Tectum® DesignArt® – Lines & Tectum DesignArt – Lines High NRC

Assembly and Installation Instructions

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Armstrong®
World Industries

1. GENERAL

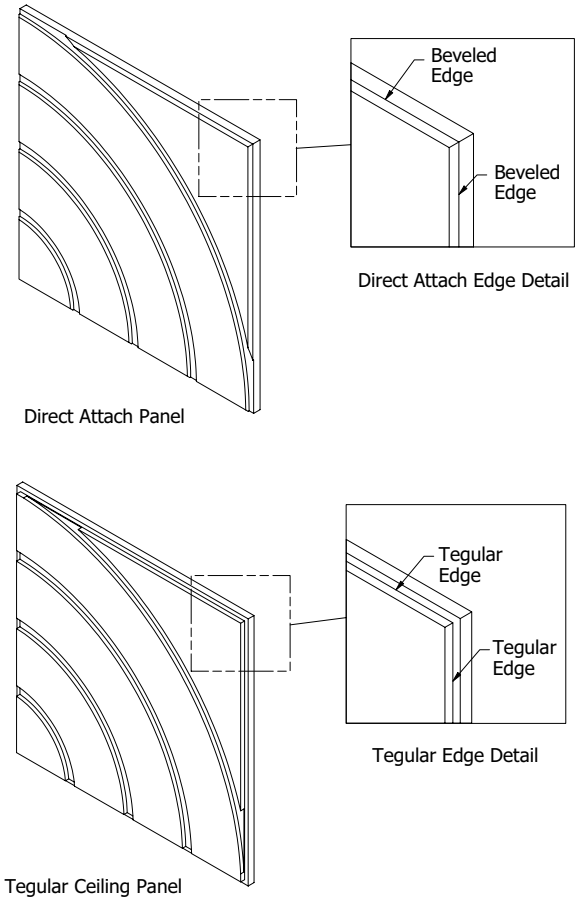
1.1 Product Description

Tectum® DesignArt® – Lines ceiling and wall panels are highly impact-resistant panels made of Aspen wood fibers held together with a cementitious binder with line patterns routed into the face of the panels. Standard Tectum DesignArt – Lines & High NRC panels for walls and ceilings are 24 × 24 × 1" and 24 × 48 × 1" (nominal). Direct-attach panels have a beveled edge profile on all four sides, and ceiling panels meant to be installed in grid have tegular edges ***(Fig 1)***.

Standard panels are available in 29 designs, see properties table on pages 18 and 19. Standard panels are available in 24 paint colors and Natural finish.

NOTE: Panels will show normal color variation due to the wood fibers. See the data page for design and color visuals.

Tectum DesignArt – Lines panels can be installed in the ceiling and on walls. Ceiling panels can be installed in a traditional grid system or direct-attached to an existing drywall, furring, or plywood surface. Wall panels can be attached directly to an existing drywall or plywood wall surface. See Section 4 for more details on installation. Panels can be field cut and field painted up to six times without impacting acoustic or fire performance (Section 5.5).



(Fig 1)

1.2. Safety

This product is made of wood fibers and cementitious binder. Sawing, sanding, or machining these products can produce wood dust and crystalline silica. Airborne dust can cause respiratory, eye, and skin irritation. Respirable wood dust and crystalline silica are classified as carcinogens. Personal protective equipment includes safety glasses or goggles, and impervious gloves. Respiratory protection may be required and depends on how the product is being cut and handled.Job site environmental conditions must be evaluated in determining what type of respiratory protection is required. In all cases, cutting is to be performed in a well-ventilated area and power tools must be equipped with a dust collection system. Refer to the Safety Data Sheet on www.armstrongceilings.com/tectum for additional information.

1.3. Warranty

Failure to follow the Armstrong® Ceilings recommended installation instructions in effect at the time of installation may void the product and/or ceiling system warranty.

1.4. Surface Finish

Tectum® panels are made of wood fibers within a cementitious binder. White panels are finished with a latex-based paint. Due to the unique porous composition of Tectum panels, they can be field painted up to six times without negatively impacting acoustic or fire performance.

1.5. Storage & Handling

Panels should be stored in a dry interior location and must remain in cartons prior to installation to avoid damage. The cartons should be stored in a flat, horizontal position.

Proper care must be taken when handling to avoid damage and soiling. Do not store in unconditioned spaces with humidity greater than 85% or lower than 25% RH, and temperatures lower than 32°F or greater than 120°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.

1.6. Site Conditions

Tectum panels are required to reach room temperature and have stabilized moisture content for a minimum of 72 hours before installation. They should not, however, be installed in spaces where the temperature is lower than 32°F or greater than 120°F and when humidity conditions are greater than 85% or lower than 25% RH. Panels must not be exposed to extreme temperatures, for example, close to a heating source or near a window where there is direct sunlight. All wet work (plastering, concrete, etc.) must be complete and dry.

1.7. HVAC Design & Operation, Temperature & Humidity Control

Real wood and wood composite products are natural building materials and they will react to changes in humidity. Spaces with installed product should be maintained with humidity in a range between 25% and 85% RH and temperatures in a range between 32°F and 120°F. Wood tends to contract with lower humidity and expand with higher humidity. Cementitious wood fiber panels may also tend to warp, twist, or bow, due to the natural stresses in the components and these humidity changes. Be aware of these natural tendencies when evaluating the products. It is also necessary for the area to be enclosed and for the HVAC systems to be functioning and in continuous operations for the life of the product. All wet work (plastering, concrete, etc.) must be complete and dry. Standard 1" Tectum panels cannot be used in exterior applications. Contact TechLine for information on custom Tectum products available for exterior installations.

1.8. Colors

Standard Tectum panels are available in 24 paint colors and Natural finish. Due to the natural variation of Tectum wood fibers, panels in Natural finish will have normal color variation from panel-to-panel and within panels. Due to manufacturing processes, the face of Natural panels may also appear whiter than the back, edges, and rout lines.

Panels can be field painted up to six times without losing their acoustical or fire performance. See Section 5.5 for field painting guidelines. Factory-finished custom colors are also available.

1.9. Ordering Considerations

Be sure to account for extra material that is normally needed for wood installations. When installing Tectum® DesignArt® panels, consider ordering at least 5% extra material.

Up to 10% more may be needed for odd size or painted installations. It is the customer's responsibility to plan each layout and order the correct amount of installation material needed, taking into account their design.

2. DESIGN CONSIDERATIONS

2.1. Directionality

Tectum® DesignArt® – Lines panels are directional based on the routed design. Panels can be installed in any direction to achieve the desired design. Consult the project's RCP for specific details pertaining to the pattern.

NOTE: The pattern drawings show the face profile of each panel and are opposite of their appearance with a reflected view.

2.2. Edges

Tegular Ceiling Panels: Tegular panels have a stepped edge, with the face of the panel dropping a nominal 1/2" below the face of the grid.

Direct-Attach Ceiling and Wall Panels: all panels are beveled on all four sides.

2.3. Pool Installations

Tectum DesignArt ceiling panels are not to be used in pool or other high humidity areas where standing water is present. Contact TechLine for information on Tectum products available for pool installations.

2.4. Exterior Installations

Tectum DesignArt ceiling and wall panels are not intended for exterior use.

2.5. Accessibility

In standard installations of Tectum DesignArt – Lines & High NRC Tegular ceiling panels, accessibility to the plenum above the panels will be maintained.

