CEILING | SYSTEMS

TECHNICAL GUIDE

DRYWALL
Grid Systems

Hanging and Framing
Flat Ceilings

Armstrong®

Work Smarter

Eliminate the labor-intensive cutting, tying, and spacing of track and channel framing. Our systems are engineered with route locations and cross tees to maintain precise module spacing. Main beams have 51 route locations and cross tee lengths of 50", 26", and 14" to accommodate type "F" fixtures without field modifications or accessories. Pre-notched main beams simplify curved drywall installations.

Our Drywall Systems are manufactured to meet or exceed ASTM standards and code requirements, and are engineered to provide economical alternatives to stud and track construction.

DRYWALL Grid Systems

Code Compliance You Can Trust

Meets:

- ASTM C635
- ASTM C645
- ASTM C754
- ASTM C840
- ICC Evaluation Service Report ESR-1289
- City of LA – RR 25348
- International Building Code, Continuous Membrane, One Level. Per Section 25.210, single level drywall ceilings are exempt from lateral force bracing requirements when walls are not over 50 feet apart. When walls are over 50 feet apart, the ceiling should be examined for bracing requirements
- IBC categories D, E, and F single layer drywall ceilings are exempt from lateral force bracing requirements, regardless of room size
- Miami-Dade County, Florida wind uplift – NOA No. 07-0119.02 – 03/17/2014
- Miami-Dade County, Florida impact testing – NOA No. 10-0126.04 – 03/17/2015
- Consult local codes for specific requirements

Performance

- **PeakForm**® patented profile increases strength and stability for improved performance during installation
- **SuperLock**™2 main beam clip is engineered for a strong secure connection and fast accurate alignment confirmed with an audible click; easy to remove and relocate
- **ScrewStop**™ reverse hem prevents screw spin off on 1-1/2" wide face
- **Rotary-stitched** – Greater torsional strength and stability
- **1-1/2" wide face** main beams and cross tees – Easy installation of screw-applied gypsum wallboard
- **G40, G90 hot dipped galvanized coating** – Corrosion resistance

Flat Drywall Grid Installation

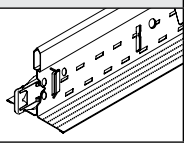
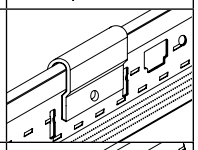
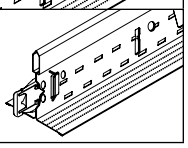
- **G90 hot dipped galvanized coating** – Superior corrosion resistance for exterior applications
- **Heavy-duty load rating** – Minimum 16 Lbs/LF on main beams
- **Fire rated** – Applicable to 25 UL Fire Resistant designs (D501, D502, G523, G524, G527, G528, G529, G553, J502, L502, L508, L513, L515, L525, L526, L529, L564, P501, P506, P507, P508, P509, P510, P513, P514, P516). Item XL7936G90 and XL8965 are not fire rated.

  Wind uplift and impact testing construction available, including Miami Dade/Broward County, Florida
- **Cross tee spacing:**
  24" O.C. for 5/8" drywall
  16" O.C. for 1/2" drywall

Table of Contents

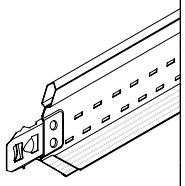
components

Main Beams

Item Number	Length	Face Dimension	Profile Height	Duty Load	Fire Rated	Routes	Load Test Data (Lbs/LF) L/360 Simple Span 2'	3'	4'	L/240 Simple Span 2'	3'	4'	Perspective
HD8906 HD8906**G90** HD8906**HRC**	144"	1-1/2"	1-11/16"	Heavy Duty	Yes	51 routes – starting 2-1/4" from each end†	95.5	35.8	18.76	139.85	52.24	28.14	
NEW HD8906**IIC**	144"	1-1/2"	1-11/16"	Heavy Duty	Yes	51 routes – starting 2-1/4" from each end†	95.5	35.8	18.76	139.85	52.24	28.14	
NEW HD8906**10**	120"	1-1/2"	1-11/16"	Heavy Duty	Yes	51 routes – starting 2-1/4" from each end†	95.5	35.8	18.76	139.85	52.24	28.14	

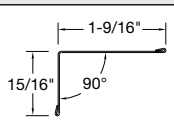
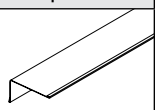
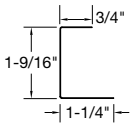
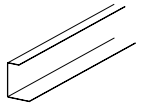
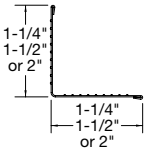
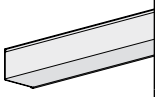
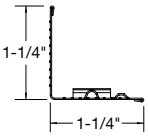
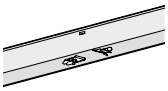
† Type "F" fixture compatible

Cross Tees

Item Number	Length	Face Dimension	Profile Height	Fire Rated	Routes	Load Test Data (Lbs/LF) L/360 Simple Span			L/240 Simple Span			Perspective
						72"			72"			
XL8965 XL8965**HRC**	72"	1-1/2"	1-1/2"	Yes	6 routes – starting 24" from each end†	4.27			6.4			
						50"			50"			
XL8947P XL8947**PG90**	50"	1-1/2"	1-1/2"	Yes	8 routes – starting 10" from each end†	13.0			19.5			
						2'	3'	4'	2'	3'	4'	
XL8945P XL8945**PG90** XL8945**HRC**	48"	1-1/2"	1-1/2"	Yes	9 routes – center route and starting 10" from each end†			15.0			22.5	
XL8341	48"	15/16"	1-11/16"	Yes	3 routes – starting 12" from each end			16.59			24.89	
XL7341	48"	15/16"	1-11/16"	Yes	3 routes – starting 12" from each end			16.59			24.89	
XL7936**G90**	36"	1-1/2"	1-1/2"	No	none		33.33			49.96		
XL8925 XL8925**G90**	26"	1-1/2"	1-1/2"	Yes	2 routes – 12" from each end†	98.0			117.0			
XL8926 XL8926**G90**	24"	1-1/2"	1-1/2"	Yes	3 routes – center route and 10" from each end†	129.0			158.0			
XL7918	14"	1-1/2"	1-1/2"	Yes	none†	71.5			107.0			

NOTE: All items available in High Recycled Content (HRC) as special order
† Type "F" fixture compatible

moldings

Moldings				
Item Number	**Length**	**Description**	**Profile**	**Perspective**
7858	144"	Reverse Angle Molding nominal 1-9/16" x 15/16"		
7838	120"	Unhemmed Channel Molding nominal 3/4" x 1-9/16" x 1-1/4"		
KAM10	120"	Knurled Angle Molding nominal 1-1/4" x 1-1/4" – 25g		
KAM12 KAM12**G90** KAM12**HRC**	144"	Knurled Angle Molding nominal 1-1/4" x 1-1/4" – 25g		
KAM1510 KAM1512 KAM151020 KAM151020**E**	120" 144"	Knurled Angle Molding nominal 1-1/2" x 1-1/2" (KAM1510 & KAM1512 – 25g; KAM151020 – 20g; KAM151020EQ – 22g)		
KAM21020 KAM21025 KAM21020**EQ**	120" 144"	Knurled Angle Molding nominal 2" x 2" (20g) (KAM21020 – 20g; KAM21025 – 25g; KAM21020EQ 22g)		
LAM12 LAM12**G90** LAM12**HRC**	144"	Locking Angle Molding nominal 1-1/4" x 1-1/4"		

NOTE: All items available in High Recycled Content (HRC) as special order.

Moldings

Corrosion Prevention

Corrosion prevention is an essential factor in the economical utilization of galvanized sheet metal for ceiling suspension systems. Armstrong provides G40 for standard construction per ASTM C645. When conditions include exposure to extreme moisture and salt water, G90 is available per ASTM A653.

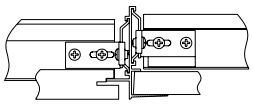
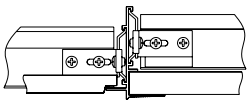
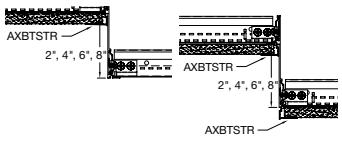
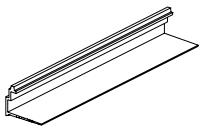
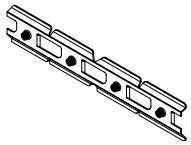
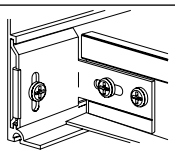
Drywall Transition Molding

Material: Commercial-quality cold rolled hot dipped galvanized steel

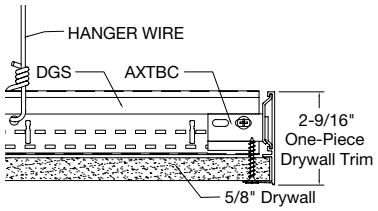
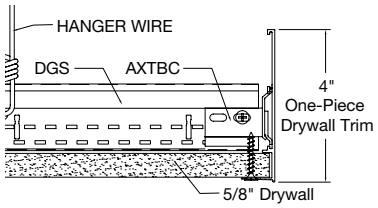
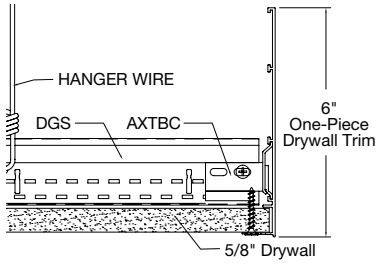
Item Number	Length/Item Description	Face Dimension	Flange	Profile Height	
7901	120" Shadow Reveal Molding	3/8" shadow reveal	9/16"	1-1/4"	
7902	120" Shadow Reveal Molding	3/8" shadow reveal	15/16"	1-1/4"	
7903	120" Inverted T Molding	1" inverted T	–	1-1/2"	
7904 7904PF*	120" Flush Transition Molding	15/16" horizontal	15/16"	1-1/4"	
7905 7905PF*	120" Flush Transition Molding	9/16" horizontal	9/16"	1-1/4"	
7906	120" "F" Molding	120" vertical transition	–	1-7/16"	
7907	120" Tegular Transition Molding	9/16" horizontal	9/16"	1-1/4"	
7908	120" Tegular Transition Molding	15/16" horizontal	15/16"	1-1/4"	

* 7904PF and 7905PF feature protective film on the acoustical wall angle flange for faster, easier finishing.

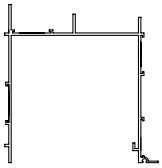
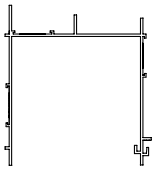
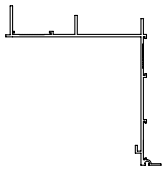
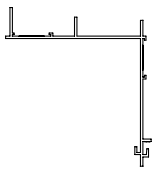
axiom transitions trim

Axiom – Transitions Trim			
Material: Extruded aluminum, alloy 6063			
Item Number	**Length/Item Description**	**Dimensions**	
AXTRVESTR	Straight Transition for Vector®	120 x 2-9/16 x 1-11/16"	 Axiom – Transitions with Vector panel to drywall perimeter (AXTRVESTR)
AXTRTECUR	Curved Transition for Tegular	120 x 2-9/16 x 1-11/16"	 Axiom – Transitions with Tegular panel to drywall perimeter (AXTRTESTR, AXTRTECUR)
AXTR2STR	2" Straight Transition	120 x 2 x 1-1/2"	 Acoustical-to-Drywall Drywall-to-Drywall
AXTR2CUR	2" Curved Transition	120 x 2 x 1-1/2"	
AXTR4STR	4" Straight Transition	120 x 4 x 1-1/2"	
AXTR4CUR	4" Curved Transition	120 x 4 x 1-1/2"	
AXTR6STR	6" Straight Transition	120 x 6 x 1-1/2"	
AXTR6CUR	6" Curved Transition	120 x 6 x 1-1/2"	
AXTR8STR	8" Straight Transition	120 x 8 x 1-1/2"	
AXBTSTR	Drywall Bottom Trim	120 x 1-1/8 x 27/32"	
ACCESSORIES			
AX4SPLICEB	Splice Plate	–	
AXTBC	T-Bar Connector Clip	–	

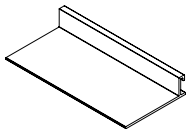
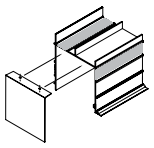
axiom drywall trim

