MetalWorks® Mesh Torsion Spring

Assembly and Installation Instructions

1. GENERAL

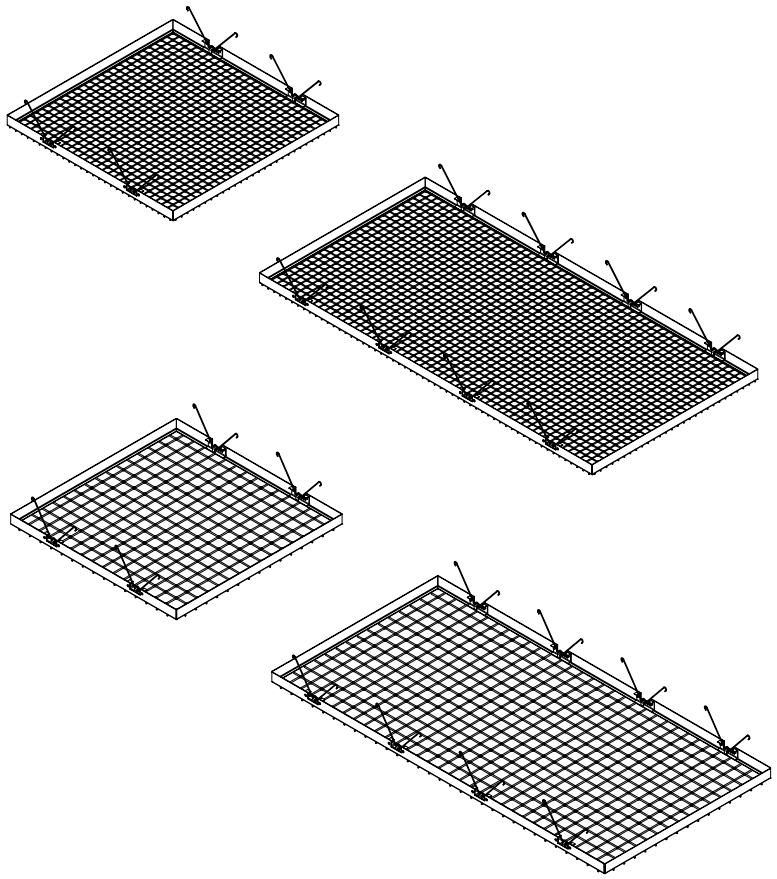
1.1 Product Description

MetalWorks™ Mesh Torsion Spring panels are manufactured from stainless steel wires that are welded or woven. The system is comprised of downward accessible ceiling panels available in 24" × 24" and 24" × 48" sizes. It is designed to install on a 15/16" Prelude® suspension system that includes items that are pre-slotted to accept the factoryapplied panel springs. For a clean visual, black 360° grid with black painted plenum is recommended.

MetalWorks Mesh Torsion Spring panels are produced with factory-applied powder coating available in White, Silver Grey, Gun Metal Grey, Tech Black, Copper, Bronze, Nickel Chrome, and a wide range of custom colors. For acoustic solutions, acoustic infill panels can be installed above the panels. The best aesthetics can be achieved with black Calla®, School Zone® Fine Fissured™, and BioAcoustic™ Infill Panels. When combining Mesh Torsion Spring panels with acoustic panels, consider overall system weight for suspension system requirements. ***(Fig 1)***

1.2 Storage and Handling

MetalWorks Mesh Torsion Spring panels should be stored in a dry interior location and shall remain in their original crate prior to installation to avoid damage. Crate contains foam lining to protect panel edges. Panels could potentially scratch one another, so keep back-to-back, and face-to-face for transporting. Keep in the protective packaging until installation. When handling the panels, proper care should be taken to avoid damage and soiling. For some patterns, it is likely that fingerprints will have to be wiped clean. See Cleaning Section 1.9.



(Fig 1)

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1.3 Site Conditions

Areas to receive ceilings must be free of construction dust and debris. Panels should only be installed in closed and acclimatized buildings. Such installations shall not be exposed to abnormal conditions, namely: chemical fumes, presence of standing water, or contact with moisture, as this could result from condensation or building leaks. Panels are intended for interior use only, therefore cannot be used in exterior applications.