NOTE: Use of Hold-down clip (Item 8178T10) for Tectum panels in high impact applications will minimize accessibility.

2.6. Plenum Clearance

Panels will be tilted into the grid opening and dropped into place, requiring 3" of height above the face of the grid.

2.7. Direct-Attachment to a Wall or Ceiling

Tectum DesignArt panels are mechanically fastened to furring (metal or wood) or directly to structure using appropriate fasteners. See Installation Section 4 for different mounting methods. DesignArt panels are approximately 1.65 LBS/SF. Correct fasteners should consider total system weight. For acoustical solutions, reference C-20 and C-40 mounting. Do not countersink screws or fasteners into panel face. The type and position of framing and furring will be specified by the contractor.

2.8 Direct-Applied – Adhesive Wall Installation

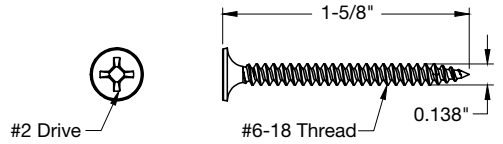
Tectum DesignArt panels can be installed on walls using construction adhesive with the exception of the High NRC panels. Tectum DesignArt – Lines High NRC panels should never be installed with adhesive as it may impact the acoustical performance of the panels.

3. TECTUM® ACCESSORIES

3.1. Screws

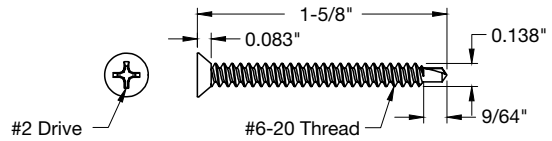
Armstrong® Ceiling and Wall Systems offer three types of screws for many common installation methods. For specific installation instructions, including which screw for furring to structure connection and spacing, see Section 4.

Sharp point screws (Item 8187L16, ***Fig 2***) are 1-5/8" long and are available in coordinating factory-finished White (suffix TWH). For 20- and 25-light-gauge steel framing, wood furring, or Armstrong Ceilings drywall grid, use 1-5/8" sharp point drywall screws.



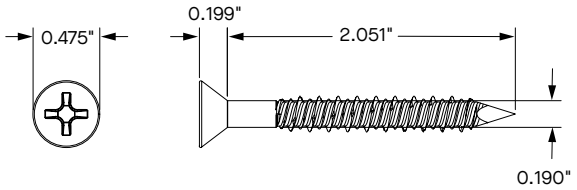
(Fig 2)

Drill point screws (Item 8188L16, ***Fig 3***) are 1-5/8" long and are available in coordinating factory-finished White (suffix TWH). For 20-gauge structural and heavier steel decking or framing, use 1-5/8" self-drilling drywall screws.



(Fig 3)

CMU Screws (Item 8189L22, ***Fig 4***) are 2-1/4" long and are available in coordinating factory-finished White (suffix TWH). For hollow block CMU (Cement Masonry Unit or breeze/cinder block) structures, use 2-1/4" masonry screws. See specific installation guidance in Section 4.2.

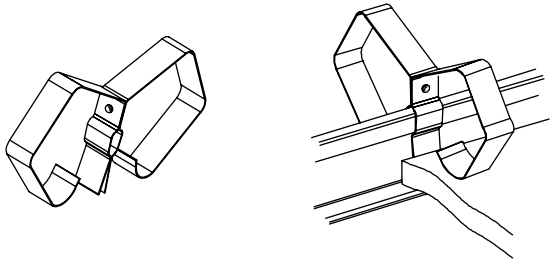


(Fig 4)

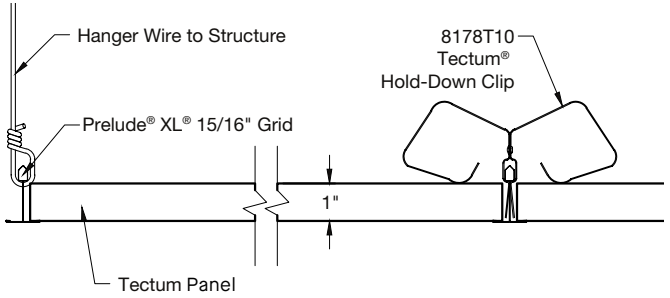
To attach Tectum® panels to structures or surfaces not listed in this section, please contact a fastener manufacturer, such as Hilti®, Fastenal®, or Tapcon® to obtain guidance and engineering data support.

3.2. Hold-down Clips

Hold-down clip (Item 8178T10) for Tectum panels are sold 200 pieces per carton. This dual-sided clip fits over the main runner or cross tee, engaging with the bulb of the grid to hold Lay-in panels in place in high impact areas, where forces may otherwise dislocate the panel ***(Figs 5 & 6)***.



(Fig 5)



(Fig 6)

NOTE: Use of this clip will slightly minimize accessibility behind the panels, as additional force will be required to lift the panel above the bulb of the grid. When the panel is above the bulb of the grid, it can be slid to the side for access.

3.3. Adhesive

Armstrong® Ceiling and Wall Solutions recommends Titebond® GREENchoice or Henry® 237 AcoustiGum™ Acoustical Ceiling Tile Adhesive when using the direct-applied adhesive installation method. The adhesive will be supplied by the contractor.

3.4. Touch Up Paint

Touch Up Paint for 24 standard paint colors is available. Custom Touch Up Paint is also available upon request.

4. INSTALLATION OPTIONS

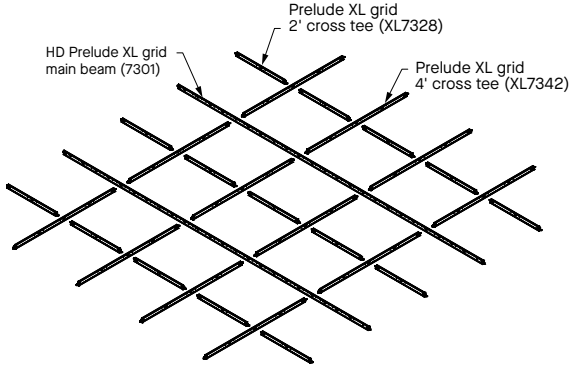
4.1. Suspended Ceiling Installation

4.1.1. Standard Suspension System

The requirements listed here represent the manufacturer's minimum acceptable installation recommendations and may be subject to additional requirements established by the local authority having jurisdiction.

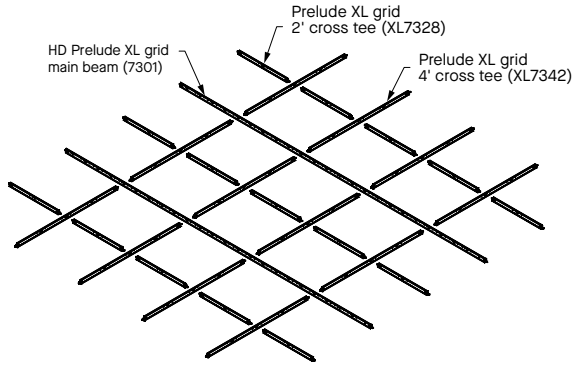
- All installations must follow ASTM C636
- All references to suspension component duty ratings are per ASTM C635

For 2' × 2' panels installation main beam (Item 7301) will be installed 48" O.C., with 4' cross tees (Item XL7342) perpendicular to the main beam at 24" O.C. and cross tee (Item XL7328) will span the midpoints of the 4' cross tees, creating a 24" × 24" grid module ***(Fig 7)***.