Axiom One-Piece Drywall Trim *For use with 5/8" drywall only		
Material: Commercial-quality extruded aluminum alloy 6063		
Item Number	**Length/Item Description**	
AX1PC2STR	2.5" One-Piece Straight Drywall Trim	
AX1PC2CUR	2.5" One-Piece Curved Drywall Trim	
AX1PC4STR	4" One-Piece Straight Drywall Trim	
AX1PC4CUR	4" One-Piece Curved Drywall Trim	
AX1PC6STR	6" One-Piece Straight Drywall Trim	
AX1PC6CUR	6" One-Piece Curved Drywall Trim	

axiom building perimeter system

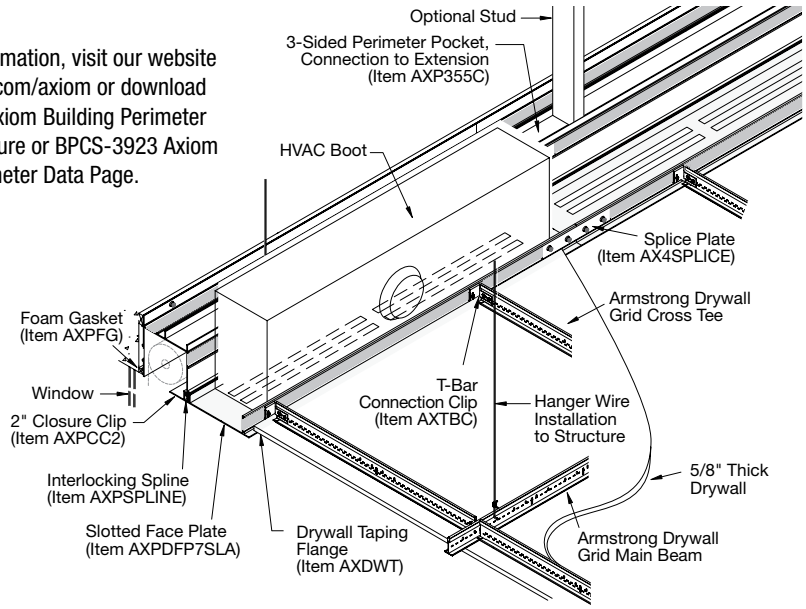
Axiom – Building Perimeter Trim			
Material: Extruded aluminum			
Item Number	**Length/Item Description**	**Dimensions**	
AXP355	3-Sided Perimeter Pocket, Acoustical/Drywall Transition	5 x 5 x 5"	 3-Sided Perimeter Pocket, Acoustical/Drywall Transition  3-Sided Perimeter Pocket, Extension Connection
AXP355OSC	3-Sided Perimeter Pocket, Acoustical/Drywall Transition Outside Corner	12 x 5 x 12"	
AXP355ISC	3-Sided Perimeter Pocket, Acoustical/Drywall Transition Inside Corner	12 x 5 x 12"	
AXP355C	3-Sided Perimeter Pocket, Connection to Extension/Diffuser Piece	5 x 5 x 5"	
AXP355S	3-Sided Seismic Perimeter Pocket, Acoustical/Drywall Transition with 0.875 Flange	5 x 5 x 5"	
AXP355SOSC	3-Sided Seismic Perimeter Pocket, Acoustical/Drywall Transition with 0.875 Flange, Outside Corner	12 x 5 x 12"	
AXP355SISC	3-Sided Seismic Perimeter Pocket, Acoustical/Drywall Transition with 0.875 Flange, Inside Corner	12 x 5 x 12"	
AXP355COSC	3-Sided Perimeter Pocket, Connection to Extension/Diffuser Piece, Outside Corner	12 x 5 x 12"	
AXP355CISC	3-Sided Perimeter Pocket, Connection to Extension/Diffuser Piece, Inside Corner	12 x 5 x 12"	
AXP3552	3-Sided Perimeter Pocket, Acoustical/Drywall Transition, 2 Sides	5 x 5 x 5"	
AXP255	2-Sided Perimeter Pocket, Acoustical/Drywall Transition	5 x 5"	 2-Sided Perimeter Pocket, Acoustical/Drywall Transition  2-Sided Perimeter Pocket, Extension Connection
AXP255OSC	2-Sided Perimeter Pocket, Acoustical/Drywall Transition Outside Corner	12 x 5 x 12"	
AXP255ISC	2-Sided Perimeter Pocket, Acoustical/Drywall Transition Inside Corner	12 x 5 x 12"	
AXP255C	2-Sided Perimeter Pocket, Connection to Extension/Diffuser Piece	5 x 5"	
AXP236	2-Sided Perimeter Pocket, Acoustical/Drywall Transition – Narrow Width	3 x 6"	
AXP255COSC	2-Sided Perimeter Pocket, Connection to Extension/Diffuser Piece, Outside Corner	12 x 5 x 12"	
AXP255CISC	2-Sided Perimeter Pocket, Connection to Extension/Diffuser Piece, Inside Corner	12 x 5 x 12"	
Material: Extruded aluminum, alloy 6063			
AXPEP4	Axiom Perimeter Extension 4"	–	 Perimeter Extension
AXPEP6	Axiom Perimeter Extension 6"	–	
AXPEP8	Axiom Perimeter Extension 8"	–	
AXPEP4H	Axiom Perimeter Extension 4" Hook on Both Sides	–	
AXPEPS6	Axiom Seismic Perimeter 6", 0.875 Flange	–	

axiom building perimeter system

Axiom – Building Perimeter System (continued)			
Material: Extruded aluminum, alloy 6063			
Item Number	**Length/Item Description**	**Dimensions**	
AXPDFP4DT	Axiom Perimeter Diffuser Face Plate 4" Drywall Transition (Unslotted)	–	 4" Diffuser Face Plate
AXPDFP4DTSLA	Axiom Perimeter Diffuser Face Plate 4" Drywall Transition (Slotted 3/4" x 23" / 2-Slot Pattern)	–	
AXPDFP4DTSLB	Axiom Perimeter Diffuser Face Plate 4" Drywall Transition (Slotted 2-3/4" x 23" / 1-Slot Pattern)	–	
AXPDFP7DT	Axiom Perimeter Diffuser Face Plate 7" Drywall Transition (Unslotted)	–	 7" Diffuser Face Plate
AXPDFP7DTSLA	Axiom Perimeter Diffuser Face Plate 7" Drywall Transition (Slotted 3/4" x 23" / 2-Slot Pattern)	–	
AXPDFP7DTSLB	Axiom Perimeter Diffuser Face Plate 7" Drywall Transition (Slotted 2-3/4" x 23" / 1-Slot Pattern)	–	
AXPDFP4DT	Axiom Perimeter Diffuser Face Plate Drywall Transition 4" (Unslotted)	–	
AXPCC2	2" Axiom Building Perimeter Closure Clip	–	
AXPCC3	3" Axiom Building Perimeter Closure Clip	–	
AXPDFPS7	Axiom Seismic Perimeter Diffuser Face Plate 7" with 0.875 Flange (Unslotted) (120" x 7-13/16")	–	
AXPDFPS7SLA	Axiom Seismic Perimeter Diffuser Face Plate 7" with 0.875 Flange (Slotted 3/4" x 23" / 2-Slot Pattern) (120" x 7-13/16")	–	
AXPDFPS7SLB	Axiom Seismic Perimeter Diffuser Face Plate 7" with 0.875 Flange (Slotted 2-3/4" x 23" / 1-Slot Pattern) (120" x 7-13/16")	–	
AXCPCI	Axiom Building Perimeter End Plate	–	

Three-sided Perimeter Pocket with Face Plate

For more information, visit our website at armstrong.com/axiom or download BPCS-3911 Axiom Building Perimeter System Brochure or BPCS-3923 Axiom Building Perimeter Data Page.

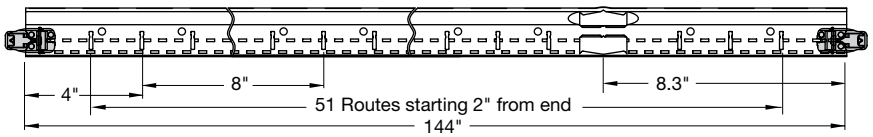


Route Locations

Three-sided Perimeter Pocket with Diffuser Face Plate

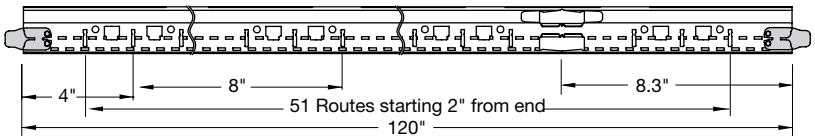
route locations

HD8906 (HRC)/HD890610* NEW

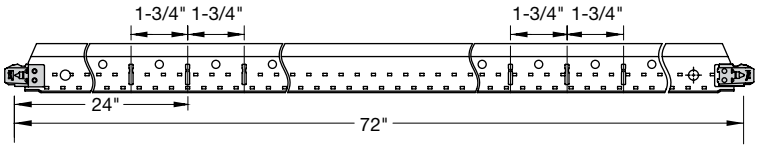


* HD890610 is 120" in length

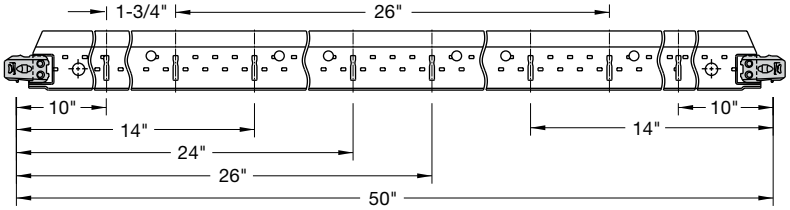
NEW **HD8906IIC**



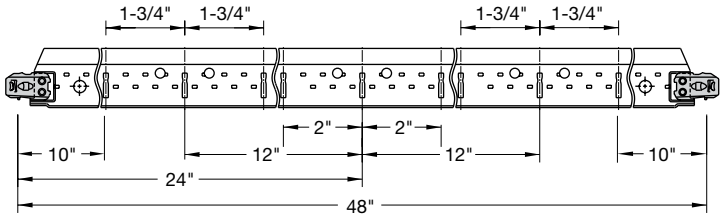
XL8965 (HRC) (Type "F" Compatible)



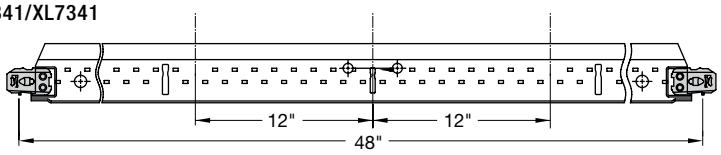
XL8947P (Type "F" Compatible)



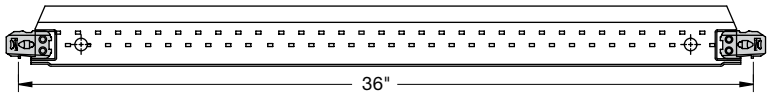
XL8945HRC/XL8945P (Type "F" Compatible)



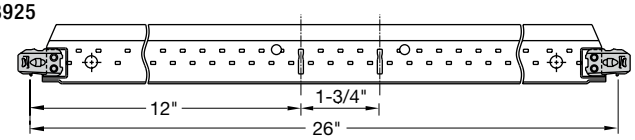
XL8341/XL7341



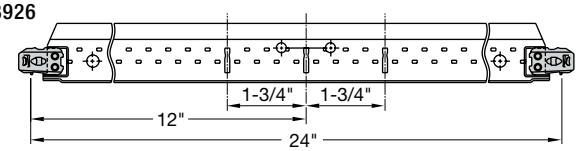
XL7936G90



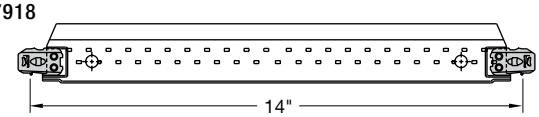
XL8925



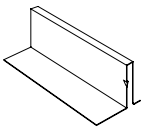
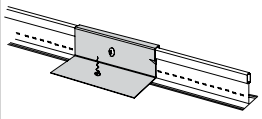
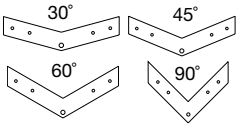
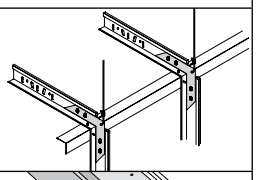
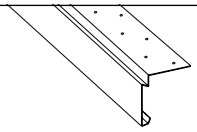
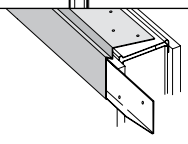
XL8926



XL7918

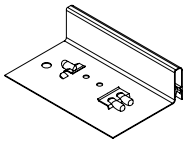
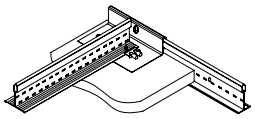
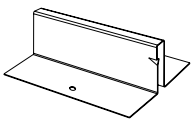
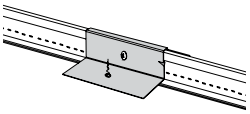
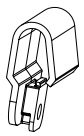
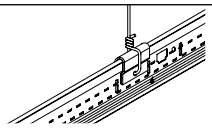
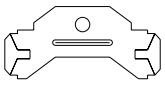
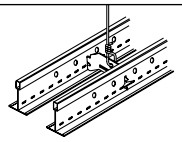
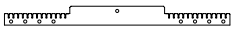
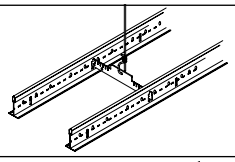
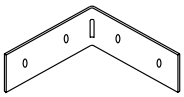
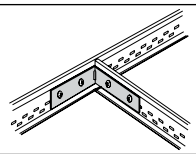
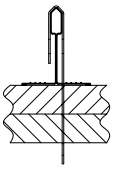
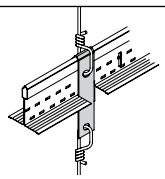
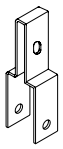
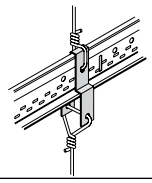
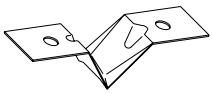
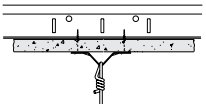
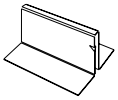
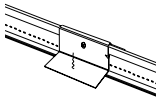


accessories

A variety of drywall grid accessories are available to provide problem-solving solutions that save time, labor, and money. For a complete list of accessories, request submittal BPCS-3082.				
Item Number	**Quantity**	**Description**	**Perspective**	**Application**
DWACS	100	**Drywall Attachment Clip** facilitates transition from drywall to acoustical ceiling; locks under bulb of grid section to prevent upward movement and provide secure attachment surface on one side of exposed grid.		
DW30C DW45C DW60C DW90C	250 250 250 250	30-, 45-, 60-, and 90-degree **Drywall Angle Clips** are used to create positive and secure angles for drywall and ceiling installations on either main beams or cross tees.		
TT10	30	**Partition Top Trim** is used to finish the top of a drywall partition for a continuous drywall/acoustical ceiling interface.		