1.4 Fire Performance and Sprinklers

MetalWorks™ Mesh Torsion Spring panels have Class A fire performance based on E-84 testing. Panels may obstruct or skew the existing or planned fire sprinkler water distribution pattern, or possibly delay the activation of the fire sprinkler or fire detection system. Designers and installers are advised to consult a fire protection engineer, NFPA 13, and their local codes for guidance on the proper installation techniques where fire detection or suppression systems are present. Refer to the Percent Open Area table on the data page to determine if you can install sprinklers above the Mesh Torsion Spring panel and confirm with the code official. A hole may be cut through the panel to allow for sprinkler head and other penetrations.

1.5 Safety Considerations

Product arrives in a crate – make arrangements for safe handling. The edges of MetalWorks Mesh Torsion Spring panels feature unique detailing. All edges are welded or prepared to minimize sharp edges. Use caution and always wear appropriate safety glasses and gloves to protect hands and eyes when installing metal panels to avoid injury.

Special consideration should be taken before field cutting panels. Please refer to Section 2.1 for cutting instructions for each pattern. For those that can be cut, utilize recommended tools and metal-cutting blades in good condition. Improper cutting equipment could damage or dent the panels and cause welds to fail. If a project requires special size panels, consult Architectural Specialties.

1.6 Warranty

The MetalWorks Mesh Torsion Spring system has been tested based on the installation method described in this document. Warranty will be voided if you do not follow instructions and guidelines.

1.7 HVAC Design & Operation and Temperature & Humidity Control

Proper design for both supply air and return air, maintenance of the HVAC filters and building interior space are essential to minimize soiling. Before starting the HVAC system, make sure supply air is properly filtered and the building interior is free of construction dust. Interior systems cannot be used where standing water is present or where moisture will come in direct contact with the ceiling.

1.8 Plenum

Although MetalWorks Mesh Torsion Spring panels install from below and panels never travel into the plenum space, it will require a minimum 4" clearance above the suspension system. This allows enough room for the springs to travel into the plenum space during installation or removal.

NOTE: Light fixtures and air handling systems may require more space and will usually determine the minimum plenum height for the installation.

1.9 Cleaning

An abrasive or strong chemical detergent should not be used. A mild detergent diluted in warm water, applied with a soft cloth, rinsed, and wiped off with a chamois will maintain the panels in good condition. Oily or stubborn stains, if not removed by washing, can be wiped with products like Fantastik®, but care is necessary to avoid affecting the gloss level of the paint.

2. DESIGN CONSIDERATIONS

2.1 Panel Properties

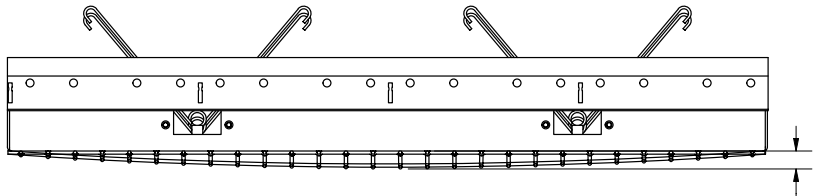
Refer to the chart on Page 9 (Back Page).

2.2 Sprinklers

See Fire Performance and Sprinklers Section 1.4.

2.3 Deflection and Cupping

Minimal deflection and cupping is expected as panels increase in size ***(Fig 2)***. It is possible to see deflection up to +/- 1/16" on the Woven patterns.



(Fig 2)

2.4 Plenum

See Plenum Section 1.8.

2.5 Suspension System

MetalWorks™ Mesh Torsion Spring uses a standard 15/16" suspension system. The elements of the system include pre-slotted Prelude® XL® 15/16" main beams with standard Prelude XL cross tees. The installation shall in all cases conform to the requirements of the International Building Code and its referenced standards. For a clean visual, black 360° grid with black painted plenum is recommended, along with 360° box molding and spreader hold down (7113BL3).

2.6 Exterior Installations

MetalWorks Mesh Torsion Spring panels are not intended for exterior use.

3. ACCESSORIES

3.1 Infill Panels

Backfill MetalWorks Mesh Torsion Spring panels with mineral fiber panels to maintain accessibility, add acoustics, and hide the plenum and suspension system. The best aesthetics can be achieved with black Calla®, School Zone® Fine Fissured™, and BioAcoustic™ Infill Panels.

3.2 Hook Panel Removal Tool (Item 7129)

See Section 5.5 for panel removal instructions.

3.3 Box Molding (Item 7125BL3)

See Section 4.3 for perimeter solutions.