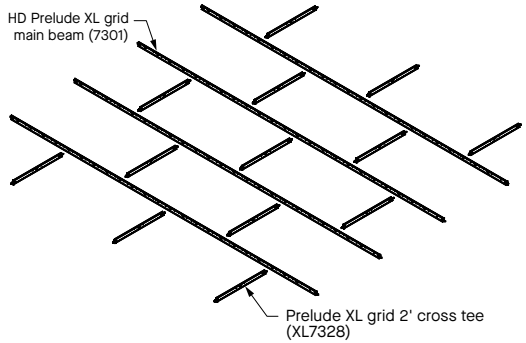
(Fig 7)

For 2' × 4' panels installation main beam (Item 7301) will be installed 48" O.C., with 4' cross tees (Item XL7342) perpendicular to the main beam at 24" O.C. creating a 24" × 48" grid module ***(Fig 8).***



(Fig 8)

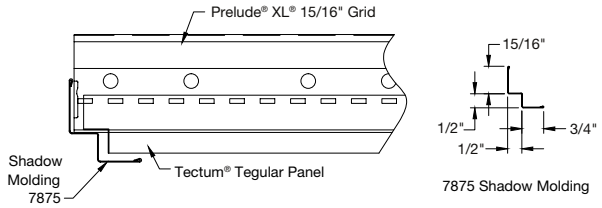
For 2' × 4' Running Bond grid layout main beams (Item 7301) will be installed 24" O.C. with 2' cross tee (Item XL7328) perpendicular to the mains, staggered every 48" O.C. STAC clips or GC3W will be required at every single cross tee insertion of XL end detail to secure the grid connection ***(Fig 9)***.



(Fig 9)

For perimeter molding of the Tegular panels, use the shadow molding (Item 7875) to ensure the correct drop to be flush with the face of the Tegular panels ***(Fig 10)***. Alternatively, the grid system can be raised 1/4" and having the tile rest on (Item 7800) 7/8" molding for non-seismic areas. **NOTE:** Using (Item 7800) with Tegular panels will result in a "mouse-hole" at the molding.

For seismic considerations, see Section 7.



(Fig 10)

4.1.2. High-impact/High-abuse Suspension System

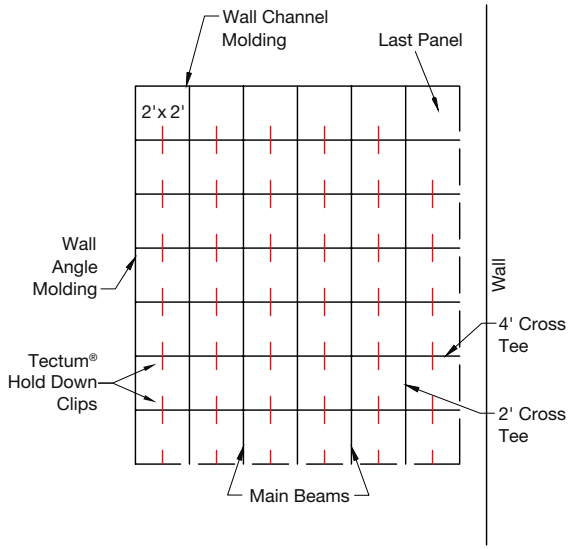
Highly durable Lay-in panels can be used in high-impact or high-abuse areas such as gymnasiums or dormitories where outside forces can impact panels. Panels will be installed in Prelude® XL® Heavy-duty system along with Tectum® Hold-Down Clip (Item 8178T10).

For 2' × 2' panels Prelude® heavy-duty main beams (Item 7301) will be installed 48" O.C., with 4' cross tees (Item XL7342) perpendicular to the main beam at 24" O.C. and cross tee (Item XL8320) will span the midpoints of the 4' cross tees, creating a 24" × 24" grid module.

For 2' × 4' panels Prelude heavy-duty main beams (Item 7301) will be installed 48" O.C., with 4' cross tees (Item XL7341) perpendicular to the main beam at 24" O.C. creating a 24" × 48" grid module.

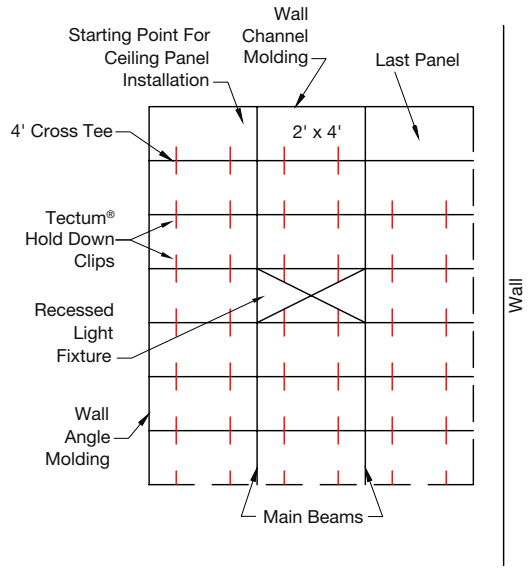
For 2' × 4' Running Bond grid layout mains beams (Item 7301) will be installed 24" O.C. with 2' cross tee (Item XL7328) perpendicular to the mains, staggered every 48" O.C. STAC clips or GC3W will be required at every single cross tee insertion of XL end detail to secure the grid connection.

Tectum Hold-down Clips (8178T10) must be installed over the panels. Clips must be installed progressively, over the top of the panels (see details in Section 3.2) as the panels are installed in the grid. Each clip straddles the grid and holds down adjacent panels. Because of this, the ratio of clips per panel is one clip per panel for 2' × 2' and two clips per panel for 2' × 4'. Clips must be placed as shown in the following diagram. Install the panels and clips progressively toward a corner of the installation so that the last panel, which will not have hold-down clips, will be in a location where it will not be impacted ***(Figs 11 & 12)***.



(Fig 11)

2' X 2' Layout



(Fig 12)

2' X 4' Layout

4.2. Direct-Attach Ceiling or Wall Installation

4.2.1. For Tectum® DesignArt® panels, one of the most common application methods for Tectum interior panels is screw attachment to furring. The furring can be either wood or metal. DesignArt panels are approximately 1.65 LBS/SF. Consider total system weight when determining fasteners. The furring enables improved sound absorption and allows the installer to fasten in areas where there could otherwise be obstructions. The use of screw attachment for interior panels is widely accepted. The proper installation of the screws results in an installation where the heads are difficult to find even when viewed from a short distance. The flathead screws are painted to match either the painted White panels or the Natural panels. The screws are installed so that the screw head is flush with the surface of the Tectum panel. Do not countersink the screw heads. The texture of Tectum panels helps hide the screw head. This installation section will review the different mounting methods and fastener recommendations.

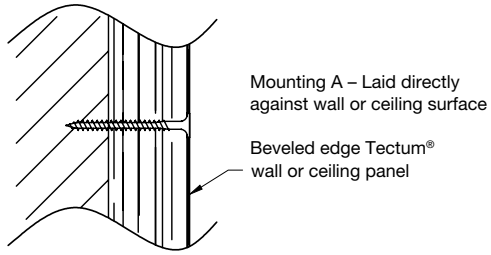
The NRC requirements will dictate what mounting method should be used. Verify specifications or drawings to determine project requirements. There are four direct mounting methods and each of them will have specific installation requirements so the Tectum system can meet project NRC specifications.

