CastWorks® Metaphors® Ceiling Panels

Assembly and Installation Instructions

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1. GENERAL

1.1 Product Description

CastWorks® Metaphors® ceiling panels are precast 24" × 24" glass fiber-reinforced gypsum (GFRG) panels available in five designs – Tidal, Tectonic, Pinnacle, Crests, and Botanical and four colors – White (WH), Black (BL), Silver Grey (SG), and Gun Metal Grey (MY). Panels can also be field painted (White only) to any desired color. Panels have a tegular edge and are designed to install with heavy-duty Suprafine® XL® 9/16" suspension system. Black Calla® or BioAcoustic™ infill panels can also be added (Botanical design only) for sound absorption.

1.2 Panel Material and Surface Finish

CastWorks Metaphors panels are made of glass fiber reinforced gypsum, a composite consisting of gypsum cement and water, reinforced with glass fibers. The surface finish is available in four standard colors, White (WH), Black (BL), Silver Grey (SG), and Gun Metal Grey (MY), or can be coated to achieve any desired color as a custom option.

1.3 Storage and Handling

Due to the fragility of the panels, transport and handle units in a manner that avoids excessive stresses or damage. Do not stack or lean. Panels should be stored in a vertical position (per instructions noted on the packaging). Wearing white gloves is recommended and proper care should be taken when handling to avoid damage and soiling. Panels should remain in cartons and the protectors between panels should not be removed until installation. The ceiling components must be stored in a dry weather-protected, and controlled interior environment.

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Do not store in unconditioned spaces with a humidity greater than 55% or lower than 25% RH and temperatures lower than 50°F or greater than 86°F. Panels must not be exposed to extreme temperatures, for example, close to a heating source or near a window where there is direct sunlight.

CAUTION: Use proper care and caution when handling suspension systems due to the sharp edges on all exposed clips.

1.4 Fire Performance

CastWorks® Metaphors® panels achieve a Class A per ASTM E84 with a Flame Spread Index 25 or less and Smoke Developed Index 50 or less. CAN/ULC S102 surface burning characteristics. Flame Spread Rating of zero. Smoke Developed Classification of zero. CastWorks Metaphors 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 a local code official for guidance on the proper installation techniques where fire detection or suppression systems are present.

1.5 Safety Considerations

Use caution and wear appropriate hand, eye, and dust mask protection when handling CastWorks materials. Avoid exposure to airborne dust; use only with adequate ventilation. If power tools are used, they should be equipped with a dust collector. If high levels of dust are expected, use an appropriate NIOSH-designed dust mask. Avoid contact with eyes and skin. Wash thoroughly after handling.

1.6 Warranty

CastWorks Metaphors panels have been tested based on the installation methods described in this document. The warranty will be voided if you do not follow these instructions and guidelines.

1.7 Site Conditions

Areas to receive ceilings should be free of construction dust and debris. Panels should only be installed in closed and acclimatized buildings. Such installations must not be exposed to abnormal conditions, namely: chemical fumes, the presence of standing water, or contact with moisture, which could result in condensation or building leaks. These products cannot be used in exterior applications.

1.8 HVAC Design & Operations and Temperature & Humidity Control

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

1.9 Plenum

Panels travel into the plenum for installation and will require a minimum 12" clearance above the suspension system. This allows enough room for the panels to travel into the plenum space during installation or removal.

NOTE: Light fixtures and air handling systems require more space and will usually determine the minimum plenum height for the installation. It is required that MEP be independently supported. There must not be weight from any lights, diffusers, speakers, or similar devices supported by the CastWorks Metaphors panels.

1.10 Cleaning and Maintenance

CastWorks Metaphors panels can be cleaned with a soft dry cloth. Dab lightly on the surface to remove any dirt using a clean damp cloth or soft, smooth sponge lightly damp with water. Dry any excess moisture with a clean, white microfiber cloth.