3.4 Spreader Hold Down (Item 7113BL3)

See Section 4.3 for perimeter solutions.

4. SUSPENSION SYSTEM (WALL-TO-WALL)

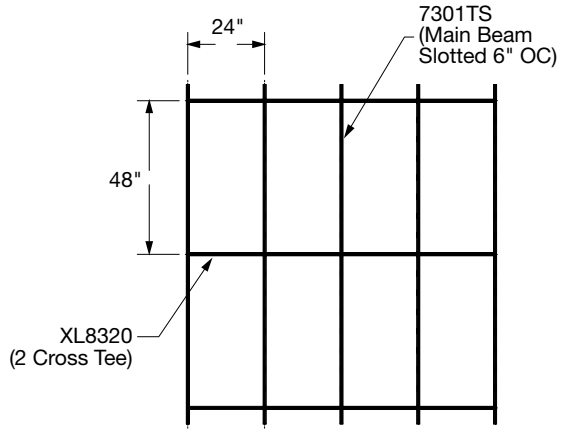
The requirements listed here represent the manufacturer's minimum acceptable installation requirements established by the local authority having jurisdiction. All installations should follow ASTM C636. All references to suspension component duty ratings are per ASTM C636.

Hangers and bracing are to comply with all local code requirements. The suspension system shall be properly installed and leveled using no less than 12-gauge galvanized steel wire. Suspension system installation shall conform to ASTM C636 requirements.

The suspension system for all panel sizes must be leveled to within 1/4" in 10' and must be square to within 1/16" in 2'. 90° Alignment Clips (BPM315710) can be used to assure the grid system meets the squareness requirement.

4.1 24" × 24" and 24" × 48" Panels

Prelude® XL® HD main beams that are pre-slotted 6" O.C. (Item 7301TSBL3) for MetalWorks™ Mesh Torsion Spring panels are installed every 24" O.C. with hanger wires every 48". Then 2' Prelude cross tees (Item XL8320BL3) shall intersect the main beams at 90 degrees every 48". Springs on the panel will be inserted into the main beams ***(Fig 3)***.



(Fig 3)

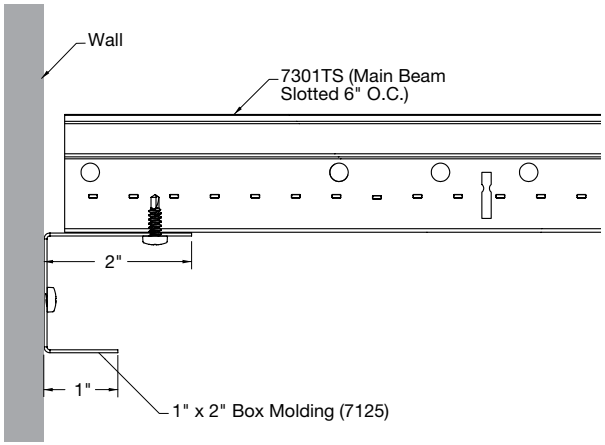
4.2 Main Beam

Location of the first main beam shall be as detailed on the reflected ceiling plan to provide borders that are equal in size and greater than 1/2 of the full panel width. Pay close attention when cutting this first main beam to length; make sure that the slots in the main beam are in the correct position to accept the springs attached to the panel size being installed.

4.3 Perimeter Solutions

Box Molding

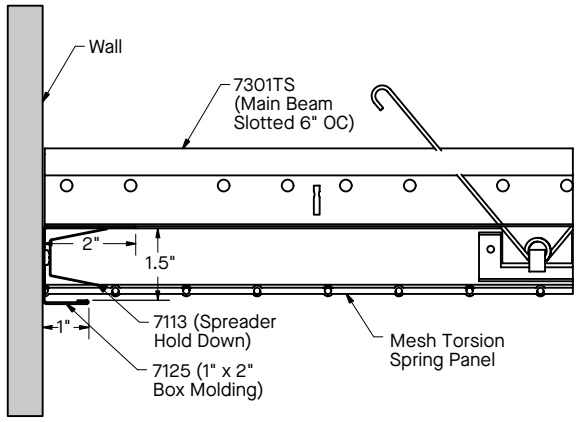
Perimeters are trimmed with Box Molding (Item 7125BL3) attached with appropriate fasteners. The suspension system will rest on the upper 2" flange of the box molding and the panel edges will rest on the bottom 1" flange ***(Fig 4)***.