4.2.2. Mounting Method A ***(Fig 13)***

Mounting Method A requires installing panels directly to a wall or ceiling structure with no furring or space behind the Tectum® panels. Consult this section for type of screw (CMU/Drill Point/Sharp Points) and Section 4.2.6 for spacing requirements (for both Standard Interior and High-impact/abuse applications). Because ceiling and wall structure materials vary greatly, Armstrong® World Industries does not offer fasteners for all project applications but does provide fasteners for the most common structures. Depending on what the substrate is, there are different recommendations for which fastener to use.

For one of the most common structure materials, Cement Masonry Unit (CMU) (hollow or breeze/cinder block), use Tectum 2-1/4" CMU Screw (Item 8189L22). While the CMU screw will work in most concrete block applications, it is important to note that it will not work with all concrete. It is difficult or impossible to use this screw with some poured or precast concrete. Work with a fastener manufacturer to determine best fastener for your application and to acquire engineering reports regarding performance. Contact Armstrong Ceilings TechLine or Tapcon® if specific guidance is needed related to drill bits, anchors, or general CMU screw installation.

For structures other than hollow CMU, contact a fastener manufacturer, such as Hilti®, Fastenal®, or Tapcon® to get guidance and engineering support data on the fastener type that will meet pull-out requirements for your building code.



(Fig 13)

IMPORTANT NOTES:

Power-actuated Fasteners: Do not use power-actuated fasteners to directly attach Tectum® panels to masonry surfaces. If power actuated fasteners are necessary, they should be used on the furring/hat channel and panels screw-attached to the furring as described in steel framing and wood furring Section 4.2.3.

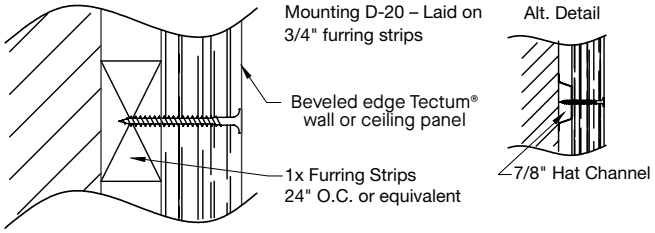
Exterior Masonry Walls: If you encounter uninsulated exterior walls, or if you are uncertain of the insulation conditions of the wall, use furring strips to ensure an air gap between panels and the structure to minimize unwanted condensation-related issues.

4.2.3. Mounting Method D-20 *(Fig 14)*

The D-20 direct-attach mounting method includes beveled-edge panels laid on 3/4" furring strips, or Drywall Grid (Item 8906 main beam and XL8945 cross tees) to maintain air gap between structure and back of the Tectum panels. The furring must be attached to structure in a method that supports the full weight of the panels per the requirements specified in Section 4.2.6. Contact a fastener manufacturer, such as Hilti®, Fastenal®, or Tapcon® to ensure the correct fastener for the structure type, since structure fastener requirements can vary.

Due to joist/stud spacing in most jobs, to meet fastener layout requirements, furring strips are recommended to ensure a secure fastening location for the panels. If you are attaching to existing drywall, all fasteners must go into a stud, drywall grid, or other structural component. It is the responsibility of the contractor to locate these elements in either ceiling or wall applications.

Consult the following sections for attaching the Tectum panels to the type of furring selected (Drill Point/Sharp Points) and Section 4.2.6 for spacing requirements (for standard interior or high impact/abuse spaces).



(Fig 14)

Attach Tectum® panels directly to 3/4" wood or metal hat channel furring (see Section 4.2.6 for screw spacing/guidance):

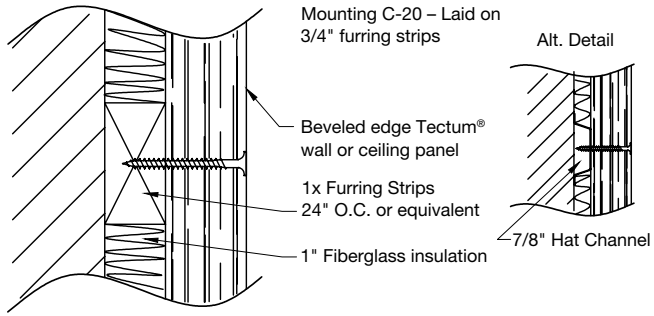
- **Wood furring:** In a D-20 mounting, to attach to wood furring, use Tectum 1-5/8" sharp point screws (Item 8187L16) with coordinating painted face
- **Light Gauge (20-25 gauge) Metal furring/framing:** In a D-20 mounting, attach to thin gauge metal furring with Tectum 1-5/8" sharp point screws (Item 8187L16) with coordinating painted face
- **Drywall Grid furring:** In a D-20 mounting, attach to thin-gauge metal furring with Tectum 1-5/8" sharp point screws (Item 8187L16) with coordinating painted face
- **Heavy-gauge metal furring:** In a D-20 mounting, attach to heavy gauge metal furring with Tectum 1-5/8" drill point screws (Item 8188L16) with coordinating painted face

4.2.4. Mounting Method C-20 *(Fig 15)*

The C-20 direct-attach mounting method includes beveled edge panels laid on 3/4" furring strips with 1", 3-LB density fiberglass batt insulation between the furring, which increases the acoustic absorption of the installed space (NRC). The furring must be attached to structure in a method that supports the full weight of the panels per the requirements specified in Section 4.2.6. Contact a fastener manufacturer, such as Hilti®, Fastenal®, or Tapcon® to ensure the correct fastener for the structure type, since structure fastener requirements can vary.

Due to joist/stud spacing in most jobs, to meet fastener layout requirements furring strips are recommended to ensure a secure fastening location for the panels.

If you are attaching to existing drywall, all fasteners must go into a stud, drywall grid, or other structural component. It is the responsibility of the contractor to locate these elements in either ceiling or wall applications.



(Fig 15)

Consult the following sections for attaching the Tectum® panels to the type of furring selected (Drill Point/Sharp Point) and Section 4.2.6 for spacing requirements (for standard interior or high impact/abuse spaces):

Attach Tectum panels directly to 3/4" wood or metal furring (see Section 4.2.6 for screw spacing/guidance):

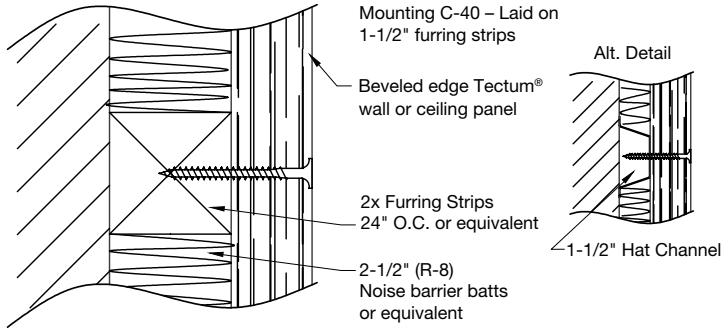
- **Wood furring:** In a C-20 mounting, to attach to wood furring, use Tectum 1-5/8" sharp point screws (Item 8187L16) with coordinating painted face
- **Light-gauge (20-25 gauge) metal furring/framing:** In a C-20 mounting, attach to light-gauge metal furring with Tectum 1-5/8" sharp point screws (Item 8187L16) with coordinating painted face
- **Drywall Grid furring:** In a C-20 mounting, attach to thin – gauge metal furring with Tectum 1-5/8" sharp point screws (Item 8187L16) with coordinating painted face
- **Heavy-gauge metal or structural steel:** In a C-20 mounting, attach to heavy-gauge metal furring with Tectum 1-5/8" drill point screws (Item 8188L16) with coordinating painted face

Contact a fastener manufacturer, such as Hilti®, Fastenal®, or Tapcon® to ensure the correct fastener for the structure type, since structure fastener requirements can vary.