accessories

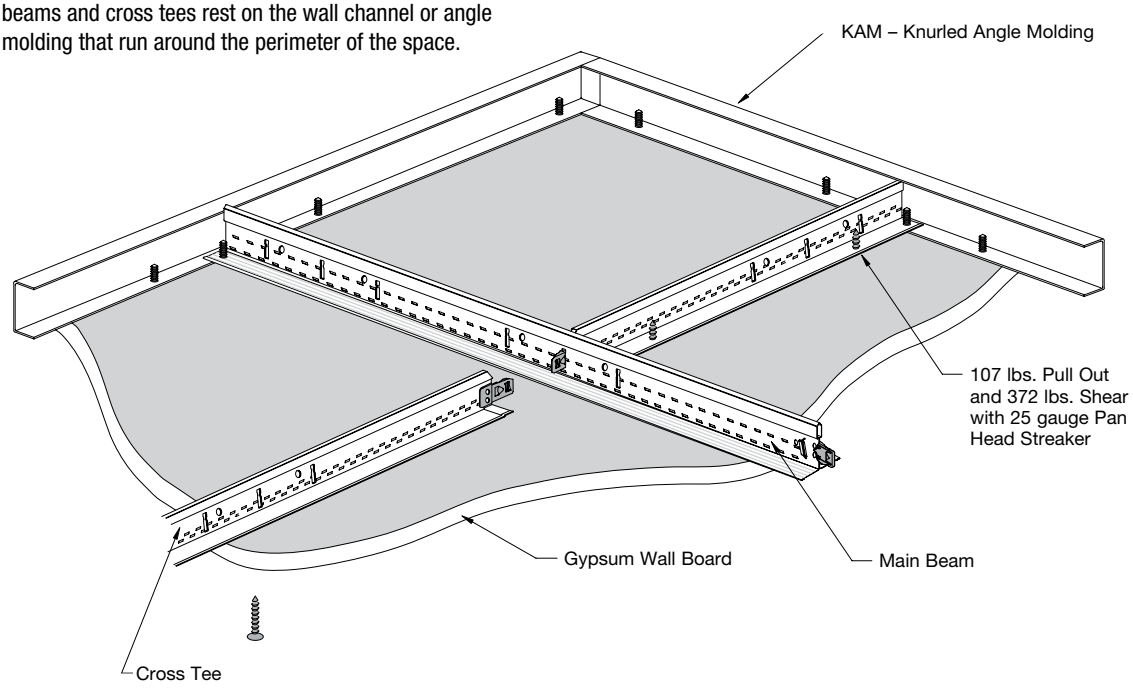
Accessories (continued)

Item Number	Quantity	Description	Perspective	Application
DW58LT	125	**DW58LT – Transition Clip for 5/8" Drywall with Locking Tabs**; facilitates transition from drywall to acoustical ceiling; one-sided hold down clip; eliminates need for drywall bead. Locking tabs provide secure location for DGS tees.		
DW50LT	125	**DW50LT – Transition Clip for 1/2" Drywall with Locking Tabs**; facilitates transition from drywall to acoustical ceiling; one-sided hold down clip; eliminates the need for a drywall bead. Locking tabs provide secure location for DGS tees.		
NEW IIC	36	**Impact Isolation Clip** for use with HD8906IIC drywall grid main beam. Provides up to 8 points of IIC improvement to ensure your project meets IBC requirements.		
MBSC2	200	**Main Beam Spacer Clip** (2" in length) is used to space two parallel main beams 2" O.C. for air supply or return.		
GSC9 GSC12 GSC16	100 100 100	**Adjustable Grid Spacer Clip** is used to space two parallel main beams for light fixtures, air diffusers, etc.; allows for 1/4" adjustments with three different clips.		
XTAC	100	**Cross Tee Adapter Clip** – Used to attach field-cut cross tees to main beams.		
DDC	250	**Double Drywall Clip** is used to hang suspension system below existing 1-1/2" grid face, transferring weight directly to hanger wire; may be used to preserve the fire rating of an existing ceiling and to support heavy accessories; allows for double layer of 5/8" gypsum board.		
DLCC	250	**Direct Load Ceiling Clip** is used to hang suspension system below existing 15/16" grid face, transferring weight directly to hanger wire; may be used to preserve the fire rating of an existing ceiling and to support heavy accessories.		
DWC	250	**Drywall Clip** allows for a “second” ceiling to be installed below a drywall ceiling; attach through installed drywall to supporting structure.		
MBAC	70	**Main Beam Adapter Clip** attaches to web of suspension system section; provides larger surface for screw attachments; used as a hold down clip for thin material (metal or plastic lay-in panels); fastens drywall track to underside of exposed suspension system with lay-in panels, leaving suspension system face free of screw holes.		

System Framing

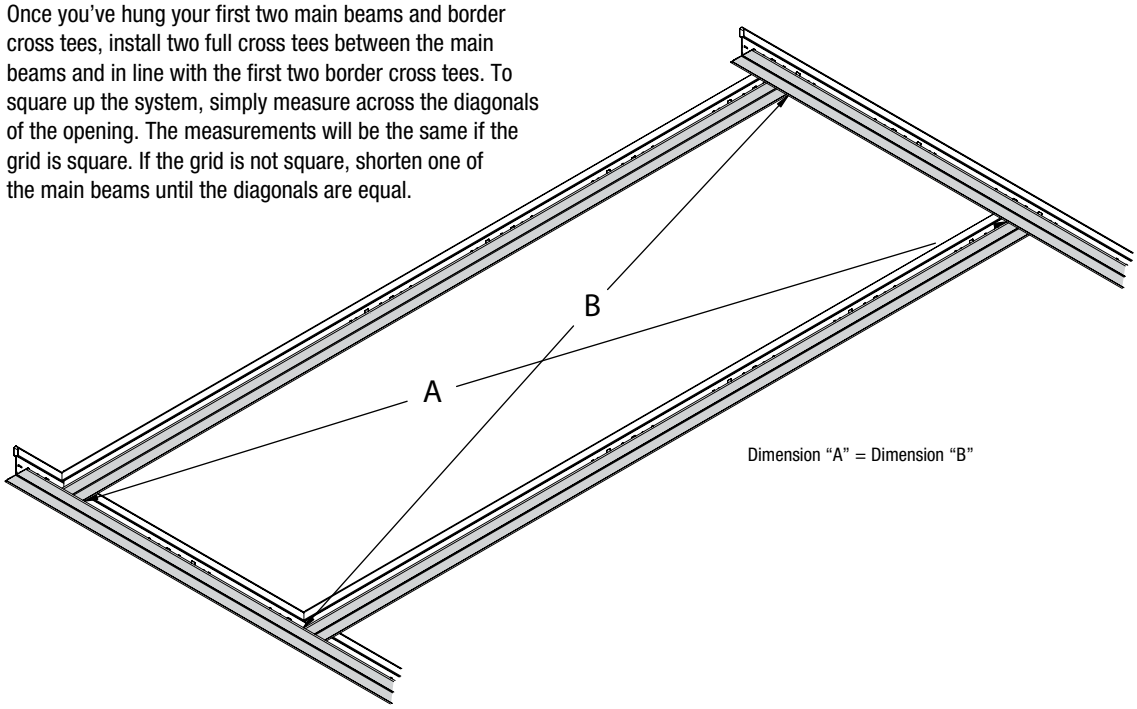
system framing

The grid system is comprised of main beams and cross tees that are suspended by hanger wires to the structural deck. Sections of main beams lock together end-to-end while cross tees span between the main beams. The ends of the main beams and cross tees rest on the wall channel or angle molding that run around the perimeter of the space.



Squaring Up the System

Once you've hung your first two main beams and border cross tees, install two full cross tees between the main beams and in line with the first two border cross tees. To square up the system, simply measure across the diagonals of the opening. The measurements will be the same if the grid is square. If the grid is not square, shorten one of the main beams until the diagonals are equal.



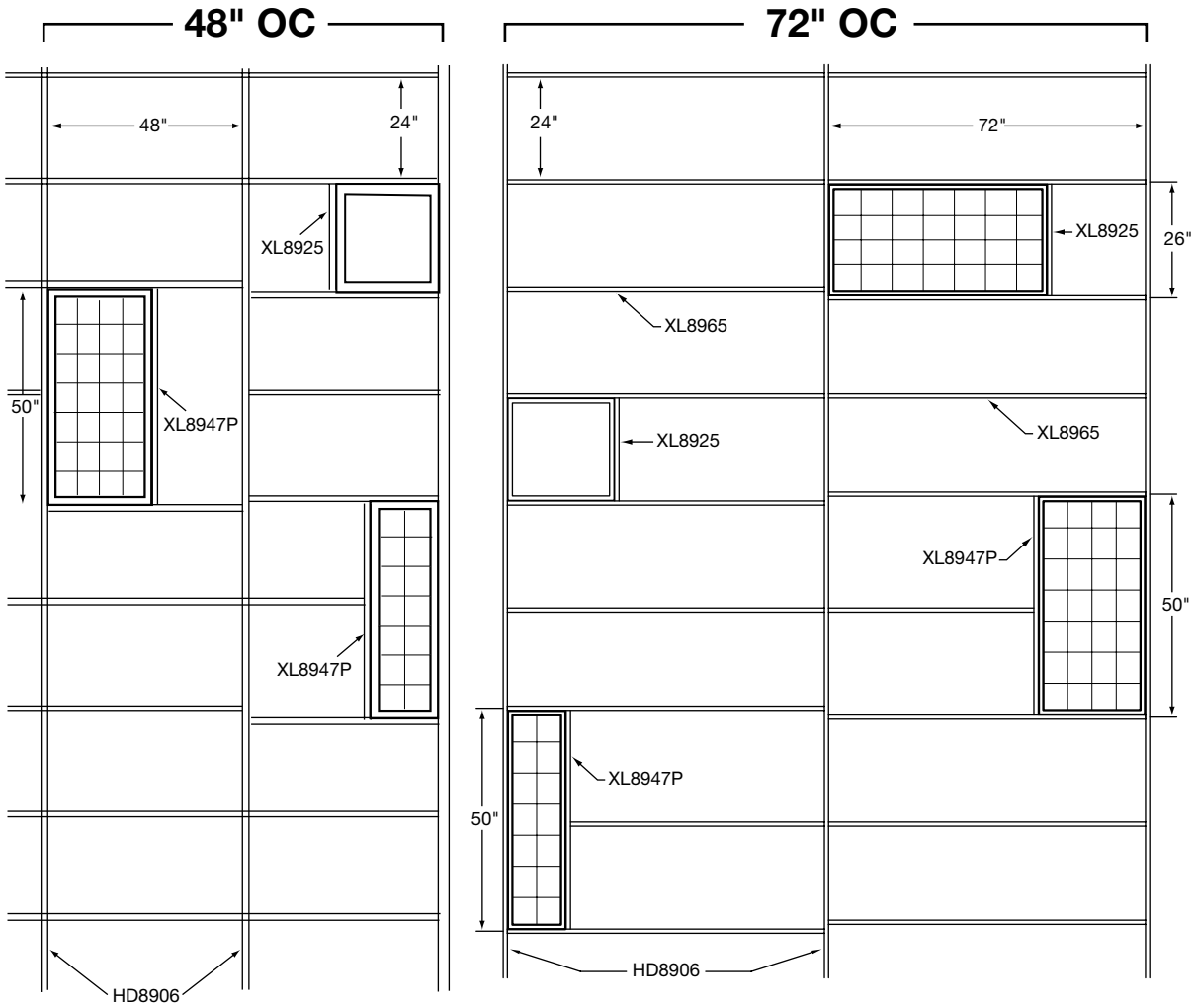
Type “F” Fixtures

Type “F” fixtures, access panels, and air diffusers require a full 12", 24", or 48" opening dimension. The Armstrong Drywall Grid System main beams and cross tees have additional routes in the web to accommodate this larger opening for type “F” fixtures. Using our 14", 26", 50", and 72" cross tees, type “F” fixtures fit perfectly without field cutting or special accessories.