(Fig 4)

Perimeter Cut Panels

Cut edges are held down against the molding by inserting a Spreader Hold Down (Item 7113BL3) into the molding, between the upper and lower flanges, over each cut panel ***(Fig 5)***. The Spreader Hold Down is 10.625" long, so use the appropriate amount of hold downs for the panel edge dimension.

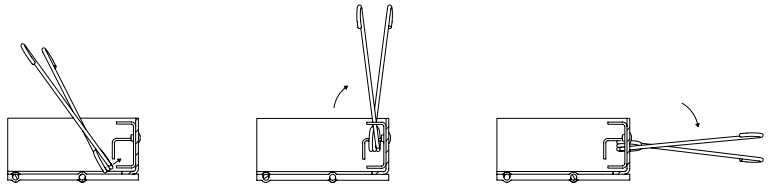


(Fig 5)

5. PANEL INSTALLATION

5.1 Panel Assembly

Springs will need to be installed on panel bracket prior to installation, ensure you have the number of springs required for each panel which should be included in the panel packaging. Insert springs to each bracket following the 3 steps shown below ***(Fig 6)***:



Step 1 *Step 2* *Step 3*

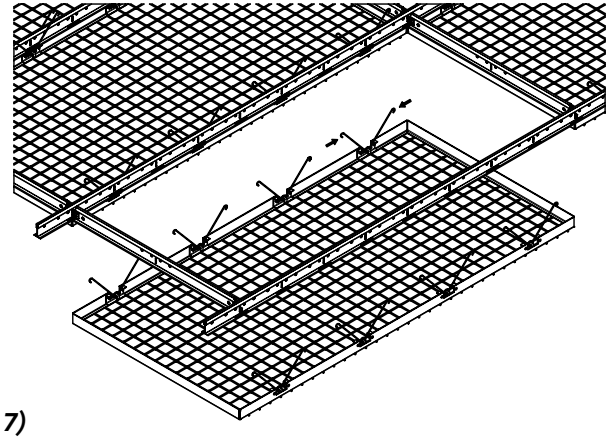
(Fig 6)

5.2 Panel Directionality

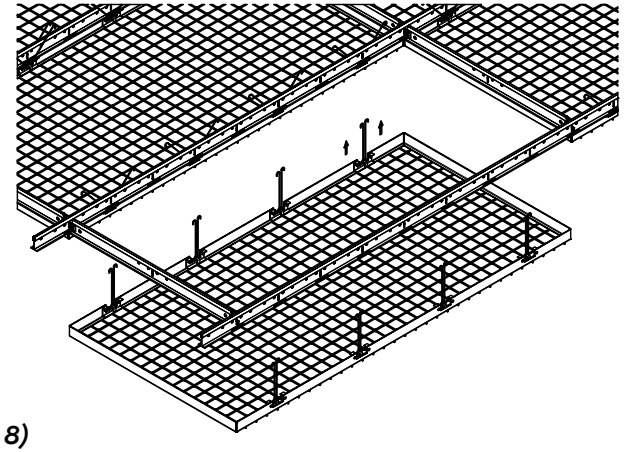
Panels are mechanically directional. Panels have two supporting sides, opposite each other, which feature a set of springs that engage the main beam and retain the panel. Install so weave pattern in corners match (Wired over top or under bottom – 180-degree directional).

5.3 Installing Panel on Suspension System

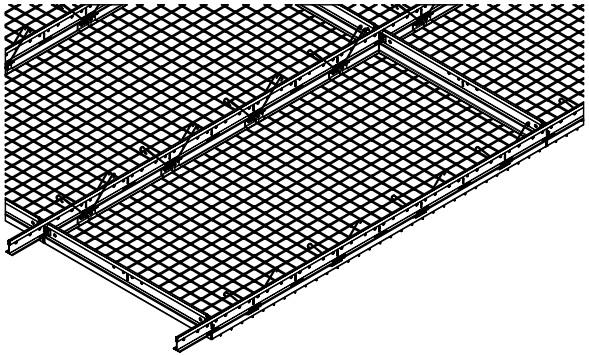
Align the springs with the slots in the flange of the main beam. Compress the spring and insert it into the corresponding slot. Follow this same process for each spring on the panel. Then press up into place with the palm of the hand. The springs should spread apart in the slots of the grid and seat the panel into place ***(Figs 7, 8 & 9)***.