4.2.5. Mounting Method C-40 ***(Fig 16)***

The C-40 Direct-Attach mounting method includes beveled-edge panels laid on 1-1/2" furring strips with 2-1/2" batt insulation between the furring, which increases the acoustic absorption of the installed space (NRC). The furring must be attached to structure in a method that supports the full weight of the panels per the requirements specified in Section 4.2.6. Contact a fastener manufacturer, such as Hilti®, Fastenal®, or Tapcon® to ensure the correct fastener for the structure type, since structure fastener requirements can vary.

Due to joist/stud spacing in most jobs, to meet fastener layout requirements, furring strips are recommended to ensure a secure fastening location for the panels. If you are attaching to existing drywall, all fasteners must go into a stud, drywall grid, or other structural component. It is the responsibility of the contractor to locate these elements in either ceiling or wall applications.



(Fig 16)

Consult the following sections for attaching the Tectum® panels to the type of furring selected (Self-drilling/Sharp point) and Sections 4.2.6 and 4.2.7 for spacing requirements (for standard interior or high impact/abuse spaces).

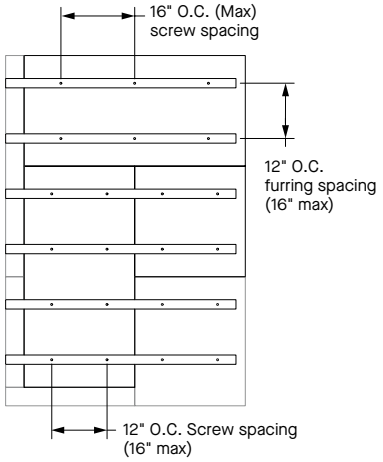
Attach Tectum panels directly to 3/4" wood or metal furring (see Section 4.2.6 for screw spacing/guidance):

- **Wood furring:** In a C-40 mounting, to attach to wood furring, use Tectum 1-5/8" sharp point screws (Item 8187L16) with coordinating painted face
- **Light-gauge (20-25 gauge) metal furring/framing:** In a C-40 mounting, attach to thin-gauge metal furring with Tectum 1-5/8" sharp point screws (Item 8187L16) with coordinating painted face
- **Drywall Grid furring:** In a C-40 mounting, attach to thin-gauge metal furring with Tectum 1-5/8" sharp point screws (Item 8187L16) with coordinating painted face
- **Heavy-gauge metal furring or structural steel:** In a C-40 mounting, attach to heavy-gauge metal furring with Tectum 1-5/8" drill point screws (Item 8188L16) with coordinating painted face coordinating painted face

4.2.6. Screw Placement for All Mounting Methods

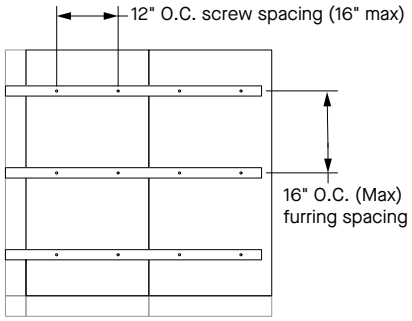
Recommended screw spacing is such that one screw supports one square foot to three square feet of panel. The 1" thick standard DesignArt® ceiling and wall panel has a weight of approximately 1.65 LBS/SF. It is the contractor/installer's responsibility to ensure type of fastener and placement can carry the system weight. Additionally, the Tectum panel surface is not intended to support additional weight. Because the pull-through resistance of the screw head is adequate, no washers or adhesive application is required.

Tectum panels are typically installed over furring, but the same screw pattern should be used for a Mounting Method A direct mounting. The recommended furring spacing is 12" O.C., but not to exceed 16" O.C. Attaching to drywall grid for ceiling installations, the spacing will be 16" O.C., this is due to the 8" rout hole spacing of the Armstrong® Drywall Grid. For wall installations, use QSUTC to fasten Armstrong Drywall Grid to structure ***(Figs 17 – 19)***. See Section 4.2.7 for screw spacing recommendations for high impact areas. The attachment of the furring must be designed to support the weight of the panels.



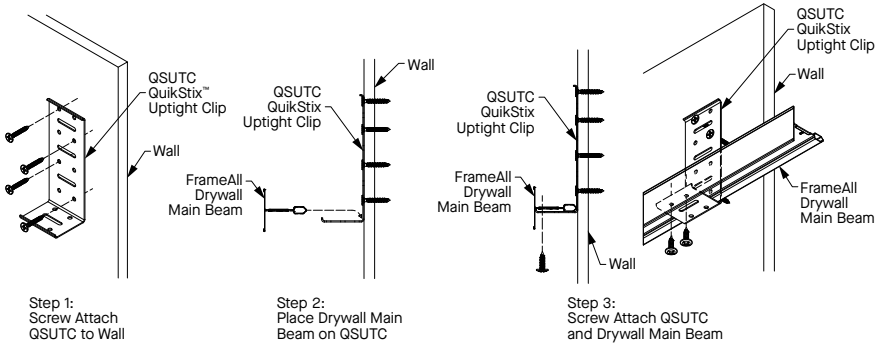
12" O.C. Furring layout for walls

(Fig 17)



16" O.C. Furring layout for walls

(Fig 18)

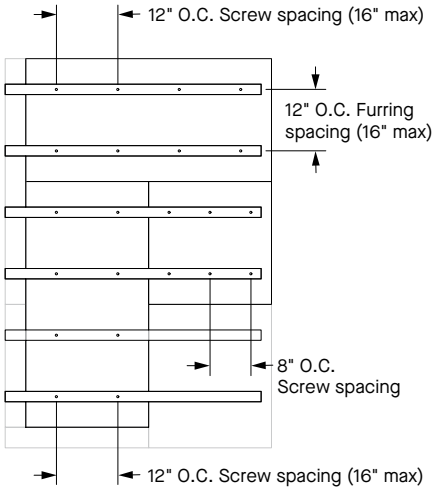


(Fig 19)

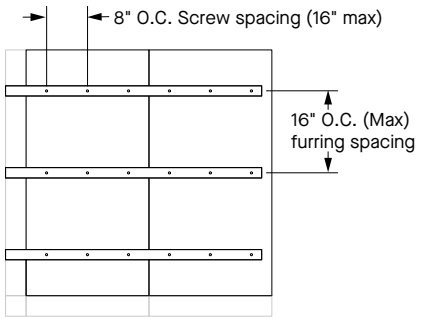
When attaching to furring use painted head drywall screws. For wall applications a minimum of 4 screws per panel will be required for a 2' × 2' and 6 screws for a 2' × 4'. For ceilings, a minimum of 6 screws will be required for a 2' × 2' and 8 screws for a 2' × 4' ***(Figs 20 & 21)***. The number of screws will be regardless of mounting method (A, D-20, C-20, or C-40).

