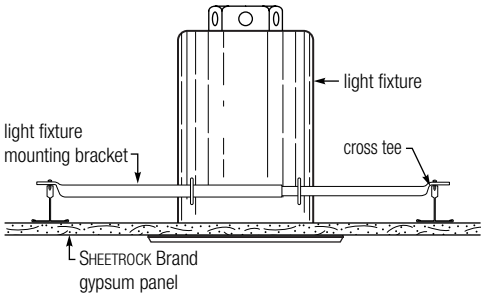
29

Incandescent fixture—recessed flat ceiling



BB
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Applying Sheetrock Brand Gypsum Panels

A lifetime limited (30-year) warranty on the USG Drywall Suspension System is offered when SHEETROCK Brand Gypsum Panels are used. The USG Drywall Suspension System is engineered to provide the ultimate in design flexibility and will accept 1/4″, 3/8″, 1/2″, 5/8″, and 3/4″ gypsum panels for flat and curved ceiling applications. Veneer plaster applications are also available.

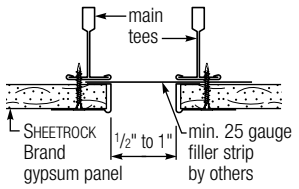
SHEETROCK Brand Gypsum Panel Selector for Flat Ceilings

Board Thickness	Maximum Main Tee on Center Spacing	Maximum Cross Tee/Channel on Center Spacing	Maximum 12 Gauge Wire on Center Spacing
1/4″ Double Layer, SHEETROCK Brand Gypsum Panels	48″	16″	48″
3/8″ Double Layer, SHEETROCK Brand Gypsum Panels	48″	16″	48″
1/2″ SHEETROCK Brand Interior Gypsum Ceiling Panels	48″	24″	48″
1/2″ SHEETROCK Brand FIRECODE® and FIRECODE C Panels	48″	16″	48″
5/8″ SHEETROCK Brand FIRECODE and FIRECODE C Panels	48″	24″	48″
5/8″ SHEETROCK Brand Exterior Gypsum Ceiling Panels	48″	24″	48″
1/2″ Imperial Brand Gypsum Base	48″	16″	48″
5/8″ Imperial FIRECODE and FIRECODE C Gypsum Base	48″	16″	48″

Note:
Radiused double layer 1/4″ gypsum panels will transition to 5/8″ flat gypsum ceilings. See page 8.
For fire-rated ceiling applications, see pages 32-33 and contact Technical Services.
For exterior ceiling applications, see page 34 and contact Technical Services.

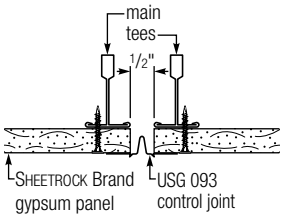
Expansion Joints

At building movement and expansion joints provide a separation in the suspension system and install back to back main tees to allow for building movement, expansion, and contraction in large ceiling areas.



Control Joints

Control joints are used to control stress caused by expansion and contraction across the control joint in large ceiling expanses in both drywall and veneer plaster systems. Use control joint 093, which provides a 3/32″ ground for drywall or veneer plaster for ceiling areas that exceed 50′ (2500 sq. ft.) with perimeter relief and 30′ (900 sq. ft.) without perimeter relief. For fire-rated ceilings, control joints shall not occur within 12″ of the fire expansion notch. Do not separate suspension: Use continuous single main tees.



Special Note

Location of control and expansion joints are the responsibility of the design professional. Gypsum panel surfaces should be isolated with control joints, caulk, or other means where:

- Ceiling or soffit abuts a structural element, column, partition, or other vertical penetration.
- Construction changes within a plane of the ceiling.
- Ceiling dimensions exceed 50′ in either direction (2500 sq. ft.) with perimeter relief or 30′ (900 sq. ft.) without relief.
- Soffit exceeds 30′ in either direction.
- Wings of “L”, “U” and “T” shaped ceilings areas are joined.

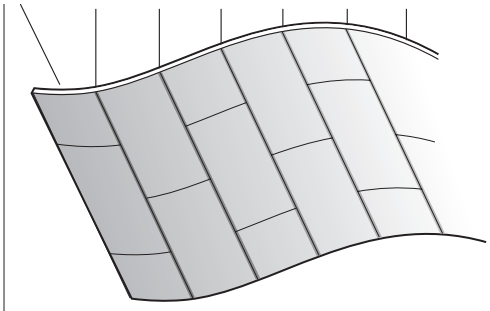
SHEETROCK Brand Gypsum Panel Selector for Curved Ceilings

	Curved Main Tees[1]					Gypsum Board Thickness Options[2]	
	Radius	Arc Length	Item No.	Cross Tee Spacing	Hanger Wire Spacing	Parallel[3]	Perpendicular[3]
Vault	31″-44″	6′	**DGW6VTxx[4]**	8″ o.c.	48″	—	1/4″ flex double layer[5]
	45″-60″	8′	**DGW8VTxx**	8″ o.c.	48″	—	1/4″ double layer
	61″-72″	10′	**DGW10VTxx**	8″ o.c.	48″	1/4″ double layer	1/4″ double layer
	73″-91″	10′	**DGW10VTxx**	8″ o.c.	48″	1/4″ double layer	1/4″ double layer
	92″-239″	10′	**DGW10VTxx**	16″ o.c.	48″	1/4″ double layer or 3/8″	1/4″ double layer or 3/8″
	240″+	12′	**DGW12VTxx**	16″ o.c.	48″	1/4″ double layer or 1/2″	1/4″ double layer or 1/2″
Valley	31″-44″	6′	**DGW6VTxx**	8″ o.c.	24″	—	1/4″ flex double layer
	45″-60″	8′	**DGW8VTxx**	8″ o.c.	24″	—	1/4″ double layer
	61″-72″	10′	**DGW10VTxx**	8″ o.c.	24″	1/4″ double layer	1/4″ double layer
	73″-91″	10′	**DGW10VTxx**	8″ o.c.	24″	1/4″ double layer	1/4″ double layer
	92″-239″	10′	**DGW10VTxx**	16″ o.c.	24″	1/4″ double layer or 3/8″	1/4″ double layer or 3/8″
	240″+	12′	**DGW12VTxx**	16″ o.c.	24″	1/4″ double layer or 1/2″	1/4″ double layer or 1/2″

[1] All curved main tees are to be spaced 48″ o.c.
[2] In a multiple radius curved ceiling, select panel thickness based on the smallest radius in the design.
[3] See drawings below.
[4] In the item number nomenclature, "xx" is a placeholder for a custom radius in inches. For example, DGW6VT36 has a radius of 36 inches.
[5] 1/4″ gypsum panels must be applied in a double layer for durability and finishing.

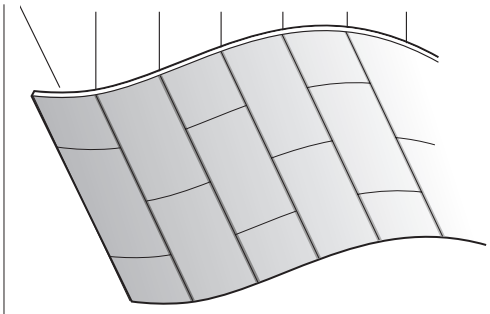
Parallel Application of Drywall

"Parallel" refers to the long wrapped edges of the gypsum panel applied **parallel** to the curved main tees.



Perpendicular Application of Drywall

"Perpendicular" refers to the long wrapped edges of the gypsum panels applied **perpendicular** to the curved main tees.