(Fig 7)



(Fig 8)



(Fig 9)

5.4 Cut Panels

Cut panels should never occur within the field of the ceiling. All ceiling mounted services must either replace a full panel, install into a hole that is cut into a panel, or be mounted through the face of a panel.

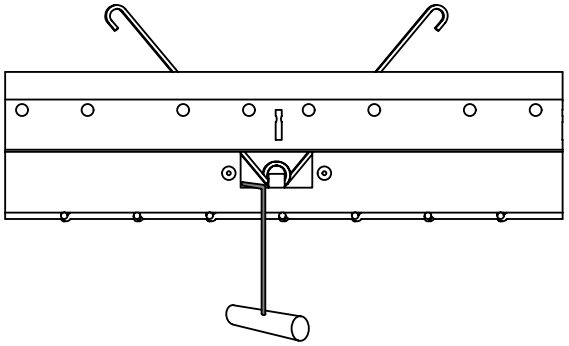
MetalWorks™ panels can be cut to size at the perimeters using standard tools and methods for metal panels. It is recommended to use a metal cutting circular saw with a non-ferrous metal cutting blade (consult blade manufacturer for specific recommendation).

Reference the table on Page 9 (Back Page) to see recommendations for cutting the mesh portion of the panel.

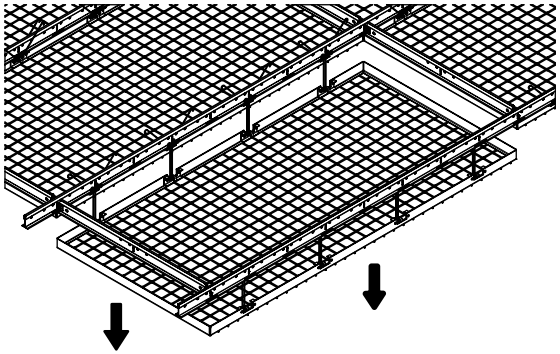
5.5 Panel Removal

All panels are removable without moving up into the plenum.

The Hook Panel Removal Tool (Item 7129) ***(Fig 10)*** is inserted into the joint between two panels. Make sure to insert the tool within 6" from a panel intersection to grab the correct part of the panel. Twist the tool 90 degrees to hook the top of the panel. Then pull the tool downward, slowly, until the spring catches on the flange of the grid and can be seen. Now that the spring has become accessible, push the spring together, slide it down through the slot, and pull down gently to release the panel from the main beam ***(Fig 11)***.



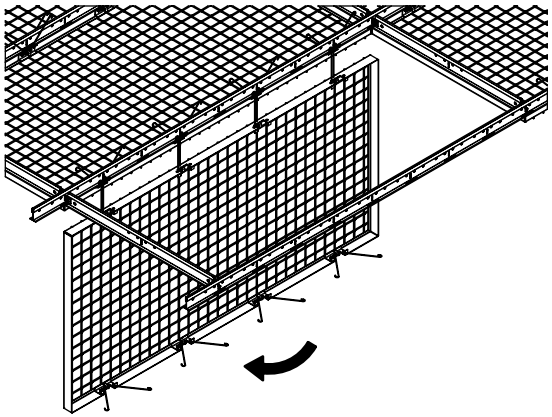
(Fig 10)



(Fig 11)

Adjacent panels may be removed from the same row of main beams without further use of the tool.

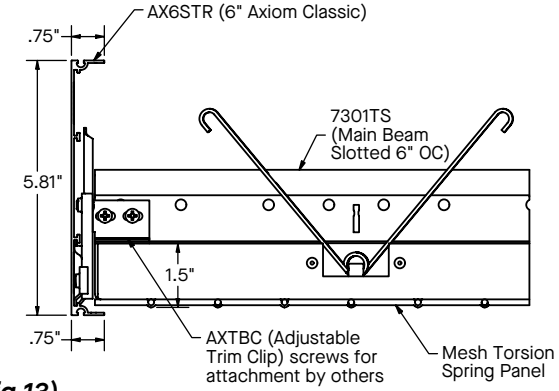
The panel is designed to provide swing-down accessibility. Using one of the above methods, pull the panel down until all springs catch on the flange of the grid and can be seen. Disengage all springs from one side of the panel. This will allow the panel to swing down and be supported by the springs on the opposing side. Be sure to guide the panel into its resting position to avoid introducing unnecessary forces into the panel or system ***(Fig 12)***.