4.2.7. High-impact Areas

In moderate or high impact areas, such as gymnasium walls less than 12 feet above the floor, furring spacing is required at 12" O.C. for all 1" panels and additional screws are recommended ***(Fig 20)***.



(Fig 20) 12" O.C. Furring layout
for high impact areas and ceilings



(Fig 21) 16" O.C. Furring layout
for high impact areas and ceilings

4.3. Direct-Applied – Adhesive Wall Installation

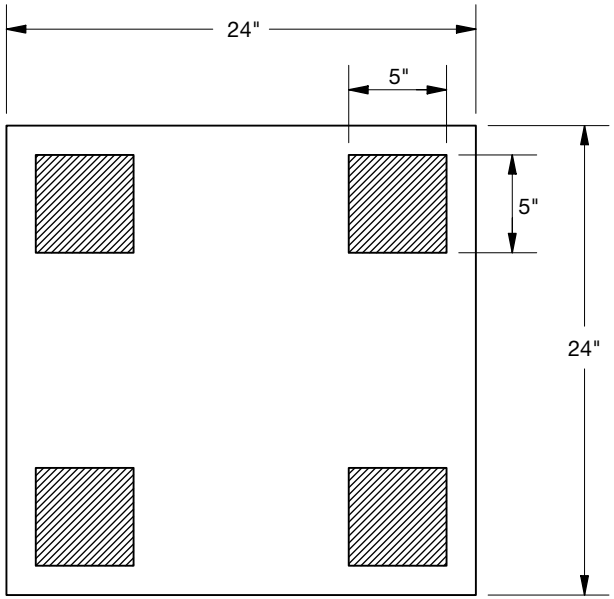
4.3.1. Tectum® DesignArt® panels can also be installed in wall applications only using construction adhesive. Armstrong® Ceiling and Wall Solutions recommends Titebond® GREENchoice or Henry® 237 AcoustiGum™ Acoustical Ceiling Tile Adhesive when using the direct-applied adhesive installation method. The adhesive will be supplied by the contractor.

The Direct-Applied – Adhesive installation method is limited to wall installations only. Panels cannot be installed in ceiling applications using construction adhesive. The maximum panel size for this installation method is 24 × 24 × 1" and 24 × 48 × 1". Larger and/or thicker panels cannot be installed using construction adhesive. The adhesive attachment is not to be used in swimming pool installations. Tectum DesignArt – Lines High NRC panels should never be installed with adhesive as it may impact the acoustical performance of the panel.

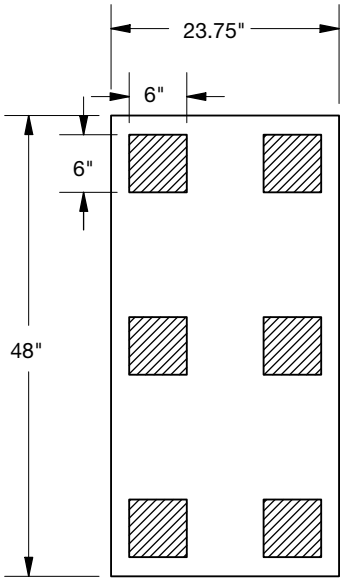
4.3.2. Follow adhesive manufacturer's instructions for application and usage. It is recommended to test and confirm suitability prior to installation. Armstrong does not guarantee the performance of these or other adhesive products, either alone or in conjunction with Armstrong products.

4.3.3. Surfaces must be dry and free of dust, grease, oil, dirt, or any other material that may deter adhesion when using the adhesive installation method. Existing finish paint must be well bonded and not flaking or peeling; otherwise, it must be removed. Avoid applying to a newly painted ceiling/deck. Glossy painted surfaces must be abraded. For painted or sealed surfaces, install a small test area and observe after 12 hours.

4.3.4. Using a trowel with 1/4 × 1/2 × 1/4" notches, apply the adhesive to the back of the panel. An adhesive spot should be no less than 5" × 5" for a 2' × 2' and 2' × 4' panel, and it should be no more than 3" away from the edge of the panel. A 2' × 2' panel will receive four 5" × 5" glue spots while a 2' × 4' panel will receive six 6" × 6" glue spots ***(Figs 22 & 23)***.



(Fig 22)



(Fig 23)

4.3.5. It is recommended to use an alignment method (i.e., laser, chalk line) to make sure the panels are properly positioned during installation.

4.3.6. Once in position, push the panel against the drywall or plywood applying even hand pressure to the panel where the adhesive is located, starting at the center first, and then working to the edges. By attaching the center first, the installer can still pivot the panel slightly left or right before adhering the edges. This ensures that the panel can be aligned correctly first before the edges are solidified into place. Avoid excessive pressure to minimize panel flexing that will disturb the previously pressed areas of adhesive and result in release of the adhesive. Lastly, press a sponge float across all areas of the panel where glue was applied to ensure all glue spots are properly compressed and adhered to the drywall.

4.3.7. Any slight adjustments to the panel placement should be done immediately to not weaken the adhesive bond. Once the panel is evenly pressed into position, the adhesive should provide an immediate bond to hold the panel in place while the adhesive sets.

4.3.8. Install finishing screws to the panel once it is in the correct location to ensure that the panel does not slide down the wall. Countersink finishing screws into the Tectum® panels no more than 1/4". Finishing screws are supplied by others.

4.3.9. In moderate or high-impact areas, such as gymnasium walls less than 12 feet above the floor, additional screws are recommended.

5. PANELS

5.1. Edge Detail

Tegular Ceiling Panels: Tegular panels have a stepped edge, with the face of the panel dropping a nominal 1/2" below the face of the grid.

Direct-Attach Ceiling and Wall Panels: All panels are beveled on all four sides.

5.2. Field Cutting

Cut the panel using standard woodworking tools and techniques. A table saw is recommended for straight cuts and a band saw for curved cuts. In both cases, panels should be cut face-up to minimize chipping of the face veneer.

To replicate the 1/4" factory bevel, a hand router with a 1/4" bevel bit can be used. Fine-toothed blades recommended for finish cuts will yield the best results.

To replicate the tegular edge, use a hand router that can cut 90° angles. Fine-toothed blades recommended for finish cuts will yield the best results.

5.3. Directionality

Tectum® DesignArt® – Line panels are directional based on the routed design. Panels can be installed in any direction to achieve the desired design.

5.4. Acoustic Infill for Direct-Attach Panels

Tegular Ceiling Panels: Lay the acoustic panel (School Zone® Fine Fissured™ [Item 1713] recommended) on the back surface of the Lay-in or Tegular panel and install together. Alternatively, lay the infill panels on the back of already installed panels as you progress across the space.

NOTE: Tectum® ceiling panels installed with acoustic infill panels should be installed following D, E, F guidelines due to the total system weight. See seismic installation Section 7 for details.

Direct-Attach Ceiling and Wall Panels: Sound Absorption (NRC) of up to 0.85 can be achieved with 1" thick standard Tectum DesignArt panels. See Section 4.2, C-20 and C-40 mounting methods.

5.5. Field Painting

Field Painting Specification Recommendation

Sherwin-Williams® Product: Dryfall Brilliant Flat White (E60WL501), or a vinyl acrylic latex paint intended as an interior brilliant white flat dry fall.