Fire-Rated Assemblies by UL Designs

Flat Drywall Ceilings

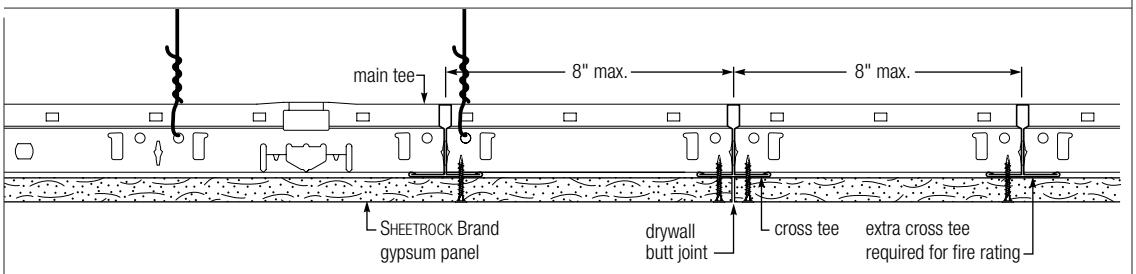
Floor/Ceiling	UL Design No.	Assembly Rating*	Board Thick.	Wallboard Core Type	Fixture Size (% of Fixtures)	Max. Duct Area per 100 sf	Assembly Constructions
Concrete/Steel Deck Floors Over Steel Beams	D501	2 HR-R 1-1/2 HR-U 2 HR-UBR	5/8″	SHEETROCK Brand FIRECODE C	N/A	N/A	Min. 2″ ltwt. concrete on Min. W8x17 beams
	D502	2 HR-R & UR	5/8″	SHEETROCK Brand FIRECODE C	2x4	144 sq. in.	Min. 2-1/2″ normal wt. concrete topping on
		2 HR-UBR			(24%)		Min. W8x28 beams
Concrete/Expanded Lath Floors Over Steel Joists and Beams	G523	2 HR-U 3 HR-UBR	5/8″	SHEETROCK Brand FIRECODE C	2x4 (24%)	144 sq. in.	Min. 2-1/2″ normal wt. concrete topping on Min. 8J2 joists and W10x21 beams
	G524	2 HR-U 2 HR-UBR	1/2″	SHEETROCK Brand FIRECODE C	N/A	113 sq. in.	Min. 2-3/4″ or 2-1/2″ ltwt. or normal wt. concrete topping on Min. 8″ or 10″ Hambro joists, respectively, and W8x24 beams
	G525	2 HR-U 2 HR-UBR	5/8″	SHEETROCK Brand FIRECODE C	N/A	113 sq. in.	Min. 3-1/2″ or 3-1/4″ normal wt. concrete topping on Min. 8″ or 10″ Hambro joists, respectively, and W8x24 beams
	G526	2 HR-R & UR 2 HR-UBR	1/2″	SHEETROCK Brand FIRECODE C	2x4 (25%)	57 sq.in	Min. 2-1/2″ normal wt. concrete topping on Min. 8J2 joists and W10x21 beams
	G527	2 HR-R & UR 3 HR-UBR	1/2″	SHEETROCK Brand FIRECODE C	N/A	N/A	Min. 2-1/2″ normal wt. concrete topping on Min. 8J2 joists and W10x21 beams
	G528	1-1/2 HR-R & UR 1-1/2 HR-UBR	1/2″	SHEETROCK Brand FIRECODE C	N/A	N/A	Min. 2-1/2″ normal wt. concrete topping on Min. 10J2 joists
	G529	2 HR & UR 2 or 3 HR-UBR	1/2″	SHEETROCK Brand FIRECODE C	2x4 (24%)	57sq in	Min. 2-1/2″ normal wt. or ltwt. concrete topping on Min. 10J2 joists and W8x24 beams
		3 HR & UR 3 HR-UBR	1/2″	SHEETROCK Brand FIRECODE C	2x4 (24%)	57sq in	Min. 3-1/4″ normal wt. concrete topping on Min. 10J2 joists and W8x24 beams
		3 HR-R & UR 3 HR-UBR	5/8″	SHEETROCK Brand FIRECODE C	2x4 (24%)	57sq in	Min. 2-3/4″ normal wt. concrete topping on Min. 10J2 joists and W8x24 beams
Precast Concrete Floors	J502	2 HR-U & UR	5/8″	SHEETROCK Brand FIRECODE C	NA	NA	Min. 2″ normal wt. concrete slab
		3 HR-R & UR	5/8″	SHEETROCK Brand FIRECODE C	NA	NA	Min. 2-3/4″ normal wt. concrete slab
Wood Joists	L211	2 HR-U	1/2″	SHEETROCK Brand FIRECODE C	12-24%	576 sq. in..	T & G or plywood (see 5 alternatives) over subfloor on 2x10 joists @16″ oc, plus P237 ceiling const.
	L502	1 HR-U 22 min finish rating	1/2″	SHEETROCK Brand FIRECODE C	N/A	N/A	T & G or plywood (see 9 alternatives) over subfloor on 2x10 joists @ 16″ o.c.
	L508	1 HR-U 29 min finish rating	5/8″	SHEETROCK Brand FIRECODE	N/A	N/A	T & G or plywood on 4x10 or DBL 2x10 joists
	L513	1 HR-U 28 min finish rating	5/8″	SHEETROCK Brand FIRECODE C	N/A	N/A	3/4″ T & G w/ adhesive on 2x10″ joists @ 24″ o.c., drywall battens at joints (see 12 alternatives)
	L515	1 HR-U 21 min finish rating	1/2″	SHEETROCK Brand FIRECODE C	N/A	N/A	T & G over subflooring on 2x10 joists @ 16″ o.c. (see 7 alternatives)
	L525	1 HR-U 21 min finish rating	1/2″ or 5/8″	SHEETROCK Brand FIRECODE C	2x4 (24%)	57 sq. in.	T & G or plywood over subflooring on 2x10 joists @ 16″ o.c.(see 7 alternatives)
	L526	1 HR-U 22 min finish rating	5/8″	SHEETROCK Brand FIRECODE C	2x4 (24%)	114 sq. in.	T & G or plywood over on 2x10 joists (see 7 alternatives)
Plywood with Wood Truss	L529	1 HR-U 22 min finish rating	5/8″	SHEETROCK Brand FIRECODE C	2x4 (24%)	57 sq. in.	T & G wood floor or ltwt insulating concrete over subflooring (see 12 alternatives) on trusses @ 24″ o.c. max

*R = restrained rating
UR = unrestrained rating
UBR = unrestrained beam rating

Roof/Ceiling	UL Design No.	Assembly Rating*	Board Thick.	Wallboard Core Type	Fixture Size (% of Fixtures)	Max. Duct Area per 100 sf	Assembly Constructions
Double Ceiling Roof Assemblies	P237	2 HR-U	1/2″	SHEETROCK Brand FIRECODE C	1x4 or 2x4 (24%)	576 sq. in.	Roof system on steel roof deck, min. fiber 8H3 or 10k1 min @ 72″ o.c. max
	P239	1-1/2 HR-U	1/2″	SHEETROCK Brand FIRECODE C	1x4 or 2x4	576 sq. in.	Roof covering on gypsum concrete over USG (24%) form board, subpurlins and 12J3 joists w/ w6x16 beam.
	P241	2 HR-U	1/2″	SHEETROCK Brand FIRECODE C	1x4 or 2x4 (24%)	576 sq. in.	Roof covering over over insulating concrete on steel roof deck and 10J3 min joists @ 48″ o.c.
Mineral and Fiber Board on Building Units or Precast Concrete	P501	1 and 2 HR-U	5/8″	SHEETROCK Brand FIRECODE C	N/A	N/A	Roof covering over mineral and fiber board on building or precast concrete units, 14J5 joists @ 48″ o.c. max.
Gypsum Plank, Insulation Board	P506	1-1/2 HR-U	5/8″	SHEETROCK Brand FIRECODE C	2x4 (24%)	57 sq in	Roof covering over min & fiber bds. on gypsum planks, subpurlins and 12 H5 joists @48″ o.c. max.
	P508	1 HR-U	5/8″	SHEETROCK Brand FIRECODE C	2x4 (24%)	144 sq in	Roof covering over min & fiber bds (see alt) gyp wallbd., steel roof deck, 10J4 joists (min) @48″ o.c.
Insulating Concrete	P507	1-1/2 HR-R 1 HR-U	5/8″	SHEETROCK Brand FIRECODE C	2x4 (24%)	57 sq in	Roof covering on foamed plastic insulation, Gypsum conc and form bds. on subpurlins and 10J4 joists (min) @ 4'o.c.
	P509	1 HR-U	5/8″	SHEETROCK Brand FIRECODE C`	2x4 (24%)	144 sq in	Roof covering on foamed plastic insulation, Gypsum conc. and form bds. on subpurlins and 10J4 joists (min) @ 4'o.c.
Corrugated Steel Deck w/Insulated Board or Foam Plastic Insulation	P510	1 & 1-1/2 HR-U	1/2″ & 5/8″	SHEETROCK Brand FIRECODE C	2x4 (24%)	57 sq in	Roof covering over insulation (see alt) on gypsum wallboard steel roof deck, 10J4 joists (min) @ 72″ o.c. max.
	P513	1-1/2 HR-U	5/8″	SHEETROCK Brand FIRECODE C	2x4 (24%)	144 sq in	Roof covering on insulating concrete and foamed plastic over corrugated steel deck, 10J4 steel joists @ 48″ o.c.
	P514	2 HR-U	5/8″	SHEETROCK Brand FIRECODE C	2x4 (24%)	255 sq in	Roof covering over insulation (see ALT), gyp. wallboard and steel deck, 8H3 steel joists @ 48″ o.c.
	P516	1 HR-R & U 1 HR-UB	5/8″ (2 layers)	FIRECODE Core	NA	NA	Metal roof deck panels on Min. 8″ deep C-or-Z-shaped purlins @ 60″ max, glass fiber insulation between roof deck panels and steel roof purlins, W-shaped beam