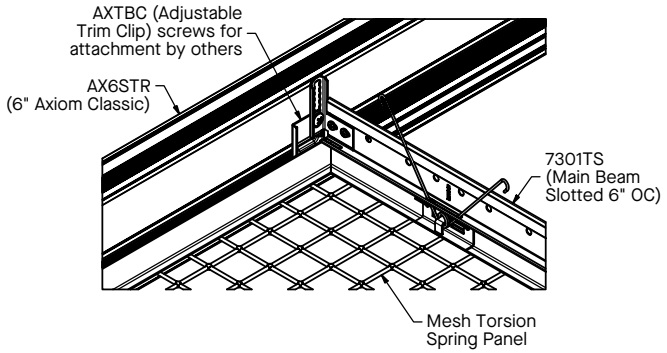
(Fig 12)

6. FLOATING PERIMETER / DISCONTINUOUS SYSTEMS

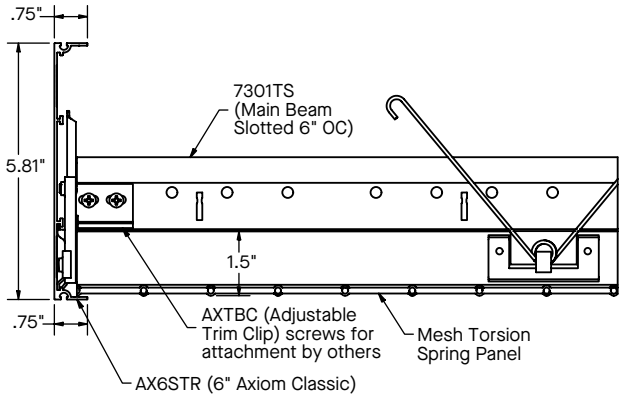
The suspension layout for floating perimeters or cloud applications should be the same as what is detailed in Sections 4.2, for the specific panel sizes. Please note that main beams and cross tees need to be in place around the entire perimeter so perimeter trim can be attached to the suspension system. Item 7131 is a formed perimeter trim available in Lacquer Mill, Satin Anodized, and Brushalume finishes. 7131 trim will need to be field painted black to coordinate with 360 painted black grid. The perimeter trim is designed for straight perimeters and should not be curved. Axiom® Classic is an extruded perimeter trim available in various color options. For best visual, we recommend 6" Axiom Classic painted black 360°. The adjustable trim clip, item 7239, is recommended to be field painted in black to coordinate and blend in with Axiom Classic and suspension system which are painted 360°. In order to accommodate panel depth and springs, less than 6" trim is not recommended. Axiom Classic can also be curved for curve applications ***(Figs 13, 14, 15, & 16)***.



(Fig 13)

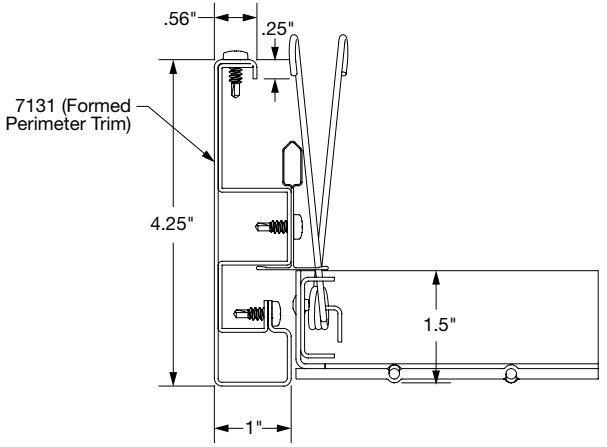


(Fig 14)



Detail for Field Cut Panels

(Fig 15)



(Fig 16)

7. SEISMIC

For more details on Seismic installations, please see our Seismic Design: What You Need to Know brochure.