Tests have shown that six coats of spray-applied paint have no negative impact on the acoustical and fire properties of the Tectum panels.

Recommended Spread Rate per Coat
Wet Mils: 3.0 – 4.0

Dry Mils: 1.0 – 1.4

Coverage: approximately 558 SF/GAL at 1.0 mil dry film, no loss (based on flat surface)

If necessary, cross spray at multiple angles.

Surface Preparation
Surface must be clean, dry, and in sound condition. Remove all oil, dirt, grease, and other foreign material to ensure adequate adhesion.

Application Condition

Temperature: 50° F minimum, 110° F maximum (air, surface, and material); At least 5° F above dew point

Relative Humidity: 75% maximum

Dry Time: 20 minutes to 1 hour

Recoat: 1 hour

During the early stages of drying, the coating is sensitive to rain, dew, high humidity, and moisture condensation. Plan painting schedules to avoid these influences during the first 16-24 hours of curing.

Dryfall characteristics will be adversely affected at temperatures below 77° F or above 50% relative humidity.

Application Equipment

The following is a guide. Changes in pressure and tip sizes may be needed for proper spray characteristics.

Airless Spray

Pressure: 1500 psi minimum

Hose: 1/4" ID

Tip: 0.013 – 0.017 fine finishing tip

Reduction: No reduction needed.

Conventional Spray

Gun: Binks 95

Fluid Nozzle: 63C

Air Nozzle: 63PB

Atomization Pressure: 35 – 45 psi

Fluid Pressure: 8 – 10 psi

Reduction: As needed up to 20% by volume

Brush and Roller: Not recommended for the face of the product

Field Touch Up and Color Match:

Standard Natural Color Match: Sherwin-Williams #SW6126

Tegular Ceiling Panels: Panels should be removed from the suspension system prior to painting and be allowed to fully dry before being returned to the grid.

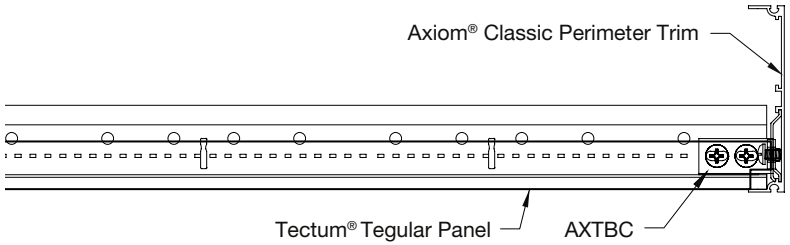
Direct-Attach Ceiling and Wall Panels: Tectum® panels should be fastened in place prior to field painting.

6. SPECIAL INSTALLATION CONSIDERATIONS

6.1. Discontinuous / Floating Installation

6.1.1. Tegular Ceiling Panels

Tectum® DesignArt® – Lines Tegular ceiling panels can be installed as a discontinuous system using Prelude® suspension system and Axiom® trim solutions ***(Fig 24)***.



(Fig 24)

6.1.2. Direct-Attach Ceiling Panels

Direct-Attach discontinuous ceiling installations are not recommended. Install Tectum DesignArt Tegular Ceiling Panels in a Prelude® suspension system as an alternative installation method.

6.2. Sloped Installation

6.2.1. Tegular Ceiling Panels

For specific installation guidance for sloped ceilings, reference the Sloped Ceilings Technical Guide BPCS-5618.

6.2.2. Direct-Attach Ceiling and Wall Panels

Sloped ceiling installations should follow standard ceiling installation with screws 12" O.C. per Section 4.2.6.

6.3. Pool/Natatorium Installation

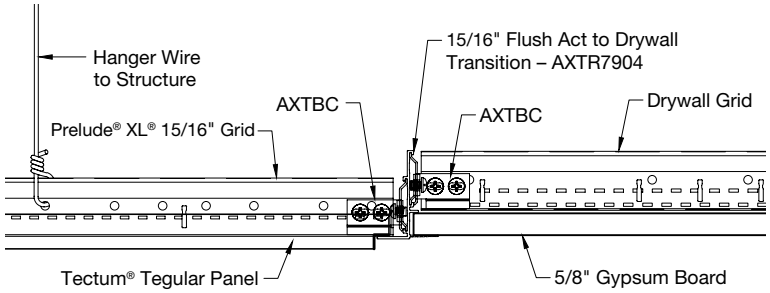
1" Tectum® ceiling panels are not to be used in pool or other high humidity areas where standing water is present. Contact TechLine for information on Tectum products available for pool installations.

6.4. Exterior Installation

1" Tectum panels are not intended for exterior use. Contact TechLine for information on exterior installations.

6.5. Transitions

Professional transitions from Tectum to another ceiling surface, at the same level or at a different height, can be achieved with Axiom® Transitions ***(Fig 25)***.



(Fig 25)

7. SEISMIC INSTALLATIONS

7.1. Tegular Ceiling Panels

NOTE: In OSHPD, DSA areas, Tectum ceiling panels will need to be mechanically fastened to the deck. Consult with the Structural Engineer/Code Expert to determine appropriate solution for your application.

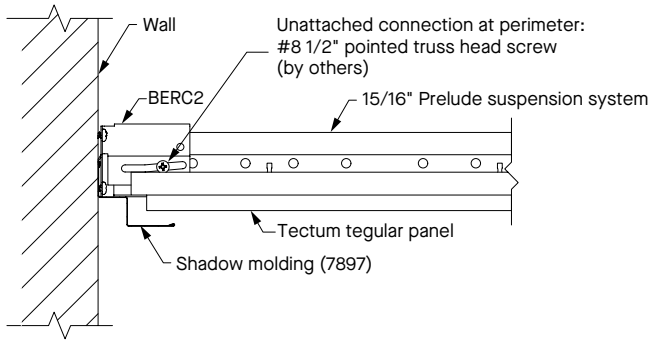
The requirements listed here represent the manufacturer's minimum acceptable installation recommendations and may be subject to additional requirements established by the local authority having jurisdiction.

- All installations must follow ASTM C636
- All references to suspension component duty ratings are per ASTM C635
- All manufacturers' suspension system components must be minimum heavy-duty

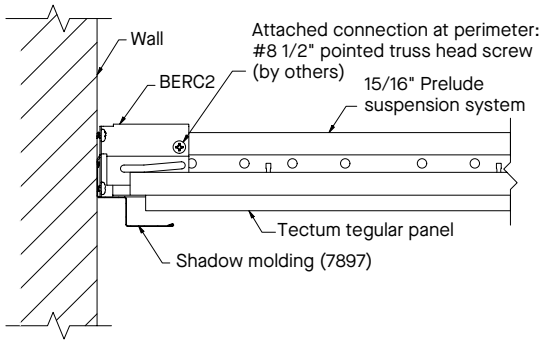
In Seismic zones, heavy-duty main beams (Item 7301) will be installed 48" O.C., with 4' cross tees (Item XL7341) perpendicular to the main beams at 24" O.C for 2' × 4', and for 2' × 2' panel installation, 2' cross tees (Item XL7328) will span the midpoints of the 4' cross tees.

Running bond pattern will require mains (Item 7301) to run 2' O.C., with 2' cross tees (Item XL7328) staggered every 48" perpendicular to the main. The use of STAC or GC3W will be required at every single cross tee insertions of XL end detail to secure the grid connection.