Fire-Rated Butt Joint Cross Tee Spacing

Fire Rated ceilings require extra cross tees spaced 8″ or less on either side of the butt joint. Fire Rated assemblies require a hanger wire installed adjacent to fire relief notch.



Exterior Application Wind Load Data

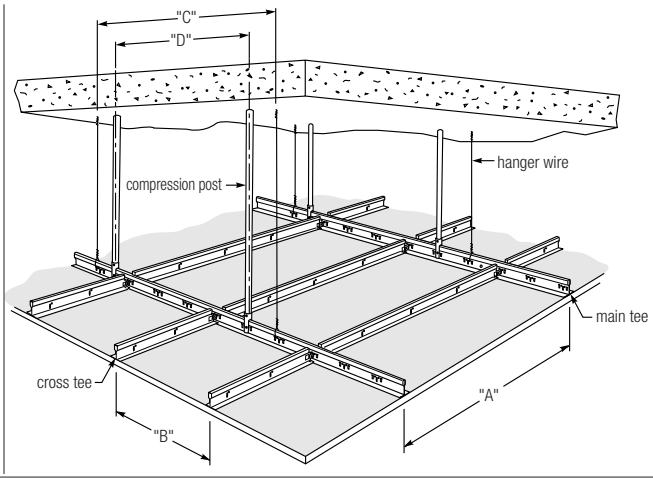
The USG Drywall Suspension System has been tested in accordance with Underwriters Laboratories UL 580, Tests for Uplift Resistance of Roof Assemblies for use in exterior soffits and canopies. See illustration below. USG has 23 different grid and wind load combinations (the most in the industry) to accommodate your design parameters. Please refer to Roofing Materials and Systems Directory, Construction No. 526 for exact construction parameters.

Note: Only SHEETROCK Brand Exterior Ceiling Board, FIBEROCK® Brand Sheathing—AQUA-TOUGH™ and DUROCK® Brand Cement Board are suitable for exterior applications. Please contact USG Technical Services for more information.

Below is a chart indicating the components and their spacing, which are necessary to achieve the different UL uplift classifications. Contact Technical Services for specific information on compression posts, limiting plenum depths, and construction details for your installation.

Design wind loads vary with geographic region and building conditions, and must be established by a professional engineer or architect of record.

Flat Drywall Ceiling



Recommended Component Spacing

Uplift Load	Panel Type	"A" Max. Main Tee Spacing	Main Tee	"B" Max. Cross Member Spacing	"C" Max. Hanger Wire Spacing	"D" Max. Compression Post Spacing
5	1/2″ or 5/8″ exterior panels	48″	DGL-26, DGLW-26	24″	48″	60″
10	1/2″ or 5/8″ exterior panels	48″	DGL-26, DGLW-26	24″	48″	42″
15	5/8″ exterior panels	48″	DGL-26, DGLW-26	24″	48″	30″
15	1/2″ exterior panels	48″	DGL-26, DGLW-26	16″	48″	30″
20	1/2″ exterior panels	48″	DGL-26, DGLW-26	16″	48″	30″
20	5/8″ exterior panels	48″	DGL-26, DGLW-26	24″	48″	30″
25	1/2″ exterior panels	24″	DGL-26, DGLW-26	24″	48″	36″
25	5/8″ exterior panels	24″	DGL-26, DGLW-26	24″	48″	36″
30	5/8″ exterior panels	24″	DGL-26, DGLW-26	24″	48″	30″
35	5/8″ exterior panels	24″	DGL-26, DGLW-26	24″	48″	30″
40	5/8″ exterior panels	24″	DGL-26, DGLW-26	24″	48″	30″
45	5/8″ exterior panels	24″	DGL-26, DGLW-26	24″	48″	24″
50	5/8″ exterior panels	24″	DGL-26, DGLW-26	24″	48″	24″
55	5/8″ exterior panels	24″	DGL-26, DGLW-26	24″	48″	24″
60	double layer 5/8″ exterior panels	24″	DGLW-26	24″	48″	42″
65	double layer 5/8″ exterior panels	24″	DGLW-26	24″	48″	42″
70	double layer 5/8″ exterior panels	24″	DGLW-26	16″	48″	36″
75	double layer 5/8″ exterior panels	24″	DGLW-26	16″	48″	36″
80	double layer 5/8″ exterior panels	24″	DGLW-26	16″	48″	36″
85	double layer 5/8″ exterior panels	24″	DGLW-26	16″	48″	36″
90	double layer 5/8″ exterior panels	24″	DGLW-26	16″	48″	30″
90	5/8″ exterior panels & plywood	24″	DGLW-26	16″	48″	24″

Seismic Requirements

Flat Ceilings

Exemptions

Flat ceilings constructed of lath and plaster or gypsum board, screw or nail attached to suspension members that support a ceiling on one level extending from wall to wall, are generally exempted from seismic construction requirements. For example, see the Uniform Building Code, Table 16-0, Note 7 and Uniform Building Code Standard 25-2, section 25.210, exception #2.

Curved Ceilings

Code Approvals

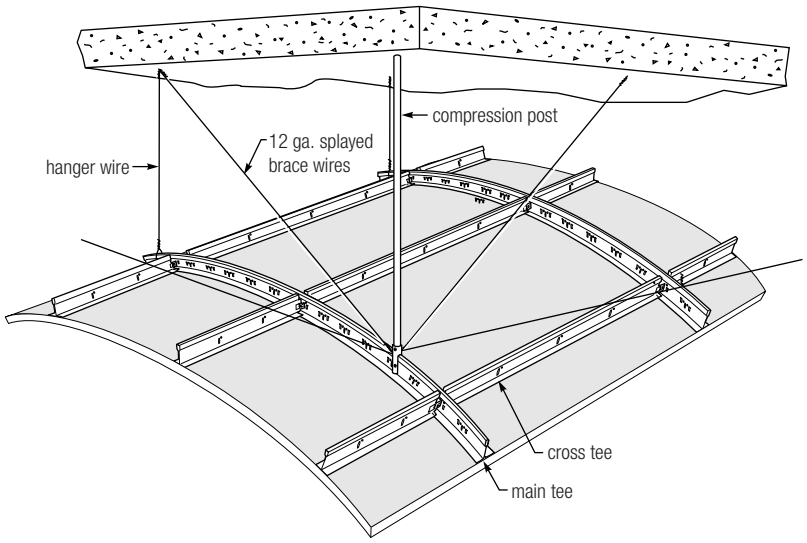
For multi-level ceilings or bulkheads, contact Technical Services.

1 Areas using curved main tees with radii 7′ or larger should use seismic splay wires and compression posts 12′ o.c. similar to Uniform Building Code Standard 25-2. See the illustration below for details.

2 Areas using curved main tees with radii smaller than 7′ require bridging members, such as Donn DXW main tees, which span across the curved drywall main tees. These bridging tees are screw fastened to "hard" points in the curved drywall ceiling, such as the tops of vaults. Seismic splay wires and compression posts are then fastened to the bridging members. If you have any questions, contact Technical Services.