7.1 Seismic Rx Cat C

- Ceiling installation should conform to basic minimums established in ASTM C636
- Minimum 7/8" wall molding
- Suspension system may be cut tight on two adjoining walls
- Minimum 3/8" clearance on two unattached walls
- BERC2 on all main beams and cross tees
- BERC2 maintains main beam and cross tee spacing; stabilizer bars are not required
- Safety wires are required on light fixtures
- Maximum ceiling weight of 2.5lb/ft^2

7.2 Seismic Rx Cat D, E & F

- Ceiling installation should conform to basic minimums established in ASTM C636
- Minimum 7/8" wall molding
- Suspension system must be attached on two adjacent walls – opposite walls require BERC2 with 3/4" clearance
- BERC2 maintains main beam and cross tee spacing; no other components are required
- Heavy-duty systems as identified in ICC-ESR-1308
- Safety wires are required on light fixtures
- Perimeter support wires within 8"
- Ceiling areas over 1,000 SF must have horizontal restraint wire or rigid bracing
- Ceiling areas over 2,500 SF must have seismic separation joints or full-height partitions
- Ceilings without rigid bracing must have 2" oversized trim rings for sprinklers and other penetrations
- Changes in the ceiling plane must have positive bracing

7.3 Suspension Layouts

Suspension layouts are the same as described in Section 4.

7.4 Connection to Wall

See BPCS-4141 Seismic Design: What You Need to Know – Code Requirements Seismic Rx® Tested Solutions – Seismic Rx® Approaches to Category C & D, E, and F Installations.

7.5 Special Bracing Required

See BPCS-4141 Seismic Design: What You Need to Know – Code Requirements Seismic Rx Tested Solutions – Bracing and Restraint for Seismic Installations Seismic Separation Joints.

See BPCS-4141 Seismic Design: What You Need to Know – Code Requirements Seismic Rx Tested Solutions – Seismic Separation Joints.

Restraint/bracing systems should be approved by the project design team and reviewed with local building department.

Item No.	Description	Weight (per sq./ft.)	Ordered Separately/ Included with	Required for Install	Cutting Recommendation	Pcs/Ctn
BP5433D01W24L24	1 Cell Woven 24" × 24" Panel	1.7 lbs	Ordered Separately	Based on Design	Cross wires: Lineman's pliers, jigsaw, diagonal cutters (Dikes) Support Frame: Tin snips, jigsaw	500 sf/ft min.
BP5433D01W24L48	1 Cell Woven 24" × 48" Panel	3.0 lbs	Ordered Separately	Based on Design		500 sf/ft min.
BP5433D02W24L24	2 Cell Woven 24" × 24" Panel	0.7 lbs	Ordered Separately	Based on Design		500 sf/ft min.
BP5433D02W24L48	2 Cell Woven 24" × 48" Panel	1.3 lbs	Ordered Separately	Based on Design		500 sf/ft min.
Accessories						
–	Springs	–	Included with Panel – 4 per panel	Yes	–	–
5823	BioAcoustic™ Infill Panel (Black Matte)	0.22 lbs	Ordered Separately	Optional	Utility Knife or Table Saw	12
2820BK	Calla® (Black Acoustical Panel)	1.0 lbs	Ordered Separately	Optional	Utility Knife or Table Saw	10
1713BL	Fine Fissured™ (Black Acoustical Panel)	1.31 lbs	Ordered Separately	Optional	Utility Knife or Table Saw	12
7129	Hook Panel Removal Tool	–	Ordered Separately	Required for Access	–	1
Suspension System Components						
7301TSBL3	Prelude® XL® 12' HD Main Beam	–	Ordered Separately	Yes	Metal cutting tin snips	20
XL8320BL3	Prelude XL 2' Cross Tee	–	Ordered Separately	Yes	Metal cutting tin snips	60
7891	12' Gauge Hanger Wire	–	Ordered Separately	Yes	Lineman pliers with wire cutter	Bundle
Perimeter Trim						
7125BL3	96" Box Molding	–	Ordered Separately	Based on Layout	Metal-cutting tin circular saw with a non-ferrous metal cutting blade Metal cutting tin snips	10
7113BL3	Spreader Hold-Down	–	Ordered Separately	Based on Layout	Metal cutting tin snips	10
AX6STR3XX	6" Axiom Classic Straight	–	Ordered Separately	Based on Layout	Use appropriate size blade, metal-cutting circular saw with a non-ferrous metal cutting blade.	10 lf/ctn

MORE INFORMATION

For more information, or for an Armstrong Ceilings representative, call 877 276-7876.

For complete technical information, detail drawings, CAD design assistance, installation information, and many other technical services, call TechLine customer support at 877 276-7876 or FAX 800 572-TECH.

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