For Tegular panels, Shadow Molding (Item 7897) should be used ***(Fig 26 & 27)***. Alternatively, Angle Molding (Item 7800) can be used along with BERC2 clips. However, this solution could result in "mouseholes" at the perimeter.



(Fig 26)



(Fig 27)

Seismic suspension system installation follows the Armstrong® Seismic Rx® Suspension System ESR-1308 guidelines of installation for both IBC C & D installations. Seismic Rx Suspension System installation method can be found in the Seismic Ceiling Installation Guide BPCS-4141.

Seismic Rx® Suspension System Category C, 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 required
- Heavy-duty systems as identified in ICC-ESR-1308
- Safety wires required on light fixtures
- Ceiling areas over 1,000 SF must have horizontal restraint wire or rigid bracing
- Perimeter support wires within 8"
- 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 ceiling plane must have positive bracing
- Cable trays and electrical conduits must be independently supported and braced
- Suspended ceilings can be subject to special inspection

7.2. Direct-Attach Ceiling and Wall Panels

Seismic installations of 1" thick Tectum® DesignArt® panels are to be handled per building code.

	Item No.		Description	Ordered Separately/ Included with	Required for Install	Sold by the	PCS/CTN
	Standard	High NRC					
2' × 2' Direct Attach Panels	5421D01T10	6347D01T10	Hatches 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D03T10	6347D03T10	Arcs 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D04T10	6347D04T10	Rings 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D05T10	6347D05T10	Rays 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D06T10	6347D06T10	Checkers 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D07T10	6347D07T10	Steps 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D08T10	6347D08T10	Bands 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D09T10	6347D09T10	Illusions 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D10T10	6347D10T10	Decos 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D11T10	6347D11T10	Currents 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D12T10	6347D12T10	Strings 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D13T10	6347D13T10	Droplets 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D14T10	6347D14T10	Signals 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D15T10	6347D15T10	Tilts 2' × 2' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
2' × 4' Direct Attach Panels	5421D40T10	6347D40T10	Tilts B 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D41T10	6347D41T10	Tilts C 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D42T10	6347D42T10	Tilts D 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D43T10	6347D43T10	Retro 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D44T10	6347D44T10	Retro B 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D45T10	6347D45T10	Rings B 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D46T10	6347D46T10	Bands B 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D47T10	6347D47T10	Bands C 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D48T10	6347D48T10	Illusions B 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D49T10	6347D49T10	Currents B 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D50T10	6347D50T10	Strings B 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D51T10	6347D51T10	Droplets B 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D52T10	6347D52T10	Signals B 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D53T10	6347D53T10	Contours 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1
	5421D54T10	6347D54T10	Levels 2' × 4' Direct Attach Panel	Ordered Separately	Based on Design	PC	1

	Item No.		Description	Ordered Separately/ Included with	Required for Install	Sold by the	PCS/CTN
	Standard	High NRC					
2' × 2' Tegular Panels	8186D01T10	6348D01T10	Hatches 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D03T10	6348D03T10	Arcs 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D04T10	6348D04T10	Rings 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D05T10	6348D05T10	Rays 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D06T10	6348D06T10	Checkers 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D07T10	6348D07T10	Steps 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D08T10	6348D08T10	Bands 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D09T10	6348D09T10	Illusions 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D10T10	6348D10T10	Decos 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D11T10	6348D11T10	Currents 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D12T10	6348D12T10	Strings 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D13T10	6348D13T10	Droplets 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D14T10	6348D14T10	Signals 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
	8186D15T10	6348D15T10	Tilts 2' × 2' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	8
2' × 4' Tegular Panels	8186D40T10	6348D40T10	Tilts B 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D41T10	6348D41T10	Tilts C 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D42T10	6348D42T10	Tilts D 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D43T10	6348D43T10	Retro 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D44T10	6348D44T10	Retro B 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D45T10	6348D45T10	Rings B 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D46T10	6348D46T10	Bands B 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D47T10	6348D47T10	Bands C 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D48T10	6348D48T10	Illusions B 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D49T10	6348D49T10	Currents B 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D50T10	6348D50T10	Strings B 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D51T10	6348D51T10	Droplets B 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D52T10	6348D52T10	Signals B 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D53T10	6348D53T10	Contours 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	8186D54T10	6348D54T10	Levels 2' × 4' Tegular Ceiling Panel	Ordered Separately	Based on Design	PC	4
	Infill Panels (The product listed below does not come in coordinating DesignArt colors)						
	1713		24"x 24" Lay-in School Zone® Fine Fissured	Ordered Separately	Based on Design	CTN	12

Item No. Standard	Description	Ordered Separately/ Included with	Required for Install	Sold by the	PCS/CTN
High Impact Suspension System NOTE: The products listed below are available as standard in coordinating DesignArt colors.					
7301	Prelude® XL® 12' HD Main Beam	Ordered Separately	Yes	CTN	20
XL7341	Prelude XL 4' Cross Tee	Ordered Separately	Yes	CTN	60
XL8320	Prelude XL 2' Cross Tee	Ordered Separately	Based on Design	CTN	60
7897	Shadow Molding	Ordered Separately	Based on Design	CTN	30
8178T10	Tectum® Hold-Down Clip	Ordered Separately	Yes	CTN	200
7891	12-gauge Hanger Wire	Ordered Separately	Yes	Bundle	140
Seismic Suspension System NOTE: The products listed below are available as standard in coordinating DesignArt colors.					
7301	Prelude XL 12' HD Main Beam	Ordered Separately	Yes	CTN	20
XL7342	Prelude XL 4' Cross Tee	Ordered Separately	Yes	CTN	60
XL7328	Prelude XL 2' Cross Tee	Ordered Separately	Based on Design	CTN	60
7897	Shadow Molding	Ordered Separately	Based on Design	CTN	30
BERC2	2" Beam End Retaining Clip	Ordered Separately	Yes	CTN	200
7891	12-gauge Hanger Wire	Ordered Separately	Yes	Bundle	140
Non-Seismic Suspension System NOTE: The products listed below do not come in coordinating DesignArt colors as standard and are a premium choice.					
7300	Prelude® XL® 12' ID Main Beam	Ordered Separately	Yes	CTN	20
XL7340	Prelude XL 4' Cross Tee	Ordered Separately	Yes	CTN	60
XL7328	Prelude XL 2' Cross Tee	Ordered Separately	Based on Design	CTN	60
7897	Shadow Molding	Ordered Separately	Based on Design	CTN	30
7891	12-gauge Hanger Wire	Ordered Separately	Yes	Bundle	140
Floating Perimeter Trim					
AX_STR_ _ _	Axiom® Classic Straight Trim	Ordered Separately	Based on Design	PC	10 LF
AX_CUR_ _ _	Axiom Classic Curved Trim	Ordered Separately	Based on Design	PC	10 LF
Accessories					
8187L16	1-5/8" Sharp point screws	Ordered Separately	Based on Design	CTN	1000
8188L16	1-5/8" Drill point screws	Ordered Separately	Based on Design	CTN	1000
8189L22	2-1/4" CMU Screws	Ordered Separately	Based on Design	CTN	500
5456GAL1	Touch Up Paint	Ordered Separately	Based on Design	GAL	1
By Others	Titebond® GREENchoice™ or Henry® 237 AcoustiGum™ Acoustical Ceiling Tile Adhesive	Ordered Separately	Based on Design	-	-

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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BPLA-293083-626

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