Seismic restraint is usually accomplished with a set of four "splay" wires and a compression post. The wires run parallel to the main tees and cross tees at an angle of less than, or equal to, 45° to the horizontal. The compression post is installed at the junction of the four "splay" wires. This post must be strong enough to resist any uplift forces generated during an earthquake. The type of post needed also varies with the depth of the plenum. Compression posts must be approved by the project engineer or the architect of record to ensure they will resist the uplift forces. Call Technical Services for details. Seismic restraints must be installed at a minimum distance of 12′ o.c.

Interior Ceiling

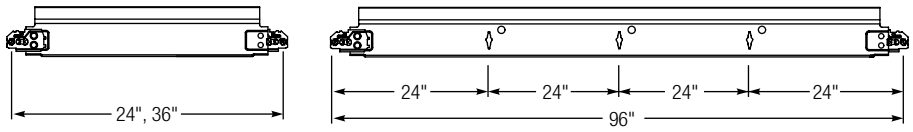


Component Hole Punching

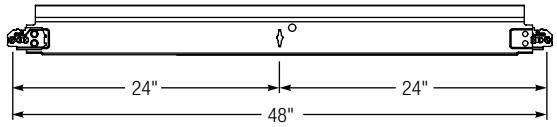
Flat Drywall Ceilings

Cross Tees

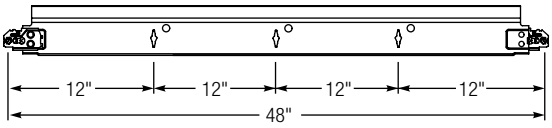
DGLW-224
DGL-224
DGL-324
DG-824



DGL-424

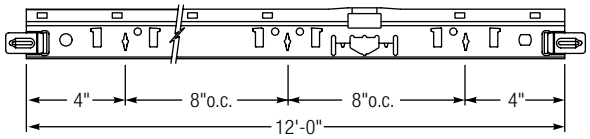


DGLW-424



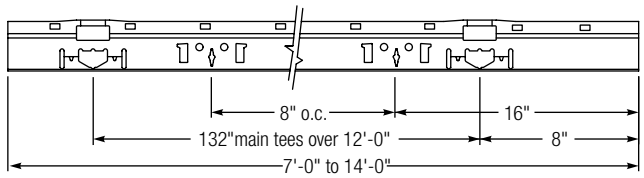
Straight Main Main Tees

DGL-26
DGLW-26



The Wall-to-Wall Main Tee

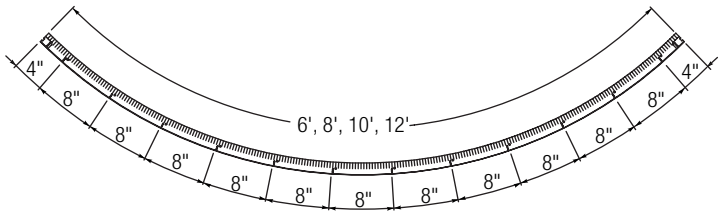
DGL-26s
DGLW-26s



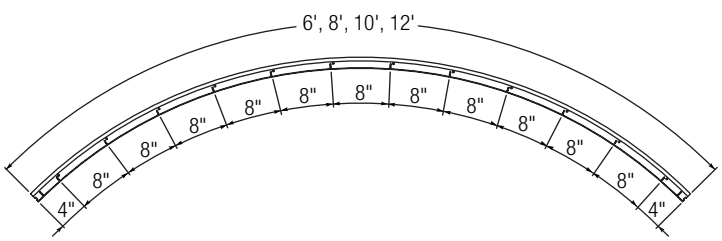
Curved Drywall Ceilings

Curved Main Tees

Valleys



Vaults



Note: Length depends on radius. See chart on page 5.

Application Guide Specifications

Flat Drywall Ceilings

1: General

1.01 Related Work

- **A.** Related work specified elsewhere:
  - **1.** Gypsum Board: Section_____
  - **2.** Air Handling: Section_____
  - **3.** Lighting: Section _____
  - **4.** Acoustical: Section_____
- **B.** Work installed but furnished under other sections:
- **C.** Work installed but furnished under other sections:

1.02 System Description

- **A.** A pre-engineered drywall suspension system consisting of straight main tees along with straight furring cross channels or cross tees, that join together to support screw attached gypsum panels and independently supported light fixtures, and air diffusers, where applicable. Where applicable, installed systems must conform to Underwriters Laboratories, Inc. (UL) Fire Resistance Design No. and other applicable codes.

1.03 Quality Assurance

- **A.** Subcontractor qualification: Installer shall have successful experience installing suspension and drywall systems.
- **B.** Requirements of regulatory agencies: Codes and regulations of authorities having jurisdiction.
- **C.** Source quality control: Manufacturer will provide test certification for suspension systems as required to meet performance standards specified by various agencies.

1.04 References

- **A.** ASTM C635, Standard Specifications for Metal Suspension Systems.
- **B.** ASTM C636, Recommended Practice for Installation of Metal Suspension Systems.
- **C.** CISCA Ceiling Systems Installation Handbook.
- **D.** GA 216, Installation & Finish of Gypsum Panels.
- **E.** ASTM C645, Standard Specification for Non-Load Bearing (Axial) Steel Studs, Runners, (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.
- **F.** ASTM C754, Specification for Installation of Steel Framing Members to Receive Screw-Attach Gypsum Boards.
- **G.** ASTM C843, Specification of Application of Gypsum Veneer Plaster.
- **H.** ASTM C844, Specification of Application of Gypsum Base to Receive Veneer Plaster.
- **I.** ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials.
- **J.** Underwriters Laboratories Inc. (UL) Fire Resistance Directory.

1.05 Submittal

- **A.** Samples: Submit actual samples and technical data for suspension system main tees and cross tees for review.
- **B.** Shop Drawings:
  - **1.** Reflected ceiling plans: Submit ceiling suspension system layout indicating dimensions, lighting fixture locations, and related mechanical components.
  - **2.** Assembly drawings: Indicate installation details, accessory attachments and installation of related lighting fixtures and related mechanical system components.
- **C.** Manufacturer's Data:
  - **1.** System details: Submit manufacturer's catalogue cuts or standard drawing showing details of system with project conditions clearly identified and manufacturer's recommended installation instructions.

	1.06 Delivery, Storage and Handling	**A.** Delivery of materials: Deliver materials in original, unopened packages clearly labeled with a manufacturer's name, item description, part number, type and class as applicable. **B.** Inspection: Promptly inspect delivered materials, file freight claims for damage during shipment, and order replacement of materials as required. Any damaged materials shall be promptly removed from the job site. **C.** Storage: Store in a manner that will prevent warpage, water damage, or damage of any kind. Prevent interference to/by other trades and any other adverse job conditions due to storage locations or methods. **Warning:** Store all SHEETROCK Brand Gypsum Panels flat. Panels are heavy and can fall over, causing serious injury or death. Do not move unless authorized. **D.** Handling: Handle in such a manner to insure against racking, distortion or physical damage of any kind.
	1.07	**A.** Existing conditions: (include specific alteration work requirements for the project). **B.** Environmental requirements: **1.** Building Conditions: Building shall be enclosed with all windows and exterior doors in place and glazed and roof watertight before installation of suspension system. **2.** Interior temperature/humidity in building: Climactic conditions in areas to receive drywall suspension systems shall range from 60 °F (16 °C) to 104 °F (40 °C) and relative humidity of not more than 90% shall be maintained before installation of components. **3.** In cold weather during gypsum panel installation and joint finishing and veneer plaster application, temperatures within the building shall be maintained in the range of 55-70 °F (13-21 °C). Heat and ventilation should be evenly provided to facilitate curing and drying. **C.** Coordination with other work: **1.** General: Coordinate with other work supported by or penetrating through the ceiling, including mechanical and electrical work and partition systems. **2.** Mechanical work: Ductwork above system shall be complete, and permanent HVAC systems operating. **3.** Electrical Work: Installation of conduit above suspension system shall be complete before installation of suspension system. **D.** Protection: **1.** Personnel: Follow good safety and industrial hygiene practices during handling and installing of all products and systems, with personnel to take necessary precautions and wear appropriate personal protective equipment as needed. Read material safety data sheets and related literature for important information on products before installation. Contractor to be solely responsible for all personal safety issues during and subsequent to installation; architect, specifier, owner and manufacturer will rely on contractor's performance in such regard.
2: Products	**2.01 Manufacturer**	**A.** USG Drywall Suspension System. **B.** USG SHEETROCK Brand Gypsum Panels (Regular, FIRECODE, FIRECODE C). **C.** USG SHEETROCK Brand Joint Tape, Joint Compounds, Trim, and Accessories (see USG Gypsum Panels and Accessories SA927-09250 Specification). **D.** USG IMPERIAL Brand Gypsum Base (see USG Veneer Plaster Systems Specification SA920-0920). All manufactured by USG, Chicago, IL USA. Manufactured in accordance with ASTM C635.