NOTE: If moisture is not removed, it may stain the surface over time.

For minor surface and edge scuffing or scratches on panels, use matching Sherwin-Williams® paint that can be purchased from your local Sherwin-Williams store. For standard color panels, use the following reference:

Armstrong Color Name	Sherwin-Williams Color #	Sherwin-Williams Color Name
White (WH)	Reach out to Armstrong TechLine	Reach out to Armstrong TechLine
Black (BL)	SW6991	Black Magic (ProMar 200 Zero VOC – Egg Shell)
Silver Grey (SG)	SW7066	Grey Matters (ProMar 200 Zero VOC – Egg Shell)
Gun Metal Grey (MY)	SW7019	Gauntlet Grey (ProMar 200 Zero VOC – Egg Shell)

2. INFILL PANELS

For acoustics, 24" × 24" Infill panels can be used with Botanical panels only. Options include Calla® panels (Item 2820 or 2820BK) and BioAcoustic™ panels (Item 5823), amongst others.

3. SUSPENSION SYSTEM

The requirements listed here represent the manufacturer's minimum acceptable installation recommendations; however, all installations are subject to requirements set forth by the authority having jurisdiction. The suspension system must be fastened to the structure per the code in the installed location.

- All installations should follow ASTM C636
- All references to suspension component duty ratings are per ASTM C636
- The suspension system chosen must be fastened to the structure per code in your area

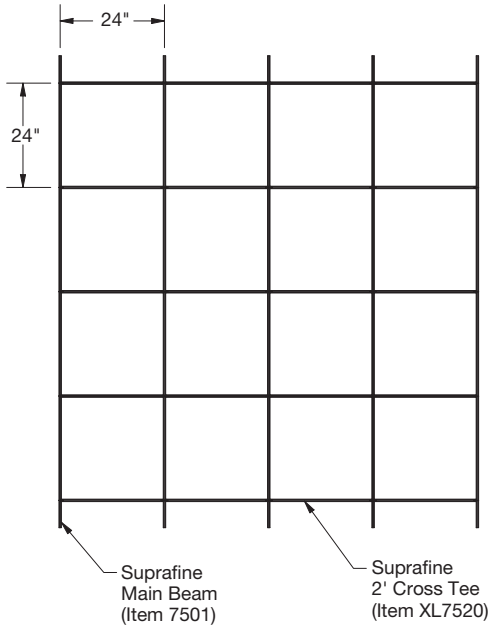
Hangers and bracing are to comply with all local code requirements. The suspension system should be properly installed and leveled using no less than 12-gauge galvanized steel wire. The suspension system must be leveled to within 1/4" in 10' and must be square to within 1/16" in 2'. Installation of suspension systems that do not meet this tolerance will produce unacceptable panel alignment.

3.1 Non-Seismic Suspension System Installation

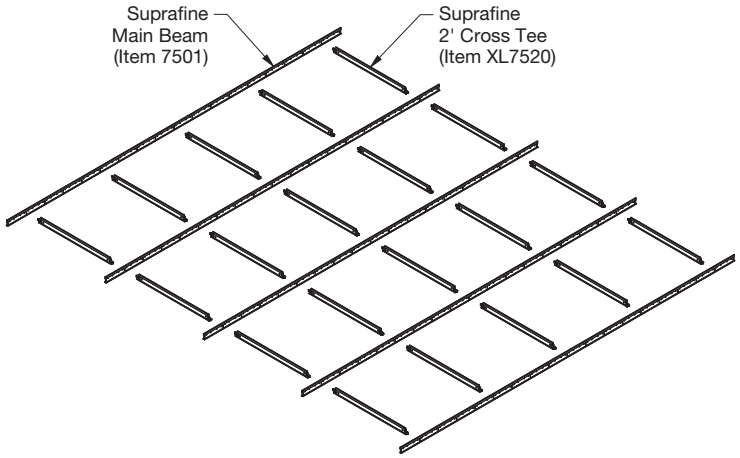
Use heavy-duty Suprafine® XL® 9/16" T-Bar suspension system, main beams, cross tees, and wall molding to support the CastWorks® Metaphors® panels. The suspension system layout should consist of:

- Suprafine XL 9/16" heavy-duty main beams (Item 7501) spaced 2' O.C.
- The 24" cross tees (Item XL7520) should intersect the main beams at 90° every 24" creating a 24" × 24" grid module ***(Figs 1 & 2)***

IMPORTANT NOTE: Depending on the hanger wire location, wires can potentially damage panels during installation due to the fragility of the panels. Reviewing the grid layout and having the hanger wires fall within the main beams and cross tee intersection to minimize hanger wires interference during panel installation is recommended. Staggering the wires by 2' at every main and tee intersection can make panel installation easier. For seismic installation refer to Section 6.



(Fig 1)

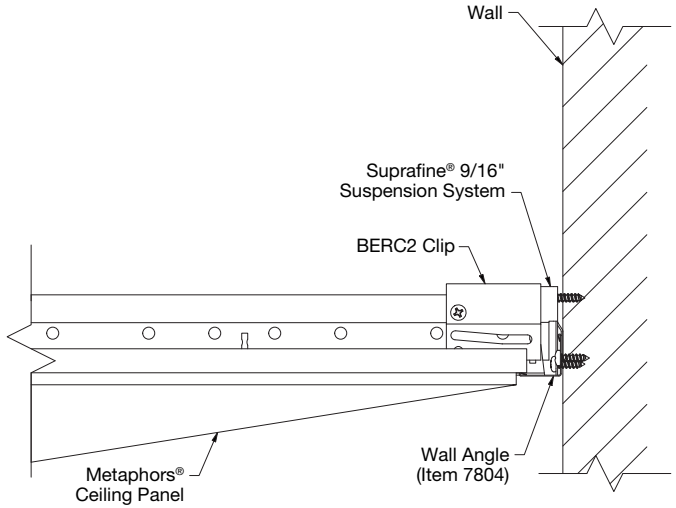


(Fig 2)

4. PERIMETERS

4.1 Wall-to-Wall Installation

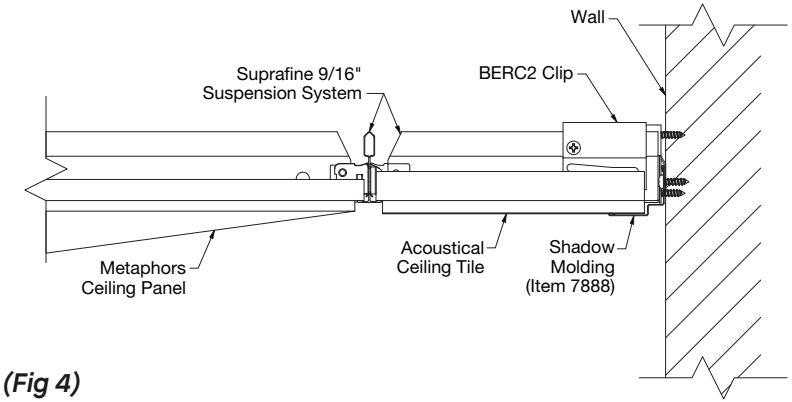
4.1.1 The face of the suspension system components rests directly on the wall molding (Item 7804). Full panels must be used ***(Fig 3).***



(Fig 3)

4.1.2 When room dimensions or wall straightness do not allow for full panel installations at the perimeter, the following options can be used to address these perimeter conditions:

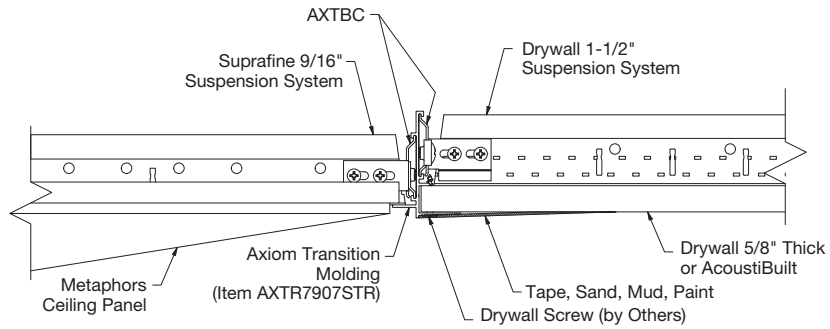
- Shadow Molding (Item 7888) is the most user friendly. For border panels, use a 24" × 24" Calla® Tegular panel ***(Fig 4)*** for a 9/16" grid to be field cut or the Utility design lay-in panel (Item AS0302D15C01_ _ _)



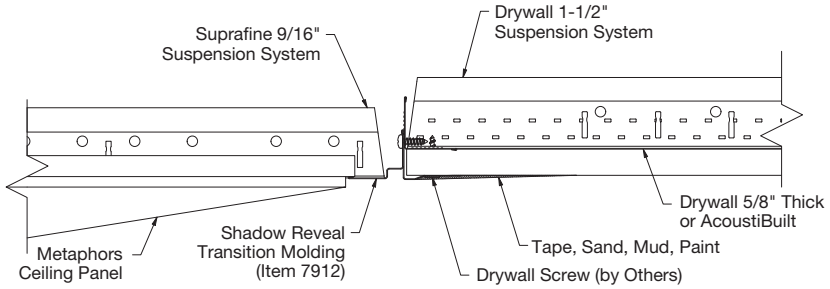
(Fig 4)

- Perimeters can also be addressed with AcoustiBuilt® for added acoustics or a drywall surround. Axiom® Transition (Item AXTR7907STR, drywall to acoustical) is designed to help transition from an acoustical grid to a drywall ceiling in straight conditions ***(Fig 5)***. Transition Molding (Item 7912) can also be used on straight conditions only ***(Fig 6)***.

NOTE: AcoustiBuilt panels are 7/8" thick and will require some adjustments for panels to be flush.



(Fig 5)

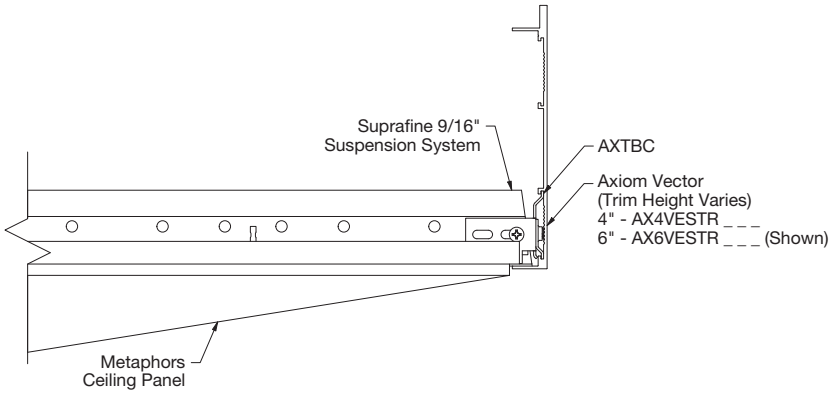


(Fig 6)

4.2 Floating Perimeter/Discontinuous Systems

The suspension layout for floating perimeters or cloud applications should be the same as what is detailed in Section 3.

Axiom® Vector trim can be used for straight cloud installations with CastWorks® Metaphors® panels. The AXTBC will fasten the trim to the suspension system. 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 ***(Fig 7)***.



(Fig 7)

5. INSTALLATION

CastWorks Metaphors panels install on heavy-duty Suprafine® XL® 9/16" suspension system and will need to travel into the plenum for installation.