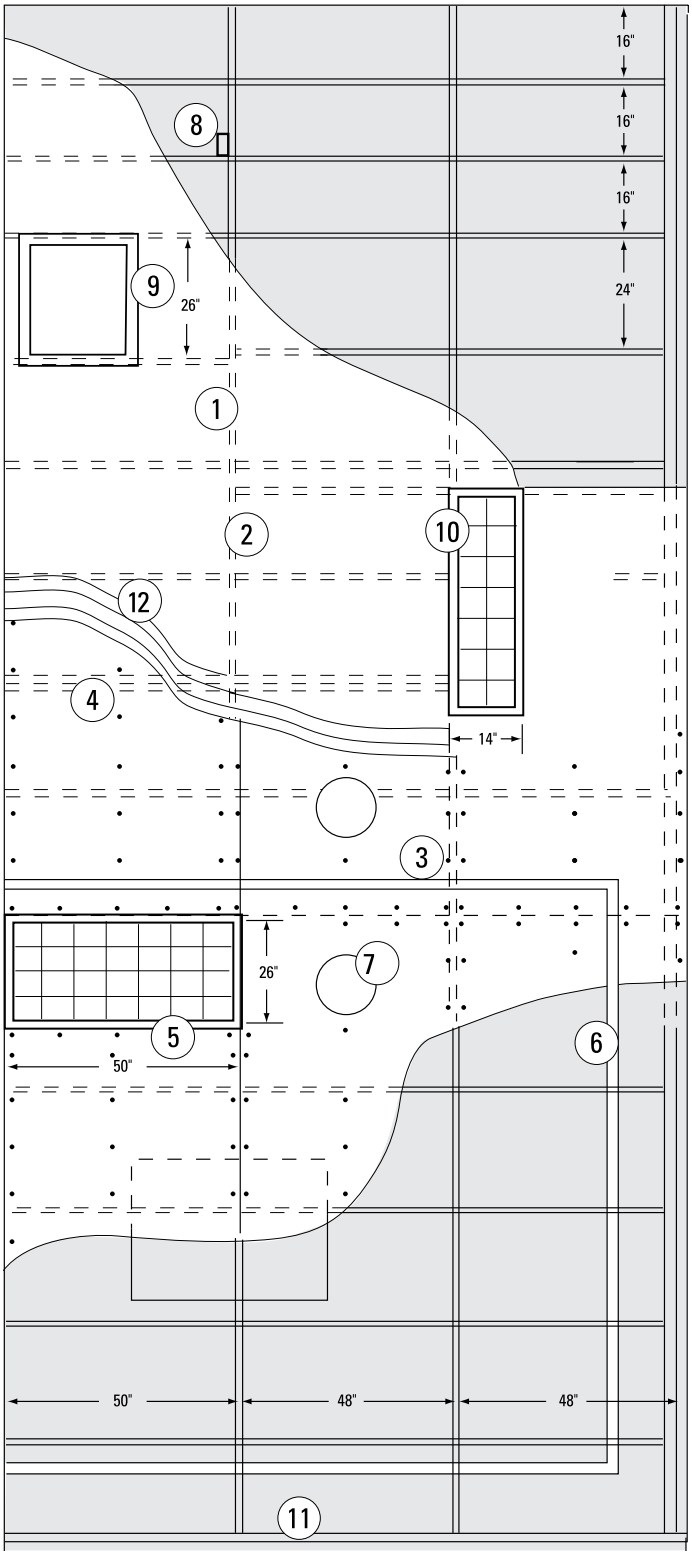
When installing type “F” fixtures **parallel** to the main beams, use a 72" and 48" cross tee for easy placement of fixtures without field modifications.

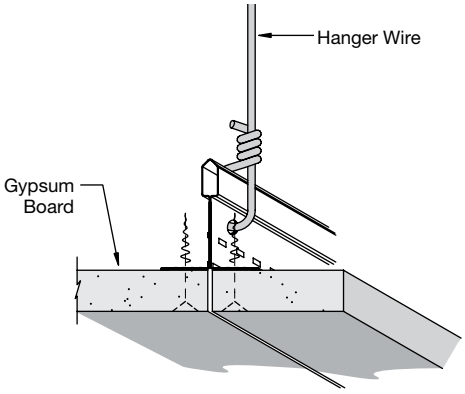
When installing fixtures **perpendicular** to the main beams, use our 72" cross tees for virtually limitless fixture placement.