Application Guide Specifications

Flat Drywall Ceilings

2.02 Materials

A. Commercial quality, cold rolled steel, hot dipped galvanized finish.

B. USG Flat Drywall Suspensions Systems:

1. Main Tees: Fire-Rated Heavy Duty classification 1-1/2″ high x 144″ long, integral reversible splice with knurled face.
DGL-26 15/16″ Face
or
DGLW-26 1-1/2″ Face

2. Cross Members: Fire-Rated members with knurled face.
Cross Tees: DGLW-424 cross tee 1-1/2″ high x 48″ long with 1-1/2″ wide face. Tees must have quick release cross tee ends to provide positive locking and removability without the need for tools.
or
Furring Channel: DGCL-4 furring channel 7/8″ high x 48″ long with 1-1/2″ face.

3. Accessory Cross Tees: Cross tees must have knurled faces. Cross tees have quick release cross tee ends to provide positive locking and removability without the need for tools.

DGL-224 Fire-Rated	1-1/2″ high x 24″ long with 15/16″ face
DGL-324 Fire-Rated	1-1/2″ high x 36″ long with 15/16″ face
DGL-424 Fire-Rated	1-1/2″ high x 48″ long with 15/16″ face
DGL-824 Non Fire-Rated	1-1/2″ high x 96″ long with 15/16″ face
DGLW-224 Fire-Rated	1-1/2″ high x 24″ long with 1-1/2″ face
DGLW-424 Fire-Rated	1-1/2″ high x 48″ long with 1-1/2″ face

4. Wall moldings: Single web with knurled face.

DGWM-24	1″x 1-1/2″ x 144″ long wall molding.
DGCM-25	144″ x 1-9/16″ x 1″ x 1″ channel molding.

C. Accessories

1. Transition Clip DGTC-90

2. Splice Clip DGSC-180

D. USG Compässo Trim

1. 4″ Compässo trim: 4″ wide face, 9/16″ horizontal legs with hems formed for attachment to the Compässo mounting clip, commercial quality cold rolled 24-gauge steel with factory finish.

2. 6″ Compässo trim: 6″ wide face, 9/16″ horizontal legs with hems formed for attachment to the Compässo mounting clip, commercial quality cold rolled 24-gauge steel with factory finish.

3. 8″ Compässo trim: 8″ wide face, 9/16″ horizontal legs with hems formed for attachment to the Compässo mounting clip, commercial quality cold rolled 24-gauge steel with factory finish.

E. Gypsum Panels

1. Gypsum panels manufactured in accordance with ASTMC36.

2. 1/4″, 3/8″, 1/2″, 5/8″ Sheetrock Brand Gypsum Panels (Regular, Firecode, Firecode C) and 1/2″ Sheetrock Brand Interior Gypsum Ceiling Board. (see USG Drywall/Steel Framed Systems Specifications—SA923 09250-USG-3).

F. USG Sheetrock Brand Drywall Accessories; Trims, Expansion Joints, Sealants, Joint Compounds Materials. (see USG Gypsum Panels & Accessories Specifications SA927 09250.

G. Fiberock Brand Abuse-Resistant Panels, Durock Brand Cement Board, and Imperial® Brand Gypsum Base—Abuse-Resistant.

	2.03 Metal, Paper or Plastic Trim	**A.**	Corner Reinforcement: Minimum #26 gauge, zinc alloy with or without paper flanges or plastic bead.
		B.	Casing Reinforcement: Minimum #24 gauge, zinc alloy or plastic with expanded flanges.
		C.	Control Joints: Minimum #26 gauge, zinc alloy, 093, extruded aluminum or plastic with expanded flanges.
	2.04 Fasteners	**A.**	Conventional Gypsum Panel fasteners (ASTM C1002). No. 6 Type-S, HiLo bugle head, self-drilling, self-tapping steel screws.
3: Execution	**3.01 Inspection**	**A.**	Examine areas to receive materials for conditions which will adversely affect installation. Provide written report of unacceptable surface.
		B.	Do not start work until unsatisfactory conditions are corrected.
		C.	Work to be concealed: Verify work above ceiling suspension system is complete and installed in manner which will not affect layout and installation of suspension system components.
		D.	Beginning of installation shall signify acceptance of conditions in areas to receive ceiling suspension system.
		F.	Fire-rating requirements: Construction above fire-rated assembly shall meet requirements as applicable to provide fire-resistance rating specified in Part 2-Products.
	3.02 Preparation	**A.**	Field dimensions must be verified prior to installation.
	3.03 Installation	**A.**	Standard reference: Install in accordance with ASTM C636, CISCA installation standards, and other applicable code references.
		B.	Manufacturer's reference: Install in accordance with manufacturer's current printed recommendations.
		C.	Drawing reference: Install in accordance with approved shop drawings and locate ceiling in accordance with main tee dimensions relative to elevations.
		D.	Component and hanger wire installation: **Flat Ceilings:** Main tees shall be spaced a maximum of 48″ on center and supported by hanger wires spaced a maximum 48″ on center and as specified by UL Fire Resistance Directory attaching hanger wires directly to structure above. Cross tees shall be spaced per manufacturers' recommendations and as specified by UL Fire Resistance Directory. **Transitions: Changes in Elevation in Soffit and Fascia Ceiling Applications.** When constructing stepped soffits, bracing of the drywall suspension system and/or additional hanger wires may be necessary to ensure stability and structural performance during and after drywall attachment. The maximum vertical soffit height is 48″. (Maximum unsupported drywall area shall not exceed 48″ x 24″). Intermediate cross tees are not necessary when soffit dimensions do not exceed 24″. Cross tee spacing in horizontal soffit plane is not to exceed 24″. Intermediate cross tees may be necessary to maintain visually acceptable drywall planes and drywall corners. **General hanger wire notes:** Hanger wires are required within 12″ on both sides of a pivoted splice clip. At least 1 hanger wire is required within 12″ of a transition clip. **Limitations:** Do not support wires from mechanical and/or electrical equipment occurring above ceiling.
		E.	Accessories: Install accessories as applicable to meet project requirements.

Application Guide Specifications

Flat Drywall Ceilings

3.04 Gypsum Panel Installation

A. Apply gypsum panels first to ceiling and then to walls. Position all ends and edges of gypsum panels at framing members. Extend ceiling board to corners and make firm contact with the wall angle, channel or top plate. To minimize end joints, use panels of maximum practical lengths. Fit ends and edges closely, but not forced together.

B. Cut ends, edges, scribe or make cutouts within the field of panels in a workmanlike manner. Cut gypsum board to size using a knife and straight edge.

C. Attach Gypsum Panels to the suspension system main runners, cross tees and cross channels with conventional gypsum panel fasteners (No. 6 Type S HiLo bugle head, self-drilling, self-tapping steel screws) spaced 8″ o.c. at periphery of gypsum panels and located 3/8″ in from panel edges and spaced 12″ o.c. in the field. Drive fasteners in field of panels first, working toward ends and edges. Hold panels in firm contact with framing while driving fasteners. Drive fastener heads slightly below surface of gypsum panels without breaking face paper. (See Gypsum Panel and Accessories Specification SA927 09250). Install trim at all internal and external angles formed by the intersection of panel surfaces or other dissimilar materials. Apply corner reinforcement to all vertical or horizontal external corners in accordance with manufacturer's directions.