5.1 Edge Detail

Panels have a tegular edge detail, and the depth of the edge can vary between the different panel design options. See the data page for each panel's depth from grid measurements. The panel face will sit below the face of the grid.

5.2 Directionality

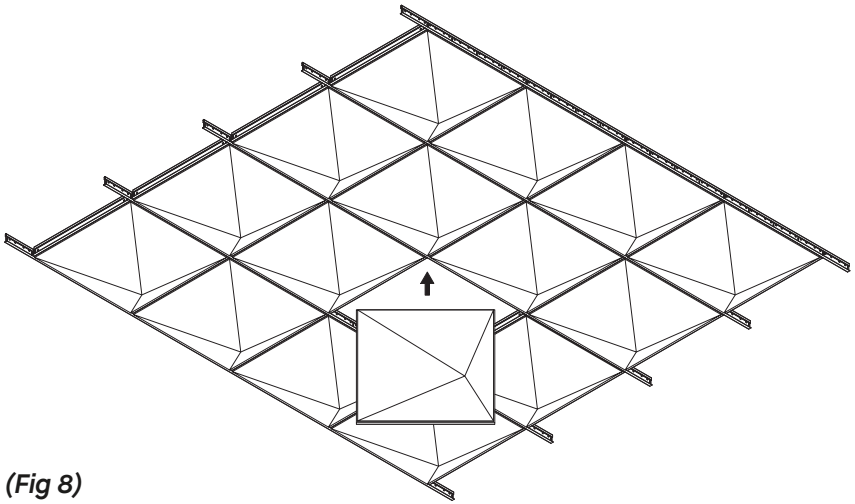
Panels have design patterns that are directional, however, panels can install in different directions to create a custom design visual.

5.3 Plenum

Consider adding additional height to your plenum space if acoustical infill panels are being used with Botanical panels in the ceiling system. It is recommended to allow 12" of plenum space to allow panels to travel into the plenum and avoid damaging the panels.

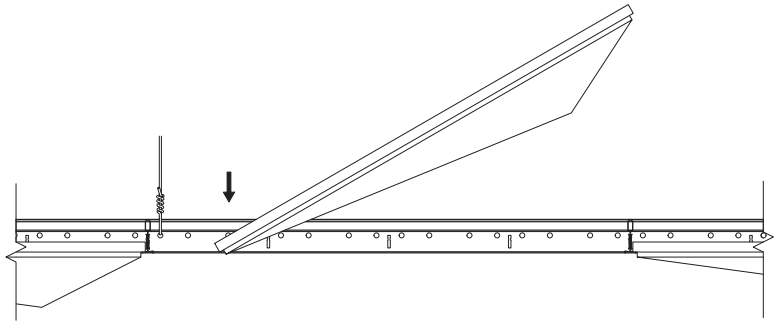
5.4 Panel Installation

Panels are very fragile; extra caution will need to be taken when installing panels to avoid damage. Panels should travel into the plenum at an angle. Position panels vertically and raise through the diagonal grid opening to avoid the panel face bumping the grid and damaging the panel face ***(Fig 8)***.

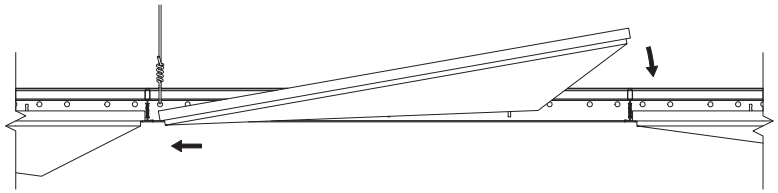


(Fig 8)

NOTE: Extra caution should be taken around hanger wires when installing the panels. To avoid panels getting damaged by wires in these areas, the following steps should be taken once the panel is in the plenum and is ready to be seated on the grid flange ***(Figs 9 & 10)***.