Main Beams

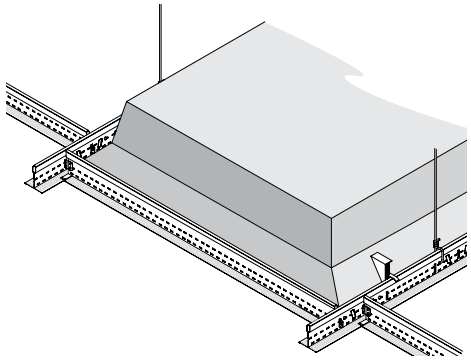


Suspended Drywall Grid System Details

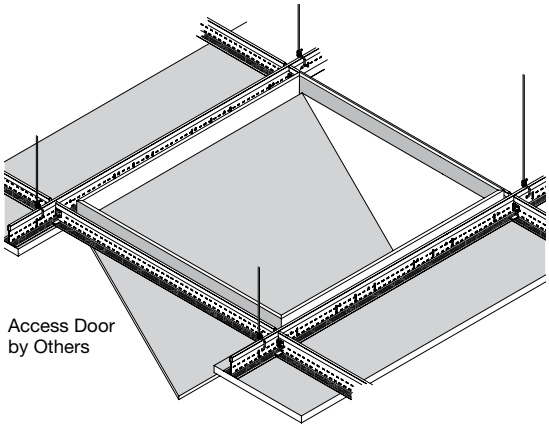




1 **Butt Joint**

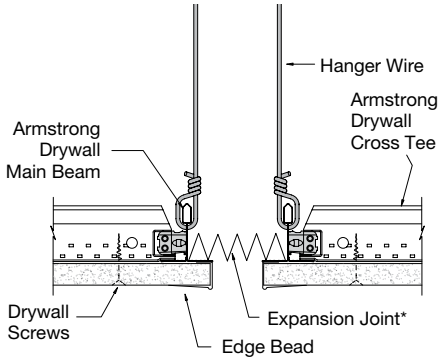


5 **Type "F" Fixture**

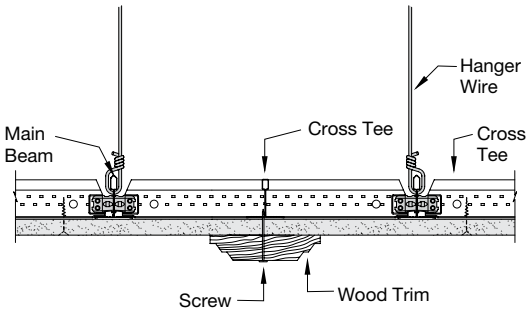


9 **Access Door**

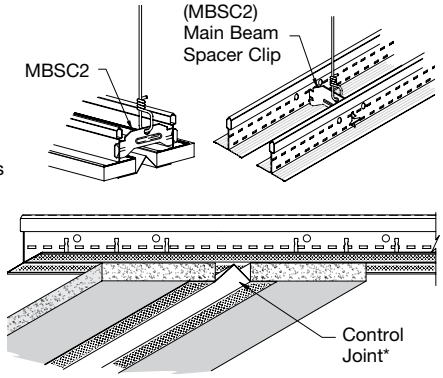
Suspended Drywall Grid System Details



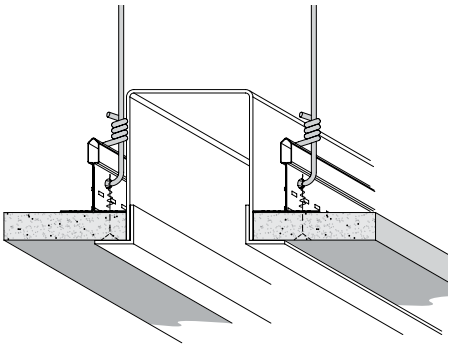
2 Expansion Joint*



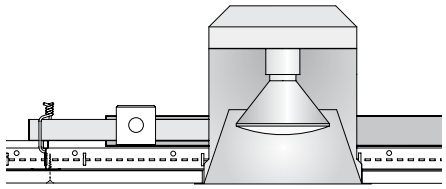
3 Wood Trim



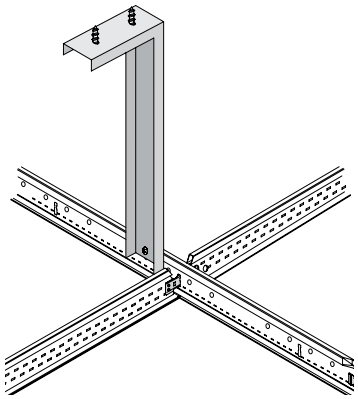
4 Control Joint



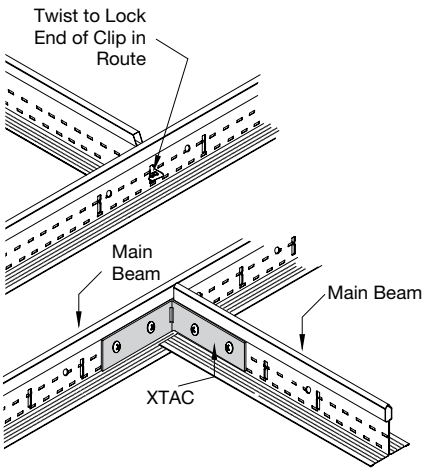
6 Air Bar



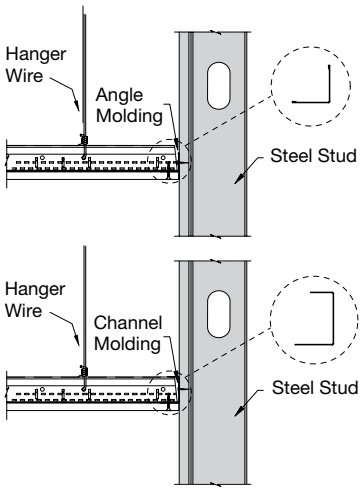
7 High Hat Fixture



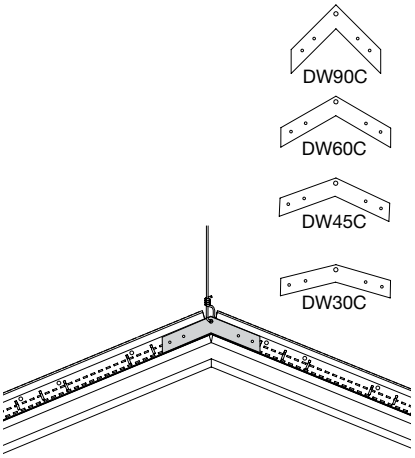
8 Vertical Brace



10 Securing a Single Cross Tee

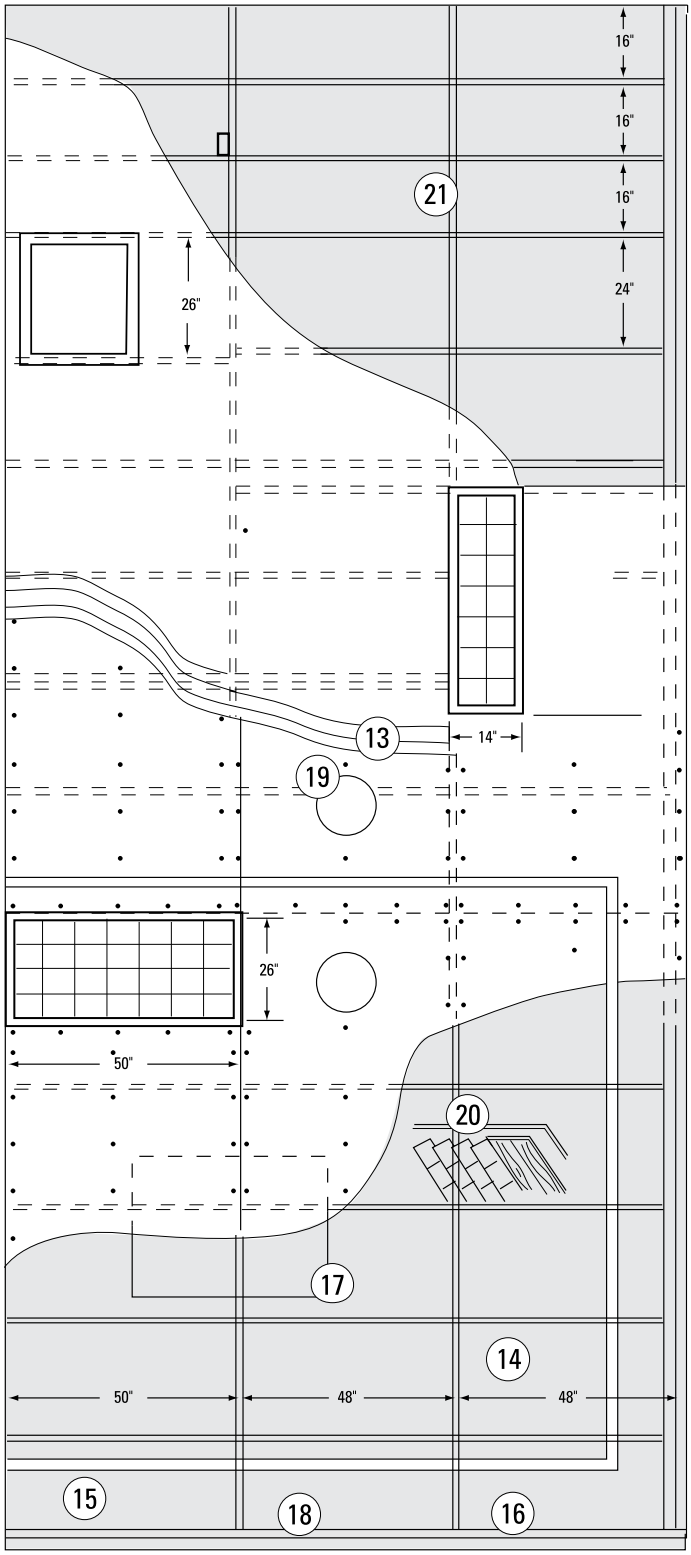


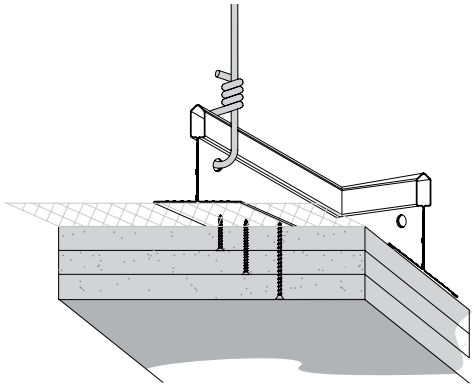
11 Channel and Angle Molding



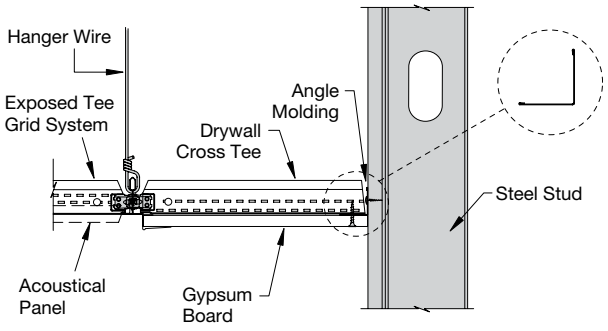
12 Angle Clip

Suspended Drywall Grid System Details

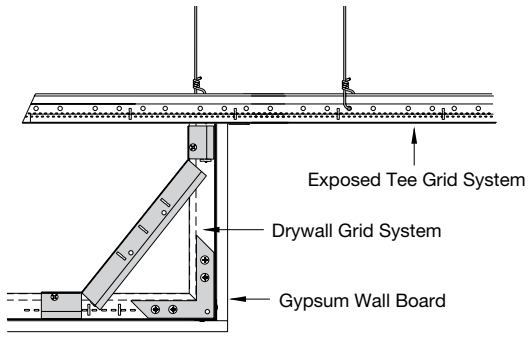




13 Triple Layer with Security Lath



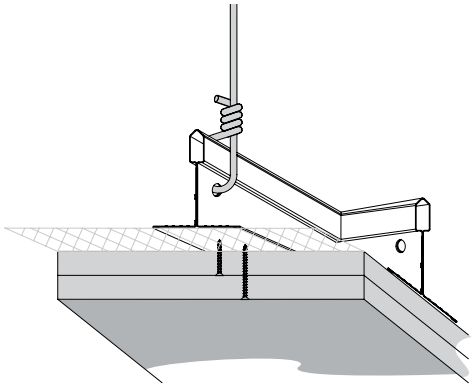
17 Transition



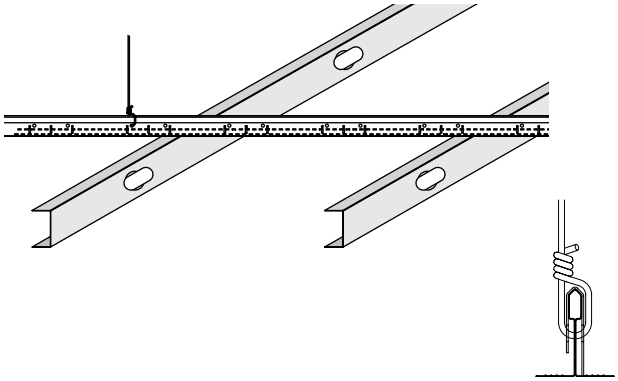
NOTE: Brace as required by code

20 Drywall Vertical

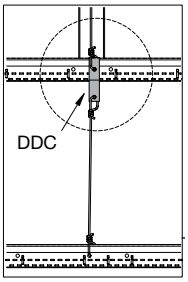
Suspended Drywall Grid System Details



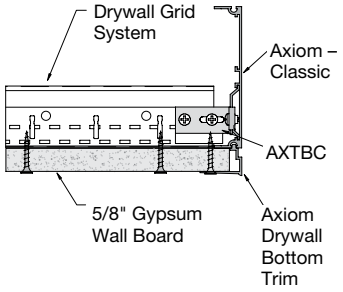
14 Double Layer with Security Lath

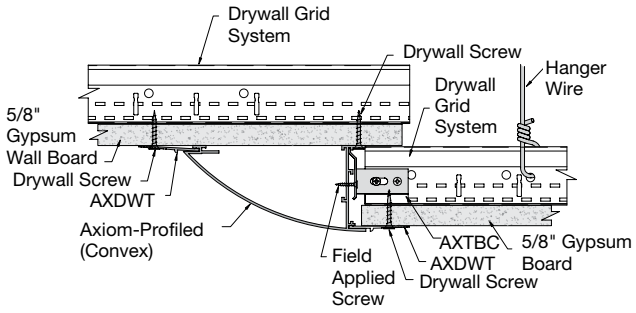


15 Main Beam Stabilizer

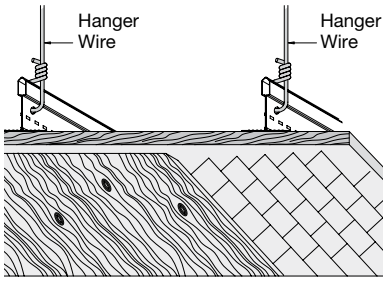


16 Double Hung Ceiling

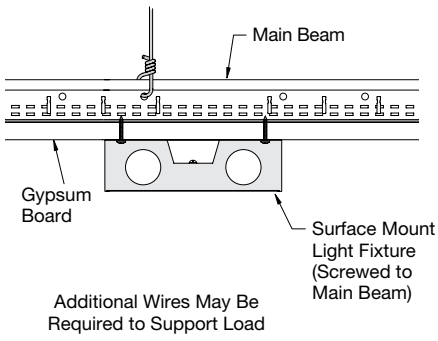




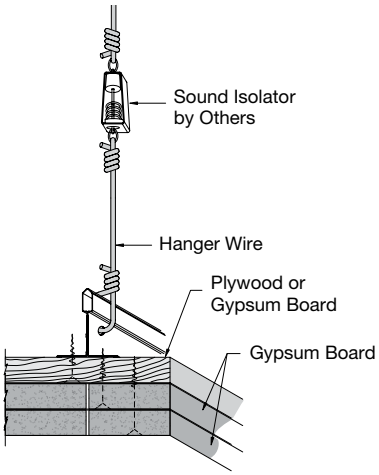
18 Axiom® Perimeter Trim



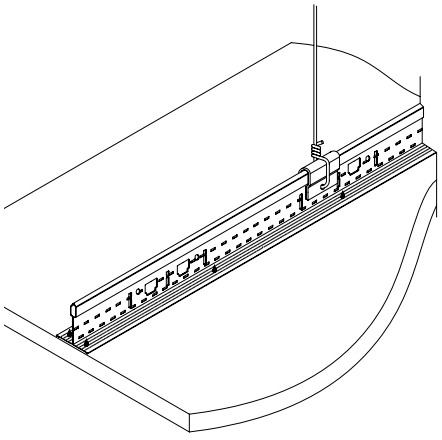
19 Alternate Finishes



21 Surface Mount Fixture



22 Triple Layer with Sound Isolators



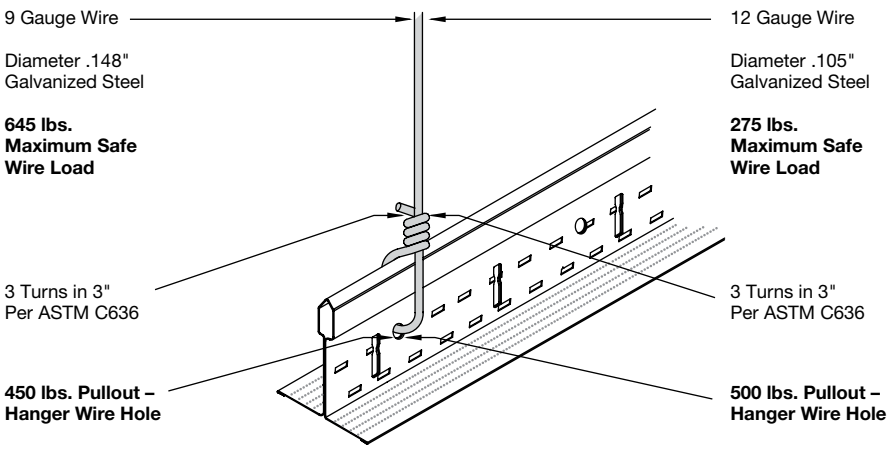
NEW **23** HD8906 with IIC Clip

Wire Loading

wire loading

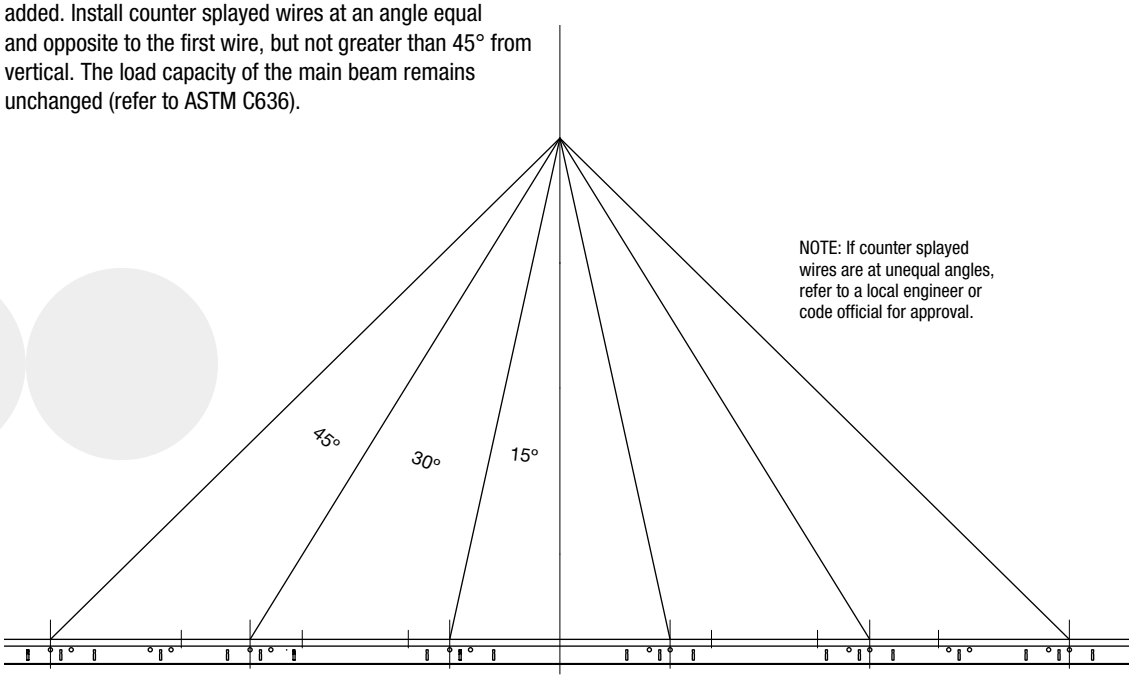
9 Gauge Wire Breaking Strength and Technical Data

12 Gauge Wire Breaking Strength and Technical Data



Counter Splayed Wires

Objects in the plenum may obstruct placement of vertical hanger wires and require splayed wires to support the load. When this occurs, a second counter splayed wire must be added. Install counter splayed wires at an angle equal and opposite to the first wire, but not greater than 45° from vertical. The load capacity of the main beam remains unchanged (refer to ASTM C636).



NOTE: If counter splayed wires are at unequal angles, refer to a local engineer or code official for approval.

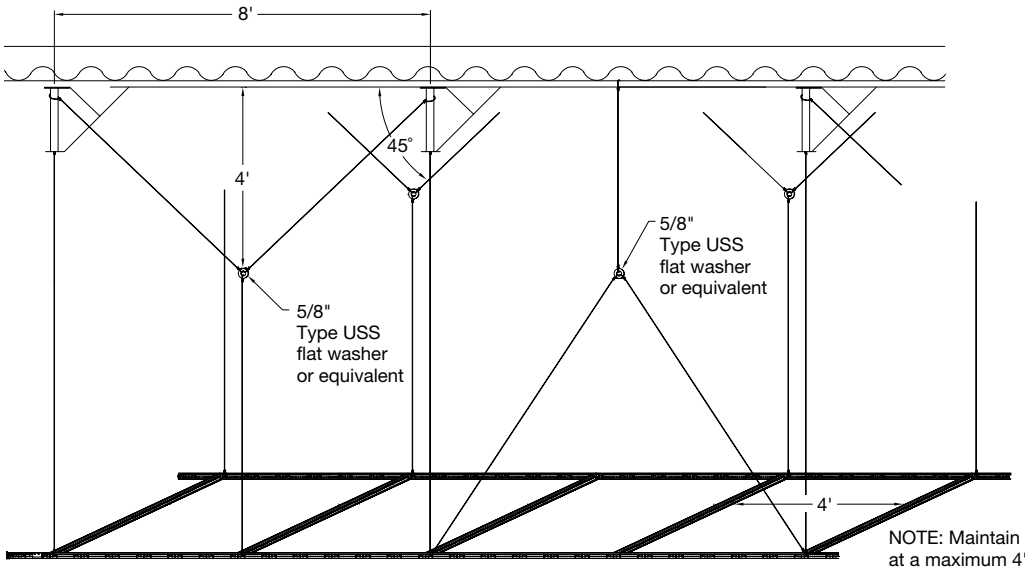
Yoke Wire Hung Ceilings

yoke wire

Another method to install hanger wires around an object in the plenum is to utilize a single or double yoke wire technique.