Ceilings note: See Drywall/Steel Framed Systems Specifications SA923 09250 USG-3.

Spacing of drywall grid is designed to support only the dead load. Heavy concentrated loads should be independently supported. Lighting fixtures or troffers, air vents and other equipment should be separately supported from the structure; Gypsum Panels will not support these items.

To prevent objectionable sag in new gypsum panel ceilings, the weight of overlaid unsupported insulation should not exceed 1.3 psf for 1/2″ thick gypsum panels with spacing of 24″ o.c.; 2.2 psf for 1/2″ thick gypsum panels 16″ o.c. framing and 1/2″ SHEETROCK Brand Interior Gypsum Ceiling Panels on 24″ o.c. framing and 5/8″ panels 24″ o.c.; 3/8″ thick gypsum panels must not be overlaid with unsupported insulation. A vapor retarder should be installed in exterior ceilings, and plenum or attic spaces should be properly vented.

During periods of cold or damp weather when a polyethylene vapor retarder is installed on ceilings behind the gypsum panels it is important to install the ceiling insulation before or immediately after installing the gypsum panels. Failure to follow this procedure may result in moisture condensation in the back of the gypsum panels causing sag.

E. Spray-Textured Ceilings: Where water-based texturing materials or any slow-drying surface treatment are used over single-layer panels, maximum frame spacing is 16″ o.c. for 1/2″ panels applied perpendicular to framing.

3.05 Expansion Joints

A. Provide a separation in the suspension system at expansion joints as shown on the drawings and carry the joint through the gypsum panels. Expansion joints are installed to separate the suspension system and allow for movement in large ceiling areas.

3.06

A. Provide control joint No. .093 which has a 3/32″ ground for drywall and veneer plaster. Ceiling areas should not exceed 50 ft. (2500 sq. ft.) with perimeter relief 30 ft. (900 sq. ft.) without perimeter relief.

Domes

Note to specifier: The following specification for USG Ceiling Suspension products and plaster products is a guide for specifying a plastered dome comprised of a finished curved surface having single radius of curvature. Delete such items that are not related to the particular project. Where blank spaces are provided, insert information pertinent to the project for which the specification is prepared.

1: General

1.01 Scope

Specify areas to receive these systems.

1.02 Related Work

Related work specified elsewhere:

1. Air Handling: Section _____
2. Lighting: Section _____
3. Acoustical: Section _____

1.03 System Description

A pre-engineered drywall suspension system consisting of curved suspension grid that join together to support screw attached metal lath, with an application of high strength conventional plaster, forming curved domes.

1.04 Quality Assurance

- **A.** Subcontractor qualification: Installer shall have successful experience installing suspension and plaster systems.
- **B.** Requirements of regulatory agencies: Codes and regulations of authorities having jurisdiction.
- **C.** Source quality control: Manufacturer will provide test certification for suspension systems as required to meet applicable industry standards and/or standards specified by various agencies.

1.05 References

- **A.** ASTM C636, Recommended Practice for Installation of Metal Suspension Systems.
- **B.** CISCA Ceiling Systems Installation Handbook
- **C.** ASTM C28, Specification for Gypsum Plasters
- **D.** ASTM C847, Specification for Metal Lath
- **E.** ASTM C841, Specification for Installation of Interior Lathing & Furring
- **F.** ASTM C842, Specification for Application of Interior Gypsum Plaster

1.06 Submittals

- **A.** Shop Drawings:
  1. Reflected ceiling plans: Submit ceiling suspension system layout indicating dimensions, hanger wires, lighting fixture locations, and related mechanical components.
  2. Assembly drawings: Indicate installation details, accessory attachments and installation of related lighting fixtures and related mechanical system components.
- **B.** Manufacturer's Data:
  1. System Details: Submit manufacturer's catalogue cuts or standard drawing showing details of system with project conditions clearly identified and manufacturer's recommended installation instructions.

1.07 Delivery, Storage and Handling

- **A.** Delivery of Materials: Deliver materials in original, unopened packages clearly labeled with a manufacturer's name, item description, part number, and type class as applicable.
- **B.** Inspection: Promptly inspect delivered materials, file freight claims for damage during shipment, and order replacement materials as required. Any damaged materials shall be promptly removed from the job site.
- **C.** Storage: Store in a manner that will prevent water damage or damage of any kind. Prevent interference to/by other trades and any other adverse job conditions due to storage locations or methods.
  Warning: Store all SHEETROCK Brand Gypsum Panels flat. Panels are heavy and can fall over, causing serious injury or death. Do not move unless authorized.
- **D.** Handling: Handle in such a manner to insure against racking, distortion or physical damage of any kind.

Application Guide Specifications

Domes

1.08

A. Environmental Requirements:
- **1.** Building Conditions: Building shall be enclosed with all widows and exterior doors in place and glazed and roof watertight before installation of suspension system and plaster.
- **2.** Temperatures within the building shall be maintained in the range of 55-70 °F (13-21 °C). Heat and ventilation shall be evenly provided to facilitate drying.

B. Coordination with Other Work:
- **1.** General: Coordinate with other work supported by or penetrating through the dome, including mechanical and electrical work.
- **2.** Mechanical work: Ductwork above system shall be complete and permanent HVAC systems operating.
- **3.** Electrical work: Installation of conduit above suspension system shall be complete before installation of suspension system

C. Protection: Follow good safety and industrial hygiene practices during handling and installing of all products and systems, with personnel to take necessary precautions and wear appropriate personal protective equipment as needed. Read Material Safety Data Sheets and related literature for important information on products before installation. Contractor to be solely responsible for all personal safety issues during and subsequent to installation; architect, specifier, owner and manufacturer will rely on contractor's performance in such regard.

2: Products

2.01 Materials

A. USG Drywall Grid Suspension System

B. Structo-Base® Gypsum Plaster

C. Structo-Gauge® Gauging Plaster

D. Red Top® Finish Plaster

E. Diamond® Brand Interior Finish Plaster
All manufactured by USG, Chicago, IL, USA, in compliance with ASTM Standards.

F. Factory-curved, 1-1/2″ x 1-1/2″ USG Drywall Grid with knurled face—commercial quality, cold-rolled steel, hot dipped galvanized finish. Cross tee holes spaced 8″ o.c.
Manufacturer's designation DGW__VT__

G. Wire
- **1.** Hanger Wire (12 ga.) (8 ga.), galvanized
- **2.** Tie Wire–18 gauge, galvanized

H. Metal Lath: 3.4 #/S.Y. self-furring diamond mesh lath, galvanized

I. Screws–Self-tapping truss-head lathing screws.

J. Gypsum Plaster: Structo-Base Gypsum Plaster

K. Sand: ASTM C35

L. Water: Clean and potable

M. Finish Plaster: To be determined

N. Dome hub and connecting clips

O. Casing and Corner Beads as required

P. Accessories as applicable to project requirements

3: Execution

3.01 Inspection

A. Examine areas to receive materials for conditions which will adversely affect installation. Provide written report of unacceptable surface.

B. Do not start work until unsatisfactory conditions are corrected.

C. Work to be concealed: Verify work above ceiling suspension system is complete and installed in manner which will not affect layout and installation of suspension system components.

D. Beginning of installation shall signify acceptance of conditions in areas to receive ceiling suspension system.

E. Field dimensions must be verified prior to installation.

3.02 Installation

A. Standard reference: Install grid members in accordance with ASTM C636.

B. CISCA installation standards or other applicable code or manufacturers' references.

C. Manufacturer's reference: Install in accordance with manufacturer's current printed recommendations.

D. Drawing reference: Install in accordance with approved shop drawings and locate ceiling in accordance with main tee dimensions relative to elevations.

E. Hanger Wire Installation: Hanger wires are required along the radial suspension members (spokes) spaced no more than 32″ as measured along the arc of the member. Additional hanger wires to upper structural elements. Do not support hangers from mechanical and/or electrical equipment.

F. Space radial spoke members so as not to exceed 48″ spacing at any point.

G. Space cross tee members so the maximum span of metal lath is (16″) (12″).

H. Secure metal lath to tee members with screws spaced 6″ o.c. max., applied at lath ribs. Lap metal lath ends and edges and secure with 18 gauge tie wire spaced 6″ o.c.