(Fig 9)



(Fig 10)

- Once the panel is in the plenum, sit only one side of the panel on the grid flange about 2"-3" from the wire location
- The panel can then slide along the grid flange below these wires as the rest of the panel is brought down to rest on the grid flange

5.5 Border Panels

For border panels, use a 24" × 24" Calla® Tegular panel for a 9/16" grid to be field cut or a suitable acoustical panel.

5.6 Panel Removal

CastWorks® Metaphors® panels are not designed to be left sitting over the grid in the plenum for access. Panels should always be removed from the space for access and placed on a flat surface to avoid damaging the panels.

5.7 Cutting

CastWorks Metaphors panels are designed for full-size panel installation only and CANNOT be cut. All ceiling-mounted services must either replace a full panel, use a panel with a factory-cut hole, or use a panel designed for field cuts. Refer to the panel property table at the end of the instructions for a list of panels with a factory-cut hole or panels designed for field cuts.

5.7.1 Cutting Field Cut Panels

When cutting a CastWorks Metaphors panel design for field cuts, a carbide hole saw is recommended. A thin-walled hole saw or diamond hole saw can also be used for round cuts. Penetrations for sprinklers (or other fixtures) can be accomplished by cutting the panel at designated locations. For square cuts, contact TechLine for support.

5.7.2 Mechanical Fixtures

While some mechanical fixtures such as lights, speakers, sprinklers, and other MEP integration must be installed into the acoustical suspension system before installing the CastWorks Metaphors panels, others will install progressively, meaning the lights and the ceiling panels must be installed at the same time.

Cuts on the panel to allow for fixtures penetration should only occur on panels designed for field cutting, refer to Section 5.7.1 for cutting instructions. All mechanical fixtures should be independently supported to the structure.

5.7.2.1 Light Fixtures

Lighting Partners Integration: Compatible lighting fixtures and drivers should be installed by a qualified electrician. Coordination and collaboration between trades will be needed, which is critical for a successful and efficient installation. The general contractor should work with the electrical contractor and ceiling contractor to clearly assign responsibilities. Please refer to the lighting partner manufacturer (USAI® or JLC-Tech) for installation instructions. The suspension systems are designed and tested to support the weight of the light fixture and housing. Light fixtures that have not been tested and approved should be independently supported to the structure. Lights are subject to local code requirements for slack or additional support wires. Refer to the panel property table for light fixture and panel with factory cut holes comparability.

5.7.2.2 Sprinklers

Sprinklers are recommended to be hard piped rather than the flex head sprinkler/connections with CastWorks Metaphors panels.

6. SEISMIC INSTALLATION

CastWorks Metaphors panels have been engineered and tested for application in all seismic areas based on these installation procedures. The following installation guidelines are required in areas where the anticipated seismic activity will be moderate to severe (IBC Seismic Design Categories C, D, E, and F). Consult the local building department to ensure compliance with their unique requirements.