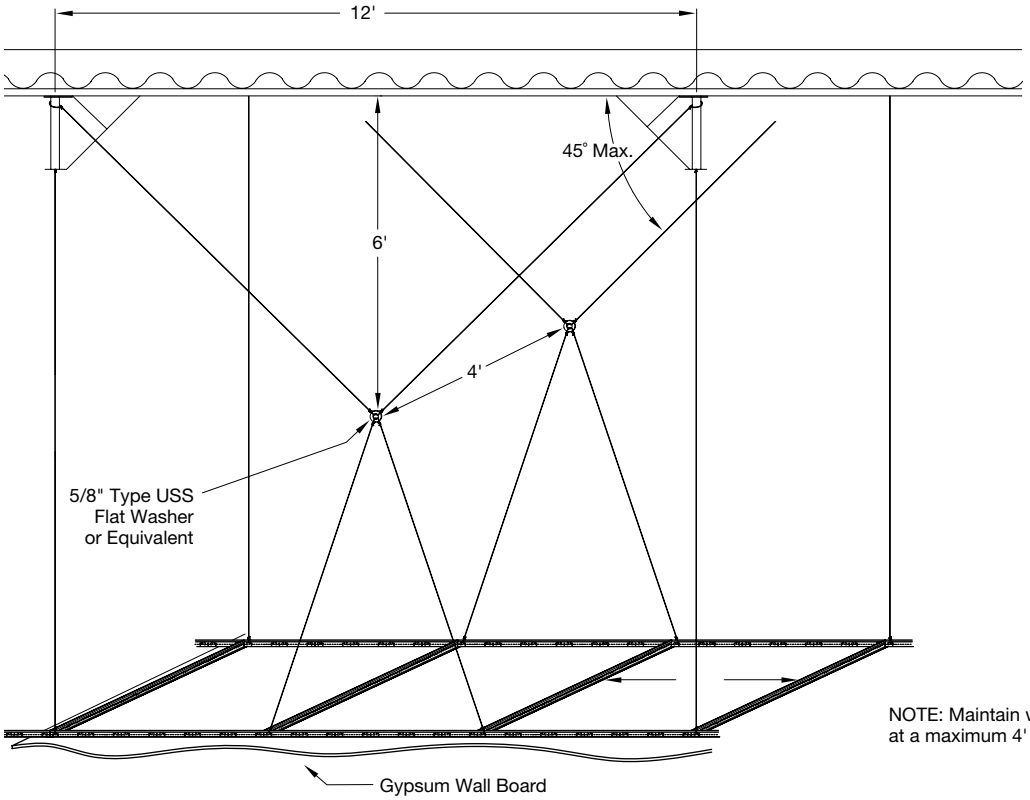
Rule: To form the 45-degree angle, the vertical location of the tension ring is always half the distance of the span at the structure.

Single Yoke



NOTE: Maintain wire spacing at a maximum 4' on center.

Double Yoke

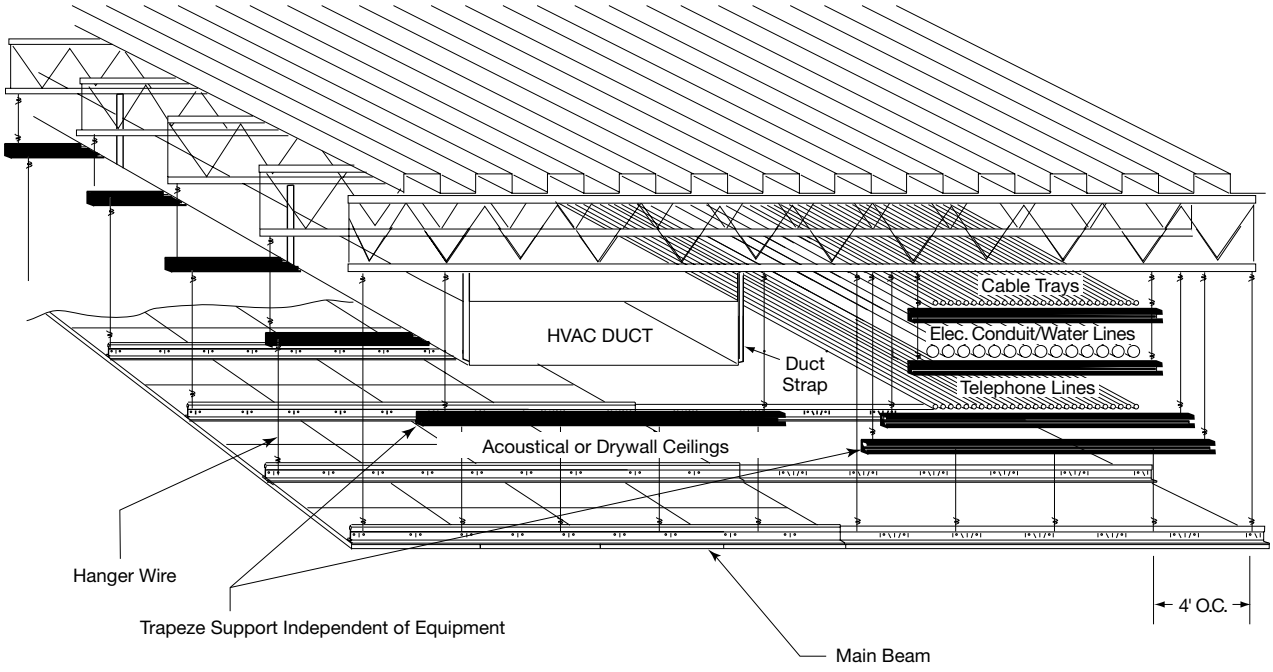


NOTE: Maintain wire spacing at a maximum 4' on center.

Trapeze Supported Loads

trapeze supported loads

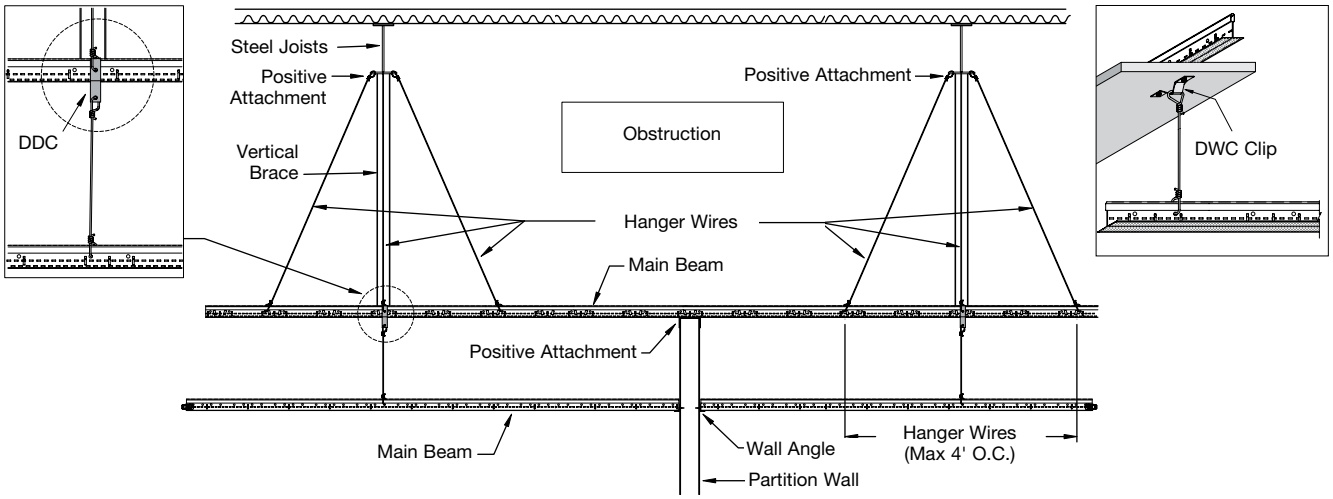
Installing a trapeze is a technique to support multiple hanger wires under obstructions, such as trunk lines, cable trays, or other objects in the plenum. In some cases, the trapeze may affect the ceiling height and must be kept small. In other cases, steel studs may be used to span the distance required.

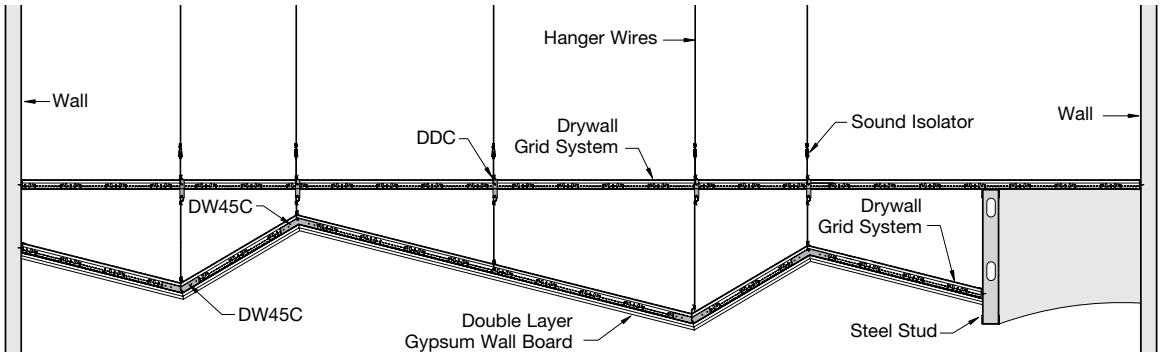


Hanging and Framing

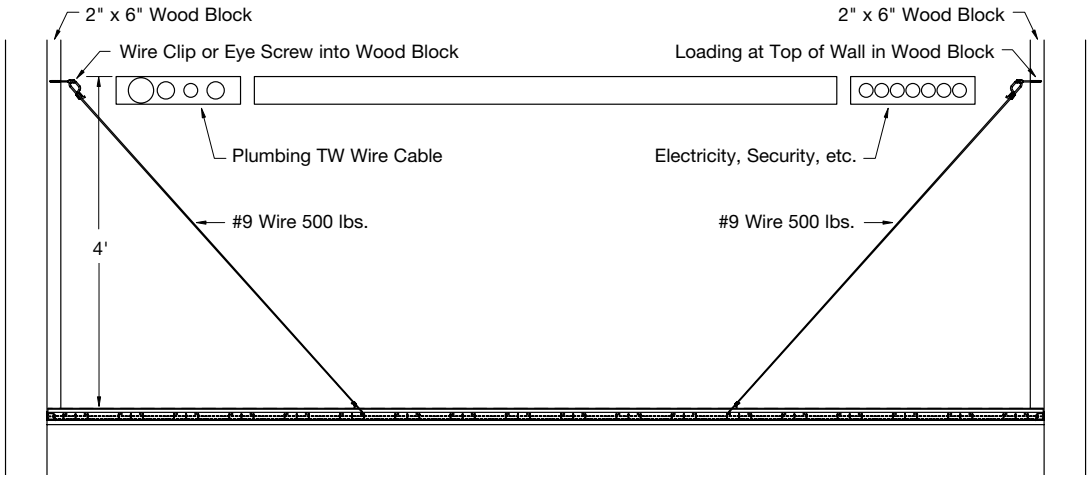
Double Hung Ceilings

A suspended ceiling not only carries the load of the applied finish, but can also act as a load carrying structure or membrane that supports another ceiling at a lower level. The DDC clip is used at hanger wire locations to allow for connecting the second and even third ceiling. This method of hanging and framing is used in multi-layer ceilings with long vertical drops – eliminating the use of long stud drops.