I. Mix Structo-Base Gypsum Plaster with sand in proportions of 2 cu. ft. of sand per 100 lbs. of plaster for scratch and brown coats. Apply plaster to metal lath to a thickness of 5/8″ (min.) Measured from the face of the lath.

J. Select a plaster mix for the finish coat to provide a smooth trowel or sand float (Textured) finish. (Reference SA 920)

K. Use template(s) to insure uniform and even curvature of the finished surface

Application Guide Specifications

Curved Drywall Ceilings

Note to specifier: The following specification for the USG Drywall Suspension System is a guide for specifying curved drywall ceilings. Delete such items that are not related to the particular project. Where blank spaces occur, provide information to the particular project for which the specification is prepared.

1: General

1.01 Related Work

A. Related work specified elsewhere:
- **1.** Gypsum Board: Section_____
- **2.** Air Handling: Section_____
- **3.** Lighting: Section _____
- **4.** Acoustical: Section_____

B. Work installed but furnished under other sections:

C. Work installed but furnished under other sections:

1.02 System Description

A. A pre-engineered drywall suspension system consisting of straight and curved main tees along with straight furring cross channels or cross tees, that join together to support screw attached gypsum panels and independently supported light fixtures, and air diffusers, where applicable. Where applicable, installed systems must conform to Underwriters Laboratories, Inc. (UL) Fire Resistance Design No. and other applicable codes.

1.03 Quality Assurance

A. Subcontractor qualification: Installer shall have successful experience installing suspension and drywall systems.

B. Requirements of regulatory agencies: Codes and regulations of authorities having jurisdiction.

C. Source quality control: Manufacturer will provide test certification for suspension systems as required to meet performance standards specified by various agencies.

1.04 References

A. ASTM C635, Standard Specifications for Metal Suspension Systems.

B. ASTM C636, Recommended Practice for Installation of Metal Suspension Systems.

C. CISCA Ceiling Systems Installation Handbook.

D. GA 216, Installation & Finish of Gypsum Panels.

E. ASTM C645, Standard Specification for Non-Load Bearing (Axial) Steel Studs, Runners, (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.

F. ASTM C754, Specification for Installation of Steel Framing Members to Receive Screw-Attach Gypsum Boards.

G. ASTM C843, Specification of Application of Gypsum Veneer Plaster.

H. ASTM C844, Specification of Application of Gypsum Base to Receive Veneer Plaster.

I. ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials.

J. Underwriters Laboratories Inc. (UL) Fire Resistance Directory.

1.05 Submittal

A. Samples: Submit actual samples and technical data for suspension system main tees and cross tees for review.

B. Shop Drawings:
- **1.** Reflected ceiling plans: Submit ceiling suspension system layout indicating dimensions, lighting fixture locations, and related mechanical components.
- **2.** Assembly drawings: Indicate installation details, accessory attachments and installation of related lighting fixtures and related mechanical system components.

C. Manufacturer's Data:
- **1.** System details: Submit manufacturer's catalogue cuts or standard drawing showing details of system with project conditions clearly identified and manufacturer's recommended installation instructions.

	1.06 Delivery, Storage and Handling	**A.** Delivery of materials: Deliver materials in original, unopened packages clearly labeled with a manufacturer's name, item description, part number, type and class as applicable. **B.** Inspection: Promptly inspect delivered materials, file freight claims for damage during shipment, and order replacement of materials as required. Any damaged materials shall be promptly removed from the job site. **C.** Storage: Store in a manner that will prevent warpage, water damage, or damage of any kind. Prevent interference to/by other trades and any other adverse job conditions due to storage locations or methods. **Warning:** Store all SHEETROCK Brand Gypsum Panels flat. Panels are heavy and can fall over, causing serious injury or death. Do not move unless authorized. **D.** Handling: Handle in such a manner to insure against racking, distortion or physical damage of any kind.
	1.07	**A.** Existing conditions: (include specific alteration work requirements for the project). **B.** Environmental requirements: **1.** Building Conditions: Building shall be enclosed with all windows and exterior doors in place and glazed and roof watertight before installation of suspension system. **2.** Interior temperature/humidity in building: Climactic conditions in areas to receive drywall suspension systems shall range from 60 °F (16 °C) to 104 °F (40 °C) and relative humidity of not more than 90 % shall be maintained before installation of components. **3.** In cold weather during gypsum panel installation and joint finishing and veneer plaster application, temperatures within the building shall be maintained in the range of 55-70 °F (13-21 °C). Heat and ventilation should be evenly provided to facilitate curing and drying. **C.** Coordination with other work: **1.** General: Coordinate with other work supported by or penetrating through the ceiling, including mechanical and electrical work and partition systems. **2.** Mechanical work: Ductwork above system shall be complete, and permanent HVAC systems operating. **3.** Electrical Work: Installation of conduit above suspension system shall be complete before installation of suspension system. **D.** Protection: **1.** Personnel: Follow good safety and industrial hygiene practices during handling and installing of all products and systems, with personnel to take necessary precautions and wear appropriate personal protective equipment as needed. Read material safety data sheets and related literature for important information on products before installation. Contractor to be solely responsible for all personal safety issues during and subsequent to installation; architect, specifier, owner and manufacturer will rely on contractor's performance in such regard.
2: Products	**2.01 Manufacturer**	**A.** USG Drywall Suspension System. **B.** USG SHEETROCK Brand Gypsum Panels (Regular, FIRECODE, FIRECODE C) and 1/2″ SHEETROCK Brand Interior Gypsum Ceiling Board. **C.** USG SHEETROCK Brand Joint Tape, Joint Compounds, Trim, and Accessories (see USG Gypsum Panels and Accessories SA927-09250 Specification). **D.** USG IMPERIAL Brand Gypsum Base (see USG Veneer Plaster Systems Specification SA920-0920). All manufactured by USG, Chicago, IL USA. Manufactured in accordance with ASTM C635.

Application Guide Specifications

Curved Drywall Ceilings

2.02 Materials

A. Commercial quality, cold rolled steel, hot dipped galvanized finish.

B. USG Flat Drywall Suspensions Systems:

1. Main Tees: Fire-Rated Heavy Duty classification 1-1/2″ high x 144″ long, integral reversible splice with knurled face.
DGL-26 15/16″ Face
or
DGLW-26 1-1/2″ Face

2. Cross Members: Fire-Rated members with knurled face.
Cross Tees: DGLW-424 cross tee 1-1/2″ high x 48″ long with 1-1/2″ wide face. Tees must have quick release cross tee ends to provide positive locking and removability without the need for tools.

3. Accessory Cross Tees: Cross tees must have knurled faces. Cross tees have quick release cross tee ends to provide positive locking and removability without the need for tools.

DGL-224 Fire-Rated	1-1/2″ high x 24″ long with 15/16″ face
DGL-324 Fire-Rated	1-1/2″ high x 36″ long with 15/16″ face
DGL-424 Fire-Rated	1-1/2″ high x 48″ long with 15/16″ face
DGL-824 Non Fire-Rated	1-1/2″ high x 96″ long with 15/16″ face
DGLW-224 Fire-Rated	1-1/2″ high x 24″ long with 1-1/2″ face
DGLW-424 Fire-Rated	1-1/2″ high x 48″ long with 1-1/2″ face

4. Wall moldings: Single web with knurled face.

DGM-16	1″x 1″ x 144″ long wall molding.
DGCM-25	144″ x 1-9/16″ x 1″ x 1″ channel molding.

C. USG Curved Drywall Suspensions Systems:

1. Valley Tees (face of grid convex): 1-1/2″ high x 1-1/2″ knurled face with partially corrugated bulb and cross tees holes at 8″ o.c. Made of hot dipped galvanized steel.

2. Vault Tees (face of grid concave): 1-1/2″ high x 1-1/2″ knurled face with cross tee holes at 8″ o.c. Made of hot dipped galvanized steel.