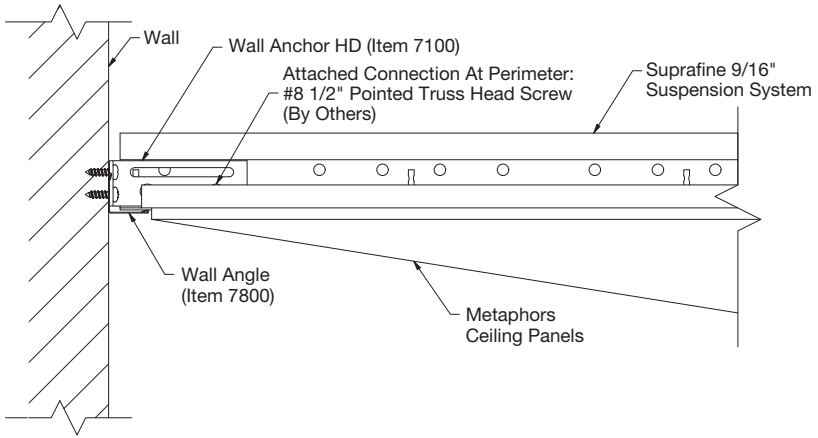
6.1 Suspension System Installation

Use a heavy-duty Suprafine® XL® 9/16" T-Bar suspension system. The installation must, in all cases, conform to the International Building Code Seismic Design Category C, D, E, and F. Refer to Armstrong Seismic Ceiling Installation Guide BPCS-4141 and ASTM E580 for more details. In addition to the above requirements, also follow ASTM C636 requirements. The requirements listed here represent the manufacturer's minimum acceptable installation recommendation and may be subject to additional requirements established by the local authority having jurisdiction.

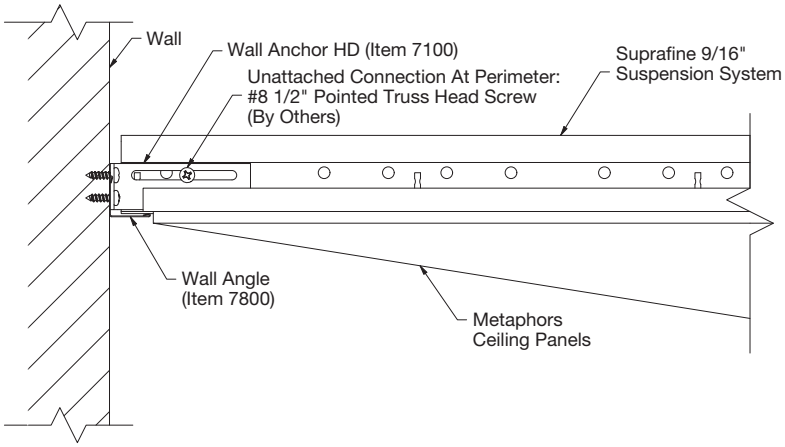
Suspension Layout

- Suprafine XL 9/16" heavy-duty main beams (Item 7501) are installed 24" O.C. with hanger wires supporting at no more than 48" O.C. along the mains

- The 24" cross tees (Item XL7520) must intersect the main beams at 90° every 24" creating a 2' × 2' grid module
- All grid connections to the wall are required to use the heavy-duty wall anchor (Item 7100) in lieu of the BERC2 clip to meet the attached and unattached wall requirements ***(Figs 11 & 12)***



(Fig 11)



(Fig 12)

IMPORTANT NOTE: Hanger wires can potentially damage panels during installation due to the fragility of the panels. Reviewing the grid layout and having the hanger wires fall within the main and cross tee intersection to minimize hanger wires interference during panel installation is recommended.

6.2 Seismic Rx® Suspension System

Ceiling installation should conform to basic minimums established in ASTM C636.

- Minimum 7/8" wall molding
- Suspension system must be attached to two adjacent walls
- HD Wall Anchor maintains the main beam and cross tee spacing; no other components are required
- Heavy-duty systems as identified in ICC-ESR-1308
- Safety wires 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
- Cable trays and electrical conduits must be independently supported and braced
- Suspended ceilings will be subject to special inspection
- Suspension layouts are the same as described in Section 3: Suspension System
- Connection to wall – See BPCS-4141 *Seismic Design: What You Need to Know – Code Requirements Seismic Rx® Suspension System Tested Solutions – Seismic Rx Suspension System Approaches to Category C and D, E, and F Installations*
- Special bracing required – See BPCS-4141 *Seismic Design: What You Need to Know – Code Requirements Seismic Rx Suspension System 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 Suspension System Tested Solutions – Seismic Separation Joints*