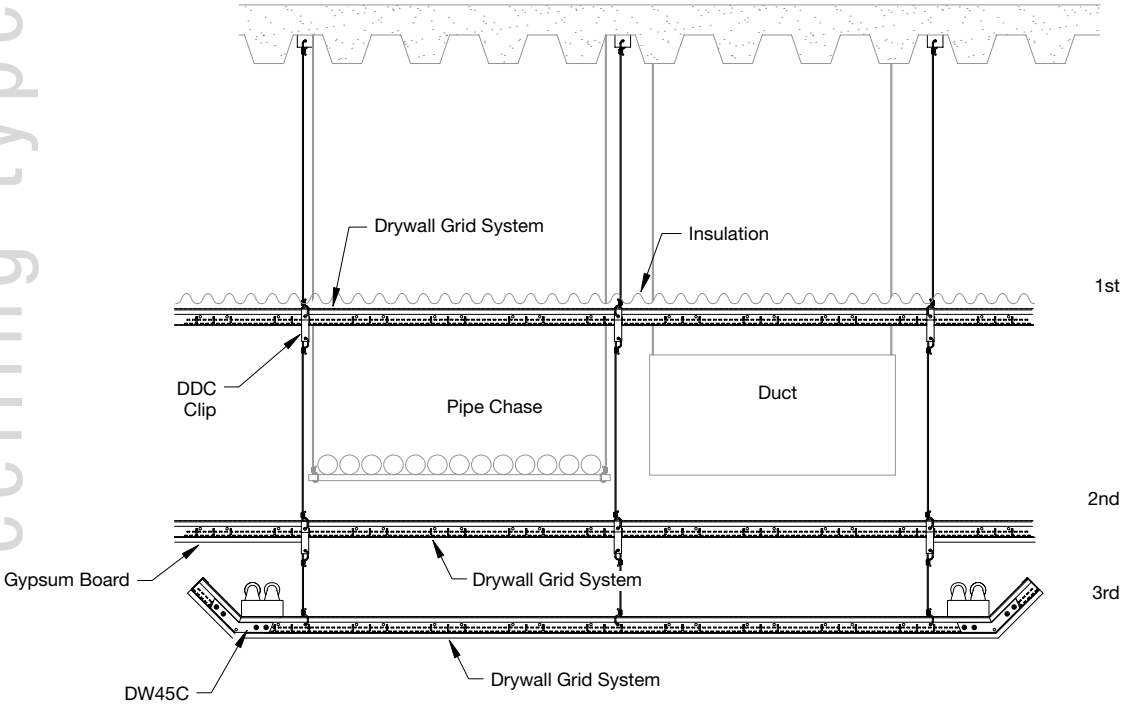


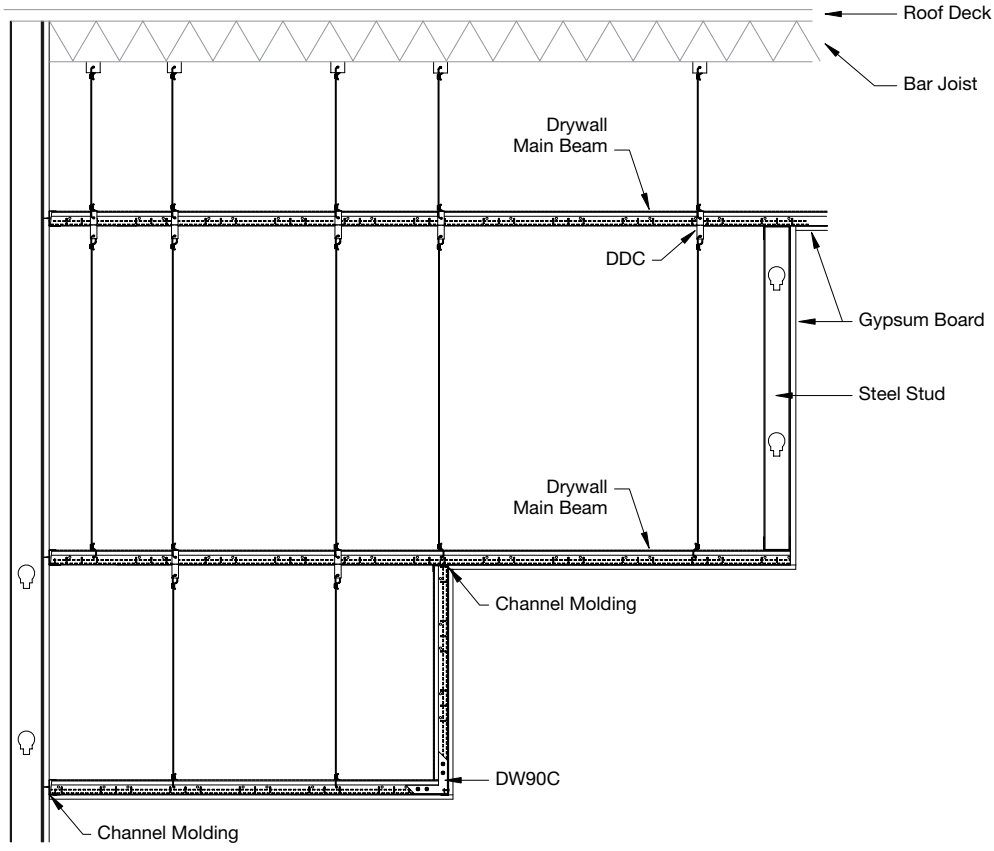
Gusset Hung Ceiling



Triple Hung Ceilings

ceiling type





Exterior Wind Load Ceiling Design For North America											
Plenum Height (ft.-in.)	Design Wind Velocity (MPH)	Design Wind Pressure (PSF)	Compression Post Size (Inch)	Compression Post Gauge (Ga. No.)	Sheathing Membrane Substrate 5/8" Drywall Sheet Densglass Gold G-P	Compression Post Spacing (ft.-in.)	Main Beam Spacing (Inch)	Cross Tee Spacing (Inch)	Hanger Wire Spacing (ft.-in.)	Cross Tee Length (Feet)	Compression Post Load Design Load (Lbs.)
0 ↓ 6' ***	15	5.07	2-1/2" CWN	20	5/8" G.P. Densglass & 1/4"-3/8" EIFS	4' – 2"	48"	16"	4'	4'	18
	30	2.03	2-1/2" CWN	20	5/8" G.P. Densglass & 1/4"-3/8" EIFS	4' – 2"	48"	16"	4'	4'	49
	45	4.56	2-1/2" CWN	20	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 6"	48"	16"	4'	4'	96
	60	8.1	2-1/2" CWN	20	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 6"	36"	16"	4'	3'	125
	90	18.24	2-1/2" CWN	20	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 4"	24"	16"	3'	2'	178
	120	32.43	2-1/2" CWN	20	5/8" G.P. Densglass & 1/4"-3/8" EIFS	2' – 8"	24"	16"	2' – 6"	2'	266
	140	44.14	2-1/2" CWN	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	2' – 4"	24"	16"	2' – 6"	2'	331
	172	75	2-1/2" CSJ	18	See NOA 12-0314.05 Design	2'	24"	16"	2'	2'	445
	172	75	2-1/2" CSJ	18	See NOA 12-0314.04 Design	2' – 6"	36"	16"	2' – 6"	3'	565
6' 1" ↓ 10' 3" ****	15	5.07	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	4' – 2"	48"	16"	4'	4'	18
	30	2.03	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3'-10"	48"	16"	4'	4'	49
	45	4.56	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 6"	48"	16"	4'	4'	96
	60	8.1	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 6"	36"	16"	4'	3'	125
	90	18.24	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 4"	36"	16"	3'	2'	178
	120	32.43	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	2' – 8"	24"	16"	2' – 6"	2'	266
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	172	75	2-1/2" CSJ	18	See NOA 12-0314.05 Design	2'	24"	16"	2'	2'	445
	172	75	2-1/2" CSJ	18	See NOA 12-0314.04 Design	2' – 6"	36"	16"	2' – 6"	3'	565
10' 4" ↓ 15' 0" ****	*15	5.07	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	4' – 2"	48"	16"	4'	4'	18
	*30	2.03	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3'-10"	48"	16"	4'	4'	49
	*45	4.56	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 6"	48"	16"	4'	4'	96
	*60	8.1	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 6"	36"	16"	4'	3'	125
	*90	18.24	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 4"	36"	16"	3'	2'	178
	*120	32.43	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	2' – 8"	24"	16"	2' – 6"	2'	266
	*140	44.14	2-1/2" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	2' – 4"	24"	16"	2' – 6"	2'	331
	*172	75	2-1/2" CSJ	18	See NOA 12-0314.05 Design	2'	24"	16"	2'	2'	445
	*172	75	2-1/2" CSJ	18	See NOA 12-0314.04 Design	2' – 6"	36"	16"	2' – 6"	3'	565
15' 1" ↓ 20' 0" ****	**15	5.07	3-5/8" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	4' – 2"	48"	16"	4'	4'	18
	**30	2.03	3-5/8" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 10"	48"	16"	4'	4'	49
	**45	4.56	3-5/8" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 6"	48"	16"	4'	4'	96
	**60	8.1	3-5/8" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 6"	36"	16"	4'	3'	125
	**90	18.24	3-5/8" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	3' – 4"	36"	16"	3'	2'	178
	**120	32.43	3-5/8" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	2' – 8"	24"	16"	2' – 6"	2'	266
	**140	44.14	3-5/8" CSJ	18	5/8" G.P. Densglass & 1/4"-3/8" EIFS	2' – 4"	24"	16"	2' – 6"	2'	331
	**172	75	3-5/8" CSJ	18	See NOA 12-0314.05 Design	2'	24"	16"	2'	2'	445
	**172	75	3-5/8" CSJ	18	See NOA 12-0314.04 Design	2' – 6"	36"	16"	2' – 6"	3'	565

* 1-1/2" 16 gauge U-Channel Bridging required at mid span for 10'4" up to 15'0"

** 1-1/2" 16 gauge U-Channel Bridging required at one-third points for 15'1" up to 20'0"

*** Compression Post and Ceiling System tested at the plenum design depth shown here for positive and negative wind speed pressure loads as listed

**** Compression Post Assemblies at this plenum design depth calculated by Dietrich Design Group

NOTE: For building heights over 20 feet, refer to ASCE 7-10 Chapter 6 Wind Loads

fire resistive

UL Fire Resistive Designs							
Deck Construction Type	UL Design Number	Concrete Thickness	# Drywall Layers	Minimum Drywall Thickness	Maximum Fixture Penetration (Ft^2/100 Ft^2)	Maximum Duct Penetration (In^2/100 Ft^2)	Drywall Grid System
FLOOR/CEILING DRYWALL ASSEMBLIES							
Concrete on Composite Flat Cellular, Fluted, or Blend Deck							
2-Hour	D501	2-1/2"	1	5/8"	None	None	DFR 8000
	D502**	2-1/2"	1	5/8"	24	144	DFR 8000
Concrete on Metal Lath, Corrugated, and Ribbed Deck							
3-Hour	G523**	3"	1	5/8"	24	144	DFR 8000
	G524***	3-1/2", 3-3/4"	1	1/2"	None	113	DFR 8000
	G529	3-1/4"	1	1/2"	24	57	DFR 8000
	G529	2-3/4"	1	5/8"	24	57	DFR 8000
2-Hour	G523	2-1/2"	1	1/2" or 5/8"*	24	144	DFR 8000
	G524***	3-1/2", 3-3/4"	1	1/2"	None	113	DFR 8000
	G527	2-1/2"	1	1/2" or 5/8"*	None	None	DFR 8000
	G529	2-1/2"	1	1/2"	24	57	DFR 8000
1-1/2-Hour	G528	2-1/2"	1	1/2" or 5/8"*	None	None	DFR 8000
	G524	2-3/4" – 3"	1	1/2" or 5/8"	***	***	DFR 8000
Precast Concrete Slab							
3-Hour	J502	2-3/4"	1	5/8"	None	None	DFR 8000
2-Hour	J502	2"	1	5/8"	None	None	DFR 8000
WOOD DECK/CEILING DRYWALL ASSEMBLIES							
Plywood 2 x 10 Wood Joists							
1-Hour	L502	NA	1	1/2"	None	None	DFR 8000
	L513	NA	1	5/8"	None	None	DFR 8000
	L515	NA	1	1/2"	None	None	DFR 8000
	L525	NA	1	1/2" or 5/8"*	24	57	DFR 8000
	L526**	NA	1	5/8"	24	114	DFR 8000
Plywood (2) 2 x 10 or (1) 4 x 10 Wood Joists							
1-Hour	L508	NA	1	5/8"	None	None	DFR 8000
Plywood with Wood Trusses							
1-Hour	L529	NA	1	5/8"	24	57	DFR 8000

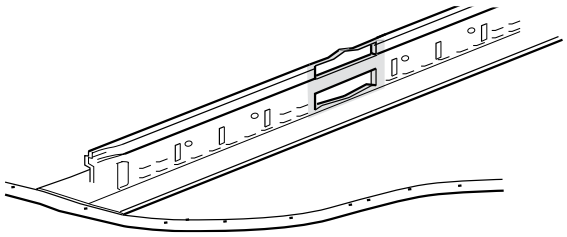
UL Fire Resistive Designs (continued)							
Deck Construction Type	UL Design Number	Concrete Thickness	# Drywall Layers	Minimum Drywall Thickness	Maximum Fixture Penetration (Ft^2/100 Ft^2)	Maximum Duct Penetration (In^2/100 Ft^2)	Drywall Grid System
DEITRICK TRADEREADY® FLOOR SYSTEM/CEILING DRYWALL ASSEMBLIES							
1-Hour	L564	3/4" Cement Fiber Units	1	5/8"	None	None	DFR 8000
1-Hour Corrugated Decking	G553	3/4"	1	5/8"	None	None	DFR 8000
ROOF/CEILING DRYWALL ASSEMBLIES							
Standing Seam Exposed Metal Roof With Batts/Blankets							
1-Hour	P516	NA	2	5/8"	None	None	DFR 8000
Mineral Fiber, Foam on Cellular, Fluted, Corrugated Metal Deck							
2-Hour	P501	NA	1	5/8"	None	None	DFR 8000
	P514	NA	1	5/8"	24	255	DFR 8000
1-1/2-Hour	P507	NA	1	5/8"	24	57	DFR 8000
	P510	NA	1	5/8"	24	57	DFR 8000
	P513**	NA	1	5/8"	24	144	DFR 8000
1-Hour	P508**	NA	1	5/8"	24	144	DFR 8000
	P509**	NA	1	5/8"	24	144	DFR 8000
	P510	NA	1	1/2"	24	57	DFR 8000
Mineral Fiber/Laminated Gypsum Planks							
1-1/2-Hour	P506	NA	1	5/8"	24	57	DFR 8000

* Depends on rating, manufacturer.
** Optional acoustical tile may be glue-applied to gypsum board.
*** Concrete thickness depends on joist depth used.