D. Accessories

1. Transition Clip DGTC-90

2. Splice Clip DGSC-180

3. Wall Attachment Clip Curved Tees DGWC

4. Splice Plate Curved Tees—Factory Cut Ends DGSP-18

5. Hub DGHUB

E. USG Compässo Trim

1. 4″ Compässo Trim: 4″ wide face, 9/16″ horizontal legs with hems formed for attachment to the Compässo mounting clip, commercial quality cold rolled 24-gauge steel with factory finish.

2. 6″ Compässo Trim: 6″ wide face, 9/16″ horizontal legs with hems formed for attachment to the Compässo mounting clip, commercial quality cold rolled 24-gauge steel with factory finish.

3. 8″ Compässo Trim: 8″ wide face, 9/16″ horizontal legs with hems formed for attachment to the Compässo mounting clip, commercial quality cold rolled 24-gauge steel with factory finish.

F. Gypsum Panels

1. Gypsum panels manufactured in accordance with ASTMC36.

2. 1/4″, 3/8″, 1/2″, 5/8″ Sheetrock Brand Gypsum Panels (Regular, Firecode, Firecode C). (see USG Drywall/Steel Framed Systems Specifications—SA923 09250-USG-3).

G. USG Sheetrock Brand Drywall Accessories; Trims, Expansion Joints, Sealants, Joint Compounds Materials. (see USG Gypsum Panels & Accessories Specifications SA927 09250.

	2.03 Metal, Paper or Plastic Trim	**A.**	Corner Bead: Minimum #26 gauge, zinc alloy with or without paper flanges or plastic bead.
		B.	Casing Bead: Minimum #24 gauge, zinc alloy or plastic with expanded flanges.
		C.	Control Joints: Minimum #26 gauge, zinc alloy, extruded aluminum or plastic with expanded flanges.
	2.04 Fasteners	**A.**	Conventional Gypsum Panel fasteners (ASTM C1002). No. 6 Type-S, HiLo bugle head, self-drilling, self-tapping steel screws.
3: Execution	**3.01 Inspection**	**A.**	Examine areas to receive materials for conditions which will adversely affect installation. Provide written report of unacceptable surface.
		B.	Do not start work until unsatisfactory conditions are corrected.
		C.	Work to be concealed: Verify work above ceiling suspension system is complete and installed in manner which will not affect layout and installation of suspension system components.
		D.	Beginning of installation shall signify acceptance of conditions in areas to receive ceiling suspension system.
		F.	Fire-rating requirements: Construction above fire-rated assembly shall meet requirements as applicable to provide fire-resistance rating specified in Part 2-Products.
	3.02 Preparation	**A.**	Field dimensions must be verified prior to installation.
	3.03 Installation	**A.**	Standard reference: Install in accordance with ASTM C636, CISCA installation standards, and other applicable code references.
		B.	Manufacturer's reference: Install in accordance with manufacturer's current printed recommendations.
		C.	Drawing reference: Install in accordance with approved shop drawings and locate ceiling in accordance with main tee dimensions relative to elevations.
		D.	Component and hanger wire installation: **Flat Ceilings:** Main tees shall be spaced a maximum of 48″ on center and supported by hanger wires spaced a maximum 48″ on center and as specified by UL Fire Resistance Directory attaching hanger wires directly to structure above. Cross tees shall be spaced per manufacturers' recommendations and as specified by UL Fire Resistance Directory. **Curved Ceilings:** Valley and Vault main tees shall be spaced a maximum 48″. Hanger wires shall be spaced a maximum 48″ for Vaults main tees. Hanger wires shall be spaced a maximum 24″ for Valley main tees. Cross tees shall be spaced as per manufacturers' recommendations. Additional hanger wires may be necessary to stabilize any curved ceiling during and after drywall attachment. **Transitions: Changes in Elevation in Soffit and Fascia Ceiling Applications.** When constructing stepped soffits, bracing of the drywall suspension system and/or additional hanger wires may be necessary to ensure stability and structural performance during and after drywall attachment. The maximum vertical soffit height is 48″. (Maximum unsupported drywall area shall not exceed 48″ x 24″). Intermediate cross tees are not necessary when bulkhead dimensions do not exceed 24″. Cross tee spacing in horizontal soffit plane is not to exceed 24″. Intermediate cross tees may be necessary to maintain visually acceptable drywall planes and drywall corners.

Application Guide Specifications

Curved Drywall Ceilings

E. USG Suspension System when used with Interior SHEETROCK Brand Gypsum Panel lifetime limited warranty: By lifetime we mean the useful life of a ceiling up to a maximum of 30 years. The USG Drywall Suspension System installed without SHEETROCK Brand Gypsum Panels has a 10-year warranty.

General hanger wire notes: Hanger wires are required within 12″ on both sides of a pivoted splice clip. At least 1 hanger wire is required within 12″ of a transition clip.

Limitations: Do not support wires from mechanical and/or electrical equipment occurring above ceiling.

F. Accessories: Install accessories as applicable to meet project requirements.

3.04 Gypsum Panel Installation

A. Apply gypsum panels first to ceiling and then to walls. Position all ends and edges of gypsum panels at framing members. Extend ceiling board to corners and make firm contact with the wall angle, channel or top plate. To minimize end joints, use panels of maximum practical lengths. Fit ends and edges closely, but not forced together.

B. Cut ends, edges, scribe or make cutouts within the field of panels in a workmanlike manner. Cut gypsum board to size using a knife and straight edge.

C. Attach Gypsum Panels to the suspension system main runners, cross tees and cross channels with conventional gypsum panel fasteners (No. 6 Type S HiLo bugle head, self-drilling, self-tapping steel screws) spaced 8″ o.c. at periphery of gypsum panels and located 3/8″ in from panel edges and spaced 12″ o.c. in the field. Drive fasteners in field of panels first, working toward ends and edges. Hold panels in firm contact with framing while driving fasteners. Drive fastener heads slightly below surface of gypsum panels in a uniform dimple without breaking face paper. (See Gypsum Panel and Accessories Specification SA927 09250).

D. Install trim at all internal and external angles formed by the intersection of panel surfaces or other dissimilar materials. Apply corner bead to all vertical or horizontal external corners in accordance with manufacturer's directions.

Ceilings note: See Drywall/Steel Framed Systems Specifications SA923 09250 USG-3.

Spacing of drywall grid is designed to support only the dead load. Heavy concentrated loads should be independently supported. Lighting fixtures or troffers, air vents and other equipment should be separately supported from the structure; gypsum panels will not support these items.

To prevent objectionable sag in new gypsum panel ceilings, the weight of overlaid unsupported insulation should not exceed 1.3 psf for 1/2″ thick gypsum panels with spacing of 24″ o.c.; 2.2 psf for 1/2″ thick gypsum panels 16″ o.c. framing and 1/2″ SHEETROCK Brand Interior Gypsum Ceiling Panels on 24″ o.c. framing and 5/8″ panels 24″ o.c.; 3/8″ thick gypsum panels must not be overlaid with unsupported insulation. A vapor retarder should be installed in exterior ceilings, and plenum or attic spaces should be properly vented.

During periods of cold or damp weather when a polyethylene vapor retarder is installed on ceilings behind the gypsum panels it is important to install the ceiling insulation before or immediately after installing the gypsum panels. Failure to follow this procedure may result in moisture condensation in the back of the gypsum panels causing sag.

E. Spray-Textured Ceilings: Where water-based texturing materials or any slow-drying surface treatment are used over single-layer panels, maximum frame spacing is 16″ o.c. for 1/2″ panels applied perpendicular to framing.

3.05 Expansion Joints

A. Provide a separation in the suspension system at expansion joints as shown on the drawings and carry the joint through the gypsum panels. Expansion joints are installed between two main tees to separate the suspension system and allow for movement in large ceiling areas.

3.06 Control Joints

A. Provide control joint No. .093 which has a 3/32″ ground for drywall and veneer plaster. Ceiling areas should not exceed 50 ft. (2500 sq. ft.) with perimeter relief 30 ft. (900 sq. ft.) without perimeter relief.

The USG Drywall Suspension System

makes building flawless drywall ceilings

quick, easy and inexpensive.

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Patents
The following are the patent numbers for the USG Drywall Suspension System and its components: 5,937,605; 6,018,923; 6,047,512; and 6,138,425.

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Manufactured by
USG Interiors, Inc.
125 South Franklin Street
Chicago, IL 60606

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