CASTWORKS® METAPHORS® PANEL ITEMS				
Item No.◆	**Description – Sizes are Nominal, not Exact**	**Ordered Separately/ Included with**	**Required for Install**	**Recommended Lighting Configuration**
CastWorks Metaphors Panels				
6708D01C01_ _	24" × 24" Tidal Design	Ordered Separately	Based on Design	JLC-Tech Diffusing Lens T-BAR LED® 9/16"
6708D02C01_ _	24" × 24" Tectonic Design	Ordered Separately	Based on Design	N/A
6708D03C01_ _	24" × 24" Pinnacle Design	Ordered Separately	Based on Design	N/A
6708D04C01_ _	24" × 24" Crests Design	Ordered Separately	Based on Design	N/A
6708D05C01_ _	24" × 24" Botanical Design	Ordered Separately	Based on Design	N/A
6708D06C01_ _	24" × 24" Botanical Reversed Design	Ordered Separately	Based on Design	N/A
CastWorks Metaphors Panels with Flat Area for Field Cutting				
6708D01C07_ _	24" × 24" Tidal Design with Flat Area	Ordered Separately	Based on Design	N/A
6708D02C07_ _	24" × 24" Tectonic Design with Flat Area	Ordered Separately	Based on Design	N/A
6708D03C07_ _	24" × 24" Pinnacle Design with Small Square Flat Area	Ordered Separately	Based on Design	N/A
6708D03C08_ _	24" × 24" Pinnacle Design with Large Square Flat Area	Ordered Separately	Based on Design	N/A
6708D05C07_ _	24" × 24" Botanical Design with Flat Area	Ordered Separately	Based on Design	N/A
6708D06C07_ _	24" × 24" Botanical Reversed Design with Flat Area	Ordered Separately	Based on Design	N/A
CastWorks Metaphors Panels with Factory Cut Hole for MEP Integration				
6708D01C05_ _	24" × 24" Tidal Design with Factory Cut Hole	Ordered Separately	Based on Design	USAI® BeveLED® 2.2 Square Downlight
6708D02C06_ _	24" × 24" Tectonic Design with Factory Cut Hole	Ordered Separately	Based on Design	N/A
6708D03C02_ _	24" × 24" Pinnacle Design with Square Factory Cut Hole	Ordered Separately	Based on Design	USAI® BeveLED® Mini Square Downlight
6708D04C05_ _	24" × 24" Crests Design with Factory Cut Hole	Ordered Separately	Based on Design	USAI BeveLED 2.2 Round Downlight

◆ When specifying or ordering, include the appropriate 2-letter color suffix (e.g., 6708D01C01SG).

SUSPENSION SYSTEM			
Item No.◆	**Description – Sizes are Nominal, not Exact**	**Ordered Separately/ Included with**	**Required for Install**
7501_ _	Suprafine® XL® 12' HD Main Beam	Ordered Separately	Yes
XL7520_ _	Suprafine XL 2' Cross Tee	Ordered Separately	Yes
7891	12-gauge Hanger Wire	Ordered Separately	Yes
Perimeter Trim			
7800; HD7801	Angle Wall Molding (12' or 10', depending upon finish needed)	Ordered Separately	Based on Design
7888	Shadow Molding	Ordered Separately	Based on Design
AXTR7907STR	Axiom® Transition for Straight Conditions	Ordered Separately	Based on Design
7912	Shadow Reveal Transition Molding	Ordered Separately	Based on Design
AX_VESTR_ _	Axiom Vector Straight Trim	Ordered Separately	Based on Design
Accessories			
7100	Heavy-duty Wall Anchor – Seismic	Ordered Separately	Yes – Seismic D, E, & F
BERC2	2" Beam End Retaining Clip	Ordered Separately	Based on Design
Infill Panels			
5823BM	BioAcoustic™ Infill Panel – 24" × 24" in Black Matte Finish	Ordered Separately	Based on Design
2820BK	Calla® Square Lay-in Panel – 24" × 24" in Black Finish	Ordered Separately	Based on Design
2820WH	Calla Square Lay-in Panel – 24" × 24" in White Finish	Ordered Separately	Based on Design

◆ When specifying or ordering, include the appropriate 2-letter color suffix (e.g., 7501SG).

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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