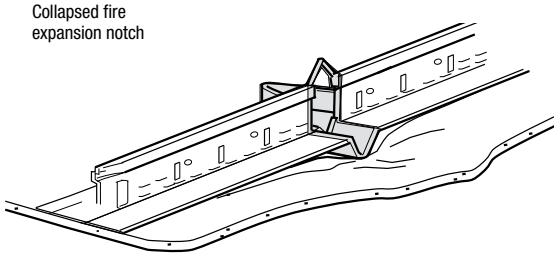
Armstrong Drywall "Design To Fit" Items XL7936G90 and XL8965 cannot be used as part of a UL Fire Resistive Design.
DFR 8000 – UL Designation, Fire Guard™ Drywall Grid System.

Fire Rated Expansion Joint

Fire expansion notch



Collapsed fire expansion notch



load data

Main Beam – Technical Load Test Data

Item Number	Flange Width (in.)	Length (in.)	Web Height (in.)	Simple Span (Lbs/LF)					
				4'		3'		2'	
				L/240	L/360	L/240	L/360	L/240	L/360
HD8906	1-1/2"	144"	1-11/16"	28.14	18.66	57.3	43.19	143.0	95.5
NEW HD8906**IIC**	1-1/2"	144"	1-11/16"	28.14	18.66	57.3	43.19	143.0	95.5
NEW HD8906**10**	1-1/2"	120"	1-11/16"	28.14	18.66	57.3	43.19	143.0	95.5

Cross Tees – Technical Load Test Data

Item Number	Flange Width (in.)	Length (in.)	Web Height (in.)	Simple Span (Lbs./LF)									
				72"		50"		4'		3'		2'	
				L/240	L/360	L/240	L/360	L/240	L/360	L/240	L/360	L/240	L/360
XL8965	1-1/2"	72"	1-1/2"	6.4	4.27								
XL8947P	1-1/2"	50"	1-1/2"			19.5	13.0						
XL8945P	1-1/2"	48"	1-1/2"					22.5	15.0				
XL8341	15/16"	48"	1-1/2"					24.8	16.59				
XL7341	15/16"	48"	1-11/16"					24.8	16.59				
XL7936**G90**	1-1/2"	36"	1-1/2"							50.0	33.3		
XL8925	1-1/2"	26"	1-1/2"									117.0	98.0
XL8926	1-1/2"	24"	1-1/2"									158.0	129.0
XL7918	1-1/2"	14"	1-1/2"									107.0	71.5

NOTE: Allowable loads tested per ASTM C635 for deflection limited to L/360 and complies with ASTM C645 for deflection limited to L/240. See standards for additional information.

Membrane Load Values

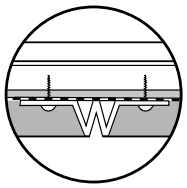
Component Combinations	Maximum Load in lbs./ft.^{2} at Hanger Wire/Cross Tee Spacing					
	48 / 24		48 / 16		36 / 16	
Main Cross Tee	L/240	L/360	L/240	L/360	L/240	L/360
HD8906 – XL8965	3.20		4.66			
HD8906 – XL8947P	6.78	4.52	6.78	4.52	13.41	8.95
HD8906 – XL8945P	7.03	4.69	7.03	4.69	14.93	9.95
HD8901 – XL8945P	6.18	4.12	6.18	4.12	11.61	7.74
HD8906 – XL7936**G90**					21.77	14.51
HD8901 – XL7936**G90**					21.77	14.51
HD8906 – XL8926					26.13	21.77

basic products

Basic Products Used on Suspension Systems					
Material	Weight Lbs/SF	Maximum Main Beam Spacing	Maximum Cross Tee Spacing	Maximum Wire Spacing	Load on Wire
OSB 1/4"	0.9	48"	8" – 16"	48"	14.4 Lbs.
3/8"	1.3	48"	16"	48"	20.8 Lbs.
1/2"	1.7	48"	16"	48"	27.2 Lbs.
5/8"	2.2	48"	24"	48"	35.2 Lbs.
3/4"	2.5	48"	24"	48"	40.0 Lbs.
Plywood 1/4"	.075	48"	8" – 16"	48"	12.0 Lbs.
3/8"	1.1	48"	16"	48"	17.6 Lbs.
1/2"	1.5	48"	16"	48"	24.0 Lbs.
5/8"	1.8	48"	24"	48"	28.8 Lbs.
3/4"	2.2	48"	24"	48"	35.2 Lbs.
Gypsum Board 1/4"	1.2	48"	8" – 16"	48"	19.2 Lbs.
3/8"	1.4	48"	16"	48"	22.4 Lbs.
1/2"	2.0	48"	16"	48"	32.0 Lbs.
5/8"	2.4	48"	24"	48"	38.4 Lbs.
3/4"	4.2	48"	16"	48"	67.2 Lbs.
Cement Board 1/2"*	3.0	48"	24"	48"	48.0 Lbs.
Cement Siding 5/8"*	1.9	48"	16"	48"	30.4 Lbs.
Hard Board Siding 1/2"	2.0	48"	16"	48"	32.0 Lbs.
Water-Resistant Gypsum Board 5/8"	3.42	48"	16" or 24"	48"	57.7 Lbs.
Water-Resistant Gypsum Board 1/2"	2.8	48"	16"	48"	44.8 Lbs.
Expanded Steel Lath	3.4	48"	16"	48"	54.4 Lbs.
12 Gauge Sheet Steel	4.5	24"	16"	48"	72.0 Lbs.

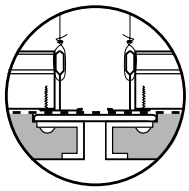
NOTES: All framing on the exterior should be 16" O.C. or less.
Some manufacturers make 1/2" gypsum board with special core to span 24" framing on interior ceiling installations (available on request).
All steel product on exterior made from G90 galvanized finish.
Data based on manufacturer's published data.
* Use lower RPM (1,000-2,500) screw gun to install cement board screws with intermittent pressure.

Control Joints



Please refer to ASTM C840, Section 20.3.3 to 20.4 for Control Joint Requirements.

Expansion Joints



Ceiling expansion joints are installed to separate the metal suspension system when expansion joints occur in buildings or when metal changes direction. Expansion joints are required to separate a system in T-, H-, I-, and U-, or circle-shaped buildings to eliminate cracking from expansion.

Sound Control

sound control

The IBC uses two sound classes to measure sound isolation performance in building construction:
Sound Transmission Class (STC) – sound transmitted through the air such as voices and music.
Impact Insulation Class (IIC) – sound transmitted through the building structure such as foot traffic and objects dropped on the floor.

A rating of 50 or above for both STC and IIC sound tests will satisfy the IBC's minimum requirements.

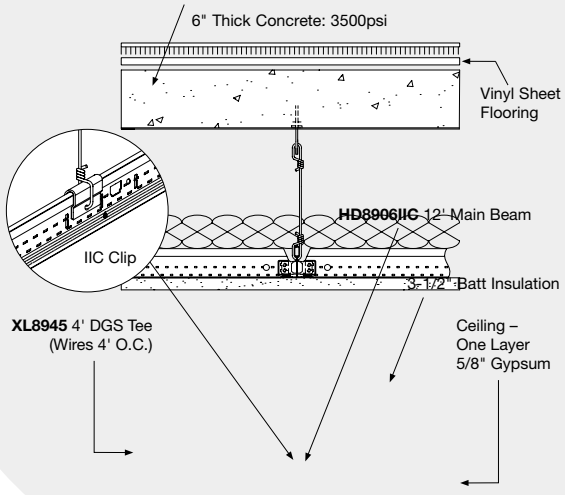
Understanding Sound Control Ratings	
STC/IIC Ratings	**Description**
55	**Excellent**
50	Loud speech barely audible
45	Some loud speech audible – not understood
30	Loud speech audible – well understood
25	Regular speech audible and understood through walls

Changes in STC/IIC Ratings	**Description**
+ / - 1	Almost perceptible
+ / - 3	Just perceptible
+ / - 5	**Clearly Perceptible**
+ / - 10	Twice (or half) as loud

Satisfy IBC requirements with a rating of 50 or above for STC and IIC sound tests – without two layers of drywall using Armstrong Drywall Grid.

Traditional Assembly – Field Tested Data				
	Traditional Assembly	**Building Structure**	**STC**	**IIC**
	1-1/2" Black Iron / 7/8" Channel 3-1/2" Batt Insulation 5/8" Gypsum	Bare Concrete Base 3" Concrete Slab Fluted Steel Decking 8" Bar Joist, 24" o.c.	55	48
Armstrong Standard Drywall Grid Assembly – Field Tested Data				
Item Number	**Armstrong Assembly**	**Building Structure**	**STC**	**IIC**
HD8906 XL8945	12' Main Beam / 4' Cross Tee 3-1/2" Batt Insulation 5/8" Gypsum	Bare Concrete Base 3" Concrete Slab Fluted Steel Decking 8" Bar Joist, 24" o.c.	55	47
Armstrong IIC Drywall Grid Assembly – Field Tested Data				
Item Number	**Armstrong Assembly**	**Building Structure**	**STC**	**IIC**
HD8906IIC XL8945 IIC Clip	12' Main Beam / 4' Cross Tee IIC Clip 3-1/2" Batt Insulation 5/8" Gypsum	6" Thick Slab Concrete Base with Vinyl Sheet Flooring	57	66

Armstrong IIC Drywall Grid Assembly



Estimating Material

estimating

Item Number	Length	Pcs/Ctn	LF/Ctn	Lbs./Ctn	Area of ceiling completed by one carton (SF)						
					8" O.C.	16" O.C.	24" O.C.	36" O.C.	48" O.C.	50" O.C.	72" O.C.
DRYWALL GRID MAIN BEAM											
HD8906/HD8906**G90**/HD8906**IIC** NEW	144"	12	144	53			288	432	576	600	864
HD8906**F08**/HD8906**F16**	144"	12	144	53			Varies with radius				
NEW HD8906**10**	120"	12	120	49			288	432	576	600	864
DRYWALL GRID 1-1/2" FACE CROSS TEES											
XL8965	72"	36	216	78	144	288	432				
XL8947P/XL8947**PG90****	50"	36	150	56	100	200	300				
XL8945P/XL8945**PG90**	48"	36	144	52	96	192	288				
XL7936**G90**	36"	36	108	39	72	144	216				
XL8925/XL8925**G90****	26"	36	78	28							
XL8926/XL8926**G90**	24"	36	72	26	48						
XL7918**	14"	36	42	14							
DRYWALL GRID 15/16" FACE CROSS TEES											
XL7341/XL8341	48"	60	240	71		320	480				

** Dimensions are nominal.

Item Number	Length	Pcs/Ctn	LF/Ctn	Lbs/Ctn
REVERSE MOLDINGS				
7857	120"	30	360	51
7858	120"	20	240	67
DRYWALL UNHEMMED CHANNEL MOLDING				
7838	120"	20	200	36
DRYWALL ANGLE MOLDING				
HD7801**G90**	120"	30	300	38
KAM-12	144"	20	240	39
KAM-10	120"	20	200	33
LAM-12	144"	20	240	39

Estimating Lineal Feet of Grid Based on Square Footage of Ceiling	
On-center Spacing of Component	Percent of Square Footage
8"	108%
12"	100%
16"	76%
20"	60%
24"	50%
30"	40%
36"	33%
48"	25%
60"	20%

Example calculation based on 5,100 SF ceiling:

Main beam at 48" O.C.
5,100 SF x .25 = 1,275 LF
1,275 LF ÷ 144 LF/Ctn = 9 cartons needed

Cross tee at 16" O.C.
5,100 SF x .76 = 3,876 LF
3,876 LF ÷ 144 LF/Ctn = 27 cartons needed

Cross tee at 24" O.C.
5,100 SF x .50 = 2,550 LF
2,550 LF ÷ 144 LF/Ctn = 18 cartons needed

For additional information regarding Armstrong® Drywall Systems visit armstrong.com/drywallgrid or reference:

BPCS-3539 Drywall Grid Systems for Flat Applications	BPCS-3540 Drywall Grid Systems for Curved Applications	BPCS-3541 Stucco/Plaster Grid Systems	BPCS-3542 Synthetic Stucco Grid Systems

CEILING Systems

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- Latest product and program news
- Real-time selection and technical information
- Contacts – reps, where to buy, how to install
- Submittal pages
- Literature and samples information
- CAD renderings

These drawings show typical conditions in which the Armstrong product depicted is installed. They are not a substitute for an architect's or engineer's plan and do not reflect the unique requirements of local building codes, laws, statutes, ordinances, rules and regulations (legal requirements) that may be applicable for a particular installation.

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